DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS INVESTIGATIONS SERIES
MAP I–1313–A

INTRODUCTION

This map is an index to flood studies and flood hazard maps for streams that lie within the Culpeper geologic basin in Northern Virginia and Maryland. The sources of data (mainly flood insurance studies and flood-prone area maps) used to compile this map and selected references are listed below.

A red line or a row of dots coincident with the stream channel is used to indicate the study method—either detailed or approximate (as defined below)—that was used along the respective reach of the channel. Drainage boundaries of the major surface-water basins are shown in blue.

POSSIBLE USES OF THE MAP

The map shows that the flood potential of nearly all the major streams and many of their tributaries have been evaluated. However, the map primarily is an index to such information. Additional flood information is contained in the approximate reference or may be obtained from the agency that prepared the report.

The flood-prone area maps and other flood-information products referred to here have been used in connection with the Federal Flood Insurance Program, and they provide a technical basis for making decisions regarding uses of land subject to flooding.

THE CULPEPER BASIN FOLIO

The Culpeper basin is a structural trough, filled with sedimentary and igneous rocks of the Mesozoic-age that borders the eastern front of the Blue Ridge in Northern Virginia. The basin extends from the Albemarle-Orange County line northeastward across the Potomac River and terminates just south of Frederick, Maryland.

This report is one of a series of earth science information maps being prepared as part of a study of the geologic and hydrologic resources of the Culpeper basin. The scale of these maps, 1:125,000 (1 inch = approximately 2 miles), permits only a regional overview or guide to evaluating hydrologic and geologic conditions that may influence certain types of land use. The maps are not intended for enlargement, nor are they, or any graphical or tabulated data included, intended to replace site investigations. Local details at a given site may be quite different from the general conditions portrayed on these maps and detailed studies are invariably required for site planning.

By combining the basic resource maps in a variety of ways, depending on the relevant limiting factors for any given land use, the user can derive a secondary series of maps that focus on specific problems. Potential uses of these maps and possible derivative products are discussed in the texts accompanying each map.

EXPLANATION

DETAILED STUDIES—Intensive studies along reaches of streams include hydrologic analyses to determine peak discharges, extensive field data collection such as bridge and culvert measurements, and surveys of individual stream cross sections. Step-backwater computations are used to compute water-surface profiles and boundaries of floods of various recurrence intervals. Some studies delineate a floodway (the channel of a stream plus any adjacent flood plain area that must be kept free of encroachment so that the 100-year flood can be carried without raising flood heights more than a specified amount), and may also include a discussion of sources of flood hazards and possible mitigation of these hazards. The flood-plain delineation, flood hazard analysis, and flood insurance study reports listed in the references are examples of studies that were made using detailed methods.

APPROXIMATE STUDIES—Boundaries of flood-prone areas with about one chance in a hundred of being inundated in any one year are delineated on maps. The flood boundaries are drawn using readily available information rather than from specially obtained and detailed field observations, measurements and surveys. Such information may consist of historical profiles of floods or flood profiles constructed using regression equations developed from data collected at long-term stream-flow gaging stations. The flood-prone area maps listed in the references are examples of studies done by appoximate methods.

Limits of study area (Culpeper basin). Flood study may have extended beyond this limit—see individual references.

Drainage-basin divide—The topographic boundary between adjacent basins. Drainage basins should be considered the fundamental, natural planning units within which environmental impacts of proposed land-use activities are assessed.

Leesburg — Name and boundary of flood-prone area map 7½-minute quadrangle sheet

Sources of data used to compile this map

VIRGINIA

Loudoun County

U.S. Department of Agriculture, 1974, Flood hazard analysis, Sycolin Creek, Loudoun County, Virginia: Soil Conservation Service, in cooperation with the State Water Control Board, Bureau of Water Control Management, Loudoun County.

