UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

FLOOD MAGNITUDE AND FREQUENCY OF STREAMS IN INDIANA

PRELIMINARY ESTIMATING EQUATIONS

Open-file Report 80-759

Prepared in Cooperation with the
Indiana State Highway Commission
and Federal Highway Administration

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Indianapolis, Indiana
July 1980

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METRIC CONVERSION FACTORS

The inch-pound units in this report can be converted to the metric system of units as follows:

Multiply inch-pound unit	By	To obtain metric unit
inch (in.)	25.40	milimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)
cubic foot per second (ft^3/s)	0.0283	cubic meter per second (m^3/s)

FLOOD MAGNITUDE AND FREQUENCY OF STREAMS IN INDIANA: PRELIMINARY ESTIMATING EQUATIONS

By Robert L. Gold

ABSTRACT

This interim report presents preliminary estimating equations developed for the ongoing study, "Flood Frequency of Small Streams in Indiana." The equations were developed by the multiple-regression technique from data collected at 57 crest-stage-gage and 15 rainfall-runoff sites in the study and from 133 streamflow stations in Indiana and 11 in eastern Illinois.

Peak discharge was used as the dependent variable, and basin characteristics were used as the independent variables in the analysis. Drainage area and precipitation were the most significant basin characteristics. The resulting equations are of the form

$$Q_t = b(A)^x(P_i)^y$$

where

Q_t is the discharge for a recurrence interval of t years,
b is the regression constant,
A is the drainage area, in square miles,
P_i is the precipitation index, in inches,

and

x and y are regression coefficients.

One source of error, time sampling, is due to the short period of record for the small-streams network.

INTRODUCTION

This report presents preliminary flood-estimating equations developed for the study of "Flood frequency of small streams in Indiana," begun in 1972 by the U.S. Geological Survey in cooperation with the Indiana State Highway Commission and the Federal Highway Administration. The project was established specifically to collect peak discharge data from streams draining areas of less than 20 mi^2 (square miles). Multiple-regression analysis of

these data and data from other stations in the Geological Survey's data-collection network were used to define estimating equations for 50-percent (2-yr recurrence) and 10-percent (10-yr recurrence) chance floods for all sizes of drainage areas in Indiana. The equations should be useful in the design of culverts, dams, levees, and embankments but should not be regarded as final. The final estimating equations will be based on additional years of record.

Davis (1974) presented equations for estimating magnitude and frequency of floods on streams draining areas greater than 15 mi^2, but the current study is the Geological Survey's first attempt at defining flood-frequency characteristics for streams smaller than 15 mi^2.

DATA-COLLECTION NETWORK

The network designed specifically for this study consists of 57 crest-stage-gage and 15 rainfall-runoff (dual-digital) sites. These sites, draining areas of less than 20 mi^2, plus 133 streamflow stations in Indiana and 11 stations in eastern Illinois (Curtis, 1977) comprised the data-collection network.

Data collected at crest-stage gage sites are used to compute the annual peak discharge. Rainfall and streamflow data collected at the dual-digital sites will be used in a rainfall-runoff model to extend the record. Rainfall-runoff modeling results were not available for this analysis.

Locations of all the stream-gaging stations used for this report are shown in figure 1; descriptions of the stations are given in table 1.

ANALYTICAL TECHNIQUE

The estimating equations presented in this report were developed from a multiple-regression analysis computer program in the Statistical Analysis System (SAS) package (Barr and others, 1976). The parameters necessary in such a model include flood discharge determined for specific percent-chance floods and basin characteristics.

Peak discharges for the 50-percent and 10-percent chance floods at each site were determined by use of the log Pearson Type III frequency distribution. The actual period of record at each site was analyzed with no adjustments to any other period. Only those sites in nonurban and unregulated basins were used. U.S. Water Resources Council (1977) guidelines were used in defining the flood-frequency values in table 2.

Identification of basin characteristics was aimed at those factors that are readily determinable and that may significantly affect peak discharge (Thomas and Benson, 1970). The factors can be determined from topographic or climatic maps. The basin characteristics used in the regression analysis were obtained from two sources. Some were obtained from maps and tables in Davis (1974), and others were determined directly from Geological Survey 7½-minute topographic maps. The characteristics selected for use in the analysis include:

- A the drainage area of basin, in square miles,
- P_i the precipitation index (annual rainfall minus the values of evapotranspiration and the water equivalent of snowfall, in inches) determined from map (fig. 2) by Davis (1974),
- R_t the watershed relief, in feet (the difference in elevation between the highest point on the watershed perimeter and the streambed at the gaging station),
- R_c the soil-runoff coefficient determined from map by Davis (1974),

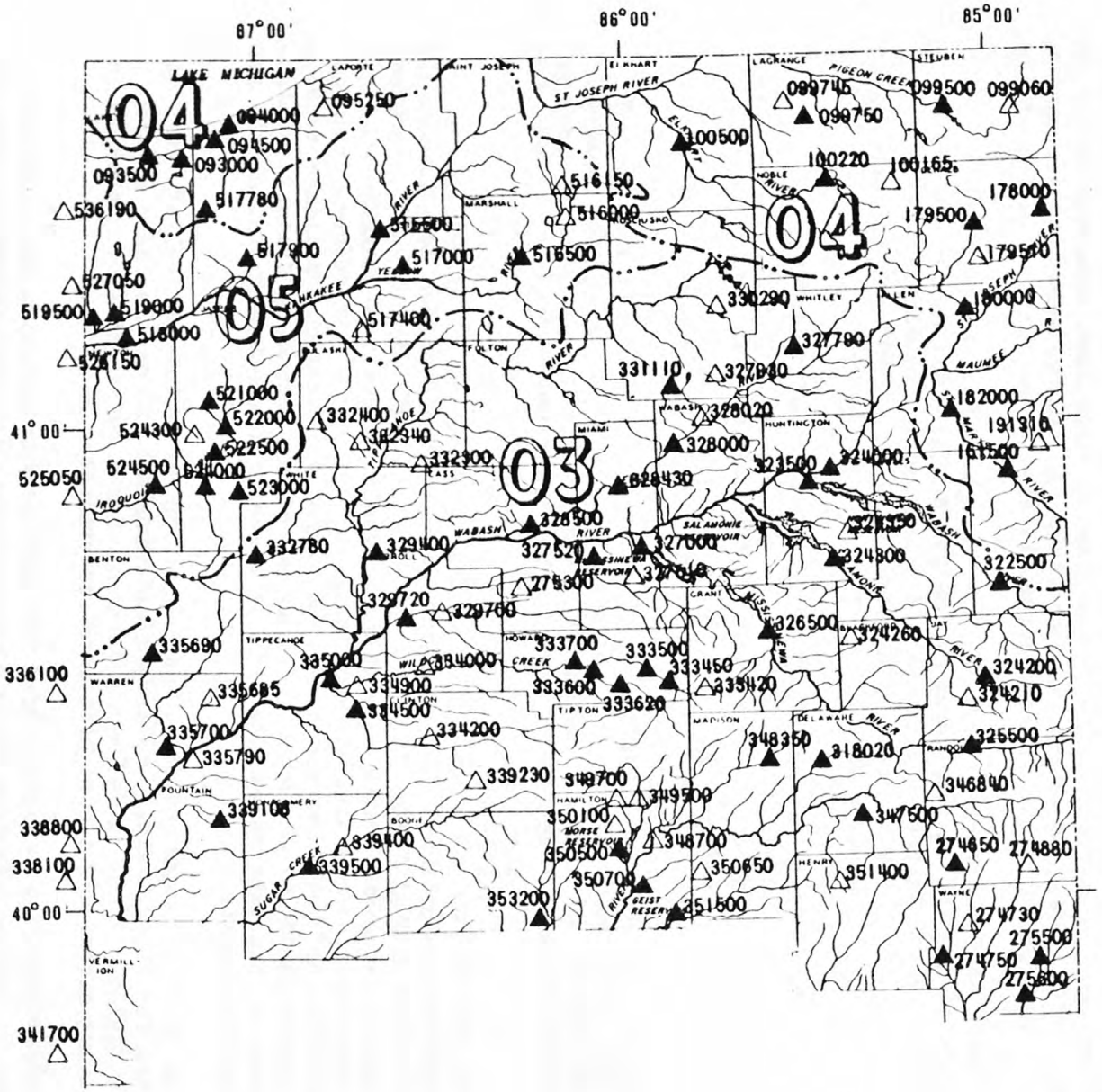
and

- DD the drainage density (total stream length in a watershed, divided by the drainage area), in miles per square mile.

The values of the basin characteristics determined for the streams in this report are given in table 2. Not all characteristics were determined for each site used. Davis (1974) determined that drainage density (DD) was not significant for drainage areas larger than 200 mi^2. Therefore, drainage-density values for those sites were omitted. Additionally, drainage density was determined for a representative number of the remaining drainage basins. Analysis of the data showed that use of these drainage-density values did not improve the equations.

As with drainage density, determination of watershed relief (R_t) was omitted for sites draining areas greater than 200 mi^2 on the basis of work by Davis (1974). Total relief was determined for a representative number of the remaining sites, and its significance was evaluated.

After the peak discharges and the basin characteristics were determined, linear multiple-regression analyses were made. Peak discharges for the 50-percent (2-yr) and 10-percent (10-yr) chance floods were used as dependent variables, and basin characteristics were used as the independent variables. Various types of regression analyses were tested with the data. After evaluation of the results, the maximum R^2 analysis with log transformation of the variables was selected as the most appropriate and was the analysis used to derive the estimating equations defined later in the report. (R^2 is the proportion of variance in the dependent variable explained by the regression analysis.)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NOBLE
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SALAMONIE RESERVOIR
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DELAWARE RIVER
IROQUOIS
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FOUNTAIN
MONTGOMERY
HOWARD
CLINTON
WILDCAT CREEK
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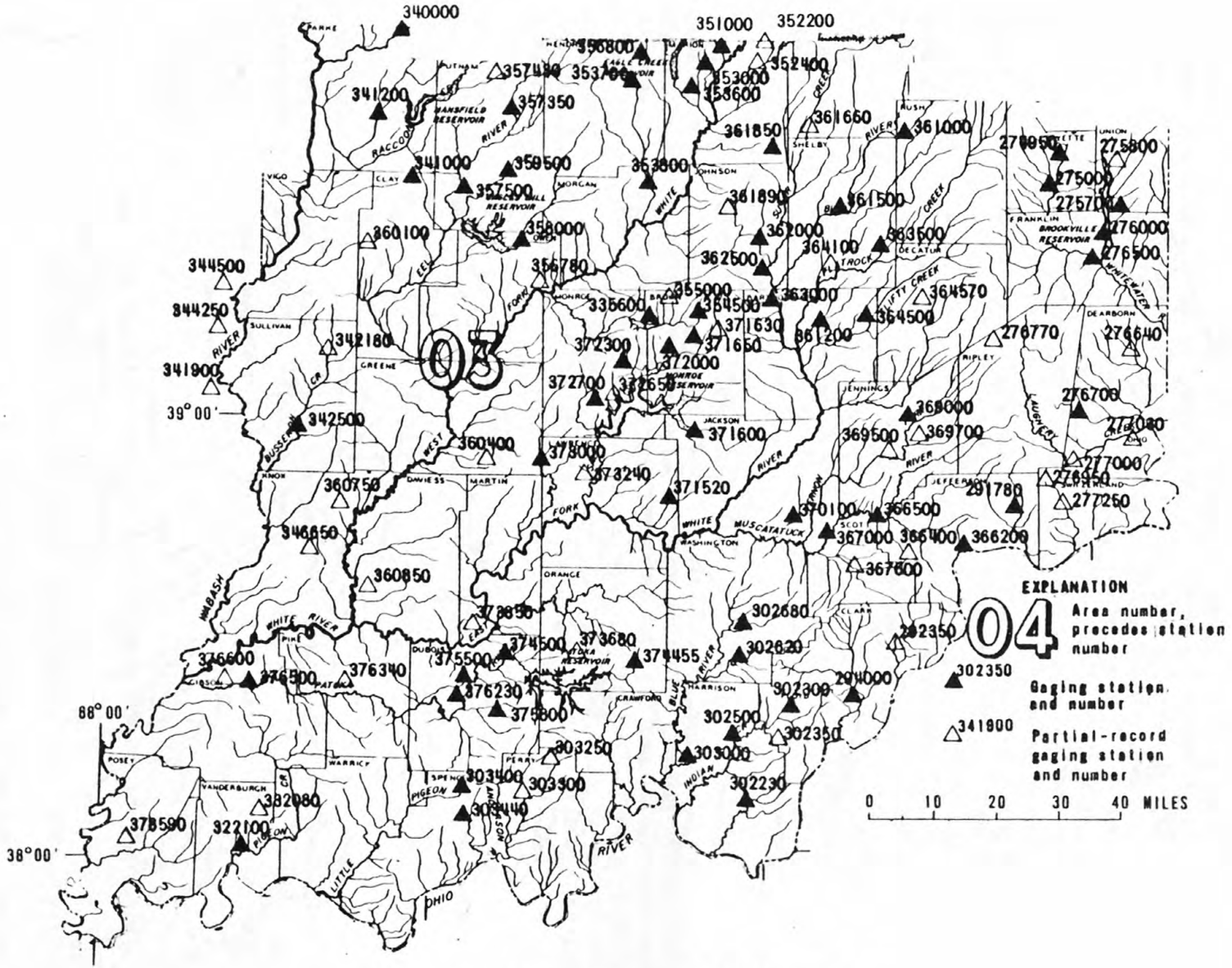

