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PRELIMINARY FLOOD-FREQUENCY RELATIONS AND SUMMARY OF MAXIMUM DISCHARGES IN NEW MEXICO

- A PROGRESS REPORT -

by

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PRELIMINARY FLOOD-FREQUENCY RELATIONS AND SUMMARY OF MAXIMUM DISCHARGES IN NEW MEXICO

ABSTRACT

The magnitude and frequency of floods is defined regionally for streams in New Mexico. An analysis was made, using multiple-regression techniques, relating flood peaks of 2, 5, 10, 25, and 50-year recurrence intervals to selected physical and climatic basin characteristics. The state was divided into three flood regions, and the resulting equations and associated standard error of prediction are presented for each of these regions. In addition the maximum observed discharges at regular and crest-stage gaging stations, and all peak discharges by indirect measurements at miscellaneous sites are presented in tabular and graphical form.

The equations developed in the study can be used to compute the peak discharges of floods of given recurrence intervals for use in the design of drainage structures.

Surface Water/*Floods/
*Regional Analysis/*New Mexico/Frequency Analysis/
Regression Analysis/Probability/Historic Flood/
Maximum Discharges

PRELIMINARY FLOOD-FREQUENCY RELATIONS AND SUMMARY OF MAXIMUM DISCHARGES IN NEW MEXICO

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INTRODUCTION

The purpose of this report is to provide flood information needed by planners and designers in New Mexico. Data are presented on flood characteristics for 163 sites where flood records have been obtained for eight or more years, and on the maximum known floods at 439 sites. From analyses of these flood data and other information, methods have been defined for estimating the magnitude of floods having selected likelihoods of occurrence at most natural-flow sites in New Mexico. These analyses consist of defining the relations between the flood data and the physical and climatic characteristics at the gaged sites. An estimate of the natural-peak flow can then be obtained for any desired site by using this relation and the basin characteristics at the desired site.

A knowledge of flood characteristics is essential for design of culverts, bridges, and drainage systems; for planning use of flood-prone lands; and for establishing flood insurance rates. Only through reliable estimates of the magnitude of flooding and the related frequency of occurrence is it possible to obtain economically optimum designs, to prepare realistic zoning ordinances, or to establish equitable insurance rates.

Previous reports (Wiard, 1962; Patterson, 1964; Patterson, 1965; Patterson and Somers, 1966) also have proposed flood-estimating techniques, but the limited amount of data available for those studies allowed definition of estimating relations that were applicable only to parts of the State and to large streams. Since preparation of those earlier reports, several years of flood records have accumulated and the flood records on many small streams have become of acceptable length for frequency analysis. These records were used in an analysis to define flood-estimating relations that are applicable to any natural-flow sites with basin characteristics which are within the limitations of the data used to develop the relations. Flow characteristics for the short-term, small-streams records used in this report are defined with only a limited accuracy. They will be more accurately defined in future years, and the relations defined from the short records and presented in this report may need to be redefined in the future. For that reason the flood-estimating relations of this report are considered preliminary.

This report was prepared under the direction of William E. Hale, District Chief, New Mexico District, Water Resources Division, U.S. Geological Survey in cooperation with the New Mexico Highway Department and the Federal Highway Administration. The opinions, findings, and conclusions are those of the Geological Survey and not necessarily those of the cooperating agencies.

DATA USED

Streamflow data used in the analyses are from 163 gaging stations that have 8 years or more of virtually natural peak-flow record at the end of the 1968 water year and that have drainage areas less than 1,500 square miles. The location of these stations is shown in figure 1. The length of record varies from 8 to 51 years with an average length of about 19 years. Records were not adjusted to a base period.

Flood-frequency relations for streams with drainage areas larger than 1,500 square miles can be found in Patterson (1964 and 1965) and Patterson and Somers (1966).

The peak discharges of 2, 5, 10, 25, and 50-year recurrence intervals were determined for each station by the log-Pearson Type III method (Water Resources Council, 1967) and are shown in Appendix table B-1. Adjustment to log-Pearson curves for some stations was made on the basis of historical data or "data outliers".

The term "recurrence interval" is defined as the average interval of time within which a flood of a given magnitude is equaled or exceeded once. A flood with a recurrence interval of 50 years is the annual flood that is equaled or exceeded once in 50 years, on the long-term average. The concept implies no regularity in the time of recurrence of a given magnitude of a flood. It is quite possible for two or more 50-year floods to occur within a short period of time, or many more than 50 years may elapse before the occurrence of one 50-year flood. Frequency may also be expressed in terms of probability. The probability of occurrence of a 50-year flood in any given year is 1 in 50, or 0.02.

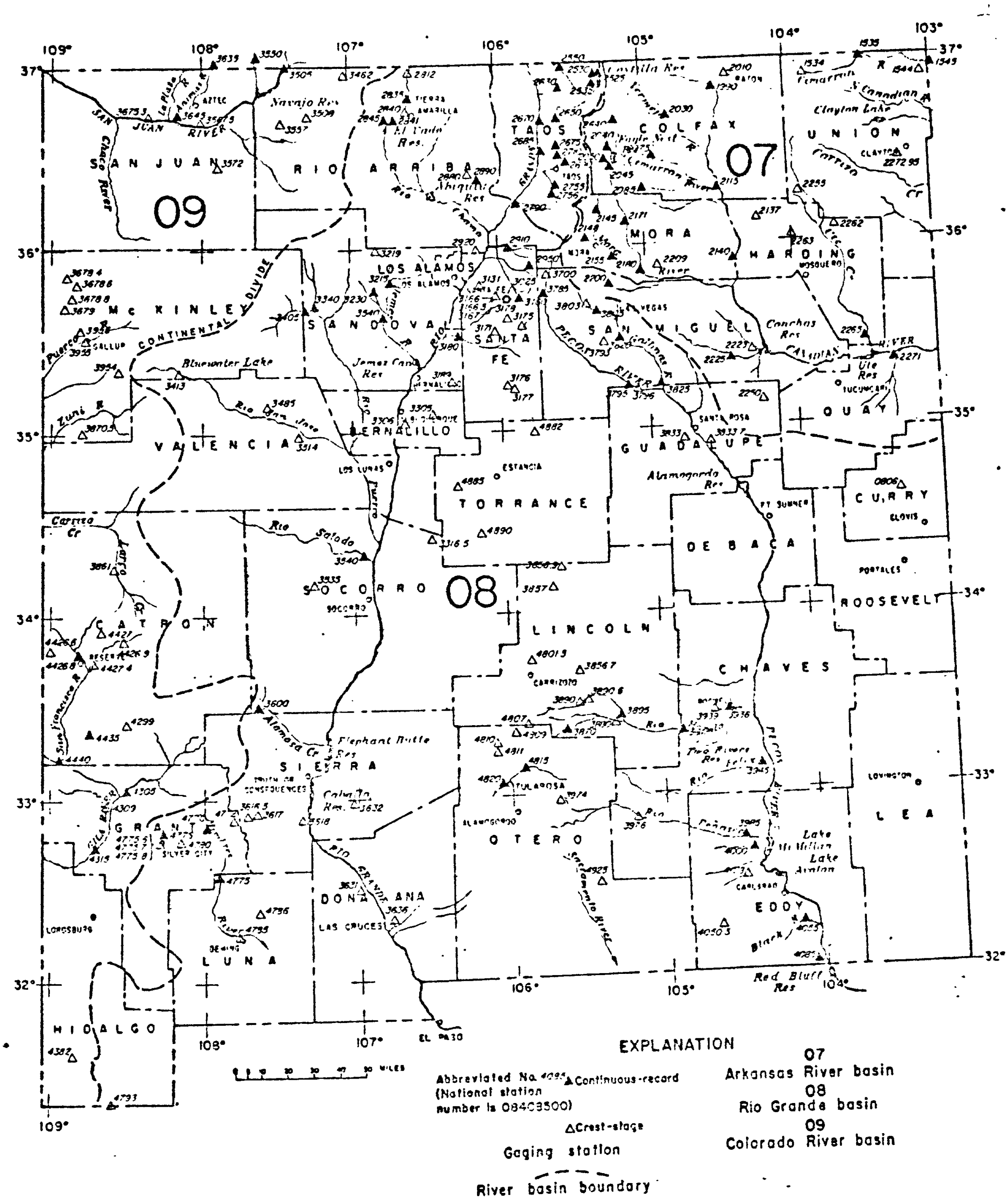

Figure 1.—Location of gaging stations used in the regression analyses for peak flows.

In addition to the peak discharges computed for each station, physical and climatic characteristics were determined for each gaged drainage basin and are shown in Appendix table B-2.

The physical and climatic characteristics were determined as follows:

Drainage area (A), in square miles, determined by use of a planimeter from the best available topographic maps.

Main channel length (L), in miles, is the length of the main channel between the gage and the basin divide measured along the channel which drains the largest area. The length was determined by using a wheel-type map-measure on the best available topographic maps.

Site altitude (E), in 1,000's of feet above mean sea level, is the altitude of the gage determined from the best available maps.

Mean basin altitude (Em), in 1,000's of feet above mean sea level is the average of the altitudes at points 10 percent and 85 percent of the distance along the main channel from the station to the basin divide, determined from the best available maps.

Shape factor (Sh), dimentionless ratio, is equal to the main channel length squared divided by the drainage area, L^2/A.

Main channel slope (S), in feet per mile, is the average slope between points 10 and 85 percent of the distance from the gage to the basin divide. The main channel slope was computed from the best available maps as the difference in altitude of the 10 and 85 percent points divided by the distance, in miles, between the two points.

Area of lakes and ponds (St), is the area of lakes and ponds within the drainage basin and expressed as a percentage of the total basin drainage area and increased by 1.0. The area of lakes and ponds was determined from the best available topographic maps by using a transparent grid divided into 0.01 or 0.04 square mile areas. The grid was placed on the map over the lake to be measured and a count made of squares or partial squares covering the lake area.

Normal annual precipitation (Pm), in inches minus 7.00, is the basin average determined from a 1:500,000 scale isohyetal map prepared by the U.S. Weather Bureau and available from the New Mexico State Engineer Office (U.S. Weather Bureau, no date). The basin average was determined by measuring (by the grid system explained above) the area within the drainage basin between consecutive isohyets, multiplying this area by the average value of the isohyets, summing these products, and dividing by the total drainage area. For very small basins which cannot be delineated on the map, a point value was determined by interpolating between isohyets.

Normal October through April precipitation (Pa), in inches, is basin average determined as explained above from a 1:500,000 scale isohyetal map prepared by the U.S. Weather Bureau and available from the New Mexico State Engineer Office (U.S. Weather Bureau, no date).

Normal May through September precipitation (Ps), in inches minus 3.00, is basin average determined as explained above from a 1:500,000 scale isohyetal map prepared by the U.S. Weather Bureau and available from the New Mexico State Engineer Office (U.S. Weather Bureau, no date).

Maximum 24-hour 2-year rainfall (I), in inches, is the basin average of the maximum 24-hour rainfall having a recurrence interval of 2 years. These values were determined as explained above from rainfall-frequency maps for New Mexico (U.S. Weather Bureau, 1967).

Mean minimum January temperature (T), in degrees F., is the basin average determined as explained above from a map published in von Eschen (1959) and shown in figure 2.

Latitude (LA), in degrees minus 30, of gage site, determined to nearest 10 minutes and converted to a decimal.

Longitude (LO), in degrees minus 100, of gage site, determined to nearest 10 minutes and converted to a decimal.

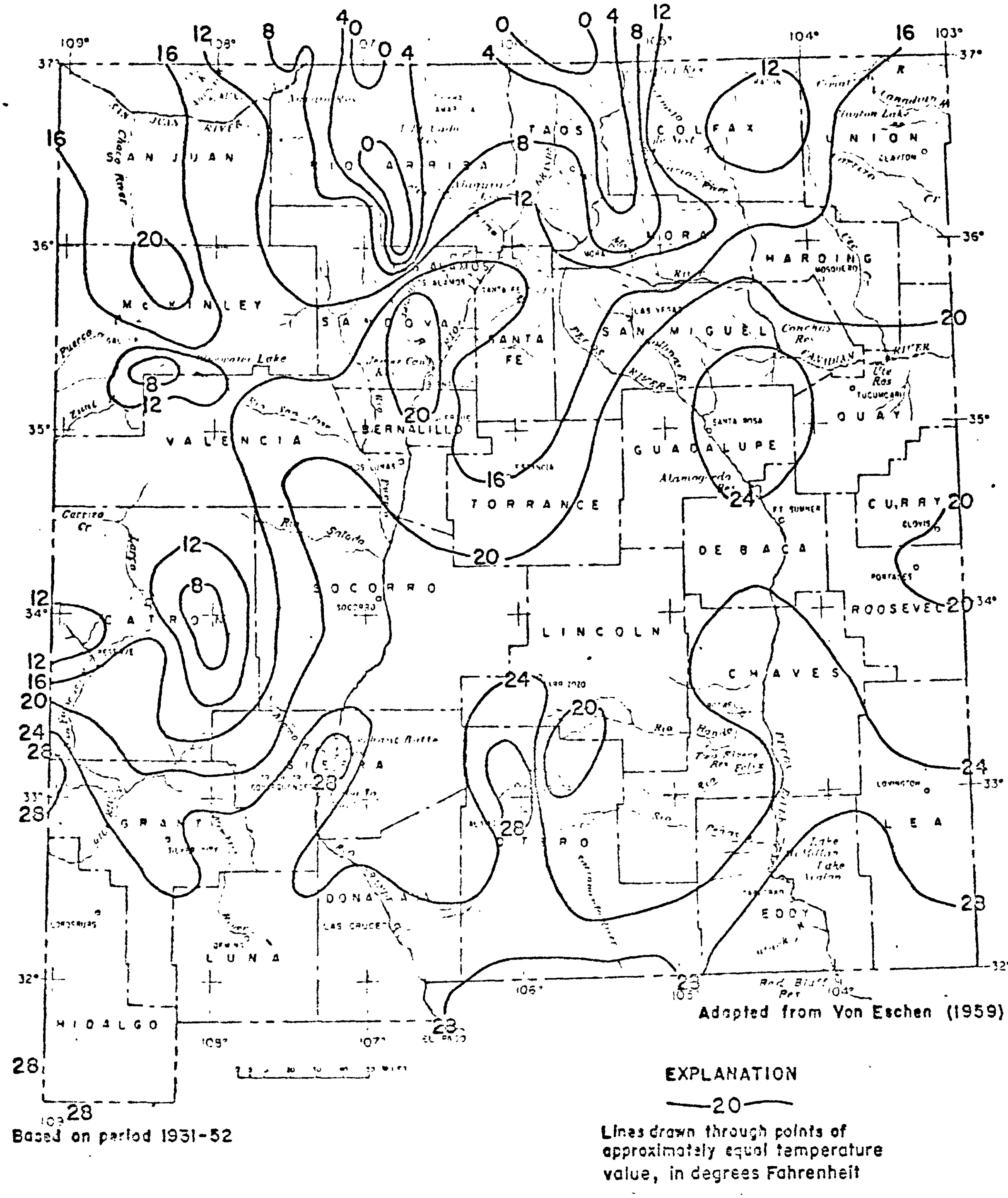

Figure 2.--Mean minimum January temperature.

ANALYSIS

Each of the peaks of a given recurrence interval were related to basin and climatic characteristics using step-backward multiple regression techniques. Computations were made by use of a digital computer. The resulting equation has the form $Q_t = aA^bS^cT^d$ ---, where Q_t is a flood of t recurrence interval; A, S, and T are basin or climatic characteristics; a is the regression constant; and b, c, and d are regression exponents. This method was described by Benson (1964). The computer was programed to calculate the regression equation and the significance of each basin characteristic. The computer was further programed to repeat the calculation, omitting the least significant basin charateristic in each calculation until only the most significant characteristic remained. After relations for a flood of a given recurrence interval had been computed, the entire computation process was repeated using peaks of another recurrence interval along with the same set of basin characteristics.

Those basin characteristics which showed a high degree of interdependence were eliminated prior to the initial regression analysis. Drainage area was highly correlated with basin length; hence basin length was not used. Similarly site altitude was highly correlated with mean basin altitude and normal annual precipitation was highly correlated with both normal October through April precipitation and normal May through September precipitation; hence site altitude and normal annual precipitation were not used.

The first regression trials included data from all 163 gaging stations throughout the state and bordering areas. Once a relation has been defined, the computer calculated the residual (ratio of observed discharge to discharge computed from the relation) for each station. The residuals were plotted on a state map to check areal bias. Groups of stations within certain areas showed consistent deviations from the general pattern. Therefore the state was divided into three regions (fig. 3) and each region treated separately. In fixing the boundaries, consideration was given to the location of the group of stations, previously defined flood-frequency regions, and topography. As a result, 56 stations were included in region 1, 33 in region 2, and 74 in region 3. By dividing the state into three homogeneous regions, the errors associated with the relations were reduced in regions 1 and 3 and increased in region 2. As a final step, the residuals were once more plotted on a state map to verify that they were randomly distributed.

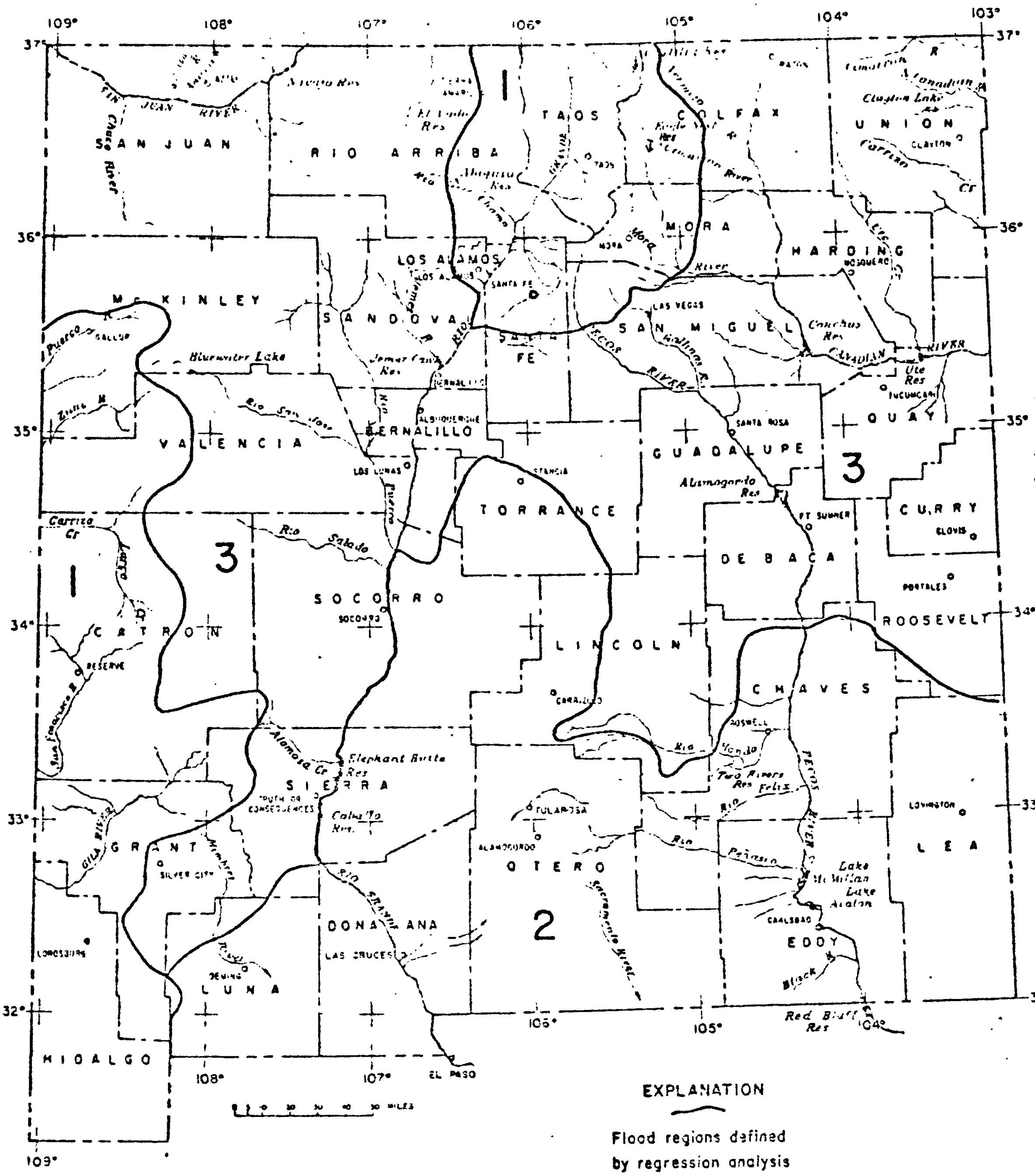

Figure 3.--Flood regions defined by regression analyses

RESULTS

Regression equations

Tables 1, 2, and 3 are summaries of the regression equations for each region. More than one relation is shown for some recurrence intervals. The first equation shown is the relation between the flood characteristic and the most significant basin characteristic. Additional basin characteristics are included in each succeeding relation until all basin characteristics which are statistically significant at the 5-percent level are included. The magnitude of error associated with each relation decreases as additional basin characteristics are included. The user may make a decision as to which relation to use on the basis of the improvement in accuracy shown and the additional work required to define additional basin characteristics for the site.

Some relations for floods of 10, 25, and 50-year recurrence intervals in region 1 are not hydrologically meaningful. Only those relations which are hydrologically meaningful and in which the basin characteristics are statistically significant are shown.

These relations may be used to estimate floods of a given recurrence interval within the region shown. For example:

Table 1.--Summary of regression equations, region 1, $Q_t = aA^bS^cI^dT^e$

Asterisk [*], statistically significant at the 5 percent level.
Double asterisk [**], statistically significant at 1 percent level.
x, Standard deviation of log of dependent variable.

Recurrence interval, t, in years	Number of stations	Basin characteristics included	Regression constant		Exponent of basin characteristics				Standard error of estimate			
			Log a	a	A (b)	S (c)	I (d)	T (e)	Log Units	Percent Positive	Percent Negative	Percent Average
2----------	56------	---------------	-----	----------	-----	-----	-----	-----	x.565	268	73	170
		A--------------	1.6538	45.1	**.42	-----	-----	-----	.458	187	65	126
		A,T------------	.6657	4.63	**.46	-----	-----	**.96	.384	142	59	100
		A,S,T----------	2.0669	117	**.36	*-.46	-----	**.70	.366	132	57	94
5----------	56------	---------------	------	----------	-----	-----	-----	-----	x.532	241	71	156
		A--------------	2.1046	127	**.34	-----	-----	-----	.461	189	65	127
		A,T------------	.9841	9.64	**.39	-----	-----	**1.09	.363	131	57	94
		A,S,T----------	2.4975	314	**.28	**-.49	-----	**.80	.339	118	54	88
10 --------	56------	---------------	------	----------	-----	-----	-----	-----	x.533	242	71	156
		A,T------------	1.1264	13.4	**.36	-----	-----	**1.16	.368	133	57	95
		A,S,T----------	2.6455	442	**.25	**-.49	-----	**.87	.345	121	55	88
25----------	56------	---------------	------	----------	-----	-----	-----	-----	x.546	252	72	162
		A,S,I,T--------	2.8082	643	*.15	**-.61	*1.39	**.98	.358	128	56	92
50----------	55------	---------------	------	----------	-----	-----	-----	-----	x.555	259	72	166
		A,T------------	1.3646	23.2	**.32	-----	-----	**1.26	.398	150	60	105
		A,S,T----------	2.8725	746	**.21	*-.49	-----	**.98	.377	138	58	98

Table 2.--Summary of regression equations, region 2, $Q_t = aA^bSh^cT^d$

Asterisk [*], statistically significant at 5 percent level.
Double asterisk [**], statistically significant at 1 percent level.
x, Standard deviation of log of dependent variable.