_____ 1974, Flood hazard analysis, Tuscarora Creek, Loudoun County and Leesburg, Virginia: Soil Conservation Service, in cooperation with the State Water Control Board, Bureau of Water Control Management, Loudoun Soil and Water Conservation District, Town of Leesburg and Loudoun County.

U.S. Department of Housing and Urban Development, 1977, Flood insurance study, Loudoun County, Virginia, unincorporated area: Federal Insurance Administration.

U.S. Geological Survey, Maps of flood-prone areas: 1974, Arcola, Virginia; 1974, Gainesville, Virginia; 1974, Herndon, Virginia; 1969, Leesburg, Virginia; 1972, Poolesville, Maryland-Virginia; 1971, Seneca, Maryland-Virginia; and 1973, Sterling, Maryland-Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

Fairfax County

Soule, P. L., 1977, Flood-plain delineation for Bull Run, Little Rocky Run, Johnny Moore Creek, and Popes Head Creek basins, Fairfax County, Virginia: U.S. Geological Survey Open-File Report 77–329, 156 p.

_____ 1978, Flood-plain delineation for Cub Run basin, Fairfax County, Virginia: U.S. Geological Survey Open-File Report 78–17, 126 p.

_____ 1978, Flood-plain delineation for Horsepen Run, Sugarland Run, Nichols Run, and Pond Branch Basins, Fairfax County, Virginia: U.S. Geological Survey Open-File Report 78–1028, 97 p.

U.S. Department of Housing and Urban Development, 1979, Flood insurance study, Town of Herndon, Virginia, Fairfax County: Federal Insurance Administration.

U.S. Geological Survey, Maps of flood-prone areas: 1974, Gainesville, Virginia; 1974, Herndon, Virginia; 1970, Manassas, Virginia; 1971, Seneca, Maryland-Virginia; and 1974, Vienna, Maryland-Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

Prince William County

U.S. Department of Housing and Urban Development, 1978, Flood insurance study, City of Manassas Park, Virginia, Prince William County: Federal Insurance Administration.

_____ 1978, Flood insurance study, City of Manassas, Virginia, Prince William County: Federal Insurance Administration.

U.S. Geological Survey, Maps of flood-prone area: 1974, Arcola, Virginia; 1974, Catlett, Virginia; 1974, Gainesville, Virginia; 1974, Independent Hill, Virginia; 1974, Nokesville, Virginia; 1974, Somerville, Virginia; and 1974, Thoroughfare Gap, Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

Fauquier County

U.S. Department of Housing and Urban Development, 1979, Flood insurance study, Fauquier County, Virginia: Federal Insurance Administration.

U.S. Geological Survey, Maps of flood-prone areas: 1974, Catlett, Virginia; 1969, Germanna Bridge, Virginia; 1974, Nokesville, Virginia; 1970, Remington, Virginia; 1974, Somerville, Virginia; 1974, Thoroughfare Gap, Virginia; and 1974, Warrenton, Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

Culpeper County

U.S. Geological Survey, Maps of flood-prone areas: 1978, Culpeper West, Virginia; 1969, Germanna Bridge, Virginia; 1970, Remington, Virginia; and 1972, Unionville, Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

Madison County

U.S. Geological Survey, Maps of flood-prone areas: 1973, Gordonsville, Virginia; 1973, Madison Mills, Virginia; 1973, Rapidan, Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

Orange County

U.S. Geological Survey, Maps of flood-prone areas: 1973, Gordonsville, Virginia; 1973, Madison Mills, Virginia; and 1973, Rapidan, Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

MARYLAND

Frederick County

U.S. Department of Housing and Urban Development, 1977, Flood insurance study, Frederick County, Maryland, unincorporated areas: Federal Insurance Administration.

U.S. Geological Survey, Maps of flood-prone areas: 1972, Buckeystown, Maryland-Virginia; 1971, Point of Rocks, Maryland-Virginia; 1972, Poolesville, Maryland-Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

Montgomery County

Federal Emergency Management Agency, 1980 (in press), Flood insurance study, Town of Poolesville, Maryland, Montgomery County: Federal Insurance Administration.

