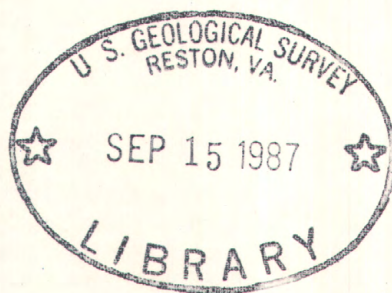


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Water Resources Data Virginia Water Year 1986



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT VA-86-1
Prepared in cooperation with the State of Virginia
and with other agencies

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons



Water Resources Data Virginia Water Year 1986

by Byron J. Prugh, Jr., Fred J. Easton, and Dennis D. Lynch



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT VA-86-1
Prepared in cooperation with the State of Virginia
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

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1987

PREFACE

The annual hydrologic data report of Virginia is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey and the Virginia Water Control Board who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following offices contributed significantly to the preparation and completion of this report:

U.S. Geological Survey, Richmond, VA
U.S. Geological Survey, Marion, VA
U.S. Geological Survey, Charlottesville, VA
Virginia Water Control Board, Charlottesville, VA

This report was prepared in cooperation with the State of Virginia and with other agencies under the general supervision of Herbert J. Freiburger, Chief of the Mid-Atlantic District, and Gary S. Anderson, Chief, Virginia Office.

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WATER RESOURCES DATA - VIRGINIA, 1986

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State agencies, obtains a large amount of data pertaining to the water resources of Virginia each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Virginia."

This report series includes records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This volume contains records for water discharge at 189 gaging stations; stage only at 1 gaging station; stage and contents at 10 lakes and reservoirs; water quality at 41 gaging stations and 26 wells; and water levels at 63 observation wells. Also included are data for 78 crest-stage partial-record stations. Locations of these sites are shown on figures 6 and 7. Miscellaneous hydrologic data were collected at 18 measuring sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Virginia.

This series of annual reports for Virginia began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Virginia were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 6A and 6B." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports, Federal Center, Bldg. 41, Box 25425, Denver, CO 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report VA-86-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the Office Chief at the address given on the back of the title page or by telephone (804) 771-2427.

COOPERATION

The U.S. Geological Survey and agencies of the State of Virginia have had cooperative agreements for the collection of water-resource records since 1930. Organizations that assisted in collecting the data in this report through joint-funding agreement with the Survey are:

Virginia Water Control Board, Richard N. Burton, executive director.
Virginia Department of Highways and Transportation, Oscar K. Mabry, deputy commissioner.
City of Alexandria, Vola Lawson, city manager.
City of Newport News, C. C. Crowder, director, Department of Public Utilities.
City of Roanoke, Kit B. Kiser, director, Utilities and Operations.
Southeastern Public Service Authority, Durwood S. Curling, executive director.
James City County, Wayland Bass, director, Department of Public Works.
University of Virginia, Dr. James N. Galloway.
Northern Virginia Planning District Commission, John W. Epling, executive director.

Assistance with funds or services was given by the U.S. Army Corps of Engineers in collecting records for 59 gaging stations and 4 water-quality stations throughout the State.

Under a cooperative agreement covering the Tennessee River basin, the Tennessee Valley Authority provided financial assistance for the operation of 5 gaging stations, the records for which are published herein. Assistance was also provided by the Water Quality Office, Environmental Protection Agency. Agencies that aided in collecting records are the Appalachian Power Company, Virginia Power, City of Danville, and City of Radford.

Organizations that provided data are acknowledged in station descriptions.

RECORDS COLLECTED BY THE STATE OF VIRGINIA

In addition to data collected by the U.S. Geological Survey, there are included herein records for 99 gaging stations and 19 index wells operated by the Virginia Water Control Board. These records are published as provided and are acknowledged in the "COOPERATION" paragraph of each individual station. The Virginia Water Control Board is under the direction of Richard N. Burton, executive director. Published material for the gaging-station records and the ground-water wells is supplied, respectively, through the Division of Water Resources Planning and Management, William L. Woodfin, Jr., director of operations.

SUMMARY OF HYDROLOGIC CONDITIONS

Despite record-breaking floods in the western part of the State during November 1985, average annual streamflows for the 1986 water year generally were below long-term historical means across most of the State (figures 1 and 2). An exception to this trend was noted in streams in the Shenandoah River basin and in the vicinity of Roanoke, that received the brunt of the November rainfall. These streams had above-average flows for the year. Streamflows in the Chowan River basin also were slightly above average as the result of increased runoff from several tropical storms that skirted the Virginia coast during the year. Flows were lowest in northern Virginia near Washington, D.C., and in the southern and southwestern parts of the State (Dan, Tennessee, New, and Big Sandy River basins) where Virginia shared the effects of a major drought in the southeastern United States. Statewide, flows were below average for 9 of the 12 months in water year 1986 (figure 2).

Gaging Station	Part of State	Annual mean flow for 1986 (cfs)	Percent of median annual flow	Length of record (years)
S.F. Shenandoah River at Front Royal, Va.	Northwestern	1,800	112	63
Rapidan River near Culpeper, Va.	Northeastern	541	103	56
Slate River near Arvon, Va.	Central	177	77	60
James River at Buchanan, Va.	Western	2,280	92	88
N.F. Holston River near Saltville, Va.	Southwestern	242	81	67
Dan River at Danville, Va.	Southern	1,590	68	52
Nottoway River near Stony Creek, Va.	Southeastern	618	110	57

Streamflows declined across most of the State during the first three weeks in October 1985, although streamflow in the Tidewater area continued well above normal in the aftermath of Hurricane Gloria in September. Late in the month, runoff from widespread rains increased streamflows, especially in northern Virginia where below-normal flows had persisted for several months.

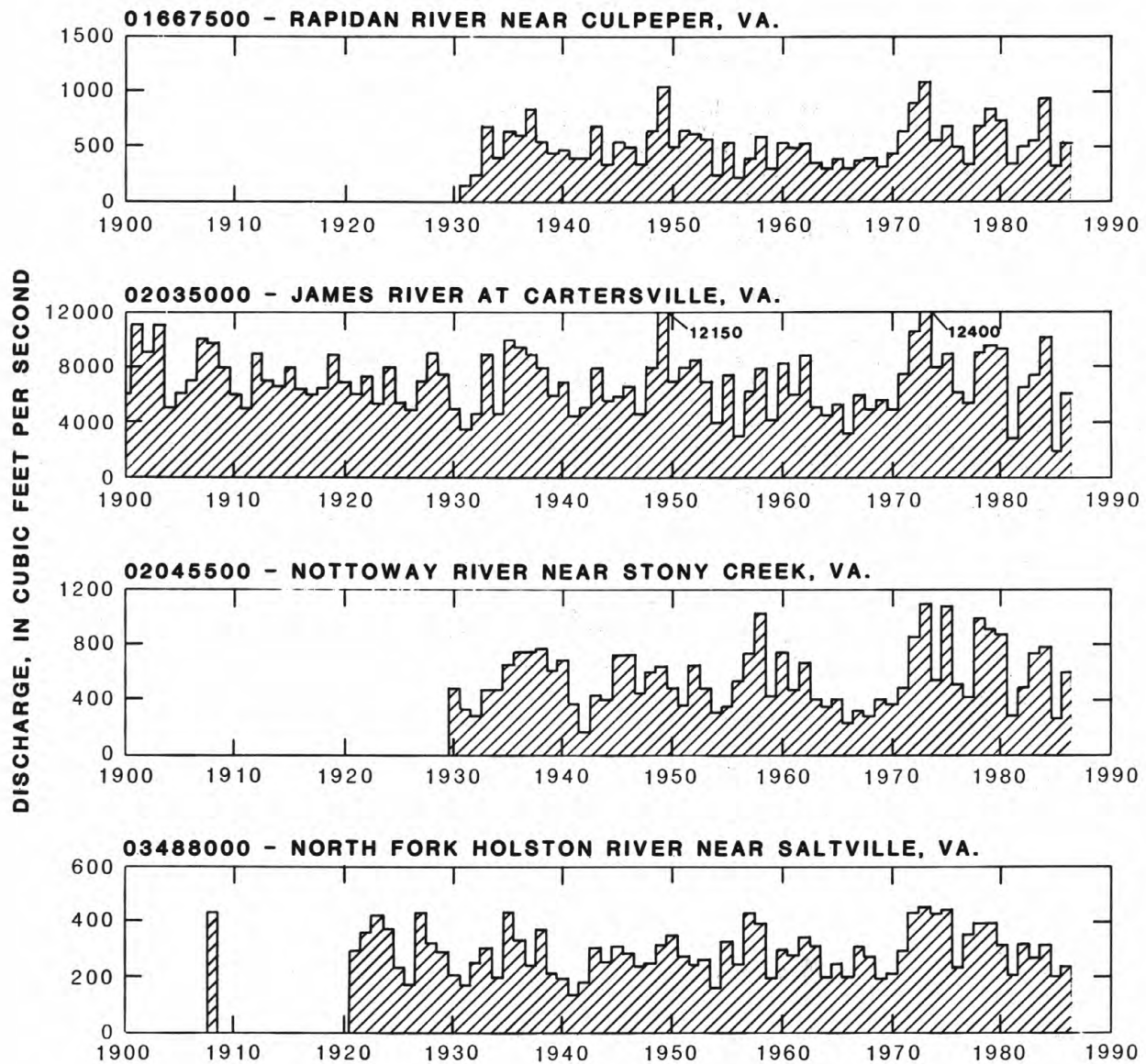


Figure 1.-- Annual mean discharge at selected gaging stations.

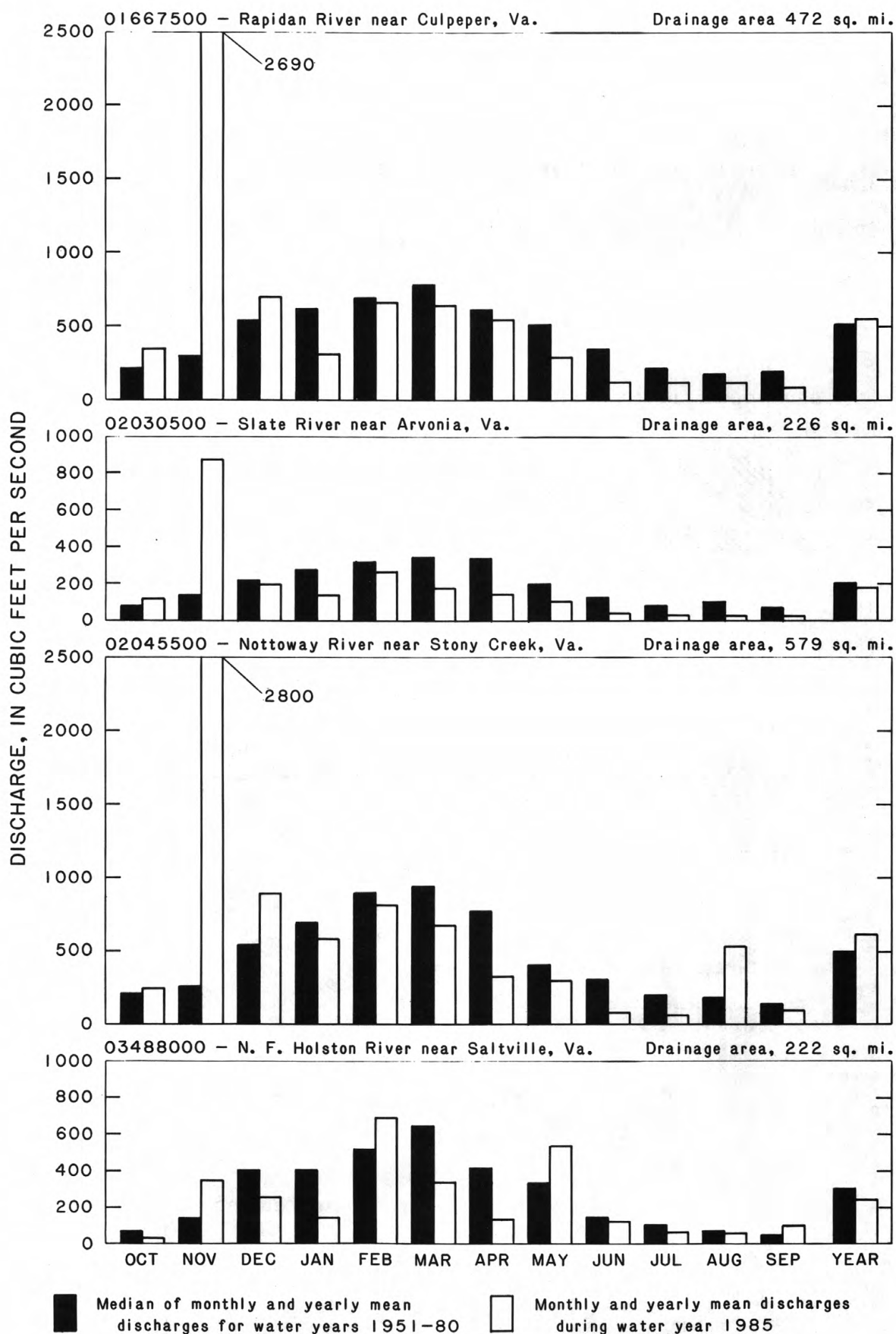


Figure 2.-- Discharge during 1986 water year compared with median discharge for period 1951-80 for four representative gaging stations.

On November 2, the remnants of Hurricane Juan entered the State from the southwest, saturating the ground and raising stream levels. Juan was followed by a major front moving in from the northwest. The result was heavy rainfall and major flooding in the upper James River and Shenandoah River basins and in a smaller area near Roanoke. Precipitation amounts up to 18 inches were reported for the 5-day period beginning November 1, and 6 to 10 inches fell over a large part of the area. Recurrence frequencies of the flood were greater than 100 years in an area west of the Blue Ridge extending from Harrisonburg to Roanoke. New records were set for peak flows and for mean monthly flows for November at many sites. Many streamflow-gaging stations in Virginia were damaged by floodwaters, and one station (Back Creek near Dundee) was destroyed. Flooding east of the Blue Ridge generally was confined to the mainstem James River. Impoundments on the Jackson River near Hot Springs (Lake Moomaw) and on the Roanoke River (Leesville Lake and Smith Mountain Lake) significantly reduced flood peaks. On the Jackson River below Lake Moomaw, the recurrence frequency of the flood peak was reduced from greater than 100 years to 5 years at Falling Spring. On the Roanoke River, the flood peak was reduced from greater than a 100-year event at Roanoke to a 4-year event at Altavista. Additional information on the magnitude and extent of this flood is summarized in a report titled, Flood of November 1985 in West Virginia, Pennsylvania, Maryland, and Virginia, U.S. Geological Survey Open-File Report 86-486. Annual peak flows occurred during early November in more than half of the streams in the State.

Gaging Station	River basin	Mean flow November 1985 (cfs)	Rank	Year record high occurred (water year)	Length of record (years)
S.F. Shenandoah River at Front Royal, Va.	Shenandoah	10,100	1	1986	63
Rappahannock River at Remington, Va.	Rappahannock	2,575	1	1986	44
James River at Buchanan, Va.	James	9,110	1	1986	88
Rivanna River at Palmyra, Va.	James	3,520	1	1986	53
Roanoke River at Roanoke, Va.	Roanoke	1,630	1	1986	87
Dan River at Danville, Va.	Roanoke	4,440	2	1952	52
New River at Allisonia, Va.	New	5,380	4	1978	57

Flows continued above average in December except in the extreme southwestern part of the State. Streamflows in the Tidewater area remained in the upper 25 percent of historical monthly flows. After a major Statewide storm at the end of November and early December, the trend was for steadily decreasing flows for the remainder of the month.

There was no significant precipitation during January and by month-end most streamflows were in the lower 25 percent of historical monthly flows. Monthly flows were lowest (40 percent of the historical monthly average) in the extreme southwest.

During February, the southwest received a respite from low flows, but the rest of the State continued with below-average flows.

Below-average streamflows continued across the State in March and were lowest for the month since the major drought of 1981.

April was the fourth consecutive month with below-average flows, with most streams in the lower 25 percent of historical monthly flows. Streamflows were lowest in the Tennessee and Big Sandy River basins where flows were 70 to 80 percent below normal for the month. Several near-record low flows for the month were observed. April flow at James River at Buchanan was the lowest since 1915 and might have been lower if flow had not been augmented by releases from Lake Moomaw on the Jackson River.

Gaging Station	River basin	Mean flow April 1986 (cfs)	Rank	Year record low occurred (water year)	Length of record (years)
Dan River at Danville, Va.	Roanoke	1,200	3	1942	52
New River at Allisonia, Va.	New	1,740	2	1942	57
James River at Buchanan, Va.	James	1,130	2	1915	88
N.F. Holston River near Saltville, Va.	Tennessee	134	2	1942	67
Russell Fork near Haysi, Va.	Big Sandy	109	3	1942	60

Flows continued below normal over most of the State in May, except for the Tennessee River basin where flow at the index station on the North Fork Holston River near Saltville increased to above normal for the first time since February. Early in the month, it appeared that new record lows would be established at many stations; however, widespread rains at mid-month increased runoff enough to bring streamflows up from their record-setting levels. May was the fifth consecutive month that streamflows were below average.

Streamflows in June were the lowest for the month since at least 1977 at most stations. New record lows for June were established on several streams in southern Virginia.

Gaging Station	River basin	Mean flow June 1986 (cfs)	Rank	Year record low occurred (water year)	Length of record (years)
S.F. Shenandoah River at Front Royal, Va.	Shenandoah	573	7	1977	63
Rappahannock River at Remington, Va.	Rappahannock	106	2	1977	44
James River at Cartersville, Va.	James	2,050	8	1964	88
Blackwater River near Franklin, Va.	Chowan	150	1	1986	42
Dan River at Danville, Va.	Roanoke	743	1	1986	52
New River at Allisonia, Va.	New	1,490	6	1930	57

Extreme low flows continued into July. In the Blackwater River near Franklin, flows reversed during times of high tide. A new record low for the month was established for the Dan River at Danville. A number of streams in central and southern Virginia had the second lowest monthly flows for July on record: New River at Allisonia (record set in 1930), Nottoway River near Sebrell (record set in 1966), and Slate River near Arvonion (record set in 1966). At many other sites, flows were the lowest for July since 1977. Numerous streams in central and southern Virginia recorded their annual instantaneous low flows during July.

Low flows persisted into August over much of the State; numerous streams in southern and southwestern Virginia had the lowest flows of the year. In late July, Hurricane Charlie brushed southeastern Virginia. Streams in this area rose dramatically in August in response to runoff from Charlie and other subsequent storms.

Weather patterns changed slightly in September, and the southwestern part of the State saw an increase in precipitation and corresponding runoff. Streams in the southeast remained above average as the effects of Hurricane Charlie were slowly dissipated. In the central and northern parts of the State, flows continued below normal for the ninth consecutive month.

In summary, the 1986 water year in Virginia was one of strong contrasts in streamflow. A record-breaking flood in November 1985 was followed by several record-breaking low flows the following summer. Most streams ended the year with a slightly below-average annual flow.

Ground-water levels in Virginia were generally above average for the first half of the year and well-below normal for the last half of the year. Below-normal precipitation during the winter and spring months accounted for below-normal water levels observed during the spring and summer months (figure 3).

Water temperatures in Virginia during the 1986 water year generally were above the average for the previous 10 years. At the two index stations in the table below, daily water temperatures averaged 1.5° Celsius above the mean. Maximum water temperatures occurred in July at both index stations, and a new record of 33.0° Celsius was set at Rappahannock River at Remington on July 6. Minimum water temperatures in Virginia generally occurred in January.

Dissolved-solids concentrations at most surface-water stations were above the average for the previous 10 years due to below-average flows for the last 9 months of the water year. Specific conductance - an indicator of dissolved-solids concentration - was about 20 percent greater than the average at the two index stations shown in the table below.

The suspended-sediment load in Rappahannock River at Remington was about 83,900 tons in the 1986 water year. This load is 33 percent below the mean for the previous 10 years and reflects below-average flows during the year and the small number of storms. More than half of the annual suspended-sediment load (48,000 tons) was associated with the flood in early November 1985. (This flood had a recurrence frequency of about 10 years at this station.)

The suspended-sediment load in James River at Cartersville during the November flood (recurrence frequency of about 50 years at this station) was 1.5 to 2.0 million tons. The respective loads of total phosphorus as P and total nitrogen as N (both essential nutrients for algal growth) during this flood were about 1,600 and 3,800 tons, respectively. Suspended-sediment particles carried more than 90 percent of the phosphorus load.

Gaging Station	Mean discharge (cfs)		Annual suspended- sediment load (tons)		Mean specific conductance (uS/cm)		Mean water temperature (°C)	
	Previous 10 years	1986	Previous 10 years	1986	Previous 10 years	1986	Previous 10 years	1986
Rappahannock River at Remington, Va.	743	619	124,700	83,900	70	86	14.5	16.0
New River at Glen Lyn, Va.	5,220	3,711	---	---	146	168	14.5	16.0

The median concentration of total phosphorus as P at the 10 National Stream-Quality Accounting Network (NASQAN) stations in Virginia was 0.06 milligrams per liter in water year 1986. Dissolved orthophosphorus as P had a median concentration of 0.02 mg/L. James River at Cartersville had the highest median concentrations of total phosphorus and dissolved orthophosphorus at 0.16 and 0.13 mg/L, respectively. (These values do not include flood samples collected in November 1985). The high concentration of total phosphorus in the James River appears to be at least partly due to recent changes in point-source discharges and/or agricultural activities in the basin. As seen in figure 4, and verified with a flow-adjusted seasonal Kendall test, total phosphorus concentration has increased about threefold since 1974. This upward trend may have important consequences on the future quality of the tidal James River and parts of Chesapeake Bay.

The median concentration of total nitrogen as N at the 10 NASQAN stations was 0.8 milligrams per liter in water year 1986. New River at Glen Lyn had the highest median concentration at 1.5 mg/L and Mattaponi River near Beulahville had the lowest median concentration at 0.6 mg/L. The median concentration of dissolved nitrate as N at New River was 1.1 mg/L, accounting for over 70 percent of total nitrogen.

Dissolved oxygen averaged 95 percent of saturation at the NASQAN stations during the year, with a mean concentration of 9.2 mg/L. Of the 70 dissolved oxygen measurements made at these stations during the 1986 water year, only two values below 5.0 mg/L were recorded, both at Blackwater River near Franklin. Values of 4.4 and 4.1 mg/L were measured on May 22 and August 21, respectively.

The concentrations of trace metals (including: arsenic, barium, cadmium, chromium, lead, mercury, silver, and selenium) in all samples collected from the NASQAN stations were well below the U.S. Environmental Protection Agency recommended limit for safe drinking water. In most cases, concentrations were less than one-tenth of the criteria. However, concentrations of dissolved iron and dissolved manganese reached relatively high concentrations in several of these rivers. Dissolved iron concentrations in excess of 1,000 ug/L were measured at Mattaponi River near Beulahville, and dissolved manganese concentrations in excess of 200 ug/L were measured at Blackwater River. Although these concentrations of iron and manganese in water do not present a human health problem, they can produce an objectionable taste and stain laundered clothes.

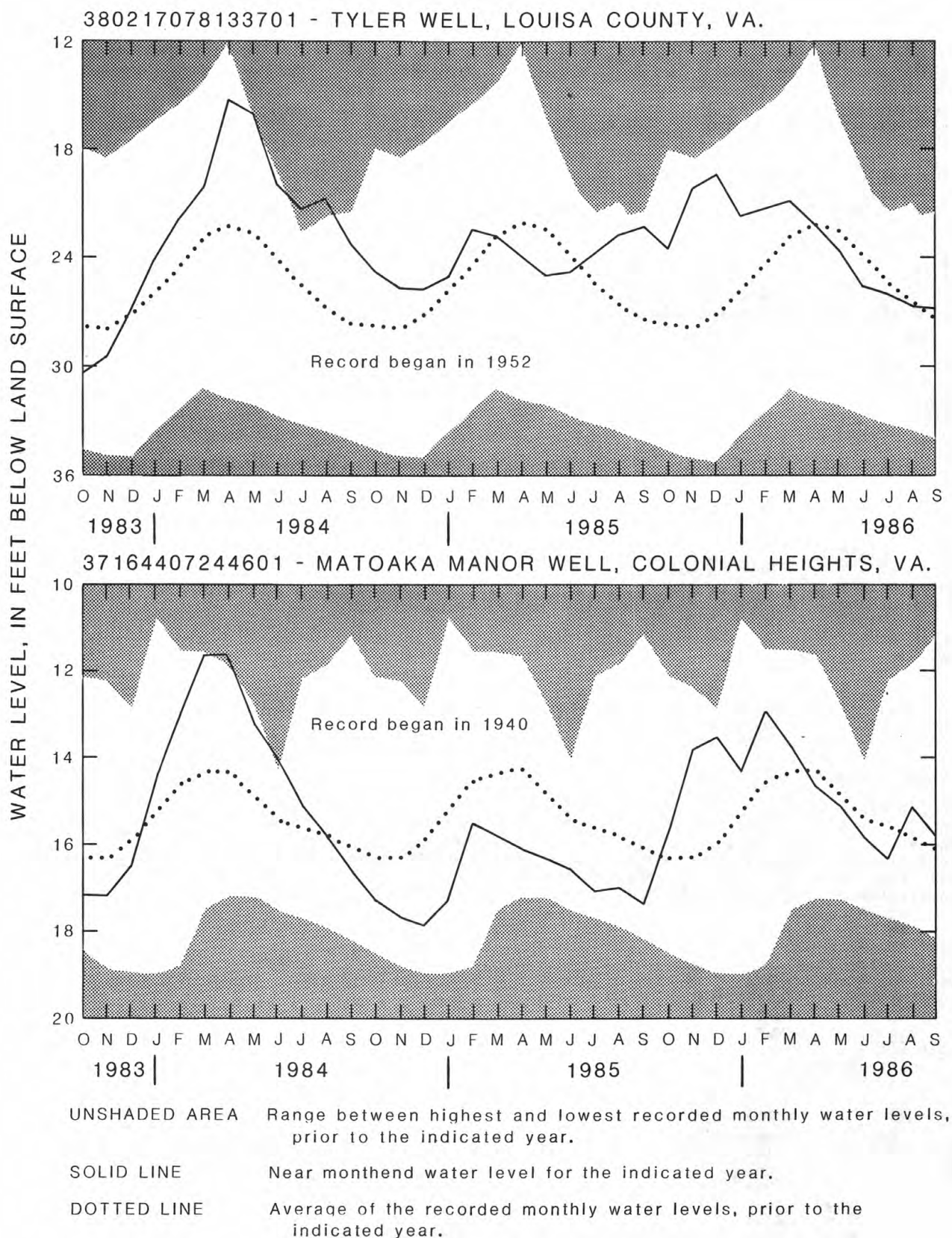


Figure 3.-- Monthly ground-water levels at key observation wells

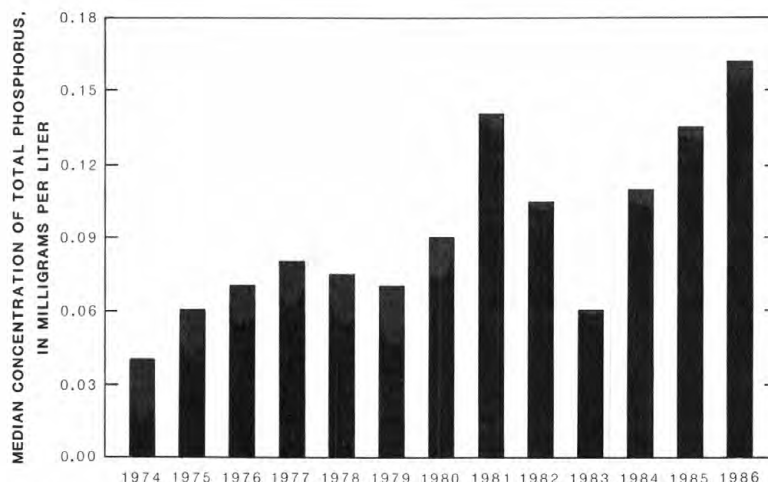


Figure 4.-- Annual median concentration of total phosphorus for period 1974-86 in James River at Cartersville, Va.

