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FLOODS IN OHIO--MAGNITUDE AND FREQUENCY

By Earl E. Webber and William P. Bartlett, Jr.

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ABSTRACT

Techniques are presented for estimating the magnitude and frequency of floods on Ohio streams. Regression analysis is used to develop equations which relate physical and climatic factors of river basins to peak discharge at stream gaging stations. The equations can be used to estimate flood magnitudes with recurrence intervals from 2 to 100 years on drainage areas between 0.01 and 7,400 square miles (0.03 to 19,200 square kilometers). A summary of flood and watershed data for gaging stations with 10 or more years of record is included. Records for 215 gaging stations are used to develop the regression equations. Flood records of streams with significant regulation or urbanization are excluded from this analysis.

INTPODUCTION

Flood magnitude and frequency data for streams are utilized in the design of dams, bridges, and other structures. Flood data are also needed for flood insurance studies, regulatory activities, and land zoning.

This is the fourth Ohio flood-frequency report prepared by the U.S. Geological Survey. The first three, Bulletins 7, 32, and 43 (Cross, 1946; Cross and Webber, 1959; Cross and Mayo, 1969), were prepared in cooperation with the Division of Water of the Ohio Department of Natural Resources. This report is based on streamflow records through 1975 and contains 10 more years (1966-75) of data than Bulletin 43. This study began in 1965 as an investigation of 20 small drainage areas. It was funded as a cooperative study between the U.S. Geological Survey and the Ohio Department of Transportation and the Federal Highway Administration, to better define flood magnitudes and frequencies

for small areas in Ohio. Subsequently it was expanded to include drainage areas of all sizes as a state-wide update of Bulletin 43.

The purposes of this report are: (1) to present flood-peak data for gaged streams and (2) to outline methods for estimating magnitude and frequency of flood peaks at ungaged sites on unregulated streams which drain primarily rural areas. Economics do not justify collection of data at all potential flood sites in Ohio. By relating peak flows on unregulated gaged streams to basin characteristics, relations may be developed for estimating flood magnitude and frequency on unregulated ungaged streams.

Conversion factors for English units to metric units

Multiply English units	by	to obtain metric units
	Length	
inches (in)	25.4	millimeters (mm)
feet (ft)	.3048	meters (m)
miles (mi)	1.609	kilometers (km)
	Area	
square miles (mi^2)	2.590	square kilometers (km^2)
	Flow	
cubic feet per second (ft^3/s)	.02832	cubic meters per second (m^3/s)

Metric units can not be used in the regression equations. Use English units to compute the discharge in cubic feet per second, then multiply by 0.02832 to convert to cubic meters per second. Metric equivalents are not shown in tables due to limitation of space.

ACKNOWLEDGMENTS

Acknowledgment is made of the cooperation of many individuals and agencies in obtaining hydrologic data and supporting the stream-gaging program in Ohio. The major support of this program has been given by the Ohio Departments of Natural Resources and Transportation, and the U.S. Army Corps of Engineers. Most of the data in this report were obtained from gaging stations operated and maintained by the U.S. Geological Survey in cooperation with local, State, and Federal agencies. Supplemental data were furnished by the Agricultural Research Service, U.S. Soil Conservation Service, and the Miami Conservancy District.

DESCRIPTION OF AREA

Ohio is divided, diagonally, from southwest to northeast by the line of glaciation. The northwest corner is a very flat, glaciated, old-lake region; the southwest, central and northeast areas are rolling, glacial till plains; the southeast area is hilly and unglaciated. Land elevations range from a low of 455 ft (137 m), in Hamilton County, to 1,550 ft (472 m) at the highest point, in Logan County.

The climate is temperate. Annual precipitation, which averages about 38 in (960 mm), is distributed rather uniformly throughout the year. Records indicate that floods may occur anytime during the year with streams having large drainage areas more susceptible from January through April and streams having small drainage areas more susceptible from May through August. Snowfall is not a significant factor of Ohio floods except along Lake Erie, in Cuyahoga, Lake, Geauga and Ashtabula Counties.

METHODS OF ANALYSIS

Methods of flood-frequency analysis at gaging stations and the application of the results to a regional analysis are

outlined in detail by U.S. Water Resources Council (WRC) (1976), Benson (1962), and Thomas and Benson (1970). The analysis consists of (1) determination of the magnitude and frequency of floods at individual stream -gaging stations and (2) development, through regional analysis, of equations for estimation of natural-flow floods on ungaged streams.

Flood frequency at gaging stations

Annual peak discharges on unregulated streams at 215 gaging stations, 206 in Ohio and 9 in Indiana, with 10 or more years of record were used to develop the flood equations used in this report. Locations of these stations are shown in fig. 1 and are listed in tables 6 and 7. Additional stations not used in the regional analysis because of regulation or special land use are also tabulated in tables 6 and 7. The annual flood peaks were analyzed in accordance with U.S. Water Resources Council Bulletin 17, (1976). In general, computations were performed for each station as follows:

(1) The mean (M), standard deviation (S), and skew coefficient (g), were computed for the logarithms of the observed annual-peak discharges.

(2) Regionalized map skew coefficients were selected from the map in Bulletin 17 and final skews were computed as follows:

Records 25 years or less - used regionalized skew;
Records 26-100 years - computed weighted skew from regional value and station value with record length as the weighting factor.

(3) Logarithms of peak discharges (Q) at selected recurrence intervals were computed from log Q = M + KS. K was taken from Pearson Type III tables that relate

computed values of g to selected recurrence intervals.

(4) Frequency curves were adjusted for low outliers, if required.

(5) Frequency curves were adjusted for historic peaks and high outliers, if required.

As mentioned above, methods described in WRC Bulletin 17 (1976) were utilized in each of the above steps. Computed discharges for selected recurrence intervals are tabulated in table 6. A typical flood frequency curve, developed for Little Beaver Creek near East Liverpool, is shown in fig. 2. This shows computed annual peak discharges for a range of recurrence intervals and exceedance probabilities. Recurrence interval and exceedance probability are reciprocals. Exceedance probability is the probability of a given flow being exceeded in any one year.

Regional analysis

Flood-frequency data often are desired for ungaged locations. One method of estimating flood-frequency data for ungaged sites is based on regional analysis by multiple regression techniques. Mathematical equations that relate peak discharges to basin parameters are developed through multiple regression analysis of data for many gaging stations within a defined geographic area. Basin parameters for any ungaged site within the area may then be used in the developed regional equations to compute peak discharges of selected recurrence intervals for the site.

Individual regression equations were developed for peak flows, Q_T, where T is a recurrence interval of 2, 5, 10, 25, 50, and 100 years. Peak flow data for natural flow at gaged sites (table 6) served as the dependent variables. Values of the following basin parameters, which were the independent variables, were determined for all drainage basins upstream from gages on unregulated streams;

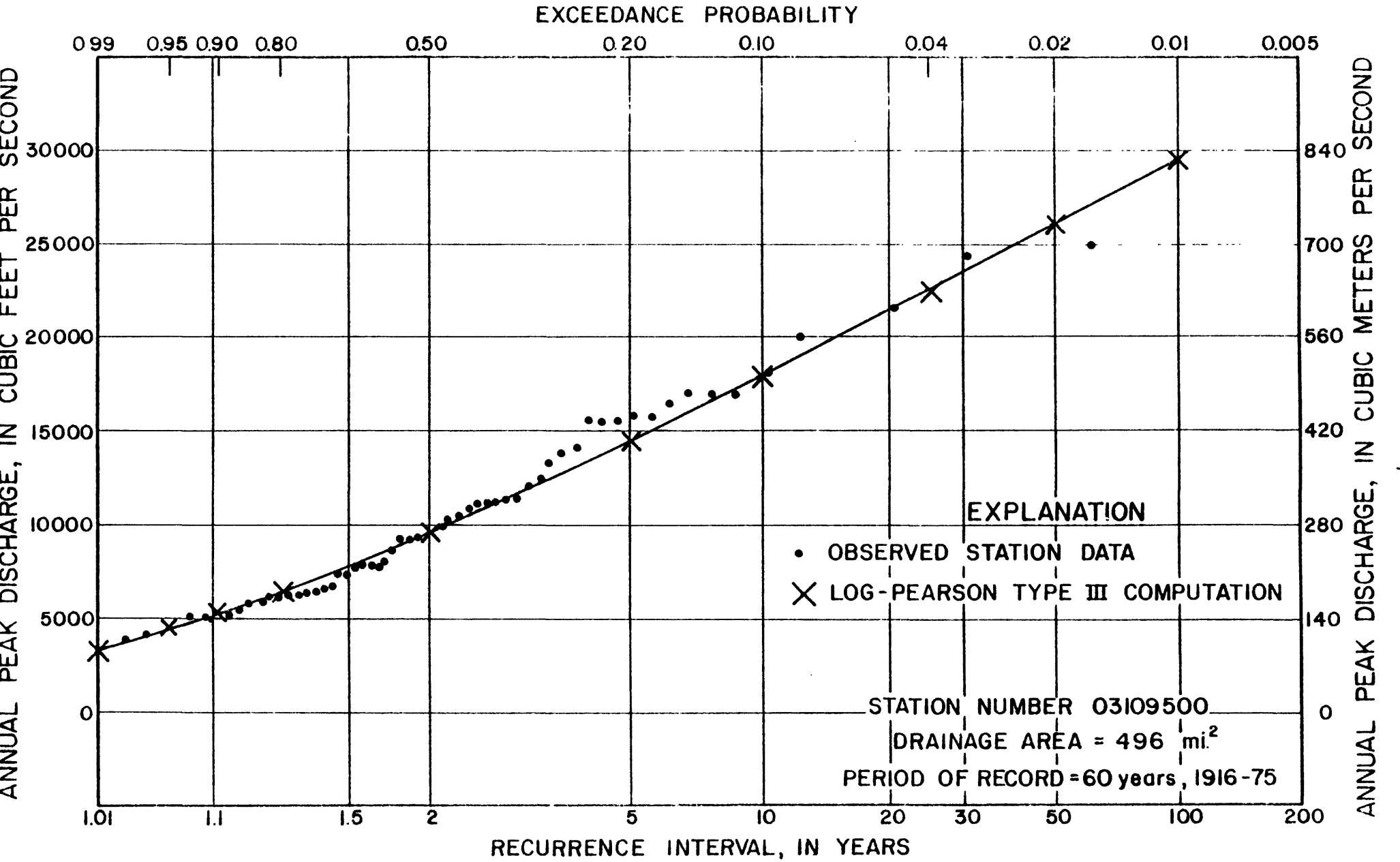

FIGURE 2 - Flood frequency curve for Little Beaver Creek near East Liverpool, Ohio.

Drainage area (A), in square miles, as planimetered from U.S. Geological Survey 7.5 minute series topographic quadrangle maps and tabulated in Ohio Department of Natural Resources Report 12a (1967).

Main-channel slope (Sl), in feet per mile, was computed as the difference between the elevations at 10 and 85 percent of the channel distance from the gaging station to the basin divide, divided by the channel distance between the two points as determined from topographic maps.

Main-channel length (L), in miles from gaging station to basin divide, was determined from topographic maps.

Average basin elevation index (E), in feet above mean sea level, was computed by averaging the elevations at the 10 and 85 percent distance points along the channel as determined from topographic maps. The reliability of this method is discussed by Benson (1964). The characteristic used in regression analysis was average basin elevation index in 1,000's of feet above mean sea level.

Surface-storage index (St), in percent, is the percentage of total drainage area occupied by lakes, ponds, and swamps, as determined from topographic maps. The characteristic used in regression was surface storage index plus 1.0 percent.

Forest area (F), in percent, is the percentage of total drainage area occupied by forest cover as determined from green tinted areas on topographic maps. The characteristic used for regression analysis was forest area plus 1.0 percent.

Soils-infiltration index (So), in inches, for each major land-resource area in Ohio was obtained by personal communication from the U.S. Soil Conservation Service.

Average annual precipitation (P), in inches, determined from an isohyetal map, shown in fig. 3, and published by the Ohio Department of Natural Resources (1962). The characteristic used for regression analysis was average annual precipitation minus 27 (in order to facilitate computations).

Maximum 24-hour rainfall, in inches, having a recurrence interval of 2 years ($I_{24,2}$) was determined from U.S. Weather Bureau Tech. Paper 40 (1961).

Significant values of the above parameters for unregulated gaging stations used in the analysis are tabulated in table 7.

Regression analysis

Peak discharges for each recurrence interval ($Q_2, \ldots, Q_{100}$) were related to the above nine basin parameters in equations developed using multiple-regression techniques. The equations have the general form:

$$Q_T = aA^x S^y P^z \ldots;$$

where,

Q_T is peak discharge for a recurrence interval of T years,
a is the regression constant,

A, S, P are basin parameters, and
x, y, z are regression coefficients.

All nine basin parameters were used initially in each regression and the regression constant, coefficients, standard error of estimate, and significance of each basin parameter were calculated. The calculations were repeated omitting the least significant parameter until only the most significant parameter remained. The five most significant parameters in descending order of significance are (1) drainage area, (2) main channel slope, (3) average annual precipitation, (4) average basin elevation, and (5) storage. Forest cover, rainfall intensity, channel length, and soil infiltration index were parameters found not to be significant in explaining variations in flood flows and are not included in the regression equations.

The step-forward multiple regression method was also used in which basin parameters were selected to be regressed using the parameter with the highest significance first, second highest next, and so on. Only parameters at or above the 5 percent level of significance were used in this analysis. Both methods produced virtually the same results and no differentiation between them was made in this report.

Equations were derived using flood peak data at 215 stations on unregulated streams in a statewide analysis, for which the average standard error of estimate was 35 percent. This error indicates that the computed value of the flood peak is within about 35 percent of the observed value two out of three times.

To improve the accuracy, additional regression analyses were made in subareas of the state divided on the basis of glacial history, plots of residuals (areal plots of differences between computed and observed flood peaks for gaging stations), topography, and generalized soil regions. Five geographic subareas were thereby delineated (fig. 1) and regressions equations derived for each; the average of the five standard errors of estimate is 32 percent. The five geographic areas are identified as follows:

Area 1.- Lake Erie drainage (part 4) from and including Huron River eastward through Conneaut Creek and Ohio River drainage (part 3) from and including

Little Beaver Creek upstream through the Mahoning River basin (glaciated area).

Area 2.- Ohio River drainage south of Short Creek downstream to, but not including, the Little Scioto River, except the Tuscarawas River drainage upstream from and including Stillwater Creek (unglaciated area).

Area 3.- Ohio River drainage downstream from and including the Little Scioto River through the Great Miami River basin including the Mississinewa River and Wabash River basin drainage in Ohio (glaciated area).

Area 4.- Lake Erie drainage from the Michigan-Ohio state boundary line eastward through the Maumee River, Portage River, and Sandusky River basins to, but not including the Huron River basin (glaciated area).

Area 5.- Ohio River drainage downstream from, but not including, Little Beaver Creek to and including Short Creek and all of the Tuscarawas River basin upstream from and including Stillwater Creek.

Additional regressions were made to determine the relation of drainage area to residuals and standard error of estimate. All 214 stations, which represents the total area of the state, were divided into nine bipartite groups (groups divided into two parts), depending upon whether their drainage areas are greater than or less than 1, 2, 5, 10, 20, 30, 50, 75, and 100 square miles (3, 5, 13, 26, 52, 78, 130, 194, and 259 km^2). Regressions for Q_2 were performed for each of the nine bipartite groups. Comparison of standard errors of estimate and basin parameters did not show any significant variation, which indicated that one regression curve could be used for the Q_2 flood. Then, 75 stations in area 3 (the area with the largest number of stations) were regressed at Q_2, Q_5, Q_{10}, Q_{25}, Q_{50}, and Q_{100} for the bipartite groups of stations for drainage areas of 5 and 10 square miles (13 and 26 km^2). The standard errors of estimate

were improved only by 1 and 2 percent, respectively, at the 5 and 10 square mile (13 and 26 km²) division points. Plots of residual against drainage area at Q_2, Q_{25}, and Q_{100} revealed that residuals varied randomly with drainage-area division and were of similar magnitude to those without drainage-area division for the same frequency floods. These studies indicate that drainage-area division would not significantly improve the regional flood frequency curves. Therefore, one regression equation would define a flood discharge of specific recurrence interval for any size drainage area. A summary of final regression equations for the five geographic areas is given in tables 1, 2, 3, 4, and 5. Initially, all parameters significant at the 5 percent level were included. Subsequently, the least significant parameter was dropped until only the most significant parameter (drainage area) remained. The change in percent standard error of estimate indicates the loss of accuracy resulting from elimination of basin parameters. The equation having the smallest standard error of estimate for the peak discharge desired is recommended for use.