Recurrence interval, t, in years	Number of stations	Basin characteristics included	Regression constant		Exponent of basin characteristics			Standard error of estimate			
			Log a	a	A (b)	Sh (c)	T (d)	Log Units	Percent Positive	Percent Negative	Average
2----------	33------	----------------	-------	-----------	-----	-----	-----	x.764	482	83	282
		A---------------	1.9058	80.5	**.51	-----	-----	.550	255	72	164
5----------	33------	----------------	-------	-----------	-----	-----	-----	x.741	450	82	266
		A---------------	2.3226	210	**.54	-----	-----	.481	203	67	135
		A,Sh------------	1.8245	66.8	*.45	*.91	-----	.439	175	64	120
10---------	33------	----------------	-------	-----------	-----	-----	-----	x.747	457	82	270
		A---------------	2.5175	329	**.55	-----	-----	.464	191	66	128
		A,Sh------------	2.0492	112	**.48	*.85	-----	.427	168	63	116
25---------	32------	----------------	-------	-----------	-----	-----	-----	x.706	408	80	244
		A---------------	2.8017	633	**.54	-----	-----	.448	180	64	122
		A,Sh------------	2.3949	248	**.47	*.74	-----	.419	163	62	112
50---------	32------	----------------	-------	-----------	-----	-----	-----	x.720	425	81	253
		A---------------	2.9326	856	**.55	-----	-----	.453	184	65	124

Table 3.--Summary of regression equations, region 3, $Q_t = aA^b Em^c St^d Ps^e I^f T^g$

Asterisk [*], statistically significant at the 5 percent level.
Double asterisk [**], statistically significant at the 1 percent level.
x, Standard deviation of log of dependent variable.

Recurrence interval, t, in years	Number of stations	Basin characteristics included	Regression constant		Exponent of basin characteristics						Standard error of estimate			
			Log a	a	A (b)	Em (c)	St (d)	Ps (e)	I (f)	T (g)	Log Units	Percent Positive	Percent Negative	Percent Average
2----------	74------	---------------	------	-----	----	-----	----	-----	----	----	x.631	328	76	202
		A--------------	2.0342	108	.53**	-----	----	-----	----	----	.360	129	56	92
		A,Em-----------	3.1442	1,390	.53**	-1.38*	----	-----	----	----	.348	123	55	89
		A,Em,St--------	3.4558	2,860	.56**	-1.76**	-.86*	----	----	----	.339	118	54	86
5----------	74------	---------------	------	-----	----	-----	----	----	----	----	x.583	283	74	178
		A--------------	2.4159	261	.49**	-----	----	----	----	----	.328	113	53	83
10---------	74------	---------------	------	-----	----	-----	----	----	----	----	x.567	267	73	170
		A--------------	2.6138	411	.47**	-----	----	----	----	----	.326	112	53	82
25---------	74------	---------------	------	-----	----	-----	----	----	----	----	x.558	260	72	166
		A--------------	2.8329	681	.45**	-----	----	----	----	----	.342	120	54	87
		A,I------------	2.6547	452	.44**	-----	----	----	.85*	----	.335	116	54	85
		A,Ps,I---------	3.1453	1,400	.47**	-----	----	-1.30**	2.91**	----	.307	103	51	77
		A,Ps,I,T-------	2.8549	716	.49**	-----	----	-1.18**	2.57**	.23**	.293	96	49	72
50---------	72-----	---------------	------	-----	----	-----	----	-----	----	----	x.554	258	72	165
		A--------------	2.9772	949	.44**	-----	----	-----	----	----	.354	126	56	91
		A,I------------	2.7774	599	.43**	-----	----	-----	.97*	----	.344	121	55	88
		A,Ps,I---------	3.2890	1,940	.47**	-----	----	-1.37**	3.13**	----	.314	106	51	78
		A,Ps,I,T-------	2.9614	915	.49**	-----	----	-1.23**	2.74**	.25**	.296	98	49	74

The flood with a 50-year recurrence interval, (Q50), is desired for a basin in region 1. It was decided that the most accurate relation should be used.

1. From table 1, $Q50 = 746\ A^{.21} S^{-.49} T^{.98}$.
2. From topographic maps, drainage area is determined to be 19 square miles and slope 50 feet per mile; from figure 2, mean minimum January temperature is 10 degrees F.
3. $Q50 \text{ at site} = 746\ (19)^{.21} (50)^{-.49} (10)^{.98}$.

$$= \frac{746\ (1.86)\ (9.55)}{(6.80)} = 1{,}950 \text{ cfs}$$

An estimate of flood flows can be obtained for streams which cross regional boundaries by computing a weighted-average discharge based on the drainage area within each region. For example:

The flood with a 50-year recurrence interval is desired for a site located in region 3. However, 50 square miles of the drainage basin is in region 2 and 20 square miles in region 3.

1. Determine Q50, as explained above, using the total basin area and the relation for Q50 in region 2. Q50, region 2 = 1,250 cfs.
2. Determine Q50 using the total basin area and the relation for Q50 in region 3. Q50, region 3 = 550 cfs.
3. Compute weighted average based on amount of drainage area in each region.

$$Q50 \text{ at site} = \frac{50(1250) \div 20\ (550)}{50 \div 20} = 1{,}050 \text{ cfs}$$

Graphical solutions to the regression equations which include all statistically significant basin characteristics are provided by figures A-1 through A-15 in the Appendix.

Limitations of relations

Because regression equations usually do not represent actual physical relationships, they should not be applied outside the range of data from which they were developed. The extremes of the statistically significant basin characteristics used to develop the relations for each region are given in table 4.

The relations are applicable only to sites where flood flows are virtually natural. They cannot be considered applicable for sites where the drainage basin contains significant urban development, storage reservoirs, diversions, channel improvements, or other man-made features that may modify flood flows.

Table 4.--Extremes of basin characteristics used in regression analyses

REGION 1

	Maximum		Minimum	
Drainage area (A)	558	sq mi	0.33	sq mi
Main channel slope (S)	862	ft/mi	22	ft/mi
Maximum 24-hour 2-year rainfall (I)	2.35	in.	1.18	in.
Mean minimum January temperature (T)	28	deg.	2.0	deg.

REGION 2

	Maximum		Minimum	
Drainage area (A)	1,370	sq mi	0.20	sq mi
Shape factor (Sh)	15.8		1.08	
Mean minimum January temperature (T)	28	deg.	18	deg.

REGION 3

	Maximum		Minimum	
Drainage area (A)	1,390	sq mi	0.16	sq mi
Mean basin altitude (Em)	9.50	ft	4.09	ft
Area of lakes and ponds (St)	4.49	percent	1.00	percent
Normal May through September precipitation (Ps)	12.50	in.	1.00	in.
Maximum 24-hour 2-year rainfall (I)	2.40	in.	1.00	in.
Mean minimum January temperature (T)	28	deg.	0.10	deg.

Accuracy of estimates

The standard error of estimate, shown in tables 1, 2, and 3 is a measure of the reliability of the relation. The standard error is a measure of the unexplained variation remaining after the explainable variation is taken into account. The numerical value signifies the percentage of the true value within which about two-thirds of the estimates will be made by using the established relation. The standard error of estimate is always greater in a positive direction because the relations are based on logarithmic analyses. In tables 1, 2, and 3, the percentage value of the standard error of estimate is shown as positive, negative, and average values. The differences from row to row in average values are indicative of the relative improvement that can be obtained by using additional basin characteristics in the relations.

The standard error of estimate is composed of two parts, the model error and the time or sampling error. The time error is that error inherent in defining a flood of some recurrence interval from a hydrologically short record. The model error is that error caused by use of a general equation form which does not exactly fit the data, interdependence among the basin characteristics, poor definition of the independent variables used, and by not using other independent variables which might be important to explain the differences in floods from basin to basin. To reduce the standard error, consideration should be given to determining the primary cause of the error. If the error is due to time, then effort should be expended on obtaining longer records. If primarily a model error, then a search for other basin characteristics or better definition of existing characteristics would be appropriate. However, it is beyond the scope of this report to attempt to separate these errors.

The error in defining a flood of a given recurrence interval from a record of a certain length is a function of the variability of annual flows and the length of the record. In general, the longer the record, the more reliable the estimates of future occurrences. However, even with a long record, 50-100 years or more, it is not possible to determine with great precision the probability of floods of a large magnitude. The standard error of floods of a given recurrence interval decreases with the years of available record, but at a decreasing rate, as shown in figures 4 and 5. The incremental economic value of additional years of record, beyond a reasonable limit, in the planning and design of projects is under continuing study, but no usable guidelines are available now.

An estimate of the accuracy of a flood estimate in terms of years of observed record, can be obtained from figures 4 and 5. For example; from table 3, the average standard error of estimate for a 50-year flood in region 3 is 74 percent. From figure 5, it can be seen that an estimate from the regression equation is as accurate as the discharge computed from 7 years of observed record at the site.

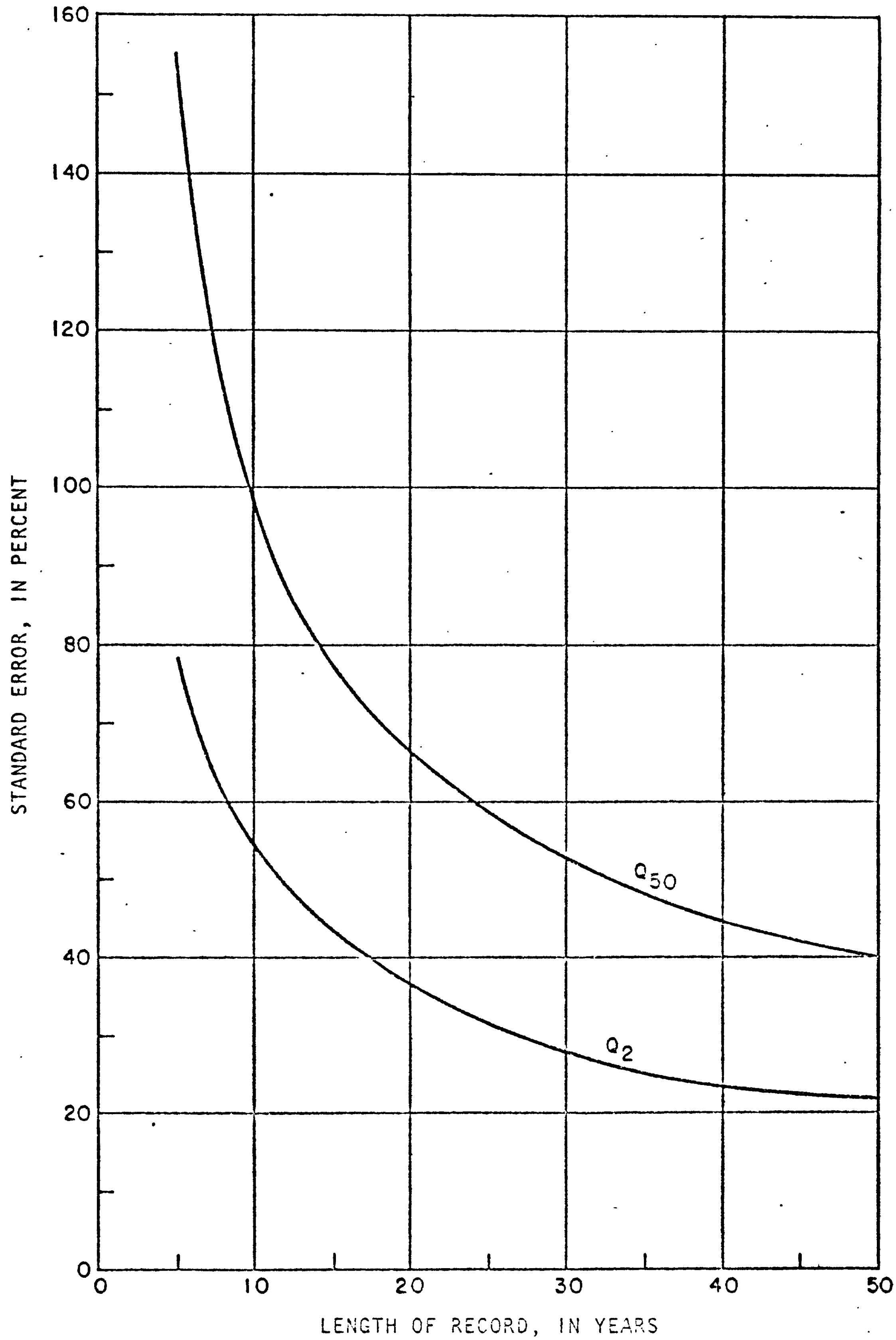

Figure 4.--Relation of standard error to length of record for region 2.

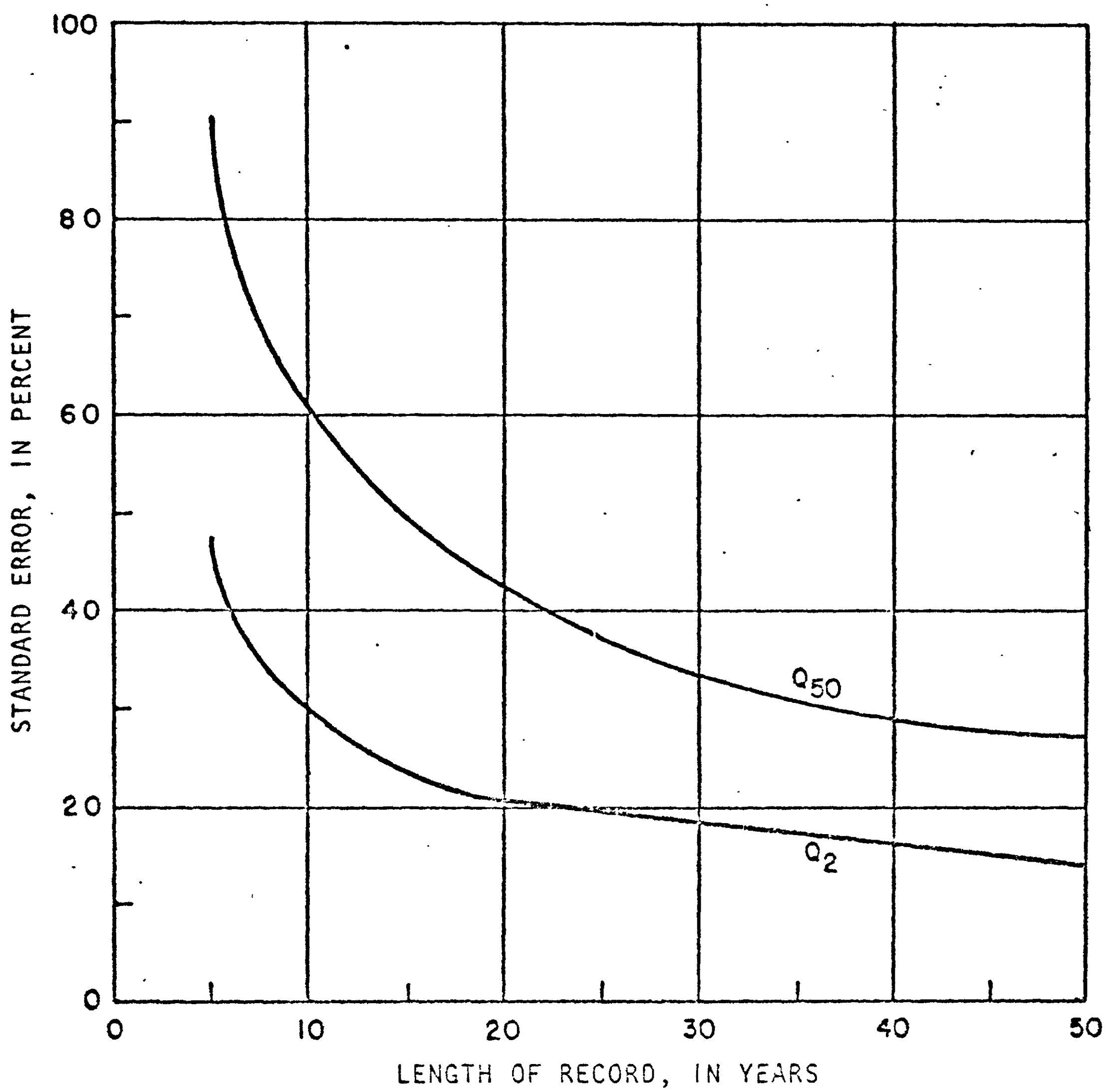

Figure 5.--Relation of standard error to length of record for regions 1 and 3.

SUMMARY OF MAXIMUM OBSERVED DISCHARGES

The following data are presented because of a wide interest in the greatest floods which have been measured within given areas.

Enveloping curves of maximum observed discharges are presented in figures 6, 7, and 8 for each of the three regions defined by the regression analysis.

It must be emphasized that the curves carry no connotation of probability and represent only the maximum observed discharges within each region. Because the curves are based upon historical data, it is logical to assume that they will be exceeded at some time in the future. The base data for these curves are shown in Appendix tables B-3, B-4, and B-5.

The discharges represent maximum discharges observed in New Mexico through the 1968 water year for sites with unregulated flow and drainage areas of less than 1,400 square miles. Data from sites with greater drainage areas were used in drawing the enveloping curves, however, these data are not shown in tables B-3 or B-4. The number shown in the left column of each table is the identification number of each point plotted on figures 6, 7, and 8. The data for continuous-record stations are for the same stations which were used in the regression analysis plus a few stations for which basin characteristics could not be defined. The data for partial-record stations are for essentially the same stations as used in the analysis. The data for miscellaneious sites includes data for all indirect measurements of discharge made at ungaged sites through the 1968 water year.

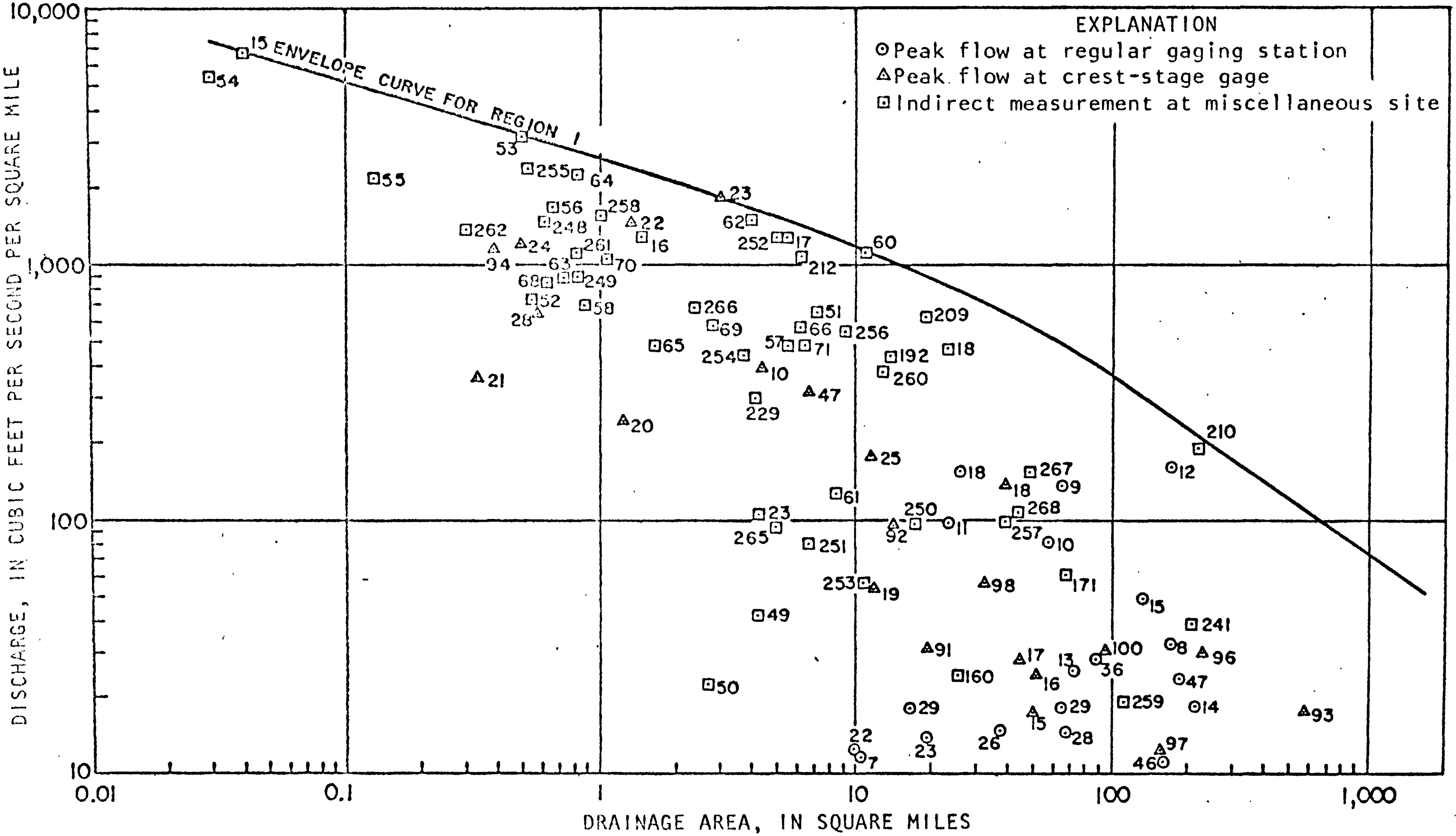

Figure 6.--Maximum observed discharges in region 1.

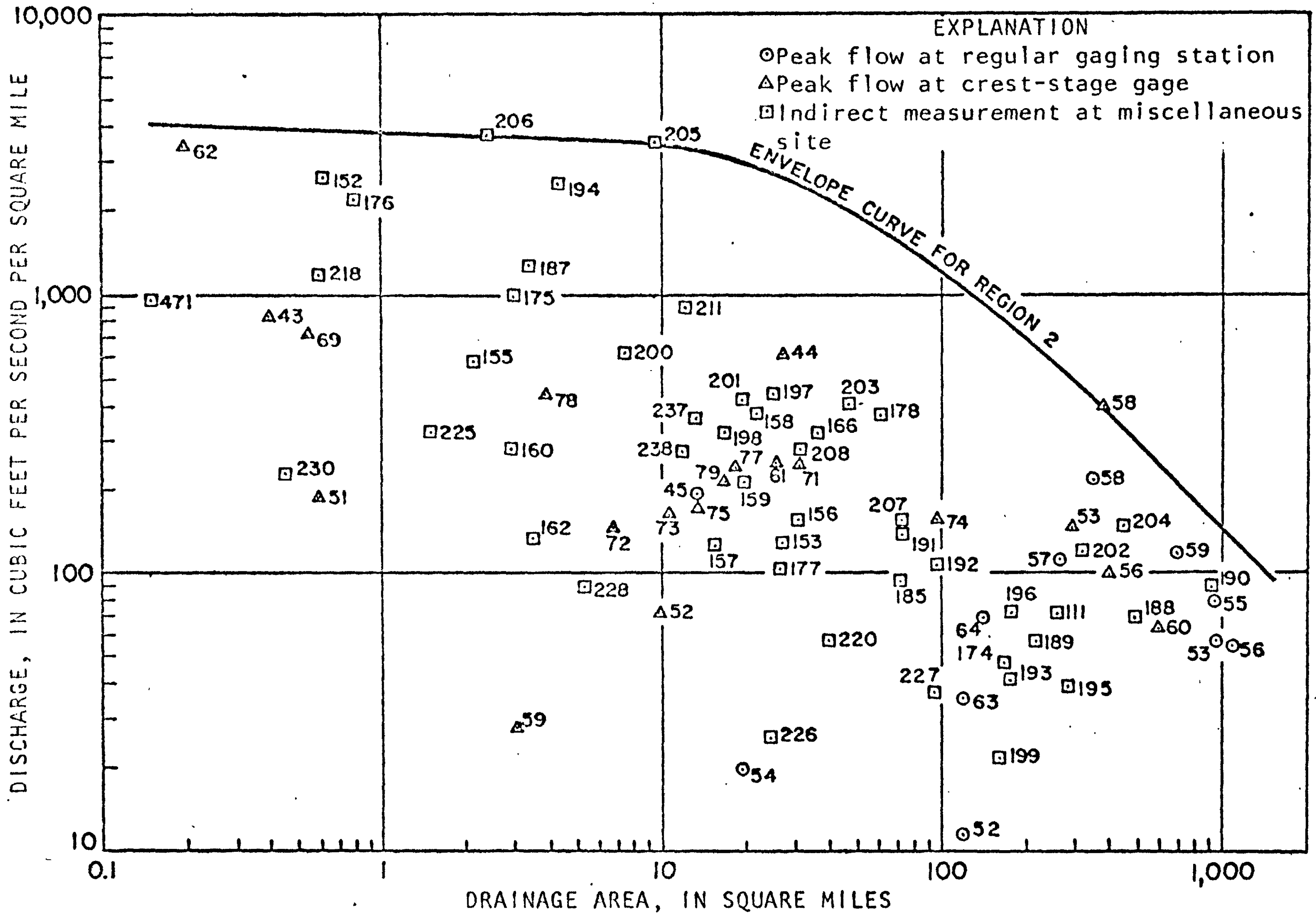

Figure 7.--Maximum observed discharges in region 2.