The median concentrations of fecal coliform and fecal streptococcal bacteria at the 10 NASQAN stations were 48 and 46 col/100mL, respectively. Of the 10 stations, Nottoway River near Sebrell had the highest concentrations of both bacteria. On August 21, the concentration of fecal coliform bacteria was 4,100 col/100mL and the concentration of fecal streptococcal bacteria was 5,900 col/100mL. James River at Cartersville had the lowest concentrations of both bacteria, with median concentrations less than 15 col/100mL.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream-Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Radiochemical Program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF THE RECORDS

The surface-water, quality-of-water, and ground-water records published in this report are for the 1986 water year that began October 1, 1985, and ended September 30, 1986. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data were collected are shown in figures 6 and 7. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. In Virginia, the "downstream order" system is used for surface-water stations and the "latitude-longitude" system is used for wells.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 03176500, which appears just to the left of the station name, includes the two-digit Part number "03" plus the six-digit downstream-order number "176500." The Part number designates the major river basin; for example, Part "03" is the Ohio River basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

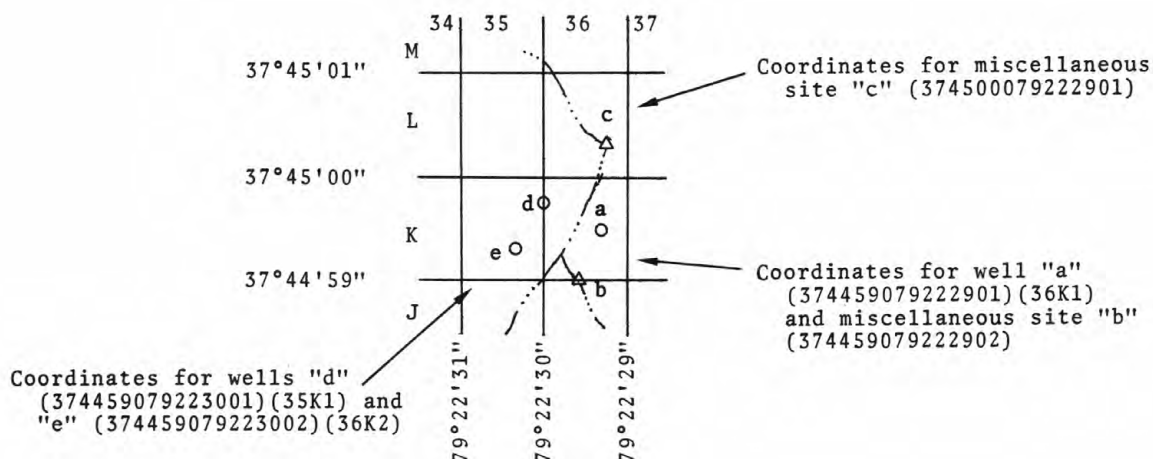


Figure 5. System for numbering wells and miscellaneous sites

A second well-numbering system used in Virginia utilizes 7 1/2-minute quadrangles within the State. The quadrangles are numbered from west to east, and lettered from south to north, omitting the letters "I" and "O." The designation for each quadrangle is determined by the method "Read Right, Up." Wells are numbered serially within each quadrangle. This local well number is shown immediately after the primary well number.

Well records furnished by the State of Virginia also include the well number that is based on an indexing system used by the Virginia Water Control Board.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device, and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figures 6 and 7.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow over dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations, the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see glossary), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record if the median differs from the average given by more than 10 percent.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and equal to or greater than a selected base discharge are presented under this heading. The peaks equal to or greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the offices whose addresses are given on the back of the title page of this report to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in the Virginia Office of the Mid-Atlantic District. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the offices whose addresses are given on the back of the title page of this report.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records", as used in this report, and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 6.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" which appears at the end of the introductory text. Detailed information on collecting, treating, and shipping samples may be obtained from the Virginia Office of the Mid-Atlantic District.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the Virginia Office of the Mid-Atlantic District whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at the time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Virginia Office of the Mid-Atlantic District.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available,

instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily, are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

Records of Ground-Water Levels

Only water-level data from a national network of observation wells are given in this report. These data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the observation wells in this network in Virginia are shown in figure 6.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. The prime identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, an alphanumeric number, derived from the 7 1/2-minute topographic map quadrangles within the State. (See page 11 for a more detailed explanation.)

Water-level records are obtained from direct measurements with a steel tape or from the graph or punched tape of a water-stage recorder. The water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the elevation of the land-surface datum is given in the well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

Data Presentation

Each well record consists of two parts, the station description and the data table of water levels observed during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

LOCATION.--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); the hydrologic-unit number; the distance and direction from a geographic point of reference; and the owner's name.

AQUIFER.--This entry designates by name (if a name exists) and geologic age the aquifer(s) open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and/or screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

INSTRUMENTATION.--This paragraph provides information on both the frequency of measurement and the collection method used, allowing the user to better evaluate the reported water-level extremes by knowing whether they are based on weekly, monthly, or some other frequency of measurement.

DATUM.--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above (or below) National Geodetic Vertical Datum of 1929 (NGVD of 1929); it is reported with a precision depending on the method of determination.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that also are water-quality observation wells and may be used to acknowledge the assistance of local (non-Survey) observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year. Periods for which water-level records are available, but are not published by the Geological Survey, may be noted.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed. For wells equipped with recorders, only abbreviated tables are published; generally, only water-level lows are listed for every fifth day and at the end of the month (eom). The highest and lowest water levels of the water year and their dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that, for most sampling sites, they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes, one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

Data Collection and Computation

The records of ground-water quality in this report were obtained mostly as a part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some counties but none are presented for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality Statewide. Such a view can be attained only by considering records for this year in context with similar records obtained for these and other counties in earlier years.

Most methods for collecting and analyzing water samples are described in the "U.S. Geological Survey Techniques of Water-Resources Investigations" manuals listed at the end of the introductory text. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material, possibly metal, comprising the casings.

Data Presentation

The records of ground-water quality are published in a section titled QUALITY OF GROUND WATER immediately following the ground-water-level records. Data for quality of ground water are listed alphabetically by County and are identified by well number. The prime identification number for wells sampled is the 15-digit number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records are also applicable to ground-water-quality records.

ACCESS TO WATSTORE DATA

The National WATER Data STORAGE and RETRIEVAL System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from the offices whose addresses are given on the back of the title page.

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C plus or minus 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5°C plus or minus 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C plus or minus 1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic feet per second per square mile [$(\text{ft}^3/\text{s})/\text{mi}^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic-foot-per-second day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to that material in a representative water sample which passes through a 0.45 μm membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate (CaCO_3).

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L, ug/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter (m²), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	.004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimentation or sieve
Gravel.....	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [$\text{mg C}/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg C}/(\text{m}^3 \cdot \text{time})$] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [$\text{mg O}_2/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg O}_2/(\text{m}^3 \cdot \text{time})$] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

Runoff in inches (IN., in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

7-day 10-year low flow ($7 Q_{10}$) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emerged or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom.....	Animal
Phylum.....	Arthropoda
Class.....	Insecta
Order.....	Ephemeroptera
Family.....	Ephemeridae
Genus.....	<u>Hexagenia</u>
Species.....	<u>Hexagenia limbata</u>

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1986, is called the "1986 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WSP is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 Pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.

- 3-A9. *Measurement of time of travel and dispersion in streams by dye tracing*, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*. by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*. by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-C1. *Fluvial sediment concepts* by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*. by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. *Computation of rate and volume of stream depletion by wells* by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments* by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*. by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*. edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.

- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. *A model for simulation of flow in singular and interconnected channels* by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers* by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

SELECTED U.S. GEOLOGICAL SURVEY REPORTS ON WATER RESOURCES IN VIRGINIA

Listed below is a selection of reports on water resources in Virginia which are available through the Virginia Office of the Mid-Atlantic District at the U.S. Geological Survey, WRD, 3600 West Broad Street, Room 606, Richmond, Virginia 23230.

An index of geophysical logging in Virginia by the U.S. Geological Survey, by J. D. Mulheren, J. D. Larson, and H. T. Hopkins: U.S. Geological Survey Open-File Report 82-432. 1982. 34 pages.

Availability and quality of ground water in the Piedmont Province of Virginia, by J. D. Powell and J. M. Abe: U.S. Geological Survey Water-Resources Investigations Report 85-4235. 1985. 33 pages.

Effects of fracturing on well yields in the coalfield areas of Wise and Dickenson Counties, southwestern Virginia, by W. G. Wright: U.S. Geological Survey Water-Resources Investigations Report 85-4061. 1985. 21 pages.

Flood of November 1985 in West Virginia, Pennsylvania, Maryland, and Virginia, by Joseph B. Lescinsky: U.S. Geological Survey Open-File Report 86-486. 1987. 33 pages.

Ground-water availability along the Blue Ridge Parkway, Virginia, by H. T. Hopkins: U.S. Geological Survey Water-Resources Investigations Report 84-4168. 1984. 154 pages.

Guide to obtaining U.S. Geological Survey information, by K. Dodd, H. K. Fuller, and P. F. Clarke: U.S. Geological Survey Circular 900. 1985. 35 pages.

Hydrology and effects of mining in the upper Russell Fork basin, Buchanan and Dickenson Counties, Virginia, by J. D. Larson and J. D. Powell: U.S. Geological Survey Water-Resources Investigations Report 85-4238. 1986. 63 pages.

Hydrology of Area 16, Eastern Coal Province, Virginia and Tennessee, by P. W. Hufschmidt and others: U.S. Geological Survey Water-Resources Investigations Report 81-204. 1981. 67 pages.

Low flow of streams in Fairfax County, Virginia, by E. H. Mohler, Jr., and G. F. Hagan: U.S. Geological Survey Open-File Report 81-63. 1981. 30 pages.

Quality of ground water in southern Buchanan County, Virginia, by S. M. Rogers and J. D. Powell: U.S. Geological Survey Water-Resources Investigations 82-4022. 1983. 36 pages.

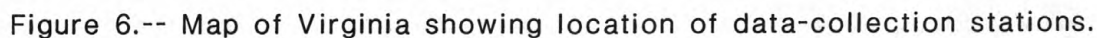
Relation between ground-water quality and mineralogy in the coal-producing Norton Formation of Buchanan County, Virginia, by J. D. Powell and J. D. Larson: U.S. Geological Survey Water-Supply Paper 2274. 1985. 30 pages.

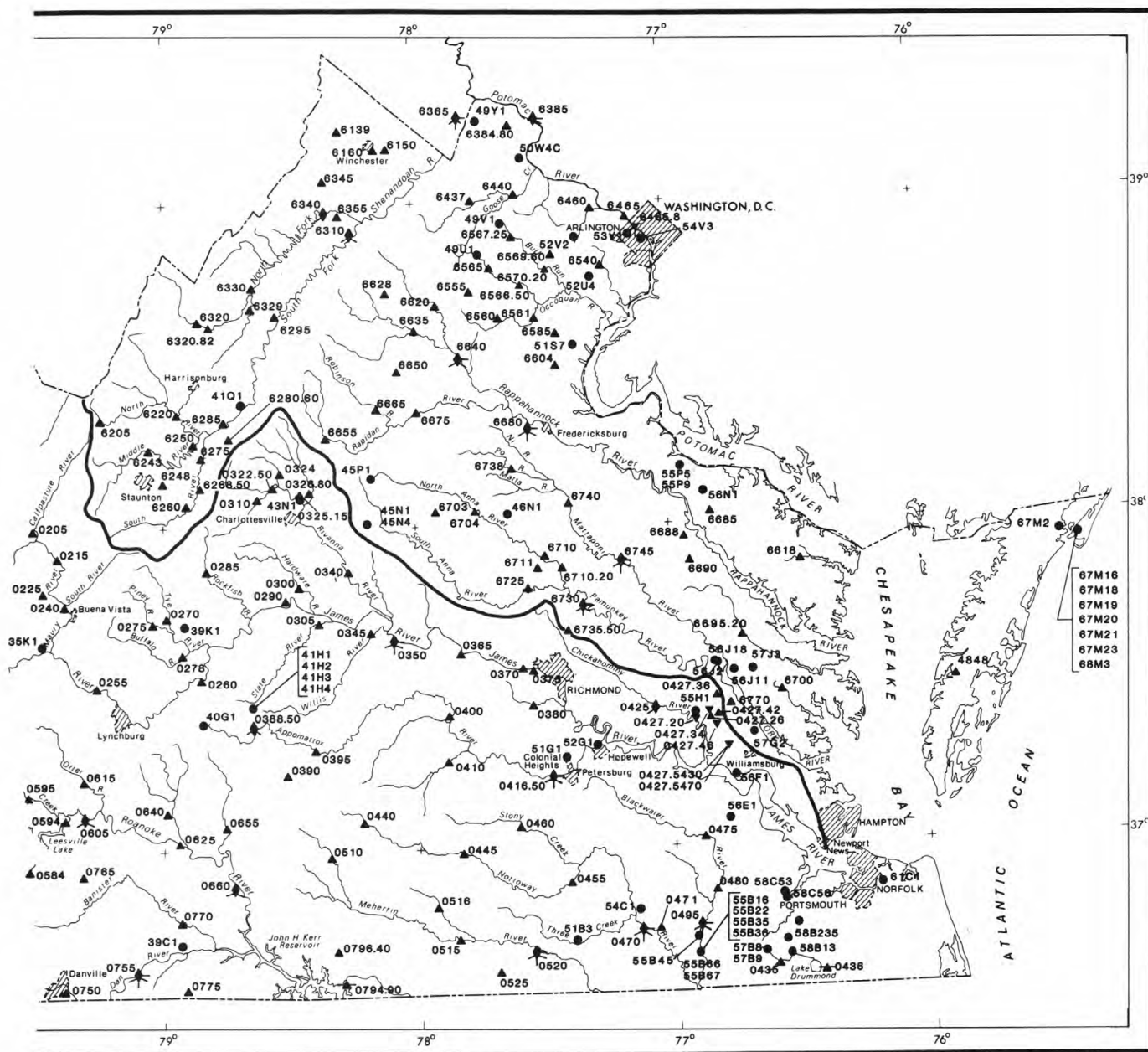
Selected hydrologic data for the Powell River basin in Wise County, Virginia, by J. D. Larson: U.S. Geological Survey Open-File Report 85-186. 1985. 22 pages.

Selected publications on the water resources of Virginia, by N. R. Carrington: U.S. Geological Survey Open-File Report 86-418. 1986. 34 pages.

Sensitivity of stream basins in Shenandoah National Park to acid deposition, by D. D. Lynch and N. B. Dise: U.S. Geological Survey Water-Resources Investigations Report 85-4115. 1985. 61 pages.

Water-level hydrographs for observation wells in Virginia, by S. Farrington, N. R. Carrington, and W. V. Daniels: U.S. Geological Survey Open-File Report 84-134. 1984. 167 pages.





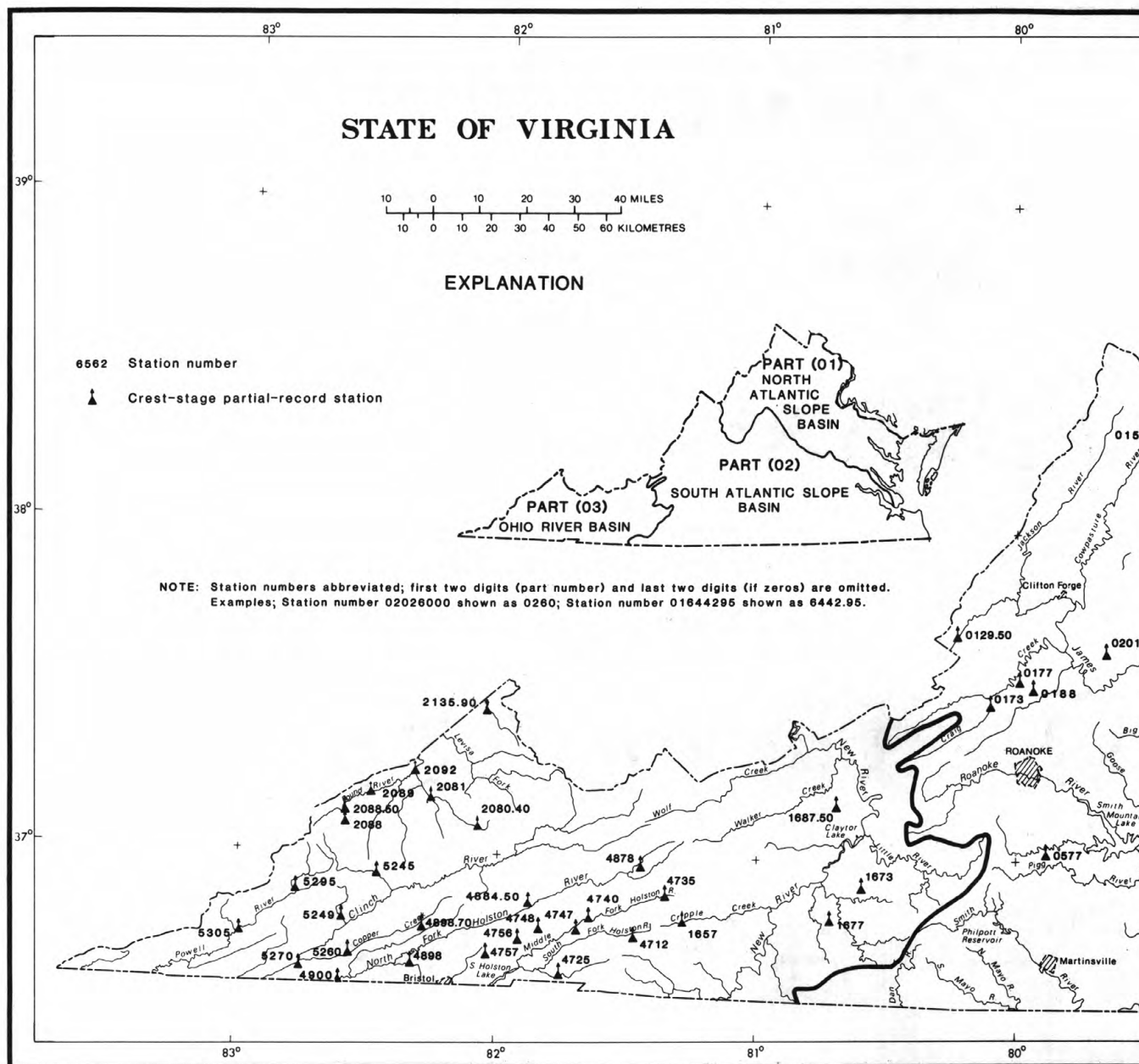
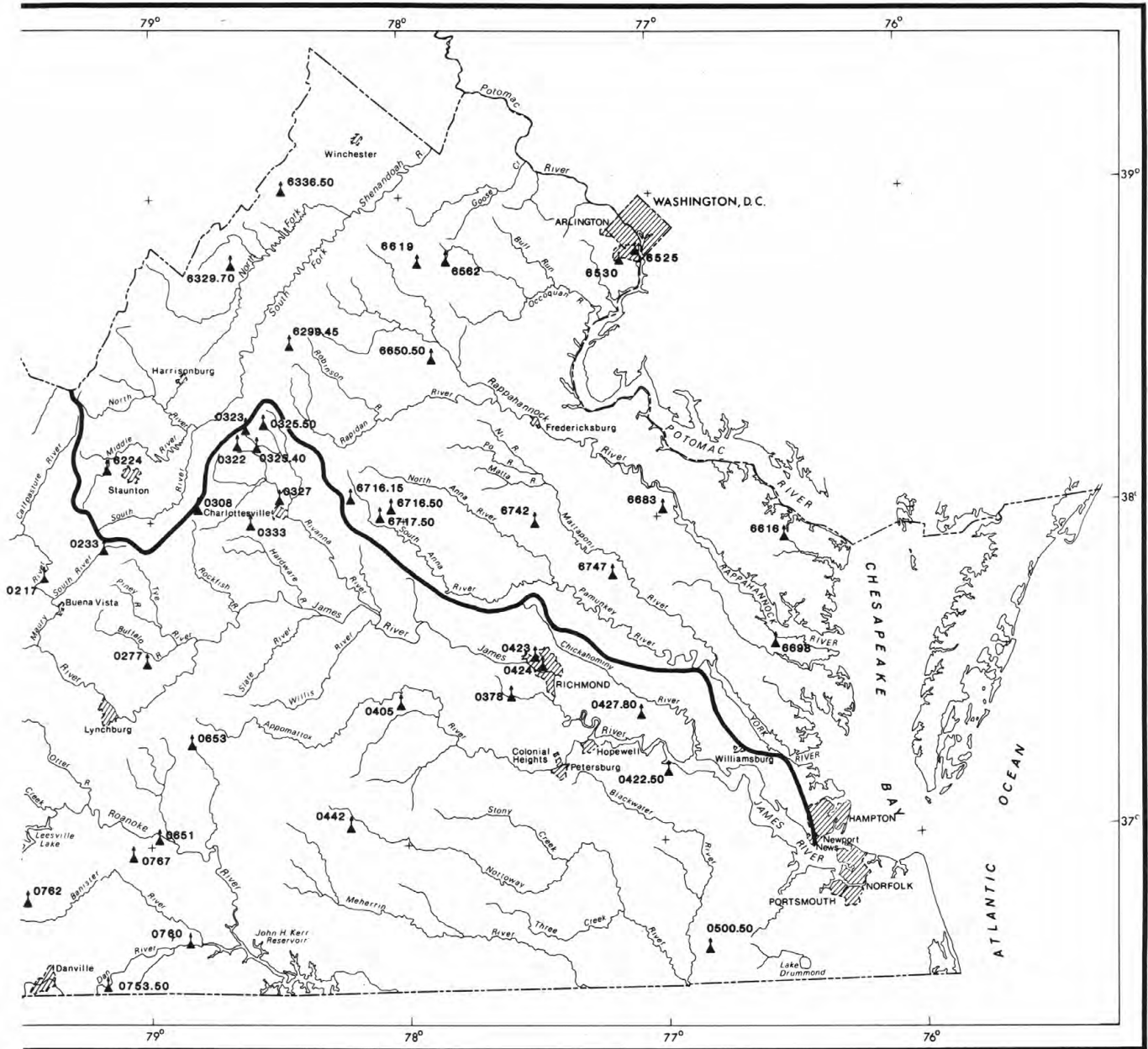


Figure 7.-- Map of Virginia showing location of partial-record stations.



SURFACE-WATER RECORDS

REMARK CODES.--The following remark codes may appear with the water-quality data in this section:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

HYDROLOGIC-DATA STATION RECORDS

NORTH ATLANTIC SLOPE BASINS

NASSAWADOX CREEK BASIN

01484800 GUY CREEK NEAR NASSAWADOX, VA

LOCATION.--Lat 37°30'08", long 75°52'22", Northampton County, Hydrologic Unit 02080109, on left bank 25 ft upstream from bridge on State Highway 606, 1.9 mi northwest of Nassawadox, and 2.1 mi upstream from mouth.

DRAINAGE AREA.--1.72 mi².

PERIOD OF RECORD.--November 1963 to current year.