The regression coefficients for average basin elevation (E) are negative for area 3. Elevation regression coefficients are normally positive. The negative coefficients in area 3 are explained by the fact that the highest part of the area is flat and the slopes and mean basin relief are greater in the basins of lower elevation of that area.

Table 1.--Summary of regression equations for area 1

Model, based on 40 gaging stations, is $Q_T = aA^x Sl^y St^z$, where;

Q_T = discharge is ft^3/s for a T year recurrence interval,
A = drainage area in mi^2
Sl = main-channel slope in ft/mi
St = percentage of the drainage area occupied by lakes, ponds, and swamps in percent plus 1.0,
a = regression constant, and
x,y,z = regression exponents.

Equation number	Peak flow characteristic Q_T	Regression constant a	Exponent of basin characteristic: Drainage area, A (x)	Main channel slope, Sl (y)	Storage St (z)	Standard error of estimate, percent
1a	Q_2	55.8	0.791	0.174	-0.297	30*
1b	Q_2	91.0	.735	-	-	36
2a	Q_5	91.2	.768	.185	-.334	29*
2b	Q_5	152	.708	-	-	36
3a	Q_{10}	115	.760	.197	-.359	29*
3b	Q_{10}	196	.697	-	-	37
4a	Q_{25}	145	.754	.211	-.389	30*
4b	Q_{25}	257	.686	-	-	39
5a	Q_{50}	166	.752	.222	-.411	31*
5b	Q_{50}	304	.681	-	-	40
6a	Q_{100}	186	.752	.235	-.431	32*
6b	Q_{100}	352	.677	-	-	43

* Equations recommended for use.

Table 2.--Summary of regression equations for area 2

Model, based on 46 gaging stations, is $Q_T = aA^x Sl^y$

where;

Q_T = discharge in ft^3/s for a T year recurrence interval,
A = drainage area in mi^2
Sl = main-channel slope in ft/mi
a = regression constant, and
x,y = regression exponents.

Equation number	Peak flow characteristic Q_T	Regression constant a	Exponent of basin characteristic: Drainage area, A (x)	Exponent of basin characteristic: Main channel slope, Sl (y)	Standard error of estimate, percent
7a	Q_2	42.6	0.802	0.225	33*
7b	Q_2	116	.702	-	35
8a	Q_5	45.4	.820	.373	28*
8b	Q_5	239	.654	-	34
9a	Q_{10}	47.4	.830	.447	27*
9b	Q_{10}	347	.630	-	35
10a	Q_{25}	49.5	.842	.525	27*
10b	Q_{25}	513	.608	-	38
11a	Q_{50}	50.9	.850	.575	29*
11b	Q_{50}	659	.594	-	41
12a	Q_{100}	52.6	.857	.619	32*
12b	Q_{100}	826	.582	-	45

* Equations recommended for use.

Table 3.--Summary of regression equations for area 3

Model, based on 82 gaging stations, is $Q_T = aA^w Sl^x E^y P^z$, where;

Q_T = discharge in ft^3/s for a T year recurrence interval,
A = drainage area in mi^2,
Sl = main-channel slope in ft/mi,
E = average basin elevation index in 1,000's of feet above mean sea level,
P = average annual precipitation, in inches, minus 27.0,
a = regression constant, and
w,x,y,z = regression exponents.

Equation number	Peak flow characteristic Q_T	Regression constant a	Exponent of basin characteristic: Drainage area A (w)	Main channel slope Sl (x)	Average basin elevation E (y)	Average annual precipitation P (z)	Standard error of estimate, percent
13a	Q_2	7.27	0.771	0.244	-1.54	0.802	27*
13b	Q_2	140	.698	-	-	-	47
14a	Q_5	13.0	.751	.259	-1.44	.785	26*
14b	Q_5	252	.672	-	-	-	46
15a	Q_{10}	17.5	.743	.267	-1.39	.769	27*
15b	Q_{10}	337	.661	-	-	-	46
16a	Q_{25}	23.9	.735	.277	-1.35	.750	30*
16b	Q_{25}	454	.650	-	-	-	48
17a	Q_{50}	29.1	.732	.284	-1.32	.732	32*
17b	Q_{50}	547	.643	-	-	-	49
18a	Q_{100}	34.7	.729	.290	-1.30	.718	34*
18b	Q_{100}	643	.638	-	-	-	51

* Equations recommended for use.

Table 4.--Summary of regression equations for area 4

Model, based on 33 gaging stations, is $Q_T = aA^x Sl^y P^z$
where;
Q_T = discharge in ft^3/s for the T year recurrence interval,
A = drainage area in mi^2,
Sl = main-channel slope in ft/mi,
P = average annual precipitation, in inches, minus 27,
a = regression constant, and
x,y,z = regression exponents.

Equation number	Peak flow characteristic Q_T	Regression constant a	Exponent of basin characteristic: Drainage area, A (x)	Exponent of basin characteristic: Main channel slope, Sl (y)	Exponent of basin characteristic: Average annual precipitation P (z)	Standard error of estimate, percent
19a	Q_2	1.44	0.834	0.310	1.35	29*
19b	Q_2	52.1	.762	-	-	38
20a	Q_5	4.21	.800	.264	1.12	30*
20b	Q_5	84.3	.738	-	-	35
21a	Q_{10}	6.59	.784	.247	1.04	31*
21b	Q_{10}	107	.726	-	-	35
22a	Q_{25}	10.9	.767	.231	.929	32*
22b	Q_{25}	136	.712	-	-	35
23a	Q_{50}	14.4	.757	.222	.875	32*
23b	Q_{50}	157	.703	-	-	35
24a	Q_{100}	17.9	.748	.216	.839	33*
24b	Q_{100}	179	.696	-	-	36

* Equations recommended for use.

Table 5.--Summary of regression equations for area 5

Model, based on 14 gaging stations, is $Q_T = aA^x Sl^y$ where;

Q_T = discharge in ft^3/s for the T year recurrence interval,
A = drainage area in mi^2,
Sl = main-channel slope in ft/mi,
a = regression constant, and
x,y = regression exponents.

Equation number	Peak flow characteristic Q_T	Regression constant a	Exponent of basin characteristic: Drainage area, A (x)	Exponent of basin characteristic: Main channel slope, Sl (y)	Standard error of estimate, percent
25a	Q_2	25.1	0.775	0.317	36*
25b	Q_2	91.0	.651	-	37
26a	Q_5	39.3	.750	.350	37*
26b	Q_5	163	.613	-	40
27a	Q_{10}	51.9	.733	.356	38*
27b	Q_{10}	221	.594	-	40
28a	Q_{25}	71.9	.713	.353	39*
28b	Q_{25}	303	.574	-	41
29a	Q_{50}	91.2	.697	.346	40*
29b	Q_{50}	372	.562	-	42
30a	Q_{100}	114	.682	.336	41*
30b	Q_{100}	447	.550	-	43

* Equations recommended for use.

APPLICATION OF REPORT DATA

Methods for computing flood-peak discharges with recurrence intervals between 2 and 100 years are outlined in this section. These methods should only be used for unregulated streams with drainage areas between 0.1 and 7,400 square miles (0.26 and 19,200 km^2). They should not be used for areas where flood flows are significantly affected by regulation or where there is runoff from urban areas. Many streams in Ohio are affected by regulation, as indicated in table 6, and special methods, outside the scope of this report, should be used for flood frequency computations for regulated streams. In general, flood peaks were considered to be significantly affected by regulation if 103 (or more) acre-ft/mi^2 (49,000 m^3/km^2) of usable storage capacity was available in the drainage basin (Benson, 1962). Regulated flow, station data identified in table 6 as type "R", has no regional significance; such data should only be used for estimates for sites at or near the gage and on the same stream.

For sites at a gaging station, or sites on the same stream whose drainage area is within 5 percent of the drainage area of the gaging station, use the gaging station flood frequency data indicated in table 6 as type "N" flow.

If the drainage area for the site is within 1/2 to 2 times that of a gaging station on the same stream, compute a site correction factor (Ks) and multiply it by the site peak discharge computed by the regression equation. Site correction factors (Hannum, 1976) (upstream or downstream) are computed as follows:

For a site downstream from gage,

$$Ks = (Kg-1)(2-As/Ag) + 1 \qquad (31)$$

For a site upstream from gage,

$$Ks = (Kg-1)(2As/Ag-1) + 1 \qquad (32)$$

where;

Ks = ratio of final flood magnitude for the site to regression value for the site,

Kg = ratio of flood magnitude based on gage records (table 6) to the corresponding regression value for the gage,

Ag = drainage area for gage, and

As = drainage area for site.

The geographic-area boundaries follow drainage-area boundaries except where the boundary between areas 5 and 2 crosses the Tuscarawas River. (See fig. 1.) The Tuscarawas River is regulated below Dover Dam. Therefore the regulated frequency data (table 6, type "R" flow) for Tuscarawas River below Dover Dam near Dover (03122500) and Tuscarawas River at Newcomerstown (03129000) should be used for estimates in this reach of the Tuscarawas River. Peak discharge may be estimated for any site on the Tuscarawas River in this reach by interpolation on the basis of the ratios of the contributing drainage areas raised to the 0.6 power.

The Maumee River basin above Antwerp (04183500) was originally separated, because of a geographic bias in residuals, from area 4 and studied as an independent geographic area. Due to a limited number of stations (7) and bias in the drainage area distribution, no valid regression equations could be developed. The final decision was to incorporate it into area 4 (33 stations), for which regression equations were developed. However, owing to bias in residuals in the area above Antwerp, station frequency data should be used in preference to the area 4 regression equations for the main stems of Maumee River, St. Joseph River, St. Marys River, and Cedar Creek. Area 4 regression equations may be used for estimates for areas less than 50 square miles (130 km^2) within the area upstream from Antwerp.

The recommended procedure for estimating flood discharge for a desired frequency is summarized as follows:

(1) Check fig. 1 and table 6 to determine if stream-gage frequency data are available for the site in question. If gage data (table 6, types "N" or "R") are available, use discharge as tabulated for the desired frequency.

(2) When the site is on the same unregulated stream as one or more gaging stations and its drainage area is within 1/2 to 2 times the gaged drainage areas, transfer available data (table 6, type "N") to the site through use of the appropriate procedures described previously and shown later in the illustrated examples. For a site downstream use equation 31 and for a site upstream use equation 32.

(3) When the site is on an unregulated stream for which no stream-gage data are available, use the appropriate regression equation, as listed in tables 1-5.

Limitations and Recommendations

Regression equations should be used only for unregulated streams and not for streams draining urban areas. Frequency

relations for regulated streams must be based on station data. Many streams in Ohio are regulated; table 6 identifies major streams that are presently regulated as having type "R" flow. New reservoirs are constantly being constructed, resulting in changes in regulation. The user is cautioned to look for man-made changes in the drainage basin, upstream from the site, that could alter floodflows. Flood frequency for regulated stream basins should be studied. Streamflow modeling techniques have been developed and are available for this type analysis.

Very little urban area flood data are available in Ohio, but a current, comprehensive project on the hydrology of urban areas will undoubtedly provide flood data in the near future. Present data from two urban stations indicate that urbanization substantially increases flood magnitudes particularly for floods with recurrence intervals of 10 years and less. Thus, the regression equations should not be used for urban areas because such estimates will be low.

Numerous urban-hydrology investigations have been conducted and several are summarized briefly below. The effect of urban development on direct runoff was studied in East Meadow Brook, Long Island, New York (Seaburn, 1969). That study indicates that urbanization increases peak runoff from 1.1 to 4.6 times with an average increase of 2.5 times. The effects of urban development were studied in northern Virginia (Anderson, 1970). In that area the study indicated that urban development increases flood peaks by a factor of 2 to 3. The effects are, however, more profound on floods of small recurrence intervals than on floods of larger recurrence interval. An urban-hydrology study conducted in Houston, Texas (Johnson and Sayre, 1973) indicates that urbanization increases the 2-year flood by a factor of 9 and the 50-year flood by a factor of 5. An investigation of the effects of urbanization in New Jersey (Stankowski, 1974) indicates that urban development increases the flood peaks up to 3 times at the 2-year recurrence interval and up to 1.8 times at the 100-year recurrence interval.

Though no report of the effects of urban development on flood peaks is available for Ohio, the results of the above investigations provide some indication of the range of reported increases in peak discharges resulting from urban development.

Some flood data are available for heavily-forested areas in Ohio. These data indicate that use of the regression equations for a heavily forested area will yield estimates that are too

high. Thus, caution should be exercised when interpreting the results of regression equations applied to heavily forested basins.

No flood data are available for strip-mine areas in Ohio. If the area has been reclaimed by smoothing and reseeding the spoil banks, the regression equations may be applicable. If the area is not reclaimed, with high-bank cuts, pools of water, and spoil banks left untouched the regression equations can only be used with uncertainty; the regression sample contained no data from this type of basin. Some studies of strip-mined basins, however, indicate that those basins may produce reduced (from natural) flood peaks.

The results of this report indicate that the following investigations should be made in the future:

(1) To more accurately determine the magnitude and frequency of floods in the western portion of area 4.

(2) To accurately determine the effects of various type of land use--urban, forested and strip mined--on the magnitude and frequency of floods.

This could be accomplished with a revised state-wide network of small drainage area sites that would be selected with the above objectives in mind. This would provide a check on the regression equations presented and make available additional data for determining the effects of land use. Additional stream gaging stations in geographic area 4, especially upstream from Defiance, would provide needed hydrologic data in that area.

Illustrative examples

In the following illustrative examples, some of the sites are at gaging stations. Station frequency data should be used, when available, in such instances. The regression equations are applied here for illustrative purposes only.

Example 1. - The 100-year peak discharge is required for a site in the Sandusky River basin in geographic area 4.

The site characteristics are:

Drainage area = 66.2 mi^2
Slope = 7.0 ft/mi
Precipitation = 35.0 less 27.0 = 8.0 in

The equation to use is 24a in table 4:

$$Q_{100} = 17.9A^{0.748}S1^{0.216}p0^{0.839}$$
$$= 17.9\ (66.2)^{0.748}(7.0)^{0.216}(8.0)^{0.839}$$
$$= 17.9 \times 23.0 \times 1.52 \times 5.72$$
$$= 3590\ ft^3/s$$

The site, in this example, is actually at the gaging station Wolf Creek at Bettsville (04197300), for which the observed Q_{100} is 3120 ft^3/s.

Example 2. - The 100-year peak discharge is required for a very small ungaged area in southwestern Ohio in geographic area 3.

The site characteristics are:

Drainage area = 0.29 mi^2
Slope = 93.0 ft/mi
Elevation index = 946÷1,000 = 0.946 ft
Precipitation = 38.0 less 27.0 = 11.0 in

The equation to use is 18a in table 3.

$$Q_{100} = 34.7A^{0.729}S1^{0.290}E^{-1.30}p0^{0.718}$$
$$= 34.7 \times (0.29)^{0.729}(93)^{0.290}(0.946)^{-1.30}(11.0)^{0.718}$$
$$= 315\ ft^3/s$$

This site is actually at the gaging station for Blake Run near Reily (03274100), for which the observed Q_{100} = 292 ft^3/s. This is an example where the computed regression data check the observed station data very well.

Example 3. - The 25-year peak discharge is required for an ungaged site in geographic area 2, downstream from the gaging station, Licking River near Newark (03146500).

The equation to be used is 10a in table 2.

$$Q_{25} = 49.5A^{0.842}S1^{0.525}$$

Basin characteristics for the site are:

Drainage area = 672 mi^2

Slope = 8.21 ft/mi

Q_{25} at site = $49.5 \times (672)^{0.842}(8.21)^{0.525}$ = 35,900 ft^3/s

However, table 6 shows the observed Q_{25} for the gage site is 30,100 ft^3/s; solution of the regression equation gives a Q_{25} of 34,200 ft^3/s for the gage. A correction should be applied to the computed Q_{25} = 35,900 ft^3/s for the ungaged site.