Figure 1.-- Gaging stations used in this report.

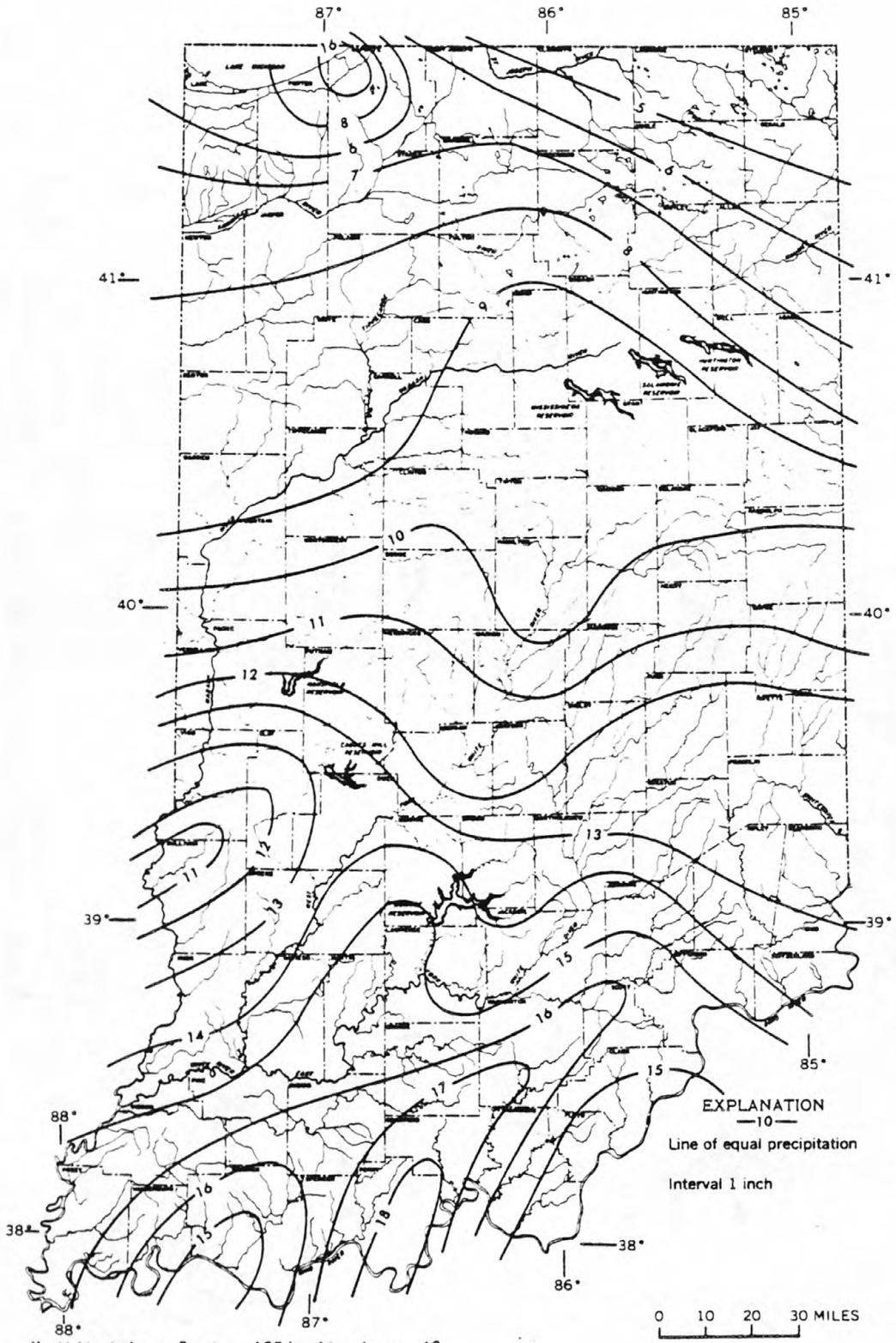

Figure 2.-- Map used to determine precipitation indices for this report.

For analysis, streams were grouped by the size of their drainage area. For example, in one of the analyses, results for streams of drainage areas less than 200 mi^2 were compared with the regression equations developed for all the streams. The form of the resulting equations for each regression analysis varied little. Thus, the author determined that analysis of all the streams' data would be of more value than providing an equation for each range of drainage-basin size. This approach eliminates the need for a transition equation for basins near the upper or lower limits of the range.

At the beginning, all basin characteristics were used in the multiple-regression analysis. Some drainage-basin characteristics were omitted from further analysis if the characteristic correlated to another independent variable or violated a hydrologic principle. The final equations were the result of retaining the basin characteristics that showed the maximum R^2 value and maximum reduction in the standard error of estimate (the standard deviation of the residuals about the regression equation). The basin characteristics determined to have the greatest significance were drainage area (A) and the precipitation index (P_i). The form of the resulting equations was the same as the form determined by Davis (1974) for all drainage areas. The equations differed only in the values of the regression coefficients and constants.

After the estimating equations were determined, their validity was evaluated. For example, residual values (the difference between the estimated peaks and the observed values) were plotted on a map to determine if the equations were regionally biased. This plot indicated no discernable regional bias. In addition, plotting the residuals against the independent variables illustrated that a log-linear model was appropriate. Lastly, intercorrelation of the independent variables was investigated by a series of plots. The independent variables in the final equations have no discernable intercorrelation.

ESTIMATING EQUATIONS

The following estimating equations were computed for determining peak discharges for streams in Indiana:

$$Q_t = b(A)^x(P_i)^y$$

where

Q_t is the discharge for a recurrence interval of t years,
b the regression constant,
A the drainage area, in square miles,
P_i the precipitation index, in inches,

and

x and y are regression coefficients.

Values of regression constant b and coefficients x and y are given in the table that follows:

Percent chance of being exceeded	b	x	y	Standard error of estimate (percent)
50	1.19	0.705	1.849	63
10	1.81	.688	1.951	69

ACCURACY AND LIMITATIONS

One major concern in the regression analysis was the large standard error of estimate. The error was greater than that determined by Davis (1974) who used only the streams whose drainage area exceeded 15 mi^2. One possible source of error is the short period of record (5 to 7 yr) for the small streams. Such a short period would exhibit greater variability among sites and would result in higher standard error than similar groups of sites with long-term records. Another source of error might be the variables used in the estimating equations. Certain basin characteristics not considered in the regression analysis could possibly be better suited for inclusion in the equations with or without drainage area or precipitation index. One of the aims of future work on this project is to identify other characteristics for inclusion in the estimating equations to be published in the final report.

Analysis of long-term stream records indicates a tendency toward lower peak discharge during the period of record of the small-streams network. This bias, however, was not extreme enough to warrant adjusting the peak records of the small streams.

The estimating equations presented in this interim report apply only to streams that are nonregulated and are unaffected by significant urban development. Equations for estimating floods less frequent than the 10-percent chance flood will be determined later in the study after more years of record have been collected.

ESTIMATING PROCEDURE

To determine the flood peaks from the estimating equations, the user must determine two basin characteristics. One is the drainage area (A). Drainage area is determined by outlining the basin divide and using a planimeter or other similar device to compute the area within the divide. The other one is precipitation index (P_i), which is determined from the map in figure 2.

An example of the estimating procedure is the computation of the 50-percent chance flood for site 03274650 (Whitewater River near Economy), whose location is plotted in figure 1. The drainage area determined from a 7½-minute topographic map is 10.4 mi^2. The precipitation index, determined from the map in figure 2, is 10.5 in.

The characteristic values are then substituted into the estimating equation for the 50-percent (2-yr) chance flood:

$$\text{50-percent chance flood } Q = 1.19(A)^{0.705}(P_i)^{1.849}$$

becomes

$$\text{50-percent change flood } Q = 1.19(10.4)^{0.705}(10.5)^{1.849} = 479 \text{ ft}^3/\text{s}.$$

REFERENCES

Barr, A. J., Goodnight, J. H., Sall, J. P., and Helwig, J. T., 1976, A users guide to SAS 76: Raleigh, N.C., SAS Institute, Inc., 329 p.

Curtis, G. W., 1977, Frequency analysis of Illinois floods using observed and synthetic streamflow records: U.S. Geological Survey Water-Resources Investigations 77-104, 32 p.

Davis, L. G., 1974, Floods in Indiana: Technical manual for estimating their magnitude and frequency: U.S. Geological Survey Circular 710, 40 p.

Thomas, D. M., and Benson, M. A., 1970, Generalization of streamflow characteristics from drainage-basin characteristics: U.S. Geological Survey Water-Supply Paper 1975, 55 p.

U.S. Water Resources Council, 1977, Guidelines for determining flood-flow frequency: U.S. Water Resources Council Bulletin 17A, 26 p.