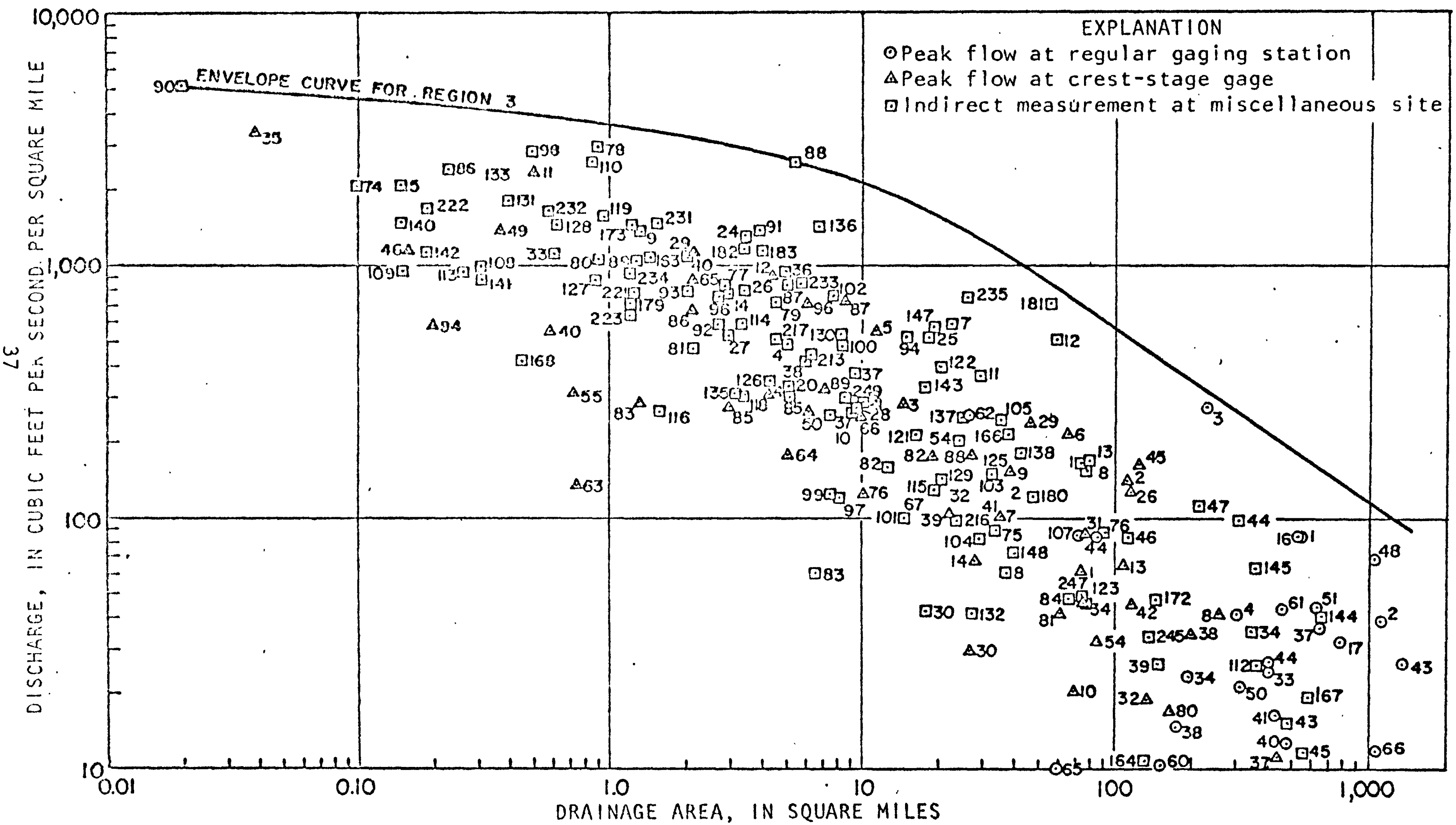

Figure 8.--Maximum observed discharges in region 3.

SUMMARY

This report has presented flood information commonly needed by planners and designers. Relations have been defined to estimate from easily obtained watershed characteristics the 2, 5, 10, 25, and 50-year flood-peak magnitude at any natural-flow site in New Mexico that has basin characteristics which are within the limitations of the data used to define the relations.

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Wiard, L. A., 1962, Floods in New Mexico, magnitude and frequency: U.S. Geol. Survey Circ. 464, 13 p.

APPENDIX

Figures A-1 to A-15 provide graphical solutions for the regression relations presented in tables 1, 2, and 3. There is one nomograph or graph provided for floods of each recurrence interval (2, 5, 10, 25, and 50-year) for each region.

The nomographs are used by laying a straightedge between scales of two independent variables and reading the answer at the intersection of the straightedge and the scale of the dependent variable. If a pivot line is required, a pivot point is determined by the intersection of the pivot line with the line between the first two independent variables. Then the straightedge is laid between this pivot point and the third independent variable. The answer is read at the intersection of the scale of the dependent variable and the straightedge. An example is shown on each nomograph which shows the order in which the variables must be considered.

For example, it is desired to compute the discharge of a flood of a 2-year recurrence interval for a site in region 1 with a drainage area of 14 square miles, a slope of 446 feet per mile and a mean minimum January temperature of 10 degrees F. Figure A-1 should be used. A straightedge is placed between a value of 14 on the A scale and 446 on the S scale. The pivot point is determined by the intersection of the straightedge and the pivot line. The straightedge is then placed between the pivot point and a value of 10 on the T scale. The answer (94 cfs) is then read at the intersection of the straightedge and the Q_2 scale.

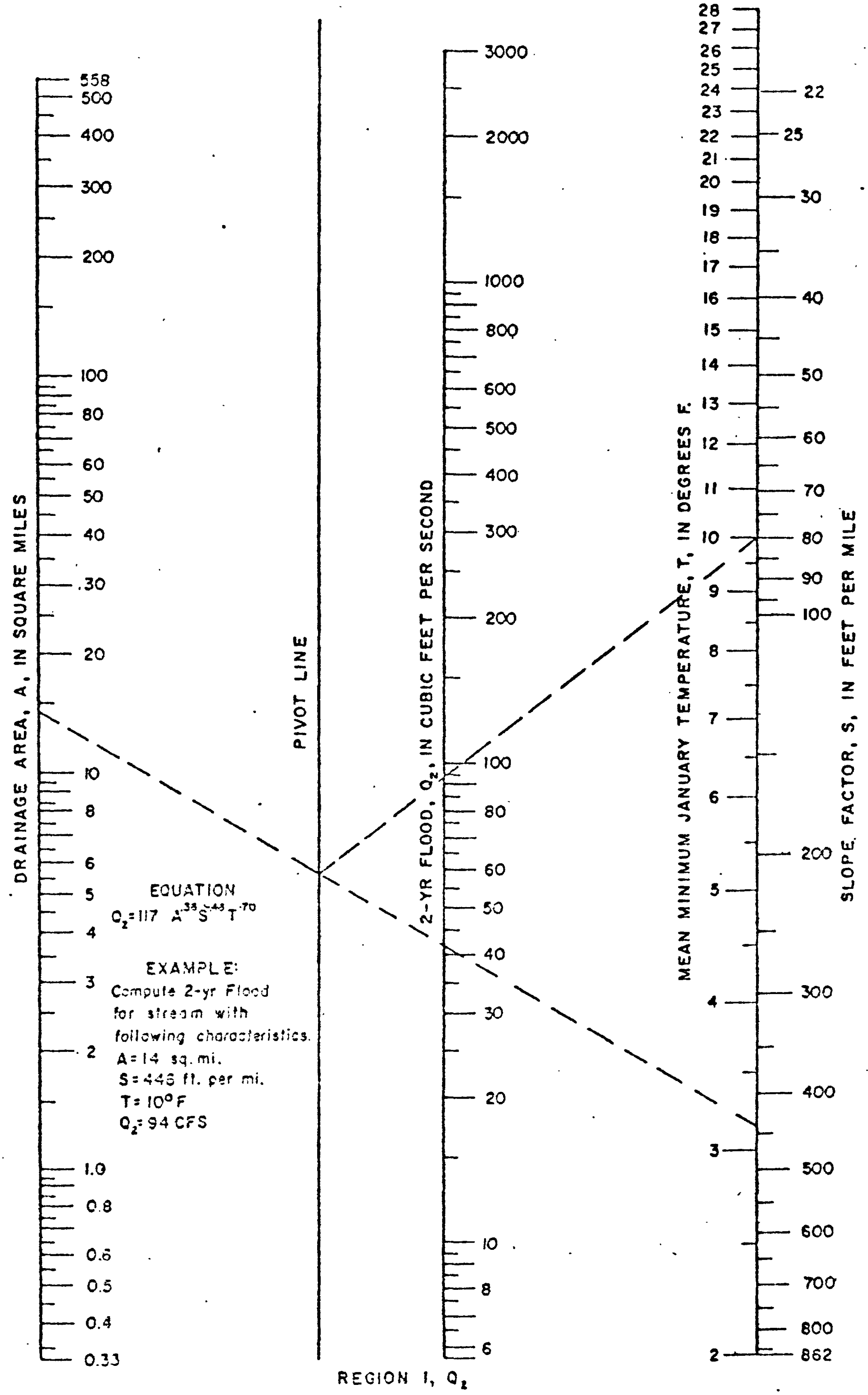


Figure A-1.--Nomograph of relation of 2-year flood to drainage area, slope, and mean minimum January temperature, for region 1.

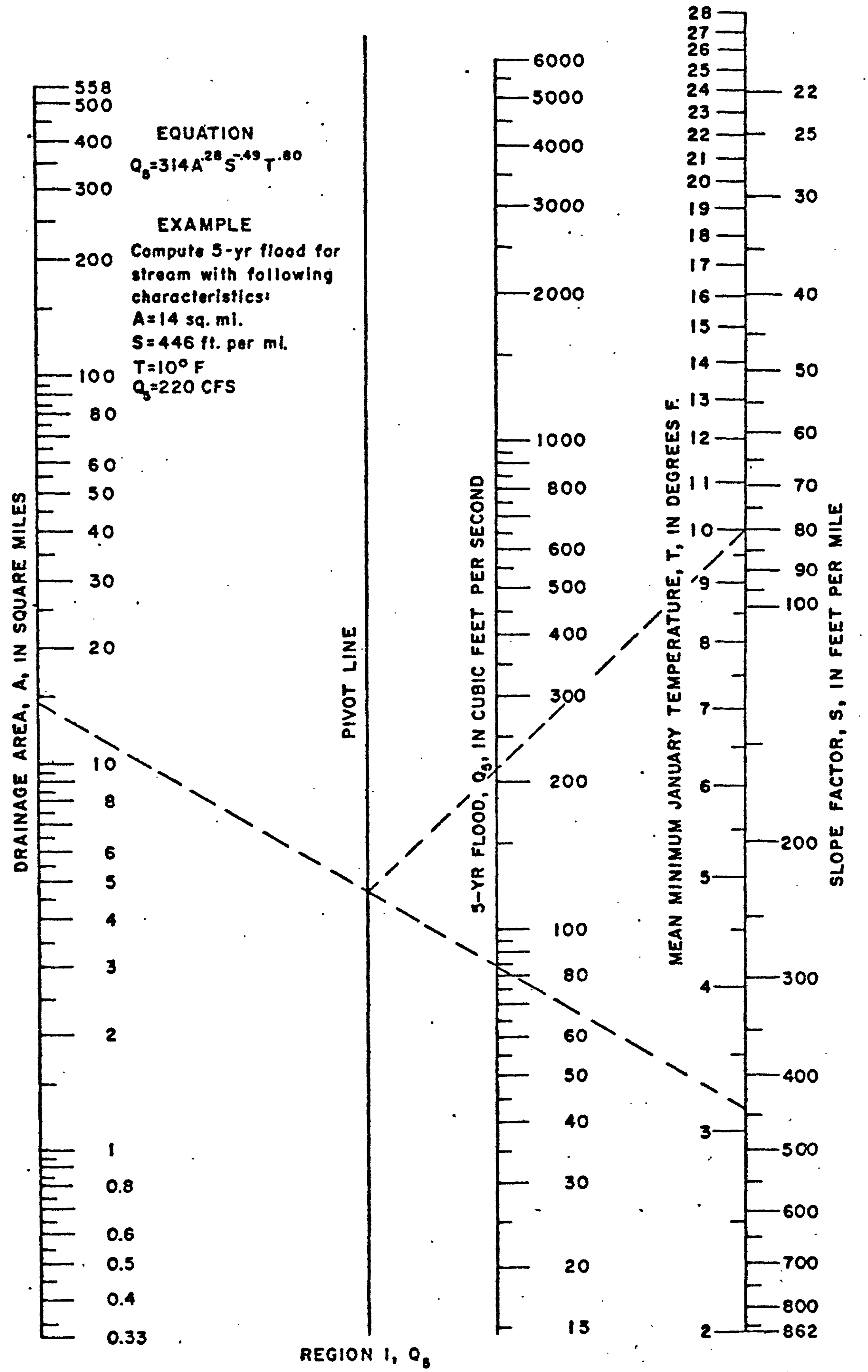


Figure A-2.--Nomograph of relation of 5-year flood to drainage area, slope, and mean minimum January temperature, for region 1.

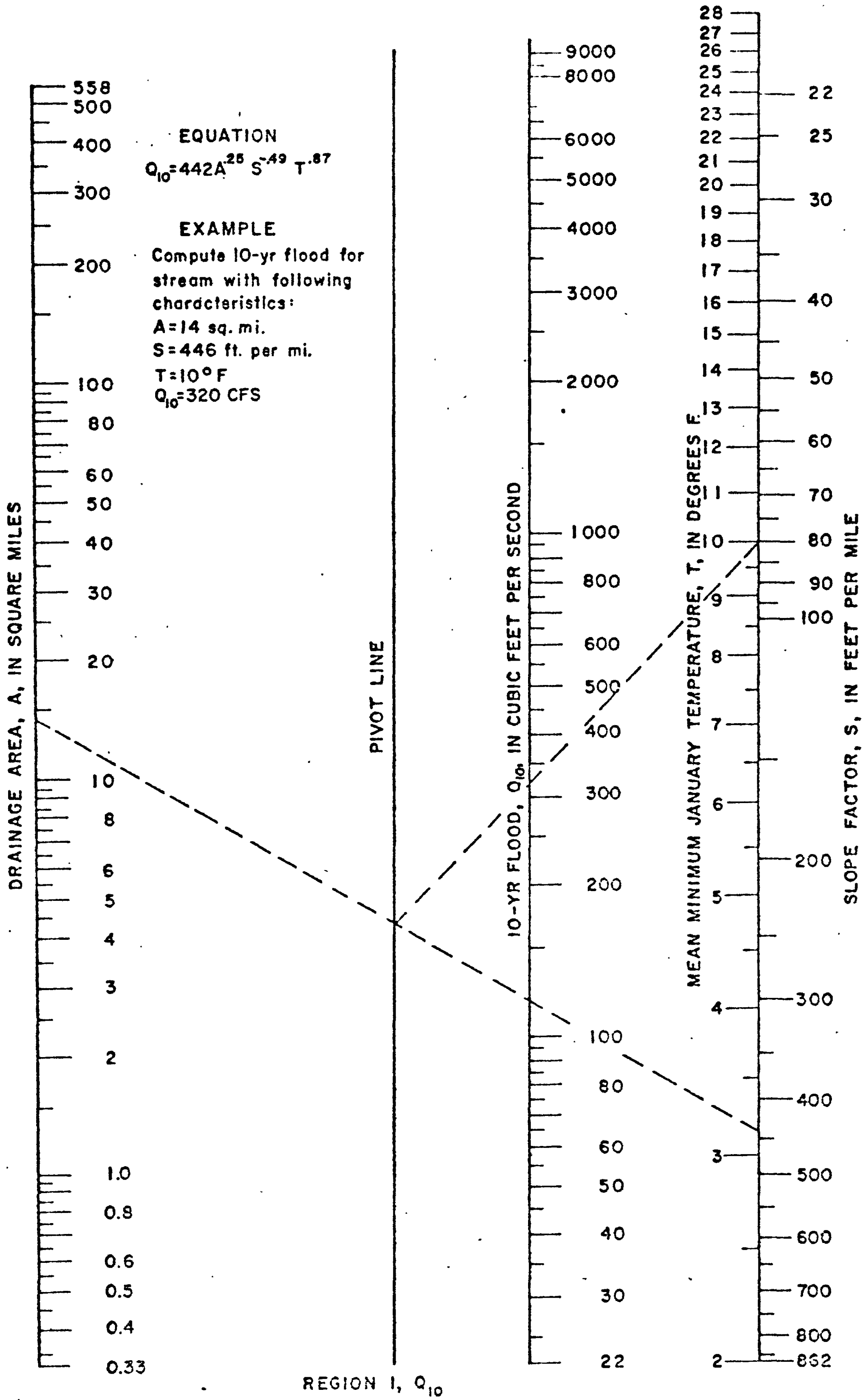


Figure A-3.--Nomograph of relation of 10-year flood to drainage area, slope, and mean minimum January temperature, for region 1.

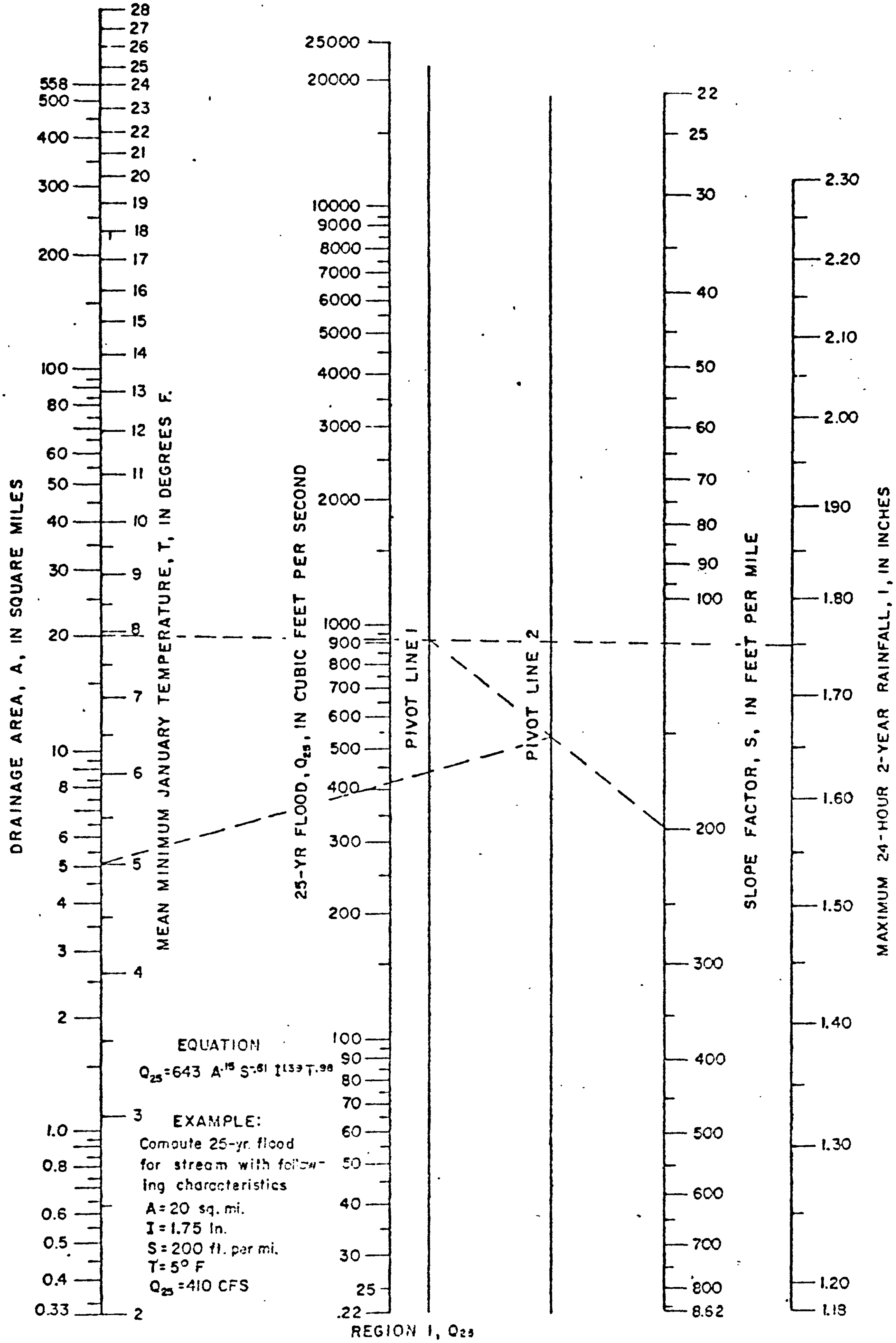


Figure A-4.--Nomograph of relation of 25-year flood to drainage area, maximum 24-hour 2-year rainfall, slope factor, and mean minimum January temperature, for region 1.