The correction factor for a site downstream, with a drainage area less than twice that at a gage is computed using equation 31, Ks = (Kg-1)(2-As/Ag) +1; where Ag = area at gage and As = area at site. Hence: Correction factor at gage = Kg = Qg/Qr = 30,100/34,200 = 0.880.

$$Ks = (0.880-1)(2-672\div537)+1 = 0.910$$

Final Q_{25} at site = 0.910 x 35,900 = 32,700 ft³/s

The site, selected for this example, is at the discontinued gaging station, Licking River at Toboso (03147000), for which the observed Q_{25} is 34,400 ft³/s.

Example 4. - The 50-year peak discharge is required for a site located between two gaging stations on the same stream in geographic area 2. Gaging stations and site data are:

Location	Gage number	Drainage area (mi²)	50-year flood (ft³/s) Observed	Computed
Licking R near Newark ---	03146500	537	35,300	41,500
Site ----------	-	672	-	-
Licking R at Dillon -----	03147500	742	51,500	39,200

Site basin characteristics are:

Drainage area = 672 mi²
Main channel slope = 8.2 ft/mi

Equation to use is 11a, table 2:

$Q_{50} = 50.9A^{0.850}S1^{0.575}$
Q_{50} at site = $50.9(672)^{0.850}(8.2)^{0.575}$ = 43,100 ft³/s

A correction for a site with less than twice the drainage area of an upstream gage should be applied to the computed Q_{50} utilizing equation 31 as follows:

Correction at upstream gage = Kg = 35,300/41,500 = 0.851
Correction at site = Ks = (0.851-1)[2-(672/537)]+1 = 0.888

A correction for a site more than half the drainage area of a downstream gage should be applied to the computed Q_{50} utilizing equation 32.

Correction at downstream gage = Kg = 51,500/39,200 = 1.314
Correction at site = Ks = (1.314-1)[2(672/742)-1]+1 = 1.255

The average of the two Ks correction factors should be applied since both an upstream and a downstream gage are available:

Average Ks = (0.888+1.255)/2 = 1.072

Final Q_{50} for site = 43,100 x 1.072 = 46,200 ft^3/s

The site in this example is actually at the discontinued gaging station Licking River at Toboso (03147000) for which the observed Q_{50} is 40,400 ft^3/s.

REGULATED STREAMS

The regression equations in tables 1 to 5 should not be used on the currently regulated streams listed below.

Regulated Ohio streams, as of 1975

Geographic Area 1

Cuyahoga River from East Branch Lake to Lake Rockwell
Little Cuyahoga River below Mogadore Lake
Mahoning River below Berlin Lake
West Branch Mahoning River below M.J. Kirwan Lake
Mosquito Creek below Mosquito Creek Lake
Meander Creek below Meander Creek Lake

Geographic Areas 2 and 5

Conotton Creek below Leesville Lake
Sandy Creek below Bolivar Reservoir
Tuscarawas River below Dover Reservoir
Sugar Creek below Beach City Reservoir
Stillwater Creek below Piedmont Lake
Little Stillwater Creek below Tappan Lake
Black Fork below Charles Mill Lake
Clear Fork below Pleasant Hill Lake
Lake Fork below Mohicanville Reservoir
Mohican River
North Branch Kokosing River below North Branch Kokosing River Lake
Walhonding River below Mohawk Reservoir
Muskingum River
Seneca Fork below Senecaville Lake
Salt Fork below Salt Fork Lake
Wills Creek below Wills Creek Reservoir
Licking River below Dillon Lake
Hunters Run
Hocking River above Rush Creek

Geographic Area 3

Scioto River below Olentangy River
Olentangy River below Delaware Lake
Big Walnut Creek below Hoover Lake
Alum Creek below Alum Creek Lake
Deer Creek below Deer Creek Lake
Paint Creek below Paint Creek Lake
Rocky Fork below Rocky Fork Lake
Caesar Creek below Caesar Creek Lake
Little Miami River below Caesar Creek
East Fork Little Miami River below East Fork Little Miami Lake
West Fork Mill Creek below West Fork Lake
Mill Creek below West Fork Mill Creek
Loramie Creek below Lockington Reservoir
Miami River below Loramie Creek
Stillwater River below Englewood Reservoir
Buck Creek below C.J. Brown Reservoir
Mad River below Buck Creek
Twin Creek below Germantown Reservoir
Whitewater River below East Fork Whitewater River

Geographic Area 4

No streams are significantly affected by regulation

Many years of record are available for regulated streams as shown in table 6 under type "R" flow (regulated). Peak discharges in table 6 are for periods when regulation remained virtually constant; recurrence intervals for which peak discharges are reported have been limited to twice the length of record. These discharges may be used as estimates for sites at or near the gaging station on the same stream. If, however, a new reservoir is constructed or the operational procedures are changed for an existing reservoir within a regulated-stream basin, the frequency data in table 6 will no longer be applicable.

MAXIMUM FLOODS IN OHIO

Maximum known floods for gaging stations are listed in table 6. Many-peak discharge determinations by indirect methods have been made by the U.S. Geological Survey and other agencies. All unit peak discharges with Myers ratings of 5 or more are plotted against drainage area on fig. 4. The Myers rating is one way to rate the severity of floods. The formula is

$$M = Q/100(D.A.)^{0.5}$$

where,

M = Myers rating in percent,

Q = Peak discharge in ft^3/s, and

D.A. = Drainage area in mi^2.

Myers ratings for the 100-year floods in Ohio are generally between 10-and 20- percent. The 60 percent Myers rating envelope appears to be a good estimate of the upper limit of floods in Ohio.

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Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03086500	Mahoning R at Alliance, lat 40°55'55", long 81°05'45", Stark Co, at Webb Ave bridge.	M	2430	3890	4980	6450	7620	8840	1959	9740	34	1942-1975	Slight regulation by Westville Res, peaks not seriously affected.
03087000	Beech Cr nr Bolton, lat 40°55'50", long 81°08'50", Stark Co, at bridge 1.8 mi SW of Bolton.	M	1070	1580	1930	2370	2700	3030	1950	2210	11	1944-1954	
03088000	Deer Cr at Limaville, lat 40°58'45", long 81°09'35", Stark Co, 0.6 mi W of Limaville.	M	1060	1400	1620	1880	2070	2250	1959	3660	15	1942-1955, 1959	
03089500	Mill Cr nr Berlin Center, lat 41°00'00", long 80°58'10", Mahoning Co, 2 mi SW of Berlin Center.	M	966	1350	1600	1920	2150	2380	1946	1900	34	1942-1975	
03091500[2]	Mahoning R at Pricetown, lat 41°07'50", long 80°58'24", Mahoning Co, 0.5 mi SW of Pricetown.	R	1950	2800	3220	3610	3840	-	1947	3430	33	1943-1975	Regulation by Berlin and Milton Res, 1943-75.
03092000	Kale Cr nr Pricetown, lat 41°08'25", long 80°59'45", Trumbull Co, 1.5 mi NW of Pricetown.	M	1230	1800	2180	2680	3060	3450	1959	3860	34	1942-1975	
03092090	W Br Mahoning R nr Ravenna, lat 41°09'41", long 81°11'50", Portage Co, at bridge, 2.5 mi E of Ravenna.	M	862	1300	1600	1980	2270	2560	1972	2090	10	1966-1975	
03092100	Hinkley Cr nr Charlestown, lat 41°09'10", long 81°10'05", Portage Co, at culvert on SR 5, 1.3 mi SW of Charlestown.	M	339	513	646	834	989	1160	1959	2400	23	1947-1969	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03092600	Ordnance Cr nr Newton Falls, lat 41°11'20", long 81°01'05", Portage Co, at culvert on SR 5, W of Newton Falls.	M	37	67	89	121	146	173	1956	103	13	1950-1962	
03093000	Eagle Cr at Phalanx Station, lat 41°15'40", long 80°57'16", Trumbull Co, at bridge 1 mi N of Phalanx Station.	M	2420	3480	4170	5010	5620	6220	1959	6700	46	1927-1934 1938-1975	
03094900	Walnut Cr at Cortland, lat 41°19'45", long 80°43'30", Trumbull Co, at Main St bridge in Cortland.	M	481	824	1080	1440	1730	2030	1959	1470	29	1947-1975	
03095500[2]	Mosquito Cr below Mosquito Cr Dam nr Cortland, lat 41°18'00", long 80°45'25", Trumbull Co, 100 ft below Mosquito Cr Dam.	R	561	874	1070	1300	1460	-	1947	1280	32	1944-1975	Regulation by Mosquito Cr Res, 1944-75.
03097500[2]	Meander Cr at Mineral Ridge, lat 41°09'26", long 80°46'31", Trumbull Co, 0.8 mi downstream from Mineral Ridge Dam.	R	1520	2310	2890	3690	4320	-	1946	5500	22	1930-1951	Regulation by Meander Cr Res, 1930-51.
03098500	Mill Cr at Youngstown, lat 41°04'20", long 80°41'25", Mahoning Co, 2.5 mi upstream from mouth.	M	1570	2630	3440	4570	5490	6470	1913	7140	33	1913 1944-1975	
03098700	Crab Cr at Youngstown, lat 41°07'20", long 80°38'08", Mahoning Co, at Hubbard Rd bridge, 2 mi upstream from mouth.	M	644	843	981	1160	1300	1450	1959	2140	17	1959-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03102900	Clear Cr at Dilworth, lat 41°26'40", long 80°39'56", Trumbull Co, at bridge on SR 193.	N	64	126	181	266	342	429	1958	749	29	1947-1975	
03102950	Pymatuning Cr at Kinsman, lat 41°26'34", long 80°35'18", Trumbull Co, at bridge on SR 7..	N	1280	1590	1770	1990	2140	2280	1972	1660	10	1966-1975	
03109000	Lisbon Cr at Lisbon, lat 40°46'55", long 80°45'53", Columbiana Co, at city waterworks of Lisbon.	N	382	617	793	1030	1230	1430	1958	1500	29	1947-1975	
03109500	Little Beaver Cr nr E Liverpool, lat 40°40'33", long 80°32'27", Columbiana Co, at Grimms Bridge.	N	9710	14500	17900	22400	26000	29600	1941	25000	60	1916-1975	
03110000	Yellow Cr nr Hammondsville, lat 40°32'16", long 80°43'31", Jefferson Co, 1.6 mi SW of Hammondsville.	N	3340	4910	6020	7480	8610	9770	1952	9580	35	1941-1975	
03111500	Short Cr nr Dillonvalle, lat 40°11'36", long 80°44'04", Jefferson Co, at SR 150 bridge, 2.1 mi E of Dillonvale.	N	2850	4260	5260	6570	7590	8640	1945	6500	34	1942-1975	
03114000	Captina Cr at Armstrong Mills, lat 39°54'31", long 80°55'27", Belmont Co, at bridge on SR 148.	N	6200	9170	11300	14100	16400	18700	1975	12000	26	1927-1935 1959-1975	
03115400	Little Muskingum R at Bloomfield, lat 39°33'47", long 81°12'14", Washington Co, 400 ft above bridge on SR 260.	N	7270	9990	11700	13700	15100	16400	1963	21200	17	1959-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s 2-year	5-year	10-year	25-year	50-year	100-year	Maximum known discharge Date	Maximum known discharge ft³/s	Record No. of years	Record Period	Remarks
03115600	Barnes Run nr Summerfield, lat 39°46'20", long 81°22'26", Noble Co, 2.5 mi SW of Summerfield.	N	557	1120	1620	2390	3080	3880	1957	2350	29	1947-1975	
03116000	Tuscarawas R at Clinton, lat 40°55'40", long 81°37'58", Summit Co, 100 ft downstream from Co Rd 17 bridge at Clinton.	N	1280	1790	2110	2490	2760	3020	1935	2700	49	1927-1975	
03116100	Little Chippewa Cr nr Smithville, lat 40°53'39", long 81°48'46", Wayne Co, at bridge on SR 5.	N	746	1170	1480	1880	2200	2530	1969	3930	26	1947-1972	
03116200	Chippewa Cr at Easton, lat 40°56'47", long 81°44'35", Wayne Co, at bridge on SR 585.	N	1510	2340	3090	4330	5490	6910	1969	12500	17	1959-1975	
03117000	Tuscarawas R at Massillon, lat 40°46'13", long 81°31'27", Stark Co, at sewage treatment works, 0.7 mi S of Massillon.	N	3910	5230	6080	7140	7910	8670	1969	10700	37	1939-1975	
03117500	Sandy Cr at Waynesburg, lat 40°40'21", long 81°15'36", Stark Co, at bridge on SR 183.	N	3450	5090	6290	7940	9260	10700	1959	15000	37	1939-1975	
03118000	Middle Br Nimishillen Cr at Canton, lat 40°50'29", long 81°21'14", Stark Co, at bridge on Martindale Rd.	N	690	1040	1280	1600	1840	2090	1959	2470	34	1942-1975	
03118500	Nimishillen Cr at North Industry, lat 40°44'03", long 81°21'08", Stark Co, 1 mi SE of North Industry.	N	2960	4290	5210	6410	7320	8260	1959	8600	54	1922-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03119000	Sandy Cr at Sandyville, lat 40°38'04", long 81°22'28", Tuscarawas Co, at highway bridge 0.4 mi below Nimishillen Cr.	N	7080	10500	12900	15900	18100	20400	1937	14200	24	1924-1947	
03119600[2]	Jefferson Cr nr Jewett, lat 40°22'57", long 80°58'36", Harrison Co, at culvert adjacent to SR 9.	R	87	148	198	271	334	-	1952	367	29	1947-1975	Regulation by Pay Dam, 1947-75.
03119700	Conotton Cr at Jewett, lat 40°21'59", long. 81°00'13", Harrison Co, at bridge on SR 9.	N	461	726	920	1180	1390	1610	1963	1170	29	1947-1975	
03120500[2]	McGuire Cr below Leesville Dam nr Leesville, lat 40°28'13", long 81°11'48", Carroll Co, at dam outlet.	R	372	501	587	696	779	-	1940	740	37	1939-1975	Regulation by Leesville Res, 1939-75.
03121500[2]	Indian Fk below Atwood Dam nr New Cumberland lat 40°31'31", long 81°17'18", Tuscarawas Co, 500 ft below dam.	R	554	762	937	1210	1450	-	1945	1610	37	1939-1975	Regulation by Atwood Res, 1939-75.
03122500	Tuscarawas R below Dover Dam nr Dover, lat 40°31'37", long 81°25'48", Tuscarawas Co, at bridge on SR 416.	N	15100	21800	25700	30100	32900	35500	1913	62000	15	1913 1924-1937	Regulation by Dover Res, 1938-75.
		R	7000	8860	10300	12500	14400	-	1939 1940	14900	38	1938-1975	
03123400	Dundee Cr at Dundee, lat 40°35'35", long 81°36'13", Tuscarawas Co, at culvert on SR 93.	N	94	177	244	341	423	511	1969	340	10	1966-1975	
03124000[2]	Sugar Cr below Beach City Dam nr Beach City lat 40°38'08", long 81°33'11", Tuscarawas Co, 1000 ft below Beach City Dam.	R	2160	3030	3880	5340	6780	-	1969	7520	38	1938-1975	Regulation by Beach City Res, 1938-75.