Table 1.--Locations of gaging stations used in this report

Station number	Name	Location
03274650	Whitewater River near Economy, Ind.	Lat 40°00'05", long 85°06'56", in NW¼ sec.19, T.18 N., R.13 E., Wayne County, on right bank 6 ft downstream from bridge on County Line Road, 1.7 mi upstream from Little Creek, 2.4 mi northwest of Economy.
03274730[1]	Whitewater River tributary near Hagerstown, Ind.	Lat 39°54'38", long 85°05'56", in NE¼SE¼NE¼ sec.23, T.17 N., R.12 E., Wayne County, at culvert on State Highway 38, 0.7 mi east of Hagerstown.
03274750	Whitewater River near Hagerstown, Ind.	Lat 39°52'25", long 85°09'47", in NE¼NE¼ sec.3, T.16 N., R.12 E., Wayne County, on left bank at downstream side of bridge on Terry Meyers Road, 1.0 mi upstream from Pronghorn Run, 1.5 mi north of Interstate 70, 2.0 mi downstream from Nettle Creek, 2.6 mi south of Hagerstown.
03274880[1]	Greens Fork tributary near Lynn, Ind.	Lat 40°01'14", long 84°56'24", in SW¼SW¼SW¼ sec.11, T.18 N., R.14 E., Randolph County, at culvert on U.S. Highway 27, 1.9 mi south of intersection of U.S. Highways 27 and 36 in Lynn.
03274950	Little Williams Creek at Connersville, Ind.	Lat 39°38'16", long 85°10'20", in SW¼NE¼ sec.27, T.14 N., R.12 E., Fayette County, on downstream left bank wingwall of bridge on State Highway 44, 1 mi west of Connersville, and 2.6 mi upstream from mouth.
03275000	Whitewater River near Alpine, Ind.	Lat 39°34'23", long 85°09'27", in SW¼SE¼ sec.14, T.13 N., R.12 E., Fayette County.
03275500	East Fork Whitewater River at Richmond, Ind.	Lat 39°48'24", long 84°54'26", in NW¼SW¼ sec.8, T.13 N., R.1 W., Wayne County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03275600	East Fork Whitewater River at Abington, Ind.	Lat 39°43'57", long 84°57'30", in NE¼SW¼ sec.2, T.12 N., R.2 W., first principal meridian, Wayne County, at downstream side of center pier at bridge on county road at Abington, 3 mi downstream from Elkhorn Creek, 8 mi southwest of Richmond.
03275800[1]	West Run near Liberty, Ind.	Lat 39°38'24", long 84°57'18", in SE¼SE¼SW¼ sec.2, T.14 N., R.2 W., Union County, at culvert on State Highway 44, 4.8 mi east of Fayette-Union County Line, 1.1 mi west of Liberty.
03275900[1]	Templeton Creek near Fairfield, Ind.	Lat 39°31'20", long 84°56'51", in SW¼NW¼NW¼ sec.24, T.10 N., R.2 W., Franklin County, at culvert on State Highway 101, 0.25 mi south of Franklin-Union County Line.
03276000	East Fork Whitewater River at Brookville, Ind.	Lat 39°26'02", long 85°00'12", in NE¼NE¼ sec.20, T.9 N., R.2 W., Franklin County.
03276500	Whitewater River at Brookville, Ind.	Lat 39°24'24", long 85°00'46", in NE¼NW¼ sec.32, T.9 W., R.2 W., Franklin County.
03276640[1]	Tanners Creek tributary near Lawrenceburg, Ind.	Lat 39°09'18", long 84°52'20", in NW¼SW¼NE¼ sec.27, T.6 N., R.1 W., Dearborn County, at culvert 0.25 mi east of Salt Fork Road on State Highway 1.
03276700	South Hogan Creek near Dillsboro, Ind.	Lat 39°01'47", long 85°02'17", in SW¼NW¼ sec.7, T.4 N., R.2 W., Dearborn County.
03276770[1]	Laughery Creek tributary near Napoleon, Ind.	Lat 39°13'18", long 85°20'07", in SE¼SE¼SE¼ sec.18, T.9 N., R.11 E., Ripley County, at culvert on U.S. Highway 421, 1.1 mi north of Napoleon.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03276950[1]	Uhlman Creek tributary near Avonburg, Ind.	Lat 38° 53'33", long 85°11'04", in NW¼NW¼SW¼ sec.10, T.4 N., R.12 E., Switzerland County, at culvert on State Highway 129, 1.5 mi north of State Highway 250 at Pleasant.
03277000	Laughery Creek near Farmers Retreat, Ind.	Lat 38°57'08", long 85°04'15", in NW¼SE¼ sec.2, T.4 n., R.3 W., Ohio County.
03277030[1]	Ohio River tributary near Rising Sun, Ind.	Lat 38°59'36", long 84°51'16", in SW¼NW¼SW¼ sec.23, T.4 N., R.1 W., Ohio County, at culvert on State Highway 56, 3.3 mi north of State Highway 262 in Rising Sun.
03277250[1]	Indian Creek tributary near Bennington, Ind.	Lat 38°52'25", long 85°07'24", in NE¼NW¼NE¼ sec.5, T.4 N., R.3 W., Switzerland County, at culvert on State Highway 250, 3.7 mi east of State Highway 129 at Pleasant.
03291780	Indian-Kentuck Creek near Canaan, Ind.	Lat 38°52'41", long 85°15'26", in SW¼NW¼ sec.13, T.15 N., R.11 E., Jefferson County, on downstream end of left pier of bridge on State Highway 62, 1,500 ft upstream from Wilson Fork, 2.0 mi northeast of Canaan.
03292350[1]	Flag Run tributary near New Washington, Ind.	Lat 38°31'08", long 85°32'29", in NW¼NW¼NE¼ sec.20, T.1 N., R.9 E., Clark County, at culvert on State Highway 62, 3.0 mi south of New Washington.
03294000	Silver Creek near Sellersburg, Ind.	Lat 38°22'15", long 85°43'35", in SW¼SW¼ lot 68, Clark Military Grant, Clark County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03302220	Buck Creek near New Middletown, Ind.	Lat 38°07'13", long 86°05'16", in SE¼NE¼ sec.32, T.4 S., R.4 E., Harrison County, at downstream end of pier of bridge on State Highway 337, 0.6 mi downstream from South Fork Buck Creek, 3.6 mi southwest of New Middleton, and 14.4 mi upstream from mouth.
03302300	Little Indian Creek near Galena, Ind.	Lat 38°19'19", long 85°55'53", in NE¼SW¼ sec.23, T.2 S., R.5 E., Floyd County, on right bank at downstream side of county road bridge, 2 mi south of Galena, 3.6 mi upstream from mouth, 7.0 mi northwest of New Albany.
03302350[1]	Georgetown Creek tributary near Georgetown, Ind.	Lat 38°17'30", long 85°56'26", in SW¼NW¼SW¼ sec.35, T.25 N., R.5 E., Floyd County, at culvert on State Highway 64, 1.8 mi east of Georgetown, Ind.
03302500	Indian Creek near Corydon, Ind.	Lat 38°16'35", long 86°06'35", in SW¼SE¼ sec.6, T.3 S., R.4 E., Harrison County.
03302680	West Fork Blue River at Salem, Ind.	Lat 38°36'19", long 86°05'40", in SW¼SE¼ sec.17, T.2 N., R.4 E., Washington County, on left bank at downstream side of bridge on East Market Street, 0.35 mi east of County Court House in Salem, 6.0 mi upstream from Hoggatt Branch, 6.9 mi upstream from mouth.
03302690[1]	Middle Fork Blue River tributary near Farabee, Ind.	Lat 38°32'44", long 86°02'14", in NE¼SW¼SE¼ sec.2, T.1 N., R.4 E., Washington County, at culvert on State Highway 60, 3.3 mi west of State Highway 56.
03303000	Blue River near White Cloud, Ind.	Lat 38°14'15", long 86°13'42", in NW¼SE¼ sec.19, T.3 S., R.3 E., Harrison County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03303250[1]	Sigler Creek tributary at Uniontown, Ind.	Lat 38°13'21", long 86°41'50", in NW¼SW¼SW¼ sec.25, T.3 S., R.3 W., Perry County, at culvert on State Highway 145, 0.1 mi south of State Highway 62 and U.S. Highway 460.
03303300	Middle Fork Anderson River at Bristow, Ind.	Lat 38°08'19", long 86°43'16", in SW¼NE¼ sec.27, T.4 S., R.3 W., Perry County.
03303400	Crooked Creek at Santa Claus, Ind.	Lat 38°07'05", long 86°53'24", in SW¼SE¼ sec.31, T.4 S., R.4 W., Spencer County, on right bank at upstream side of bridge on county road, 1.3 mi east of Santa Claus Post Office, 1.8 mi upstream from unnamed right bank tributary.
03303440[1]	East Fork Crooked Creek tributary near Fulda, Ind.	Lat 38°05'18", long 86°49'12", in NW¼NW¼NE¼ sec.14, T.5 S., R.4 W., Spencer County, at culvert on State Highway 545, 1.6 mi south of Fulda.
03322100	Pigeon Creek at Evansville, Ind.	Lat 38°00'14", long 87°32'19", in NE¼NW¼ sec.16, T.6 S., R.10 W., Vanderburgh County.
03324000	Little River near Huntington, Ind.	Lat 40°54'14", long 85°24'22", in NE¼NW¼ sec.9, T.28 N., R.10 E., Huntington County.
03324200	Salamonie River at Portland, Ind.	Lat 40°25'40", long 85°02'20", in NE¼SE¼ sec.23, T.23 N., R.13 E., Jay County.
03324210[1]	Blaine Run at Blaine, Ind.	Lat 40°24'15", long 85°03'19", in NW¼SW¼NW¼ sec.35, T.23 N., R.13 E., Jay County, at culvert on State Highway 67, 0.1 northeast of Blaine.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03324260[1]	Salamonie River tributary near Montpelier, Ind.	Lat 40°33'06", long 85°19'25", in NW¼NW¼NE¼ sec.7, T.24 N., R.11 E., Blackford County, at culvert on State Highwy 18, 2.5 mi east of State Highway 3.
03324300	Salamonie River near Warren, Ind.	Lat 40°42'25", long 85°27'13", in SE¼SE¼ sec.12, T.26 N., R.9 E., Huntington County.
03324350[1]	Brook Creek tributary near Warren, Ind.	Lat 40°44'35", long 85°26'42", in SW¼SE¼SW¼ sec.31, T.27 N., R.10 E., Huntington County, at culvert on State Highway 5, 1.6 mi northwest of Interstate Highway 69.
03325500	Mississinewa River near Ridgeville, Ind.	Lat 40°16'49", long 84°59'4", in SE¼SE¼ sec.7, T.21 N., R.14 E., Randolph County.
03326000	Mississinewa River near Eaton, Ind.	Lat 40°19'08", long 85°19'10", in NW¼NE¼ sec.31, T.22 N., R.11 E., Delaware County.
03326500	Mississinewa River at Marion, Ind.	Lat 40°34'34", long 85°39'34", in SE¼NE¼ sec.31, T.25 N., R.8 E., Grant County.
03327000	Mississinewa River at Peoria, Ind.	Lat 40°43'24", long 85°57'27", in SW¼SW¼ sec.3, T.26 N., R.5 E., Miami County.
03327520	Pipe Creek near Bunker Hill, Ind.	Lat 40°40'06", long 36°05'44", in NE¼SE¼ sec.29, T.26 N., R.4 E., Miami County, on right bank 150 ft downstream from bridge on County Road 125 West, 0.5 mi northeast of Bunker Hill.
03327530[1]	Minnow Creek tributary near Logansport, Ind.	Lat 40°43'46", long 86°17'48", in NW¼NW¼SW¼ sec.3, T.26 N., R.2 E., Cass County, at culvert on U.S. Highway 35, 4.0 mi southeast of State Highway 29 in Logansport.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03327790[1]	Eel River tributary near Columbia City, Ind.	Lat 41°07'01", long 85°31'21", T.31 N., R.9 E., Columbia Township, Whitley County, at culvert on State Highway 205, 3.8 mi southwest of U.S. Highway 30 in Columbia City.
03327930[1]	Koontz ditch near Sidney, Ind.	Lat 41°07'28", long 85°44'38", in NW¼NW¼SW¼ sec.22, T.31 N., R.7 E., Kosciusko County, at culvert on State Highway 13, 3.5 mi north of State Highway 14.