GAGE.--Water-stage recorder and wooden control. Datum of gage is 11.67 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 27-30, Dec. 20-22, 26, 27, Jan. 9, 16, Feb. 13, 14, and May 1 to Sept. 30. Records good except those for periods of doubtful gage-height record, Oct. 27-30 and May 1 to Sept. 30, and periods with ice effect, Dec. 20-22, 26, 27, Jan. 9, 16, and Feb. 13, 14, which are poor. Some diversion into pond for irrigation upstream from station, amount unknown. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--22 years (water years 1965-86), 1.35 ft³/s, 10.66 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78 ft³/s, July 31, 1979, gage height, 5.28 ft; no flow at times in 1964, 1966, 1981, and 1983-85.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3.7 ft³/s, Nov. 30, Jan. 26, gage height, 2.09 ft; minimum daily, 0.01 ft³/s, many days in June and July.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.27	.46	2.3	.81	1.7	1.9	.80	.93	.20	.07	.09	.28
2	.28	.42	1.6	.74	2.2	1.7	.71	.72	.17	.16	.07	.22
3	.31	.33	1.2	.85	2.0	1.7	.64	.82	.18	.18	.08	.20
4	.32	.53	1.1	.81	2.4	1.6	.74	.60	.16	.12	.10	.17
5	.29	.56	1.0	.85	2.3	1.6	.90	.45	.17	.06	.11	.15
6	.28	.40	.98	.80	2.0	1.6	1.1	.43	.16	.04	.06	.40
7	.27	.35	.88	.74	2.1	1.5	1.2	.36	.16	.02	.02	.27
8	.27	.35	.87	.69	1.9	1.4	1.2	.41	.15	.02	.03	.30
9	.28	.35	.85	.64	1.8	1.4	1.3	.38	.13	.01	.13	.22
10	.28	.35	.81	.72	1.7	1.4	1.2	.59	.10	.01	.11	.16
11	.30	.35	.81	.68	2.2	1.4	1.2	.51	.05	.01	.14	.12
12	.30	.35	.81	.68	2.1	1.4	1.1	.37	.04	.01	.55	.10
13	.30	.37	1.4	.67	1.8	1.4	1.0	.24	.11	.01	1.1	.08
14	.31	.36	1.3	.59	1.6	1.5	.96	.51	.16	.01	.45	.06
15	.29	.35	1.1	.55	1.8	1.5	.96	.39	.16	.01	.33	.06
16	.30	.35	.98	.52	1.8	1.4	1.0	.35	.16	.02	.31	.05
17	.28	.39	.92	.55	2.0	1.3	.80	.48	.15	.31	.32	.05
18	.28	.38	.87	.55	2.1	1.3	1.0	.47	.06	.26	.56	.04
19	.28	.35	.81	.85	2.0	1.4	.71	.36	.02	.16	.38	.04
20	.31	.36	.80	.85	2.1	1.3	.83	.34	.01	.10	.75	.03
21	.89	.62	.78	.68	2.0	1.3	1.0	.40	.01	.10	.59	.03
22	.70	.83	.76	.61	1.9	1.3	1.1	.33	.02	.07	.49	.02
23	.37	.61	.83	.59	2.7	1.3	1.1	.25	.02	.07	.45	.02
24	.30	.53	.82	.55	2.3	1.3	1.1	.21	.02	.05	.42	.06
25	.28	.48	.79	.83	2.1	1.4	.98	.20	.02	.04	.42	.03
26	.27	.49	.70	3.0	1.9	1.7	.97	.20	.02	.04	.42	.03
27	.27	.49	.68	2.8	1.9	1.3	.82	.20	.02	.05	.71	.06
28	.26	.49	.74	2.2	1.9	.74	.72	.20	.02	.05	1.3	.04
29	.25	.49	.74	1.9	---	.59	.82	.19	.02	.04	.68	.02
30	.24	2.0	.69	1.8	---	1.0	1.1	.23	.03	.15	.55	.01
31	.23	---	.68	1.6	---	.74	---	.21	---	.09	.40	---
TOTAL	9.86	14.74	29.60	30.70	56.3	42.37	29.06	12.33	2.70	2.34	12.12	3.32
MEAN	.32	.49	.95	.99	2.01	1.37	.97	.40	.09	.07	.39	.11
MAX	.89	2.0	2.3	3.0	2.7	1.9	1.3	.93	.20	.31	1.3	.40
MIN	.23	.33	.68	.52	1.6	.59	.64	.19	.01	.01	.02	.01
CFSM	.19	.28	.55	.58	1.17	.80	.56	.23	.05	.04	.23	.06
IN.	.21	.32	.64	.66	1.22	.92	.63	.27	.06	.05	.26	.07
CAL YR 1985	TOTAL	197.07	MEAN	.54	MAX	4.1	MIN	.00	CFSM	.31	IN.	4.26
WTR YR 1986	TOTAL	245.44	MEAN	.67	MAX	3.0	MIN	.01	CFSM	.39	IN.	5.31

01613900 HOGUE CREEK NEAR HAYFIELD, VA

LOCATION.--Lat 39°12'52", long 78°17'18", Frederick County, Hydrologic Unit 02070004, on right bank 15 ft upstream from bridge on State Highway 614, 0.8 mi upstream from Gap Run, and 1.3 mi southeast of Hayfield.

DRAINAGE AREA.--15.0 mi².

PERIOD OF RECORD.--August 1960 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 668.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Dec. 18-22, 25, 26, Jan. 7-10, 13-17, Jan. 28 to Feb. 1, and Feb. 13, 14. Records good except those for periods with ice effect, Dec. 18-22, 25, 26, Jan. 7, 10, 13-17, Jan. 28 to Feb. 1, and Feb. 13, 14, and period of no gage-height record, Jan. 8, 9, which are fair. No estimated daily discharges for period October to December 1986. Several measurements of of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--26 years, 14.9 ft³/s, 13.49 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s, June 22, 1972, gage height, 8.85 ft, from rating curve extended above 870 ft³/s; no flow for part of Sept. 14, 1968, cause unknown.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0245	503	4.19	Nov. 4	2315	*709	*4.88

October 1985 to September 1986: Minimum daily discharge, 0.64 ft³/s, Sept. 14.

October to December 1986: Maximum discharge during period, 278 ft³/s, Dec. 24, gage height, 3.18 ft; minimum, 1.4 ft³/s, Oct. 1, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	9.0	40	5.3	6.0	17	7.8	6.7	2.6	1.8	1.3	1.0
2	2.0	26	36	5.6	5.3	16	7.6	6.1	2.5	2.2	1.5	1.2
3	1.8	119	24	5.3	6.6	16	7.2	5.7	2.2	2.0	1.6	1.2
4	1.6	423	20	5.2	31	17	7.0	5.5	2.2	1.7	1.2	1.2
5	1.4	283	18	5.0	35	19	7.2	5.4	2.3	1.6	7.6	1.1
6	1.3	128	18	5.1	26	21	8.4	5.2	2.4	1.5	7.3	1.0
7	1.3	57	17	5.0	22	20	9.2	4.9	2.9	1.5	4.3	.88
8	1.3	30	14	4.2	18	21	7.9	4.8	3.1	1.4	3.0	.81
9	1.3	20	13	3.6	17	16	7.3	4.6	2.6	2.9	2.3	.69
10	1.3	15	11	4.0	18	18	7.0	4.5	2.2	2.0	1.9	.73
11	1.5	12	11	4.6	18	20	6.8	4.2	2.2	2.7	1.8	.74
12	1.5	10	9.9	4.6	16	18	6.5	4.1	2.3	2.6	1.6	.81
13	1.7	9.1	36	4.6	15	37	6.2	4.2	2.0	1.9	1.5	.77
14	2.0	8.4	33	4.5	13	99	6.0	4.8	2.2	1.7	1.4	.64
15	2.3	7.7	22	4.0	12	199	6.6	4.4	2.0	1.6	1.4	.72
16	2.3	7.7	18	3.5	9.8	84	8.2	3.9	1.8	1.7	1.4	.65
17	2.2	8.7	15	3.9	22	52	18	3.6	1.8	4.0	1.7	.73
18	2.3	7.5	12	4.4	89	37	26	3.4	1.8	3.9	1.9	.79
19	2.3	7.0	10	9.1	122	31	19	11	1.8	2.4	1.9	.82
20	2.9	6.6	9.4	24	122	25	16	8.4	2.1	2.4	2.0	.80
21	11	6.5	9.2	14	87	19	15	11	2.0	2.0	4.2	.76
22	29	60	9.4	13	54	15	13	6.8	1.8	1.6	2.4	.71
23	54	52	8.6	11	40	14	11	5.2	1.7	1.7	1.9	.67
24	20	29	8.3	10	34	13	9.7	4.7	1.9	1.8	1.6	.67
25	12	20	8.5	9.9	28	11	9.2	3.8	1.7	1.8	1.3	1.0
26	8.1	15	8.4	11	24	11	8.9	3.4	1.7	1.8	1.2	.82
27	6.1	15	8.5	12	23	11	8.2	3.4	1.6	1.6	1.2	1.1
28	4.7	51	6.8	11	19	9.4	7.7	3.5	1.9	1.5	1.4	1.5
29	4.0	83	6.0	9.0	---	8.9	7.4	3.1	1.8	1.4	1.2	1.5
30	3.8	49	5.8	7.8	---	8.5	6.9	2.8	1.6	1.3	1.1	1.3
31	3.5	---	6.4	6.8	---	8.1	---	2.8	---	1.3	1.0	---
TOTAL	192.1	1575.2	473.2	231.0	932.7	911.9	292.9	155.9	62.7	61.3	67.1	27.31
MEAN	6.20	52.5	15.3	7.45	33.3	29.4	9.76	5.03	2.09	1.98	2.16	.91
MAX	54	423	40	24	122	199	26	11	3.1	4.0	7.6	1.5
MIN	1.3	6.5	5.8	3.5	5.3	8.1	6.0	2.8	1.6	1.3	1.0	.64
CFSM	.41	3.50	1.02	.50	2.22	1.96	.65	.34	.14	.13	.14	.06
IN.	.48	3.91	1.17	.57	2.31	2.26	.73	.39	.16	.15	.17	.07
CAL YR 1985	TOTAL	4585.27	MEAN	12.6	MAX	423	MIN	.83	CFSM	.84	IN.	11.37
WTR YR 1986	TOTAL	4983.31	MEAN	13.7	MAX	423	MIN	.64	CFSM	.91	IN.	12.36

POTOMAC RIVER BASIN

01613900 HOGUE CREEK NEAR HAYFIELD, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	4.0	4.1									
2	2.3	6.2	21									
3	1.8	3.4	50									
4	1.9	2.9	19									
5	2.2	5.9	12									
6	1.8	7.0	8.8									
7	1.8	4.5	7.6									
8	1.8	8.9	6.7									
9	1.8	4.2	9.3									
10	1.6	2.8	12									
11	1.6	7.5	12									
12	2.0	8.6	14									
13	2.9	4.4	12									
14	3.8	3.0	9.8									
15	2.4	2.7	8.4									
16	2.3	2.6	7.5									
17	2.5	2.4	6.8									
18	3.0	2.4	9.1									
19	2.5	4.3	9.0									
20	2.4	4.9	8.3									
21	2.4	13	7.5									
22	2.4	8.3	6.5									
23	2.4	5.8	7.2									
24	2.4	5.3	66									
25	1.9	4.3	98									
26	2.4	6.0	36									
27	2.4	8.3	22									
28	2.6	7.5	16									
29	2.7	6.0	12									
30	2.9	4.9	10									
31	3.4	---	8.9									
TOTAL	72.1	162.0	537.5									
MEAN	2.33	5.40	17.3									
MAX	3.8	13	98									
MIN	1.6	2.4	4.1									
CFSM	.16	.36	1.15									
IN.	.18	.40	1.33									
CAL YR 1986	TOTAL	3514.41	MEAN	9.63	MAX	199	MIN	.64	CFSM	.64	IN.	8.72

01615000 OPEQUON CREEK NEAR BERRYVILLE, VA

LOCATION.--Lat 39°10'40", long 78°04'20", Frederick County, Hydrologic Unit 02070004, on left bank between the bridges on State Highway 7, 0.2 mi upstream from Abrams Creek, and 5.0 mi west of Berryville.

DRAINAGE AREA.--57.4 mi².

PERIOD OF RECORD.--October 1943 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-72-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 503.24 ft above National Geodetic Vertical Datum of 1929. Prior to July 26, 1949, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 19-23, 26, 27, and Jan. 8-11, 14-17, 28-30. Records good except those for periods with ice effect, Dec. 19-23, 26, 27, and Jan. 8-11, 14-17, 28-30, which are fair. Diurnal fluctuation at low flow caused by mills upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--43 years, 42.5 ft³/s, 10.05 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s, Nov. 13, 1970, gage height, 12.82 ft, from rating curve extended above 4,800 ft³/s; minimum daily, 0.20 ft³/s, Sept. 12, 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 18.4 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0600	1,420	6.46	Nov. 29	0130	1,060	5.64
Nov. 5	0400	1,230	6.04	Mar. 15	0430	*1,800	*7.27

Minimum discharge, 1.7 ft³/s, Sept. 13, 14, 15, 16-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	20	168	18	20	69	24	13	7.7	5.7	2.7	2.8
2	4.4	44	141	17	24	65	23	13	7.3	6.4	3.4	3.6
3	5.3	182	85	18	29	66	22	12	7.1	6.3	4.1	3.8
4	7.4	919	65	18	151	69	22	11	7.2	6.1	3.9	3.7
5	8.3	697	56	18	169	70	22	11	9.0	5.5	3.3	3.4
6	4.0	281	56	17	98	64	29	11	7.6	5.4	13	3.1
7	2.9	114	60	15	76	56	34	11	7.5	5.4	6.0	2.8
8	2.5	75	50	12	62	42	28	10	7.4	5.2	4.7	2.7
9	3.0	54	45	9.3	67	42	24	9.8	6.9	7.2	4.1	2.5
10	4.8	43	40	10	80	43	22	9.8	7.2	8.0	3.6	2.6
11	9.5	37	37	13	92	44	22	9.5	7.0	6.5	4.2	2.5
12	13	32	35	15	73	38	20	9.2	6.8	6.1	3.5	2.3
13	13	30	108	15	56	43	19	9.0	6.6	5.5	3.3	1.9
14	19	27	127	12	50	148	19	10	6.4	6.1	3.2	1.9
15	23	25	68	10	45	907	21	10	6.5	5.3	3.1	1.8
16	14	24	54	9.4	41	209	37	11	6.5	5.5	2.9	1.7
17	12	31	47	11	61	121	40	9.9	6.0	6.2	5.8	1.7
18	11	27	41	14	301	94	47	11	6.0	7.3	3.1	1.7
19	11	24	30	25	400	76	35	9.4	6.1	5.7	3.6	1.9
20	13	23	28	239	342	61	29	20	6.7	5.4	3.2	2.0
21	66	21	26	125	172	49	26	51	6.9	5.4	5.7	2.0
22	162	125	26	75	115	44	25	20	6.7	4.9	5.7	1.9
23	215	148	26	54	106	41	22	13	6.6	11	4.1	2.1
24	138	73	26	41	110	39	19	11	6.9	17	3.3	1.9
25	68	50	28	35	103	36	17	9.8	6.6	4.9	3.0	2.3
26	38	41	26	37	90	34	17	9.0	6.0	4.2	2.9	2.2
27	26	40	22	48	93	32	16	8.8	6.1	3.5	2.6	2.3
28	20	209	20	30	80	30	16	9.7	6.9	3.2	3.5	2.5
29	17	487	19	29	---	30	15	8.6	6.7	2.8	3.8	2.6
30	16	172	19	24	---	27	14	8.1	6.0	2.7	3.1	2.8
31	17	---	18	21	---	25	---	7.8	---	2.7	2.8	---
TOTAL	967.8	4075	1597	1034.7	3106	2714	726	377.4	204.9	183.1	125.2	73.0
MEAN	31.2	136	51.5	33.4	111	87.5	24.2	12.2	6.83	5.91	4.04	2.43
MAX	215	919	168	239	400	907	47	51	9.0	17	13	3.8
MIN	2.5	20	18	9.3	20	25	14	7.8	6.0	2.7	2.6	1.7
CFSM	.54	2.37	.90	.58	1.93	1.52	.42	.21	.12	.10	.07	.04
IN.	.63	2.64	1.03	.67	2.01	1.76	.47	.24	.13	.12	.08	.05
CAL YR 1985	TOTAL	13699.0	MEAN	37.5	MAX	1780	MIN	2.5	CFSM	.65	IN.	8.88
WTR YR 1986	TOTAL	15184.1	MEAN	41.6	MAX	919	MIN	1.7	CFSM	.72	IN.	9.84

POTOMAC RIVER BASIN

01616000 ABRAMS CREEK NEAR WINCHESTER, VA

LOCATION.--Lat 39°10'40", long 78°05'10", Frederick County, Hydrologic Unit 02070004, on right bank 1,000 ft upstream from bridge on State Highway 659, 0.9 mi upstream from mouth, and 4.4 mi east of Winchester.

DRAINAGE AREA.--16.5 mi².

PERIOD OF RECORD.--July 1949 to September 1960, June 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 526.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharge: Jan. 28. Records good except for period with ice effect, Jan. 28, which is fair. Slight diurnal fluctuation caused by sewage disposal plant upstream from station at Winchester. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--18 years, 21.5 ft³/s, 17.70 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 982 ft³/s, Feb. 14, 1984; maximum gage height, 6.16 ft, Dec. 4, 1950; minimum discharge, 3.5 ft³/s, Oct. 8, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0200	520	3.73	July 9	1200	383	3.22
Nov. 4	2400	386	3.23	July 11	1700	237	2.63
Jan. 19	2200	278	2.80	Aug. 2	1630	352	3.10
Mar. 14	2400	644	4.17	Aug. 2	1900	223	2.57
May 20	2230	596	4.00	Aug. 17	1900	*658	*4.22
June 5	1730	266	2.75	Aug. 21	0530	240	2.64

Minimum discharge, 9.0 ft³/s, July 1, 6, Aug. 15, Sept. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	30	48	19	19	33	26	19	17	13	14	16
2	22	28	46	19	19	32	26	19	17	16	57	19
3	20	83	37	19	20	32	25	19	16	13	17	18
4	26	237	34	19	48	33	25	19	16	13	16	18
5	16	145	32	18	39	33	25	19	40	12	19	19
6	15	62	34	18	32	33	30	19	23	12	17	16
7	15	41	32	18	31	30	28	20	19	13	15	15
8	15	34	29	18	29	28	26	19	18	13	14	16
9	16	30	29	18	29	28	24	19	17	48	14	15
10	16	27	28	18	31	28	24	19	16	17	15	15
11	15	26	27	18	33	32	24	19	16	30	15	15
12	15	25	26	18	30	28	23	19	16	16	15	15
13	15	25	52	18	27	36	22	20	16	14	15	15
14	22	24	39	18	25	118	23	22	16	14	14	15
15	17	24	32	18	25	176	26	20	16	14	14	15
16	16	26	30	18	24	66	34	20	16	21	13	15
17	16	25	29	18	39	51	36	19	16	19	87	15
18	16	24	27	17	73	45	30	19	16	15	24	16
19	15	23	25	45	86	42	26	31	16	15	17	15
20	19	22	23	54	69	38	24	86	22	14	16	16
21	64	22	22	34	49	35	24	48	16	15	57	16
22	73	66	22	28	40	34	24	26	16	16	19	17
23	69	40	22	24	40	32	22	20	16	20	17	18
24	40	30	22	22	40	31	22	19	20	15	16	18
25	29	27	21	21	42	30	21	18	15	15	16	21
26	23	26	20	25	38	30	21	18	14	14	16	17
27	20	31	20	25	39	29	20	20	14	14	16	16
28	20	80	20	23	35	28	20	18	16	15	28	15
29	20	73	20	22	---	27	19	18	13	15	16	15
30	19	52	20	20	---	26	19	17	13	15	16	16
31	19	---	20	19	---	26	---	17	---	14	15	---
TOTAL	738	1408	888	689	1051	1270	739	705	518	510	660	488
MEAN	23.8	46.9	28.6	22.2	37.5	41.0	24.6	22.7	17.3	16.5	21.3	16.3
MAX	73	237	52	54	86	176	36	86	40	48	87	21
MIN	15	22	20	17	19	26	19	17	13	12	13	15
CFSM	1.44	2.84	1.73	1.35	2.27	2.48	1.49	1.38	1.05	1.00	1.29	.99
IN.	1.66	3.17	2.00	1.55	2.37	2.86	1.67	1.59	1.17	1.15	1.49	1.10
CAL YR 1985	TOTAL	9244	MEAN	25.3	MAX	310	MIN	14	CFSM	1.53	IN.	20.84
WTR YR 1986	TOTAL	9664	MEAN	26.5	MAX	237	MIN	12	CFSM	1.61	IN.	21.79

POTOMAC RIVER BASIN

43

01620500 NORTH RIVER NEAR STOKESVILLE, VA

LOCATION.--Lat 38°20'15", long 79°14'25", Augusta County, Hydrologic Unit 02070005, George Washington National Forest, on left bank 575 ft upstream from highway bridge, 2.8 mi upstream from city of Staunton dam, 3.8 mi upstream from Broad Run, 5.0 mi west of Stokesville, and 7.8 mi upstream from Skidmore Fork.

DRAINAGE AREA.--17.2 mi².

PERIOD OF RECORD.--October 1946 to current year.

REVISED RECORDS.--WSP 1903: 1960. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,054.57 ft above National Geodetic Vertical Datum of 1929.

Prior to June 10, 1958, at site 575 ft downstream at datum 6.0 ft lower.

REMARKS.--Estimated daily discharges: Nov. 4 to Mar. 12, Mar. 15-20, Mar. 26 to Apr. 1, and June 14 to July 22. Records fair except those for periods of doubtful gage-height record, Nov. 4 to Mar. 12, Mar. 15-20, Mar. 26 to Apr. 1, and June 14 to July 22, which are poor. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--40 years, 25.9 ft³/s, 20.45 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft³/s, June 17, 1949, gage height, 10.9 ft, from floodmarks, site and datum then in use, from rating curve extended above 900 ft³/s on basis of computation of peak flow over dam; maximum gage height, 19.8 ft, Nov. 5, 1985, from floodmarks (backwater from Elkhorn Lake); minimum discharge, 0.10 ft³/s, Sept. 15, 16, 19-22, 1962, Sept. 7-13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 8.4 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	Unknown	*7,600	*a19.8	Mar. 15	0200	630	b6.41

a From floodmarks; backwater from Elkhorn Lake.

b Affected by control deposition.

Minimum daily discharge, 0.68 ft³/s, Aug. 15, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.86	18	130	5.0	3.0	25	11	15	9.5	3.4	1.5	1.2
2	1.2	125	85	4.8	3.0	22	10	14	8.5	4.2	1.4	1.2
3	1.3	223	61	4.7	6.3	21	9.6	13	7.6	4.5	1.3	1.3
4	1.6	2000	55	5.2	12	20	9.1	12	6.8	4.0	1.3	1.4
5	1.5	3300	50	5.2	25	18	9.6	12	6.5	3.3	1.1	1.4
6	1.4	490	43	5.0	34	17	12	11	6.8	2.9	1.0	1.4
7	1.3	240	37	4.7	35	17	16	10	7.1	2.5	.99	1.8
8	1.3	150	31	4.4	34	14	19	9.5	9.4	2.3	.97	2.1
9	1.2	95	26	4.2	37	14	19	8.8	7.5	2.1	.93	2.0
10	1.2	70	23	4.2	40	14	18	8.3	6.3	2.0	.89	1.9
11	1.1	50	20	4.2	43	17	17	7.7	7.0	1.8	.88	1.8
12	1.1	40	18	4.4	35	26	16	7.3	7.3	1.6	.82	1.7
13	1.1	33	17	4.6	28	28	15	7.9	6.3	1.5	.82	1.5
14	1.1	27	15	4.7	24	94	13	8.5	5.7	1.6	.75	1.4
15	1.1	23	13	4.4	22	440	13	7.5	5.2	1.7	.68	1.3
16	1.1	17	11	4.0	18	200	14	6.9	4.7	1.7	.85	1.2
17	1.1	15	11	3.8	17	125	14	7.1	4.3	1.6	.84	1.1
18	1.1	13	10	3.8	28	84	15	7.9	4.1	1.6	.84	1.0
19	1.1	11	9.0	4.0	50	58	18	8.2	3.7	1.7	.85	1.0
20	1.3	9.4	8.4	4.8	60	44	22	14	3.3	1.5	.91	1.1
21	4.2	8.7	8.0	4.6	53	34	27	57	2.9	1.4	1.0	1.1
22	7.8	30	7.8	4.1	48	28	27	49	2.5	1.5	1.0	.99
23	8.2	140	8.4	3.7	45	24	25	39	2.1	1.6	1.1	.95
24	6.7	110	9.0	3.4	42	22	23	31	2.1	1.8	1.1	.88
25	5.8	70	8.8	3.3	38	20	20	26	1.9	1.6	1.1	.80
26	5.3	55	7.8	3.4	35	18	19	22	1.7	1.7	1.2	.75
27	4.9	45	6.6	3.8	33	16	18	20	1.6	1.6	1.2	.76
28	4.6	47	6.0	3.7	29	15	17	17	1.7	1.6	1.3	.75
29	4.2	80	5.8	3.4	---	13	18	14	2.4	1.6	1.3	.69
30	3.8	160	5.6	3.3	---	12	16	12	2.6	1.6	1.3	.68
31	3.7	---	5.2	3.2	---	12	---	11	---	1.5	1.2	---
TOTAL	83.26	7695.1	752.4	130.0	877.3	1512	500.3	494.6	149.1	65.0	32.42	37.15
MEAN	2.69	257	24.3	4.19	31.3	48.8	16.7	16.0	4.97	2.10	1.05	1.24
MAX	8.2	3300	130	5.2	60	440	27	57	9.5	4.5	1.5	2.1
MIN	.86	8.7	5.2	3.2	3.0	12	9.1	6.9	1.6	1.4	.68	.68
CFSM	.16	14.9	1.41	.24	1.82	2.84	.97	.93	.29	.12	.06	.07
IN.	.18	16.64	1.63	.28	1.90	3.27	1.08	1.07	.32	.14	.07	.08
CAL YR 1985	TOTAL	13260.44	MEAN	36.3	MAX	3300	MIN	.86	CFSM	2.11	IN.	28.68
WTR YR 1986	TOTAL	12328.63	MEAN	33.8	MAX	3300	MIN	.68	CFSM	1.97	IN.	26.66

POTOMAC RIVER BASIN

01622000 NORTH RIVER NEAR BURKETOWN, VA

LOCATION.--Lat 38°20'25", long 78°54'50", Rockingham County, Hydrologic Unit 02070005, on right bank 0.8 mi downstream from Pleasant Run, 2.8 mi northeast of Burkettown, and 8.5 mi upstream from Middle River.

DRAINAGE AREA.--379 mi².