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03125000	Home Cr nr New Philadelphia, lat 40° 28'06", long 81°24' 10", Tuscarawas Co, 1.5 mi SE of New Philadelphia.	N	114	205	275	373	452	536	1969	378	39	1937-1975	
03126000[2]	Stillwater Cr at Piedmont, lat 40°11' 41", long 81°12'56", Harrison Co, 400 ft below Piedmont Dam outlet.	R	949	1230	1400	1580	1700	-	1951	1470	37	1939-1975	Regulation by Piedmont Res, 1939-75.
03127000[2]	Stillwater Cr at Tippecanoe, lat 40° 16'13", long 81°17' 26", Harrison Co, at highway bridge at Tippecanoe.	R	2300	3170	3750	4490	5050	-	1945 1963	4410	37	1939-1975	Regulation by Piedmont and Clendening Res, 1939-75.
03127500[2]	Stillwater Cr at Uhrichsville, lat 40° 23'10", long 81°20' 50", Tuscarawas Co, at dam of the Dennison Water Supply Co.	R	2910	3900	4580	5460	6140	-	1945	5570	38	1938-1975	Regulation by Piedmont and Clendening Res, 1939-75.
03128500[2]	Little Stillwater Cr below Tappan Dam at Tappan, lat 40°21'25", long 81°13'49", Harrison Co, 150 ft downstream from Tappan Dam.	R	475	601	669	741	787	-	1939	1050	37	1939-1975	Regulation by Tappan Res, 1939-75.
03129000	Tuscarawas R at Newcomerstown, lat 40° 15'41", long 81°36'33", Tuscarawas Co, 0.2 mi S of Newcomerstown.	N	21200	31200	38700	49100	57700	66900	1913	83000	17	1913 1922-1937	Regulation by 8 reservoirs, 1938-75.
		R	12700	15700	17700	20100	21900	-	1940	22100	38	1938-1975	
03129012	White Eyes Cr tributary nr Coshocton (ARS station 192), lat 40°21'41", long 81°47'52", Coshocton Co, 10 mi NE of Coshocton.	N	3	10	19	34	50	70	1946	35	19	1940-1958	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s 2-year	5-year	10-year	25-year	50-year	100-year	Maximum known discharge Date	ft³/s	Record No. of years	Period	Remarks
03129014	White Eyes Cr tributary nr Coshocton (ARS station 196), lat 40°21'36", long 81°46'04", Coshocton Co, 10 mi NE of Coshocton.	N	110	260	403	637	851	1100	1957	1140	34	1937-1970	
03129016	White Eyes Cr tributary nr Coshocton (ARS station 183), lat 40°21'29", long 81°46'53", Coshocton Co, 10 mi NE of Coshocton.	N	28	74	120	199	275	367	1946	193	25	1938-1955 1957-1963	
03129300	Whetstone Cr tributary nr Olivesburg, lat 40° 53'15", long 82°24'25", Ashland Co, at culvert on SR 96.	N	44	75	99	132	158	187	1969	310	26	1950-1975	
03130000[2]	Black Fk below Charles Mill Dam nr Mifflin, lat 40°44'16", long 82° 21' 48", Ashland Co, 700 ft downstream from dam.	R	1200	1600	1870	2220	2480	-	1964	2800	37	1939-1975	Regulation by Charles Mill Res, 1939-75.
03130500	Touby Run at Mansfield, lat 40°45'53", long 82° 32'43", Richland Co, 100 ft downstream from W 4th St bridge at Mansfield.	N	411	626	771	955	1090	1230	1947	965	29	1947-1975	
03131500[2]	Black Fk at Loudonville, lat 40°38'09", long 82° 14'22", Ashland Co, at bridge on SR 3.	R	2880	3910	4550	5330	5880	-	1969	8460	39	1937-1975	Regulation by Charles Mill Res, 1937-75.
03132000	Clear Fk at Butler, lat 40°35'37", long 82° 25'20", Richland Co, at bridge on SR 95.	N	3200	4820	6030	7710	9070	10500	1959	14300	30	1946 1975	Slight regulation by Clear Fk Res, peaks not seriously affected.
03133500[2]	Clear Fk below Pleasant Hill Dam nr Perrysville, lat 40°37'13", long 82° 19'28", Ashland Co, 0.2 mi downstream from dam.	R	1410	1810	2010	2230	2360	-	1959	2340	37	1939-1975	Regulation by Pleasant Hill Res, 1939-75.

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03134000	Jerome Fk nr Jeromeville, lat 40°48'07", long 82°12'01", Ashland Co, at highway bridge in Jeromeville.	M	2510	3980	5220	7170	8930	11000	1969	27000	30	1926-1949, 1959 1962-1964, 1966, 1969	
03135000[2]	Lake Fk below Mohicanville Dam nr Mohicanville, lat 40°43'24", long 82°09'18", Ashland Co, 800 ft downstream from dam.	R	1640	2180	2690	3530	4330	-	1969	5490	37	1939-1975	Regulation by Mohicanville Res, 1939-75.
03136000	Mohican R at Greer, lat 40°30'53", long 82°11'44", Knox Co, 3000 ft downstream from bridge on SR 514.	M	10700	15800	19200	23600	26900	30200	1913	55000	17	1913 1922-1937	Regulation by 3 reservoirs, 1939-75.
		R	6410	8890	10900	14000	16600	-	1969	20500	38	1938-1975	
03136500	Kokosing R at Mount Vernon, lat 40°24'20", long 82°30'00", Knox Co, at Tilden Ave bridge at Mount Vernon.	M	4330	7110	9480	13200	16500	20300	1959	38000	23	1953-1975	Minor regulation by 2 reservoirs, peaks not seriously affected.
03137000	Kokosing R at Millwood lat 40°23'51", long 82°17'09", Knox Co, 0.4 mi W of Millwood.	M	9630	16200	21500	29600	36600	44500	1959	75900	54	1913, 1922-1974	
03138500	Walhonding R below Mohawk Dam nr Nellie, lat 40°20'29", long 82°03'56", Coshocton Co, at bridge on US 36.	M	19600	29200	35500	43400	49200	54900	1913	102000	17	1913 1922-1937	Regulation by 4 reservoirs, 1938-75.
		R	9050	11300	12800	14800	16200	-	1939	15800	38	1938-1975	
03138900	Jennings Ditch tributary nr Wooster, lat 40°44'45", long 81°55'48", Wayne Co, at culvert on SR 83, 4 mi S of Wooster.	M	58	153	278	561	919	1470	1946	1880	11	1946 1966-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03139000	Killbuck Cr at Killbuck, lat 40°29'41", long 81°59'12", Holmes Co, at highway bridge at Killbuck.	M	3420	6340	9630	16200	23700	34300	1969	47500	45	1931-1975	
03139930	Little Mill Cr tributary nr Coshocton (ARS station 5), lat 40°24'23", long 81°48'11", Coshocton Co, 10 mi NE of Coshocton.	N	65	136	200	298	385	484	1957	382	35	1937-1971	
03139940	Little Mill Cr nr Coshocton (ARS station 92), lat 40°24'08", long 81°47'41", Coshocton Co, 10 mi NE of Coshocton.	N	155	306	433	622	782	959	1957	578	35	1937-1971	
03139960	Little Mill Cr nr Coshocton (ARS station 94), lat 40°23'32", long 81°48'24", Coshocton Co, 10 mi NE of Coshocton.	N	293	615	892	1310	1670	2070	1957	1400	35	1937-1971	
03139970	Little Mill Cr tributary nr Coshocton (ARS station 10), lat 40°23'33", long 81°48'19", Coshocton Co, 10 mi NE of Coshocton.	N	26	65	105	171	234	309	1957	216	34	1938-1971	
03139980	Little Mill Cr nr Coshocton (ARS station 95), lat 40°23'03", long 81°49'04", Coshocton Co, 10 mi NE of Coshocton.	N	399	840	1220	1790	2280	2820	1957	1590	35	1937-1971	
03139990	Little Mill Cr nr Coshocton, (ARS station 97), lat 40°21'51", long 81°50'20", Coshocton Co, 10 mi NE of Coshocton.	N	715	1500	2180	3220	4120	5120	1935	9020	36	1935 1937-1971	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03140000	Mill Cr nr Coshocton, lat 40°21'46", long 81°51'45", Coshocton Co, 6 mi N of Coshocton.	N	1460	2800	3910	5600	7040	8650	1969	8720	39	1937-1975	
03140010	Spoon Cr tributary nr Coshocton (ARS station 177), lat 40°22'01", long 81°47'58", Coshocton Co, 10 mi NE of Coshocton.	N	22	58	94	158	219	292	1957	240	31	1940-1970	
03140020[2]	Spoon Cr tributary nr Coshocton (ARS station 172), lat 40° 21'58", long 81°48'04", Coshocton Co, 10 mi NE of Coshocton.	N	9	22	35	56	76	100	1957	116	33	1939-1971	Forest on 99% of area.
03140030	Spoon Cr tributary nr Coshocton (ARS station 169), lat 40° 21'27", long 81°48' 11", Coshocton Co, 10 mi NE of Coshocton.	N	14	33	50	79	105	136	1957	76	30	1940-1969	
03140500[2]	Muskingum R nr Coshocton, lat 40°14'54", long 81° 52'23", Coshocton Co, 1 mi SW of Coshocton.	R	24500	29800	33000	36700	39200	-	1913	202000	38	1938-1975	Regulation by 12 reservoirs, 1938-75.
03141500[2]	Seneca Fk below Senecaville Dam nr Senecaville, lat 39°55'28", long 81°26'17", Guernsey Co, 650 ft downstream from dam.	R	700	780	830	900	950	-	1964	914	36	1939-1953 1955-1975	Regulation by Senecaville Res, 1939-75.
03142000[2]	Wills Cr at Cambridge, lat 40°00'52", long 81°35'14", Guernsey Co., at bridge on Campbell Ave in Cambridge.	R	3760	5350	6450	7890	9010	-	1963	8500	38	1938-1975	Regulation by Senecaville Res, 1938-75.