03328000	Eel River at North Manchester, Ind.	Lat 40°59'55", long 85°45'50", in NE¼NE¼ sec.5, T.29 N., R.7 E., Wabash County.
03328020[1]	Otter Creek tributary near North Manchester, Ind.	Lat 40°59'59", long 85°49'37", in SW¼SE¼SW¼ sec.35, T.30 N., R.6 E., Wabash County, at culvert on State Highway 114, 1.7 mi west of State Highway 13.
03328430	Weesau Creek near Deedsville, Ind.	Lat 40°54'34", long 86°07'36", in NW¼NW¼ sec.6, T.28 N., R.4 E., Miami County, on left bank 100 ft downstream from bridge on County Road 100 North, 1.5 mi west of Deedsville.
03328500	Eel River near Logansport, Ind.	Lat 40°46'55", long 86°15'50", in NE¼SE¼ sec.14, T.27 N., R.2 E., Cass County.
03329400	Rattlesnake Creek near Patton, Ind.	Lat 40°42'46", long 86°41'49", in NW¼SW¼ sec.7, T.26 N., R.2 W., Carroll County, on left bank 5 ft downstream from bridge on County Road 900 West, 2.5 mi northeast of Patton.
03329700	Deer Creek near Delphi, Ind.	Lat 40°35'25", long 86°37'15", in NE¼NE¼ sec.27, T.25 N., R.2 W., Carroll County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03329720[1]	Robinson Branch near Delphi, Ind.	Lat 40°37'10", long 86°37'01", in NE¼NW¼NW¼ sec.14, T.25 N., R.2 W., Carroll County, at culvert on State Highway 25, 2.0 mi northeast of State Highway 218, 3.9 mi northeast of State Highway 39 in Delphi.
03330290[1]	Shanton ditch near Pierceton, Ind.	Lat 41°12'45", long 85°41'10", in NW¼NE¼SW¼ sec.22, T.32 N., R.7 E., Kosciusko County, at culvert on State Highway 13, 0.6 mi north of U.S. Highway 30.
03331110	Walnut Creek near Warsaw, Ind.	Lat 41°12'17", long 85°52'11", in NW¼NE¼ sec.30, T.32 N., R.6 E., Kosciusko County, on left bank 10 ft upstream from bridge on County Road 200 South, 0.3 mi downstream from small right-bank tributary, and 2.5 mi south of Court House in Warsaw.
03331500	Tippecanoe River near Ora, Ind.	Lat 41°09'26", long 86°33'49", in SE¼SE¼ sec.6, T.31 N., R.1 W., Pulaski County.
03332300	Little Indian Creek near Royal Center, Ind.	Lat 40°52'53", long 86°35'26", in NE¼NW¼ sec.13, T.28 N., R.2 W., White County.
03332400	Big Monon Creek near Francesville, Ind.	Lat 40°59'03", long 86°51'43", in NW¼NE¼ sec.10, T.29 N., R.4 W., Pulaski County.
03332340[1]	Weltzin ditch tributary near Francesville, Ind.	Lat 40°48'99", long 86°46'33", in SW¼NW¼NW¼ sec.16, T.29 N., R.3 W., Pulaski County, at culvert on State Highway 39, 6.1 mi south of State Highway 14.
03332780[1]	Big Creek near Wolcott, Ind.	Lat 40°41'26", long 87°02'37", in SE¼NE¼NE¼ sec.24, T.26 N., R.6 W., White County, at culvert on U.S. Highway 231, 4.4 mi south of Wolcott.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03333420[1]	Grassy Fork tributary at Point Isabel, Ind.	Lat 40°25'28", long 85°49'28", in NE¼SE¼SE¼ sec.22, T.23 N., R.6 E., Grant County, at culvert on State Highway 13, 1,100 ft north of State Highway 26 in Point Isabel.
03333450	Wildcat Creek near Jerome, Ind.	Lat 40°26'29", long 85°55'08", in NE¼SE¼ sec.14, T.23 N., R.5 E., Howard County.
03333500	Wildcat Creek at Greentown, Ind.	Lat 40°27'00", long 85°57'00", on line between secs. 9 and 10, T.23 N., R.5 E., Howard County.
03333600	Kokomo Creek near Kokomo, Ind.	Lat 40°26'28", long 86°05'20", in NW¼SW¼ sec.16, T.23 N., R.4 E., Howard County.
03333620[1]	Scott Youngman ditch near Kokomo, Ind.	Lat 40°25'10", long 86°04'39", in NW¼NW¼NE¼ sec.28, T.23 N., R.4 E., Howard County, at culvet on State Highway 26, 2.4 mi west of State Highway 19.
03333700	Wildcat Creek at Kokomo, Ind.	Lat 40°28'24", long 86°09'26", in NE¼NW¼ sec.2, T.23 N., R.3 E., Howard County.
03334000	Wildcat Creek at Owasco, Ind.	Lat 40°27'50", long 86°38'15", in SE¼SE¼ sec.4, T.23 N., R.2 W., Carroll County.
03334200[1]	Prairie Creek tributary near Frankfort, Ind.	Lat 40°15'14", long 86°30'36", in NW¼SE¼NE¼ sec.22, T.21 N., R.1 W., Clinton County, at culvert on State Highways 38 and 39, 1.8 mi south of State Highway 28 in Frankfort.
03334500[1]	South Fork Wildcat Creek near Lafayette, Ind.	Lat 40°25'04", long 86°46'05", in SW¼SW¼ sec.21, T.23 N., R.3 W., Tippecanoe County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03335000	Wildcat Creek near Lafayette, Ind.	Lat 40°26'26", long 86°49'46", in SE¼NE¼ sec.14, T.23 N., R.4 W., Tippecanoe County.
03335685[1]	Big Pine Creek tributary near Pine Village, Ind.	Lat 40°25'24", long 87°15'32", in SE¼NW¼SW¼ sec.19, T.23 N., R.7 W., Warren County, at culvert on State Highway 55, 1.9 mi south of State Highway 26 in Pine Village.
03335690	Mud Pine Creek near Oxford, Ind.	Lat 40°31'24", long 87°20'30", in NE¼SE¼ sec.17, T.24 N., R.8 W., Benton County, on right bank 5 ft downstream from county road bridge, 0.3 mi north of Chase, 2 mi east of Boswell, and 5 mi west of Oxford.
03335700	Big Pine Creek near Williamsport, Ind.	Lat 40°19'03", long 87°17'26", in SW¼SE¼ sec.26, T.22 N., R.8 W., Warren County.
03335790[1]	Big Shawnee Creek tributary near Attica, Ind.	Lat 40°16'48", long 87°10'29", in NE¼NW¼SE¼ sec.11, T.21 N., R.7 W., Fountain County, at culvert on State Highway 28, 1.4 mi west of State Highway 341 and 4.3 mi east of Attica.
03336100	Big Four ditch tributary near Paxton, Ill.	Lat 40°27'15", long 88°09'10", in NW¼NW¼ sec.14, T.23 N., R.9 E., Ford County.
03338100	Salt Fork tributary near Catlin, Ill	Lat 40°03'55", long 87°46'05", in SE¼NE¼ sec.36, T.19 N., R.13 W., Vermilion County.
03338800	North Fork Vermilion River tributary near Danville, Ill.	Lat 40°14'23", long 87°38'40", in NE¼NE¼ sec.36, T.21 N., R.12 W., Vermilion County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03339108	East Fork Coal Creek near Hillsboro, Ind.	Lat 40°06'06", long 87°07'54", in NW¼SW¼ sec.8, T.19 N., R.6 W., Fountain County at center pier on downstream side of bridge on County Road 700 East, 1.5 mi east of Hillsboro, 3.7 mi northwest of Waynetown, 9.6 mi upstream from mouth.
03339230[1]	Woods ditch near Frankfort, Ind.	Lat 40°13'13", long 86°27'34", in NE¼NE¼SW¼ sec.31, T.21 N., R.1 E., Clinton County, at culvert on State Highway 38, 2.2 mi southeast of State Highway 39.
03339400[1]	Sugar Creek tributary near Garfield, Ind.	Lat 40°05'01", long 86°48'13", in SW¼SE¼NW¼ sec.18, T.19 N., R.3 W., Montgomery County, at culvert on State Highway 47, 1.1 mi northeast of Garfield.
03339500	Sugar Creek at Crawfordsville, Ind.	Lat 40°02'56", long 86°53'58", in SW¼NW¼ sec.32, T.19 N., R.4 W., Montgomery County.
03340000	Sugar Creek near Byron, Ind.	Lat 39°55'52", long 87°07'33", in NW¼SW¼ sec.8, T.17 N., R.6 W., Parke County.
03340800	Big Raccoon Creek near Fincastle, Ind.	Lat 39°48'45", long 86°57'14", in NW¼SW¼ sec.22, T.16 N., R.5 W., Putnam County.
03341000	Raccoon Creek at Mansfield, Ind.	Lat 39°41'00", long 87°07'00", in sec.8, T.14 N., R.6 W., Parke County.
03341200	Little Raccoon Creek near Catlin, Ind.	Lat 39°40'38", long 87°13'38", in NE¼NW¼ sec.7, T.14 N., R.7 W., Parke County.
03341700	Big Creek tributary near Dudley, Ill.	Lat 39°33'55", long 87°47'25", in SW¼NW¼ sec.19, T.13 N., R.12 W., Edgar County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03341900	Raccoon Creek tributary near Annapolis, Ill.	Lat 39°08'36", long 87°41'10", in NE¼NE¼ sec.13, T.8 N., R.12 W., Crawford County.
03342180[1]	Kettle Creek tributary near Shelburn, Ind.	Lat 39°10'36", long 87°22'27", in SW¼SE¼SE¼ sec.26, T.9 N., R.9 W., Sullivan County, at culvert on State Highway 48, 1.0 mi east of U.S. Highways 41 and 150.
03342500	Busseron Creek near Carlisle, Ind.	Lat 38°58'26", long 87°35'23", in NW¼, survey 17, Vincennes Tract, Sullivan County.
03344250	Embarras River tributary near Greenup, Ill.	Lat 39°10'00", long 88°09'20", in NW¼SW¼ sec.12, T.9 N., R.9 E., Cumberland County.
03344500	Range Creek near Casey, Ill.	Lat 39°19'36", long 88°01'46", in NE¼SE¼ sec.12, T.10 N., R.10 E., Cumberland County.
03346650[1]	River Deshee tributary near Frichton, Ind.	Lat 38°40'33", long 87°25'47", in SW¼, survey 29, Vincennes Tract, Palmyra Township, Knox County, at culvet on new U.S. Highways 50 and 150, 0.5 mi southwest of Frichton.
03346840[1]	White River tributary at Parker City, Ind.	Lat 40°11'35", long 85°11'34", in SW¼SW¼SE¼ sec.9, T.20 N., R.12 E., Randolph County, at culvert on State Highway 32, 3.3 mi west of intersection of State Highways 1 and 32 in Farmland.
03347500	Buck Creek near Muncie, Ind.	Lat 40°08'05", long 85°22'25", in SW¼SE¼ sec.34, T.20 N., R.10 E., Delaware County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03348020	Killbuck Creek near Gaston, Ind.	Lat 40°15'45", long 85°30'53", in SE¼SW¼ sec.16, T.21 N., R.9 E., Delaware County, on right bank 30 ft upstream from bridge on County Road 500 North, 15 ft east of County Road 675 West, 3.6 mi southwest of Gaston.
03348350	Pipe Creek at Frankton, Ind.	Lat 40°13'38", long 85°45'58", in SE¼NE¼ sec.31, T.21 N., R.7 E., Madison County, Hydrologic Unit 05120201, on right bank 20 ft (6 m) downstream from bridge on County Road 500 West, at northeast edge of Frankton.
03348700[1]	White River tributary near Strawtown, Ind.	Lat 40°06'47", long 85°57'10", in NW¼SE¼NW¼ sec.10, T.19 n., R.5 E., Hamilton County, at culvert on State Highway 37, 0.9 mi south of intersection of State Highway 37 and Strawtown Avenue in Strawtown.
03349500	Cicero Creek near Arcadia, Ind.	Lat 40°10'34", long 85°59'43", in NW¼NW¼ sec.20, T.20 N., R.5 E., Hamilton County.
03349700	Little Cicero Creek near Arcadia, Ind.	Lat 40°10'32", long 86°02'45", in NE¼NW¼ sec.23, T.20 N., R.4 E., Hamilton County.
03350100	Hinkle Creek near Cicero, Ind.	Lat 40°06'05", long 86°05'10", in NW¼NW¼ sec.16, T.19 N., R.4 E., Hamilton County.
03350500	Cicero Creek at Noblesville, Ind.	Lat 40°03'20", long 86°02'30", in NW¼NE¼ sec.35, T.19 N., R.4 E., Hamilton County.