PERIOD OF RECORD.--October 1925 to October 1972, May 1975 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 1171: 1936(M). WSP 1302: 1928-29(M), 1932-34(M), 1937-38(M). WSP 2103: Drainage area. GAGE.--Water-stage recorder. Datum of gage is 1,103.49 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 12, 1938, nonrecording gage at site 3.0 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 2-14, Dec. 3 to Jan. 13, and Jan. 15, 28-30. Records good except those for periods of no gage-height record, Nov. 2-14 and Dec. 3 to Jan. 13, and periods with ice effect, Jan. 15, 28-30, which are fair. At a point 26.8 mi upstream from station, there is an aqueduct tunnel diversion of about 3.1 ft³/s from Staunton Dam Reservoir by city of Staunton for industrial and municipal use. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--58 years, 372 ft³/s, 13.33 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft³/s, Nov. 5, 1985, gage height, 35.85 ft, from high-water mark, from rating curve extended above 16,000 ft³/s on basis of slope-area measurements at gage heights 32.4 ft and 36.3 ft, and contracted-opening measurements at gage heights 35.85 ft and 36.3 ft; maximum gage height, 36.3 ft, June 18, 1949; minimum discharge, 16 ft³/s, Nov. 23, 1965, result of temporary dam upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, that of June 18, 1949.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	Unknown	*65,000	*a35.85	Mar. 15	0800	3,680	7.87

a From high-water mark.

Minimum discharge, 29 ft³/s, Aug. 13, gage height, 1.66 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	139	953	235	174	394	262	228	222	139	42	50
2	92	680	968	235	177	373	254	214	199	125	39	122
3	104	1700	863	230	182	363	237	201	165	117	44	85
4	74	6800	780	230	222	350	233	196	157	94	48	77
5	87	30000	680	228	247	334	230	189	146	92	37	74
6	72	4200	610	225	286	326	255	179	150	91	38	64
7	72	2300	540	220	343	315	311	175	378	92	38	63
8	66	1700	490	200	352	288	305	168	462	83	38	65
9	68	1200	450	185	382	286	311	159	269	79	38	61
10	68	1000	430	195	412	280	313	157	211	85	38	61
11	66	880	410	175	450	288	302	150	188	79	59	64
12	68	760	400	170	421	313	286	146	187	69	41	61
13	70	700	420	165	387	354	272	142	165	68	40	56
14	74	630	440	159	363	490	260	159	148	72	43	53
15	74	546	405	150	351	3230	252	153	139	61	43	60
16	72	485	385	155	334	2630	285	146	132	56	45	53
17	70	462	370	156	330	1770	279	137	128	57	45	52
18	68	423	355	153	379	1350	277	136	112	56	54	57
19	64	396	335	164	494	1070	275	162	113	50	50	54
20	87	374	330	188	608	833	309	295	109	55	53	53
21	194	352	310	177	629	665	354	842	101	60	64	52
22	162	660	300	176	596	553	357	926	98	49	55	57
23	142	904	295	181	565	490	339	761	99	63	52	54
24	124	886	305	187	527	443	318	594	93	55	50	53
25	119	782	305	187	500	397	296	460	86	51	53	53
26	114	693	275	205	466	368	283	380	83	54	49	51
27	106	627	265	213	458	349	269	331	78	53	49	49
28	109	599	255	175	427	325	256	302	80	59	52	51
29	101	649	245	170	---	307	245	264	98	50	53	56
30	101	860	240	172	---	291	239	288	94	44	45	49
31	101	---	240	178	---	279	---	291	---	44	46	---
TOTAL	2861	62387	13649	5839	11062	20104	8464	8931	4690	2202	1441	1810
MEAN	92.3	2080	440	188	395	649	282	288	156	71.0	46.5	60.3
MAX	194	30000	968	235	629	3230	357	926	462	139	64	122
MIN	64	139	240	150	174	279	230	136	78	44	37	49
CFSM	.24	5.49	1.16	.50	1.04	1.71	.74	.76	.41	.19	.12	.16
IN.	.28	6.12	1.34	.57	1.09	1.97	.83	.88	.46	.22	.14	.18
CAL YR 1985	TOTAL	159820	MEAN	438	MAX	30000	MIN	64	CFSM	1.16	IN.	15.69
WTR YR 1986	TOTAL	143440	MEAN	.393	MAX	30000	MIN	37	CFSM	1.04	IN.	14.08

POTOMAC RIVER BASIN

45

01624300 MIDDLE RIVER NEAR VERONA, VA

LOCATION.--Lat 38°14'36", long 79°02'08", Augusta County, Hydrologic Unit 02070005, on right bank at downstream side of bridge on State Highway 742, 2.7 mi downstream from Moffett Creek, and 3.2 mi northwest of Verona.

DRAINAGE AREA.--178 mi².

PERIOD OF RECORD.--October 1967 to December 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,260.78 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Nov. 5 to Dec. 12, Dec. 23, 24, 27, Jan. 8, 9, 15, 29-31, and Feb. 15. Records good except those for period of no gage-height record, Nov. 5 to Dec. 12, and periods with ice effect, Dec. 23, 24, 27, Jan. 8, 9, 15, 29-31, and Feb. 15, which are fair. Estimated daily discharges for period October to December 1986: Dec. 18, 19. Records good except period with ice effect, Dec. 18, 19, which is fair. Diurnal fluctuation at low flow caused by mill upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--19 years, 184 ft³/s, 14.04 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft³/s, Nov. 5, 1985, gage height, 24.29 ft, from floodmarks, from rating curve extended above 6,500 ft³/s on basis of slope-area measurement of peak flow; minimum, 3.7 ft³/s, Jan. 30, 1977, result of freezeup.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	Unknown	*45,000	*a24.29	Mar. 15	0430	2,730	7.64
Nov. 30	Unknown	Unknown	Unknown				

a From floodmarks.

October 1985 to September 1986: Minimum discharge, 42 ft³/s, Aug. 7.

October to December 1986: Maximum discharge during period, 1,910 ft³/s, Dec. 25, gage height, 6.28 ft; minimum, 43 ft³/s, Oct. 7, gage height, 0.84 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	90	820	118	84	189	134	102	93	63	47	49
2	53	923	640	116	85	182	131	95	86	68	47	70
3	57	1640	500	115	88	179	124	92	79	66	47	80
4	53	6490	400	117	106	176	122	92	74	56	47	80
5	53	20000	350	119	117	169	122	88	73	55	45	81
6	51	5000	315	111	131	166	124	87	71	54	46	73
7	49	2000	285	113	156	161	139	87	161	53	45	67
8	47	1000	265	94	160	149	128	85	141	50	45	64
9	47	700	245	90	178	147	124	83	101	51	45	59
10	47	550	220	100	201	146	122	82	86	51	44	56
11	48	410	210	96	224	148	122	81	84	51	47	54
12	47	340	203	97	197	154	116	79	78	50	50	54
13	48	310	221	95	175	164	113	81	72	50	46	52
14	48	280	222	91	163	235	109	91	69	48	46	51
15	48	250	203	89	155	1860	112	86	67	47	45	49
16	47	235	196	88	150	868	128	81	66	50	44	50
17	47	225	193	89	156	577	124	81	63	49	54	49
18	47	215	185	88	249	434	122	111	60	48	59	49
19	47	200	170	93	377	361	119	103	60	46	61	50
20	52	195	166	104	359	305	119	112	59	47	59	50
21	71	185	161	96	297	253	134	225	58	45	63	57
22	80	300	152	91	258	222	138	191	58	45	62	53
23	70	700	145	88	250	207	132	158	57	72	55	54
24	64	430	148	87	233	192	124	132	58	119	52	54
25	62	350	153	87	231	178	122	115	58	63	48	54
26	58	300	132	92	219	168	119	105	54	54	48	52
27	58	270	125	93	221	162	117	100	54	59	46	56
28	56	250	130	79	204	157	110	103	58	65	50	55
29	54	460	127	78	---	149	114	89	64	54	50	53
30	53	1500	122	80	---	144	105	90	61	50	48	52
31	53	---	119	82	---	140	---	107	---	48	46	---
TOTAL	1662	45798	7523	2976	5424	8742	3669	3214	2223	1727	1537	1727
MEAN	53.6	1527	243	96.0	194	282	122	104	74.1	55.7	49.6	57.6
MAX	80	20000	820	119	377	1860	139	225	161	119	63	81
MIN	47	90	119	78	84	140	105	79	54	45	44	49
CFSM	.30	8.58	1.37	.54	1.09	1.58	.69	.58	.42	.31	.28	.32
IN.	.35	9.57	1.57	.62	1.13	1.83	.77	.67	.46	.36	.32	.36
CAL YR 1985	TOTAL	95395	MEAN	261	MAX	20000	MIN	47	CFSM	1.47	IN.	19.94
WTR YR 1986	TOTAL	86222	MEAN	236	MAX	20000	MIN	44	CFSM	1.33	IN.	18.02

POTOMAC RIVER BASIN

01624300 MIDDLE RIVER NEAR VERONA, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	46	110									
2	47	52	107									
3	47	49	305									
4	46	45	255									
5	47	50	186									
6	46	64	151									
7	44	56	129									
8	46	66	113									
9	47	68	109									
10	46	62	121									
11	47	62	126									
12	46	62	192									
13	48	59	190									
14	49	55	165									
15	48	55	149									
16	46	55	132									
17	47	53	120									
18	47	50	110									
19	46	50	105									
20	48	51	102									
21	46	55	99									
22	47	59	90									
23	46	58	88									
24	47	57	354									
25	50	58	1230									
26	54	66	638									
27	52	130	410									
28	50	142	298									
29	47	121	232									
30	47	111	196									
31	45	---	191									
TOTAL	1471	1967	6803									
MEAN	47.5	65.6	219									
MAX	54	142	1230									
MIN	44	45	88									
CFSM	.27	.37	1.23									
IN.	.31	.41	1.42									
CAL YR 1986	TOTAL	41480	MEAN	114	MAX	1860	MIN	44	CFSM	.64	IN.	8.67

POTOMAC RIVER BASIN

47

01624800 CHRISTIANS CREEK NEAR FISHERSVILLE, VA

LOCATION.--Lat 38°07'42", long 78°59'41", Augusta County, Hydrologic Unit 02070005, on right bank at upstream side of bridge on State Highway 794, 2.2 mi northwest of Fishersville, and 5.6 mi upstream from mouth.

DRAINAGE AREA.--70.1 mi².

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,230 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Dec. 21-24, 27, Jan. 8-10, 14-16, 28-31, and Feb. 13-16. Records good except those for periods with ice effect, Dec. 21-24, 27, Jan. 14-16, 28-31, and Feb. 13-16, and period of no gage-height record, Jan. 8-10, which are fair. Some diurnal fluctuation caused by discharge of about 1.8 ft³/s from sewage treatment plant just upstream from station. Most of the water discharged from the treatment plant was diverted from another drainage basin for municipal supply. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--19 years, 71.7 ft³/s, 13.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,520 ft³/s, Nov. 4, 1985, gage height, 13.58 ft, from rating curve extended above 2,400 ft³/s; minimum, 3.8 ft³/s, Jan. 11, 1977, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0530	2,160	8.74	Nov. 30	0700	2,120	8.63
Nov. 4	2100	*4,520	*13.58				

Minimum discharge, 13 ft³/s, Aug. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	239	370	59	44	73	55	39	30	28	17	21
2	27	548	289	57	46	70	54	37	29	31	18	41
3	31	984	212	58	47	71	53	36	27	28	18	35
4	26	2730	181	57	60	70	52	36	27	24	19	31
5	24	2100	164	56	56	67	52	36	27	23	16	29
6	23	647	150	54	53	65	52	36	27	21	17	27
7	23	395	134	54	65	63	54	36	30	21	18	24
8	23	299	125	51	68	58	50	35	34	20	17	24
9	23	239	116	48	71	59	48	34	28	20	16	23
10	22	203	109	49	68	59	48	34	26	21	18	22
11	23	178	105	51	77	60	47	33	26	20	22	21
12	22	159	102	50	67	57	44	32	26	19	20	21
13	22	147	116	51	57	68	45	35	24	19	19	21
14	22	136	103	47	51	153	44	38	24	18	19	20
15	22	125	90	45	53	383	54	35	24	23	18	20
16	22	117	89	44	56	160	76	33	24	23	18	20
17	22	117	85	49	74	126	57	39	23	20	41	20
18	22	105	80	50	118	110	53	50	22	19	25	20
19	22	100	74	53	107	101	48	36	22	18	23	20
20	24	95	73	56	95	90	46	43	22	18	26	24
21	51	90	70	50	85	82	55	54	21	17	34	23
22	46	235	67	49	84	77	51	37	21	17	26	20
23	37	161	68	48	98	73	47	35	22	19	23	20
24	30	124	69	47	88	69	45	33	22	22	23	20
25	27	110	72	47	86	66	44	33	21	18	20	19
26	25	103	64	50	80	64	43	32	20	22	20	19
27	24	100	62	50	83	63	42	33	21	27	20	21
28	24	145	61	44	78	60	41	34	21	33	28	20
29	23	291	60	40	---	58	45	31	34	22	24	19
30	23	981	59	42	---	57	40	31	25	20	21	19
31	24	---	58	44	---	56	---	30	---	18	20	---
TOTAL	801	12003	3477	1550	2015	2688	1485	1116	750	669	664	684
MEAN	25.8	400	112	50.0	72.0	86.7	49.5	36.0	25.0	21.6	21.4	22.8
MAX	51	2730	370	59	118	383	76	54	34	33	41	41
MIN	22	90	58	40	44	56	40	30	20	17	16	19
CFSM	.37	5.71	1.60	.71	1.03	1.24	.71	.51	.36	.31	.31	.33
IN.	.43	6.37	1.85	.82	1.07	1.43	.79	.59	.40	.36	.35	.36
CAL YR 1985	TOTAL	33372	MEAN	91.4	MAX	2730	MIN	22	CFSM	1.30	IN.	17.71
WTR YR 1986	TOTAL	27902	MEAN	76.4	MAX	2730	MIN	16	CFSM	1.09	IN.	14.81

01625000 MIDDLE RIVER NEAR GROTTOES, VA

LOCATION.--Lat 38°15'42", long 78°51'44", Augusta County, Hydrologic Unit 02070005, on left bank at upstream side of bridge on State Highway 769 at Mount Meridian, 1.8 mi upstream from mouth, and 2.0 mi west of Grottoes.

DRAINAGE AREA.--375 mi².

PERIOD OF RECORD.--April 1927 to current year. Records for February 1925 to September 1926, published in WSP 601 and 621, are unreliable and should not be used.

REVISED RECORDS.--WSP 1051: 1928-29, 1930(M), 1932, 1935-37, 1938(M), 1940. WSP 1171: 1933. WSP 1302: 1928-29(M), 1931-34(M). WSP 2103: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,061.51 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 23, 24, 27, Jan. 8, 9, and Jan. 28 to Feb. 2. Records good except those for periods with ice effect, Dec. 23, 24, 27, Jan. 8, 9, and Jan. 28 to Feb. 2, which are fair. At a point 24.4 mi upstream from station, there is a discharge of about 4.5 ft³/s from sewage treatment plant. Most of water discharged from the treatment plant was diverted from another drainage basin for industrial and municipal supply. Small diurnal fluctuation at low flow caused by mills upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--59 years, 312 ft³/s, 11.30 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s, Nov. 5, 1985, gage height, 33.09 ft, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 19 ft³/s, Jan. 12, 1981, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1877, that of Nov. 5, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0930	*38,500	*33.09	No other peak equal to or greater than base discharge.			

Minimum discharge, 84 ft³/s, July 23, gage height, 3.33 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	182	1770	265	178	396	272	200	220	148	92	102
2	104	848	1330	258	180	373	264	195	173	157	90	177
3	133	1700	995	257	201	366	257	187	159	175	91	216
4	128	6690	815	258	256	367	250	183	149	133	91	185
5	116	26000	726	256	269	350	252	181	145	115	91	171
6	110	5570	668	251	266	338	251	178	142	112	90	163
7	106	2050	594	245	321	330	286	181	228	107	89	144
8	101	1500	541	225	362	305	262	176	400	106	89	134
9	100	1180	507	210	390	295	243	170	221	102	88	126
10	99	978	476	236	395	295	237	168	176	104	88	119
11	99	826	452	225	452	293	234	167	159	102	99	114
12	99	692	445	219	432	292	231	162	156	101	107	110
13	100	623	471	219	371	306	222	163	146	96	102	107
14	101	567	490	212	336	403	224	190	137	94	95	104
15	103	522	433	205	322	1990	230	182	131	92	95	102
16	101	483	414	204	319	1420	325	172	127	128	95	102
17	98	475	403	204	335	895	288	163	124	104	146	99
18	96	446	390	206	454	687	272	183	117	100	156	98
19	96	418	366	214	575	585	245	217	113	93	132	100
20	104	402	347	240	588	522	238	196	113	90	153	101
21	170	385	341	230	521	466	256	317	114	88	159	115
22	231	638	329	213	473	425	272	320	110	87	153	115
23	189	1130	310	208	504	398	253	267	109	86	133	105
24	156	880	320	200	465	378	238	235	113	126	119	113
25	137	690	333	200	463	355	230	209	115	167	109	105
26	125	586	301	206	434	335	231	194	108	116	104	105
27	117	531	290	226	437	323	222	190	104	126	102	105
28	115	530	288	165	432	310	216	195	108	120	106	117
29	111	998	280	168	---	298	220	186	138	131	128	108
30	108	2040	272	170	---	286	215	174	141	105	110	105
31	108	---	264	172	---	279	---	215	---	96	103	---
TOTAL	3656	60560	15961	6767	10731	14661	7436	6116	4496	3507	3405	3667
MEAN	118	2019	515	218	383	473	248	197	150	113	110	122
MAX	231	26000	1770	265	588	1990	325	320	400	175	159	216
MIN	95	182	264	165	178	279	215	162	104	86	88	98
CFSM	.31	5.38	1.37	.58	1.02	1.26	.66	.53	.40	.30	.29	.33
IN.	.36	6.01	1.58	.67	1.06	1.45	.74	.61	.45	.35	.34	.36
CAL YR 1985	TOTAL	153121	MEAN	420	MAX	26000	MIN	94	CFSM	1.12	IN.	15.19
WTR YR 1986	TOTAL	140963	MEAN	386	MAX	26000	MIN	86	CFSM	1.03	IN.	13.98

01626000 SOUTH RIVER NEAR WAYNESBORO, VA

LOCATION.--Lat 38°03'27", long 78°54'30", Waynesboro City, Hydrologic Unit 02070005, on right bank 80 ft downstream from bridge on State Highway 664, 1.3 mi southwest of Waynesboro post office, and 2.4 mi downstream from Back Creek.

DRAINAGE AREA.--127 mi², of which 41 mi² are above flood-detention structures.

PERIOD OF RECORD.--October 1952 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,296.20 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20-23, Jan. 9, 29-31, and Feb. 14-16. Records good except those for periods with ice effect, Dec. 20-23, Jan. 9, 29-31, and Feb. 14-16, which are fair. At a point 13.8 mi upstream from station, there is a diversion of about 1.8 ft³/s from Coles Run Reservoir, capacity 80,000,000 gal., by Augusta County Service Authority for industrial and municipal use. Flow from 41 mi² upstream from station slightly regulated by flood-detention reservoirs (sixteen of which were built by Soil Conservation Service between 1954 and 1961). Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--34 years, 142 ft³/s, 15.18 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s, Nov. 4, 1985, gage height, 15.30 ft, from rating curve extended above 4,200 ft³/s on basis of contracted-opening measurement at gage height 13.95 ft; minimum, 7.0 ft³/s, July 18, 1966; minimum daily, 17 ft³/s, Aug. 8, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 14.3 ft, from floodmarks, discharge, 14,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2200	*17,500	*15.30	Nov. 30	2200	1,300	5.56

Minimum discharge, 17 ft³/s, Aug. 7-8, gage height, 2.17 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	463	1030	113	78	125	104	108	56	46	34	38
2	49	1390	742	108	82	121	102	80	54	47	34	47
3	56	2240	577	111	88	121	98	75	51	48	35	51
4	55	9070	486	110	102	121	97	73	50	44	34	52
5	51	8750	415	107	106	117	96	72	50	42	33	54
6	49	2860	369	103	105	114	95	70	49	41	33	52
7	48	1730	326	102	124	110	100	71	47	41	31	47
8	47	1340	293	93	129	101	93	69	51	40	32	44
9	47	976	267	90	136	101	90	65	50	40	34	42
10	47	742	240	97	137	100	88	64	47	40	35	40
11	47	543	221	96	150	100	86	63	46	41	35	38
12	47	449	213	95	138	97	83	62	44	38	36	37
13	47	429	214	95	124	99	80	64	44	37	34	37
14	47	340	216	87	110	124	80	79	41	37	35	37
15	47	257	190	86	105	428	85	71	43	37	35	36
16	47	231	176	83	110	377	152	66	42	37	36	36
17	47	232	168	84	114	291	136	62	42	38	57	36
18	47	209	160	85	131	244	131	79	41	37	44	36
19	47	194	149	93	141	220	120	74	43	37	40	36
20	49	203	140	105	144	199	116	74	41	36	55	37
21	69	179	132	94	142	176	123	91	41	36	103	37
22	116	301	128	90	142	161	120	80	40	35	64	36
23	122	385	130	87	151	152	109	72	40	36	49	36
24	88	299	139	84	144	144	102	67	41	36	47	36
25	72	265	142	85	143	134	98	64	41	36	41	36
26	64	238	119	89	138	128	96	64	38	36	38	35
27	61	248	122	95	139	124	92	63	38	44	38	36
28	56	247	119	75	133	118	88	66	41	41	52	36
29	54	574	116	70	---	116	94	62	52	38	52	35
30	53	1050	112	73	---	112	110	58	45	36	43	37
31	55	---	110	75	---	108	---	57	---	35	39	---
TOTAL	1778	36434	7961	2860	3486	4783	3064	2185	1349	1213	1308	1193
MEAN	57.4	1214	257	92.3	125	154	102	70.5	45.0	39.1	42.2	39.8
MAX	122	9070	1030	113	151	428	152	108	56	48	103	54
MIN	47	179	110	70	78	97	80	57	38	35	31	35
CFSM	.45	9.56	2.02	.73	.98	1.21	.80	.56	.35	.31	.33	.31
IN.	.52	10.67	2.33	.84	1.02	1.40	.90	.64	.40	.36	.38	.35
CAL YR 1985	TOTAL	82897	MEAN	227	MAX	9070	MIN	45	CFSM	1.79	IN.	24.28
WTR YR 1986	TOTAL	67614	MEAN	185	MAX	9070	MIN	31	CFSM	1.46	IN.	19.81

POTOMAC RIVER BASIN

01626850 SOUTH RIVER NEAR DOOMS, VA

LOCATION.--Lat 38°05'19", long 78°52'38", Augusta County, Hydrologic Unit 02070005, on left bank at downstream side of Hopeman Parkway Road bridge, 1.1 mi downstream from Steele Run, and 1.6 mi southwest of Dooms.

DRAINAGE AREA.--149 mi².

PERIOD OF RECORD.--April 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,247.04 ft above National Geodetic Vertical Datum of 1929 (Norfolk and Western Railway bench mark). Prior to Sept. 18, 1980, nonrecording gage at site 30 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 4-6, Dec. 21 to Jan. 10, 29-31, and Feb. 14-16. Records good except those for periods of doubtful or no gage-height record, Nov. 4-6 and Dec. 21 to Jan. 10, and periods with ice effect, Jan. 29-31 and Feb. 14-16, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--12 years, 206 ft³/s, 18.78 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,100 ft³/s, Nov. 4, 1985, gage height, 14.03 ft, from floodmarks, from rating curve extended above 8,100 ft³/s; minimum, 42 ft³/s, Aug. 29, 30, 1981, gage height, 2.17 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	a2300	*19,100	*b14.03	Aug. 16	2100	1,080	5.50
Nov. 30	2230	1,610	6.62				

a About.

b From floodmarks.

Minimum discharge, 44 ft³/s, Aug. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	558	1280	140	113	163	136	140	80	70	52	57
2	65	1780	904	135	117	158	133	112	80	80	51	82
3	72	3070	690	140	126	157	128	105	73	68	51	76
4	69	12000	568	138	141	157	126	102	71	62	51	73
5	65	10500	488	135	149	152	123	101	70	61	51	74
6	63	3500	437	130	149	149	124	99	70	60	50	71
7	62	2250	388	130	169	145	130	101	73	60	49	67
8	62	1600	351	125	173	136	124	100	71	60	47	63
9	62	1120	320	120	180	136	119	94	71	61	50	60
10	61	855	289	125	185	135	117	92	67	62	54	57
11	61	640	266	129	200	135	115	91	66	62	56	56
12	61	522	254	128	181	132	112	90	63	62	55	54
13	61	496	255	128	165	135	108	94	62	59	56	54
14	61	408	252	120	150	176	109	108	59	58	56	53
15	62	314	220	118	140	506	139	103	60	58	55	53
16	61	283	205	115	145	459	192	96	59	59	145	52
17	61	280	198	117	153	360	177	91	58	65	117	52
18	62	256	183	118	171	301	167	102	57	54	72	53
19	61	238	172	129	184	272	155	101	60	54	70	53
20	67	243	169	141	188	243	150	109	58	54	80	54
21	110	223	155	131	184	215	156	117	58	53	136	55
22	168	394	150	126	187	196	155	107	58	52	90	54
23	165	471	152	123	195	186	142	97	57	51	70	53
24	114	374	160	119	188	177	135	91	60	54	66	53
25	94	328	165	120	186	165	132	87	58	54	61	53
26	81	294	145	128	179	159	129	87	57	58	57	53
27	76	301	140	132	182	155	124	86	56	59	58	55
28	73	338	140	113	173	150	121	89	72	58	82	55
29	70	724	138	105	---	146	124	85	92	56	71	53
30	69	1470	135	108	---	141	138	83	72	54	61	53
31	76	---	134	110	---	138	---	82	---	53	57	---
TOTAL	2356	45830	9503	3876	4653	6035	4040	3042	1968	1831	2077	1751
MEAN	76.0	1528	307	125	166	195	135	98.1	65.6	59.1	67.0	58.4
MAX	168	12000	1280	141	200	506	192	140	92	80	145	82
MIN	61	223	134	105	113	132	108	82	56	51	47	52
CFSM	.51	10.3	2.06	.84	1.11	1.31	.91	.66	.44	.40	.45	.39
IN.	.59	11.44	2.37	.97	1.16	1.51	1.01	.76	.49	.46	.52	.44
CAL YR 1985	TOTAL	102569	MEAN	281	MAX	12000	MIN	57	CFSM	1.89	IN.	25.61
WTR YR 1986	TOTAL	86962	MEAN	238	MAX	12000	MIN	47	CFSM	1.60	IN.	21.71

01627500 SOUTH RIVER AT HARRISTON, VA

LOCATION.--Lat 38°13'07", long 78°50'13", Augusta County, Hydrologic Unit 02070005, on left bank 100 ft downstream from bridge on State Highway 778, 0.3 mi northwest of Harriston, 0.6 mi downstream from Paine Run, and 7.2 mi upstream from confluence with North River.