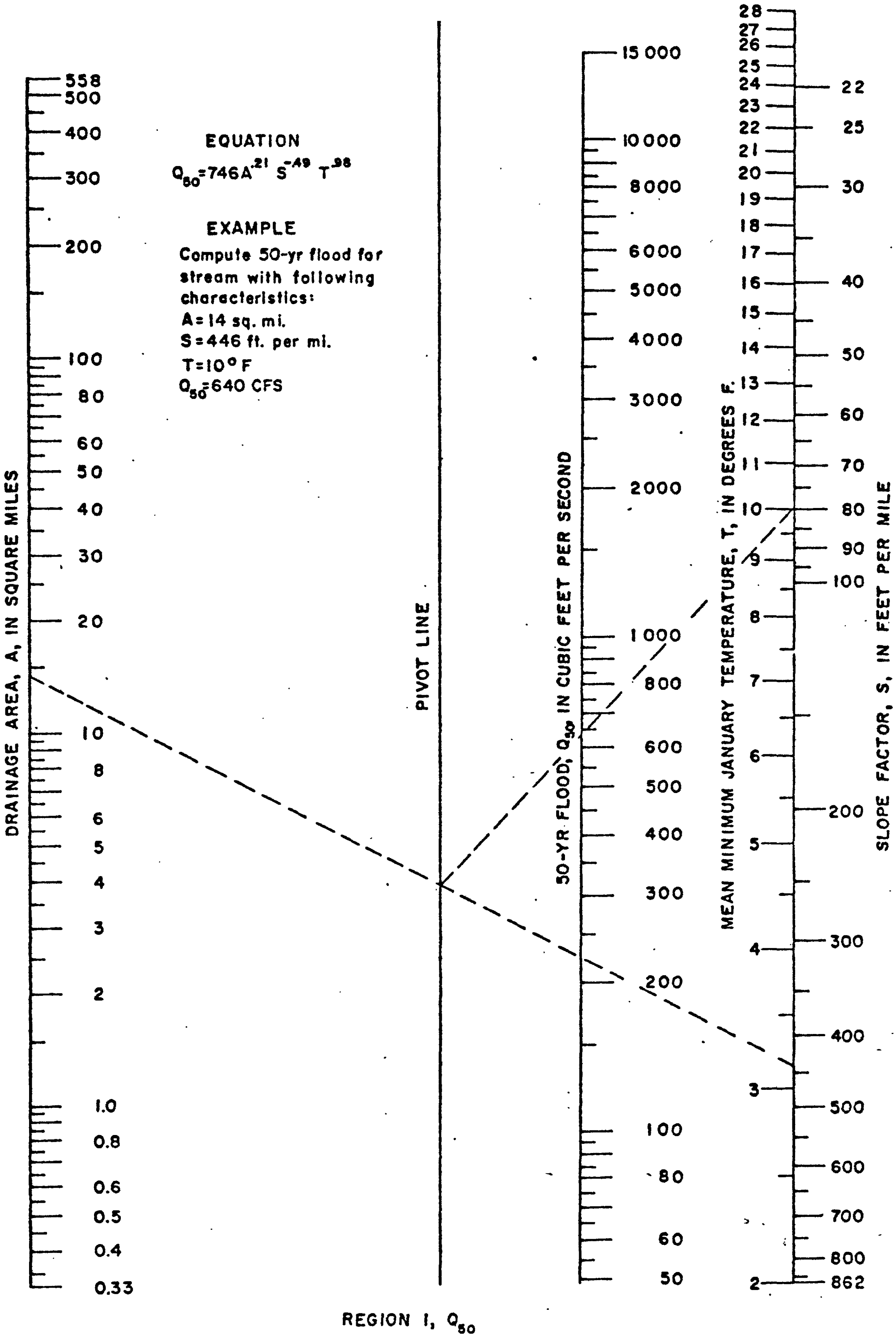
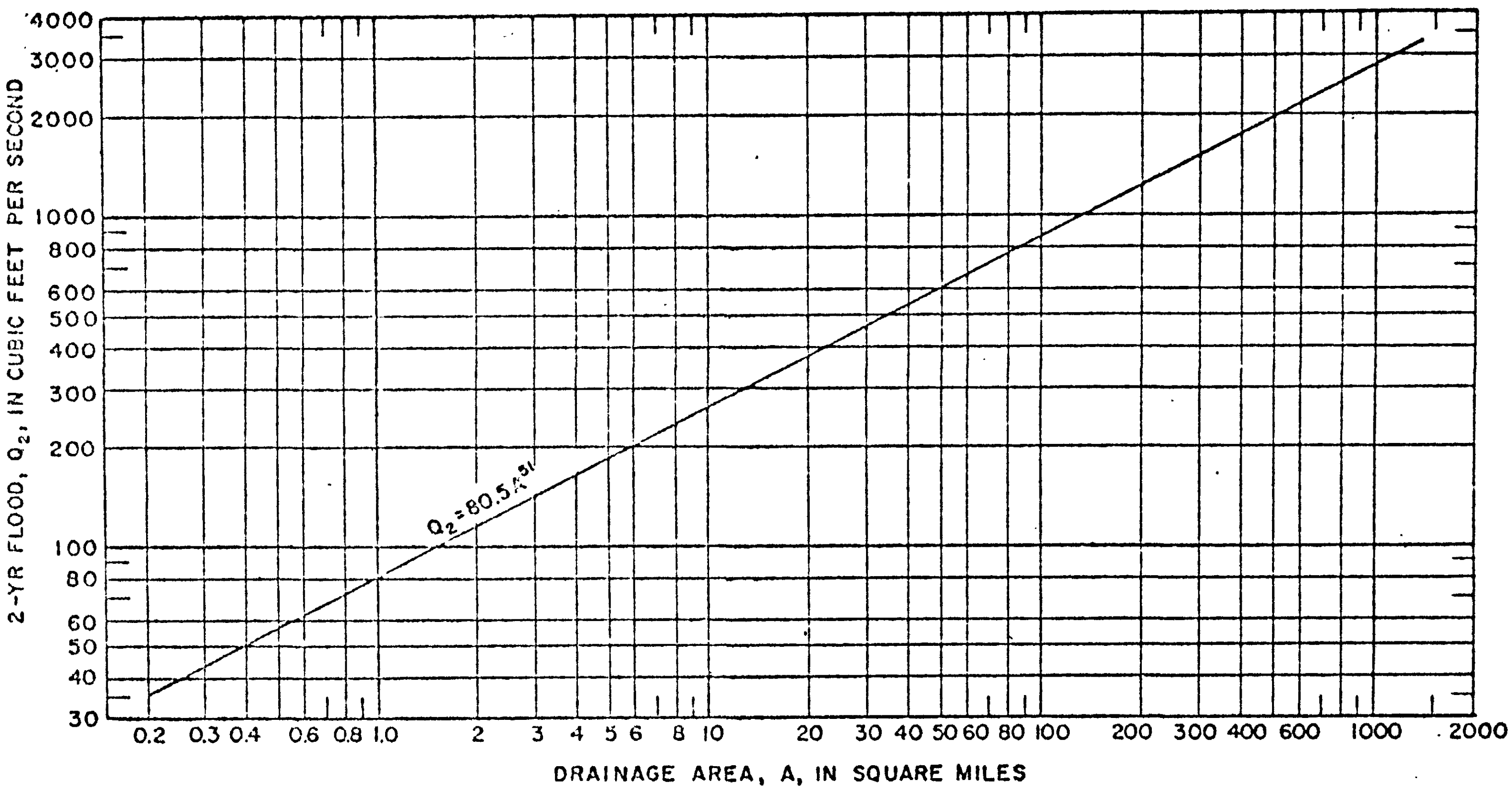


Figure A-5.--Nomograph of relation of 50-year flood to drainage area, slope, and mean minimum January temperature, for region 1.



Region 2, Q_2

Figure A-6.--Relation between 2-year flood and drainage area, for region 2.

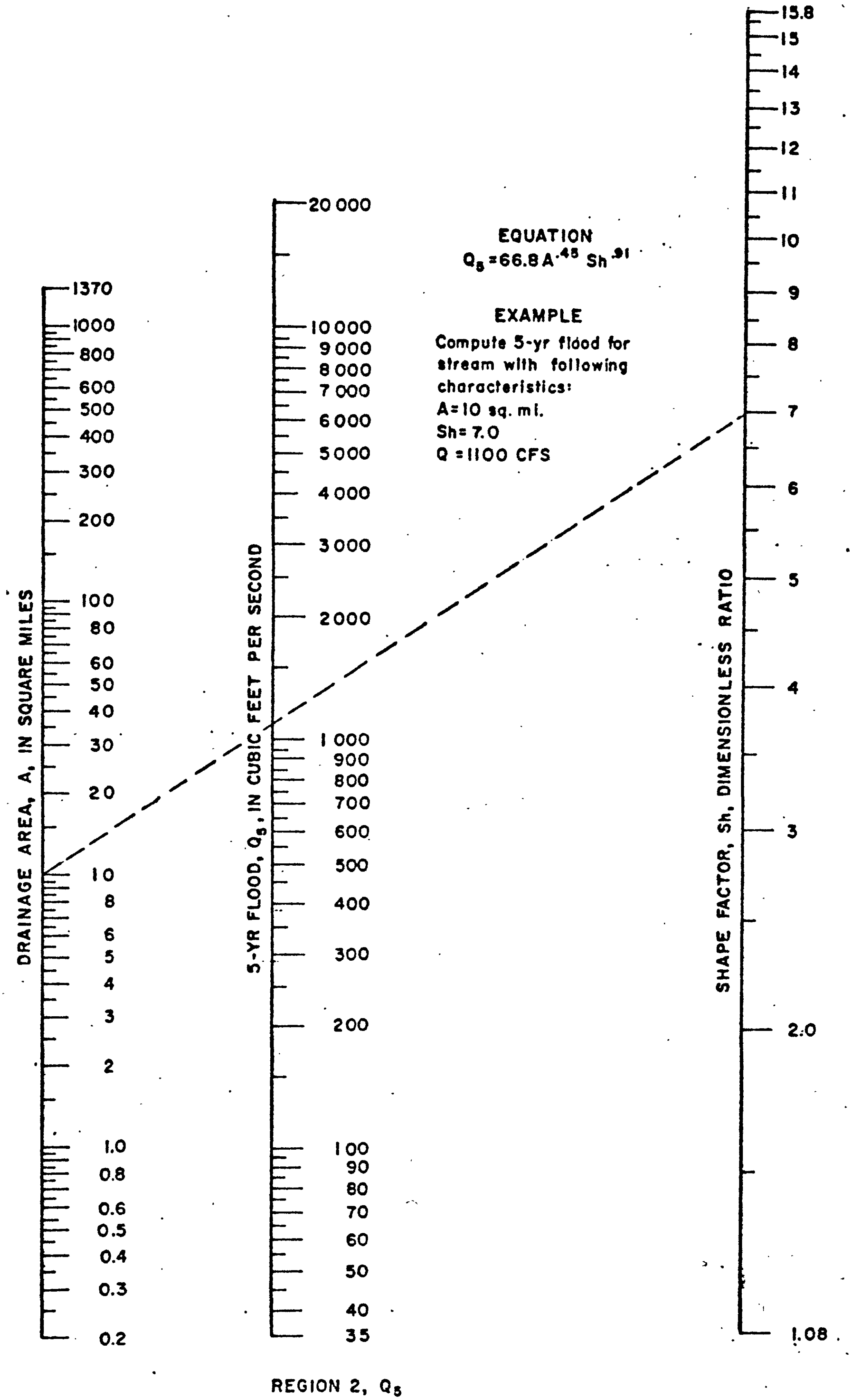


Figure A-7.--Relation of 5-year flood to drainage area, and shape factor, for region 2.

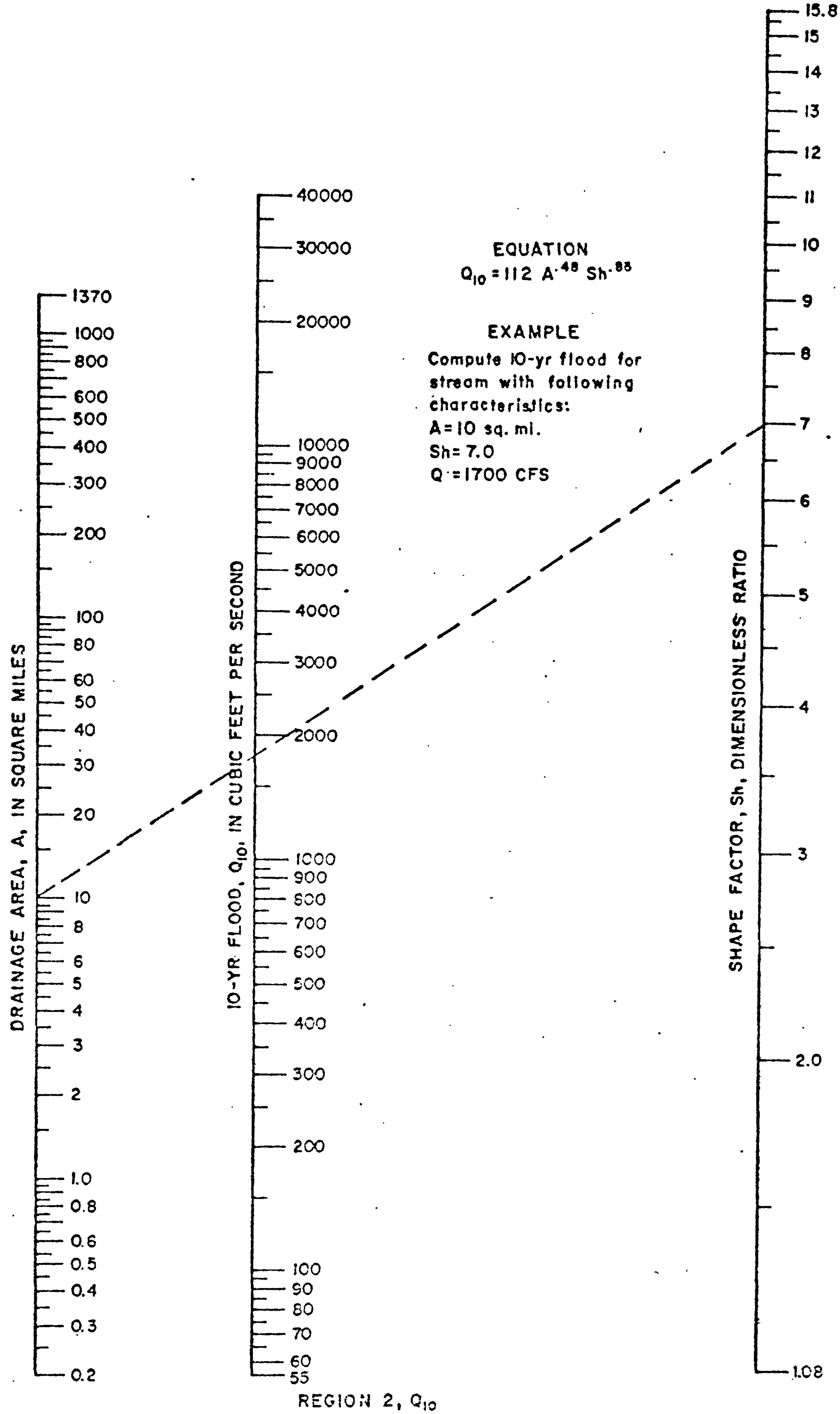
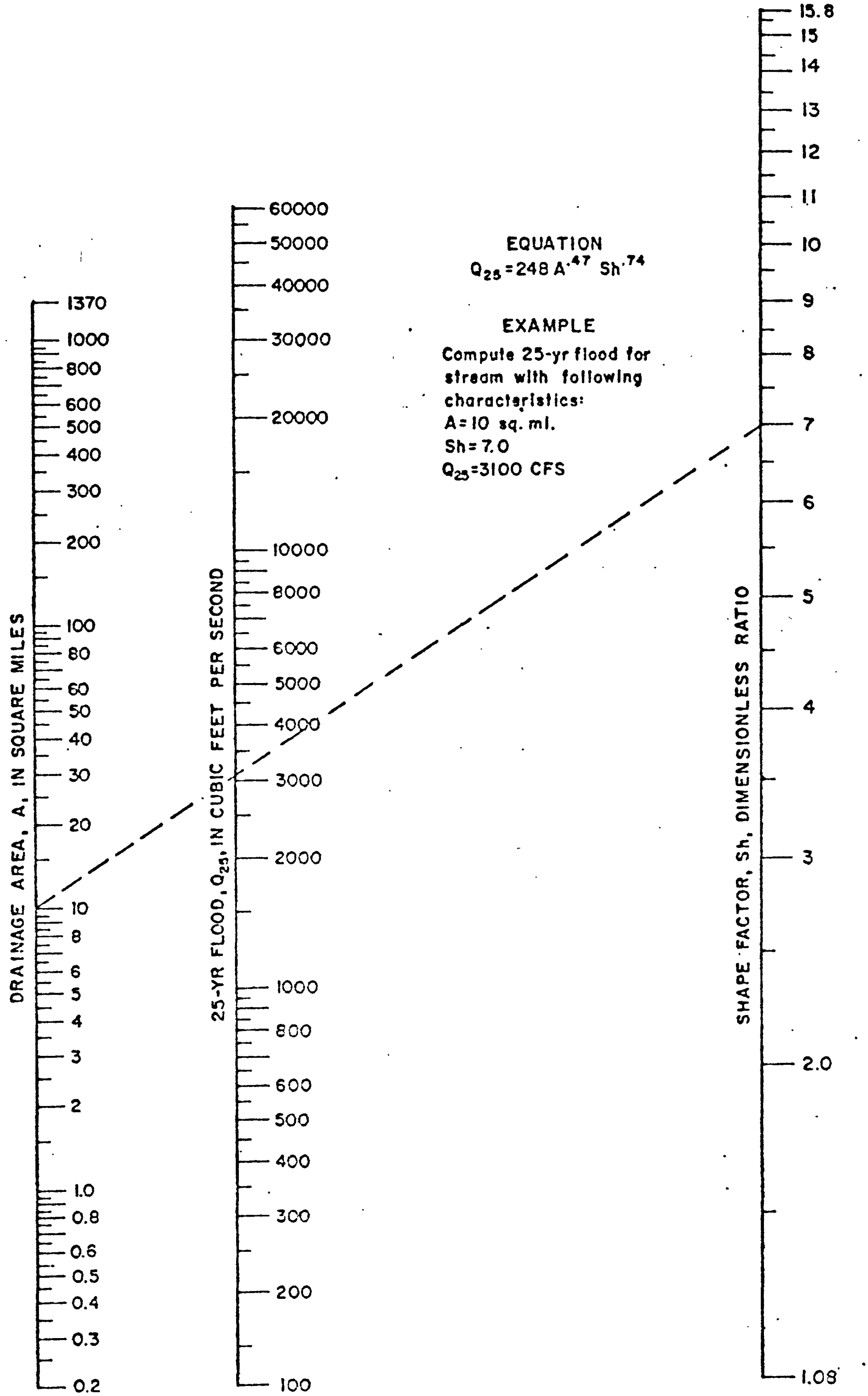
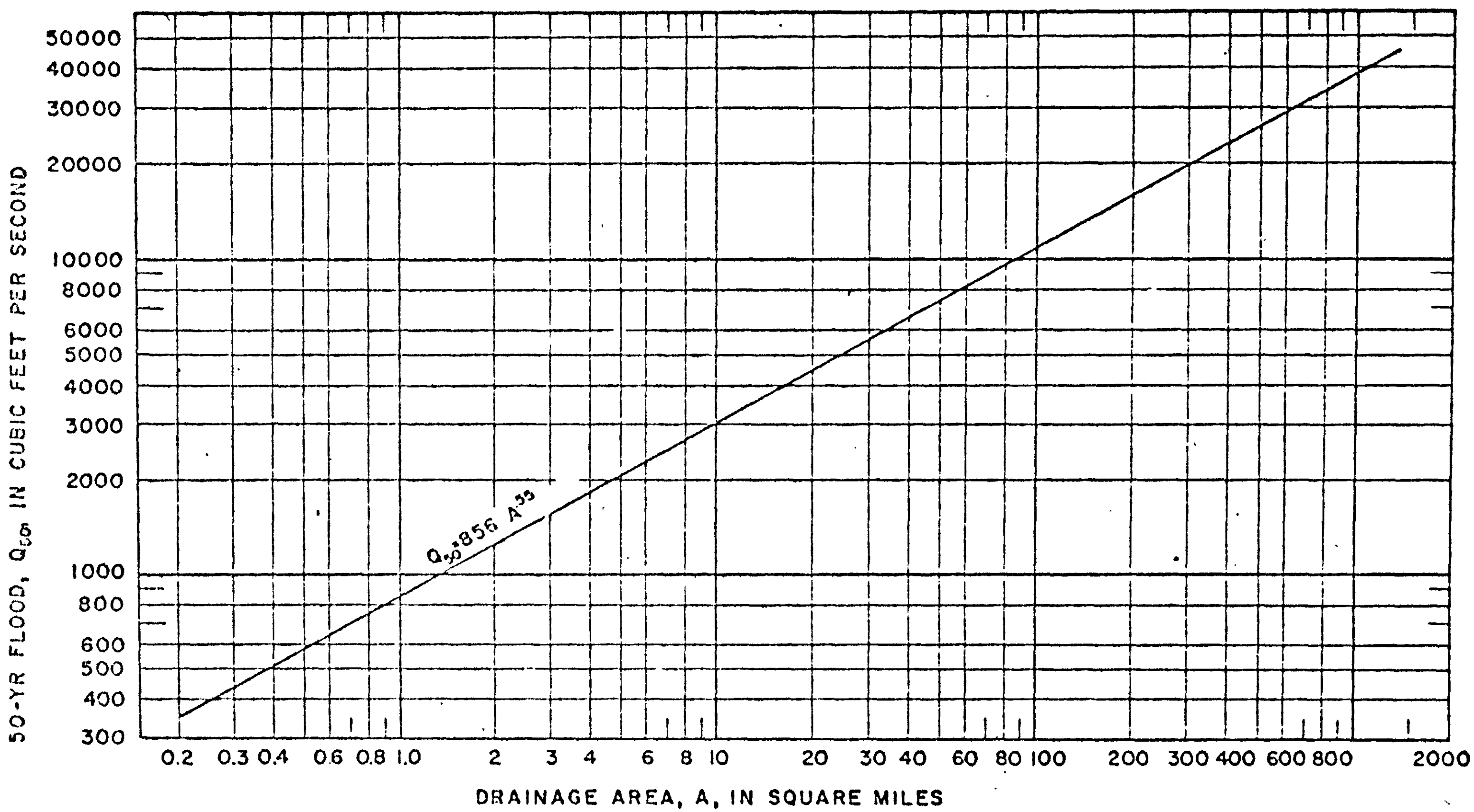


Figure A-8.--Relation of 10-year flood to drainage area, and shape factor, for region 2.



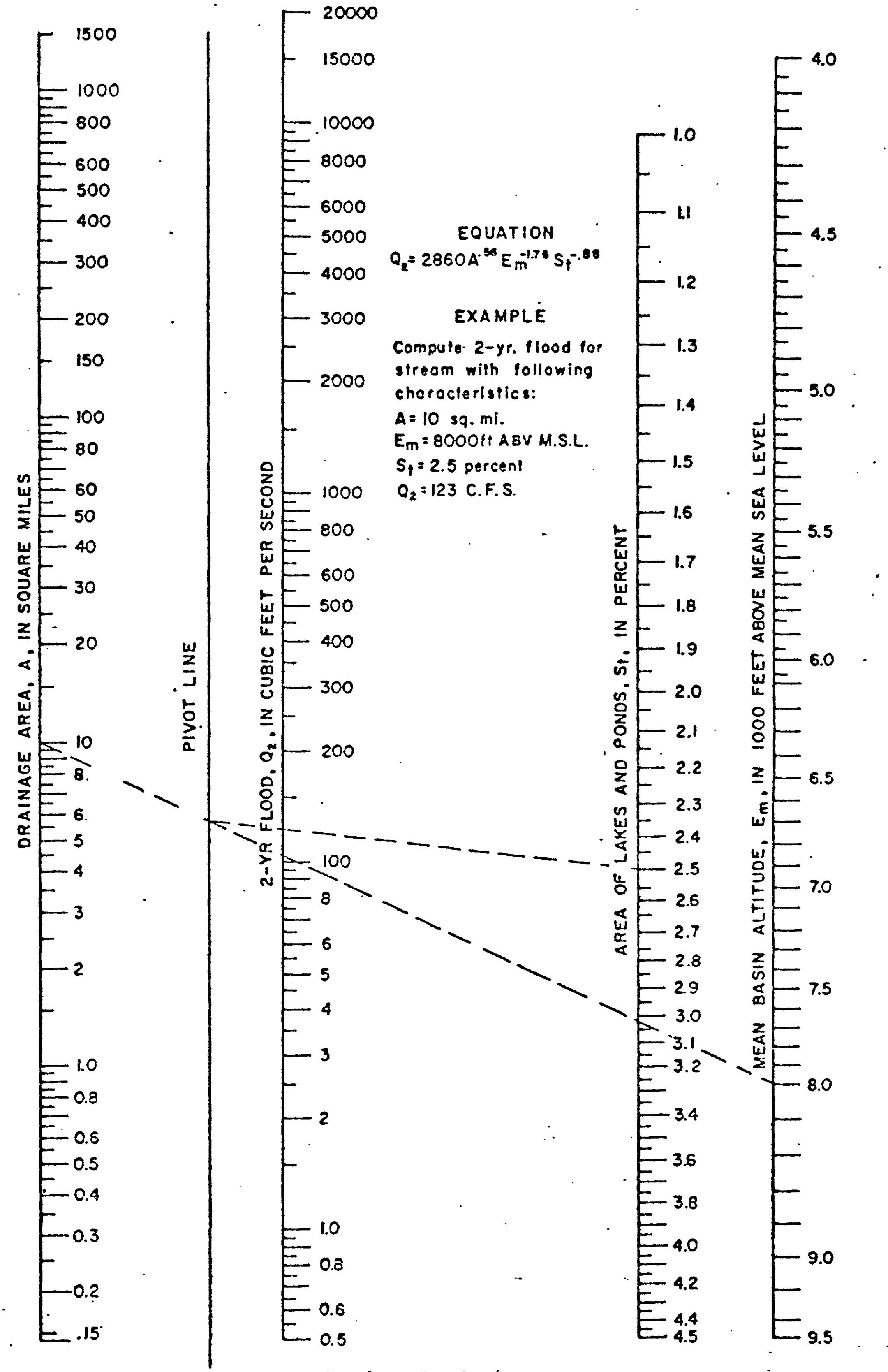
REGION 2, Q_{25}

Figure A-9.--Relation of 25-year flood to drainage area and shape factor, for region 2.