03350650[1]	Stony Creek tributary near Lapel, Ind.	Lat 40°05'18", long 85°49'22", in NE¼NW¼NW¼ sec.23, T.19 N., R.6 E., Madison County, at culvert on State Highway 32, 2.0 mi northeast of State Highways 13 and 32 in Lapel.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03350700	Stony Creek near Noblesville, Ind.	Lat 40°01'44", long 85°59'42", in NE¼NE¼ sec.7, T.18 N., R.5 E., Hamilton County, on left bank at downstream side of county road bridge, 1.4 mi upstream from mouth, 1.4 mi southeast of Noblesville, Ind.
03351400	Sugar Creek near Middletown, Ind.	Lat 40°02'27", long 85°31'30", in NW¼SE¼ sec.5, T.18 N., R.9 E., Henry County, on right bank 90 ft upstream from bridge on County Road 750 North, 1 mi southeast of Middletown.
03351500	Fall Creek near Fortville, Ind.	Lat 39°57'15", long 85°52'05", in NW¼NE¼ sec.5, T.17 N., R.6 E., Hamilton County.
03352200	Mud Creek at Indianapolis, Ind.	Lat 39°53'30", long 86°00'57", in SE¼NE¼ sec.25, T.17 N., R.4 E., Marion County.
03352400[1]	Blue Creek near Castleton, Ind.	Lat 39°53'23", long 86°02'46", in NW¼NE¼SE¼ sec.26, T.17 N., R.4 E., Marion County, at culvert on State Highway 100, 0.1 mi south of 75th Street, 1.2 mi south of Castleton.
03353200	Eagle Creek at Zionsville, Ind.	Lat 39°56'56", long 86°15'22", in SW¼NW¼ sec.1, T.17 N., R.2 E., Boone County.
03353668[1]	White Lick Creek tributary near Brownsburg, Ind.	Lat 39°53'54", long 86°23'34", in SE¼NE¼SE¼ sec.22, T.17 N., R.1 E., Hendricks County, at culvert on State Highway 267, 4.0 mi north of U.S. Highway 136 in Brownsburg.
03353700	West Fork White Lick Creek at Danville, Ind.	Lat 39°45'36", long 86°30'47", in NW¼NE¼ sec.10, T.15 N., R.1 W., Hendricks County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03353800	White Lick Creek at Mooresville, Ind.	Lat 39°36'28", long 86°22'56", in NE¼SE¼ sec.35, T.14 N., R.1 E., Morgan County.
03354500	Beanblossom Creek at Beanblossom, Ind.	Lat 39°15'45", long 86°14'55", in SW¼NW¼ sec.31, T.10 N., R.3 E., Brown County.
03355000	Bear Creek near Trevlac, Ind.	Lat 39°16'40", long 86°20'45", in NE¼NE¼ sec.30, T.10 N., R.2 E., Brown County. (Not included in regression analysis.)
03356000	Beanblossom Creek at Dolan, Ind.	Lat 39°14'30", long 86°29'57", in NW¼SW¼ sec.2, T.9 N., R.1 W., Brown County.
03356780[1]	Limestone Creek tributary near Gosport, Ind.	Lat 39°21'12", long 86°40'58", in NE¼NW¼NW¼ sec.31, T.11 N., R.2 W., Owen County, at culvert on State Highway 67, 0.9 mi west of Gosport.
03357350	Plum Creek near Bainbridge, Ind.	Lat 39°45'42", long 86°43'46", in SW¼SE¼ sec.3, T.15 N., R.3 W., Putnam County, on right upstream wingwall of bridge on U.S. Highwy 36, 0.5 mi west of Groveland, 4.5 mi east of Bainbridge.
03357430[1]	Owl Creek tributary near Bainbridge, Ind.	Lat 39°45'46", long 86°52'53", in SW¼SE¼SW¼ sec.5, T.15 N., R.4 W., Putnam County, at culvert on U.S. Highway 36, 3.7 mi west of Bainbridge.
03357500	Big Walnut Creek near Reelsville, Ind.	Lat 39°32'11", long 86°58'35", in NW¼SW¼ sec.28, T.13 N., R.5 W., Putnam County.
03358000	Mill Creek near Cataract, Ind.	Lat 39°26'00", long 86°45'48", in NE¼SE¼ sec.32, T.12 N., R.3 W., Owen County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03359500	Deer Creek near Putnamville, Ind.	Lat 39°34'04", long 86°52'00", in SW¼NW¼ sec.16, T.13 N., R.4 W., Putnam County.
03360100[1]	Clear Branch at Cory, Ind.	Lat 39°23'20", long 87°11'58", in SE¼SW¼SW¼ sec.16, T.11 N., R.7 W., Clay County, at culvert on State Highway 46, 4.9 mi west of State Highway 59.
03360400[1]	Doans Creek tributary near Doans, Ind.	Lat 38°55'12", long 86°50'54", in SW¼SW¼SW¼ sec.27, T.6 N., R.4 W., Greene County, at culvert on State Highway 58 at Doans.
03360750[1]	Miller ditch tributary near Bicknell, Ind.	Lat 38°47'08", long 87°18'36", in SE¼NW¼NW¼ sec.16, T.4 N., R.8 W., Knox County, at culvert on State Highway 159, 0.4 mi north of State Highway 67 in Bicknell.
03360850[1]	Veales Creek tributary at Washington, Ind.	Lat 38°37'16", long 87°11'00", in SW¼SW¼NW¼ sec.10, T.2 N., R.7 W., Daviess County, at culvert on State Highway 57, 2.3 mi south of U.S. Highway 50 in Washington.
03361000	Big Blue River at Carthage, Ind.	Lat 39°44'38", long 85°34'33", in SW¼SW¼ sec.18, T.15 N., R.9 E., Rush County.
03361500	Big Blue river at Shelbyville, Ind.	Lat 39°31'45", long 85°46'55", in SE¼SE¼ sec.31, T.13 N., R.7 E., Shelby County.
03361650	Sugar Creek at New Palestine, Ind.	Lat 39°42'51", long 85°53'08", in SE¼SW¼ sec.29, T.15 N., R.6 E., Hancock County, 0.5 mi south of New Palestine, 3.1 mi upstream from Little Sugar Creek, 37.3 mi upstream from mouth.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03361600[1]	Little Sugar Creek tributary at Carrollton, Ind.	Lat 39°42'22", long 85°49'40", in SW¼SW¼NE¼ sec.35, T.15 N., R.6 E., Hancock County, at culvert on U.S. Highway 52, 3.4 mi southeast of New Palestine.
03361850	Buck Creek at Acton, Ind.	Lat 39°39'25", long 85°57'27", in NW¼SE¼ sec.15, T.14 N., R.5 E., Marion County, on left bank 30 ft downstream from McGregor Road bridge, 0.5 mi east of Acton, and 4.1 mi upstream from mouth.
03361890[1]	Gilmore Creek near Bargersville, Ind.	Lat 39°30'44", long 86°08'26", in NE¼NE¼SE¼ sec.1, T.12 N., R.3 E., Johnson County, at culvert on State Highway 144, 1.0 mi southeast of State Highway 135 east of Bargersville.
03362000	Youngs Creek near Edinburg, Ind.	Lat 39°25'08", long 86°00'18", in SE¼SW¼ sec.5, T.11 N., R.5 E., Johnson County.
03362500	Sugar Creek near Edinburg, Ind.	Lat 39°21'39", long 85°59'51", in SW¼SE¼ sec.29, T.11 N., R.5 E., Johnson County.
03363000	Driftwood River near Edinburg, Ind.	Lat 39°20'21", long 85°59'11", in NW¼SW¼ sec.4, T.10 N., R.5 E., Bartholomew County.
03363500	Flatrock River at St. Paul, Ind.	Lat 39°25'03", long 85°38'03", in SE¼NE¼ sec.9, T.11 N., R.8 E., Shelby County.
03364100[1]	Tough Creek near Norristown, Ind.	Lat 39°22'19", long 85°45'38", in SW¼SW¼NW¼ sec.28, T.11 N., R.7 E., Shelby County, at culvert 0.5 mi north of Norristown.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03364200	Haw Creek near Clifford, Ind.	Lat 39°16'04", long 85°51'22", in NW¼SW¼ sec.34, T.10 N., R.6 E., Bartholomew County, on left bank 20 ft downstream from bridge on County Road 450 North, 1.2 mi southeast of Clifford, 5.8 mi northeast of Columbus, 7.6 mi upstream from mouth.
03364500	Clifty Creek at Hartsville, Ind.	Lat 39°16'25", long 85°42'10", in NW¼NW¼ sec.36, T.10 N., R.7 E., Bartholomew County.
03364570[1]	Fall Fork Clifty Creek tributary near Horace, Ind.	Lat 39°16'01", long 85°34'30", in SW¼SW¼NW¼ sec.31, T.10 N., R.9 E., Decatur County, at culvert on State Highway 3, 2.8 mi south of State Highway 46, 0.4 mi north of Horace.
03365000	Sand Creek near Brewersville, Ind.	Lat 39°05'03", long 85°39'32", in NW¼NE¼ sec.5, T.7 N., R.6 E., Jennings County.
03366000	Graham Creek near Vernon, Ind.	Lat 38°55'47', long 85°33'45", in NW¼SE¼ sec.30, T.6 N., R.9 E., Jennings County.
03366200	Harberts Creek near Madison, Ind.	Lat 38°46'55", long 85°29'08", in SW¼SE¼ sec.14, T.4 N., R.9 E., Jefferson County, attached to left downstream wingwall of bridge on County Road 533 West, 0.2 mi west of Smyrna, 3.7 mi upstream from Big Creek, 4 mi northwest of Madison.
03366400[1]	Lewis Creek tributary near Kent, Ind.	Lat 38°44'13", long 85°34'39", in NW¼NE¼NE¼ sec.2, T.3 N., R.8 E., Jefferson County, on State Highway 256, 2.8 mi west of Kent.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03366500	Muscatatuck River near Deputy, Ind.	Lat 38°48'15", long 85°40'26", in SW¼NE¼ sec.7, T.4 N., R.8 E., Jefferson County.
03367000	Muscatatuck River near Austin, Ind.	Lat 38°46'13", long 85°49'21", in NW¼SE¼ sec.23, T.4 N., R.6 E., Scott County.
03367600[1]	Flat Creek tributary at New Frankfort, Ind.	Lat 38°44'18", long 85°42'50", in NE¼SE¼SW¼ sec.35, T.4 N., R.7 E., Scott County, at culvert on State Highway 256, 0.2 mi northwest of State Highway 203.
03369000	Vernon Fork near Butlerville, Ind.	Lat 39°02'55", long 85°32'40", in NW¼SE¼ sec.17, T.7 N., R.9 E., Jennings County.
03369500	Vernon Fork at Vernon, Ind.	Lat 38°58'34", long 85°37'13", in NW¼SE¼ sec.10, T.6 N., R.8 E., Jennings County.
03369700[1]	Sixmile Creek tributary near North Vernon, Ind.	Lat 39°01'55", long 85°38'24", in NW¼SW¼SE¼ sec.21, T.7 N., R.8 E., Jennings County, at culvert on State Highway 3, 1.2 mi north of State Highway 7 in North Vernon.
03370100[1]	Blau ditch tributary near Crothersville, Ind.	Lat 38°48'17", long 85°50'25", in SW¼SW¼NE¼ sec.10, T.4 N., R.6 E., Jackson County, at culvert on U.S. Highway 31, 1.4 mi north of Crothersville.
03371520	Back Creek at Leesville, Ind.	Lat 38°50'48", long 86°18'06", in SW¼SE¼ sec.21, T.5 N., R.2 E., Lawrence County, on left bank at downstream side of county road bridge, 0.9 mile west of Leesville, 2.5 mi upstream from Jones Defeat Hollow and 7 mi above mouth.
03371600	South Fork Salt Creek at Kurtz, Ind.	Lat 38°57'46", long 86°12'12", in SW¼SW¼ sec.9, T.6 N., R.3 E., Jackson County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03371630[1]	North Fork Salt Creek tributary near Nashville, Ind.	Lat 39°11'38", long 86°12'11", in NE¼NE¼NW¼ sec.28, T.9 N., R.3 E., Brown County, at culvert on State Highway 46, 2.6 mi east of State Highway 135 in Nashville.
03371650	North Fork Salt Creek at Nashville, Ind.	Lat 39°12'06", long 86°14'51", in NW¼SW¼ sec.19, T.9 N., R.3 E., Brown County.
03372000	North Fork Salt Creek near Belmont, Ind.	Lat 39°09'00", long 85°20'14", in SW¼NW¼ sec.5, T.8 N., R.2 E., Brown County.
03372300	Stephens Creek near Bloomington, Ind.	Lat 39°10'11", long 86°25'07", in NE¼NW¼ sec.4, T.8 N., R.1 E., Monroe County, on downstream side of right pier of bridge on State Highway 46, 0.2 mi downstream from Kerr Creek, 4.0 mi west of Belmont, and 6.1 mi east of Bloomington.