Maryland-National Capital Park and Planning Commission, 1975, Flood-plain mapping coverage for Montgomery County, Maryland: 1 sheet, scale 1:36,000.

U.S. Department of Housing and Urban Development, 1979, Flood insurance study, Montgomery County, Maryland, unincorporated areas: Federal Insurance Administration.

U.S. Geological Survey, Maps of flood-prone areas: 1973, Germantown, Maryland; 1972, Poolesville, Maryland-Virginia; 1971, Seneca, Maryland-Virginia; 1973, Sterling, Maryland-Virginia; and 1974, Waterford, Maryland-Virginia; U.S. Geological Survey 7½-minute quadrangles, scale 1:24,000.

SELECTED GENERAL REFERENCES

Bailey, J. F., Patterson, J. L., and Paulhus, J. L. H., 1975, Hurricane Agnes rainfall and floods, June-July 1972: U.S. Geological Survey Prof. Paper 924, 403 p.

Bogart, D. B., 1960, Floods of August-October 1955, New England to North Carolina: U.S. Geological Survey Water-Supply Paper 1420, 854 p.

Edelen, G. W., Jr., 1976, National program for managing flood losses, Guidelines for preparation, transmittal, and distribution of flood-prone area maps and pamphlets: U.S. Geological Survey Open-File Report (unnumbered), 30 p.

Grover, N. C., 1937, The floods of March, 1936, Part 3, Potomac, James and Upper Ohio Rivers; with a section on the weather associated with the floods of March, 1936 by Stephen Lichtblau, U.S. Weather Bureau: U.S. Geological Survey Water-Supply Paper 800, 351 p.

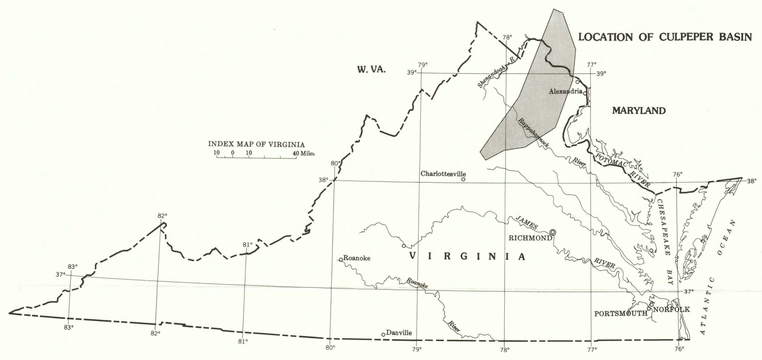
Miller, E. M., 1977, Equation for estimating regional flood depth—frequency relation for Virginia: U.S. Geological Survey Open-File Report 77–396, 6 p.

_____ 1978, Technique for estimating magnitude and frequency of floods in Virginia: U.S. Geological Survey Water-Resources Investigations 78–5, prepared in cooperation with the Virginia Department of Highways and Transportation and U.S. Department of Transportation, Federal Highway Administration, 24 p., 5 tables.

U.S. Department of Housing and Urban Development, 1977, Flood insurance study, Guidelines and specifications for study contractors: Federal Insurance Administration.

Additional data may be obtained from the District Chief, U.S. Geological Survey, Water Resources Division, Room 304, 200 West Grace Street, Richmond, Virginia 23220.

LOCATION OF CULPEPER BASIN



SCALE 1:125 000

5 4 3 2 1 0 5 MILES

5 4 3 2 1 0 5 10 KILOMETERS

INDEX MAP OF FLOOD STUDIES, CULPEPER BASIN, VIRGINIA AND MARYLAND

By
Sara A. Morsches and Chester Zenone

1981

Base from U.S. Geological Survey 1:250,000
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