DRAINAGE AREA.--212 mi².

PERIOD OF RECORD.--February 1925 to September 1951, October 1968 to current year.

REVISED RECORDS.--WSP 1171: 1926(M), 1927-28, 1929-32(M), 1933, 1934(M), 1935, 1937. WSP 1302: 1937(M), 1938(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,129.87 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 21-23, Jan. 28-31, and Feb. 14-16. Records good except those for periods with ice effect, Dec. 21-23, Jan. 28-31, and Feb. 14-16, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--44 years, 256 ft³/s, 16.40 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,100 ft³/s, Nov. 4, 1985, gage height, 15.47 ft, from rating curve extended above 10,000 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 17.2 ft, Oct. 15, 1942; minimum discharge, 17 ft³/s, Nov. 14, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in 1870 and 1877 reached a stage of about 18.8 ft, from information by observer in 1925.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2300	*28,100	*15.47	Nov. 30	1130	2,060	6.76

Minimum discharge, 59 ft³/s, Aug. 5, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	438	1550	194	152	233	203	185	110	107	66	76
2	96	1880	1100	191	154	224	194	155	108	109	65	107
3	107	2460	858	189	161	222	186	143	105	101	65	101
4	103	15000	708	191	186	221	182	140	100	91	66	94
5	97	16400	609	187	199	214	181	138	99	87	64	96
6	92	4920	540	182	200	208	179	136	99	87	66	94
7	91	2650	484	180	222	204	189	137	110	82	66	89
8	89	1910	441	172	230	190	181	132	115	81	63	86
9	89	1420	408	168	239	188	174	127	104	82	63	82
10	88	1090	374	176	249	186	170	125	98	81	68	79
11	88	862	348	176	271	186	167	123	97	81	73	77
12	89	685	332	173	257	183	163	121	94	80	70	75
13	89	641	336	172	235	185	158	126	91	78	69	72
14	89	564	336	166	210	205	157	144	88	75	68	71
15	89	468	304	160	195	494	165	141	87	73	67	71
16	88	425	286	157	200	534	267	131	87	74	71	69
17	87	419	278	161	213	436	257	124	85	76	225	69
18	88	394	269	158	235	374	243	126	83	85	119	70
19	88	369	252	165	260	338	223	144	84	72	92	69
20	90	355	243	185	267	311	212	138	84	74	96	69
21	145	363	235	177	264	281	217	158	83	70	163	71
22	194	496	215	168	264	264	217	144	82	70	129	69
23	236	624	220	164	276	254	199	131	82	70	98	69
24	177	524	233	159	266	243	185	124	85	72	89	69
25	140	462	236	159	263	230	178	119	83	70	83	68
26	121	430	214	167	254	222	177	118	80	76	77	68
27	112	418	208	177	255	218	170	117	79	77	73	71
28	108	432	207	135	247	213	163	120	89	79	102	75
29	103	848	203	140	---	208	161	117	129	75	93	71
30	102	1680	199	145	---	200	169	114	93	70	83	69
31	104	---	193	150	---	199	---	116	---	68	77	---
TOTAL	3369	59627	12419	5244	6424	7868	5687	4114	2813	2473	2669	2316
MEAN	109	1988	401	169	229	254	190	133	93.8	79.8	86.1	77.2
MAX	236	16400	1550	194	276	534	267	185	129	109	225	107
MIN	87	355	193	135	152	183	157	114	79	68	63	68
CFSM	.51	9.38	1.89	.80	1.08	1.20	.90	.63	.44	.38	.41	.36
IN.	.59	10.46	2.18	.92	1.13	1.38	1.00	.72	.49	.43	.47	.41
CAL YR 1985	TOTAL	136673	MEAN	374	MAX	16400	MIN	81	CFSM	1.76	IN.	23.98
WTR YR 1986	TOTAL	115023	MEAN	315	MAX	16400	MIN	63	CFSM	1.49	IN.	20.18

POTOMAC RIVER BASIN

01628060 WHITE OAK RUN NEAR GROTTOS, VA

LOCATION.--Lat 38°15'01", long 78°44'57", Rockingham County, Hydrologic Unit 02070005, Shenandoah National Park, on left bank 700 ft upstream from Madison Run, 0.2 mi south of Madison Run Forest Trail, 1.4 mi upstream from southwest boundary of Shenandoah National Park, and 4.3 mi southeast of Grottoes.

DRAINAGE AREA.--1.94 mi².

PERIOD OF RECORD.--October 1979 to current year.

REVISED RECORDS.--WDR VA-85-1: 1983-84(P).

GAGE.--Water-stage recorder. Elevation of gage is 1,480 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--7 years, 2.44 ft³/s, 17.08 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 515 ft³/s, Nov. 4, 1985, gage height, 6.17 ft, from floodmarks; no flow many days in 1980-86.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 30 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0845	33	2.15	Nov. 4	Unknown	*515	*a6.17

a From floodmarks.

No flow many days during October, June through September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	6.1	19	.33	.19	1.3	.54	1.0	.20	.18	.00	.00
2	.00	29	14	.32	.19	1.2	.51	.92	.19	.22	.00	.08
3	.02	58	9.1	.31	.25	1.1	.47	.78	.18	.24	.00	.17
4	.02	337	6.3	.33	.47	.98	.41	.69	.17	.20	.00	.17
5	.01	92	4.6	.33	.83	.89	.41	.63	.17	.15	.00	.13
6	.01	26	3.6	.33	1.1	.85	.43	.59	.17	.12	.00	.11
7	.00	13	2.6	.33	1.2	.81	.64	.53	.18	.09	.00	.08
8	.00	7.4	2.0	.30	1.2	.66	.56	.47	.27	.04	.00	.08
9	.00	4.7	1.7	.27	1.4	.58	.56	.42	.23	.01	.00	.07
10	.00	3.6	1.4	.27	1.9	.58	.55	.39	.18	.00	.00	.06
11	.00	2.8	1.1	.27	2.4	.60	.53	.36	.17	.00	.00	.06
12	.00	2.2	1.1	.28	2.2	.53	.50	.33	.16	.00	.00	.05
13	.00	1.7	1.1	.30	1.8	.51	.45	.33	.16	.00	.00	.05
14	.00	1.5	.94	.30	1.6	.90	.42	.33	.16	.00	.00	.04
15	.00	1.2	.76	.28	1.5	8.7	1.3	.31	.14	.00	.00	.02
16	.00	.90	.70	.25	1.2	10	6.9	.29	.12	.00	.00	.01
17	.00	.85	.68	.24	1.2	7.3	7.1	.27	.10	.00	.03	.00
18	.00	.68	.65	.24	2.3	5.1	6.0	.27	.08	.00	.12	.00
19	.00	.57	.57	.25	5.1	4.0	4.9	.27	.04	.00	.04	.00
20	.00	.51	.53	.31	6.1	3.0	4.4	.24	.01	.00	.07	.00
21	.10	.47	.53	.30	5.2	2.2	4.2	.31	.00	.00	.14	.00
22	1.0	2.6	.53	.26	4.0	1.7	3.4	.28	.00	.00	.12	.00
23	2.2	5.3	.55	.23	3.2	1.5	2.8	.24	.00	.00	.08	.00
24	1.2	5.4	.58	.21	2.8	1.3	2.4	.23	.00	.00	.06	.00
25	.82	4.1	.58	.21	2.4	1.1	2.3	.21	.00	.00	.04	.00
26	.58	2.8	.49	.21	2.2	.95	2.0	.21	.00	.00	.02	.00
27	.42	2.3	.41	.24	2.1	.91	1.7	.19	.00	.00	.00	.00
28	.34	2.5	.39	.24	1.6	.82	1.5	.19	.00	.00	.04	.00
29	.28	7.8	.37	.22	---	.71	1.4	.19	.15	.00	.05	.00
30	.24	21	.37	.21	---	.66	1.1	.20	.16	.00	.03	.00
31	.22	---	.33	.20	---	.60	---	.21	---	.00	.01	---
TOTAL	7.46	643.98	77.56	8.37	57.63	62.04	60.38	11.88	3.39	1.25	.85	1.18
MEAN	.24	21.5	2.50	.27	2.06	2.00	2.01	.38	.11	.04	.03	.04
MAX	2.2	337	19	.33	6.1	10	7.1	1.0	.27	.24	.14	.17
MIN	.00	.47	.33	.20	.19	.51	.41	.19	.00	.00	.00	.00
CFSM	.12	11.1	1.29	.14	1.06	1.03	1.04	.20	.06	.02	.01	.02
IN.	.14	12.35	1.49	.16	1.11	1.19	1.16	.23	.07	.02	.02	.02
CAL YR 1985	TOTAL	1023.04	MEAN	2.80	MAX	337	MIN	.00	CFSM	1.44	IN.	19.62
WTR YR 1986	TOTAL	935.97	MEAN	2.56	MAX	337	MIN	.00	CFSM	1.32	IN.	17.95

POTOMAC RIVER BASIN

53

01628500 SOUTH FORK SHENANDOAH RIVER NEAR LYNNWOOD, VA

LOCATION.--Lat 38°19'21", long 78°45'18", Rockingham County, Hydrologic Unit 02070005, on left bank 1.2 mi north-east of Lynnwood and 3.3 mi downstream from confluence of North and South Rivers.

DRAINAGE AREA.--1,084 mi².

PERIOD OF RECORD.--September 1930 to current year.

REVISED RECORDS.--WSP 1171: 1933(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,013.17 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 30 to Nov. 13, Dec. 23, 24, and Jan. 28 to Feb. 2. Records good except those for period of no gage-height record, Oct. 30 to Nov. 13, and periods with ice effect, Dec. 23, 24 and Jan. 28 to Feb. 2, which are fair. Diurnal fluctuation at low flow prior to 1960 caused by mill at Lynnwood. National Weather Service rain gage and gage-height telemeters at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--56 years, 1,005 ft³/s, 12.59 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,100 ft³/s, Nov. 5, 1985, gage height, 29.46 ft, from floodmarks, from rating curve extended above 22,000 ft³/s on basis of computations of flow over dam at gage heights 23.60 ft and 27.2 ft; minimum, 32 ft³/s, Sept. 20, 1932, gage height, 1.63 ft; minimum daily, 93 ft³/s, Sept. 21, 29, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Nov. 5, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	Unknown	*95,100	*a29.46	Mar. 15	1500	7,640	9.49
Nov. 30	1630	7,150	9.14				

a From floodmarks.

Minimum discharge, 210 ft³/s, Sept. 26-27, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	307	580	5180	697	490	1130	746	683	567	380	243	269
2	331	3000	4060	688	500	1070	723	661	507	410	242	349
3	403	11000	3170	670	540	1020	695	623	456	419	241	452
4	382	30000	2600	667	616	999	672	597	416	345	245	342
5	353	60000	2280	658	687	966	673	583	403	314	241	312
6	342	35000	2110	643	713	936	679	571	397	308	238	304
7	321	10000	1890	629	784	908	800	566	534	303	240	273
8	313	6700	1690	605	882	864	766	554	1080	295	238	266
9	310	5000	1550	565	943	828	738	535	644	289	235	257
10	306	4000	1410	597	994	815	735	516	506	287	238	245
11	303	3400	1310	588	1090	803	723	504	455	286	250	239
12	302	2500	1270	578	1150	799	689	493	440	280	265	236
13	303	2200	1300	577	1070	826	659	482	416	271	241	227
14	302	1890	1360	552	981	938	646	493	385	269	239	223
15	307	1620	1220	536	932	5800	646	513	368	264	238	222
16	307	1420	1160	525	902	5350	856	503	358	273	237	221
17	297	1370	1130	535	882	3650	870	486	343	269	380	215
18	295	1270	1090	527	957	2760	844	470	336	272	371	215
19	295	1170	1020	545	1200	2240	768	496	317	259	305	221
20	312	1100	964	596	1370	1870	762	538	321	253	326	216
21	467	1070	944	599	1440	1540	828	997	318	252	370	222
22	691	1730	894	560	1400	1320	869	1390	309	251	386	227
23	651	2930	830	554	1400	1190	819	1240	309	248	319	217
24	564	2480	850	546	1370	1100	775	1010	311	278	297	221
25	487	2070	889	543	1320	1010	736	830	307	304	281	217
26	453	1820	830	565	1270	941	766	722	293	278	273	215
27	425	1680	759	609	1220	900	760	661	289	299	268	215
28	408	1630	774	465	1200	860	735	644	289	294	287	219
29	387	2710	751	470	---	825	709	610	368	280	300	219
30	360	5230	728	475	---	800	693	564	349	264	285	215
31	350	---	704	480	---	771	---	659	---	246	270	---
TOTAL	11634	206570	46717	17844	28303	45829	22380	20194	12391	9040	8589	7491
MEAN	375	6886	1507	576	1011	1478	746	651	413	292	277	250
MAX	691	60000	5180	697	1440	5800	870	1390	1080	419	386	452
MIN	295	580	704	465	490	771	646	470	289	246	235	215
CFSM	.35	6.35	1.39	.53	.93	1.36	.69	.60	.38	.27	.26	.23
IN.	.40	7.09	1.60	.61	.97	1.57	.77	.69	.43	.31	.29	.26
CAL YR 1985	TOTAL	500177	MEAN	1370	MAX	60000	MIN	295	CFSM	1.26	IN.	17.16
WTR YR 1986	TOTAL	436982	MEAN	1197	MAX	60000	MIN	215	CFSM	1.10	IN.	15.00

POTOMAC RIVER BASIN

01629500 SOUTH FORK SHENANDOAH RIVER NEAR LURAY, VA

LOCATION.--Lat 38°38'46", long 78°32'06", Page County, Hydrologic Unit 02070005, on right bank between bridges on U.S. Highway 211, 1.2 mi downstream from Big Run, 2.2 mi upstream from Mill Creek, and 4.1 mi west of Luray.

DRAINAGE AREA.--1,377 mi².

PERIOD OF RECORD.--April 1925 to September 1930, October 1938 to September 1951, June 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 721.76 ft above National Geodetic Vertical Datum of 1929. April 1925 to September 1930, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation at low and medium flow caused by powerplant 10 mi upstream from station. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--25 years, 1,322 ft³/s, 13.04 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 110,000 ft³/s, Nov. 5, 1985, gage height, 26.72 ft; minimum, 70 ft³/s, Sept. 27, 1941, gage height, 2.15 ft; minimum daily, 135 ft³/s, Sept. 16, 1925, Sept. 28, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of 23.6 ft, from floodmarks, discharge, 81,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 8,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	2100	*110,000	*26.72	Mar. 16	0030	9,680	8.48
Dec. 1	0130	8,850	8.13				

Minimum discharge, 241 ft³/s, Aug. 7, gage height, 2.78 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	354	469	7510	935	678	1440	992	862	757	464	303	316
2	367	1950	5720	923	673	1330	966	842	692	485	281	333
3	406	6720	4570	893	696	1280	931	775	590	511	267	420
4	453	31500	3700	892	827	1260	889	736	549	494	280	524
5	447	78700	3210	881	989	1230	891	722	522	413	278	435
6	397	49700	2860	865	1010	1190	931	711	513	386	291	413
7	386	14400	2570	850	1070	1160	1060	691	488	374	274	402
8	364	10200	2280	807	1190	1090	1080	679	894	369	272	388
9	361	7980	2100	774	1280	1030	1060	647	1110	368	271	338
10	353	6380	1910	750	1390	1030	1020	623	668	350	268	347
11	352	5210	1780	774	1500	1030	981	612	589	356	276	339
12	349	4280	1700	765	1570	1010	950	601	555	344	285	329
13	348	3310	1700	756	1410	1040	914	599	525	341	305	331
14	358	2760	1790	741	1270	1290	883	613	492	333	292	319
15	360	2390	1670	719	1210	5310	868	641	467	324	287	317
16	368	2090	1560	694	1170	7890	1340	636	446	322	292	322
17	350	1940	1510	692	1150	5300	1730	605	429	317	304	303
18	345	1850	1460	697	1320	3950	1670	582	415	332	417	287
19	344	1720	1390	703	1810	3190	1470	584	393	326	417	299
20	448	1620	1320	742	2010	2640	1320	648	394	325	367	310
21	573	1540	1280	791	2030	2150	1310	765	390	315	388	308
22	833	1780	1220	760	1900	1820	1330	1520	387	296	417	309
23	1140	3700	1200	728	1820	1620	1270	1500	389	291	426	321
24	957	3550	1200	710	1820	1500	1160	1270	382	309	369	315
25	726	2940	1200	710	1700	1380	1090	1070	393	317	344	313
26	608	2530	1130	718	1630	1290	1060	932	361	362	326	314
27	548	2270	1050	760	1560	1220	1010	791	355	346	315	314
28	522	2150	1030	758	1540	1170	964	768	378	344	327	317
29	486	2890	1010	679	---	1110	917	734	381	363	329	315
30	453	4960	990	676	---	1060	876	671	442	326	340	317
31	451	---	953	704	---	1030	---	667	---	315	331	---
TOTAL	14807	263479	64573	23847	38223	60040	32933	24097	15346	11118	9939	10215
MEAN	478	8783	2083	769	1365	1937	1098	777	512	359	321	341
MAX	1140	78700	7510	935	2030	7890	1730	1520	1110	511	426	524
MIN	344	469	953	676	673	1010	868	582	355	291	267	287
CFSM	.35	6.38	1.51	.56	.99	1.41	.80	.56	.37	.26	.23	.25
IN.	.40	7.12	1.74	.64	1.03	1.62	.89	.65	.41	.30	.27	.28
CAL YR 1985	TOTAL	632302	MEAN	1732	MAX	78700	MIN	254	CFSM	1.26	IN.	17.08
WTR YR 1986	TOTAL	568617	MEAN	1558	MAX	78700	MIN	267	CFSM	1.13	IN.	15.36

POTOMAC RIVER BASIN

55

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA

LOCATION.--Lat 38°41'50", long 78°12'40", Warren County, Hydrologic Unit 02070005, on left bank 0.7 mi downstream from bridge on State Highway 619, 1.0 mi west of Front Royal, and 3.5 mi upstream from confluence with North Fork.

DRAINAGE AREA.--1,642 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1899 to September 1906, September 1930 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 951: 1936(M). WSP 1171: 1935(M), 1937(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 469.38 ft above National Geodetic Vertical Datum of 1929. June 1899 to July 1906, nonrecording gage at site 1.0 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 11-17, 22, 27, and Jan. 9-11, 15-17. Records good except those for period of doubtful gage-height record, Dec. 11-17, and periods with ice effect, Dec. 22, 27, and Jan. 9-11, 15-17, which are fair. Large diurnal fluctuation at low and medium flow caused by powerplants upstream from station prior to 1954; occasional large diurnal fluctuation thereafter. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--63 years, 1,601 ft³/s, 13.24 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s, Oct. 16, 1942, gage height, 34.8 ft, from floodmark in gage well, from rating curve extended above 92,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 59 ft³/s, Jan. 30, 1934, gage height, 0.56 ft; minimum daily, 103 ft³/s, Sept. 30, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Oct. 16, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 8,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	0645	*120,000	*32.43	Mar. 16	1045	9,460	6.97

Minimum discharge, 272 ft³/s, Aug. 5, 6, 9-10; minimum daily, 286 ft³/s, Aug. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	349	650	7000	1070	825	1760	1230	1060	728	488	331	407
2	364	2260	6490	1050	810	1640	1200	1060	825	550	313	435
3	385	5760	5200	1020	812	1560	1100	998	783	557	305	434
4	388	22500	4150	982	897	1500	1110	956	646	545	296	460
5	472	75000	3520	993	1080	1500	1080	913	631	537	286	617
6	461	92400	3220	979	1230	1460	1110	895	594	474	291	538
7	389	21300	3060	1000	1260	1420	1220	881	595	424	328	496
8	369	11500	2750	891	1270	1310	1300	868	555	404	365	493
9	366	8730	2470	820	1370	1280	1290	803	952	425	294	478
10	345	7000	2320	900	1470	1240	1350	809	1060	439	297	445
11	345	5660	2100	870	1620	1240	1220	767	716	408	303	389
12	340	4720	1980	881	1670	1230	1200	759	670	397	301	418
13	331	3750	1950	879	1660	1240	1140	762	620	361	313	403
14	339	2960	1980	867	1560	1360	1120	781	584	371	324	380
15	351	2550	1850	847	1460	3490	1100	768	567	368	343	376
16	354	2240	1750	856	1350	8290	1250	784	553	338	328	371
17	340	2070	1630	865	1330	6560	2010	785	458	363	361	394
18	339	2010	1610	803	1440	4730	2450	781	459	342	369	363
19	341	1880	1490	817	1910	3760	2210	754	463	341	437	322
20	375	1780	1460	863	2320	3170	1920	715	457	346	503	313
21	644	1610	1410	881	2370	2700	1740	812	429	351	504	342
22	863	1740	1380	908	2300	2300	1690	948	433	329	461	345
23	1340	2720	1320	864	2180	2040	1660	1610	424	340	483	343
24	1560	3820	1310	855	2130	1880	1550	1500	434	331	514	347
25	1140	3300	1300	835	2090	1750	1390	1240	479	331	445	345
26	817	2820	1280	836	1970	1580	1350	1120	378	327	421	343
27	690	2540	1280	857	1900	1470	1270	1030	426	358	406	342
28	598	2420	1160	862	1820	1430	1220	845	401	379	404	341
29	550	2520	1130	835	---	1380	1170	872	425	354	400	349
30	513	3590	1100	751	---	1320	1110	834	434	379	394	336
31	475	---	1090	796	---	1250	---	812	---	345	408	---
TOTAL	16533	303800	71740	27533	44104	68840	41760	28522	17179	12302	11528	11965
MEAN	533	10130	2314	888	1575	2221	1392	920	573	397	372	399
MAX	1560	92400	7000	1070	2370	8290	2450	1610	1060	557	514	617
MIN	331	650	1090	751	810	1230	1080	715	378	327	286	313
CFSM	.32	6.17	1.41	.54	.96	1.35	.85	.56	.35	.24	.23	.24
IN.	.37	6.88	1.63	.62	1.00	1.56	.95	.65	.39	.28	.26	.27
CAL YR 1985	TOTAL	715309	MEAN	1960	MAX	92400	MIN	330	CFSM	1.19	IN.	16.21
WTR YR 1986	TOTAL	655806	MEAN	1797	MAX	92400	MIN	286	CFSM	1.09	IN.	14.86

POTOMAC RIVER BASIN

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949, 1953-56, 1968 to June 1986 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1952 to September 1956, April 1968 to September 1977, October 1979 to August 1980.

WATER TEMPERATURE: October 1952 to September 1956, April 1968 to September 1977, October 1979 to August 1980.

SUSPENDED-SEDIMENT DISCHARGE: April 1953 to September 1956.

WATER QUALITY DATA, OCTOBER 1985 TO JUNE 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
OCT 21...	1500	681	348	350	8.20	7.90	14.5	--	10	--
DEC 17...	1130	1630	297	306	8.20	8.40	4.0	747	5	12.3
FEB 05...	0945	1060	306	324	8.60	8.50	5.0	740	5	12.5
MAR 27...	1200	1450	255	258	8.60	8.70	12.5	749	5	11.4
MAY 05...	1430	902	265	271	8.70	9.10	19.0	--	10	--
JUN 17...	0800	497	298	294	8.10	8.20	27.0	746	10	6.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 21...	--	140	6	35	13	15	3.2	135	25
DEC 17...	96	150	24	40	11	6.3	2.0	121	14
FEB 05...	101	140	16	36	12	11	2.1	123	16
MAR 27...	109	110	6	30	8.8	6.2	1.6	105	13
MAY 05...	--	120	7	32	10	8.5	2.1	114	15
JUN 17...	81	120	11	31	11	9.7	4.2	112	18

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 21...	13	0.10	2.5	196	190	<0.010	0.740	0.320	17
DEC 17...	8.0	<0.10	5.0	150	170	0.020	2.00	0.050	8
FEB 05...	12	0.10	0.5	177	160	0.020	1.50	0.050	12
MAR 27...	6.9	0.10	1.2	137	130	0.020	0.980	0.010	14
MAY 05...	8.5	<0.10	1.3	149	150	<0.010	0.510	0.040	20
JUN 17...	8.8	0.10	9.0	164	160	--	--	--	16

01632000 NORTH FORK SHENANDOAH RIVER AT COOTES STORE, VA

LOCATION.--Lat 38°38'13", long 78°51'11", Rockingham County, Hydrologic Unit 02070006, on right bank at Cootes Store, 300 ft upstream from bridge on State Highway 259, and 3.7 mi upstream from Linville Creek.

DRAINAGE AREA.--210 mi².

PERIOD OF RECORD.--February 1925 to current year.

REVISED RECORDS.--WSP 726: 1928-31. WSP 951: 1936, 1939(M). WSP 1171: 1935, 1937, 1938(M). WSP 1502: 1926, 1927-28(M), 1929, 1930-34(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,051.8 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Nov. 15, 1937, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 4-9, Jan. 10-16, 28, May 19 to June 19, and June 24 to July 3. Records good except those for periods of no gage-height record, Nov. 4-9, May 19 to June 19, and June 24 to July 3, and periods with ice effect Jan. 10-16, 28, which are fair. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--61 years, 193 ft³/s, 12.48 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s, Oct. 15, 1942, gage height, 25.3 ft, from floodmark, from rating curve extended above 9,000 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 0.20 ft³/s, Aug. 28, 29, Sept. 4, 1957, Sept. 7-10, 1966; minimum gage height, 1.74 ft, Sept. 7-10, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1836, that of Oct. 15, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	Unknown	*49,200	*a25.13	Mar. 15	0245	5,800	9.60

a From floodmarks.