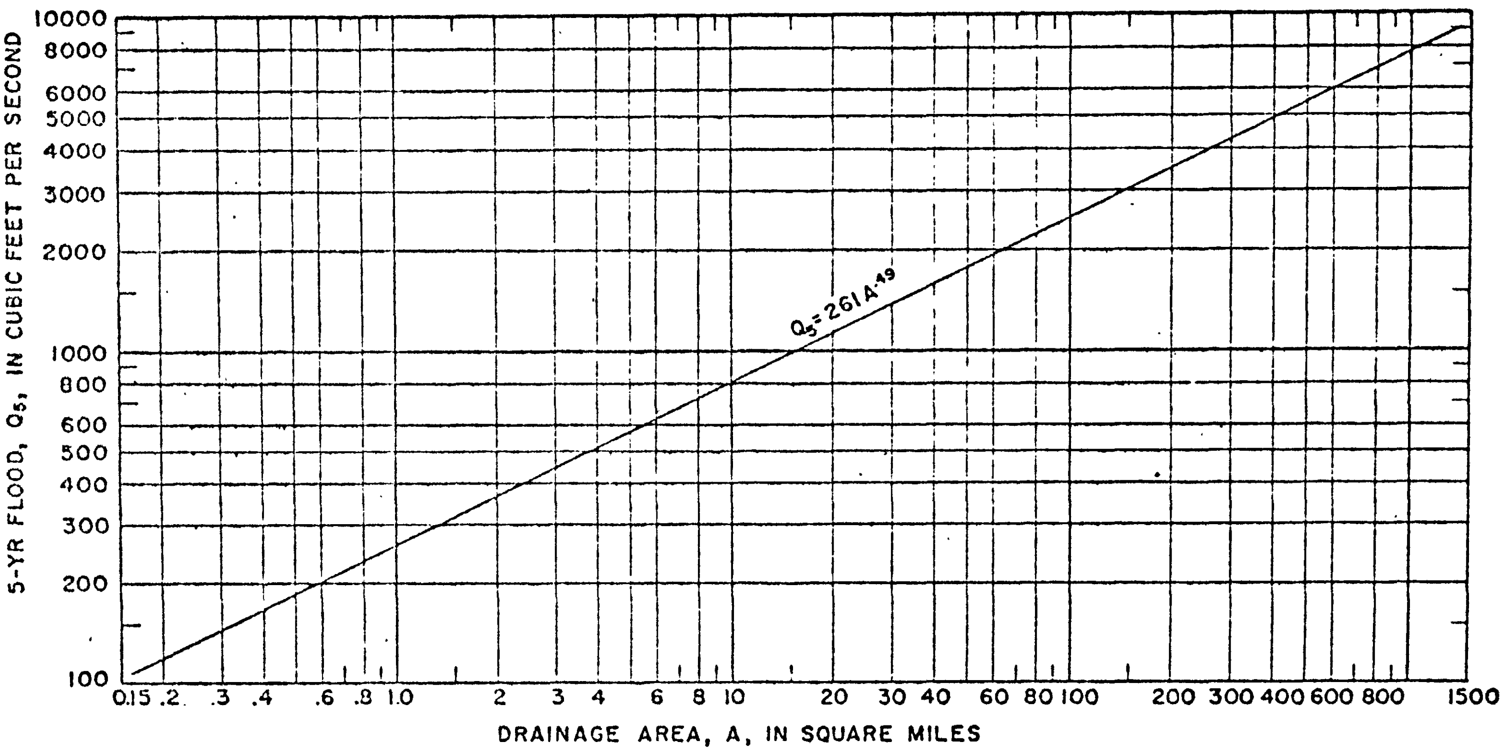
Region 2, Q_{50}

Figure A-10.--Relation between 50-year flood and drainage area, for region 2.



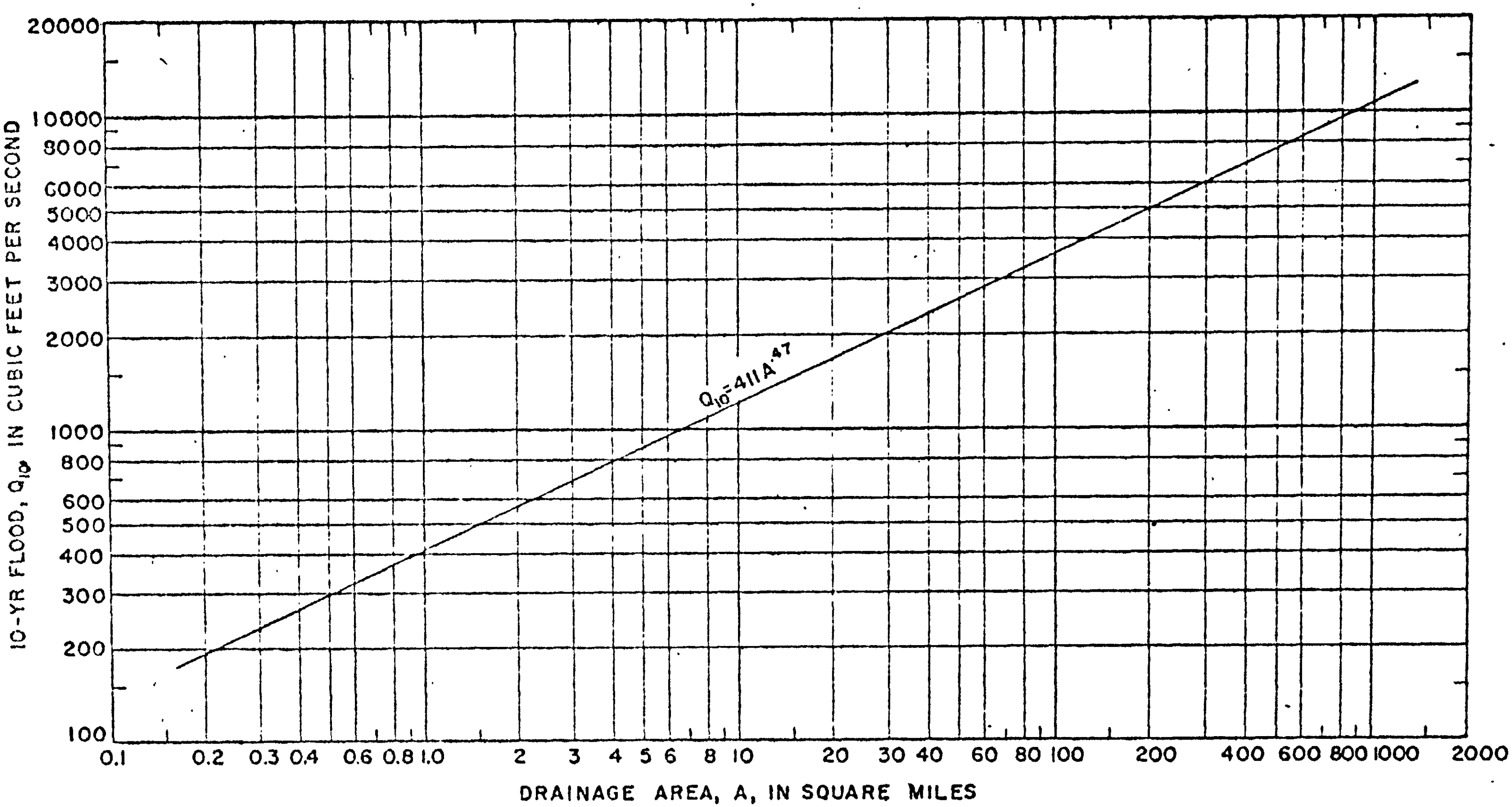
Region 3, Q_2

Figure A-11.--Nomograph of relation of 2-year flood to drainage area, slope, and mean minimum January temperature, for region 3.



Region 3, Q_5

Figure A-12.--Relation between 5-year flood and drainage area, for region 3.



Region 3, Q_{10}

Figure A-13.--Relation between 10-year flood and drainage area, in region 3.

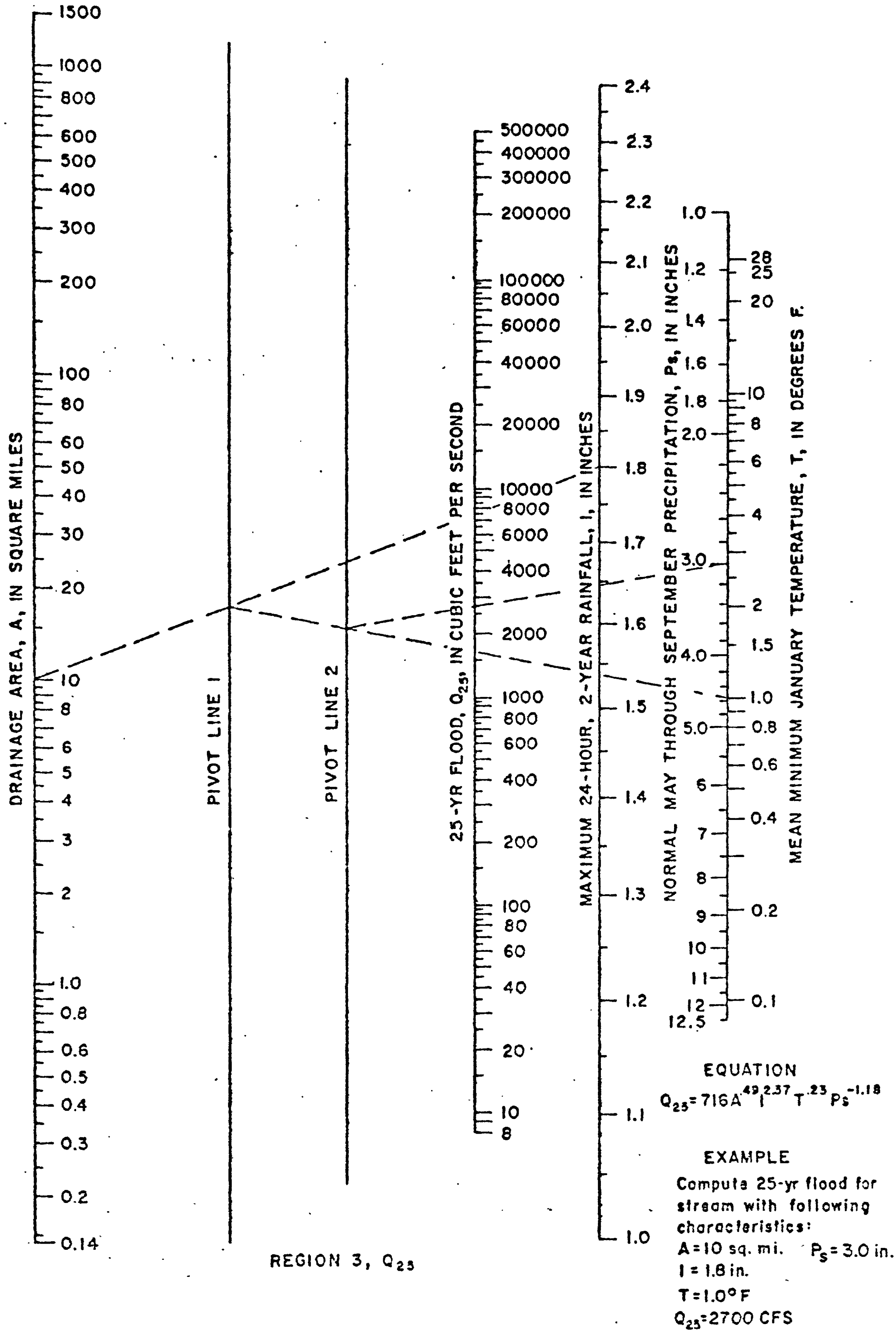


Figure A-14.--Nomograph of relation of 25-year flood to drainage area, 24-hour, 2-year rainfall, May to September precipitation, and mean minimum January temperature, for region 3.

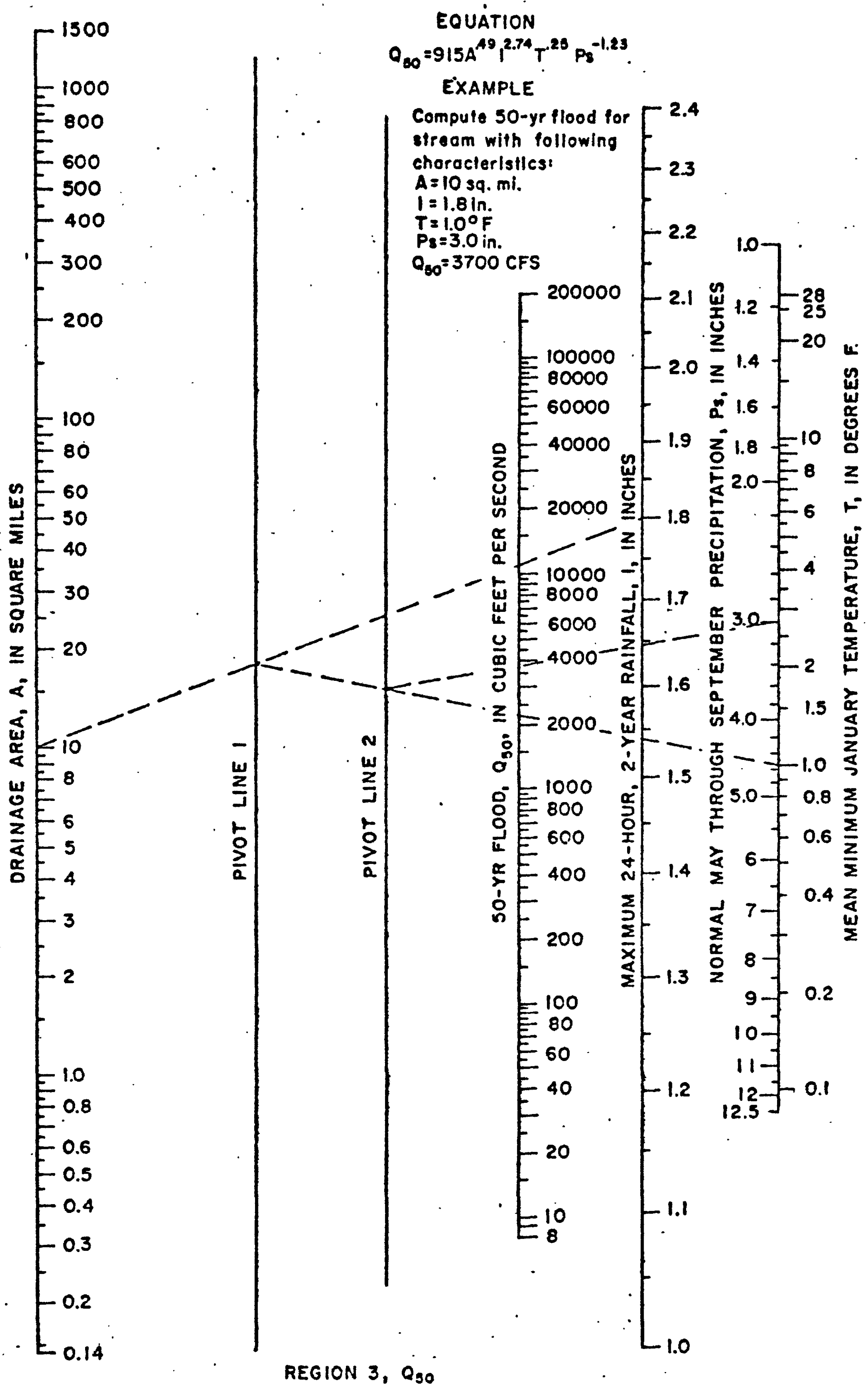


Figure A-15.--Nomograph of relation of 50-year flood to drainage area, 24-hour, 2-year rainfall, May to September precipitation, and mean minimum January temperature, for Region 3.

Table B-1.--Flood-peak characteristics at gaging stations

*For station name, see tables B-3 and B-4.
**Region as defined by regression analysis, see figure 3.

*Station number	**Region	Years of record	Peak discharges, in cubic feet per second — Recurrence interval in years: 2	5	10	25	50
71534	3	8	519	1730	3570		
71535	3	28	3290	7610	12400	21600	31700
71544	3	16	2400	7200	11100	17500	
71545	3	18	7230	15200	23200	37700	53400
71990	3	22	2420	6500	11900	24400	40200
72010	3	16	457	1200	2060	3810	
72030	3	40	1730	3420	4950	7440	9730
72040	1	26	83	147	182	216	236
72045	1	30	149	305	429	602	740
72050	1	36	28	55	80	120	155
72075	1	25	620	1620	2650	4470	6240
72085	1	46	179	330	448	613	750
72137	3	14	155	760	1360	2350	
72145	1	15	699	2110	3740	6870	
72148	1	13	166	470	812	1460	
72155	1	36	689	1020	1250	1540	1760
72171	1	13	82	326	742	1930	
72180	1	39	661	1470	2260	3600	4870
72200	1	13	1840	3720	5120	6950	
72209	3	15	1250	2390	3400	5000	
72223	3	10	2400	5940	8900	13000	
72225	3	32	3450	9000	16600	34600	58500
72250	3	15	1300	2170	2850	3820	
72255	3	16	3500	6700	8900	12200	
72262	3	12	2730	3850	4900	6500	
72263	3	15	270	590	870	1400	
72271	3	12	7880	17300	25200	36800	
72272.95	3	17	77	195	315	519	
80806	3	17	420	1900	4150	9600	
82525	1	30	69	128	171	229	274
82530	1	31	65	106	128	152	166
82535	1	31	8	12	15	19	21
82550	1	10	36	71	93	119	
82630	1	30	47	76	98	130	156
82640	1	24	106	165	206	259	299
82650	1	38	277	485	645	868	1050
82670	1	18	371	538	642	766	853
82675	1	30	170	286	376	504	609
82685	1	30	152	327	500	804	1110
82690	1	33	167	337	496	761	1010

Table B-1.--Flood-peak characteristics at gaging stations - Continued

*Station number	**Region	Years of record	Peak discharges, in cubic feet per second				
			Recurrence interval in Years				
			2	5	10	25	50
82710	1	39	127	188	227	272	304
82755	1	16	131	237	317	427	
82756	1	12	61	109	150	212	
82790	1	30	1040	1610	1850	2030	2120
82812	3	10	541	976	1380	2060	
82835	3	33	4010	5770	6980	8560	9760
82840	3	12	369	580	725	930	
82845	3	32	1210	1980	2520	3240	3790
82880	1	34	222	420	582	821	1020
82890	1	37	1120	1820	2300	2920	3380
82910	1	38	299	587	856	1300	1730
82920	1	23	111	281	444	712	953
82950	1	33	195	618	1258	2350	3460
83025	1	32	75	227	399	718	1040
83131	1	23	23	105	205	400	620
83166	1	11	161	285	370	563	
83166.5	1	12	576	1390	1890	2360	
83167	1	12	520	2080	4010	7710	
83171	1	12	25	93	190	475	
83175	1	12	973	1430	1770	2250	
83176	3	14	1830	4150	6300	9900	
83177	3	17	361	844	1380	2420	
83178	1	16	31	109	181	320	
83180	3	27	6600	11900	16200	22700	28100
83189	3	16	1250	2500	3650	5620	
83215	3	11	643	1040	1440	2170	
83219	3	12	293	477	594	730	
83230	3	23	354	790	1340	2600	4500
83240	3	25	1690	3130	4310	6060	7540
83305	3	16	1400	3570	5750	9300	
83306	3	17	1060	1600	2020	2630	
83316.5	2	8	905	2850	4840		
83340	3	18	2840	4010	4780	5740	6440
83405	3	24	5400	8020	9920	12500	14600
83413	3	16	164	267	339	390	
83485	3	10	186	375	600	1090	
83514	3	9	270	1310	3200		
83535	3	12	2580	3950	4700	5400	
83540	3	21	9120	16500	22200	30200	36600
83600	3	23	2550	5060	7380	11200	14700

Table B-1.--Flood-peak characteristics at gaging stations - Continued

*Station number	**Region	Years of record	Peak discharges, in cubic feet per second				
			Recurrence interval in years				
			2	5	10	25	50
83616.5	3	16	653	1200	1480	1720	
83616.6	3	10	74	183	260	369	
83617	3	12	1170	2430	3460	4930	
83618	3	16	1260	3180	4920	7570	
83631	2	14	125	220	287	375	
83632	2	10	2560	6870	11400	19700	
83636	2	19	335	916	1520	2580	3600
83780	1	10	765	1170	1460	1850	
83785	1	45	639	1170	1570	2110	2540
83793	3	16	2440	6430	10800	18900	
83795	3	50	6690	12600	18000	27900	38500
83796	3	17	18	66	132	284	
83803	1	9	73	502	1560		
83805	3	51	707	1880	3140	5440	7770
83820	3	13	2740	4000	4860	5970	
83825	3	18	3650	5700	7100	8870	10200
83833	3	9	2490	3030	3260		
83833.7	3	8	49	170	338		
83856.7	3	8	388	898	1340		
83856.9	2	10	23	44	61		
83857	2	10	13	123	330	1000	
83870	2	15	205	418	671	1200	
83880	2	38	947	2970	5500	10800	16700
83890	3	12	1000	1930	2660	3650	
83890.6	3	14	86	151	221	360	
83895	2	28	3040	5810	7950	10900	13300
83905	2	30	2650	8210	16000	34400	58300
83936	2	11	32	115	234	519	
83939	2	18	760	3750	7800	16800	27500
83945	2	35	5780	16200	23100	30200	34200
83974	2	16	25	70	104	144	
83976	2	13	2270	7310	16200	44000	
83985	2	18	2920	9200	16000	26200	38500
84000	2	17	909	5010	10000	18300	
84018	2	13	4170	12400	20900	35200	
84050.5	2	10	159	335	490	730	
84055	2	23	4690	15100	27300	50600	75000
84085	2	30	5080	14600	26000	48800	74100
84770	3	33	489	779	980	1240	1430
84772	3	10	6	27	64	172	