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s 2-year	5-year	10-year	25-year	50-year	100-year	Maximum known discharge Date	ft³/s	Record No. of years	Period	Remarks
03142200	Salt Fk nr Cambridge, lat 40°05'05", long 81°27'20", Guernsey Co, at US 22 bridge, 8.5 mi NE of Cambridge.	N	1630	2750	3600	4780	5730	6750	1963	3890	11	1957-1967	
03143500[2]	Wills Cr below Wills Cr Dam at Wills Cr, lat 40°09'34", long 81°50'51", Coshocton Co, 1200 ft downstream from dam.	R	5780	6300	6420	6470	6480	-	1913	22300	37	1939-1975	Regulation by Wills Cr Res, 1939-75.
03144000	Wakatomika Cr nr Frazeysburg, lat 40° 07'57", long 82°08' 53", Muskingum Co, 2 mi NW of Frazeysburg.	N	3980	6790	8900	11800	14100	16500	1959	13700	39	1937-1975	
03144500	Muskingum R at Dresden, lat 40°07'13", long 81°59'59", Muskingum Co, 70 ft downstream from bridge on SR 208.	N	46000	69200	86100	109000	128000	147000	1913	22800	17	1913 1922-1937	Regulation by 14 reservoirs, 1938-75.
		R	30500	36300	39200	42200	44000	-	1952	45200	38	1938-1975	
03144800	Etna Cr at Etna, lat 39°58'08", long 82° 40'55", Licking Co, at culvert on SR 310, 0.7 mi N of Etna.	N	93	160	211	280	334	392	1968	218	10	1966-1975	
03145500	Raccoon Cr at Granville, lat 40°03'50", long 82°31'35", Licking Co, at bridge on SR 16.	N	4170	6790	8690	11200	13200	15200	1959	8700	10	1940-1948 1959	
03145600	Otter Fk nr Centerburg, lat 40°17'35", long 82°43'09", Knox Co, at culvert on SR 3, 1.2 mi W of Centerburg.	N	129	212	273	353	416	480	1959	445	29	1947-1975	
03146000	North Fk Licking R nr Utica, lat 40°13'41", long 82°27'06", Licking Co, at bridge on SR 13.	N	4600	6610	7930	9570	10800	12000	1973	7040	15	1940-1948 1970-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03146500	Licking R nr Newark, lat 40°03'33", long 82°20'23", Licking Co, at Stadden bridge, 3.5 mi E of Newark.	N	11500	18400	23400	30100	35300	40700	1959	45000	36	1940-1975	
03147000	Licking R at Toboso, lat 40°03'26", long 82°13'12", Licking Co, at highway bridge in Toboso.	N	12900	20900	26700	34400	40400	46600	1959	49800	45	1903-1906 1913 1922-1961	
03147500	Licking R below Dillon Dam nr Dillon Falls, lat 39°59'18", long 82°04'50", Muskingum Co, 500 ft downstream from dam.	N	14100	24300	32100	42900	51500	60700	1959	47000	21	1913 1940-1959	Regulation by Dillon Res, 1960-75.
		R	5470	6160	6560	7030	-	-	1963	7320	16	1960-1975	
03147900	Timber Run nr Zanesville, lat 39°57'00", long 82°03'07", Muskingum Co, at bridge on private road adjacent to old US 40.	N	770	1280	1650	2160	2560	2980	1973	2190	29	1947-1975	
03148300	Moxahala Cr at Roseville, lat 39°48'38", long 82°04'13", Muskingum Co, at pumping station, 2500 ft downstream from 1st St bridge.	N	2430	3660	4510	5630	6480	7350	1963	5600	13	1963-1975	
03149500	Salt Cr nr Chandlersville, lat 39°54'31", long 81°51'36", Muskingum Co, at SR 146 bridge 2 mi NW of Chandlersville.	N	3330	4180	4710	5340	5780	6210	1940	5240	13	1935-1947	
03150000	Muskingum R at McConnelsville, lat 39°38'42", long 81°51'00", Morgan Co, just upstream from Dam 7.	N	55900	86300	108000	137000	159000	183000	1913	270000	16	1913 1922-1937	Regulation by 14 dams 1938-60, 15 dams, 1961-75.
		R	42500	57400	66900	78700	87400	-	1945	83800	38	1938-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03150600	Tupper Cr at DeVola, lat 39°28'24", long 81°27'58", Washington Co, at culvert on SR 60 at DeVola.	N	155	216	258	312	352	394	1968	285	10	1966-1975	
03156000[2]	Hunters Run at Lancaster, lat 39°41'57", long 82°37'18" Fairfield Co, at bridge on US 22, 1 mi SW of Lancaster.	R	899	1300	1520	1780	-	-	1948	11200	20	1956-1975	Regulation by 4 retarding basins 1956-75.
03156400[2]	Hocking R at Lancaster, lat 39°42'24", long 82°36'03", Fairfield Co, at Columbus St bridge in Lancaster.	R	1710	2550	3050	3600	-	-	1968	3520	19	1956-1974	Regulation by 8 retarding basins, 1956-74.
03157000	Clear Cr nr Rockbridge, lat 39°35'18", long 82°34'43", Hocking Co, on county road bridge 2.0 mi upstream from mouth.	N	2630	4220	5670	8070	10400	13200	1948	16000	36	1940-1975	
03157500	Hocking R at Enterprise, lat 39°33'54", long 82°28'29", Hocking Co, at an abandoned bridge at Enterprise.	N	6980	11900	15700	21200	25800	30900	1907	36000	45	1907 1932-1975	
03158100[2]	Hayden Run nr Haydenville, lat 39°28'57", long 82°19'06", Hocking Co, at culvert on US 33, 0.5 mi E of Haydenville.	N	78	137	184	250	304	363	1968	370	10	1966-1975	Forest and storage on 88% of area.
03159500	Hocking R at Athens, lat 39°19'34", long 82°05'16", Athens Co, 0.8 mi E of Athens, 1.4 mi downstream from Coats Run.	N	12600	19000	24000	31200	37300	44000	1907	50000	61	1907 1916-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03159540	Shade R nr Chester, lat 39°03'49", long 81°52'55", Meigs Co, at bridge on Oak Hill Rd, 2.8 mi SE of Chester.	N	4400	5810	6720	7860	8710	9550	1968	8170	10	1966-1975	
03202000	Raccoon Cr at Adamsville, lat 38°52'25", long 82°21'22", Gallia Co, at bridge on US 35, at Adamsville.	N	6350	9410	11600	14700	17100	19600	1968	22500	58	1916-1935 1937 1939-1975	
03217500	Scioto R at LaRue, lat 40°34'28", long 83°23'15", Marion Co, 200 ft below highway bridge at LaRue.	N	5300	8050	9820	12000	13500	15000	1959	16300	24	1927-1935 1938-1951 1959	
03218000	Little Scioto R above Marion, lat 40°37'43", long 83°10'11", Marion Co, at C&O RR bridge, 3.5 mi NW of Marion.	N	1140	1770	2250	2900	3430	4000	1959	5160	37	1939-1975	
03219500	Scioto R at Prospect, lat 40°25'10", long 83°11'50", Delaware Co, at Hoskins bridge, 2 mi south of Prospect.	N	6060	8450	9900	11600	12800	13900	1913	27000	62	1913, 1915-1975	
03219600[2]	Eagon Run nr Warrensburg, lat 40°19'35", long 83°09'15", Delaware Co, 1.7 mi NE of Warrensburg.	R	13	28	40	57	-	-	1959	48	18	1955-1967 1971-1975	Regulation by farm pond since 1955.
03220000	Mill Cr nr Bellepoint, lat 40°14'55", long 83°10'30", Delaware Co, at highway bridge, 1.5 mi W of Bellepoint.	N	4420	6550	8060	10100	11600	13200	1959	20300	33	1943-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s 2-year	5-year	10-year	25-year	50-year	100-year	Maximum known discharge Date	Maximum known discharge ft³/s	Record No. of years	Record Period	Remarks
03221000	Scioto R below O'Shaughnessy Dam nr Dublin, lat 40°08'36", long 83°07'14", Franklin Co, 0.8 mi below O'Shaughnessy Dam.	N	12600	20000	25600	33600	40100	47200	1913	74500	52	1913, 1925-1975	
03221900[2]	Dry Run at Columbus, lat 39°57'22", long 83°06'19", Franklin Co, at Westinghouse plant nr W edge of Columbus.	N	488	660	767	895	987	1070	1973	803	11	1965-1975	90% of area is urban and sewered.
03223000	Olentangy R at Claridon, lat 40°35'05", long 82°59'20", Marion Co, at SR 95, 0.5 mi E of Claridon.	N	3060	4480	5520	6940	8080	9280	1959	14900	29	1947-1975	
03224000	Shaw Cr at Shawtown, lat 40°29'00", long 82°57'25", Morrow Co, at highway bridge, 0.5 mi E of Shawtown.	N	817	1130	1360	1660	1890	2130	1959	4120	10	1947-1955 1959	
03224500	Whetstone Cr nr Ashley, lat 40°27'18", long 82°57'28", Morrow Co, above SR 746, 3.2 mi N of Ashley.	N	2940	4400	5500	7080	8370	9780	1959	19100	21	1955-1975	
03225500	Olentangy R nr Delaware, lat 40°21'18", long 83°04'05", Delaware Co, 1000 ft below Delaware Dam.	N	7340	10900	13400	16700	19300	22000	1913	41600	35	1911-1935 1938-1947	Regulation by Delaware Res since 1948.
		R	4220	4880	5250	5670	5960	-	1959	6000	25	1951-1975	
03226200	Delaware Run nr Delaware, lat 40°18'30", long 83°06'35", Delaware Co, on Houk Rd, 1 mi W of Delaware.	N	333	555	714	923	1080	1250	1959	1050	29	1947-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s 2-year	5-year	10-year	25-year	50-year	100-year	Maximum known discharge Date	ft³/s	Record No. of years	Period	Remarks
03226800[2]	Olentangy R nr Worthington, lat 40° 06'37", long 83°01' 55", Franklin Co, below I-270, 1.5 mi NW of Worthington.	R	6250	8980	11300	14900	-	-	1959	16500	21	1952, 1956-1975	Regulation by Delaware Res, 1948-75.
03226850	Linworth Run nr Linworth, lat 40°06'24", long 83° 02'35", Franklin Co, at culvert on Linworth Rd, 1.2 mi N of Linworth.	N	81	184	277	421	546	687	1969	250	10	1966-1975	
03226900[2]	Fishinger Rd Cr at Upper Arlington, lat 40°01' 27", long 83°02'38", Franklin Co, at culvert on Kenny Rd.	N	261	334	377	428	462	495	1973	465	12	1964-1975	100% of area is urban and sewered.
03227500[2]	Scioto R at Columbus, lat 39°54'34", long 83° 00'33", Franklin Co, at sewage treatment works, 0.4 mi downstream from Frank Rd.	R	18100	29400	39300	55100	69500	-	1913	138000	24	1952-1975	Regulation by by 3 reservoirs since 1952.
03228000	Scioto Big Run at Briggsdale, lat 39° 54'56", long 83°03'55", Franklin Co, at bridge on US 62, at Briggsdale.	N	1240	1830	2220	2720	3090	3460	1973	3670	29	1947-1975	
03228500	Big Walnut Cr at Central College, lat 40°06'13", long 82°53'03", Franklin Co, 0.4 mi below Hoover Dam.	N	7080	10600	13100	16200	18600	20900	1959	23800	17	1939-1954, 1959	Regulation by Hoover Res since 1954.
		R	4510	7000	9000	11800	-	-	1959	23800	21	1955-1975	
03229500	Big Walnut Cr at Rees, lat 39°51'24", long 82°57'26", Franklin Co, at bridge on Reese Rd, 0.5 mi SW of Rees.	N	11900	17500	21400	26300	30000	33700	1959	59800	32	1922-1936, 1939-1954, 1959	Regulation by Hoover Res since 1954.
		R	9850	13900	17100	21800	-	-	1959	59800	21	1955-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03230500	Big Darby Cr at Darbyville, lat 39°42'03", long 83°06'35", Pickaway Co, at bridge on SR 316.	M	8640	14000	18100	23700	28300	33100	1959	49000	53	1922-1936 1938-1975	
03230600	Hominy Cr at Circleville, lat 39°35'26", long 82°55'25", Pickaway Co, at bridge adjacent to SR 56.	M	653	1060	1390	1870	2290	2760	1968	3820	29	1947-1975	
03231600	East Fk Paint Cr nr Sedalia, lat 39°42'36", long 83°27'48", Madison Co, at culvert on SR 38, 1.8 mi SE of Sedalia.	M	182	319	419	555	660	767	1959	515	29	1947-1975	
03232000	Paint Cr nr Greenfield, lat 39°22'45", long 83°22'32", Fayette Co, at bridge on SR 753.	M	5180	9140	12200	16400	19800	23500	1968	21700	44	1926-1935, 1940-1956, 1959-1975	
03232500	Rocky Fk nr Barretts Mills, lat 39°13'06", long 83°23'08", Highland Co, 1.1 mi N of Barretts Mills, 2 mi E of Fainsboro.	M	6430	9370	11300	13800	15600	17500	1945	13200	12	1940-1951	Flow regulation by Rocky Fk Lake since 1952.
		R	4160	6880	8810	11300	13200	-	1964	13400	24	1952-1975	
03234100	Indian Cr nr Massieville, lat 39°15'42", long 82°58'08", Ross Co, at bridge adjacent to US 23, 0.2 mi S of Massieville.	M	1390	2430	3240	4370	5290	6280	1953	5640	29	1947-1975	
03234500	Scioto R at Higby, lat 39°12'44", long 82°51'50", Ross Co, 0.8 mi downstream from Walnut Cr, 1.2 mi N of Higby.	M	48900	79100	102000	133000	158000	184000	1937	177000	45	1931-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03235000	Salt Cr at Tarlton, lat 39°33'20", long 82°46'51", Pickaway Co, at bridge on SR 159.	N	1010	1650	2140	2820	3370	3960	1968	5360	29	1947-1975	
03235200	Little Blackjack Branch nr S Bloomingville, lat 39°27'23", long 82°30'25", Hocking Co, at culvert on SR 664, 5.5 mi NE of S Bloomingville.	N	123	357	615	1090	1560	2150	1966	683	10	1966-1975	
03235400[2]	W Branch Tar Hollow Cr at Tar Hollow State Park, lat 39°23'35", long 82°45'12", Ross Co, in Tar Hollow State Park, 300 ft upstream from Tar Hollow Cr.	N	20	35	46	62	74	88	1968	72	26	1950-1975	97% forest.
03235500[2]	Tar Hollow Cr at Tar Hollow State Park, lat 39°23'22", long 82°45'03", Ross Co, 2 mi upstream from mouth.	N	129	238	327	456	563	681	1968	957	29	1947-1975	96% forest.
03235995	Salt Cr above dam site nr Londonderry, lat 39°17'26", long 82°44'45", Vinton Co, at bridge on SR 671.	N	12400	19800	25700	34000	41000	48600	1968	59000	13	1963-1975	
03236100	S Branch Little Salt Cr at Jackson, lat 39°02'38", long 82°38'35", Jackson Co, at culvert adjacent to SR 139.	N	633	888	1060	1260	1410	1560	1968	1400	29	1947-1975	
03237210[2]	Rose Run nr Portsmouth, lat 38°48'07", long 82°59'03", Scioto Co, at culvert on US 23, 2.9 mi N of Portsmouth.	N	82	131	168	217	255	296	1975	165	10	1966-1975	91% forest.

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03237280[2]	Upper Twin Cr at McGaw, lat 38°38'37", long 83°12'47", Scioto Co, 0.7 mi from US 52, 3.2 mi from mouth.	N	939	1790	2470	3410	4170	4980	1960	6960	13	1960 1964-1975	96% forest.
03237300	W Branch Turkey Run nr Winchester, lat 38° 56'56", long 83°40'19", Adams Co, at culvert on SR 32, 1.3 mi W of Winchester.	N	219	381	503	671	805	946	1956	720	20	1956-1975	
03237500	Ohio Brush Cr nr W Union, lat 38°48'13", long 83°25'16", Adams Co, at bridge on SR 348.	N	21800	31800	38700	47500	54100	60800	1964	59200	44	1927-1935 1941-1975	
03238400	Harwood Cr nr Fayetteville, lat 39°07'51", long 83°51'00", Brown Co at culvert on SR 131.	N	132	230	304	407	488	573	1970	385	10	1966-1975	
03238500	Whiteoak Cr nr Georgetown, lat 38°51'29", long 83°55'43", Brown Co, 150 ft upstream from Georgetown water treatment plant.	N	9920	13700	16200	19300	21600	23800	1964	22400	48	1924-1935 1940-1975	
03239000	Little Miami R nr Selma, lat 39°48'36", long 83° 44'21", Clark Co, at bridge on Selma Pike, 2.3 mi NW of Selma.	N	1490	3130	4520	6570	8290	10200	1959	7920	23	1953-1975	
03239500	N Fk Little Miami R nr Pitchin, lat 39°49'40", long 83°46'38", Clark Co, 1.1 mi upstream from Goose Cr, 1.3 mi SW of Pitchin.	N	437	940	1370	2010	2550	3150	1959	3350	23	1953-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s 2-year	5-year	10-year	25-year	50-year	100-year	Maximum known discharge Date	Maximum known discharge ft³/s	Record No. of years	Record Period	Remarks
03240000	Little Miami R nr Old-town, lat 39°44'54", long 83°55'53", Greene Co, at bridge on US 68.	N	2830	5490	7610	10600	13000	15600	1959	14800	23	1953-1975	
03240500	North Fk Massies Cr at Cedarville, lat 39°45' 25", long 83°47'25", Greene Co, at bridge on James Barber Rd.	N	737	1520	2170	3120	3920	4780	1963	3030	14	1955-1968	
03241000	South Fk Massies Cr nr Cedarville, lat 39° 44'20", long 83°45' 50", Greene Co, at bridge on Weimer Rd.	N	762	1400	1880	2550	3090	3640	1963	3470	14	1955-1968	
03241500	Massies Cr at Wilber-force, lat 39°43'22", long 83°52'58", Greene Co, 200 ft downstream from bridge on Wilber-force-Clinton Rd.	N	1570	3160	4440	6290	7810	9420	1959 1963	7300	23	1953-1975	
03241600	Shawnee Cr at Xenia, lat 39°40'32", long 83°55' 32", Greene Co, at bridge on US 68.	N	413	705	906	1160	1340	1520	1968	1820	28	1948-1975	
03242050	Little Miami R nr Spring Valley, lat 39°35'00", long 84°01'49", Greene Co, at bridge on New Burlington Rd.	N	7780	13500	17700	23200	27500	31800	1963	38000	33	1926-1935 1940-1952 1959 1963-1964 1969-1975	
03242100	Wayne Cr at Waynesville, lat 39°31'08", long 84° 04'47", Warren Co, at culvert on SR 73, 0.8 mi SE of US 42.	N	305	524	683	896	1060	1230	1974	880	10	1966-1975	
03242300	Caesar Cr at Harveys-burg, lat 39°30'27", long 84°00'42", Warren Co, at bridge on SR 73.	N	6810	10300	12900	16800	20000	23600	1959	26000	16	1959 1961-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03242500	Little Miami R nr Ft Ancient, lat 39°22'42", long 84°05'32", Warren Co, 2 mi S of Ft. Ancient.	N	18400	29100	36700	46600	54200	61900	1959	67000	17	1939-1952 1959 1963-1964	
03244000	Todd Fk nr Roachester, lat 39°20'07", long 84°05'12", Warren Co, at bridge on SR 123.	N	10800	16200	19800	24300	27600	30900	1959	25500	22	1953-1974	
03245500	Little Miami R at Milford, lat 39°10'17", long 84°17'53", Clermont Co, 500 ft downstream from Wooster Pike bridge, US 50.	N	31100	44500	53400	64600	73000	81400	1959	84100	52	1916-1917 1926-1975	
03246500	E FK Little Miami R at Williamsburg, lat 39° 03'09", long 84°03'02", Clermont Co, at Main St bridge.	N	10600	14300	16600	19300	21200	23100	1964	19800	20	1950-1953 1959 1961-1975	
03247100	Patterson Run nr Owensville, lat 39°07'38", long 84°06'44", Clermont Co, 200 ft N of US 50, 1.2 mi E of Owensville.	N	757	749	853	974	1060	1140	1962	952	29	1947-1975	
03247500	E Fk Little Miami R at Perintown, lat 39°08'13", long 84°14'17", Clermont Co, at highway bridge at Perintown.	N	20200	27800	32500	38200	42200	46100	1964	42400	54	1916-1920 1925-1973	
03255500	Mill Cr at Reading, lat 39°13'14", long 84° 26'49", Hamilton Co, at Koehler St bridge in Reading.	N	3300	4270	4840	5500	5960	6410	1945	5780	37	1939-1975	
03257500[2]	W Fk Mill Cr at Woodlawn, lat 39°15'14", long 84°28'13", Hamilton Co, at Riddle Rd bridge in Woodlawn.	R	1210	1460	1590	1730	-	-	1956	2000	23	1953-1975	Flow regulated by West Fk Dam since 1953.

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03259000[2]	Mill Cr at Carthage, lat 39°12'07", long 84°28'16", Hamilton Co, 100 ft downstream from Anthony Wayne bridge in Carthage.	R	4450	6150	7260	8640	-	-	1959	8900	23	1953-1975	Flow regulated by West Pk Dam since 1953.
03260700	Bokengehalas Cr nr DeGraff, lat 40°20'50", long 83°53'28", Logan Co, 2 mi downstream from Bluejacket Cr, 2.8 mi NE of DeGraff.	N	782	1140	1360	1630	1830	2010	1959	1780	18	1958-1975	
03260800	Stony Cr nr DeGraff, lat 40°17'27", long 83°54'36", Logan Co, 0.6 mi downstream from Lee Cr, 1.5 mi S of DeGraff.	N	1060	1760	2250	2870	3340	3810	1959	2770	18	1958-1975	
03261500	Great Miami R at Sidney, lat 40°17'13", long 84°09'00", Shelby Co, 50 ft upstream from North St bridge in Sidney.	N	6920	11200	14400	19100	23000	27300	1913	44000	63	1913-1975	
03262000	Loramie Cr at Lockington, lat 40°12'35", long 84°14'32", Shelby Co, 1300 ft downstream from Lockington Dam.	R	4270	5280	5750	6190	6440	6630	1921	6590	55	1921-1975	Flow regulated by Lockington Dam since 1921.
03262750	Millers Ditch nr Tipp City, lat 39°57'59", log 84°10'22", Miami Co, at culvert on 4th St in Tipp City.	N	95	153	194	245	283	322	1973	198	10	1966-1975	
03263000[2]	Great Miami R at Taylorsville, lat 39°52'22", long 84°09'51", Montgomery Co, 600 ft downstream from Taylorsville Dam.	R	14700	20400	23500	26900	29100	30900	1913	127000	54	1922-1975	Flow regulated by 2 dams since 1922.