Minimum discharge, 1.1 ft³/s, Aug. 31-Sept. 1, gage height, 1.83 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	70	513	56	65	201	83	89	54	12	3.1	1.3
2	3.2	858	528	52	64	185	78	81	47	15	2.8	2.5
3	2.9	2940	415	51	69	181	73	74	42	14	2.6	2.2
4	2.7	15500	322	50	147	174	69	69	36	13	2.3	2.6
5	2.7	21000	272	47	241	164	69	63	33	12	2.0	2.8
6	2.3	7400	240	43	270	159	90	59	39	9.9	1.9	2.6
7	2.2	2500	205	42	285	155	218	57	46	8.9	1.8	2.3
8	2.3	800	174	35	260	131	195	52	52	7.8	1.8	2.5
9	2.4	600	155	32	308	135	200	47	47	7.4	1.8	2.4
10	2.5	459	141	32	340	137	229	46	40	7.1	1.7	2.3
11	2.4	245	130	31	347	168	208	41	33	6.7	1.6	2.3
12	2.4	185	127	31	288	190	184	38	29	6.2	1.5	2.1
13	2.5	153	151	30	229	202	159	38	25	5.3	1.4	1.9
14	2.5	134	258	29	198	811	143	46	22	4.7	1.5	1.8
15	2.4	118	252	31	186	3960	133	43	19	4.6	1.4	1.7
16	2.5	105	235	30	173	1530	155	38	17	4.2	1.3	1.7
17	2.5	99	214	31	169	786	211	36	15	3.8	1.3	1.6
18	2.6	88	186	31	499	526	325	34	14	3.8	1.4	1.6
19	2.6	79	150	32	1170	400	328	33	13	3.3	2.4	1.6
20	50	72	136	39	890	317	297	140	13	3.2	1.9	1.9
21	254	67	126	43	616	245	267	190	12	2.5	2.2	2.1
22	304	198	109	43	465	206	228	250	11	2.2	1.9	1.7
23	455	493	111	44	377	180	190	210	8.4	22	1.7	1.6
24	317	397	108	53	347	159	160	165	8.2	15	1.7	1.6
25	217	302	102	72	316	141	143	135	8.0	7.7	1.5	1.6
26	160	243	78	83	279	128	136	110	8.0	6.7	1.4	1.5
27	126	214	76	88	266	120	123	87	8.6	6.0	1.4	1.4
28	102	200	71	81	231	113	112	72	8.5	5.4	1.6	1.4
29	83	470	66	72	---	104	112	63	9.5	4.5	1.6	1.4
30	69	502	59	71	---	96	95	58	9.0	4.0	1.3	1.4
31	57	---	57	67	---	90	---	64	---	3.6	1.3	---
TOTAL	2241.4	56491	5767	1472	9095	12094	5013	2528	727.2	232.5	55.1	57.4
MEAN	72.3	1883	186	47.5	325	390	167	81.5	24.2	7.50	1.78	1.91
MAX	455	21000	528	88	1170	3960	328	250	54	22	3.1	2.8
MIN	1.8	67	57	29	64	90	69	33	8.0	2.2	1.3	1.3
CFSM	.34	8.97	.89	.23	1.55	1.86	.80	.39	.12	.04	.01	.01
IN.	.40	10.01	1.02	.26	1.61	2.14	.89	.45	.13	.04	.01	.01
CAL YR 1985	TOTAL	100642.4	MEAN	276	MAX	21000	MIN	1.8	CFSM	1.31	IN.	17.83
WTR YR 1986	TOTAL	95773.6	MEAN	262	MAX	21000	MIN	1.3	CFSM	1.25	IN.	16.97

LOCATION.--Lat 38°36'24", long 78°48'13", Rockingham County, Hydrologic Unit 02070006, on left bank at Broadway, 170 ft downstream from bridge on State Highway 1421, and 1.1 mi upstream from mouth.

PERIOD OF RECORD.--August 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,029.90 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges for period August to September 1985. Estimated daily discharges for period October 1985 to September 1986: Oct. 2 to Nov. 3, Dec. 22, 26, 27, Jan. 8, 14, 27-30, and Aug. 16 to Sept. 4. Records good except those for periods of no gage-height record, Oct. 2 to Nov. 3 and Aug. 16 to Sept. 4, and periods with ice effect, Dec. 22, 26, 27, and Jan. 8, 14, 27-30, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,160 ft³/s, Nov. 4, 1985, gage height, 6.22 ft; minimum, 2.8 ft³/s, Sept. 13, 14, 17, 1986.

EXTREMES FOR PERIOD AUGUST 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4, 1985	0515	1,080	4.06	Nov. 5, 1985	0830	1,530	4.62
Nov. 4, 1985	2300	*3,160	*6.22	Mar. 14, 1986	2315	750	3.55

August to September 1985: Minimum discharge, 5.4 ft³/s, many days in September.

Water Year 1986: Minimum discharge, 2.8 ft³/s, Sept. 13, 14, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, AUGUST TO SEPTEMBER 1985
MEAN VALUES

[illegible]

POTOMAC RIVER BASIN

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01632082 LINVILLE CREEK AT BROADWAY, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	16	82	22	13	46	30	16	10	17	5.5	4.5
2	8.2	50	81	21	13	44	28	15	11	14	5.8	7.0
3	7.4	200	68	22	14	43	27	14	9.9	13	6.2	8.0
4	6.8	1140	62	21	23	42	26	14	9.9	9.9	7.2	7.7
5	6.3	1050	58	21	22	40	28	14	10	9.4	6.5	7.1
6	6.2	231	55	21	21	39	39	14	10	9.3	6.3	6.0
7	6.0	153	51	20	24	37	41	14	11	8.7	6.2	4.9
8	6.2	119	48	19	25	34	31	14	11	8.5	6.4	5.6
9	6.2	101	46	19	35	34	30	13	9.9	8.3	6.7	3.9
10	6.0	89	44	18	37	33	27	13	9.5	8.7	6.0	3.9
11	6.0	79	42	17	40	32	26	13	11	8.3	7.0	3.9
12	6.0	71	41	17	36	30	24	13	11	8.1	6.4	3.9
13	6.2	64	46	17	34	32	23	14	9.8	7.4	6.1	3.4
14	6.5	59	43	15	32	120	22	14	9.9	7.4	6.5	3.6
15	6.8	54	41	16	32	222	22	13	9.7	7.4	6.2	3.9
16	6.8	52	40	16	30	104	27	13	9.7	7.3	5.8	3.8
17	6.6	50	38	15	32	84	27	13	9.5	6.6	6.0	3.2
18	6.6	46	36	15	57	73	26	12	8.7	7.0	5.8	3.7
19	7.0	44	34	17	64	67	23	11	8.7	5.6	5.6	4.7
20	20	43	32	16	56	58	22	14	9.5	6.0	5.3	5.3
21	37	39	31	14	52	52	23	17	8.9	6.4	6.2	5.5
22	35	87	31	14	49	49	22	13	8.7	5.4	6.2	5.0
23	40	78	30	14	49	46	21	12	8.7	7.2	5.8	5.0
24	30	63	30	13	51	43	19	11	9.3	6.5	5.4	5.7
25	23	56	29	14	51	41	19	11	8.0	6.8	4.8	6.2
26	18	53	27	15	50	39	19	11	7.9	11	4.5	5.4
27	15	50	25	14	50	37	17	11	8.0	9.9	4.5	5.5
28	14	49	25	12	48	35	17	11	11	9.0	4.8	6.2
29	13	56	24	13	---	33	17	10	11	5.8	4.8	7.1
30	12	89	23	13	---	32	16	11	9.1	5.5	4.5	6.8
31	12	---	22	13	---	31	---	12	---	5.4	4.5	---
TOTAL	392.3	4331	1285	514	1040	1652	739	401	290.3	256.8	179.5	156.4
MEAN	12.7	144	41.5	16.6	37.1	53.3	24.6	12.9	9.68	8.28	5.79	5.21
MAX	40	1140	82	22	64	222	41	17	11	17	7.2	8.0
MIN	5.5	16	22	12	13	30	16	10	7.9	5.4	4.5	3.2
WTR YR 1986	TOTAL	11237.3		MEAN	30.8	MAX	1140	MIN	3.2			

POTOMAC RIVER BASIN

01632900 SMITH CREEK NEAR NEW MARKET, VA

LOCATION.--Lat 38°41'36", long 78°38'35", Shenandoah County, Hydrologic Unit 02070006, on left bank 25 ft upstream from bridge on State Highway 616, 3.6 mi north of New Market, and 4.4 mi upstream from mouth.

DRAINAGE AREA.--93.2 mi².

PERIOD OF RECORD.--August 1960 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 881.50 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 2, 1963, on right bank a short distance downstream, at datum 0.71 ft higher.

REMARKS.--Estimated daily discharges: Dec. 22, 27, and Jan. 8-10, 16, 28-31. Records good except those for periods with ice effect, Dec. 22, 27, and Jan. 8-10, 16, 28-31, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--26 years, 73.2 ft³/s, 10.67 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s, Oct. 6, 1972, gage height, 16.38 ft, from rating curve extended above 2,300 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 4.5 ft³/s, Feb. 9, 1981, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 1, 1959, reached a stage of 10.7 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0330	*6,050	*13.01	Mar. 15	0530	948	5.96

Minimum discharge, 7.0 ft³/s, Sept. 13, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	29	210	52	31	82	61	46	26	24	12	9.4
2	13	52	190	50	32	77	60	44	32	28	12	12
3	15	157	156	50	34	77	57	42	28	23	12	14
4	13	1760	138	50	66	76	56	41	24	20	12	12
5	13	3230	131	49	66	73	57	39	23	19	11	11
6	15	769	125	48	56	71	71	38	23	18	11	11
7	13	400	114	47	58	69	123	39	25	17	11	9.6
8	11	284	105	47	55	62	78	36	50	16	11	9.6
9	10	222	98	54	67	62	84	34	31	17	11	8.9
10	12	189	91	52	72	59	83	34	25	17	12	8.6
11	11	167	90	43	77	59	71	33	24	16	11	8.8
12	12	146	90	42	70	57	66	31	29	16	11	8.2
13	13	135	98	42	63	59	61	32	25	15	11	7.9
14	13	126	100	40	59	117	58	36	23	15	11	8.4
15	15	113	87	38	59	652	57	33	22	14	11	8.2
16	17	104	85	38	58	261	83	31	20	14	11	8.3
17	15	104	83	37	62	191	112	33	19	14	13	8.1
18	15	96	79	37	124	158	141	30	18	14	12	7.8
19	17	91	74	38	163	141	106	29	18	14	12	8.3
20	40	89	72	39	129	124	92	29	18	14	11	9.6
21	90	84	71	38	107	108	86	43	19	13	13	9.8
22	86	168	67	36	96	100	80	35	18	12	13	10
23	96	225	66	36	98	94	71	31	18	14	12	8.7
24	70	149	68	35	103	88	65	30	19	15	12	9.0
25	56	125	67	35	101	82	61	28	19	13	10	8.7
26	46	114	60	37	94	77	62	27	17	14	9.2	9.0
27	40	109	56	38	96	75	58	27	17	17	9.4	8.5
28	35	106	57	29	90	71	54	29	19	15	10	9.2
29	31	155	55	30	---	69	51	26	23	14	10	9.9
30	29	207	53	31	---	67	48	26	19	13	9.3	8.2
31	29	---	52	31	---	64	---	34	---	12	9.2	---
TOTAL	901	9705	2888	1269	2186	3422	2213	1046	691	497	346.1	280.7
MEAN	29.1	324	93.2	40.9	78.1	110	73.8	33.7	23.0	16.0	11.2	9.36
MAX	96	3230	210	54	163	652	141	46	50	28	13	14
MIN	10	29	52	29	31	57	48	26	17	12	9.2	7.8
CFSM	.31	3.48	1.00	.44	.84	1.18	.79	.36	.25	.17	.12	.10
IN.	.36	3.87	1.15	.51	.87	1.37	.88	.42	.28	.20	.14	.11
CAL YR 1985	TOTAL	26191.1	MEAN	71.8	MAX	3230	MIN	9.4	CFSM	.77	IN.	10.45
WTR YR 1986	TOTAL	25444.8	MEAN	69.7	MAX	3230	MIN	7.8	CFSM	.75	IN.	10.16

01633000 NORTH FORK SHENANDOAH RIVER AT MOUNT JACKSON, VA

LOCATION.--Lat 38°44'43", long 78°38'21", Shenandoah County, Hydrologic Unit 02070006, on right bank at upstream side of bridge on State Highway 698 at Mount Jackson and 0.4 mi downstream from Mill Creek.

DRAINAGE AREA.--506 mi².

PERIOD OF RECORD.--October 1943 to current year.

REVISED RECORDS.--WSP 1382: 1945, 1948-50(M), 1951-53(P), 1954(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 838.55 ft above National Geodetic Vertical Datum of 1929. Prior to July 1, 1976, nonrecording gage, and July 1, 1976, to Oct. 23, 1981, water-stage recorder, at site 400 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 27, Jan. 9, 29-31, and Apr. 29 to May 5. Records good except those for periods with ice effect, Dec. 27 and Jan. 9, 29-31, and period of no gage-height record, Apr. 29 to May 5, which are fair. Some diversion during low flow by irrigation at points upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--43 years, 389 ft³/s, 10.44 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,800 ft³/s, Nov. 5, 1985, gage height, 17.79 ft, from rating curve extended above 19,000 ft³/s on basis of peak runoff for stations at Cootes Store and near Strasburg; maximum gage height, 18.10 ft, Oct. 6, 1972; minimum discharge observed, 7.0 ft³/s, Sept. 3, 1966, gage height, 1.97 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 20.2 ft, from floodmarks, discharge, about 80,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of peak runoff for flood in October 1942 for stations at Cootes Store and near Strasburg.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0400	*50,800	*17.79	Mar. 15	0700	9,800	11.45

Minimum discharge, 14 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	127	975	197	151	507	279	224	132	70	28	34
2	35	478	971	187	153	473	266	208	125	89	26	41
3	42	1950	849	184	157	460	251	198	113	75	26	42
4	41	14400	726	181	240	448	241	187	103	66	25	45
5	36	30300	651	177	410	431	238	176	97	62	24	39
6	36	5970	605	169	459	420	279	171	99	59	25	37
7	35	2510	544	163	479	410	512	168	145	54	24	34
8	31	1640	484	149	452	362	469	158	166	50	23	34
9	29	1230	443	134	499	359	456	147	148	52	26	32
10	28	1010	407	144	573	350	501	145	117	54	27	30
11	29	797	384	141	618	369	461	141	102	53	27	27
12	29	656	375	142	547	401	416	133	105	50	24	22
13	29	577	398	141	463	416	369	133	96	50	25	22
14	31	519	527	133	406	614	338	148	84	47	26	20
15	31	468	540	132	412	6680	316	143	78	42	26	19
16	32	426	511	126	368	2650	367	136	72	40	24	19
17	32	406	479	129	361	1510	449	133	66	43	26	16
18	30	373	441	128	583	1110	627	126	62	42	32	19
19	29	345	384	133	1460	922	618	125	60	40	30	20
20	68	327	352	141	1300	786	563	159	58	41	31	23
21	456	305	332	140	1010	660	524	487	58	39	36	25
22	530	489	309	137	834	570	480	561	60	36	39	27
23	730	987	295	135	739	512	416	425	57	78	36	24
24	559	821	295	135	710	468	362	329	55	53	33	19
25	403	691	292	149	681	425	329	262	53	51	30	21
26	300	595	243	171	624	392	318	222	52	40	26	21
27	238	540	239	187	614	372	293	196	56	45	24	20
28	197	509	231	150	567	349	268	188	53	42	31	22
29	165	732	220	143	---	331	251	165	64	37	33	26
30	146	944	206	145	---	313	239	146	57	33	31	23
31	133	---	198	150	---	296	---	159	---	28	29	---
TOTAL	4537	71122	13906	4673	15870	24366	11496	6299	2593	1561	873	803
MEAN	146	2371	449	151	567	786	383	203	86.4	50.4	28.2	26.8
MAX	730	30300	975	197	1460	6680	627	561	166	89	39	45
MIN	27	127	198	126	151	296	238	125	52	28	23	16
CFSM	.29	4.69	.89	.30	1.12	1.55	.76	.40	.17	.10	.06	.05
IN.	.33	5.23	1.02	.34	1.17	1.79	.85	.46	.19	.11	.06	.06
CAL YR 1985	TOTAL	163183	MEAN	447	MAX	30300	MIN	25	CFSM	.88	IN.	12.00
WTR YR 1986	TOTAL	158099	MEAN	433	MAX	30300	MIN	16	CFSM	.86	IN.	11.62

POTOMAC RIVER BASIN

01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA

LOCATION.--Lat 38°58'36", long 78°20'11", Warren County, Hydrologic Unit 02070006, on right bank at downstream side of bridge on State Highway 55, 1.5 mi southeast of Strasburg, 2.2 mi upstream from Cedar Creek, and 10 mi upstream from confluence with South Fork.

DRAINAGE AREA.--768 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1925 to current year.

REVISED RECORDS.--WSP 951: 1936(M). WSP 1001: 1931. WSP 1171: 1929(M), 1933(M), 1936-37. WSP 1302: 1928(M), 1930(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 494.03 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 21, 1930, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 18-22, Dec. 19 to Mar. 22, Mar. 29 to Apr. 8, and May 5-12. Records good except those for periods of doubtful gage-height record, Nov. 18-22, Dec. 19 to Mar. 22, Mar. 29 to Apr. 8, and May 5-12, which are fair. Large diurnal fluctuation at low and medium flow from unknown cause. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--61 years, 587 ft³/s, 10.38 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft³/s, Oct. 16, 1942, gage height, 31.2 ft, from high-water mark in well, from rating curve extended above 46,000 ft³/s; minimum, 6.0 ft³/s, Feb. 9, 1934, gage height, 1.52 ft; minimum daily, 35 ft³/s, Oct. 15, 1985, Sept. 14, 18, 1986.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Oct. 16, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	1845	*62,600	*27.37	Mar. 16	Unknown	9,500	11.77

Minimum discharge, 28 ft³/s, Oct. 16; minimum daily, 35 ft³/s, Oct. 15, Sept. 14, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	237	1290	290	220	800	440	355	208	135	86	76
2	83	224	1290	285	225	750	420	328	234	132	60	74
3	109	700	1180	270	230	710	400	316	191	174	68	87
4	81	6280	1010	260	240	700	380	306	182	152	102	79
5	79	33000	896	255	350	690	365	282	183	107	93	102
6	90	17700	832	250	600	640	360	270	181	151	144	77
7	68	4420	773	225	660	620	440	250	166	151	98	80
8	95	2760	702	240	700	600	700	255	196	82	111	86
9	102	1970	633	220	660	550	612	250	217	108	91	78
10	56	1490	598	200	730	560	601	230	215	141	78	57
11	73	1210	561	220	790	540	641	215	228	75	60	84
12	77	971	557	215	860	590	605	205	246	133	92	71
13	83	821	570	210	760	630	555	228	144	85	72	52
14	60	749	618	205	670	670	507	252	189	100	72	35
15	35	655	720	200	580	2000	480	221	140	108	81	38
16	36	606	698	200	590	6000	477	226	136	73	85	49
17	128	578	663	195	550	3300	532	246	136	80	85	48
18	60	540	632	195	550	2200	683	198	124	93	78	35
19	53	520	580	200	1000	1600	826	222	125	86	83	57
20	79	490	510	210	1950	1300	785	227	135	79	92	83
21	146	470	470	215	1700	1150	733	329	99	113	77	80
22	563	450	430	215	1450	950	689	563	129	71	88	64
23	752	658	410	210	1200	809	630	656	87	172	98	57
24	936	1280	380	205	1100	736	556	528	97	127	88	63
25	768	1050	390	200	1030	678	503	438	122	119	70	70
26	559	890	360	220	980	619	470	356	94	117	88	82
27	414	774	340	245	920	570	453	329	145	113	55	62
28	322	747	320	260	930	541	427	277	123	125	77	71
29	275	968	300	230	---	510	402	278	86	83	75	64
30	223	1170	290	215	---	500	364	266	78	87	97	53
31	182	---	300	220	---	470	---	217	---	101	47	---
TOTAL	6647	84378	19303	6980	22225	32983	16036	9319	4636	3473	2591	2014
MEAN	214	2813	623	225	794	1064	535	301	155	112	83.6	67.1
MAX	936	33000	1290	290	1950	6000	826	656	246	174	144	102
MIN	35	224	290	195	220	470	360	198	78	71	47	35
CFSM	.28	3.66	.81	.29	1.03	1.39	.70	.39	.20	.15	.11	.09
IN.	.32	4.09	.93	.34	1.08	1.60	.78	.45	.22	.17	.13	.10
CAL YR 1985	TOTAL	219193	MEAN	601	MAX	33000	MIN	35	CFSM	.78	IN.	10.62
WTR YR 1986	TOTAL	210585	MEAN	577	MAX	33000	MIN	35	CFSM	.75	IN.	10.20

POTOMAC RIVER BASIN

63

01634000 NORTH FORK SHENANDOAH RIVER NEAR STRASBURG, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1949, 1952, 1956, 1970 to June 1986 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1955 to September 1956.

WATER TEMPERATURE: October 1948 to September 1949, October 1955 to September 1956.

WATER QUALITY DATA, OCTOBER 1985 TO JUNE 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
OCT 21...	1315	155	430	439	8.00	7.50	14.0	--	<1	--
DEC 17...	0945	672	326	335	8.30	8.40	3.5	749	5	12.7
FEB 04...	1345	282	380	396	8.80	8.40	4.5	746	7	13.3
MAR 27...	0900	557	328	332	8.40	8.40	12.0	749	10	10.2
MAY 05...	1045	277	298	304	7.90	8.50	16.0	747	10	11.1
JUN 17...	1345	151	347	348	8.30	8.60	27.5	748	10	9.4

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 21...	--	180	6	44	17	17	3.8	174	20
DEC 17...	97	170	34	47	12	5.3	1.8	133	14
FEB 04...	105	190	30	50	15	11	1.9	157	16
MAR 27...	96	150	23	43	11	4.9	1.5	130	14
MAY 05...	115	140	13	35	12	7.6	1.9	124	15
JUN 17...	122	160	10	38	15	9.4	2.5	147	21

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 21...	26	0.10	0.9	247	230	<0.010	<0.100	0.140	14
DEC 17...	9.0	<0.10	3.5	166	180	0.010	2.00	0.010	11
FEB 04...	18	0.10	0.3	204	210	0.020	1.80	0.010	5
MAR 27...	7.8	0.10	2.7	182	160	0.020	1.90	0.010	8
MAY 05...	12	<0.10	0.5	158	160	<0.010	0.470	0.020	16
JUN 17...	11	0.10	6.5	191	190	0.010	0.360	0.050	50

01634500 CEDAR CREEK NEAR WINCHESTER, VA

LOCATION.--Lat 39°04'52", long 78°19'47", Frederick County, Hydrologic Unit 02070006, on left bank 0.2 mi upstream from Fawcett Run, 0.3 mi upstream from bridge on State Highway 628, 1.3 mi downstream from Froman Run, and 11.4 mi southwest of Winchester.

DRAINAGE AREA.--103 mi².

PERIOD OF RECORD.--June 1937 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 647.09 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 19-23, 26-28, and Jan. 8-10, 14-17, 29-31. Records good except those for periods with ice effect, Dec. 19-23, 26-28, and Jan. 10, 14-17, 29-31, and period of no gage-height record, Jan. 8, 9, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--49 years, 94.4 ft³/s, 12.45 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s, Oct. 15, 1942, gage height, 27.0 ft, from flood-marks, from rating curve extended above 15,000 ft³/s; minimum, 1.8 ft³/s, Feb. 19, 1941, Dec. 7, 1958, result of freezeups; minimum daily, 2.8 ft³/s, Sept. 7, 1964, Sept. 3, 4, 7, 8, 1966; minimum gage height, 1.04 ft, Feb. 19, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1936, reached a stage of about 25 ft, discharge, about 18,000 ft³/s, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0400	*8,980	*16.05	Feb. 19	2300	1,040	4.70
Nov. 29	0030	1,290	5.21	Mar. 15	0330	3,300	8.78

Minimum daily discharge, 4.1 ft³/s, Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	55	285	49	57	128	66	55	21	9.5	6.7	6.3
2	9.0	244	257	53	57	122	63	52	18	15	8.7	6.7
3	12	591	193	43	62	122	59	49	17	15	18	9.7
4	16	3660	158	42	128	120	57	47	16	11	15	8.6
5	16	4580	145	41	176	129	57	45	16	8.8	65	11
6	8.2	1130	140	37	144	133	92	44	17	8.5	220	9.0
7	5.9	538	129	38	133	134	108	43	32	7.7	127	6.1
8	5.4	329	115	32	114	107	89	41	27	6.9	42	5.2
9	5.6	229	106	32	109	108	80	38	21	10	28	5.9
10	5.8	184	96	40	116	123	77	38	17	17	19	5.5
11	6.0	146	91	42	122	135	72	35	15	13	16	4.7
12	5.8	121	88	40	106	124	68	33	15	14	13	5.2
13	6.3	107	156	40	94	149	63	34	14	11	12	6.1
14	9.0	96	188	36	102	379	60	40	12	9.4	11	6.1
15	10	84	139	33	96	1880	60	37	11	7.9	11	6.2
16	8.5	76	126	31	90	712	76	34	11	7.3	11	6.0
17	8.0	83	114	35	107	399	97	31	12	12	21	4.8
18	7.8	71	101	38	470	288	146	32	10	15	38	4.1
19	8.3	64	80	38	747	241	116	36	9.0	14	25	5.8
20	16	60	73	73	761	200	117	38	11	17	20	6.4
21	123	55	73	56	494	162	106	99	14	15	55	6.2
22	218	230	76	60	316	140	98	55	10	12	43	5.4
23	361	278	80	63	251	127	86	45	8.9	18	29	5.5
24	172	176	71	55	228	115	78	40	10	27	22	5.7
25	102	136	66	54	196	103	73	36	10	19	13	8.3
26	66	118	50	61	175	97	74	33	8.4	22	12	8.5
27	49	114	53	75	170	92	68	31	8.2	13	12	8.6
28	41	325	57	60	143	85	65	33	11	11	17	10
29	33	755	56	60	---	80	63	29	18	8.9	15	11
30	30	367	57	59	---	75	58	24	13	7.3	11	10
31	27	---	54	58	---	71	---	25	---	7.1	7.9	---
TOTAL	1398.8	15002	3473	1474	5764	6880	2392	1252	433.5	390.3	964.3	208.6
MEAN	45.1	500	112	47.5	206	222	79.7	40.4	14.4	12.6	31.1	6.95
MAX	361	4580	285	75	761	1880	146	99	32	27	220	11
MIN	5.4	55	50	31	57	71	57	24	8.2	6.9	6.7	4.1
CFSM	.44	4.85	1.09	.46	2.00	2.16	.77	.39	.14	.12	.30	.07
IN.	.51	5.42	1.25	.53	2.08	2.48	.86	.45	.16	.14	.35	.08
CAL YR 1985	TOTAL	36394.4	MEAN	99.7	MAX	4580	MIN	4.8	CFSM	.97	IN.	13.14
WTR YR 1986	TOTAL	39632.5	MEAN	109	MAX	4580	MIN	4.1	CFSM	1.06	IN.	14.31

01635500 PASSAGE CREEK NEAR BUCKTON, VA

LOCATION.--Lat 38°57'29", long 78°16'01", Warren County, Hydrologic Unit 02070006, on right bank 350 ft upstream from bridge on State Highway 55, 1.2 mi south of Buckton railroad station, 1.4 mi upstream from mouth, and 4.2 mi west of Riverton.