Table B-1.--Flood-peak characteristics at gaging stations - Continued

*Station number	**Region	Years of record	Peak discharges, in cubic feet per second Recurrence interval in Years				
			2	5	10	25	50
84775	3	29	3130	6980	10300	15400	19700
84775.6	3	10	596	754	858	989	
84775.7	3	11	496	907	1220	1640	
84775.8	3	11	1330	2110	2560	3040	
84776	3	13	2000	3420	4660	6640	
84780	3	8	772	1480	1960		
84785	2	15	355	900	1290	1800	
84786	2	10	119	264	385	559	
84793	1	10	249	552	871	1460	
84801.5	2	9	2230	4240	6020		
84807	2	12	206	525	812	1240	
84809	2	12	361	727	1080	1700	
84810	2	13	2860	7130	10700	15600	
84811	2	17	510	1290	1950	3000	
84815	2	21	552	1470	2560	4750	7200
84820	2	11	2240	4910	7320	11100	
84882	3	8	265	495	753		
84885	2	15	269	1150	2210	4110	
84890	2	16	31	205	490	1200	
84925	2	9	1120	2650	3600		
93462	3	12	1050	1590	2040	2730	
93508	3	13	309	918	1540	2570	
93550	3	18	240	350	433	549	645
93557	3	13	595	1090	1600	2620	
93567.5	3	8	85	207	329		
93572	3	17	96	200	290	435	
93635	3	30	5820	8260	10000	12500	14500
93675.3	3	18	121	278	430	700	985
93678.4	3	18	392	730	1030	1520	1970
93678.6	3	21	1500	2620	3850	5800	7600
93678.8	3	18	1710	3420	4650	6220	7600
93679	3	18	428	1030	1510	2700	3750
93861	1	15	288	502	726	1150	
93870.5	1	12	223	378	475	585	
93954	1	16	57	245	465	930	
93955	1	19	3880	5690	6950	8600	9880
93956	1	18	82	211	325	489	622
94299	1	9	221	494	703		
94309	1	12	3620	5520	6840	8550	
94382	1	10	789	1270	1610	2030	

Table B-1.--Flood-peak characteristics at gaging stations - Concluded

*Station number	**Region	Years of record	Peak discharges, in cubic feet per second				
			Recurrence interval in Years				
			2	5	10	25	50
94426.6	1	15	166	498	858	1500	
94426.8	1	10	701	1060	1290	1580	
94426.9	1	14	28	70	126	260	
94427	1	12	255	910	1780	3120	
94427.4	1	13	451	976	1500	2410	

Table B-2.--Physical and climatic characteristics of gaged drainage basins used in regression analyses

Station number	A	L	E	E_m	S_h	S	S_t	P_m	P_a	P_s	I	T	LA	LO
071534	73.00	17.30	6.42	7.13	4.10	99.0	1.03	13.10	5.79	9.00	2.25	12.0	6.83	4.00
71535	545.00	54.00	4.90	6.00	5.33	50.0	1.18	9.00	5.00	8.00	2.28	14.0	6.94	3.77
71544	111.00	34.20	4.38	4.92	10.50	38.0	1.01	8.38	5.20	7.61	2.38	17.0	6.83	3.17
71545	1,038.00	104.00	4.26	5.48	10.40	26.0	1.00	11.00	5.50	8.10	2.15	16.0	7.00	3.00
71990	229.00	47.40	6.25	7.36	9.81	53.8	1.04	11.00	6.00	9.00	2.35	12.0	6.92	4.68
72010	14.40	7.60	6.64	7.12	4.01	143.0	1.14	10.76	6.46	8.32	2.40	12.0	7.00	4.50
72030	301.00	51.40	6.38	7.73	8.78	62.9	1.28	12.00	7.00	9.00	2.38	11.0	6.90	4.98
72040	73.80	14.40	8.20	8.69	2.81	81.0	1.12	13.00	8.00	8.00	1.76	4.0	6.65	5.29
72045	56.00	15.70	8.20	8.84	4.40	102.0	1.41	12.00	8.00	9.00	1.53	4.0	6.42	5.26
72050	10.50	6.50	8.20	9.36	4.02	429.0	1.09	13.00	9.00	8.00	1.50	4.0	6.53	5.31
72075	171.00	28.00	6.63	7.86	4.58	99.0	1.11	11.00	7.00	8.00	2.32	8.0	6.68	5.10
72085	65.00	17.50	6.72	8.35	4.71	212.0	1.51	14.00	8.00	11.00	2.30	6.0	6.40	5.12
72115	2,850.	87.2	5.64	6.88	2.67	34.4	1.58	10.0	6.0	8.0	2.19	12.0	6.71	4.70
72137	4.20	4.00	5.89	6.06	3.81	100.0	1.00	7.20	4.10	6.45	2.00	14.0	6.17	4.33
72140	4,066.	127.8	4.89	6.30	4.02	27.1	1.70	10.00	6.0	8.0	2.14	13.0	6.57	4.65
72145	57.00	12.90	7.86	8.68	2.92	156.0	1.01	15.00	9.00	11.00	2.18	6.0	6.19	5.34
72148	23.00	10.80	7.64	9.62	5.07	446.0	2.23	17.00	10.00	11.00	2.35	10.0	6.00	5.46
72155	173.00	32.60	7.00	7.86	6.14	65.2	1.25	14.00	8.00	10.00	2.18	6.0	6.06	5.37
72171	71.00	18.10	7.70	8.20	4.61	68.4	2.79	12.00	7.00	9.00	2.10	4.0	6.27	5.24
72180	215.00	41.00	6.78	7.73	7.82	45.3	3.00	12.00	7.00	9.00	2.18	7.0	6.12	5.21
72200	132.00	23.70	6.91	7.60	4.26	67.4	1.11	16.00	8.00	11.00	2.20	14.0	5.82	5.39
72209	18.40	10.20	6.30	6.75	5.65	99.0	2.09	10.00	5.20	9.09	2.15	11.0	5.83	5.00
72223	65.00	19.00	4.58	5.05	5.55	50.0	1.00	7.04	4.50	6.20	1.98	22.0	5.50	4.50
72225	523.00	52.30	4.43	5.40	5.23	48.4	1.86	8.00	5.00	7.00	2.00	22.0	5.39	4.76
72250	55.00	16.00	4.51	4.79	4.65	41.0	2.60	7.09	4.00	6.77	2.12	24.0	5.00	4.33
72255	256.00	33.50	5.80	6.43	4.38	44.0	1.39	8.60	4.00	8.58	2.15	14.0	6.50	4.00
72262	34.00	14.30	4.49	4.84	6.01	61.0	1.03	8.75	4.00	7.90	2.15	18.0	6.00	3.67
72263	68.00	19.10	5.45	5.82	5.36	34.0	1.88	7.50	4.10	7.50	2.12	15.0	6.17	4.00
72265	2,060.	120.7	3.84	5.09	7.07	25.7	1.75	8.0	4.0	8.0	2.19	17.0	6.03	3.85
72271	786.00	63.10	3.67	4.09	5.07	13.2	1.15	8.00	4.00	7.00	2.30	23.0	5.00	3.63
7227295	1.25	2.67	5.11	5.17	5.70	53.0	1.00	9.00	4.00	8.00	2.25	17.0	6.33	3.33
080806	109.00	26.00	4.25	4.42	6.20	15.0	4.49	8.84	4.00	8.22	2.35	21.0	4.67	3.33
82525	26.00	10.00	9.43	10.40	3.85	227.0	1.42	18.00	12.00	10.00	1.95	4.0	6.96	5.24
82530	19.00	5.20	9.40	10.40	1.42	461.0	1.00	18.00	12.00	10.00	2.15	4.0	6.95	5.29
82535	2.50	3.40	9.49	10.70	4.62	862.0	3.00	19.00	10.00	12.00	2.15	4.0	6.88	5.28
82550	12.00	6.40	8.90	10.40	3.41	629.0	1.00	19.00	12.00	11.00	2.00	2.0	6.94	5.37
82630	10.00	5.40	8.28	9.38	2.92	704.0	1.00	17.00	14.00	8.00	1.70	4.0	6.83	5.31
82640	19.10	6.20	9.39	10.60	2.01	477.0	1.42	18.00	12.00	11.00	1.70	4.0	6.53	5.38
82650	113.00	22.80	7.45	8.91	4.60	137.0	1.09	14.00	11.00	8.00	1.55	5.0	6.67	5.43
82670	190.00	33.40	6.60	8.36	5.87	104.0	1.08	15.00	11.00	7.00	1.50	5.0	6.70	5.45
82675	36.20	11.70	7.65	9.32	3.78	336.0	1.06	16.00	12.00	9.00	1.85	8.0	6.58	5.48
82685	65.60	19.50	6.68	8.45	5.90	219.0	1.03	13.00	10.00	8.00	1.60	8.0	6.57	5.54
82690	66.60	15.30	7.40	8.74	3.52	210.0	1.09	17.84	9.21	8.55	1.51	8.0	6.50	5.33
82710	16.60	8.80	8.05	9.61	4.66	406.0	1.12	17.00	12.00	10.00	1.29	8.0	6.51	5.46
82755	83.00	19.00	7.24	8.72	4.35	194.0	1.02	15.00	10.00	9.00	1.67	7.0	6.24	5.50
82756	37.00	16.80	7.22	8.56	7.63	168.0	1.00	15.00	10.00	9.00	1.75	6.0	6.31	5.45
82790	305.00	39.60	5.85	7.76	5.14	113.0	1.02	14 27	9.05	8.85	1.82	10 0	6.17	5.57
82812	27.70	9.90	8.31	9.50	3.54	236.0	1.04	20.40	16.38	8.90	1.55	4.0	7.00	6.50
82835	405.00	33.00	7.28	8.41	2.69	79.8	1.18	15.00	12.00	7.00	1.50	3.0	6.88	6.48
82840	49.70	17.00	7.52	8.46	3.93	138.0	1.05	13.48	9.99	7.03	1.48	6.0	6.67	6.50
82841	480.	41.3	7.08	8.18	3.55	63.6	1.20	17.0	13.0	9.0	1.48	3.0	6.84	6.48
82845	193.00	17.80	6.94	7.60	1.64	48.3	1.23	11.00	10.00	5.00	1.38	2.0	6.81	6.70
82880	50.50	17.80	7.18	8.76	6.27	166.0	1.10	15.32	12.03	7.39	1.47	6.0	6.50	6.33
82890	419.00	35.90	6.36	7.90	3.08	104.0	1.06	9.00	10.00	6.00	1.45	6.0	6.56	6.14
82910	86.00	16.70	6.46	8.65	3.24	320.0	1.00	13.00	10.00	8.00	1.36	14.0	5.96	5.79
82920	34.50	18.20	6.12	7.68	9.59	200.00	1.00	13.42	9.85	8.40	1.87	15.0	6.00	6.33
82950	38.20	12.30	6.30	8.28	3.96	400.0	1.00	14.59	10.21	8.35	1.66	16.0	5.83	5.83
83025	11.70	8.30	7.11	8.71	5.89	450.0	1.00	10.11	7.91	6.30	1.50	16.0	5.67	5.83
83131	1.23	2.63	6.45	6.61	4.33	142.0	1.00	4.00	4.40	4.00	1.40	17.0	5.67	6.17
83160	22.3	11.5	7.72	9.12	5.93	343.	1.49	16.0	12.0	9.0	2.19	16.0	5.73	5.80
83166	.33	1.25	7.16	7.25	4.73	153.0	1.00	6.00	4.90	4.90	1.40	16.0	5.67	6.00
831665	1.30	2.55	7.03	7.17	5.00	119.0	1.00	6.00	5.00	4.90	1.40	16.0	5.67	6.00
83167	2.92	5.38	6.83	7.22	9.91	95.0	1.00	5.00	4.80	4.90	1.40	16.0	5.67	6.00
83171	.47	1.48	6.02	6.12	4.66	159.0	1.00	3.50	4.00	3.20	1.30	16.0	5.50	6.17
83175	11.30	6.98	6.94	7.60	4.19	131.0	1.00	10.10	7.82	7.32	1.73	15.0	5.50	5.83
83176	116.00	19.20	6.19	6.80	3.18	73.0	1.08	6.67	4.94	6.00	1.64	16.0	5.33	5.67
83177	2.15	3.45	6.27	6.52	5.53	169.0	1.00	6.00	4.60	5.00	1.58	16.0	5.33	5.83
83178	.56	1.77	7.20	7.52	5.59	468.0	1.00	8.00	5.30	6.00	1.70	16.0	5.67	5.83
83180	640.00	47.00	5.26	6.01	3.45	37.6	1.02	6.00	5.00	5.00	1.51	16.0	5.42	5.93
83189	45.20	11.00	6.28	6.59	2.68	60.0	1.03	5.35	6.00	4.84	1.40	16.0	5.17	6.17
83215	173.00	29.20	6.70	8.19	4.93	57.1	1.20	18 00	12.00	11.00	2.00	5.0	5.91	6.53
83219	26.80	11.20	8.12	9.28	4.68	232.0	1.03	17.60	11.90	9.00	1.98	.1	6.00	6.87
~~83239~~	235.00	32.90	6.02	8.20	4.51	132.0	1.05	15.00	11.00	9.00	1.93	4.0	5.92	6.75
83240	470.00	36.30	5.62	7.75	2.90	140.0	1.07	16.00	10.00	9.00	1.20	6.0	5.88	6.68
83305	75.30	16.20	5.66	6.38	3.40	95.0	1.01	8.53	7.25	6.00	1.54	18.0	5.00	6.50
83306	133.00	28.80	4.99	5.93	6.24	83.0	1.02	7.81	6.77	5.05	1.51	19.0	5.00	6.50
833165	35.00	9.30	5.80	6.15	2.47	190.0	1.01	5.50	4.50	5.00	1.45	20.0	4.33	6.50
83340	420.00	58.80	5.95	6.54	8.23	23.4	1.02	9.00	7.00	6.00	1.44	9.0	5.95	6.97
83405	1,390 00	51.80	5.92	6.62	1.93	21.9	1.10	7.00	5.00	5.00	1.10	14.0	5.70	7.42
83413	75.00	18.00	7.43	7.82	4.32	44.0	1.05	9.32	7.29	6.62	1.50	13.0	5.17	8.33

Table B-2.--Physical and climatic characteristics of gaged drainage basins used in regression analyses - Continued

Station number	A	L	E	E_m	S_h	S	S_t	P_m	P_a	P_s	I	T	LA	LO
083485	6.19	7.20	6.65	7.53	8.37	256.0	1.03	4.88	4.00	4.95	1.38	17.0	5.17	7.50
83514	437.00	68.10	5.54	6.50	10.60	35.0	1.51	3.00	3.57	3.37	1.20	18.0	4.83	7.50
83535	195.00	19.10	6.11	6.88	1.87	87.0	1.02	5.52	4.48	5.35	1.44	18.0	4.17	7.33
83540	1,380.00	75.00	4.76	5.95	4.08	35.6	1.09	5.00	4.00	4.00	1.28	16.0	4.39	7.39
83600	403.00	28.10	6.14	7.02	1.96	73.5	1.00	9.00	6.00	7.00	1.56	14.0	3.68	7.65
836165	21.50	8.30	5.74	6.60	3.20	282.0	1.00	11.44	8.81	8.05	1.77	24.0	2.83	7.67
836166	.58	1.15	5.68	5.94	2.28	417.0	1.00	7.00	5.50	5.00	1.62	24.0	2.83	7.67
83617	35.40	11.40	5.40	6.38	3.67	202.0	1.01	10.50	7.96	7.65	1.74	24.0	2.83	7.67
83618	119.00	31.20	4.23	5.30	8.18	81.0	1.02	7.57	5.96	5.67	1.63	24.0	2.83	7.50
83631	.40	1.37	3.90	4.15	4.70	259.0	1.00	3.00	4.00	3.00	1.40	26.0	2.50	7.00
83632	25.40	12.10	4.67	5.02	5.76	70.0	1.12	3.00	4.30	3.27	1.43	24.0	3.00	7.00
83636	13.50	9.70	4.04	4.56	6.97	115.0	1.00	3.00	4.00	3.00	1.20	26.0	2.34	6.70
83780	160.00	20.50	5.98	9.24	2.63	178.0	1.15	21.00	12.00	12.00	2.17	14.0	5.86	5.63
83785	189.00	23.20	7.50	9.14	2.85	144.0	1.06	17.00	11.00	11.00	2.17	14.0	5.84	5.63
83793	122.00	29.40	6.24	7.18	7.08	79.0	1.09	12.56	6.66	9.88	2.03	18.0	5.50	5.33
83795	1,050.00	110.00	5.13	6.82	11.50	35.7	1.03	11.00	7.00	8.00	1.87	15.0	5.52	5.48
83796	.16	.55	5.43	5.47	1.89	116.0	1.00	7.00	5.30	6.00	1.72	20.0	5.17	5.33
83803	7.60	4.35	7.14	7.42	2.49	144.0	1.00	15.60	8.50	9.00	2.15	14.0	5.67	5.33
83805	84.00	16.30	6.95	8.18	3.16	196.0	1.00	15.00	7.00	11.00	2.28	15.0	5.71	5.42
83820	313.00	36.00	5.93	7.21	4.14	82.0	1.80	12.00	6.00	10.00	2.11	16.0	5.47	5.17
83825	610.00	81.00	4.94	6.22	10.80	37.0	1.57	10.00	5.00	9.00	2.06	16.0	5.18	4.92
83833	896.00	68.20	4.61	5.70	5.19	35.0	1.20	6.52	4.81	6.56	1.68	22.0	5.00	5.33
838337	.37	1.05	4.50	4.64	2.98	371.0	1.00	6.00	4.10	6.40	1.88	24.0	4.83	4.67
838567	6.07	4.80	6.33	6.74	3.80	203.0	1.00	12.00	6.50	7.00	1.80	22.0	3.67	5.67
838569	.60	1.40	6.81	6.83	3.27	24.0	1.00	8.40	5.25	7.00	1.64	21.0	4.17	5.67
83857	10.00	6.00	6.72	7.09	3.60	138.0	1.00	9.00	5.75	7.50	1.63	21.0	4.17	5.67
83870	120.00	16.70	6.36	8.02	2.32	252.0	1.07	18.00	10.00	13.00	1.87	22.0	3.30	5.70
83880	290.00	36.70	5.20	6.46	4.64	78.0	1.07	13.74	7.92	10.88	1.90	20.0	3.33	5.50
83890	85.00	27.60	6.03	7.02	8.36	84.0	1.12	14.01	7.77	11.29	2.00	21.0	3.50	5.67
838906	.72	2.00	5.96	6.35	5.56	333.0	1.00	9.00	4.75	9.00	1.90	20.0	3.50	5.50
83895	295.00	33.60	5.20	6.19	3.83	58.0	1.04	11.48	6.06	9.83	1.33	21.0	3.67	5.50
83905	947.00	66.60	4.18	5.48	4.68	42.8	1.03	11.00	6.00	10.00	1.92	22.0	3.37	5.40
83936	19.50	4.60	3.57	3.66	1.08	47.8	1.51	5.00	4.00	5.00	1.98	24.0	3.39	4.58
83939	397.00	64.40	3.74	4.82	10.40	39.0	2.34	7.29	4.27	7.25	1.98	22.0	3.50	5.00
83945	932.00	108.00	3.40	5.21	12.50	39.4	1.02	9.00	5.00	8.00	1.98	22.0	3.23	5.21
83974	3.08	2.88	7.62	8.06	2.69	359.0	1.03	16.00	8.00	12.50	2.07	22.0	3.00	5.67
83976	583.00	47.60	5.31	6.90	3.89	78.0	1.23	14.00	6.99	9.12	2.02	22.0	3.00	5.50
83985	1,060.00	95.50	3.39	5.39	8.60	47.7	1.19	11.00	6.00	9.00	2.02	23.0	2.84	5.27
84000	265.00	64.80	3.30	4.38	15.80	40.1	1.32	7.00	4.00	6.00	2.00	24.0	2.73	4.87
84018	254.00	43.30	3.55	4.66	7.38	60.0	1.20	6.20	4.00	6.43	2.00	28.0	2.33	4.67
840505	.20	.65	4.18	4.22	2.11	15.0	1.00	6.30	4.00	6.35	2.00	28.0	2.33	4.67
84055	343.00	56.70	3.07	4.18	9.37	47.6	1.05	8.00	5.00	7.00	2.00	28.0	2.10	4.50
84085	689.00	60.20	2.90	3.92	5.26	39.5	1.05	7.00	5.00	6.00	2.00	27.0	1.84	4.47
84770	152.00	26.10	5.97	7.08	4.48	37.8	1.03	14.00	10.00	8.00	1.65	28.0	2.99	7.97
84772	.74	1.15	7.68	8.24	1.79	1,020.0	1.00	17.80	10.50	12.50	1.85	24.0	2.83	7.83
84775	460.00	51.00	5.03	6.17	5.65	51.3	1.03	11.00	8.00	8.00	1.58	26.0	2.84	7.88
847756	5.10	4.85	6.05	6.29	4.61	115.0	1.02	10.50	7.30	6.50	1.80	23.0	2.83	8.33
847757	2.12	3.60	5.99	6.21	6.11	143.0	1.00	10.00	6.50	6.20	1.70	23.0	2.83	8.17
847758	10.00	6.40	5.90	6.18	4.10	106.0	1.01	10.50	7.00	6.75	1.75	23.0	2.83	8.33
84776	26.50	7.10	5.86	6.16	1.90	95.0	1.25	9.00	6.00	6.00	1.75	24.0	2.77	8.27
84780	18.80	8.50	5.99	6.54	3.84	144.0	1.00	10.20	7.09	6.78	1.70	24.0	2.83	8.17
84785	1,370.00	87.90	4.33	5.60	5.64	35.0	1.04	6.98	5.57	5.33	1.56	24.0	2.67	8.00
84786	.55	1.35	4.41	4.51	3.31	164.0	1.00	3.00	4.00	3.00	1.40	26.0	2.50	7.00
84793	4.30	4.05	5.17	5.48	4.10	179.0	1.00	6.00	6.00	5.50	1.75	28.0	1.33	8.67
848015	31.00	12.60	5.56	6.03	5.12	78.0	1.06	9.75	7.00	8.00	1.80	23.0	3.83	5.83
84807	6.80	5.70	6.24	7.89	4.78	730.0	1.01	19.60	12.21	13.90	2.00	24.0	3.33	5.83
84809	10.90	9.80	5.28	7.00	8.81	436.0	1.06	16.70	9.00	10.25	1.85	24.0	3.33	5.83
84810	96.00	19.60	4.51	5.74	4.00	150.0	1.02	14.24	8.89	9.06	1.58	26.0	3.33	6.00
84811	13.80	12.20	4.50	5.51	10.80	199.0	1.01	8.60	6.75	6.00	1.74	26.0	3.33	6.00
84815	120.00	20.60	5.45	6.82	3.54	146.0	1.00	14.00	8.00	10.00	1.98	24.0	3.13	5.77
84820	140.00	27.90	4.80	6.34	5.56	123.0	1.03	13.00	7.00	9.00	1.97	25.0	3.14	5.79
84882	10.00	6.45	6.55	6.76	4.16	75.0	1.02	6.00	4.40	6.00	1.60	16.0	5.00	5.67
84885	18.20	10.60	6.68	7.51	6.18	184.0	1.00	13.05	8.61	8.10	1.81	18.0	4.67	6.33
84890	3.90	4.00	6.77	6.92	4.10	83.0	1.00	5.50	4.20	5.50	1.60	18.0	4.33	6.17
84925	16.60	11.60	5.47	6.00	8.11	105.0	1.06	8.20	4.90	5.75	2.05	23.0	2.50	5.50
093462	168.00	23.80	6.72	7.23	3.37	50.0	1.07	10.72	9.85	5.23	1.40	.1	6.83	6.83
93505	1,990.	65.4	5.98	7.08	2.15	39.8	1.10	20.0	18.00	8.0	1.68	2.0	7.23	7.04
93508	60.00	21.10	6.60	7.15	7.42	40.0	1.21	7.99	7.61	4.20	1.38	2.0	6.83	7.17
93550	58.00	17.50	6.16	6.86	5.28	97.3	1.02	5.0	10.00	10	1.39	7.0	7.10	7.53
93557	19.80	6.07	6.41	6.59	1.86	74.0	1.13	5.10	6.50	2.70	1.22	8.0	6.67	7.33
935675	1.38	2.30	5.50	5.62	3.83	116.0	1.00	2.80	5.00	1.30	1.00	14.0	6.67	8.00
93572	.20	1.15	6.79	6.83	6.61	70.0	1.00	4.10	4.90	2.60	1.15	14.0	6.50	7.83
93635	1,090.	78.30	5.96	7.35	5.62	52.8	1.41	22.0	16.0	14.0	1.93	3.0	7.48	7.86
93645	1,360.	113.2	5.23	7.35	9.42	41.2	1.37	22.0	17.0	8.0	1.50	6.0	7.37	7.87
936753	2.96	5.40	5.23	5.41	9.85	76.0	1.10	1.00	4.50	1.00	1.00	15.0	6.67	8.33
936784	2.10	3.20	6.81	7.12	4.88	229.0	1.00	9.00	7.00	4.00	1.60	15.0	5.83	8.83
936786	8.70	6.95	6.52	6.89	5.55	118.0	1.01	7.00	6.40	4.50	1.50	15.0	5.83	8.83
936788	26.90	10.20	6.32	6.86	3.87	124.0	1.01	6.00	6.00	3.50	1.35	15.0	5.67	8.83
93679	7.05	7.95	6.28	6.62	8.96	96.0	1.06	5.75	5.90	3.25	1.32	15.0	5.67	8.83
93861	151.00	26.50	6.90	7.63	4.65	62.0	1.33	8.61	5.87	6.33	1.47	12.0	4.17	8.50