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03263100	Poplar Cr nr Vandalia, lat 39°52'10", long 84°11'21", Montgomery Co, at culvert on I-75, 1.2 mi upstream from mouth.	N	407	709	926	1210	1430	1650	1959	1130	29	1947-1975	
03263700	Bridge Cr nr Greenville, lat 40°04'13", long 84°37'45", Darke Co, at culvert on SR 49, 2.2 mi S of Greenville.	N	322	597	801	1070	1280	1490	1958	754	29	1947-1975	
03264000	Greenville Cr nr Bradford, lat 40°06'08", long 84°25'48", at boundary of Darke and Miami Co, at bridge on SR 721.	N	3220	5200	6710	8820	10500	12400	1913	18200	45	1913 1932-1975	
03265000	Stillwater R at Pleasant Hill, lat 40°03'28", long 84° 21'22", Miami Co, at bridge on Laurer Rd, 0.8 mi NW of Pleasant Hill.	N	10100	15900	19900	25000	28800	32600	1913	51400	60	1913 1917-1975	
03265100	Hog Run Tributary at Laura, lat 40°00'30", long 84°25'26", Miami Co, at culvert on SR 571, 1 mi NW of Laura.	N	37	62	80	103	120	137	1953	204	26	1950-1975	
03266000[2]	Stillwater R at Englewood, lat 39° 52'10", long 84°16' 57", Montgomery Co, 1000 ft downstream from Englewood Dam.	R	7300	8700	9300	9900	10200	10500	1913	85400	50	1926-1975	Flow regulated Englewood Dam since 1926.
03266500	Mad R at Zanesfield, lat 40°21'01", long 83°40'28", Logan Co, at bridge on County Rd 5.	N	468	801	1040	1360	1610	1850	1972	2100	29	1947-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03267000	Mad R nr Urbana, lat 40°06'27", long 83° 47'57", Champaign Co, at bridge on US 36.	N	2540	4150	5260	6690	7750	8810	1959	8000	42	1926-1975	
03267900	Mad R, St Paris Pike, nr Eagle City, lat 39° 57'51", long 83°49'54", Clark Co, at bridge on St Paris Pike.	N	5370	7170	8260	9540	10400	11300	1971	9700	10	1966-1975	
03268000	Buck Cr at New Moorefield, lat 39°59'15", long 83°42'55", Clark Co, 1.5 mi downstream from East Fork.	N	1740	2290	2740	3410	4000	4670	1959	8130	17	1943-1959	
03268300	Beaver Cr at Brighton, lat 39°55'46', long 83° 34'04", Clark Co, at culvert on US 40, 0.2 mi W of Brighton.	N	273	502	677	917	1110	1310	1959	1000	17	1959-1975	
03268500	Beaver Cr nr Springfield, lat 39°56'26", long 83°44'56", Clark Co, at Croft Rd bridge 0.8 mi upstream from mouth.	N	2030	2920	3490	4190	4690	5170	1959	5400	20	1943-1959 1973-1975	
03269000	Buck Cr at Springfield, lat 39°55'57", long 83° 49'02", Clark Co, at Plum St bridge 2.2 mi upstream from mouth.	N	3230	5460	7130	9420	11300	13200	1929	13000	56	1913 1915-1921 1924-1956 1959-1973	
03269500	Mad R nr Springfield, lat 39°55'23", long 83°52'13", Clark Co, 300 ft downstream from bridge on Lower Valley Pike.	N	7720	12600	16400	21700	26200	31000	1913	55400	65	1904-1905 1913-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03270000[2]	Mad R nr Dayton, lat 39°47'50", long 84° 05'19", Greene Co, 300 ft upstream from Huffman Dam.	R	7570	11500	14000	17000	19100	21100	1913	75700	54	1922-1975	Flow regulated by Huffman Dam since 1922.
03270500	Great Miami R at Dayton, lat 39°45'55", long 84°11'51", Montgomery Co, 1000 ft downstream from Main St bridge.	N	36800	57300	70800	87400	99200	111000	1913	250000	29	1893-1921	Flow regulated by 4 dams since 1922.
		R	27300	38500	44600	50900	54700	57900	1959	60900	54	1922-1975	
03270800	Wolf Cr at Trotwood, lat 39°47'39", long 84°18'36", Montgomery Co, 350 ft downstream from Union Rd bridge.	N	1540	2480	3120	3930	4530	5130	1959	3900	14	1959 1963-1975	
03271000	Wolf Cr at Dayton, lat 39°46'00", long 84° 14'10", Montgomery Co, at West Riverview Ave.	N	4020	7050	9260	12200	14500	16800	1943	9950	12	1939-1950	
03271500[2]	Great Miami R at Miamisburg, lat 39°38'40", long 84°17'23", Montgomery Co, 600 ft downstream from bridge on SR 725.	R	25900	38900	47900	59700	68800	-	1913	257000	34	1925-1935 1953-1975	Flow regulated by 4 dams since 1922.
03271800	Twin Cr nr Ingomar, lat 39°42'28", long 84°31' 30", Preble Co, at bridge on Halderman Rd.	N	8210	12000	14700	18500	21600	24800	1959	30300	14	1959 1963-1975	
03272000[2]	Twin Cr nr Germantown, lat 39°38'10", long 84° 23'48", Montgomery Co, 0.3 mi downstream from Germantown Dam.	R	6050	7200	7900	8500	8800	9100	1913	66000	52	1921-1923 1927-1975	Flow regulated by Germantown Dam since 1921.
03272800	Sevenmile Cr at Collinsville, lat 39°31'23", long 84°36'39", Butler Co, 0.3 mi N of Collinsville, 5.5 mi upstream from mouth.	N	6630	10100	12400	15300	17400	19400	1968	16800	16	1959 1961-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
03272900	Collins Cr at Collinsville, lat 39°31'05", long 84°36'53", Butler Co, at culvert on US 127, 0.3 mi upstream from mouth.	N	206	442	640	930	1170	1430	1968	409	10	1966-1975	
03273500	Fourmile Cr nr Hamilton, lat 39°27'50", long 84°32'50", Butler Co, 0.9 mi below Sevenmile Cr.	N	14600	21400	25500	30100	33100	35900	1959	44500	23	1938-1960	
03274000	Great Miami R at Hamilton, lat 39°23'28", long 84°34'20", Butler Co, 1000 ft downstream from Columbia bridge.	N	41300	60100	75400	98200	118000	140000	1913	352000	12	1907-1918	Flow regulated by 5 dams since 1922.
		R	42500	62900	73600	84400	90700	95900	1959	108000	48	1928-1975	
03274100	Blake Run nr Reily, lat 39°27'59", long 84°45'22", Butler Co, 600 ft upstream from culvert on Stevenson Rd, 3 mi upstream from mouth.	N	64	117	156	209	250	292	1960	307	33	1939-1940 1942-1943 1947-1975	
03275000	Whitewater R nr Alpine, Indiana, lat 39°34'23", long 85°09'27", Fayette Co, 0.3 mi downstream from East Fk Whitewater River.	N	12800	22300	29000	37800	44400	50900	1937	37100	47	1929-1975	
03275500	E Fk Whitewater R at Richmond, Indiana, lat 39°48'24", long 84°54'26", Wayne Co, 0.8 mi S of Richmond, 1.5 mi upstream from Short Creek.	N	5460	9490	12400	16100	19000	21800	1969	15000	26	1950-1975	
03325500	Mississinewa R nr Ridgeville, Indiana, lat 40°16'49", long 84°59'44", Randolf Co, 0.8 mi downstream from Mud Cr, 2 mi E of Ridgeville.	N	3790	5900	7310	9050	10300	11500	1958	13900	29	1947-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
04176900	Hill Ditch nr Richards, lat 41°39'50", long 83° 40'05", Lucas Co, on US 20, 3.4 mi N of SR 2.	N	69	126	169	227	273	319	1972	340	29	1947-1975	
04177400	Eagle Cr Tributary nr Montpelier, lat 41°35' 10", long 84°40'50", Williams Co, on SR 107, 3.5 mi W of Montpelier.	N	67	118	155	202	238	274	1956	195	26	1950-1975	
04178000	St Joseph R nr Newville, Indiana, lat 41°23'06", long 84°48'06", on Ohio SR 249, 3.5 mi NE of Newville, Indiana.	N	3900	5600	6660	7910	8790	9620	1950	9710	29	1947-1975	
04179500	Cedar Cr at Auburn, Indiana, lat 41°21'57", long 85°03'08", at Ninth St bridge in Auburn.	N	850	1090	1230	1380	1490	1580	1950	1520	33	1943-1975	
04180000	Cedar Cr nr Cedarville, Indiana, lat 41°13'08", long 85°04'35", on SR 427, 3 mi NW of Cedarville.	N	2830	3750	4290	4900	5320	5700	1950	4870	29	1947-1975	
04181500	St Marys R at Decatur, Indiana, lat 40°50'55", long 84°56'16", on US 27, 1.3 mi N of Decatur.	N	5300	7670	9150	10900	12100	13300	1943	12000	44	1932-1975	
04182000	St Marys R nr Ft Wayne, Indiana, lat 40°59'16", long 85°06'03", at bridge 5 mi S of Ft Wayne and 10.8 mi above mouth.	N	6160	8700	10200	12000	13200	14400	1959	13600	45	1931-1975	
04183500	Maumee R at Antwerp, lat 41°11'56", long 84° 44'40", Paulding Co, 425 ft below SR 49, 1 mi N of Antwerp.	N	14300	18600	20700	22700	23900	24800	1913	40000	64	1912-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
04184500	Bean Cr at Powers, lat 41°40'40", long 84° 13'50", Fulton Co, on US 20, 1 mi E of Powers.	M	1990	2980	3600	4330	4850	5350	1956	4250	35	1941-1975	
04185000	Tiffin R at Stryker, lat 41°30'15", long 84° 25'50", Williams Co, 0.5 mi below SR 191, at W edge of Stryker.	M	3230	4830	5820	6970	7750	8490	1913	7600	44	1913, 1922-1928 1937, 1941-1975	
04186500	Auglaize R nr Fort Jennings, lat 40°56'55", long 84°15'58", above US 224, 3.5 mi NE of Fort Jennings.	M	4920	7030	8300	9780	10800	11700	1959	12000	50	1922-1936 1941-1975	
04186800	King Run nr Harrod, lat 40°43'56", long 83°53' 47", Allen Co, on US 30-S, 0.9 mi W of Allen-Hardin Co line.	M	82	125	154	189	214	239	1972	135	10	1966-1975	
04187500	Ottawa R at Allentown, lat 40°45'18", long 84° 11'41", Allen Co, on SR 81 in Allentown.	M	3040	4350	5160	6120	6800	7440	1959	7740	46	1924-1935, 1939, 1943-1975	
04188500	Eagle Cr nr Findlay, lat 40°59'35", long 83°39' 05", Hancock Co, 3.3 mi S of Findlay and 4.5 mi above mouth.	M	2020	2860	3350	3900	4270	4600	1959	6300	12	1947-1957, 1959	
04189000	Blanchard R nr Findlay, lat 41°03'21", long 83° 41'17", Hancock Co, at bridge 2 mi W of Findlay and 3 mi below Eagle Cr.	M	5220	8000	9710	11700	13100	14300	1913	22000	49	1913, 1924-1936 1941-1975	
04189100	Tiderishi Cr nr Jenera, lat 40°55'50", long 83° 43'40", Hancock Co, on SR 698, 2.2 mi N of Jenera.	M	195	304	376	465	528	589	1959	480	29	1947-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
04189500	Blanchard R at Glandorf, lat 41°02'40", long 84°04'55", Putnam Co, at bridge 0.8 mi N of Glandorf.	N	8140	11400	13500	16100	18000	19800	1959	17700	13	1922-1928 1947-1951 1959	
04190500	Roller Cr at Ohio City, lat 40°46'15", long 84° 38'15", Van Wert Co, at bridge 0.8 mi W of Ohio City.	N	204	286	337	399	443	486	1959	890	29	1947-1975	
04191500	Auglaize R nr Defiance, lat 41°14'15", long 84° 23'57", Defiance Co, below Toledo-Edison dam and 0.3 mi above Jackson Ditch.	N	25100	36500	43500	51700	57400	62700	1913	120000	61	1913, 1916-1975	
04192500	Maumee R nr Defiance, lat 41°17'30", long 84° 16'50", Defiance Co, above Independence Dam, 4.5 mi E of Defiance.	N	43500	60500	69800	79900	86200	91800	1950	87100	49	1925-1936 1939-1975	
04192900	Reitz Run nr Waterville, lat 41°29'50", long 83° 42'45", Wood Co, on SR 64, 0.5 mi SE of Waterville.	N	29	54	73	99	119	139	1969	165	10	1966-1975	
04193500	Maumee R at Waterville, lat 41°30'00", long 83° 42'46", Lucas Co, at SR 64 bridge in Waterville.	N	50200	67800	77200	86800	92700	97800	1913	180000	55	1900-1901 1913, 1922-1936 1939-1975	
04195500	Portage R at Woodville, lat 41°26'55", long 83° 21'41", Sandusky Co, at US 20 bridge in Woodville.	N	6170	8510	9920	11500	12700	13700	1913	17000	44	1913, 1929-1935 1940-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s 2-year	5-year	10-year	25-year	50-year	100-year	Maximum known discharge Date	ft³/s	Record No. of years	Period	Remarks
04196000	Sandusky R nr Bucyrus, lat 40°48'14", long 83° 00'24", Crawford Co, at bridge 1.5 mi W of Bucyrus.	N	2530	3760	4640	5820	6750	7710	1959	13500	36	1926-1935 1939-1951 1959, 1964-1975	
04196500	Sandusky R nr Upper Sandusky, lat 40°51'02", long 83°15'23", Wyandot Co, at bridge 2 mi NE of Upper Sandusky.	N	4700	6670	7900	9380	10400	11400	1959	10000	53	1922-1936 1938-1975	
04196700	St James Run nr Upper Sandusky, lat 40°46'55", long 83°18'10", Wyandot Co, on SR 67, 3.5 mi SW of Upper Sandusky.	N	198	320	403	506	582	656	1959	408	29	1947-1975	
04196800	Tymochtee Cr at Crawford, lat 40°55'22", long 83°20'56", Wyandot Co, on SR 199, 0.4 mi NW of Crawford.	N	3600	5080	5990	7080	7850	8580	1964	6040	15	1961-1975	
04197000	Sandusky R nr Mexico, lat 41°02'39", long 83°11'42", Seneca Co, at bridge 3 mi above Honey Cr.	N	8490	12000	14200	16900	18700	20600	1937	19000	53	1922-1937 1939-1975	
04197100	Honey Cr at Melmore, lat 41°01'20", long 83°06'35", Seneca Co, at SR 67 bridge at Melmore.	N	2540	3320	3790	4320	4690	5030	1963	3850	15	1961-1975	
04197300	Wolf Cr at Bettsville, lat 41°14'58", long 83°14'08", Seneca Co, at SR 590 bridge at Bettsville.	N	1550	1970	2240	2590	2860	3120	1962	4280	15	1961-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
04197400	E Br Wolf Cr at Fort Seneca, lat 41°12'40", long 83°10'50", Seneca Co, at County Rd 30 bridge, 0.8 mi W of Fort Seneca.	N	1780	2220	2470	2750	2930	3100	1969	2780	15	1961-1975	
04197500	Havens Cr at Havens, lat 41°17'40", long 83°11'55", Sandusky Co, at County Rd 12 bridge, 1.8 mi above mouth.	N	136	206	251	306	346	384	1956	312	29	1947-1975	
04198000	Sandusky R nr Fremont, lat 41°18'28", long 83°09'32", Sandusky Co, at bridge 3.5 mi SW of Fremont.	N	14700	19400	22100	25200	27200	29000	1959	28000	50	1924-1936 1939-1975	
04198100	Norwalk Cr at Norwalk, lat 41°14'00", long 82°32'30", Huron Co, at bridge 4 mi SE of Norwalk.	N	320	560	742	996	1200	1410	1969	1880	29	1947-1975	
04199000	Huron R at Milan, lat 41°18'00", long 82°36'30", Erie Co, below US 250 bridge at Milan.	N	7810	11700	15100	20700	26000	32400	1969	49600	26	1950-1975	
04199500	Vermilion R at Vermilion, lat 41°22'55", long 82°19'00", Erie Co, at North Ridge Rd bridge, 3.5 mi SE of Vermilion.	N	5600	9280	12700	18400	24000	30900	1969	40800	26	1950-1975	
04199800	Neff Run nr Litchfield, lat 41°12'33", long 82°01'26", Lorain Co, on SR 83, 2.8 mi N of Litchfield.	N	72	115	144	182	211	240	1969	152	10	1966-1975	
04200000	E Br Black R at Elyria, lat 41°20'51", long 82°05'40", Lorain Co, at Fuller St bridge in Elyria.	N	4720	7670	9940	13100	15800	18600	1969	23100	14	1923-1935 1969	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
04200100	Plum Cr at Oberlin, lat 41°17'15", long 82°13' 10", Lorain Co, at bridge on Professor St in Oberlin.	M	286	484	634	842	1010	1190	1969	1650	29	1947-1975	
04200500	Black R at Elyria, lat 41°22'50", long 82° 06'15", Lorain Co, in Cascade Park 0.8 mi below confluence of East and West branch.	M	6890	10400	13200	17300	21000	25100	1969	51700	31	1945-1975	
04201500	Rocky R nr Berea, lat 41°24'32", long 81° 53'13", Cuyahoga Co, at bridge just below confluence of East and West branches.	M	7820	10900	13000	15700	17600	19600	1959	21400	44	1924-1935 1944-1975	
04202000	Cuyahoga R at Hiram Rapids, lat 41°20'27", long 81°10'01", Portage Co, at highway bridge at Hiram Rapids.	M	1550	2310	2810	3450	3930	4410	1959	3670	24	1928-1935 1945-1960	Flow regulated by 2 reservoirs since 1961.
		R	1700	2190	2440	2690	-	-	1963	2670	15	1961-1975	
04204000[2]	Little Cuyahoga R at Mogadore, lat 41°03' 45", long 81°23'40", Summit Co, at SR 532, 500 ft below Mogadore Reservoir.	R	114	145	160	176	183	-	1975	179	30	1946-1975	Flow regulated by Mogadore Reservoir.
04204500[2]	Little Cuyahoga R at Massillon Rd at Akron, lat 41°03'35", long 81°27'45", Summit Co 250 ft above Springfield Lake outlet.	R	318	506	653	865	1040	-	1959	891	29	1946-1974	Flow regulated by 2 reservoirs.
04205000[2]	Springfield Lake outlet at Akron, lat 41°03' 20", long 81°27'50", Summit Co, 0.3 mi above mouth in Akron.	R	110	192	256	347	421	-	1959	519	28	1947-1974	Flow regulated by Springfield Lake.