DRAINAGE AREA.--87.8 mi².

PERIOD OF RECORD.--October 1905 to July 1906 (gage heights only), April 1932 to current year. Prior to October 1966, published as "at Buckton."

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 525.14 ft above National Geodetic Vertical Datum of 1929. October 1905 to July 1906, nonrecording gage at site 1 mi downstream at different datum. Apr. 4, 1932, to Oct. 7, 1937, nonrecording gage at site 350 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 6-9, 14-16, and Jan. 29 to Feb. 1. Records good except those for periods with ice effect, Jan. 6-9, 14-16, and period of no gage-height record, Jan. 29 to Feb. 1, which are fair. Occasional diurnal fluctuation during low flow caused by State Fish Hatchery 2 mi upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--54 years, 68.9 ft³/s, 10.66 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft³/s, Oct. 15, 1942, gage height, 15.5 ft, from high-water mark in well, from rating curve extended above 5,200 ft³/s; minimum observed, 0.1 ft³/s, Aug. 5, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0900	*4,640	*10.45	Mar. 15	0930	1,440	6.72

Minimum discharge, 1.6 ft³/s, Sept. 29, gage height, 2.80 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	32	190	30	25	98	43	44	13	7.1	2.5	3.7
2	3.1	122	167	25	28	96	40	41	11	12	2.4	4.5
3	4.7	179	127	27	22	97	38	37	8.9	14	2.4	8.6
4	9.9	1370	106	26	46	96	36	33	9.1	11	2.8	10
5	8.0	3130	97	25	95	101	37	33	9.0	7.5	5.6	7.4
6	7.9	860	93	21	75	104	46	30	8.6	5.8	5.4	5.5
7	6.0	374	82	20	66	103	74	29	9.3	4.7	4.8	4.7
8	4.1	223	72	19	57	77	64	26	21	3.8	4.7	4.2
9	3.1	152	65	19	67	79	55	23	15	4.7	3.5	4.1
10	4.4	119	57	31	77	81	68	22	9.5	7.0	4.0	3.7
11	2.7	97	53	27	87	89	59	21	8.4	10	4.2	3.4
12	3.0	79	52	23	73	78	53	20	18	9.3	3.5	3.1
13	3.0	68	68	23	58	78	47	20	13	6.5	2.7	2.8
14	3.6	57	91	15	56	131	44	25	10	4.9	2.5	2.5
15	3.5	49	68	14	56	984	44	24	7.5	4.0	2.3	2.5
16	3.2	44	61	15	56	397	93	22	7.6	3.5	3.3	2.2
17	4.0	48	57	22	50	259	154	20	8.4	4.2	23	2.1
18	4.3	41	52	21	147	196	258	31	4.5	3.9	8.3	2.0
19	4.1	37	40	23	294	169	162	27	4.1	4.0	5.2	2.0
20	6.3	34	38	28	225	142	133	21	4.4	3.8	5.1	2.8
21	95	32	39	28	172	118	119	54	4.3	4.6	7.4	2.2
22	83	94	39	24	141	104	110	34	5.5	4.1	9.6	2.1
23	88	178	43	23	132	94	94	24	8.1	4.1	7.7	2.1
24	56	109	44	22	138	86	80	21	5.4	9.0	5.2	2.2
25	35	83	40	21	129	75	73	18	3.8	9.3	4.1	2.2
26	23	71	22	23	120	69	69	17	3.6	7.0	3.6	2.1
27	18	71	28	27	121	65	65	17	4.4	5.2	3.3	1.9
28	14	94	30	18	107	58	61	18	5.7	4.0	4.2	1.8
29	12	243	31	19	---	53	55	16	7.7	3.7	3.3	1.8
30	11	192	28	20	---	49	48	13	7.8	3.2	4.8	4.5
31	10	---	28	22	---	46	---	15	---	2.8	4.2	---
TOTAL	536.5	8282	2008	701	2720	4272	2322	796	256.6	188.7	155.6	104.7
MEAN	17.3	276	64.8	22.6	97.1	138	77.4	25.7	8.55	6.09	5.02	3.49
MAX	95	3130	190	31	294	984	258	54	21	14	23	10
MIN	2.6	32	22	14	22	46	36	13	3.6	2.8	2.3	1.8
CFSM	.20	3.14	.74	.26	1.11	1.57	.88	.29	.10	.07	.06	.04
IN.	.23	3.51	.85	.30	1.15	1.81	.98	.34	.11	.08	.07	.04
CAL YR 1985	TOTAL	22164.0	MEAN	60.7	MAX	3130	MIN	1.7	CFSM	.69	IN.	9.39
WTR YR 1986	TOTAL	22343.1	MEAN	61.2	MAX	3130	MIN	1.8	CFSM	.70	IN.	9.47

POTOMAC RIVER BASIN

01636500 SHENANDOAH RIVER AT MILLVILLE, WV
(National stream-quality accounting network station)

LOCATION.--Lat 39°16'55", long 77°47'22", Jefferson County, Hydrologic Unit 02070007, on left bank 0.4 mi downstream from Cattail Run, 1.0 mi upstream from Millville, 5.0 mi upstream from Harpers Ferry, and at mile 5.0.

DRAINAGE AREA.--3,040 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1895 to March 1909, August 1928 to current year.

REVISED RECORDS.--WSP 951: 1936(M). WSP 1432: Drainage area at former site, 1895-99, 1901-2, 1905, 1907-8, 1932(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 293.00 ft above National Geodetic Vertical Datum of 1929. Apr. 15, 1895, to Mar. 31, 1909, nonrecording gage at site 0.8 mi downstream at datum 0.32 ft higher.

REMARKS.--No estimated daily discharges. Records good. Regulation by hydroelectric plants, particularly that of Potomac Light and Power Company, 0.5 mi upstream from station. U.S. Army Corps of Engineers satellite telemeter and National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--71 years (water years 1896-1908, 1929-86), 2,699 ft³/s, 12.06 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s, Oct. 16, 1942, gage height, 32.4 ft, from floodmarks; minimum, about 59 ft³/s, Oct. 4, 1930, gage height, 0.39 ft; minimum daily, 194 ft³/s, July 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1870 reached practically same stage as flood of Mar. 18, 1936, 26.36 ft, discharge, 151,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	1900	*142,000	*25.60	Mar. 16	1630	18,000	9.23

Minimum discharge, 285 ft³/s, June 23, gage height, 1.03 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	445	920	7250	1910	1380	3400	2200	1860	1290	607	503	476
2	450	1150	9690	1890	1370	3220	2080	1770	1190	637	461	512
3	477	3730	7890	1830	1370	3010	2020	1670	1160	824	493	566
4	569	15300	6560	1780	1470	2880	1890	1620	995	810	498	592
5	596	54100	5540	1720	1840	2820	1890	1550	1010	833	451	567
6	577	125000	4960	1680	2220	2800	1920	1410	1010	796	434	674
7	625	66300	4600	1650	2470	2730	2120	1450	885	709	728	720
8	614	23900	4310	1610	2450	2640	2240	1380	876	676	738	654
9	518	13200	3950	1410	2430	2470	2400	1380	925	624	688	601
10	485	10300	3680	1400	2540	2380	2340	1320	1200	625	606	580
11	493	8190	3460	1420	2820	2360	2350	1270	1340	636	475	567
12	489	6810	3260	1390	3030	2350	2260	1240	1180	661	439	519
13	460	5730	3220	1410	2980	2350	2210	1190	1080	637	424	477
14	450	4760	3350	1330	2760	2560	2100	1190	1060	609	418	468
15	538	4060	3420	1310	2530	6390	2040	1270	929	544	426	468
16	466	3580	3380	1360	2400	16300	2400	1240	860	510	429	450
17	434	3240	3170	1300	2350	13700	2640	1250	835	558	436	419
18	487	2970	3030	1270	2460	9270	3900	1280	737	529	460	413
19	462	2800	2890	1300	4020	7090	4270	1270	648	517	503	430
20	491	2620	2710	1440	6210	5970	3890	1260	676	533	503	434
21	545	2440	2590	1530	6310	5120	3490	1360	732	555	711	427
22	1310	2450	2460	1490	5450	4420	3190	1550	695	536	736	402
23	2380	3440	2420	1480	4780	3840	3060	1850	556	564	651	416
24	3180	5240	2390	1320	4400	3440	2810	2560	636	499	598	432
25	2960	5380	2380	1350	4260	3180	2620	2300	631	655	644	426
26	2190	4610	2340	1360	3980	2920	2320	1970	622	568	641	435
27	1730	4060	2310	1380	3790	2710	2250	1770	644	533	561	443
28	1380	3870	2250	1380	3640	2560	2180	1610	574	525	546	417
29	1150	4900	2030	1550	---	2440	2060	1360	627	543	537	444
30	1100	5530	2000	1480	---	2350	1960	1360	619	545	491	440
31	935	---	1940	1470	---	2280	---	1220	---	523	468	---
TOTAL	28986	400580	115430	46200	87710	131950	75100	46780	26222	18921	16697	14869
MEAN	935	13350	3724	1490	3133	4256	2503	1509	874	610	539	496
MAX	3180	125000	9690	1910	6310	16300	4270	2560	1340	833	738	720
MIN	434	920	1940	1270	1370	2280	1890	1190	556	499	418	402
CFSM	.31	4.39	1.23	.49	1.03	1.40	.82	.50	.29	.20	.18	.16
IN.	.35	4.90	1.41	.57	1.07	1.61	.92	.57	.32	.23	.20	.18
CAL YR 1985	TOTAL	1056715	MEAN 2895	MAX 125000	MIN 434	CFSM .95	IN. 12.93					
WTR YR 1986	TOTAL	1009445	MEAN 2766	MAX 125000	MIN 402	CFSM .91	IN. 12.35					

01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-63, 1965, 1969-71, 1979 to current year.

INSTRUMENTATION.--Water-quality monitor October 1980 to September 1983.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1983 (discontinued).

WATER TEMPERATURES: October 1980 to September 1983 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (water years 1981-82): Maximum, 778 microsiemens, Dec. 29, 1980; minimum, 212 microsiemens, Jan. 17, 1982.

WATER TEMPERATURE: Maximum, 30.0°C, July 20, 21, 1981; minimum, 0.0°C on many days during winter periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV											
04...	1030	14700	210	7.80	14.0	13.0	752	100	9.3	89	>2000
06...	1610	140000	144	7.30	14.0	12.0	752	1600	--	--	>3000
JAN											
06...	1015	1710	390	8.70	5.0	3.0	756	1.1	13.3	100	K2
MAR											
04...	1115	2900	290	9.11	8.0	5.0	756	1.6	14.1	--	0
MAY											
05...	0900	1590	317	8.64	20.0	17.0	758	--	9.0	94	31
JUL											
01...	1000	618	490	8.70	21.0	25.0	759	1.0	5.6	68	67
SEP											
02...	0920	515	510	8.58	19.0	21.0	763	5.9	9.5	107	K560

DATE	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE IT-FLD (MG/L AS HCO3)
NOV										
04...	2000	86	22	24	6.3	9.6	19	0.5	2.7	78
06...	>20000	53	16	17	2.6	2.3	8	0.1	3.3	45
JAN										
06...	1000	170	41	45	13	16	17	0.6	2.4	141
MAR										
04...	K11	130	36	36	9.0	11	16	0.4	1.7	96
MAY										
05...	22	--	--	--	--	--	--	--	--	96
JUL										
01...	E730	140	36	33	13	45	41	2	2.9	112
SEP										
02...	K450	170	35	43	16	56	41	2	3.0	159

DATE	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CACO3	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)
NOV										
04...	62	2.0	25	8.2	<0.1	8.6	125	120	0.17	4960
06...	36	3.6	20	3.5	0.1	5.0	83	80	0.11	31400
JAN										
06...	125	0.4	44	12	0.1	1.0	221	220	0.3	1020
MAR										
04...	92	0.1	26	9.3	0.2	1.2	161	160	0.22	1260
MAY										
05...	87	0.3	--	--	--	--	--	--	--	--
JUL										
01...	100	0.4	97	21	0.1	1.4	277	280	0.38	463
SEP										
02...	139	0.7	120	28	0.2	3.2	328	360	0.45	456

POTOMAC RIVER BASIN

01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)
NOV 04...	--	--	<0.01	--	0.90	0.07	0.05	0.06	1.6	--
06...	0.77	3.4	0.01	0.03	0.78	0.45	0.21	0.27	3.2	0.49
JAN 06...	1.59	7.1	0.01	0.03	1.60	0.03	0.02	0.03	0.37	--
MAR 04...	0.95	--	0.01	0.03	0.96	0.02	0.02	0.03	0.28	--
MAY 05...	0.43	--	0.01	0.03	0.44	0.04	0.04	0.05	0.56	--
JUL 01...	--	--	<0.01	--	<0.10	0.04	0.02	0.03	1.6	--
SEP 02...	0.33	--	0.01	0.03	0.34	0.05	0.02	0.03	0.35	--

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO- GEN DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS TOTAL (MG/L AS PO4)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)
NOV 04...	1.7	--	--	--	0.41	1.3	0.08	0.07	0.21	20
06...	3.6	0.7	2.9	1.5	1.80	5.5	0.09	0.04	0.12	110
JAN 06...	0.4	--	--	--	0.02	0.06	0.02	0.03	0.09	--
MAR 04...	0.3	--	--	--	0.02	--	0.03	<0.01	--	10
MAY 05...	0.6	--	--	--	0.05	--	0.02	<0.01	--	--
JUL 01...	1.6	--	--	--	0.23	--	0.02	0.02	0.06	--
SEP 02...	0.4	--	--	--	0.13	--	0.07	0.07	0.21	<10

DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 04...	<1	28	<0.5	1	<1	<3	<1	68	1	4
06...	1	23	<0.5	<1	<1	<3	5	120	2	<4
MAR 04...	<1	35	<0.5	<1	<1	<3	3	23	1	5
SEP 02...	2	36	<0.5	<1	<1	<3	2	4	<5	13

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 04...	9	<0.1	<10	<1	<1	<1	78	<6	8
06...	3	0.1	<10	<1	<1	1	41	<6	11
MAR 04...	8	<0.1	<10	<1	<1	<1	130	<6	16
SEP 02...	2	--	<10	1	<1	<1	170	<6	10

POTOMAC RIVER BASIN

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01636500 SHENANDOAH RIVER AT MILLVILLE, WV--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV					
04...	1030	14700	312	12400	73
06...	1610	140000	1850	701000	95
JAN					
06...	1015	1710	1	4.6	55
MAR					
04...	1115	2900	3	24	49
MAY					
05...	0900	1590	6	26	89
JUL					
01...	1000	618	29	48	84
SEP					
02...	0920	515	14	19	90

POTOMAC RIVER BASIN

01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA

LOCATION.--Lat 39°15'18", long 77°34'36", Loudoun County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on State Highway 663 at Taylorstown and 3.2 mi downstream from Milltown Creek.

DRAINAGE AREA.--89.6 mi².

PERIOD OF RECORD.--August 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 247.37 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 3, 1983, at site 60 ft upstream at datum 1.78 ft higher.

REMARKS.--Estimated daily discharges: Dec. 20, 22, 26, and Jan. 8, 9, 14-16, 28, 29. Records good except those for periods with ice effect, Dec. 20, 22, 26, and Jan. 8, 9, 14-16, 28, 29, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--15 years, 104 ft³/s, 15.76 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s, June 22, 1972, gage height, 23.83 ft, from flood-marks, site and datum then in use, from rating curve extended above 7,400 ft³/s on basis of contracted-opening measurement of peak flow; minimum daily, 0.20 ft³/s, Sept. 23, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 15	0430	*1,640	*7.00	No other peak equal to or greater than base discharge.			

Minimum daily discharge, 0.20 ft³/s, Sept. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	19	244	40	31	127	64	50	18	2.2	1.2	1.6
2	2.9	42	231	38	35	118	59	49	16	2.6	1.2	1.6
3	5.9	40	146	38	54	121	56	46	14	3.6	1.6	2.2
4	16	321	123	38	137	123	53	44	12	3.6	2.6	3.0
5	19	377	106	37	218	132	53	44	12	2.6	2.4	2.8
6	11	233	106	34	148	127	68	42	12	2.1	3.2	2.6
7	8.3	121	110	32	121	112	72	41	12	1.8	3.8	2.4
8	4.8	84	89	32	98	79	62	38	12	1.6	5.3	1.8
9	3.6	66	89	30	89	91	53	36	12	1.4	3.4	1.6
10	2.6	57	74	27	89	89	50	35	8.7	1.4	2.2	1.4
11	2.3	49	72	28	100	98	49	34	7.8	1.7	2.1	1.2
12	2.3	46	68	28	86	86	49	33	8.7	1.8	1.7	1.1
13	1.6	45	112	32	74	98	47	31	10	1.8	1.6	.92
14	2.3	41	141	24	77	246	46	35	9.2	2.0	1.6	.84
15	3.9	38	86	23	74	911	56	36	7.1	1.5	1.5	.76
16	4.8	35	77	23	68	346	416	36	6.4	1.2	3.9	.68
17	4.8	53	72	24	66	253	220	34	5.3	1.0	3.2	.52
18	6.5	47	68	24	230	207	192	47	4.6	.92	7.8	.44
19	7.7	38	49	31	448	184	136	36	4.0	.92	7.4	.44
20	8.3	36	53	59	435	160	114	40	3.8	4.0	5.6	.44
21	29	34	53	56	310	134	104	82	4.0	19	8.9	.28
22	112	126	52	41	250	123	102	52	4.0	6.7	13	.28
23	72	187	53	36	226	114	98	36	3.6	4.2	7.8	.20
24	50	94	50	32	218	106	80	32	3.4	3.2	4.2	.28
25	41	72	54	31	197	94	74	29	3.2	2.6	2.8	.28
26	31	65	46	38	170	89	70	26	2.8	2.2	2.1	.28
27	24	65	49	48	170	86	65	25	2.4	2.2	1.6	.28
28	20	148	46	38	148	77	59	25	2.2	2.1	1.5	.36
29	17	326	46	35	---	76	57	24	2.4	1.8	2.0	.44
30	14	194	38	33	---	71	53	21	2.4	1.6	2.6	.44
31	12	---	42	31	---	68	---	20	---	1.5	1.8	---
TOTAL	544.2	3099	2645	1061	4367	4746	2677	1159	226.0	86.84	111.6	31.46
MEAN	17.6	103	85.3	34.2	156	153	89.2	37.4	7.53	2.80	3.60	1.05
MAX	112	377	244	59	448	911	416	82	18	19	13	3.0
MIN	1.6	19	38	23	31	68	46	20	2.2	.92	1.2	.20
CFSM	.20	1.15	.95	.38	1.74	1.71	1.00	.42	.08	.03	.04	.01
IN.	.23	1.29	1.10	.44	1.81	1.97	1.11	.48	.09	.04	.05	.01
CAL YR 1985	TOTAL	20761.5	MEAN	56.9	MAX	3160	MIN	1.3	CFSM	.64	IN.	8.62
WTR YR 1986	TOTAL	20754.10	MEAN	56.9	MAX	911	MIN	.20	CFSM	.64	IN.	8.62

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD

LOCATION.--Lat 39°16'25", long 77°32'35", Frederick County, Hydrologic Unit 02070008, on left bank at downstream side of bridge on U.S. Highway 15 at Point of Rocks, 0.3 mi downstream from Catoctin Creek (Virginia), 6 mi upstream from Monocacy River, and at mile 159.5.

DRAINAGE AREA.--9,651 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1895 to current year.

REVISED RECORDS.--WSP 192: 1895-1905. WSP 1432: 1899, 1901-2, 1904-5, 1912, 1914(M), 1915, 1917(M), 1918, 1919(M), 1920, 1921-23(M), 1924, 1925-28(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 200.63 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 28, 1929, nonrecording gage at same site. Prior to Sept. 2, 1902, at datum about 0.45 ft higher.

REMARKS.--Estimated daily discharges: Dec. 25, 26, Jan. 11-18, 29-31. Records good except those for estimated daily discharges (ice effect), which are fair. Low flow affected slightly from 1913 to July 1981 by Stony River Reservoir, since December 1950 by Savage River Reservoir, and since July 1981, by Jennings Randolph Lake. Low flow affected extensively at times by run-of-the-river hydroelectric plants. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--91 years, 9,410 ft³/s, 13.24 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480,000 ft³/s, Mar. 19, 1936, gage height, 41.03 ft, from rating curve extended above 300,000 ft³/s on the basis of adjustment of figure of peak flow at station near Washington for inflow and storage, and slope-area measurement of peak flow; minimum discharge, 530 ft³/s, Sept. 11, 12, 1966, gage height, 0.27 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, reached a stage of 40.2 ft, from floodmarks, discharge, about 460,000 ft³/s from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 35,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	0330	*309,000	*36.28	Feb. 21	0500	65,000	12.94
Nov. 30	0230	45,200	10.03	Mar. 16	1400	116,000	19.35

Minimum discharge, 1,130 ft³/s, Sept. 20, gage height, 0.65 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1530	3490	39600	6040	4950	16000	7940	6860	4860	2070	1540	1600
2	1570	3340	36000	5950	5390	14400	7530	6840	4470	2140	1590	1690
3	2120	5490	32500	5810	5780	13000	7210	6720	4130	2380	1610	2150
4	1990	15800	27300	5630	6410	12300	6820	6340	3790	2710	1590	2270
5	1970	83100	23600	5580	10100	11900	6620	5980	3580	3730	1610	1940
6	1880	230000	20500	5350	20300	11700	6560	5590	3450	4150	1620	1800
7	1780	253000	18200	4950	23800	11300	6780	5410	3650	3540	1990	1870
8	1670	76100	16800	4530	20400	10900	7140	5300	3780	3250	2080	1760
9	1560	45300	15200	4320	17500	9980	7660	5000	3660	3030	1920	1810
10	1530	34300	13900	3990	15800	9530	7850	4790	4800	2830	1850	1660
11	1540	27100	13000	3900	15400	9800	7580	4610	5010	2610	1830	1530
12	1490	23300	12200	3800	14800	11500	7600	4390	4390	2890	1620	1540
13	1430	20000	11800	3700	13200	15800	7590	4240	3880	2410	1520	1460
14	1490	16900	13200	3600	11300	18400	7260	4120	3630	2240	1450	1390
15	1490	13700	18400	3500	10100	46600	7070	4190	3420	2300	1480	1370
16	1550	12300	18800	3400	9800	110000	8920	4250	3170	2180	1570	1330
17	1480	14100	16400	3300	9570	78400	10200	4290	2970	2090	1440	1210
18	1470	25100	14700	3200	10800	46000	15500	4460	2400	2000	1490	1290
19	1450	18300	13100	3820	22300	32800	20600	4270	2500	1840	1990	1270
20	1460	14100	11400	4500	49500	26000	18900	4350	2550	2080	1790	1170
21	1570	12000	10300	5740	61700	22000	16100	6270	2570	2150	1930	1260
22	2540	11100	9410	6970	49700	18300	14600	12200	2380	2080	2150	1240
23	4740	16500	8970	7780	39800	15300	13000	15400	2160	2080	2230	1330
24	11400	28900	9400	7240	31300	13600	11600	12700	2190	2120	1960	1440
25	12000	25300	8600	6850	26000	12400	10500	10300	2230	2070	1970	1510
26	9340	20100	8000	6960	22200	11600	9400	8510	2160	2050	1970	1490
27	7370	17800	7450	6920	19500	10700	8730	7380	2140	1900	1830	1510
28	5710	23300	7290	6850	17600	9850	8220	6570	2070	1880	1810	1500
29	4830	35600	6970	4900	---	9270	7780	5930	2040	1880	1800	1530
30	4190	44600	6610	4800	---	8800	7290	5470	2090	1840	1660	1540
31	3760	---	6300	4700	---	8360	---	5170	---	1690	1600	---
TOTAL	99900	1170020	475900	158580	565000	656490	290550	197900	96120	74210	54490	46460
MEAN	3223	39000	15350	5115	20180	21180	9685	6384	3204	2394	1758	1549
MAX	12000	253000	39600	7780	61700	110000	20600	15400	5010	4150	2230	2270
MIN	1430	3340	6300	3200	4950	8360	6560	4120	2040	1690	1440	1170
CFSM	.33	4.04	1.59	.53	2.09	2.20	1.00	.66	.33	.25	.18	.16
IN.	.39	4.51	1.83	.61	2.18	2.53	1.12	.76	.37	.29	.21	.18

CAL YR 1985	TOTAL	3787920	MEAN	10380	MAX	253000	MIN	1350	CFSM	1.08	IN.	14.60
WTR YR 1986	TOTAL	3885620	MEAN	10650	MAX	253000	MIN	1170	CFSM	1.10	IN.	14.98

POTOMAC RIVER BASIN

01638500 POTOMAC RIVER AT POINT OF ROCKS, MD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1960 to current year.

REMARKS.--Water temperatures are measured daily in field by local observer at time of sampling.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum daily, 33.5°C, Aug. 24, 1964, July 19, 1977; minimum daily, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATION: Maximum daily mean, 2,690 mg/L, Nov. 7, 1985; minimum daily mean, 1 mg/L on many days most years.