03372680[1]	Clear Creek tributary near Bloomington, Ind.	Lat 39°04'24", long 86°32'39", in SW¼SW¼NE¼ sec.5, T.7 N., R.1 W., Monroe County, at culvert on State Highway 37, 5.5 mi south of Bloomington.
03372700	Clear Creek near Harrodsburg, Ind.	Lat 39°02'03", long 86°34'01", in NE¼NW¼ sec.19, T.7 N., R.1 W., Monroe County.
03373000	Salt Creek near Peerless, Ind.	Lat 38°56'36", long 86°30'36", in SE¼NW¼ sec.22, T.6 N., R.1 W., Lawrence County.
03373200	Indian Creek near Springville, Ind.	Lat 38°57'01", long 86°40'30", in SE¼SW¼ sec.18, T.6 N., R.2 W., Lawrence County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03373240[1]	Spring Creek tributary near Springville, Ind.	Lat 38°54'41", long 86°39'09", in SE¼SW¼NE¼ sec.32, T.6 N., R.2 W., Lawrence County, at culvert on State Highway 58, 6.6 mi northwest of State Highway 37 in Oolitic.
03373680[1]	French Lick Creek tributary near French Lick, Ind.	Lat 38°30'08", long 86°36'20", in SW¼NW¼SW¼ sec.23, T.1 N., R.2 W., Orange County, at culvert on State Highway 145, 4.3 mi south of intersection of State Highways 145 and 56 in French Lick.
03373850	Slate Creek tributary near Haysville, Ind.	Lat 38°33'30", long 86°54'10", in NE¼SW¼SW¼ sec.31, T.2 N., R.4 W., Martin County, at culvert on U.S. Highway 231, 5.5 mi north of intersection of U.S. Highway 231 and State Highway 56, in Haysville.
03374455	Patoka River near Hardinsburg, Ind.	Lat 38°26'41", long 86°23'14", in NW¼SE¼ sec.10, T.1 S., R.1 E., Orange County, on downstream edge of center pier of county road bridge, 0.3 mi downstream from Fudge Creek, 0.7 mi northeast of Valeene, 6.0 mi southwest of Hardinsburg, and at mi 158.0.
03374500	Patoka River near Ellsworth, Ind.	Lat 38°26'39", long 86°43'31", in SW¼SE¼ sec.10, T.2 S., R.3 W., Dubois County.
03375500	Patoka River at Jasper, Ind.	Lat 38°24'49", long 86°52'36", in NW¼SW¼ sec.20, T.1 S., R.4 W., Dubois County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
03375800	Hall Creek near St. Anthony, Ind.	Lat 38°21'45", long 86°49'43", in NW¼NW¼ sec.11, T.2 S., R.4 W., Dubois County, on downstream side of right pier of bridge on County Road 125 South, 0.7 mi upstream from Grassy Fork, 3.3 mi north of St. Anthony, and at mi 4.1.
03376230[1]	Shiloh drain near Jasper, Ind.	Lat 38°24'26", long 86°58'47", in NW¼NW¼NW¼ sec.28, T.15 N., R.5 W., Dubois County, at culvert on State Highway 56, at Ireland, 2.8 mi northwest of Jasper.
03376340[1]	Patoka River tributary near Glezen, Ind.	Lat 38°23'41", long 87°19'05", in NE¼SE¼SE¼ sec.29, T.1 S., R.8 W., Pike County, at culvert on State Highway 57, 7.9 mi south of intersection of State Highways 61, 56, and 57 in Petersburg.
03376500	Patoka River near Princeton, Ind.	Lat 38°23'30", long 87°32'55", in Location 107, T.1 S., R.10 W., Gibson County.
03376600[1]	Patoka River tributary near Patoka, Ind.	Lat 38°23'08", long 87°35'21", in SE¼SW¼NW¼ sec.36, T.15 N., R.11 W., Gibson County, at culvert on old U.S. Highway 41, 1.2 mi south of Patoka River at Patoka.
03378590[1]	Olive Creek tributary near Solitude, Ind.	Lat 38°00'14", long 87°53'57", in NW¼SE¼NW¼ sec.17, T.6 S., R.13 W., Posey County, at culvert on State Highway 69, 0.65 mi south of Solitude.
04093000	Deep River at Lake George outlet at Hobart, Ind.	Lat 41°32'10", long 87°15'25", in NW¼NW¼ sec.32, T.36 N., R.7 W., Lake County.
04093500	Burns ditch at Gary, Ind.	Lat 41°34'30", long 87°17'20", in SE¼NW¼ sec.13, T.36 N., R.8 W., Lake County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
04094000	Little Calumet River at Porter, Ind.	Lat 41°37'18", long 87°05'13", in NE¼NE¼ sec.34, T.37 N., R.6 W., Porter County.
04094500	Salt Creek near McCool, Ind.	Lat 41°35'48", long 87°08'40", in SE¼SE¼ sec.6, T.36 N., R.6 W., Porter County.
04095250[1]	East Branch Trail Creek tributary near Springville, Ind.	Lat 41°41'22", long 86°46'42", in NE¼SE¼NE¼ sec.5, T.37 N., R.3 W., LaPorte County, at culvert on U.S. Highway 20, 1.4 mi east of U.S. Highway 35.
04099060[1]	Pigeon Creek tributary near Ellis, Ind.	Lat 41°37'43", long 84°54'56", in NW¼NW¼NW¼ sec.34, T.37 N., R.14 E., Steuben County, at culvert on State Highway 1, 0.25 mi south of U.S. Highway 20.
04099500	Pigeon Creek at Hogback Lake Outlet near Angola, Ind.	Lat 41°37'24", long 85°05'44", in NE¼NW¼ sec.36, T.37 N., R.12 E., Steuben County.
04099745[1]	Truesdale ditch near Shipshewana, Ind.	Lat 41°43'36", long 85°35'38", in NE¼NE¼NW¼ sec.27, T.38 N., R.8 E., Lagrange County, at culvert on State Highway 120, 0.6 mi west of State Highway 5.
04099750	Pigeon River near Scott, Ind.	Lat 41°44'56", long 35°34'35", in SE¼NW¼ sec.14, T.38 N., R.8 E., Lagrange County, on right bank 20 ft downstream from bridge on County Road 750 North, 1,200 ft downstream from Page ditch, 0.7 mi south of Indiana-Michigan State Line, 1.2 mi northwest of Scott.
04100165[1]	Wible Lake inlet near Kendallville, Ind.	Lat 41°29'15", long 85°16'13", in NW¼NW¼SW¼ sec.16, T.35 N., R.11 E., Noble County, at culvert on State Highway 3, 1.9 mi north of U.S. Highway 6 in Kendallville.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
04100220	North Branch Elkhart River near Cosperville, Ind.	Lat 41°29'32", long 85°26'54", in SW¼NE¼ sec.14, T.35 N., R.9 E., Noble County.
04100500	Elkhart River at Goshen, Ind.	Lat 41°35'36", long 85°50'55", in NE¼NE¼ sec.8, T.36 N., R.6 E., Elkhart County.
04178000	St. Joseph River near Newville, Ind.	Lat 41°23'08", long 84°48'06", in SW¼SW¼ sec.18, T.5 N., R.1 E., Defiance County, Ohio.
04179500	Cedar Creek at Auburn, Ind.	Lat 41°21'57", long 85°03'08", in NE¼NW¼ sec.32, T.34 N., R.13 E., DeKalb County.
04179510[1]	Cecil Metcalf ditch near Auburn, Ind.	Lat 41°21'55", long 85°01'07", in SW¼NE¼NW¼ sec.34, T.34 N., R.13 E., DeKalb County, at culvert on State Highway 8, 2.0 mi east of State Highway 427 in Auburn.
04180000	Cedar Creek near Cedarville, Ind.	Lat 41°13'08", long 85°04'35", in NW¼NW¼ sec.19, T.32 N., R.13 E., Allen County.
04181500	St. Marys River at Decatur, Ind.	Lat 40°50'55", long 84°56'16", in SW¼SW¼ sec.27, T.28 N., R.14 E., Adams County.
04182000	St. Marys River near Fort Wayne, Ind.	Lat 40°59"16", long 85°06'03", in A. LaFontaine Res., T.29 N., R.12 E., Allen County.
04191310[1]	Flatrock Creek tributary near Monroeville, Ind.	Lat 40°53'42", long 84°51'42", in NW¼SW¼SW¼ sec.8, T.28 N., R.15 E., Adams County, at culvert on State Highway 101, 1.8 mi south of Adams-Allen County Line.
05515000	Kankakee River near North Liberty, Ind.	Lat 41°33'50", long 86°29'50", in NW¼NE¼ sec.23, T.36 N., R.1 W., St. Joseph County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
05515500	Kankakee River at Davis, Ind.	Lat 41°24'00", long 86°42'04", in SE¼NE¼ sec.13, T.34 N., R.3 W., Starke County.
05516000	Yellow River near Bremen, Ind.	Lat 41°25'11", long 86°10'14", in NW¼NW¼ sec.10, T.34 N., R.3 E., Marshall County.
05516150[1]	Walt Kimble ditch near LaPaz, Ind.	Lat 41°26'59", long 86°14'16", in SW¼SE¼SE¼ sec.25, T.35 N., R.2 E., Marshall County, at culvert on U.S. Highway 6, 3.8 mi east of U.S. Highway 31.
05516500	Yellow River at Plymouth, Ind.	Lat 41°20'25", long 86°18'16", in SE¼NW¼ sec.13, T.33 N., R.2 E., Marshall County.
05517000	Yellow River at Knox, Ind.	Lat 41°18'10", long 86°37'14", in SW¼SW¼ sec.14, T.33 N., R.2 W., Starke County.
05517400[1]	West Arm Payne ditch near North Judson, Ind.	Lat 41°12'55", long 86°52'13", in SW¼SW¼SE¼ sec.16, T.32 N., R.4 W., Starke County, at bridge on State Highway 10, 1.3 mi east of U.S. Highway 421.
05517500	Kankakee River at Dunns Bridge, Ind.	Lat 41°13'17", long 86°57'52", in NE¼SE¼ sec.15, T.32 N., R.5 W., Jasper County.
05517780[1]	Sievers Creek tributary near Valparaiso, Ind.	Lat 41°24'41", long 87°08'08", in NE¼NE¼SW¼ sec.8, T.34 N., R.6 W., Porter County, at culvert on State Highway 2, 5.7 mi southwest of Valparaiso.
05517900	Cobb ditch near Kouts, Ind.	Lat 41°19'08", long 87°04'55", in SW¼SW¼ sec.11, T.33 N., R.6 W., Porter County, on left bank 15 ft upstream from bridge on State Highway 8, 700 ft upstream from mouth, and 3 mi west of Kouts.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
05518000	Kankakee River at Shelby, Ind.	Lat 41°10'58", long 87°20'33", in SW¼NE¼ sec.33, T.32 N., R.8 W., Lake County.
05519000	Singleton ditch at Schneider, Ind.	Lat 41°12'44", long 87°26'44", in SW¼NW¼ sec.22, T.32 N., R.9 W., Lake County.
05519500	West Creek near Schneider, Ind.	Lat 41°12'52", long 87°29'36", in NW¼NE¼ sec.19, T.32 N., R.9 W., Lake County.
05521000	Iroquois River at Rosebud, Ind.	Lat 41°02'00", long 87°10'49", in NW¼SW¼ sec.24, T.30 N., R.7 W., Jasper County.
05522000	Iroquois River near North Marion, Ind.	Lat 40°58'12", long 87°06'50", in NE¼NW¼ sec.16, T.29 N., R.6 W., Jasper County.
05522500	Iroquois River at Rensselaer, Ind.	Lat 40°56'00", long 87°07'44", in NW¼SE¼ sec.29, T.29 N., R.6 W., Jasper County.
05523000	Bice ditch near South Marion, Ind.	Lat 40°52'00", long 87°05'32", in NE¼NW¼ sec.22, T.28 N., R.6 W., Jasper County.
05523500	Slouth Creek near Collegeville, Ind.	Lat 40°53'30", long 87°09'17", in SE¼NE¼ sec.12, T.28 N., R.7 W., Jasper County.
05524000	Carpenter Creek at Egypt, Ind.	Lat 40°51'58", long 87°12'20", in SE¼SW¼ sec.15, T.28 N., R.7 W., Jasper County.
05524300[1]	Yeoman ditch tributary near Rensselaer, Ind.	Lat 40°56'27", long 87°14'10", in SW¼SW¼SW¼ sec.21, T.29 N., R.7 W., Jasper County, at culvert on State Highway 114, 4.5 mi west of U.S. Highway 231 in Rensselaer.
05524500	Iroquois River near Foresman, Ind.	Lat 40°52'14", long 87°18'24", in NE¼SE¼ sec.15, T.28 N., R.8 W., Newton County.