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
04206000[2]	Cuyahoga R at Old Portage, lat 41°08'04", long 81°32'49", Summit Co, above highway bridge at Old Portage.	R	3000	3700	4250	5100	5800	6600	1959	6500	52	1922-1936 1939-1975	Flow slightly regulated by reservoir and lakes.
04207200	Tinkers Cr at Bedford, lat 41°23'04", long 81°31'39", Cuyahoga Co, at SR 14 bridge in Bedford.	N	2520	3510	4140	4900	5450	5980	1969	7220	13	1963-1975	
04208000	Cuyahoga R at Independence, lat 41°23'44", long 81°37'45", Cuyahoga Co, at Old Rockside Rd bridge.	N	8250	10900	12600	14700	16300	18000	1959	24800	47	1922-1923 1928-1936 1940-1975	
04209000	Chagrin R at Willoughby, lat 41°37'51", long 81°24'13", Lake Co, at city water works, 800 ft below East branch.	N	9280	14200	17800	22500	26200	30000	1948	28000	47	1913 1926-1935 1940-1975	
04210000	Phelps Cr nr Windsor, lat 41°30'55", long 80°56'05", Ashtabula Co, at SR 534, 1.4 mi S of Windsor.	N	1850	2700	3240	3870	4320	4740	1959	4600	18	1942-1959	
04210090	Montville Ditch at Montville, lat 41°36'04", long 81°03'03", Geauga Co, on SR 528, 0.4 mi S of Montville.	N	23	41	55	75	91	107	1972	73	10	1966-1975	
04210100	Hoskins Cr at Hartsgrove, lat 41°36'00", long 80°57'12", Ashtabula Co, on SR 534, 0.4 mi S of Hartsgrove.	N	209	335	425	543	633	726	1959	700	29	1947-1975	

See footnotes at end of table.

Table 6.--Summary of flood-frequency data for Ohio streams, based on gaging stations records through 1975.--Continued

Station number	Stream name and location	Type of flow[1]	Peak discharge in ft³/s						Maximum known discharge		Record		Remarks
			2-year	5-year	10-year	25-year	50-year	100-year	Date	ft³/s	No. of years	Period	
04211000	Rock Cr nr Rock Cr, lat 41°39'05", long 80°50'10", Ashtabula Co, at highway bridge, 1.4 mi SE of Rock Cr.	N	2510	3690	4470	5440	6150	6850	1959	8000	25	1942-1966	
04211500	Mill Cr nr Jefferson, lat 41°45'10", long 80° 48'00", Ashtabula Co, at SR 307, 1.8 mi NW of Jefferson.	N	3370	4670	5560	6730	7630	8560	1959	9810	33	1942-1974	
04212000	Grand R nr Madison, lat 41°44'26", long 81°02' 48", Lake Co, 1000 ft above SR 528, 2 mi S of Madison.	N	8830	11600	13300	15300	16800	18200	1959	21100	51	1923-1936 1938-1974	
04212500	Ashtabula R nr Ashtabula, lat 41°51'19", long 80°45'43", Ashtabula Co, at highway bridge 1.3 mi SE of Ashtabula.	N	4450	6470	7830	9550	10800	12100	1959	11600	47	1925-1936 1939-1947 1950-1975	
04212600	Hubbard Run Tributary, at Ashtabula, lat 41° 50'38", long 80°46'42", Ashtabula Co, on Seven Hills Rd, 0.5 mi above mouth.	N	105	163	204	257	296	336	1969	270	10	1966-1975	
04213000	Conneaut Cr at Conneaut, lat 41°55'34", long 80° 36'18", Ashtabula Co, at highway bridge 6.5 mi above mouth.	N	6010	8840	10700	13100	14900	16700	1959	17000	40	1923-1936 1950-1975	

[1] N = natural-flow, observed data; R = regulated-flow, observed data.

[2] Station not used in regression analysis.

Table 7.--Basin characteristics for Ohio streams.

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index E (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
03086500	Mahoning R at Alliance	1	89.2	10.4	1096	0.9	37.0	
03087000	Beech Cr nr Bolton	1	17.4	27.0	1150	0.4	37.0	
03088000	Deer Cr at Limaville	1	31.9	6.8	1090	0.5	37.0	
03089500	Mill Cr nr Berlin Center	1	19.1	11.1	1100	2.0	37.0	
03091500	Mahoning R at Pricetown	-	273	-	-	-	-	Regulated.
03092000	Kale Cr nr Pricetown	1	21.9	11.4	962	1.0	38.0	
03092090	W Br Mahoning R nr Ravenna	1	21.8	19.0	1108	1.0	38.5	
03092100	Hinkley Cr nr Charlestown	1	10.6	20.5	1090	1.0	37.0	
03092600	Ordnance Cr nr Newton Falls	1	.163	110	979	0.0	37.0	
03093000	Eagle Cr at Phalanx Station	1	97.6	10.7	974	0.1	38.0	
03094900	Walnut Cr at Cortland	1	8.45	15.8	1060	1.0	37.0	
03095500	Mosquito Cr below Mosquito Cr Dam nr Cortland	-	97.5	-	-	-	-	Regulated.
03097500	Meander Cr at Mineral Ridge	-	84.3	-	-	-	-	Regulated.
03098500	Mill Cr at Youngstown	1	66.3	7.7	1031	0.2	37.0	
03098700	Crab Cr at Youngstown	1	14.0	51.0	1014	1.0	35.5	
03102900	Clear Cr at Dilworth	1	1.13	46.5	1080	1.0	38.0	
03102950	Pymatuning Cr at Kinsman	1	96.7	4.0	939	4.0	39.0	
03109000	Lisbon Cr at Lisbon	1	6.19	55.6	1100	3.0	39.0	
03109500	Little Beaver Cr nr E Liverpool	1	496	8.3	922	0.1	39.5	
03110000	Yellow Cr nr Hammondsville	5	147	9.8	835	0.0	40.0	
03111500	Short Cr nr Dillonvale	5	123	14.4	896	0.0	39.0	
03114000	Captina Cr at Armstrongs Mills	2	134	16.0	927	0.0	41.0	
03115400	Little Muskingum R at Bloomfield	2	210	7.0	749	0.0	41.5	
03115600	Barnes Run nr Summerfield	2	3.46	75.5	907	0.0	40.0	
03116000	Tuscarawas R at Clinton	5	165	6.2	1060	1.4	37.0	
03116100	Little Chippewa Cr nr Smithville	5	16.4	6.5	1000	0.0	37.0	
03116200	Chippewa Cr at Easton	5	146	5.0	988	1.0	37.0	
03117000	Tuscarawas R at Massillon	5	526	5.4	1010	0.7	37.0	
03117500	Sandy Cr at Waynesburg	5	253	7.6	1042	0.0	37.5	
03118000	Middle Br Nimishillen Cr at Canton	5	43.1	7.7	1100	0.4	37.0	
03118500	Nimishillen Cr at North Industry	5	175	8.7	1120	0.2	37.0	
03119000	Sandy Cr at Sandyville	5	481	7.3	1021	0.0	37.5	
03119600	Jefferson Cr nr Jewett	-	2.54	-	-	-	-	Regulated.
03119700	Conotton Cr at Jewett	5	14.3	20.9	1050	16.0	40.0	
03120500	McGuire Cr below Leesville Dam nr Leesville	-	48.3	-	-	-	-	Regulated.

See footnotes at end of table.

Table 7.--Basin characteristics for Ohio streams.--Continued

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index E (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
03121500	Indian Fk below Atwood Dam nr New Cumberland	-	70.0	-	-	-	-	Regulated.
03122500	Tuscarawas R below Dover Dam nr Dover	5	1405	4.5	1006	0.6	37.0	Regulated since 1938
03123400	Dundee Cr at Dundee	5	.71	116	1038	32.0	37.0	
03124000	Sugar Cr below Beach City Dam nr Beach City	-	300	-	-	-	-	Regulated.
03125000	Home Cr nr New Philadelphia	5	1.64	62.0	920	6.0	39.0	
03126000	Stillwater Cr at Piedmont	-	122	-	-	-	-	Regulated.
03127000	Stillwater Cr at Tippecanoe	-	282	-	-	-	-	Regulated.
03127500	Stillwater Cr at Uhrichsville	-	367	-	-	-	-	Regulated.
03128500	Little Stillwater Cr below Tappan Dam at Tappan	-	71.7	-	-	-	-	Regulated.
03129000	Tuscarawas R at Newcomerstown	2	2443	1.9	884	0.8	39.0	Regulated since 1938
03129012	White Eyes Cr tributary nr Coshocton (ARS station 192)	2	.012	493	1100	0.0	39.0	
03129014	White Eyes Cr tributary nr Coshocton (ARS station 196)	2	.473	91.9	1010	0.0	39.0	
03129016	White Eyes Cr tributary nr Coshocton (ARS station 183)	2	.116	372	990	0.0	39.0	
03129300	Whetstone Cr tributary nr Olivesburg	2	.240	47.7	1220	0.0	35.0	
03130000	Black Fk below Charles Mill Dam nr Mifflin	-	217	-	-	-	-	Regulated.
03130500	Touby Run at Mansfield	2	5.44	39.6	1307	0.0	38.0	
03131500	Black Fk at Loudonville	-	349	-	-	-	-	Regulated.
03132000	Clear Fk at Butler	2	136	7.0	1144	1.0	38.0	
03133500	Clear Fk below Pleasant Hill Dam nr Perrysville	-	198	-	-	-	-	Regulated.
03134000	Jerome Fk nr Jeromeville	2	120	9.6	1020	0.0	35.0	
03135000	Lake Fk below Mohicanville Dam nr Mohicanville	-	271	-	-	-	-	Regulated.
03136000	Mohican R at Greer	2	948	2.9	983	0.3	36.5	Regulated since 1938
03136500	Kokosing R at Mount Vernon	2	202	10.1	1134	0.0	37.0	
03137000	Kokosing R at Millwood	2	455	7.6	1042	0.0	38.0	
03138500	Walhonding R below Mohawk Dam nr Nellie	2	1505	3.0	943	0.2	39.0	Regulated since 1938
03138900	Jennings Ditch tributary nr Wooster	2	.900	153	1014	0.0	36.5	
03139000	Killbuck Cr at Killbuck	2	462	3.7	878	0.0	37.0	
03139930	Little Mill Cr tributary nr Coshocton (ARS station 5)	2	.545	190	1040	0.0	39.0	
03139940	Little Mill Cr nr Coshocton (ARS station 92)	2	1.44	151	1040	0.0	39.0	
03139960	Little Mill Cr nr Coshocton (ARS station 94)	2	2.36	100	996	0.0	39.0	
03139970	Little Mill Cr tributary nr Coshocton (ARS station 10)	2	.191	283	1020	0.0	39.0	
03139980	Little Mill Cr nr Coshocton (ARS station 95)	2	4.02	77.8	969	0.0	39.0	
03139990	Little Mill Cr nr Coshocton (ARS station 97)	2	7.16	47.9	915	0.0	39.0	
03140000	Mill Cr nr Coshocton	2	27.2	21.1	872	0.0	39.5	
03140010	Spoon Cr tributary nr Coshocton (ARS station 177)	2	.118	357	1100	0.0	39.0	

See footnotes at end of table.

Table 7.--Basin characteristics for Ohio streams.--Continued

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index Z (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
03140020	Spoon Cr tributary nr Coshocton (ARS station 172)	-	0.068	258	1050	0.0	39.0	99% forest.
03140030	Spoon Cr tributary nr Coshocton (ARS station 169)	2	.045	265	1050	0.0	39.0	
03140500	Muskingum R nr Coshocton	-	4859	-	-	-	-	Regulated.
03141500	Seneca Fk below Senecaville Dam nr Senecaville	-	118	-	-	-	-	Regulated.
03142000	Wills Cr at Cambridge	-	406	-	-	-	-	Regulated.
03142200	Salt Fk nr Cambridge	2	55.6	6.2	846	0.0	39.5	
03143500	Wills Cr below Wills Cr Dam at Wills Cr	-	842	-	-	-	-	Regulated.
03144000	Wakatomika Cr nr Frazeysburg	2	140	10.3	830	0.0	39.0	
03144500	Muskingum R at Dresden	2	5993	2.0	846	0.4	39.5	Regulated since 1938
03144800	Etna Cr at Etna	2	1.10	37.0	1051	1.0	38.5	
03145500	Raccoon Cr at Granville	2	82.7	13.0	1004	1.0	38.0	
03145600	Otter Fk nr Centerburg	2	3.17	17.7	1200	2.0	37.0	
03146000	N Fk Licking R nr Utica	2	116	14.0	1085	1.0	38.0	
03146500	Licking R nr Newark	2	537	10.7	985	0.6	39.0	
03147000	Licking R at Toboso	2	672	8.2	958	0.8	39.0	
03147500	Licking R below Dillon Dam nr Dillon Falls	2	742	6.0	870	1.0	39.0	Regulated since 1961
03147900	Timber Run nr Zanesville	2	10.1	35.7	791	1.0	37.0	
03148300	Moxahala Cr at Roseville	2	80.6	8.0	789	9.0	38.5	
03149500	Salt Cr nr Chandlersville	2	75.7	9.0	775	0.0	38.5	
03150000	Muskingum R at McConnelsville	2	7422	2.0	804	1.0	38.5	Regulated since 1938
03150600	Tupper Cr at DeVola	2	.99	58.0	674	0.0	40.0	
03156000	Hunters Run at Lancaster	-	10.0	-	-	-	-	Regulated.
03156400	Hocking R at Lancaster	-	48.2	-	-	-	-	Regulated.
03157000	Clear Cr nr Rockbridge	2	89.0	9.2	852	0.0	39.0	
03157500	Hocking R at Enterprise	2	459	10.6	851	0.0	39.0	
03158100	Hayden Run nr Haydenville	-	1.04	94.0	792	9.0	39.0	88% forest and storage.
03159500	Hocking R at Athens	2	943	3.5	724	0.0	39.5	
03159540	Shade R nr Chester	2	156	4.0	658	2.0	40.5	
03202000	Raccoon Cr at Adamsville	2	585	2.8	658	0.1	40.0	
03217500	Scioto R at LaRue	3	255	2.5	962	0.0	34.5	
03218000	Little Scioto R above Marion	3	72.4	4.3	949	0.0	35.5	
03219500	Scioto R at Prospect	3	567	1.5	938	0.0	35.0	
03219600	Eagon Run nr Warrensburg	-	.12	-	-	-	-	Regulated.
03220000	Mill Cr nr Bellepoint	3	178	5.2	996	0.0	37.0	
03221000	Scioto R below O'Shaughnessy Dam nr Dublin	3	980	1.7	910	0.3	35.5	

See footnotes at end of table.