Table B-2.--Physical and climatic characteristics of gaged drainage basins used in regression analyses - Concluded

Station number	A	L	E	E_m	S_h	S	S_t	P_m	P_a	P_s	I	T	LA	LO
938705	19.00	7.30	7.18	7.36	2.80	50.0	1.26	5.75	5.25	3.75	1.25	10.0	5.00	8.67
93954	14.50	5.70	7.42	7.78	2.24	147.0	1.21	8.50	6.50	4.90	1.50	10.0	5.33	8.50
93955	558.00	49.40	6.50	6.97	4.37	22.0	1.13	5.91	5.90	4.17	1.24	18.0	5.50	8.50
93956	.42	1.00	6.60	6.66	2.38	111.0	1.00	4.50	5.75	3.50	1.18	15.0	5.67	8.83
94299	89.60	18.50	7.27	7.78	3.82	63.0	1.02	11.20	8.17	7.75	1.71	18.0	3.50	8.50
94305	1,864.	86.3	4.90	6.10	4.00	37.1	1.01	11.0	7.0	7.0	1.58	16.0	3.26	8.26
94309	228.00	35.70	4.50	5.27	5.59	51.0	1.08	9.82	6.51	5.39	1.69	26.0	3.17	8.67
94315	2,829.0	115.2	4.09	5.74	4.69	31.5	1.05	10.0	7.0	7.0	1.58	16.0	3.26	8.26
94382	157.00	15.10	5.02	5.22	1.45	31.0	1.00	8.26	7.27	5.96	1.82	28.0	1.50	8.83
944266	32.00	12.60	7.31	7.98	4.96	107.0	1.12	12.50	9.14	7.00	1.60	12.0	3.83	9.00
944268	350.00	40.90	5.83	6.88	4.78	59.8	1.13	10.00	8.00	7.00	1.72	12.0	3.88	8.92
944269	89.00	13.80	6.75	7.47	2.14	129.0	1.02	7.33	5.90	5.97	1.49	13.0	4.00	8.50
94427	94.60	14.10	6.76	7.55	2.10	127.0	1.26	7.50	6.40	6.50	1.43	12.0	4.00	8.67
944274	426.00	33.80	5.95	7.00	2.68	75.0	1.01	7.39	6.32	5.97	1.53	15.0	3.83	8.50
94435	34.0	13.4	5.67	7.28	5.28	262.	1.00	16.0	10.0	11.0	1.86	21.0	3.34	8.74
94440	1,653.	80.0	4.55	5.77	3.87	33.0	1.05	10.0	8.0	7.0	1.69	17.0	3.68	8.73

Table B-3.--Maximum observed discharges at continuous-record gaging stations in New Mexico

No.	Station number	Station	Period of record, water years	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
		ARKANSAS RIVER BASIN:					
1	7-1535	Cimarron River near Guy	1942-68	545	8/21/65	46,100	84.6
2	7-1545	Cimarron River near Kenton, Okla.	1951-68	1,106	10/17/65	43,400	39.2
3	7-1990	Canadian River near Hebron	1947-68	229	do	62,400	272
4	7-2030	Vermejo River near Dawson	1916-18 1919-21 1927-68	301	6/17/65	12,500	41.9
5	7-2040	Moreno Creek at Eagle Nest	1928-55 1965-68	73.8	9/ 1/46	240	3.25
6	7-2045	Cieneguilla Creek near Eagle Nest	1928-55 1965-68	56	6/16/65	505	9.02
7	7-2050	Six Mile Creek near Eagle Nest	1928-55 1959-68	10.5	4/11/37	a125	11.9
8	7-2075	Ponil Creek near Cimarron	1916-29 1951-68	171	6/17/65	5,630	32.9
9	7-2085	Rayado Creek at Sauble Ranch near Cimarron	1911-20 1927-68	65	do	9,000	138
10	7-2145	Rio Agua Negra at Holman	1953-68	57	7/22/64	4,700	82.5
11	7-2148	Rio de la Casa near Cleveland	1957-68	23	8/ 6/59	2,260	98.3
12	7-2155	Mora River at La Cueva	1906-11 1931-68	173	9/29/04	a20,000	162
13	7-2171	Coyote Creek above Guadalupita	1957-68	71	6/17/65	1,820	25.6
14	7-2180	Coyote Creek near Golondrinas	1928-68	215	8/17/61	4,050	18.2
15	7-2200	Sapello River at Sapello	1916-21 1957-68	132	8/ 5/66	6,420	48.6
16	7-2225	Conchas River at Variadero	1937-68	523	9/ 1/42	44,000	84.1
17	7-2271	Revuelto Creek near Logan	1960-68	786	7/ 9/60	26,700	34.0
		RIO GRANDE BASIN:					
18	8-2525	Costilla Creek above Costilla Dam	1937-68	25.1	7/22/54	3,870	154
19	8-2530	Casias Creek near Costilla	1937-68	16.6	6/11/57	122	7.35
20	8-2535	Santistevan Creek near Costilla	1937-68	2.15	8/11/41	18	8.37
21	8-2550	Ute Creek near Amalia	1949-59	12	6/ 8/55	88	7.33
22	8-2630	Latir Creek near Cerro	1938-68	10	6/18/65	126	12.6
23	8-2640	Red River near Red River	1941-64	19.1	6/12/52	264	13.8
24	8-2650	Red River near Questa	1916-25 1927-68	113	5/25/42	a886	7.84
25	8-2670	Red River at mouth near Questa	1951-68	190	8/12/64	730	3.84
26	8-2675	Rio Hondo near Valdez	1935-68	36.2	5/13/41	541	14.9
27	8-2685	Rio Hondo at Arroyo Hondo	1913-28 1932-68	65.6	8/23/35	b1,200	18.3
28	8-2690	Rio Pueblo de Taos near Taos	1911-16 1940-68	66.6	5/14/41	970	14.6
29	8-2710	Rio Lucero near Arroyo Seco	1911-15 1934-51 1953-68	16.6	5/13/41	300	18.1
30	8-2755	Rio Grande del Rancho near Talpa	1953-68	83	9/10/64	435	5.24
31	8-2756	Rio Chiquito near Talpa	1957-68	37	7/31/68	193	5.22
32	8-2790	Embudo Creek at Dixon	1923-68	305	8/ 4/67	2,280	7.48
33	8-2835	Rio Chama at Parkview	1925-55	405	5/21/26	c10,000	24.7
34	8-2845	Willow Creek near Parkview	1937-68	193	4/23/42	c4,500	23.3
35	8-2890	Rio Ojo Caliente at La Madera	1932-68	419	4/21/58	3,140	7.49
36	8-2910	Santa Cruz River at Cundiyo	1931-68	86	9/24/31	2,420	28.1

See footnotes at end of table.

Table B-3.--Maximum observed discharges at continuous-record gaging stations in New Mexico - Concluded

No.	Station number	Station	Period of record, water years	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
37	8-3180	Galisteo Creek at Domingo	1942-68	640	8/20/35	a24,300	38.0
38	8-3215	Jemez River below East Fork, near Jemez Springs	1950 1958-68	173	4/21/58	2,520	14.6
39	8-3230	Rio Guadalupe at Box Canyon near Jemez	1959-62	235	4/21/58	1,440	6.13
40	8-3240	Jemez River near Jemez	1959-68	470	5/13/41	b6,000	12.8
41	8-3340	Rio Puerco above Arroyo Chico, near Guadalupe	1952-58	420	7/29/67	6,940	16.5
42	8-3405	Arroyo Chico near Guadalupe	1944-68	1,390	7/17/53	12,200	8.78
43	8-3540	Rio Salado near San Acacia	1948-68	1,380	7/31/65	36,200	26.2
44	8-3600	Alamosa Creek near Monticello	1932-42 1957-68	403	8/13/64	10,800	26.8
45	8-3636	Las Cruces Arroyo near Las Cruces	1959-66	13.5	9/21/41	d2,630	195
		PECOS RIVER BASIN:					
46	8-3780	Pecos River near Cowles	1910-19	160	5/27/12	1,800	11.2
47	8-3785	Pecos River near Pecos	1920-68	189	9/21/29	4,500	23.8
48	8-3795	Pecos River near Anton Chico	1910-24 1927-68	1,050	9/29/04	73,000	69.5
49	8-3805	Gallinas River near Montezuma	1915 1917-68	84	8/ 2/66	7,120	84.8
50	8-3820	Gallinas River near Lourdes	1952-63	313	8/17/61	6,680	21.3
51	8-3825	Gallinas River near Colonias	1951-68	610	6/ 1/37	26,700	43.8
52	8-3870	Rio Ruidoso at Hollywood	1953-58	120	6/17/65	1,340	11.2
53	8-3905	Rio Hondo at Diamond A Ranch, near Roswell	1940-68	947	6/18/65	54,800	57.9
54	8-3936	North Spring River at Roswell	1959-68	19.5	6/13/64	387	19.8
55	8-3945	Rio Felix at old highway bridge, near Hagerman	1939-68	932	10/ 7/54	74,000	79.4
56	8-3985	Rio Penasco at Dayton	1951-68	1,070	9/22/41	b60,000	56.1
57	8-4000	Fourmile Draw near Lakewood	1952-68	265	8/23/66	29,300	111
58	8-4055	Black River above Malaga	1940 1947-68	343	8/23/66	74,600	217
59	8-4085	Delaware River near Red Bluff	1912-13 1938-68	689	10/ 2/55	81,400	118
		MIMBRES RIVER BASIN:					
60	8-4770	Mimbres River near Mimbres	1931-68	152	8/ 2/52	1,560	10.3
61	8-4775	Mimbres River near Faywood	1931-55 1964-68	460	8/ 4/39	20,000	43.5
62	8-4776	San Vincente Arroyo at Silver City	1954-65	26.5	9/ 9/38	a6,800	257
		TULAROSA VALLEY:					
63	8-4815	Rio Tularosa near Bent	1948-68	120	6/18/65	4,280	35.7
64	8-4820	Rio Tularosa near Tularosa	1938-47	140	9/ 3/38	9,640	68.8
		SAN JUAN RIVER BASIN:					
65	9-3550	Spring Creek at La Boca, Colo.	1951-68	58	8/12/64	580	10.0
66	9-3635	Animas River near Cedar Hill	1934-67	1,090	6/19/49	c13,100	12.0
		GILA RIVER BASIN:					
67	9-4426.8	San Francisco River near Reserve	1959-68	350	7/31/67	1,320	3.77

a - May have been exceeded.
b - Equal to or greater than.
c - Maximum recorded: a greater flood occurred Oct. 5 or 6, 1911.
d - As determined by Corps of Engineers.

Table B-4.--Maximum observed discharges at crest-stage gages in New Mexico

No.	Station number	Station	Period of record, water years	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
		ARKANSAS RIVER BASIN:					
1	7-1534	Dry Cimarron River at Folsom	1952-59	73	5/19/55	4,500	61.6
2	7-1544	Carrizozo Creek near Kenton, Okla.	1953-68	111	7/ 6/58	15,600	141
3	7-2010	Raton Creek at Raton	1953-68	14.4	6/17/65	4,140	288
4	7-2137	Canadian River tributary near Mills	1954-68	4.2	7/23/66	1,280	305
5	7-2209	Dog Creek near Shoemaker	1954-68	11.2	7/ 7/68	6,190	553
6	7-2223	Trementina Creek at Trementina	1959-68	65	9/11/65	14,100	217
7	7-2250	Pajarito Creek at Newkirk	1954-68	35	9/16/62	3,550	101
8	7-2255	Ute Creek near Gladstone	1953-68	256	9/ 1/63	10,700	41.8
9	7-2262	Bueyeros Creek at Bueyeros	1957-68	34	7/21/61	5,240	154
10	7-2263	Carrizo Creek near Roy	1954-68	68	6/16/65	1,380	20.3
11	7-2270.5	Plaza Larga Creek tributary near Ragland	1952-68	.5	7/16/58	1,170	2,340
12	7-2272.95	Sandy Arroyo tributary near Clayton	1952-68	4.3	7/16/56	388	90.2
		RIO GRANDE BASIN:					
13	8-0806	Running Water Draw near Clovis	1953-68	109	9/ 6/57	7,090	65.0
14	8-2812	Wolf Creek near Chama	1959-68	27.7	4/20/65	1,900	68.6
15	8-2840	Rito de Tierra Amarilla at Tierra Amarilla	1957-68	49.7	8/ 1/67	870	17.5
16	8-2880	El Rito near El Rito	1932-68	50.5	4/23/42	1,240	21.6
17	8-2920	Santa Clara Creek near Espanola	1936-68	34.5	9/22/41	970	28.1
18	8-2950	Rio Nambe near Nambe	1933-65	38.2	7/31/55	5,280	138
19	8-3025	Tesuque Creek above Diversions, near Santa Fe	1936-68	11.7	8/24/57	632	54.0
20	8-3131	Canada Ancha tributary near Santa Fe	1940-48 1952-68	1.23	8/10/67	298	242
21	8-3166	North Frijoles Arroyo near Santa Fe	1958-68	.33	8/24/66	360	1,090
22	8-3166.5	Arroyo de los Frijoles, Locust Tree Reach, near Santa Fe	1957-68	1.30	8/24/57	1,900	1,460
23	8-3167	Arroyo de los Frijoles near Santa Fe	1957-68	2.92	8/24/57	5,340	1,830
24	8-3171	Arroyo Yupa tributary near Santa Fe	1957-68	.47	9/10/67	568	1,210
25	8-3175	Galisteo Creek at Canoncito	1955-56 1959-68	11.3	8/23/66	2,000	177
26	8-3176	San Cristobal Arroyo near Galisteo	1955-68	116	1952	a15,000	129
27	8-3177	Tarhole Canyon near Galisteo	1952-68	2.15	8/12/52	2,440	1,130
28	8-3178	Canada de las Minas tributary near Santa Fe	1952-68	.56	7/27/66	366	654
29	8-3189	San Pedro Creek near Golden	1953-68	45.2	9/24/55	10,800	239
30	8-3219	Rio de las Vacas near Senorita	1957-68	26.8	5/23/58	800	29.9
31	8-3305	Tijeras Arroyo at Albuquerque	1943-48 1958-68	75.3	6/24/67	6,500	86.3
32	8-3306	Tijeras Arroyo near Albuquerque	1952-68	133	6/24/67	2,530	19.0
33	8-3316.5	Canada Montoso near Scholle	1961-68	35	8/ 9/67	4,700	134
34	8-3413	Bluewater Creek above Bluewater Dam, near Bluewater	1953-68	75	7/ /53	3,570	47.6
35	8-3433	Rio San Jose tributary near Grants	1952-59	.03	8/24/57	112	3,730
36	8-3485	Encinal Creek near Casa Blanca	1959-68	6.19	9/ 9/67	4,330	700
37	8-3514	Arroyo Colorado near Correro	1953-61	437	7/26/57	4,890	11.2
38	8-3535	La Jencia Creek near Magdalena	1957-68	195	9/ /62	4,830	24.8
39	8-3616.5	Percha Creek near Kingston	1953-68	21.5	7/11/55	2,260	105
40	8-3616.6	Percha Creek tributary near Kingston	1957-67	.58	8/21/62	323	557

See footnotes at end of table.

Table B-4.--Maximum observed discharges at crest-stage gages in New Mexico - Continued

No.	Station number	Station	Period of record, water years	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
41	8-3617	Percha Creek near Hillsboro	1957-68	35.4	7/19/62	4,100	116
42	8-3618	Percha Creek at Cabello Dam near Arrey	1953-68	119	9/13/58	7,260	61.0
43	8-3631	Rio Grande tributary near Radium Springs	1955-68	.40	8/24/59	332	830
44	8-3632	Aleman Draw at Aleman	1959-68	27	8/ 7/67	16,400	607
		PECOS RIVER BASIN:					
45	8-3793	Tecolote Creek at Tecolote	1937-68	122	1937	b20,000	164
46	8-3796	Pecos River tributary near Dilia	1952-68	.16	9/26/54	184	1,150
47	8-3803	Sandoval Canyon at Gallinas	1957 1961-68	7.6	8/ 1/66	2,530	316
48	8-3833	Pintada Arroyo near Santa Rosa	1959-68	896	7/19/62	3,000	3.35
49	8-3833.7	Pecos River tributary near Puerto de Luna	1961-68	.37	8/22/66	514	1,390
50	8-3856.7	Aragon Creek tributary near Encinoso	1961-68	6.07	9/ 6/61	1,610	265
51	8-3856.9	Bonita Canyon tributary near Corona	1959-68	.60	7/17/67	112	187
52	8-3857	Cloud Canyon near Gallinas	1957-68	10	8/ 2/66	706	70.6
53	8-3880	Rio Ruidoso at Hondo	1931-68	2.90	6/17/65	42,700	147
54	8-3890	Rio Bonito near Fort Stanton	1955-68	85	7/23/57	2,800	32.9
55	8-3890.6	Rio Bonito tributary near Fort Stanton	1955-68	.72	9/24/55	240	333
56	8-3895	Rio Bonito at Hondo	1931-67	295	6/17/65	28,200	95.6
57	8-3901	Rio Hondo at Picacho	1956-68	715	6/17/65	115,000	161
58	8-3939	Eight Mile Draw near Roswell	1941 1952-68	397	9/22/41	22,200	55.9
59	8-3974	Hyatt Canyon near Cloudcroft	1953-68	3.08	8/10/67	86	27.9
60	8-3976	Rio Penasco near Duncan	1952-68	583	10/ 6/54	36,300	62.3
61	8-4018	Rocky Arroyo near Carlsbad	1953-68	254	10/ 7/54	63,300	249
62	8-4050.5	Last Chance Canyon tributary near Carlsbad	1959-68	.2	8/23/66	683	3,420
		MIMBRES RIVER BASIN:					
63	8-4772	Iron Creek near Kingston	1955-68	.74	8/21/63	100	135
64	8-4775.6	Little Walnut Creek near Silver City	1959-68	5.10	7/29/66	920	180
65	8-4775.7	Silva Creek tributary at Silver City	1958-68	2.12	8/16/63	1,830	863
66	8-4775.8	Silva Creek at Silver City	1958-68	10.0	8/11/60	2,670	267
67	8-4780	Cameron Creek at Central	1954-68	18.8	8/29/59	2,200	117
68	8-4785	Mimbres River at Deming	1954-68	1,370	8/ 7/54	2,000	1.46
69	8-4786	Mimbres Basin tributary near Florida	1959-68	.55	8/ 6/68	400	727
		PLAYAS VALLEY:					
70	8-4793	Deer Creek tributary near Antelope Wells	1959-68	4.3	8/ 5/60	1,680	391
		TULAROSA VALLEY:					
71	8-4801.5	White Oaks Canyon near Carrizozo	1959 1961-68	31	7/26/59	7,690	248
72	8-4807	Indian Creek near Three Rivers	1956-68	6.8	9/ /61	990	146
73	8-4809	Indian Creek at mouth near Three Rivers	1956-68	10.9	9/26/57	1,780	163
74	8-4810	Three Rivers at Three Rivers	1956-68	96	8/ 5/67	15,000	156
75	8-4811	Tularosa Valley tributary near Three Rivers	1952-68	13.8	8/10/55	2,340	170

See footnotes at end of table.

Table B-4.--Maximum observed discharges at crest-stage gages in New Mexico - Concluded

No.	Station number	Station	Period of record, water years	Drainage area sq mi	Peak discharge		
					Date	cfs	cfs per sq mi
		ESTANCIA VALLEY:					
76	8-4882	Osita Draw near Clines Corners	1961-68	10	9/19/61	1,260	126
77	8-4825	Canon de Torreon at Torreon	1954-68	18.2	8/ 9/67	4,310	237
78	8-4890	Canada del Leon near Mountainair	1953-68	3.9	9/25/54	1,710	438
		SALT BASIN:					
79	8-4925	Fleming Draw near Pinon	1959-68	16.6	8/ /61	3,500	211
		SAN JUAN RIVER BASIN:					
80	9-3462	Rio Amargo at Dulce	1956-68	168	7/31/68	2,860	17.0
81	9-3508	Vaqueros Canyon near Gobernador	1956-68	60	8/ 2/65	2,520	42.0
82	9-3557	Gobernador Canyon near Gobernador	1956-68	19.8	8/ 6/63	3,450	174
83	9-3567.5	Valdez Draw near Bloomfield	1956-67	1.3	8/ 6/63	367	282
84	9-3572	Gallegos Canyon tributary near Nageezi	1952-68	.2	7/12/64	580	2,900
85	9-3675.3	Locke Arroyo near Kirtland	1951-55 1957-68	2.96	8/29/57	812	274
86	9-3678.4	Yazzie Wash near Mexican Springs	1937-42 1953-54 1956-68	2.1	1941	1,390	662
87	9-3678.6	Chusca Wash near Mexican Springs	1937-42 1953-68	8.7	9/15/67	6,400	736
88	9-3678.8	Catron Wash near Mexican Springs	1937-42 1954 1956-67	26.9	9/15/67	4,750	177
89	9-3679	Black Springs Wash near Mexican Springs	1938-40 1942 1954-68	7.05	8/18/55	2,200	312
		LITTLE COLORADO RIVER BASIN:					
90	9-3861	Largo Creek near Quemado	1954-68	151	8/ 6/54	1,320	8.74
91	9-3870.5	Galestena Canyon tributary near Blackrock	1957-63	19	9/ 4/63	593	31.2
92	9-3954	Milk Ranch Canyon near Fort Wingate	1949 1953-68	14.0	1949	1,360	97.1
93	9-3955	Puerco River at Gallup	1940-46 1956-68	558	8/ 6/59	9,820	17.6
94	9-3956	Wagon Trail Wash near Gamerco	1951-68	.38	8/17/58	437	1,150
95	9-4299	Snow Creek near Mogollon	1957-67	89.6	8/15/64	608	6.79
		GILA RIVER BASIN:					
96	9-4309	Duck Creek at Cliff	1957-68	228	8/ 4/67	6,900	30.3
97	9-4382	Animas Creek at Cloverdale	1959-68	157	9/12/64	1,950	12.4
98	9-4426.6	Trout Creek at Luna	1954-68	31.9	8/20/55	1,830	57.4
99	9-4426.9	Tularosa River near Aragon	1955-67	89	3/28/66	a181	2.03
100	9-4427	Apache Creek near Apache Creek	1957-68	94.6	8/11/64	2,900	30.7
101	9-3327.4	Tularosa River near Reserve	1956-68	426	7/28/56	2,280	5.35

a - Estimated.
b - At site 5 miles downstream.