Table 1.--Locations of gaging stations used in this report--Continued

Station number	Name	Location
05525050	Eastburn Hollow near Sheldon, Ill.	Lat 40°46'30", long 87°38'40", in NE¼NW¼ sec.6, T.26 N., R.11 W., Iroquois County.
05536190	Hart ditch at Munster, Ind.	Lat 41°33'40", long 87°28'50", in SE¼NW¼ sec.20, T.36 N., R.9 W., Lake County.
05526150	Kankakee River tributary near Bourbonnais, Ill.	Lat 41°11'35", long 87°57'00", in SW¼ sec.3, T.31 N., R.11 E., Kankakee County.
05527050	Prairie Creek near Frankfort, Ill.	Lat 41°26'12", long 87°50'42", in NW¼ sec.15, T.34 N., R.12 E., Will County.

[1]Part of the small streams data-collection network.

Table 2.--Basin characteristics and flood peaks of stations used in this report

[Obs., Observation; A, drainage area; mi^2, square mile; ft^3/s, cubic foot per second, R_c, runoff coefficient; P_i, precipitation index; in., inch; R_t, watershed relief; ft, foot; DD, drainage density; mi/mi^2, mile per square mile]

Obs.	Station number[1]	A (mi^2)	Peaks (2-yr recurr.) (ft^3/s)	Peaks (10-yr recurr.) (ft^3/s)	R_c	P_i (in.)	R_t (ft)	DD (mi/mi^2)
1	3274650	10.4	533	833	0.7	10.5	115	6.10
2	3274730	.20	10.3	21.4	.7	11.0	65	5.66
3	3274750	58.7	1,890	2,260	---	11.5	---	-----
4	3274880	.78	95.2	221	.8	10.0	80	12.30
5	3274950	9.16	709	1,610	.7	12.0	205	8.50
6	3275000	529	12,600	28,370	---	11.5	---	-----
7	3275500	121	5,330	11,770	.8	11.0	341	9.50
8	3275600	200	7,270	11,290	---	11.5	---	-----
9	3275800	.26	92.2	302	.7	12.0	70	11.20
10	3275900	5.39	329	773	.7	12.5	130	8.78
11	3276000	380	9,323	20,000	---	10.5	---	-----
12	3276500	1,224	28,280	55,240	---	11.0	---	-----
13	3276640	.19	148	327	.8	13.0	230	13.50
14	3276700	38.2	4,850	10,120	.9	13.0	449	11.00
15	3276770	.11	29.7	47.9	1.0	13.0	20	6.09
16	3276950	.16	32.5	80.4	.8	14.0	60	14.10
17	3277000	248	10,520	20,930	---	12.5	---	-----
18	3277030	.03	11.1	19.8	.8	13.0	285	16.00
19	3277250	.16	38.9	71.9	1.0	14.0	25	13.10
20	3291780	27.5	2,250	3,770	---	14.5	---	-----
21	3292350	.16	23.1	40.5	.8	14.0	25	8.94
22	3294000	188	6,860	10,560	.9	15.0	265	10.50
23	3302220	65.2	5,540	13,000	---	15.0	---	-----
24	3302300	16.1	2,810	5,380	0.8	15.0	285	7.90
25	3302350	.56	124	230	.7	15.0	150	10.00
26	3302500	129	7,910	14,670	.8	16.0	438	8.70
27	3302680	19.0	2,020	3,800	.7	16.5	265	8.10
28	3302690	.07	21.2	35.9	.7	16.0	55	14.80
29	3303000	284	12,490	22,180	---	17.0	---	-----
30	3303250	.15	30.2	63.3	.8	17.5	240	22.00

Table 2.--Basin characteristics and flood peaks of stations used in this report--Continued

Obs.	Station number[1]	A (mi^2)	Peaks (2-yr recurr.) (ft^3/s)	Peaks (10-yr recurr.) (ft^3/s)	R_c	P_i (in.)	R_t (ft)	DD (mi/mi^2)
31	3303300	39.8	1,800	3,890	---	17.5	---	-----
32	3303400	7.86	1,120	2,530	0.8	17.5	210	8.20
33	3303440	.26	70.7	209	.8	17.5	110	19.60
34	3322100	326	4,470	7,360	---	14.5	---	-----
35	3324000	263	3,230	4,560	---	7.0	---	-----
36	3324200	85.6	2,310	3,510	.5	9.5	182	5.80
37	3324210	.45	25.3	35.3	.8	9.0	20	3.60
38	3324260	.86	70.9	115	.8	9.0	20	5.64
39	3324300	425	6,520	10,400	---	9.5	---	-----
40	3324350	.52	56.5	120	.8	9.0	25	6.50
41	3325500	133	3,560	6,940	.8	10.0	150	7.50
42	3326000	310	6,370	12,900	---	10.5	---	-----
43	3326500	682	10,830	19,580	---	9.5	---	-----
44	3327000	808	9,790	20,600	---	9.5	---	-----
45	3327520	159	2,070	3,260	---	9.5	---	-----
46	3327530	.50	25.0	67.7	.7	9.0	40	7.80
47	3327790	.17	17.2	34.3	.5	7.5	40	15.50
48	3327930	2.50	117	185	.5	8.0	60	4.03
49	3328000	417	4,020	6,310	---	7.5	---	-----
50	3328020	.92	61.0	112	.7	9.0	70	10.10
51	3328430	8.87	173	258	.5	9.0	90	2.90
52	3328500	789	7,388	11,600	---	8.5	---	-----
53	3329400	6.83	137	228	.5	9.0	75	4.80
54	3329700	274	4,290	8,470	---	9.5	---	-----
55	3329720	5.62	241	630	.5	9.0	75	7.46
56	3330290	.70	11.6	17.6	.5	7.0	30	10.10
57	3331110	19.60	118	169	.5	7.5	80	1.00
58	3331500	856	4,010	6,240	---	8.0	---	-----
59	3332300	35.0	326	443	.3	8.5	77	2.20
60	3332400	152	1,510	2,690	.7	8.0	---	-----
61	3332340	.50	13.0	41.0	.3	8.0	25	7.60
62	3332780	1.35	67.3	149	.7	8.5	30	11.70
63	3333420	.67	69.2	145	.8	9.5	10	7.37
64	3333450	146	2,420	4,270	.8	9.0	100	2.80
65	3333500	162	2,400	4,800	---	9.0	---	-----

Table 2.--Basin characteristics and flood peaks of stations used in this report--Continued