Table 7.--Basin characteristics for Ohio streams.--Continued

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index E (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
03221900	Dry Run at Columbus	-	1.91	26.0	900	0.0	35.5	90% urban and sewered.
03223000	Olentangy R at Claridon	3	157	6.8	1060	0.0	35.5	
03224000	Shaw Cr at Shawtown	3	25.4	9.0	1022	0.0	36.0	
03224500	Whetstone Cr nr Ashley	3	98.7	11.7	1091	0.0	35.5	
03225500	Olentangy R nr Delaware	3	393	3.9	998	0.0	35.5	Regulated since 1948
03226200	Delaware Run nr Delaware	3	5.84	9.8	938	0.4	36.0	
03226800	Olentangy R nr Worthington	-	497	-	-	-	-	Regulated.
03226850	Linworth Run nr Linworth	3	.400	60.0	864	0.0	35.5	
03226900	Fishinger Rd Cr at Upper Arlington	-	.450	76.0	830	0.0	35.0	100% urban and sewered.
03227500	Scioto R at Columbus	-	1629	-	-	-	-	Regulated.
03228000	Scioto Big Run at Briggsdale	3	11.0	30.1	821	0.0	35.5	
03228500	Big Walnut Cr at Central College	3	190	10.6	990	0.0	36.5	Regulated since 1954
03229500	Big Walnut Cr at Rees	3	544	8.1	919	0.0	37.0	Regulated since 1954
03230500	Big Darby Cr at Darbyville	3	534	3.9	905	0.0	37.0	
03230600	Hominy Cr at Circleville	3	5.66	58.3	808	0.0	39.0	
03231600	E Fk Paint Cr nr Sedalia	3	3.82	7.6	1040	0.0	38.5	
03232000	Paint Cr nr Greenfield	3	249	4.1	980	0.0	38.5	
03232500	Rocky Fk nr Barretts Mills	3	140	21.3	916	0.0	43.5	Regulated since 1952
03234100	Indian Cr nr Massieville	3	9.60	60.9	734	0.1	39.5	
03234500	Scioto R at Higby	3	5131	2.7	756	0.0	37.0	
03235000	Salt Cr at Tarlton	3	11.5	28.6	961	0.0	39.5	
03235200	Little Blackjack Br nr S Bloomingville	3	.890	116	896	0.0	39.5	
03235400	W Br Tar Hollow Cr at Tar Hollow State Park	-	.300	213	900	0.0	39.5	97% forest.
03235500	Tar Hollow Cr at Tar Hollow State Park	-	1.35	140	897	0.0	39.5	96% forest.
03235995	Salt Cr above dam site nr Londonderry	3	268	13.0	786	0.0	39.5	
03236100	S Br Little Salt Cr at Jackson	3	3.76	36.7	724	0.1	41.5	
03237210	Rose Run nr Portsmouth	-	1.04	207	646	0.0	42.0	91% forest.
03237280	Upper Twin Cr at McGaw	-	12.2	67.0	746	0.0	43.0	96% forest.
03237300	W Br Turkey Run nr Winchester	3	.890	55.3	990	0.0	42.5	
03237500	Ohio Brush Cr nr W Union	3	387	8.3	673	0.0	42.0	
03238400	Harwood Cr nr Fayetteville	3	.880	26.0	982	0.0	42.0	
03238500	Whiteoak Cr nr Georgetown	3	222	7.9	838	0.0	41.5	
03239000	Little Miami R nr Selma	3	48.9	9.9	1080	0.0	38.5	
03239500	N Fk Little Miami R nr Pitchin	3	28.9	9.4	1070	0.0	38.5	
03240000	Little Miami R nr Oldtown	3	129	13.2	965	0.0	38.0	

See footnotes at end of table.

Table 7.--Basin characteristics for Ohio streams.--Continued

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index E (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
03240500	N Fk Massies Cr at Cedarville	3	28.9	7.0	1073	0.0	38.5	
03241000	S Fk Massies Cr nr Cedarville	3	17.1	7.2	1025	0.0	38.5	
03241500	Massies Cr at Wilberforce	3	63.2	14.2	988	0.0	38.5	
03241600	Shawnee Cr at Xenia	3	4.21	26.1	991	0.1	39.0	
03242050	Little Miami R nr Spring Valley	3	366	10.0	915	0.0	38.5	
03242100	Wayne Cr at Waynesville	3	1.01	98.0	854	0.0	42.0	
03242300	Caesar Cr at Harveysburg	3	209	11.0	932	0.0	41.0	
03242500	Little Miami R nr Ft Ancient	3	677	8.0	868	0.0	40.0	
03244000	Todd Fk nr Roachester	3	219	12.0	871	1.0	43.5	
03245500	Little Miami R at Milford	3	1203	6.5	782	0.0	43.5	
03246500	E Fk Little Miami R at Williamsburg	3	237	5.3	928	0.0	42.5	
03247100	Patterson Run nr Owensville	3	3.34	31.9	862	0.0	41.0	
03247500	E Fk Little Miami R at Perintown	3	476	6.9	782	0.0	42.5	
03255500	Mill Cr at Reading	3	73.0	7.6	592	0.4	39.0	
03257500	W Fk Mill Cr at Woodlawn	-	32.5	-	-	-	-	Regulated.
03259000	Mill Cr at Carthage	-	115	-	-	-	-	Regulated.
03260700	Bokengehalas Cr nr DeGraff	3	36.3	28.6	1180	0.2	35.5	
03260800	Stony Cr nr DeGraff	3	59.1	22.8	1131	0.1	35.5	
03261500	Great Miami R at Sidney	3	541	3.0	988	2.0	36.0	
03262000	Loramie Cr at Lockington	-	257	-	-	-	-	Regulated.
03262750	Millers Ditch nr Tipp City	3	.810	60.0	878	0.0	37.5	
03263000	Great Miami R at Taylorsville	-	1149	-	-	-	-	Regulated.
03263100	Poplar Cr nr Vandalia	3	3.11	78.0	915	0.0	37.5	
03263700	Bridge Cr nr Greenville	3	4.83	11.6	1040	0.0	37.5	
03264000	Greenville Cr nr Bradford	3	193	5.8	1042	0.0	37.5	
03265000	Stillwater R at Pleasant Hill	3	503	3.1	949	0.0	37.0	
03265100	Hog Run Tributary at Laura	3	.460	12.9	1000	0.0	37.0	
03266000	Stillwater R at Englewood	-	650	-	-	-	-	Regulated.
03266500	Mad R at Zanesfield	3	7.31	49.8	1304	0.0	36.0	
03267000	Mad R nr Urbana	3	162	11.0	1113	0.0	37.0	
03267900	Mad R, St Paris Pike, nr Eagle City	3	310	8.0	1052	0.0	37.0	
03268000	Buck Cr at New Moorefield	3	67.3	20.2	1117	0.0	38.0	
03268300	Beaver Cr at Brighton	3	3.33	17.0	1192	0.0	38.5	
03268500	Beaver Cr nr Springfield	3	37.3	15.7	1088	0.0	38.0	
03269000	Buck Cr at Springfield	3	139	15.4	1050	0.0	38.0	

See footnotes at end of table.

Table 7.--Basin characteristics for Ohio streams.--Continued

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index E (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
03269500	Mad R nr Springfield	3	490	8.3	1030	0.0	37.5	
03270000	Mad R nr Dayton	-	635	-	-	-	-	Regulated.
03270500	Great Miami R at Dayton	3	2511	4.0	882	0.0	37.0	Regulated since 1922
03270800	Wolf Cr at Trotwood	3	22.7	19.0	937	0.0	38.0	
03271000	Wolf Cr at Dayton	3	69.5	18.5	843	0.0	38.0	
03271500	Great Miami R at Miamisburg	-	2711	-	-	-	-	Regulated.
03271800	Twin Cr nr Ingomar	3	197	10.0	957	0.0	38.0	
03272000	Twin Cr nr Germantown	-	275	-	-	-	-	Regulated.
03272800	Sevenmile Cr at Collinsville	3	120	16.0	924	0.0	39.0	
03272900	Collins Cr at Collinsville	3	.940	120	783	0.0	39.0	
03273500	Fourmile Cr nr Hamilton	3	311	14.5	866	0.3	40.0	
03274000	Great Miami R at Hamilton	3	3630	3.4	794	0.2	38.5	Regulated since 1922
03274100	Blake Run nr Reily	3	.290	93.0	946	0.0	38.0	
03275000	Whitewater R nr Alpine, Indiana	3	529	8.7	940	0.1	39.5	
03275500	E Fk Whitewater R at Richmond, Indiana	3	121	12.8	980	0.6	39.0	
03325500	Mississinewa R nr Ridgeville, Indiana	3	133	4.6	1008	0.2	40.0	
04176900	Hill Ditch nr Richards	4	3.35	15.7	639	0.0	31.5	
04177400	Eagle Cr Tributary nr Montpelier	4	1.84	15.6	885	6.0	34.0	
04178000	St. Joseph R nr Newville, Indiana	4	610	3.2	901	0.3	35.0	
04179500	Cedar Cr at Auburn, Indiana	4	87.3	8.0	916	0.5	34.5	
04180000	Cedar Cr nr Cedarville, Indiana	4	270	6.0	871	0.4	34.5	
04181500	St Marys R at Decatur, Indiana	4	621	1.4	816	1.2	36.0	
04182000	St Marys R nr Ft Wayne, Indiana	4	762	1.2	810	1.0	37.0	
04183500	Maumee R at Antwerp	4	2128	1.6	794	0.5	34.5	
04184500	Bean Cr at Powers	4	206	6.6	826	0.0	32.5	
04185000	Tiffin R at Stryker	4	410	5.3	843	0.0	33.0	
04186500	Auglaize R nr Ft Jennings	4	332	3.4	826	0.0	36.0	
04186800	King Run nr Harrod	4	.530	65.0	1016	0.0	35.0	
04187500	Ottawa R at Allentown	4	160	3.9	872	0.3	36.0	
04188500	Eagle Cr nr Findlay	4	55.0	9.3	866	0.0	35.0	
04189000	Blanchard R nr Findlay	4	346	3.7	832	0.0	35.0	
04189100	Tiderishi Cr nr Jenera	4	4.65	10.4	838	0.0	35.0	
04189500	Blanchard R at Glandorf	4	644	3.2	795	0.0	35.0	
04190500	Roller Cr at Ohio City	4	5.14	8.0	823	0.0	36.0	
04191500	Auglaize R nr Defiance	4	2318	2.7	795	0.0	35.0	

See footnotes at end of table.

Table 7.--Basin characteristics for Ohio streams.--Continued

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index E (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
04192500	Maumee R nr Defiance	4	5545	1.0	762	0.0	35.0	
04192900	Reitz Run nr Waterville	4	1.06	18.0	642	0.0	32.0	
04193500	Maumee R at Waterville	4	6329	1.3	752	0.0	34.5	
04195500	Portage R at Woodville	4	428	2.8	672	0.0	33.0	
04196000	Sandusky R nr Bucyrus	4	88.8	7.4	1098	0.0	36.0	
04196500	Sandusky R nr Upper Sandusky	4	298	6.6	972	0.0	35.0	
04196700	St James Run nr Upper Sandusky	4	5.29	13.4	875	0.0	35.0	
04196800	Tymochtee Cr at Crawford	4	229	2.0	840	1.0	34.5	
04197000	Sandusky R nr Mexico	4	774	4.3	894	0.0	35.0	
04197100	Honey Cr at Melmore	4	149	5.0	910	1.0	35.5	
04197300	Wolf Cr at Bettsville	4	66.2	7.0	772	0.0	35.0	
04197400	E Br Wolf Cr at Ft Seneca	4	70.1	7.0	748	0.0	35.0	
04197500	Havens Cr at Havens	4	4.28	10.7	688	0.0	34.0	
04198000	Sandusky R nr Fremont	4	1251	4.0	828	0.0	35.0	
04198100	Norwalk Cr at Norwalk	1	4.92	25.6	900	0.0	35.5	
04199000	Huron R at Milan	1	371	9.3	814	0.1	35.5	
04199500	Vermilion R at Vermilion	1	262	7.0	827	0.0	34.5	
04199800	Neff Run nr Litchfield	1	.760	31.0	938	1.0	36.0	
04200000	E Br Black R at Elyria	1	217	6.8	894	0.0	36.0	
04200100	Plum Cr at Oberlin	1	4.83	13.8	823	1.0	34.5	
04200500	Black R at Elyria	1	396	6.7	884	0.0	35.0	
04201500	Rocky R nr Berea	1	267	9.4	874	0.0	36.5	
04202000	Cuyahoga R at Hiram Rapids	1	151	4.7	1133	1.9	41.0	Regulated since 1961
04204000	Little Cuyahoga R at Mogadore	-	17.3	-	-	-	-	Regulated.
04204500	Little Cuyahoga R at Massillon Rd at Akron	-	31.6	-	-	-	-	Regulated.
04205000	Springfield Lake Outlet at Akron	-	9.72	-	-	-	-	Regulated.
04206000	Cuyahoga R at Old Portage	-	404	-	-	-	-	Regulated.
04207200	Tinkers Cr at Bedford	1	83.9	5.0	969	2.0	38.5	
04208000	Cuyahoga R at Independence	1	707	7.1	854	1.5	37.5	
04209000	Chagrin R at Willoughby	1	246	12.4	893	0.0	40.0	
04210000	Phelps Cr nr Windsor	1	25.6	20.7	998	1.0	39.5	
04210090	Montville Ditch at Montville	1	.290	107	1244	0.0	41.5	
04210100	Hoskins Cr at Hartsgrove	1	5.11	15.6	1120	3.0	40.0	
04211000	Rock Cr nr Rock Cr	1	69.2	4.1	858	0.0	39.5	
04211500	Mill Cr nr Jefferson	1	82.0	7.6	898	0.0	40.0	

See footnotes at end of table.

Table 7.--Basin characteristics for Ohio streams.--Continued

Station number	Station name	Geographic area[1]	Drainage area A (mi²)	Main channel slope Sl (ft/mi)	Basin elevation index E (ft)[2]	Storage index St (pct)[3]	Average annual precipitation P (in)[4]	Remarks
04212000	Grand R nr Madison	1	581	1.4	777	0.0	39.5	
04212500	Ashtabula R nr Ashtabula	1	121	12.8	832	0.0	40.0	
04212600	Hubbard Run Tributary at Ashtabula	1	.880	114	812	1.0	37.5	
04213000	Conneaut Cr at Conneaut	1	175	7.0	810	0.0	41.0	

[1] For reasons stated in the Limitations and Recommendation section, stations without a geographicaal area number were not included in the regression analysis.

[2] Elevation in 1,000's of feet (mean sea level; 1929) used in the regression analysis.

[3] Storage index in percent plus 1.0 used in the regression analysis.

[4] Precipitation in inches minus 27.0 used in the regression analysis.