Table B-5.--Measurements of peak discharges made by indirect methods at miscellaneous sites in New Mexico

No.	Stream	Tributary to	Location	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi.
	ARKANSAS RIVER BASIN:						
1	Travesser Creek	Cimarron River	near Valley	74.7	6/17/65	12,500	167
2	Unnamed	Cimarron	near Kenton, Okla	37	7/ 6/58	4,280	116
3	Do	do	do	7.5	do	1,930	257
4	Do	do	do	4.9	do	2,410	492
5	Do	Carrizozo Creek	near Moses	.15	do	307	2,047
6	Chicorica Creek	Canadian River	near Raton	36.3	6/17/65	2,230	61.4
7	East Fork	Chicorica Creek	at Yankee	22.7	do	13,500	595
8	Chicorica Creek	Canadian River	near Raton	78.8	do	12,800	162
9	Unnamed	Chicorica Creek	do	1.33	do	1,810	1,360
10	Chicorica Creek	Canadian River	above Lake Malaga	9.3	5/18/55	2,450	263
11	Crow Creek	Canadian River	near Koehler	29	6/17/65	10,600	366
12	Do	do	do	59.8	do	30,500	510
13	Do	do	near Maxwell	78.4	do	13,100	167
14	Springer Arroyo	Crow Creek	at Hoxie Junction	3.00	do	2,280	760
15	Unnamed	Cimarron Creek	near Cimarron	.05	6/ 5/58	337	6,740
16	Do	do	in Cimarron	1.44	6/ 5/58	1,870	1,299
17	Turkey Creek Canyon	Cimarron Creek	near Cimarron	5.25	6/17/65	6,660	1,270
18	Chase Canyon	Ponil Creek	do	23.0	do	10,800	470
19	Ocate Creek	Canadian River	at Colmor	-	7/ 4/51	25,000	-
20	Rito Colorado	Sapello River	at San Ignacio	5.0	8/ 4/57	1,660	332
21	Unnamed	do	near San Ignacio	-	do	544	-
22	Los Dispensos Arroyo	do	near Sapello	-	do	7,050	-
23	Unnamed	Manuelitas Creek	at Tierra Monte	4.2	8/ 7/57	445	106
24	Unnamed	Conchas River	near Trujillo	3.43	7/ 5/67	4,530	1,320
25	Conchas River	Canadian River	do	18.6	do	9,810	527
26	Unnamed	Arroyo Laguna	near Montoya	3.4	7/ 5/60	2,660	782
27	Unnamed	Blanco Creek	at Palomas	2.9	7/ 5/60	1,540	531
28	Carras Creek	Canadian River	near Gallegos	9.4	7/ 8/60	2,590	276
29	Trinchera Creek	Canadian River	near Tucumcari	-	5/16/54	2,740	-
30	Unnamed	Bueyeros Creek	near Bueyeros	18	8/ 8/60	799	44.4
31	Tesquesquite Creek	Ute Creek	near Mosquero	-	1937 or 42	36,000	-
32	Arroyo del Alamo	Tesquesquite Creek	near Mosquero	27.4	5/16/54	3,440	126
33	Unnamed	Ute Creek	near Gallegos	.6	8/ 9/60	668	1,110
34	Plaza Larga Creek	Revuelto Creek	near Tucumcari	348	7/ 9/60	12,200	35.1
35	Unnamed	Plaza Larga Creek	at Ragland	-	7/16/58	1,150	-
36	Do	do	near Ragland	5	do	4,730	946
37	Do	do	near Quay	9.2	7/17/56	3,410	371
38	Do	do	do	5.8	7/16/58	2,400	414
39	Barranca Creek	Revuelto Creek	near Norton	147	8/23/59	3,870	26.3
40	Unnamed	Canadian River	near Hoxie Junction	2.01	6/17/65	2,130	1,060
41	Rana Canyon	Canadian River	near Porter	10	7/16/58	2,910	291
42	Traques Creek	do	near Nara Vista	-	8/23/54	20,400	-
43	Carrizo Creek	Mustang Creek	near Clayton	477	6/17/65	9,270	15.2
44	Carrizo Creek	Mustang Creek	near Clayton	305	5/28/57	29,500	96.7
45	Major Langs Creek	Mustang Creek	near Stead	556	6/17/65	6,600	11.9

Table B-5.--Measurements of peak discharges made by indirect methods at miscellaneous sites in New Mexico - Continued

No.	Stream	Tributary to	Location	Drainage area sq mi	Peak discharge		
					Date	cfs	cfs per sq mi
46	Cieneguilla Creek	North Canadian River	near Clayton	112	do	9,580	85.5
47	Cieneguilla Creek	North Canadian River	near Seneca	215	1941	24,000	112
48	Blanco Creek	Red River	near Clovis	-	5/ /41	26,000	-
	RIO GRANDE BASIN:						
49	Arroyo del Alamo	Rio Pueblo de Taos	near Ranchos de Taos	4.11	8/ 1/59	173	42.1
50	Unnamed	Arroyo del Alamo	do	2.64	do	59	22.3
51	Tierra Amarilla Arroyo	Rio Grande	at Pilar	7	7/28/52	4,600	657
52	Unnamed	do	at Rinconada	.53	7/26/59	388	732
53	Do	do	do	.48	do	1,490	3,104
54	Do	do	do	.03	8/ 6/59	159	5,300
55	Do	do	do	.13	do	283	2,177
56	Do	do	near Lyden	.66	7/26/59	1,100	1,667
57	Unnamed	Rio Chama	near Abiquiu	5.35	5/26/64	2,670	499
58	Do	Canoncito de La Madera	near Ojo Caliente	.87	6/14/59	606	697
59	Rio del Oso	Rio Chama	at Chili	41.2	8/22/61	11,600	282
60	Arroyo de la Presa	do	near Hernandez	11.0	do	12,300	1,120
61	Little Tesuque Creek	Rio Tesuque	near Santa Fe	8.28	8/24/57	1,060	128
62	Arroyo Cuyamungue	Rio Tesuque	near Pojoaque	3.86	8/22/61	5,770	1,490
63	Unnamed	do	do	.71	do	633	892
64	Ramon Martinez Arroyo	Pojoaque River	at El Rancho	.8	8/22/52	1,780	2,225
65	Canada Ancha	Santa Fe River	near Santa Fe	1.66	8/24/57	800	482
66	Santa Fe River	Rio Grande	at Castillo St., in Santa Fe	6.1	7/25/68	3,420	561
67	Santa Fe River	Rio Grande	at Don Gaspar St, in Santa Fe	-	7/28/52	635	-
68	Arroyo Ranchito	Arroyo de la Piedra	in Santa Fe	.61	8/24/57	520	852
69	Arroyo de la Piedra	Arroyo Mascaras	do	2.78	do	1,600	576
70	Arroyo Barranca	do	do	1.04	do	1,100	1,058
71	Arroyo Mascaras	Santa Fe River	do	6.27	do	3,040	485
72	Santa Fe River	Rio Grande	do	13.9	7/25/68	6,110	440
73	Santa Fe River	Rio Grande	near Santa Fe	-	7/30/53	2,410	-
74	Unnamed	San Marcos Arroyo	near Cerrillos	.1	6/17/58	209	2,090
75	San Marcos Arroyo	Galisteo	do	33	do	2,990	90.6
76	Do	do	at Cerrillos	92	do	8,090	87.9
77	Unnamed	San Pedro Arroyo	near Golden	2.82	9/24/55	2,400	851
78	Do	do	do	.92	do	2,750	2,989
79	Do	do	do	4.21	do	2,950	701
80	Do	do	do	.90	do	962	1,069
81	Cuchillo Arroyo	Tonque Arroyo	at Golden	2.1	9/24/55	987	479
82	Unnamed	Cuchillo Arroyo	do	12.2	do	2,000	161
83	Do	Rio Guadalupe	near Jemez Springs	6.74	7/31/56	410	60.8
84	Vallecitos Creek	Jemez Creek	near Jemez	64.1	Unknown	3,130	48.8
85	Cachana Arroyo	Rio Salado	near San Ysidro	5.16	5/14/59	1,590	308
86	Unnamed	Cachana Arroyo	do	.23	do	552	2,400
87	Do	Jemez Creek	do	5	7/23/51	4,150	830
88	Do	do	do	5.4	do	14,000	2,592

Table B-5.--Measurements of peak discharges made by indirect methods at miscellaneous sites in New Mexico - Continued

No.	Stream	Tributary to	Location	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
89	Unnamed	Rio Grande	at Bernalillo	1.28	7/19/56	1,320	1,031
90	Do	do	do	.02	do	104	5,200
91	Canon del Agua	do	do	3.93	do	5,400	1,374
92	Unnamed	do	do	2.63	do	1,540	586
93	Do	Rio Grande	near Bernalillo	1.93	8/ 3/63	1,540	798
94	Sandia Wash	Albuquerque drainage system	at Sandia Pueblo	15.0	8/ 3/63	7,550	503
95	Canon La Cueva	Albuquerque drainage system	near Albuquerque	2.6	7/27/55	1,920	738
96	Arroyo de Domingo Baca	do	do	8.1	do	977	121
97	Arroyo del Pino	do	do	6.0	do	1,150	192
98	Unnamed	Hahn Arroyo	at Albuquerque	.50	8/10/63	1,420	2,840
99	Hahn Arroyo	Rio Grande	do	7.6	8/11/61	935	123
100	Hahn Arroyo	Albuquerque drainage system	do	8.5	8/10/63	4,100	482
101	Arroyo del Embudo	do	do	14.6	do	1,470	101
102	Unnamed	Arroyo del Embudo	do	7.7	8/11/61	572	743
103	Arroyo del Embudo	Albuquerque drainage system	do	27.5	do	3,590	131
104	Arroyo del Embudo	do	at San Mateo Blvd in Albuquerque	28.6	do	2,360	82.5
105	Do	do	do	34.1	8/10/63	8,840	259
106	Unnamed (Campus Blvd)	do	at Girard St. in Albuquerque	-	7/15/57	629	-
107	Campus Wash	do	do	7.3	8/10/63	640	87.7
108	Unnamed	Tijeras Arroyo	at Cedar Crest	.31	7/15/60	307	990
109	Do	do	do	.15	do	142	947
110	Do	Belen Highline Canal	near Los Chavez	.86	6/14/61	2,230	2,590
111	Abo (Wash) Arroyo	Rio Grande	near Scholle	257	8/21/51	18,300	71.2
112	Abo Arroyo	do	at Vequita	355	7/30/56	9,350	26.3
113	Unnamed	Rito Olguin	near La Ventana	.26	8/ /57	243	935
114	Do	Mitchell Draw	near Thoreau	3.3	8/ 7/59	1,930	585
115	Do	do	do	18.8	do	2,350	125
116	Do	do	do	1.6	9/ /58	430	269
117	Do	do	near Prewitt	-	8/ 7/59	928	-
118	Do	do	at Prewitt	3.0	do	1,020	340
119	Do	San Mateo Creek	near San Mateo	.95	7/19/56	1,500	1,579
120	Do	do	do	23.4	do	4,820	206
121	Unnamed	Rio San Jose	near Grants	16.0	1956	3,390	212
122	Encinal Arroyo	do	at New Laguna	20.4	8/10/54	8,320	408
123	Unnamed	Rio Moquino	at Moquino	76.4	Prior to'58	2,970	38.9
124	Meyer Draw	Arroyo Pedro Padilla	near Moquino	21.7	8/21/58	2,310	106
125	Bohart Creek	Arroyo Zia	do	32	8/21/58	4,840	151
126	Oak Canyon	Rio Paguate	near Paguate	4.28	5/23/59	1,450	339
127	Unnamed	Rio San Jose	near Laguna	.87	7/26/59	761	875
128	Do	do	do	.62	do	917	1,479
129	La (Hinca) Jencia Creek	Rio Salado	near Magdalena	20.9	Unknown	2,970	142
130	Unnamed	La Jencia	do	8.1	do	4,300	531

Table B-5.--Measurements of peak discharges made by indirect methods at miscellaneous sites in New Mexico - Continued

No.	Stream	Tributary to	Location	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
131	Unnamed	Rio Grande	at Polvadera	4	do	720	1,800
132	San Lorenzo Arroyo	do	do	27.9	9/19/60	11,730	420
133	Unnamed	do	near Socorro	.36	Unknown	905	2,514
134	Nogal Arroyo	do	do	60.4	8/ 1/56	4,670	77.3
135	Four Mile Canyon	Socorro Canyon	do	3.1	do	989	319
136	Unnamed	do	do	6.67	do	9,480	1,421
137	Box Canyon	do	do	24.3	do	6,210	256
138	Socorro Canyon (flood channel)	Arroyo de la Montanza	in Socorro	42.2	Unknown	7,650	181
139	Unnamed	Rio Grande	near San Marcial	-	7/31/56	210	-
140	Do	do	do	.15	do	223	1,487
141	Do	do	do	.31	do	283	913
142	Do	do	do	.19	do	214	1,126
143	San Jose Arroyo	do	near Truth or Consequences	17.6	6/26/54	5,890	335
144	Alamosa Creek	do	do	643	9/ 4/67	27,500	42.8
145	Cuchillo Negro River	do	do	355	8/25/57	21,400	60.3
146	Unnamed	do	do	-	7/12/50	1,840	-
147	Mud Springs Canyon	do	do	19	do	10,900	574
148	King's Canyon	do	near Las Palomas	40	do	29,000	725
149	Palomas River	do	at Las Palomas	-	do	18,000	-
150	Seco Creek	do	near Caballo	-	do	9,000	-
151	Montoya Arroyo	do	at Arrey	-	do	9,800	-
152	Unnamed	do	at Salem	.62	6/28/66	1,600	2,580
153	Placitas Arroyo	do	at Hatch	27	9/13/58	3,360	124
154	Broad Canyon	do	near Radium Springs	36	do	11,400	317
155	Unnamed	do	at Radium Springs	2.12	9/13/58	1,190	561
156	Faulkner Canyon	do	do	30.3	do	4,640	153
157	Alameda Arroyo	do	near Las Cruces	15.6	8/22/65	1,960	126
158	Tortugas Arroyo	do	at State University	21.7	8/22/58	5,880	271
159	Fillmore Arroyo	do	near Tortugas	19.5	do	4,100	210
160	Unnamed	Mesquite drainage ditch	near Mesquite	2.9	do	809	279
161	Inlet to Ft. Bliss Sump area	Rio Grande	at El Paso, Tex.	-	9/ 2/62	755	
162	Do	do	do	3.5	do	461	132
163	Jesuit Draw	do	do	1.49	8/18/63	1,630	1,090
	PECOS RIVER BASIN:						
164	Cow Creek	Pecos River	near San Jose	130	6/ 1/63	1,420	10.9
165	Unnamed	do	do	2	do	208	104
166	El Rito	do	do	37.2	do	8,070	217
167	Pecos River	Rio Grande	at San Jose	579	do	11,400	19.7
168	Unnamed	Pecos River	at Sena	.45	5/12/65	189	420
169	Tecolote Creek	Pecos River	near Chapelle	171	6/ 1/37	20,500	120
170	Beaver Creek	Gallinas River	near El Porvenir	25	8/ 4/57	619	24.8
171	Gallinas River	Pecos River	do	67	do	4,110	61.3
172	Unnamed	Pintada Arroyo	near Milagro	146	Prior to 1957	6,800	46.6

Table B-5.--Measurements of peak discharges made by indirect methods at miscellaneous sites in New Mexico - Continued

No.	Stream	Tributary to	Location	Drainage area sq mi	Peak discharge		
					Date	cfs	cfs per sq mi
173	Unnamed	Arroyo San Juan de Dios	near Santa Rosa	1.2	6/16/63	1,700	1,420
174	Rio Ruidoso	Rio Hondo	near Glencoe	169	6/17/65	7,920	46.9
175	Silva Canyon	Rio Ruidoso	do	3.0	do	2,940	980
176	Devils Canyon	do	do	.8	do	1,740	2,175
177	Eagle Creek	Devils Canyon	do	26.6	do	2,700	102
178	Devils Canyon	Rio Ruidoso	do	60	do	16,200	270
179	Unnamed	Rio Bonito	near Hondo	1.2	do	850	708
180	Chavez Canyon	Rio Hondo	at Tinnie	46.4	do	5,710	123
181	Alamo Canyon	do	do	54.6	do	38,400	703
182	Patterson Canyon	do	at Picacho	3.39	6/28/65	4,000	1,180
183	Silver Canyon	do	at Riverside	3.96	do	4,550	1,150
184	Rio Hondo	Pecos River	near Roswell	974	10/7/54	7,250	7.44
185	Rocky Arroyo	Rio Hondo	do	71	do	6,620	93.2
186	Rio Hondo	Pecos River	in Roswell	-	do	934	-
187	South Fork Spring River	Rio Hondo	near Roswell	338	5/17/54	4,270	1,260
188	Berrendo Creek	do	do	483	6/ 1/37	37,700	78.0
189	Lincoln Canyon	Rio Felix	near Elk	216	7/31/62	11,500	53.2
190	Rio Felix	Pecos River	near Hagerman	920	10/7/54	81,000	87.8
191	Walnut Creek	do	near Lake Arthur	72	7/29/65	10,000	139
192	Eagle Creek	do	near Hope	95	8/23/66	10,300	108
193	Eagle Draw	do	near Artesia	174	6/13/64	7,170	41.2
194	Unnamed	Eagle Draw	do	4.3	do	10,700	2,490
195	Eagle Draw	Pecos River	at Artesia	185	do	7,000	37.8
196	Eagle Creek	do	near Artesia	174	do	12,500	71.8
197	Hart Canyon	do	do	25.0	6/13/64	10,900	436
198	Burned Canyon	Rio Penasco	at Elk	16.9	8/30/57	5,450	322
199	Elk Canyon	do	near Elk	160	do	3,470	21.7
200	Panther Canyon	Little Felix Canyon	do	7.5	7/ 5/58	4,630	617
201	Little Felix Canyon	Rio Penasco	do	19.5	10/6/54	8,080	414
202	North Seven Rivers	Pecos River	near Lakewood	312	8/23/66	37,400	120
203	Little McKittrick Draw	Dark Canyon	near Carlsbad	46.2	8/18/67	18,500	400
204	Dark Canyon	Pecos River	do	449	8/23/66	66,000	147
205	Cass Draw	do	near Carlsbad	9.3	5/30/65	32,500	3,490
206	Elbow Canyon	Cass Draw	do	2.4	do	6,410	2,670
207	McKittrick Canyon	Black River	near White City	71	8/22/66	10,900	154
208	Slaughter Canyon	do	do	31.9	do	8,610	270
209	Rattlesnake Canyon	do	do	18.8	do	11,900	633
210	Black River	Pecos River	do	217	do	41,500	191
211	Walnut Canyon	Black River	do	12.1	8/31/63	10,700	884
212	Jurnigan Draw	do		6.13	8/23/66	6,710	1,090
	MIMBRES RIVER BASIN:						
213	Unnamed	Mimbres River	near Dwyer	6.34	9/ /58	2,790	440
214	Do	do	near Spalding	-	7/25/57	465	-
215	Do	do	do	-	9/12/58	1,910	-
216	Do	Lampbright Draw	near Faywood	24.1	7/25/57	2,400	99.6
217	Do	do	do	4.6	do	2,370	515

Table B-5.—Measurements of peak discharges made by indirect methods at miscellaneous sites in New Mexico - Continued

No.	Stream	Tributary to	Location	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
218	Unnamed	Mimbres River	near Florida	.6	9/13/58	695	1,158
219	Do	do	do	-	do	1,570	-
220	Do	do	near Akela	40	do	2,270	56.8
221	Keese Canyon	McDonald Draw	near White Signal	1.24	9/ /58	954	769
222	Unnamed	Keese Canyon	do	.19	do	320	1,684
223	Do	Walking X Canyon	do	1.19	do	770	647
224	Palomas Arroyo	Mimbres River basin	near Waterloo	-	8/ 6/54	721	-
225	Unnamed	Palomas Arroyo	do	1.5	9/11/58	474	316
226	Hermanas Draw	Simpson Draw	near Hermanas	24.5	9/11/58	618	25.2
227	Simpson Draw	Unnamed Lagoon in Mexico	do	94	1942	3,500	37.2
228	Unnamed	Laguna de Guzman	near Columbus	5.3	9/11/58	467	88.1
	PLAYAS VALLEY:						
229	Granite Pass Arroyo	Ojo de los Mosquitos	near Hachita	4.0	9/ /58	1,200	300
	TULAROSA VALLEY:						
230	Unnamed	Tularosa Valley	near Alamogordo	.45	8/ /55	102	227
	ESTANCIA VALLEY:						
231	Canada de las Narrias	Hyer Draw	near San Pedro	1.53	9/24/55	2,220	1,451
232	San Lazaras Gulch	Canada de las Narrias	do	.58	do	950	1,638
233	Canada de las Narrias	Hyer Draw	do	5.71	do	4,830	846
234	Unnamed	Estancia Valley	near Cedar Grove	1.21	do	1,140	942
235	Bachelor Draw	do	near Edgewood	26	1929	19,500	750
236	Tajique Creek	Estancia Valley	at Tajique	-	7/14/52	1,110	-
237	Unnamed	do	near Estancia	13.2	7/ 7/52	4,660	353
238	Arroyo del Cuervo	do	near Torreon	12	8/ 2/50	3,250	271
239	Unnamed	do	near Mountainair	-	7/ 7/52	3,560	-
	CLOSED BASIN:						
240	Unnamed	San Simon Swale	near Carlsbad	.15	9/ /58	143	953
	SALT BASIN:						
241	Pinon Creek	Salt Basin	near Pinon	203	8/22/66	7,970	39.3
242	Box Canyon	do	near El Paso Gap	87	do	5,450	62.6
243	SAN JUAN RIVER BASIN:						
243	Unnamed	Blanco Wash	near Nagezzi	-	8/12/57	196	-
244	Do	do	do	-	do	519	-
245	Do	San Juan River	near Waterflow	138	1955	4,620	33.5
246	Figueredo Wash	Chaco River	near Mexican Springs	72	8/19/58	3,510	48.8
247	Unnamed	do	at Naschitti	8.8	8/ 6/59	2,490	283
	LITTLE COLORADO RIVER BASIN:						
248	Unnamed	Puerco River	near Coolidge	.6	do	877	1,462
249	Do	do	do	.8	do	722	902
250	Foster Canyon	do	do	16.7	Unknown	1,660	99.4
251	Smith Canyon	do	do	6.6	do	534	80.9
252	Unnamed	do	do	5.1	8/ 6/59	5,250	1,029
253	Four Mile Canyon	do	do	10.4	Prior to 1956	690	66.3
254	Unnamed	do	At Wingate	3.6	9/ /58	1,590	442

Table B-5.--Measurements of peak discharges made by indirect methods at miscellaneous sites in New Mexico - Concluded

No.	Stream	Tributary to	Location	Drainage area sq mi	Peak discharge Date	cfs	cfs per sq mi
255	Unnamed	Puerco River tributary	near Gallup	.52	7/31/56	1,230	2,365
256	Do	Puerco River	do	9	do	4,940	549
257	Do	do	at Defiance	39	8/17/58	3,810	97.7
	GILA RIVER BASIN:						
258	Unnamed	Duck Creek	in Cliff	1	1958	1,570	1,570
259	Sapello Creek	Gila River	near Pinos Altos	111	8/ 1/62	2,180	19.6
260	Lobo Creek	do	at Cliff	12.7	8/ 4/66	4,890	385
261	Unnamed	Largo Canyon	near Reserve	.8	7/19/59	882	1,102
262	Do	Saliz Canyon	do	.3	do	414	1,380
263	Do	Steins Creek	near Steins	-	9/ /58	380	-
	ANIMAS VALLEY:						
264	Animas Creek	Animas Valley	near Rodeo	248	9/13/58	1,030	4.15
265	Unnamed	Animas Creek	do	4.78	Unknown	450	94.1
266	Do	Lordsburg Draw	near Lordsburg	232	9/11/64	1,590	685
267	Do	Lordsburg Draw	near Separ	47.6	9/ /58	2,310	154
268	Do	do	do	43.3	do	4,730	109
269	Do	Wood Canyon	near Lordsburg	-	do	432	-
270	Peterson Canyon	do	do	-	do	603	-
271	Unnamed	Peterson Canyon	do	-	do	518	-