Obs.	Station number[1]	A (mi^2)	Peaks (2-yr recurr.) (ft^3/s)	Peaks (10-yr recurr.) (ft^3/s)	R_c	P_i (in.)	R_t (ft)	DD (mi/mi^2)
66	3333600	24.7	472	715	0.7	9.5	72	4.50
67	3333620	.86	41.5	96.0	.7	9.5	15	6.52
68	3333700	242	3,660	7,320	---	9.0	---	-----
69	3334000	396	4,500	8,720	---	9.5	---	-----
70	3334200	2.61	102	223	.7	10.0	35	10.30
71	3334500	243	4,540	9,410	---	10.0	---	-----
72	3335000	794	8,900	17,480	---	9.5	---	-----
73	3335685	.21	118	202	.5	9.0	50	13.30
74	3335690	39.4	969	1,600	---	8.5	---	-----
75	3335700	323	5,027	9,026	---	9.0	---	-----
76	3335790	1.22	89.6	227	.7	11.0	50	8.20
77	3336100	1.05	112	199	.7	9.0	65	2.60
78	3338100	2.20	186	379	.5	10.0	55	7.30
79	3338800	1.31	303	521	.7	9.5	70	7.60
80	3339108	33.4	1,440	1,920	---	10.0	---	-----
81	3339230	1.12	130	414	.7	10.0	45	10.40
82	3339400	1.05	158	323	.7	10.0	---	-----
83	3339500	509	10,000	20,000	---	11.0	---	-----
84	3340000	670	13,920	24,000	---	11.0	---	-----
85	3340800	132	4,850	11,010	.7	12.0	252	5.40
86	3341000	248	6,490	13,480	---	13.0	---	-----
87	3341200	133	5,990	14,870	.7	13.0	344	5.40
88	3341700	1.08	190	295	.5	12.0	55	1.70
89	3341900	.04	18.0	34.0	.5	11.0	15	9.40
90	3342500	228	3,220	5,990	---	11.5	---	-----
91	3342180	.48	122	303	.7	11.0	30	6.25
92	3344250	.08	22.0	34.0	.5	11.0	---	-----
93	3344500	7.61	888	1,630	---	11.0	---	-----
94	3346650	.82	126	193	.5	13.5	55	10.40
95	3346840	.60	17.2	29.9	.8	10.0	10	1.70
96	3347500	35.5	807	1,460	---	10.5	165	5.70
97	3348020	25.5	298	456	---	10.0	---	-----
98	3348350	113	1,630	2,780	---	9.5	---	-----
99	3348700	.42	40.8	77.3	.7	10.0	30	7.93
100	3349000	858	10,120	18,940	---	11.0	---	-----

Table 2.--Basin characteristics and flood peaks of stations used in this report--Continued

Obs.	Station number[1]	A (mi^2)	Peaks (2-yr recurr.) (ft^3/s)	Peaks (10-yr recurr.) (ft^3/s)	R_c	P_i (in.)	R_t (ft)	DD (mi/mi^2)
101	3349500	131	1,860	3,070	0.7	10.0	121	5.40
102	3349700	40.4	1,160	2,060	.7	9.5	110	4.60
103	3350100	18.5	1,330	3,087	.7	9.5	110	6.60
104	3350500	216	3,286	6,480	---	10.5	---	-----
105	3350650	.46	93.4	191	.7	10.0	30	6.90
106	3350700	50.8	872	1,450	---	10.0	---	-----
107	3351400	5.80	536	992	.7	10.5	60	5.10
108	3351500	169	2,827	5,292	.7	11.5	273	5.30
109	3352200	42.4	785	1,470	.7	10.0	127	4.50
110	3352400	.77	58.0	77.5	.7	10.5	35	8.88
111	3353200	103	5,050	8,620	.7	10.5	153	7.50
112	3353668	.31	47.3	87.1	.7	11.0	15	9.35
113	3353700	28.8	1,710	3,000	.7	11.0	131	6.00
114	3353800	212	8,440	14,600	---	11.0	---	-----
115	3354500	14.6	1,780	3,840	.8	13.0	291	11.50
116	3355000	6.94	620	1,360	---	13.0	---	-----
117	3356000	100	2,810	6,630	---	13.0	---	-----
118	3356780	.72	106	260	1.0	13.0	165	12.10
119	3357350	3.00	359	640	.7	12.0	115	12.20
120	3357430	.58	244	386	.7	11.5	55	15.50
121	3357500	326	13,800	27,100	---	12.5	---	-----
122	3358000	245	5,200	9,870	---	12.5	---	-----
123	3359500	59.0	5,730	9,560	.7	12.5	283	7.00
124	3360100	.27	53.2	97.1	1.0	12.0	25	7.78
125	3360400	.20	56.9	102	.7	14.0	85	18.00
126	3360750	.50	55.7	106	.7	14.0	85	16.80
127	3360850	.27	96.6	203	.7	14.5	65	16.00
128	3361000	184	4,030	7,500	.7	12.0	251	5.20
129	3361500	421	7,260	13,200	---	12.5	---	-----
130	3361650	93.9	1,300	1,880	---	11.0	---	-----
131	3361660	.70	65.9	197	.7	11.5	25	6.93
132	3361850	78.8	2,410	3,930	---	11.5	---	-----
133	3361890	.71	91.0	204	.7	12.0	30	4.70
134	3362000	107	3,450	7,960	.7	12.0	195	7.00
135	3362500	474	8,270	16,600	---	12.0	---	-----

Table 2.--Basin characteristics and flood peaks of stations used in this report--Continued

Obs.	Station number[1]	A (mi^2)	Peaks (2-yr recurr.) (ft^3/s)	Peaks (10-yr recurr.) (ft^3/s)	R_c	P_i (in.)	R_t (ft)	DD (mi/mi^2)
136	3363000	1,060	15,370	30,280	---	12.5	---	-----
137	3363500	303	6,390	14,060	---	12.5	---	-----
138	3364100	1.46	156	285	0.7	13.0	40	10.70
139	3364200	47.5	2,080	2,630	---	13.0	---	-----
140	3364500	91.4	3,830	9,090	.7	12.5	401	7.40
141	3364570	.83	82.6	218	.7	13.0	50	12.90
142	3365000	155	7,250	14,000	.9	13.5	410	9.80
143	3366000	77.2	6,380	11,900	1.0	14.0	318	1.50
144	3366200	9.31	1,070	1,570	1.0	15.0	195	6.70
145	3366400	.16	72.1	109	1.0	16.0	50	11.30
146	3366500	293	14,400	25,800	---	14.5	---	-----
147	3367000	359	13,200	25,600	---	14.5	---	-----
148	3367600	.34	87.7	177	1.0	16.0	60	12.90
149	3369000	85.9	6,940	11,900	1.0	13.5	391	9.00
150	3369500	198	13,800	27,100	1.0	14.0	448	9.10
151	3369700	.39	25.4	64.9	1.0	14.5	30	6.59
152	3370100	1.31	18.2	33.4	1.0	15.5	25	5.66
153	3371520	24.1	2,550	6,510	---	14.5	---	-----
154	3371600	38.2	3,860	5,670	.8	14.0	312	10.00
155	3371630	.22	17.6	40.9	.8	13.5	160	16.00
156	3371650	76.1	4,426	6,410	.7	13.5	400	8.00
157	3372000	120	6,240	11,900	.7	13.5	436	9.50
158	3372300	10.9	793	1,540	---	14.0	---	-----
159	3372680	.38	45.1	93.7	.7	14.5	165	19.70
160	3372700	48.8	6,830	8,088	.8	14.5	383	7.50
161	3373000	573	11,600	20,700	---	14.0	---	-----
162	3373200	60.7	3,860	6,100	.8	15.0	390	7.00
163	3373240	.54	60.3	241	.8	15.0	305	20.40
164	3373680	.29	85.6	164	.8	16.5	300	12.40
165	3373850	.14	84.9	146	1.0	15.5	95	17.90
166	3374455	12.8	1,520	1,930	---	17.0	---	-----
167	3374500	171	2,790	5,380	.8	15.5	466	13.70
168	3375500	262	3,710	7,740	---	16.0	---	-----
169	3375800	21.8	2,190	3,640	---	17.0	---	-----
170	3376230	.57	178	226	.8	16.0	65	11.90

Table 2.--Basin characteristics and flood peaks of stations used in this report--Continued

Obs.	Station number[1]	A (mi^2)	Peaks (2-yr recurr.) (ft^3/s)	Peaks (10-yr recurr.) (ft^3/s)	R_c	P_i (in.)	R_t (ft)	DD (mi/mi^2)
171	3376340	0.84	110	175	0.7	15.5	147	17.90
172	3376500	822	5,530	11,210	---	15.5	---	-----
173	3376600	.40	85.8	163	.5	15.5	145	11.30
174	3378590	.32	97.4	217	.5	16.0	70	10.00
175	4093000	125	1,360	2,580	.5	7.0	131	3.20
176	4093500	160	1,400	2,340	.4	8.0	173	3.10
177	4094000	62.9	1,040	1,950	.4	12.0	262	8.00
178	4094500	78.7	946	1,800	.4	8.0	206	6.60
179	4095250	.17	24.5	35.6	.5	16.0	130	20.60
180	4099060	1.22	32.7	55.2	.5	4.5	85	7.50
181	4099500	80.5	322	511	.3	4.5	120	3.20
182	4099745	2.39	14.0	30.7	.3	4.5	115	7.28
183	4099750	307	1,080	1,630	---	5.0	---	-----
184	4100165	2.47	16.1	48.2	.5	5.0	90	6.35
185	4100220	142	414	674	.3	5.5	130	3.50
186	4100500	594	2,670	4,420	---	6.0	---	-----
187	4178000	609	3,960	6,730	---	4.5	---	-----
188	4179500	87.3	1,100	1,340	.5	4.5	193	5.10
189	4179510	.78	92.9	238	.5	5.0	20	4.76
190	4180000	270	2,830	4,250	---	5.0	---	-----
191	4181500	621	5,300	9,140	---	7.5	---	-----
192	4182000	762	6,190	10,200	---	7.5	---	-----
193	4191310	.83	51.6	76.2	.8	7.0	25	6.76
194	5515000	116	505	672	.3	5.5	100	3.00
195	5515500	400	1,190	1,470	---	6.5	---	-----
196	5516000	132	1,130	1,356	.5	7.0	65	2.50
197	5516150	1.50	77.8	213	.5	7.0	35	6.40
198	5516500	284	2,020	2,850	---	8.0	---	-----
199	5517000	425	2,290	3,400	---	8.0	---	-----
200	5517400	2.58	33.0	53.6	.3	8.0	40	4.60
201	5517500	1,160	3,448	4,490	---	7.0	---	-----
202	5517780	.39	38.4	70.6	.5	7.0	45	12.40
203	5517900	31.70	438	728	---	7.0	---	-----
204	5518000	1,578	4,100	5,420	---	6.5	---	-----
205	5519000	123	976	1,680	.4	7.5	137	2.50

Table 2.--Basin characteristics and flood peaks of stations used in this report--Continued

Obs.	Station number[1]	A (mi^2)	Peaks (2-yr recurr.) (ft^3/s)	Peaks (10-yr recurr.) (ft^3/s)	R_c	P_i (in.)	R_t (ft)	DD (mi/mi^2)
206	5519500	54.7	935	1,830	0.4	7.0	102	6.50
207	5521000	35.6	241	360	.4	7.5	44	2.50
208	5522000	144	862	1,280	.4	8.0	58	3.50
209	5522500	203	1,230	1,750	.4	8.0	63	4.50
210	5523000	21.8	485	807	.7	8.5	82	3.40
211	5523500	83.7	1,268	2,180	.7	8.5	95	2.50
212	5524000	44.8	1,060	1,880	.7	8.5	193	3.00
213	5524300	.57	83.7	194	.3	8.0	65	11.70
214	5524500	452	3,510	4,056	---	8.0	---	-----
215	5525050	10.2	256	572	.7	8.0	40	2.74
216	5536190	70.7	1,290	2,175	---	6.0	---	-----
217	5526150	.19	33.0	78.0	.3	8.0	50	7.44
218	5527050	.80	107	204	.5	7.5	50	6.37

[1]Station numbers are preceded by a zero.