SEDIMENT LOAD: Maximum daily, 1,930,000 tons, Nov. 7, 1985; minimum daily, 2.0 tons on many days during 1964, 1966-69.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum daily, 31.0°C, July 29; minimum daily, 0.0°C, Jan. 2, 14, 15.

SEDIMENT CONCENTRATION: Maximum daily mean, 2,690 mg/L, Nov. 7; minimum daily mean, 1 mg/L, Oct. 2, Sept. 16.

SEDIMENT LOAD: Maximum daily, 1,930,000 tons, Nov. 7; minimum daily, 3.6 tons, Sept. 16.

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM
NOV 06...	1730	256000	2630	1820000	40	55	76
FEB 21...	1205	61400	437	72400	--	28	41

DATE	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM	SED. SUSP. SIEVE DIAM. % FINER THAN 1.00 MM
NOV 06...	89	94	98	99	100	100	100
FEB 21...	55	77	77	83	91	99	100

POTOMAC RIVER BASIN

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01638500 POTOMAC RIVER AT POINT OF ROCKS, MD--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	12.0	9.0	1.0	---	4.0	16.0	18.0	25.0	23.0	29.0	22.0
2	18.0	12.0	---	.0	3.0	4.0	16.0	17.0	24.0	24.0	27.0	20.0
3	18.0	12.0	---	2.0	3.0	4.0	14.0	14.0	20.0	24.0	28.0	20.0
4	17.0	12.0	---	3.0	2.0	5.0	14.0	17.0	21.0	26.0	27.0	22.0
5	17.0	12.0	---	2.0	3.0	6.0	15.0	19.0	22.0	26.0	28.0	23.0
6	17.0	12.0	---	2.0	2.0	4.0	13.0	17.0	25.0	27.0	27.0	24.0
7	17.0	12.0	---	1.0	2.0	---	14.0	19.0	25.0	29.0	27.0	23.0
8	17.0	12.0	---	1.0	3.0	---	14.0	19.0	26.0	29.0	27.0	21.0
9	19.0	12.0	6.0	2.0	3.0	6.0	14.0	18.0	25.0	27.0	28.0	20.0
10	20.0	11.0	6.0	2.0	2.0	6.0	---	17.0	23.0	28.0	29.0	22.0
11	20.0	13.0	6.0	2.0	2.0	7.0	10.0	20.0	25.0	27.0	27.0	21.0
12	16.0	13.0	7.0	2.0	2.0	10.0	13.0	18.0	28.0	28.0	27.0	23.0
13	17.0	12.0	6.0	1.0	2.0	9.0	13.0	18.0	26.0	---	26.0	22.0
14	17.0	13.0	5.0	.0	1.0	10.0	12.0	17.0	24.0	---	26.0	23.0
15	20.0	12.0	5.0	.0	1.0	8.0	12.0	17.0	---	---	25.0	24.0
16	20.0	11.0	5.0	1.0	2.0	8.0	10.0	20.0	---	28.0	25.0	22.0
17	17.0	12.0	4.0	1.0	2.0	8.0	10.0	20.0	17.0	26.0	26.0	---
18	17.0	10.0	4.0	2.0	2.0	7.0	10.0	24.0	18.0	30.0	25.0	20.0
19	19.0	11.0	4.0	---	2.0	10.0	11.0	22.0	23.0	28.0	26.0	20.0
20	18.0	11.0	3.0	---	3.0	8.0	12.0	21.0	25.0	29.0	24.0	21.0
21	15.0	11.0	3.0	---	5.0	7.0	13.0	20.0	24.0	29.0	23.0	23.0
22	14.0	10.0	2.0	---	4.0	7.0	13.0	20.0	27.0	28.0	25.0	21.0
23	15.0	10.0	2.0	---	5.0	9.0	11.0	19.0	25.0	29.0	26.0	21.0
24	15.0	10.0	2.0	---	4.0	9.0	13.0	19.0	25.0	28.0	25.0	23.0
25	15.0	9.0	7.0	---	4.0	10.0	12.0	20.0	23.0	29.0	25.0	23.0
26	15.0	8.0	6.0	---	3.0	11.0	---	19.0	25.0	27.0	26.0	23.0
27	15.0	8.0	5.0	---	4.0	10.0	15.0	19.0	26.0	30.0	25.0	24.0
28	14.0	8.0	2.0	---	3.0	12.0	16.0	19.0	25.0	30.0	21.0	21.0
29	13.0	8.0	2.0	---	---	10.0	17.0	20.0	28.0	31.0	22.0	24.0
30	12.0	8.0	1.0	---	---	15.0	16.0	23.0	27.0	27.0	22.0	23.0
31	12.0	---	1.0	---	---	15.0	---	22.0	---	28.0	24.0	---

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)		MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)		MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)		MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)	
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH					
1	2	8.3	5	47	130	13900	5	82	5	67	13	562				
2	1	4.2	5	45	120	11700	5	80	7	102	10	389				
3	3	17	25	371	100	8770	6	94	6	94	10	351				
4	4	21	80	3410	85	6270	7	106	5	87	10	332				
5	2	11	374	96000	75	4780	5	75	9	245	10	321				
6	2	10	1990	1290000	60	3320	4	58	45	2470	10	316				
7	14	67	2690	1930000	45	2210	4	53	63	4050	12	40300				
8	15	68	774	184000	30	1360	4	49	45	2480	15	441				
9	12	51	250	30600	15	616	4	47	32	1510	12	323				
10	9	37	215	19900	23	863	4	43	24	1020	11	283				
11	6	25	160	11700	15	526	5	53	15	624	12	318				
12	3	12	128	8050	11	362	6	62	13	519	14	435				
13	4	15	84	4540	20	637	5	50	11	392	22	939				
14	5	20	68	3100	95	3390	5	49	10	305	32	1590				
15	5	20	54	2000	45	2240	5	47	11	300	238	29900				
16	5	21	44	1460	35	1780	5	46	12	318	960	285000				
17	6	24	37	1410	30	1330	5	45	15	388	990	220000				
18	7	28	140	9490	23	913	5	43	11	321	260	32300				
19	6	23	95	4690	16	566	7	72	30	1810	155	13700				
20	5	20	43	1640	12	369	9	109	380	50800	80	5620				
21	5	21	30	972	40	1110	10	155	680	113000	60	3560				
22	5	34	20	599	15	381	12	226	175	23500	25	1240				
23	15	192	30	1340	10	242	14	294	95	10200	20	826				
24	55	1690	95	7410	10	254	12	235	42	3550	16	588				
25	78	2530	86	5870	11	255	10	185	35	2460	16	536				
26	77	1940	55	2980	11	238	10	188	25	1500	16	501				
27	67	1330	40	1920	12	241	10	187	12	632	14	404				
28	56	863	110	6920	15	295	10	185	15	713	11	293				
29	38	496	140	13500	15	282	7	93	---	---	10	250				
30	21	238	177	21300	11	196	5	65	---	---	9	214				
31	13	132	---	---	6	102	5	63	---	---	10	226				
TOTAL	---	9968.5	---	3665264	---	69498	---	3139	---	223457	---	642058				
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER					
1	10	214	11	204	16	210	15	84	8	33	4	17				
2	8	163	11	203	14	169	22	127	9	39	8	37				
3	7	136	12	218	13	145	23	148	12	52	13	75				
4	8	147	12	205	14	143	21	154	15	64	14	86				
5	9	161	12	194	14	135	25	252	18	78	12	63				
6	11	195	11	166	12	112	33	370	19	83	7	34				
7	13	238	9	131	11	108	31	296	20	107	9	45				
8	15	289	8	114	15	153	24	211	22	124	9	43				
9	16	331	6	81	20	198	14	115	24	124	8	39				
10	21	445	6	78	25	324	17	130	25	125	12	54				
11	25	512	7	87	26	352	17	120	24	119	9	37				
12	23	472	9	107	26	308	17	133	11	48	8	33				
13	20	410	11	126	23	241	19	124	12	49	5	20				
14	14	274	9	100	20	196	21	127	12	47	10	38				
15	13	248	7	79	20	185	22	137	14	56	4	15				
16	16	385	8	92	18	154	23	135	15	64	1	3.6				
17	22	606	9	104	20	160	21	119	16	62	6	20				
18	42	1760	9	108	25	162	19	103	23	93	9	31				
19	90	5010	9	104	22	148	17	84	41	220	12	41				
20	68	3470	10	117	20	138	16	90	40	193	18	57				
21	21	913	12	203	18	125	23	134	39	203	14	48				
22	13	512	62	2040	18	116	28	157	28	163	12	40				
23	9	316	72	2990	17	99	22	124	24	145	16	57				
24	9	282	42	1440	17	101	17	97	16	85	18	70				
25	10	283	30	834	18	108	20	112	20	106	18	73				
26	11	279	18	414	20	117	24	133	23	122	22	89				
27	11	259	14	279	19	110	20	103	13	64	23	94				
28	9	200	11	195	18	101	16	81	12	59	18	73				
29	9	189	11	176	15	83	17	86	10	49	13	54				
30	10	197	12	177	12	68	18	89	6	27	19	79				
31	---	---	15	209	---	---	14	64	4	17	---	---				
TOTAL	---	18896	---	11575	---	4769	---	4239	---	2820	---	1465.6				
TOTAL LOAD FOR YEAR: 4657149.1 TONS.																

POTOMAC RIVER BASIN

75

01643700 GOOSE CREEK NEAR MIDDLEBURG, VA

LOCATION.--Lat 38°59'11", long 77°47'49", Loudoun County, Hydrologic Unit 02070008, on right bank 250 ft upstream from bridge on State Highway 611, 2.0 mi downstream from Panther Skin Creek, and 3.4 mi northwest of Middleburg.

DRAINAGE AREA.--123 mi².

PERIOD OF RECORD.--October 1965 to September 1967, July 1969 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 329.80 ft above National Geodetic Vertical Datum of 1929. October 1965 to September 1967, at site 300 ft downstream at datum 0.73 ft lower.

REMARKS.--Estimated daily discharges: Dec. 20, 21, 26, 27, Jan. 6-9, 15, 28, 29, Aug. 13-15, Aug. 24 to Sept. 4, and Sept. 7-18, 21-30. Records good except those for periods with ice effect, Dec. 20, 21, 26, 27, and Jan. 6-9, 15, 28, 29, and periods of backwater from beaver dams, Aug. 13-15, Aug. 24 to Sept. 4, and Sept. 7-18, 21-30, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--19 years, 135 ft³/s, 14.90 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s, June 22, 1972, gage height, 27.46 ft, from flood-marks, from rating curve extended above 2,900 ft³/s on basis of slope-area measurements at gage heights 14.44 ft and 27.46 ft; no flow Sept. 21-26, 1985, Sept. 29, 30, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,350 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1030	1,440	6.79	Mar. 15	0230	*1,630	*7.27

No flow Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	23	353	52	61	172	88	84	32	5.5	1.5	.56
2	.05	75	324	49	63	161	85	78	29	8.2	1.0	.82
3	.10	136	231	50	72	164	78	71	26	12	.93	1.2
4	.09	1090	196	49	222	175	76	67	24	9.6	4.3	2.4
5	.05	935	175	48	242	189	75	65	24	7.1	3.1	1.7
6	.04	579	178	40	205	182	128	61	23	6.4	2.4	1.2
7	.03	361	162	34	201	165	147	64	22	5.5	2.1	.71
8	.02	253	134	32	166	126	100	58	24	5.9	1.8	.44
9	.02	182	118	39	158	136	87	53	26	7.4	1.2	.20
10	.02	144	105	42	162	141	83	53	19	11	1.2	.18
11	.02	120	100	43	173	152	82	50	17	14	1.5	.14
12	.01	103	97	41	140	135	78	46	22	11	1.1	.08
13	.01	94	146	42	123	151	71	45	28	11	.62	.08
14	.04	84	141	32	130	308	69	54	20	6.5	.60	.06
15	.08	73	101	32	117	1060	103	53	15	4.4	.56	.06
16	.05	65	99	33	106	621	625	52	13	3.2	.90	.04
17	.04	82	97	37	101	459	479	47	11	3.4	1.1	.04
18	.03	67	89	41	259	373	433	43	10	2.8	1.0	.06
19	.03	60	81	71	412	328	343	45	8.2	8.4	1.4	.10
20	.10	57	80	164	481	270	285	77	7.4	5.0	.96	.09
21	22	52	74	100	443	221	252	133	8.5	6.0	1.4	.08
22	200	237	68	80	370	197	241	127	8.0	8.7	7.3	.06
23	303	249	73	72	344	180	192	74	5.9	4.0	1.7	.04
24	209	165	72	63	318	159	158	61	5.4	2.6	.71	.16
25	94	134	83	63	281	140	140	53	5.8	2.1	.56	.12
26	55	116	70	80	238	131	130	48	5.0	2.8	.52	.04
27	40	107	68	102	235	124	115	45	3.7	3.9	.48	.02
28	31	123	64	74	197	113	105	47	3.5	4.0	.60	.01
29	25	299	58	74	---	107	99	41	4.6	3.5	1.2	.00
30	21	307	53	71	---	101	88	36	6.0	2.9	.60	.00
31	20	---	52	64	---	94	---	37	---	2.2	.52	---
TOTAL	1020.84	6372	3742	1814	6020	7035	5035	1868	457.0	191.0	44.86	10.69
MEAN	32.9	212	121	58.5	215	227	168	60.3	15.2	6.16	1.45	.36
MAX	303	1090	353	164	481	1060	625	133	32	14	7.3	2.4
MIN	.01	23	52	32	61	94	69	36	3.5	2.1	.48	.00
CFSM	.27	1.72	.98	.48	1.75	1.85	1.37	.49	.12	.05	.01	.00
IN.	.31	1.93	1.13	.55	1.82	2.13	1.52	.56	.14	.06	.01	.00
CAL YR 1985	TOTAL	25588.67	MEAN	70.1	MAX	2950	MIN	.00	CFSM	.57	IN.	7.74
WTR YR 1986	TOTAL	33610.39	MEAN	92.1	MAX	1090	MIN	.00	CFSM	.75	IN.	10.17

POTOMAC RIVER BASIN

01644000 GOOSE CREEK NEAR LEESBURG, VA

LOCATION.--Lat 39°01'10", long 77°34'40", Loudoun County, Hydrologic Unit 02070008, on left bank 400 ft upstream from bridge on State Highway 621 at Evergreen Mills, 1.4 mi downstream from Little River, 6.7 mi south of Leesburg, and 10.9 mi upstream from mouth.

DRAINAGE AREA.--332 mi².

PERIOD OF RECORD.--July 1909 to April 1911, September 1911 to December 1912, January 1930 to current year.

REVISED RECORDS.--WSP 851: 1935-37. WSP 951: 1933(M), 1937. WSP 1302: 1934-35(M). WSP 2103: Drainage area. WDR VA-72-1: 1937(M), 1943(M), 1951(M), 1956(M). WDR VA-79-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 248.93 ft above National Geodetic Vertical Datum of 1929. July 12, 1909, to Dec. 31, 1912, nonrecording gage at site 1,000 ft downstream at different datum. Jan. 21, 1930, to Nov. 28, 1938, nonrecording gage at site 400 ft downstream at datum 4.20 ft lower than present datum.

REMARKS.--Estimated daily discharges: Oct. 1-20, Dec. 20, 21, Jan. 8, 9, 15, 28, 30, June 17 to Aug. 16, and Sept. 6-30. Records good except those for periods with backwater from debris, Oct. 1-20, June 17 to Aug. 16, and Sept. 6-30, and periods with ice effect, Dec. 20, 21, and Jan. 8, 9, 15, 28, 30, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--58 years (water years 1910, 1912, 1931-86), 316 ft³/s, 12.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,100 ft³/s, June 22, 1972, gage height, 30.59 ft, from high-water mark in gage house, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 0.40 ft³/s, Sept. 27-30, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May or June 1889 reached a stage of about 29 ft, discharge, about 45,000 ft³/s, site and datum in use 1930-38, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 15	0800	*3,870	*6.44			No peak equal to or greater than base discharge.	

Minimum daily discharge, 0.80 ft³/s, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	52	1340	177	197	468	231	221	78	22	5.6	5.1
2	1.3	105	1120	148	215	441	221	208	67	29	5.2	7.6
3	1.6	196	738	168	263	447	206	185	61	32	5.0	11
4	1.5	1980	603	166	680	466	195	175	56	31	14	11
5	1.3	2340	541	160	1010	538	197	171	55	30	12	9.9
6	1.2	1480	537	147	739	510	361	162	54	22	8.0	8.0
7	1.1	818	519	127	675	470	447	162	50	19	6.7	6.0
8	1.1	574	444	70	586	336	326	154	51	17	5.8	5.0
9	1.1	430	393	110	557	380	258	138	54	19	5.4	4.0
10	1.0	348	350	118	570	383	231	138	50	22	5.4	3.5
11	1.0	294	328	126	616	395	224	133	39	25	6.0	3.0
12	.90	251	316	121	543	358	217	126	50	29	3.5	2.5
13	.90	227	395	133	442	354	197	119	70	30	3.4	2.0
14	1.2	209	558	98	387	652	185	131	54	25	3.3	1.5
15	1.4	186	374	95	467	2790	213	142	38	20	3.2	1.1
16	1.3	163	338	98	408	1490	1980	139	30	15	6.0	.90
17	1.2	204	329	105	391	1040	1260	133	27	12	48	.80
18	1.1	194	312	117	874	805	1130	123	26	12	31	.85
19	1.1	159	220	152	1800	705	784	123	24	15	15	2.5
20	9.0	148	210	437	1860	609	651	124	22	20	9.2	2.2
21	61	141	200	368	1490	509	585	250	23	25	35	1.8
22	292	498	185	269	1160	463	560	255	24	24	29	1.4
23	465	957	239	231	977	434	506	179	24	23	11	1.3
24	376	514	233	201	899	401	417	139	22	15	9.7	1.2
25	198	411	257	192	757	358	372	123	20	8.0	6.7	2.5
26	116	349	154	281	632	339	349	111	19	8.4	3.8	2.0
27	80	322	209	406	621	323	313	105	18	11	3.0	1.8
28	61	386	203	250	542	298	283	109	19	12	6.0	1.7
29	50	1100	186	207	---	277	263	103	19	8.0	7.2	1.6
30	43	1030	162	210	---	263	237	88	18	6.7	8.9	1.4
31	37	---	158	211	---	248	---	79	---	6.0	6.4	---
TOTAL	1810.40	16066	12151	5699	20358	17550	13399	4548	1162	593.1	328.4	105.15
MEAN	58.4	536	392	184	727	566	447	147	38.7	19.1	10.6	3.50
MAX	465	2340	1340	437	1860	2790	1980	255	78	32	48	11
MIN	.90	52	154	70	197	248	185	79	18	6.0	3.0	.80
CFSM	.18	1.61	1.18	.55	2.19	1.70	1.35	.44	.12	.06	.03	.01
IN.	.20	1.80	1.36	.64	2.28	1.97	1.50	.51	.13	.07	.04	.01
CAL YR 1985	TOTAL	76350.39	MEAN	209	MAX	7290	MIN	.42	CFSM	.63	IN.	8.55
WTR YR 1986	TOTAL	93770.05	MEAN	257	MAX	2790	MIN	.80	CFSM	.77	IN.	10.51

01646000 DIFFICULT RUN NEAR GREAT FALLS, VA

LOCATION.--Lat 38°58'33", long 77°14'46", Fairfax County, Hydrologic Unit 02070008, on right bank 250 ft downstream from bridge on State Highway 193, 300 ft downstream from Rocky Run, 0.7 mi upstream from mouth, and 1.5 mi southeast of Great Falls.

DRAINAGE AREA.--57.9 mi².

PERIOD OF RECORD.--October 1934 to current year. Monthly discharge only October to December 1934, published in WSP 1302.

REVISED RECORDS.--WSP 951: 1936(M), 1937-38, 1939-40(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 151.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 30 to Nov. 19, Dec. 15, Jan. 15, 29, and Feb. 14. Records good except those for period of no gage-height record, Oct. 30 to Nov. 19, and periods with ice effect, Dec. 15, Jan. 15, 29, and Feb. 14, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--52 years, 59.6 ft³/s, 13.98 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,200 ft³/s, June 22, 1972, gage height, 21.40 ft, from flood-marks, from rating curve extended above 1,600 ft³/s on basis of contracted-opening measurement at gage height 13.18 ft and slope-area measurement at gage height 21.40 ft; minimum, 0.05 ft³/s, Sept. 9, 10, 1966, gage height, 1.65 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 16	0330	*689	*6.42	No peak equal to or greater than base discharge.			

Minimum discharge, 1.4 ft³/s, July 19, 20, gage height, 2.23 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	13	145	25	32	44	32	31	16	4.0	2.6	5.4
2	9.4	14	88	24	36	46	32	31	15	29	4.7	25
3	62	40	48	26	40	45	31	30	13	39	30	14
4	19	250	38	25	189	50	31	30	13	8.2	7.3	14
5	13	200	36	25	112	56	32	30	13	5.9	4.3	9.0
6	9.9	110	36	24	61	50	77	28	13	4.9	43	8.1
7	8.4	70	33	23	58	45	92	26	12	4.0	116	7.0
8	7.4	40	32	25	47	37	45	26	17	4.2	50	7.7
9	7.6	33	31	23	53	38	37	24	18	3.9	32	8.4
10	7.4	30	31	23	52	40	35	24	10	7.0	9.0	5.6
11	7.6	28	30	24	62	39	37	23	10	4.2	7.7	5.3
12	7.2	26	30	23	49	34	35	23	10	3.4	6.1	5.3
13	7.2	25	63	24	43	38	33	24	16	2.9	5.2	4.6
14	7.4	24	49	23	40	70	32	35	9.6	2.3	4.7	3.8
15	21	23	32	23	38	181	45	28	8.1	2.1	4.4	3.2
16	20	27	30	22	37	88	319	27	8.0	1.9	4.1	2.9
17	9.0	35	30	22	39	56	116	26	8.8	6.6	73	2.5
18	7.4	28	29	24	227	47	90	31	7.1	4.7	31	2.2
19	8.0	24	26	34	156	46	57	25	6.0	2.1	21	2.5
20	8.8	24	26	66	114	58	49	52	8.0	41	51	3.3
21	188	23	26	33	76	49	49	60	14	90	59	3.1
22	207	260	27	28	62	47	57	41	7.1	10	23	2.9
23	110	107	27	26	85	41	53	27	5.9	11	11	2.9
24	33	44	27	24	83	40	42	24	7.4	9.0	8.6	2.6
25	22	34	36	44	78	36	39	22	7.3	6.3	6.4	2.6
26	17	31	28	295	62	36	39	21	4.8	5.2	5.5	2.6
27	15	30	25	130	62	36	37	21	4.3	4.6	5.4	2.6
28	13	39	26	60	51	35	35	23	6.5	3.9	27	2.1
29	12	177	26	50	---	34	34	21	7.0	5.7	12	2.9
30	12	259	25	37	---	34	32	19	5.0	11	6.3	3.1
31	11	---	25	33	---	33	---	18	---	4.3	5.5	---
TOTAL	896.9	2068	1161	1288	2044	1529	1674	871	300.9	342.3	676.8	167.2
MEAN	28.9	68.9	37.5	41.5	73.0	49.3	55.8	28.1	10.0	11.0	21.8	5.57
MAX	207	260	145	295	227	181	319	60	18	90	116	25
MIN	7.2	13	25	22	32	33	31	18	4.3	1.9	2.6	2.1
CFSM	.50	1.19	.65	.72	1.26	.85	.96	.49	.17	.19	.38	.10
IN.	.58	1.33	.75	.83	1.31	.98	1.08	.56	.19	.22	.43	.11
CAL YR 1985	TOTAL	15293.5	MEAN	41.9	MAX	1150	MIN	3.7	CFSM	.72	IN.	9.83
WTR YR 1986	TOTAL	13019.1	MEAN	35.7	MAX	319	MIN	1.9	CFSM	.62	IN.	8.36

01646500 POTOMAC RIVER NEAR WASHINGTON, DC

LOCATION.--Lat 38°56'58", long 77°07'40", Montgomery County, Md., Hydrologic Unit 02070008, on left bank just upstream from Little Falls Dam, 1 mi upstream from District of Columbia boundary line, 1.2 mi upstream from Chain Bridge, 1.8 mi east of Langley, Fairfax County, Va., and at mile 117.4.

DRAINAGE AREA.--11,560 mi².

PERIOD OF RECORD.--March 1930 to current year.

REVISED RECORDS.--WSP 726: Drainage area. WDR MD-DE-75-1: 1973-74(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 37.95 ft above National Geodetic Vertical Datum of 1929. Prior to June 7, 1930, nonrecording gage, and June 7, 1930, to Jan. 22, 1965, water-stage recorder at site 1 mi upstream on right bank at same datum.

REMARKS.--Estimated daily discharges: Nov. 30 to Jan. 30, Feb. 1-5, 14-18, and Mar. 3-13. Records good except for estimated daily discharges (construction on control), which are fair. Diversions at Great Falls through aqueducts, and since June 1959, from gage pool at Little Falls Dam, for municipal supply of Washington, D.C.; since October 1958, at Rockville Filtration Plant, for municipal supply of city of Rockville; since April 1961, at Potomac Filtration Plant for water supply of Washington Suburban Sanitary District; since October 1961, at Fairfax Water Treatment Plant for water supply of city of Fairfax (from Goose Creek); since April 1964, at Violets Lock to Chesapeake and Ohio Canal; and since October 1985, at Fairfax County Water Authority Treatment Plant for water supply of the county. Low flow affected slightly prior to July 1981 by Stony River Reservoir, since December 1950, by Savage River Reservoir, and since July 1981, by Jennings Randolph Lake. Gage-height telemeter at station.

AVERAGE DISCHARGE.--56 years, 11,520 ft³/s, 13.54 in/yr, adjusted for diversions.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 484,000 ft³/s, Mar. 19, 1936, gage height, 28.1 ft, site then in use; minimum daily discharge observed at gaging station, 121 ft³/s, Sept. 9, 1966, does not include diversion of 489 ft³/s for municipal use; minimum daily discharge (adjusted), 601 ft³/s, Sept. 10, 1966, include diversion of 449 ft³/s for municipal use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, was of approximately the same magnitude as that of March 19, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 45,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1200	*317,000	*17.99	Feb. 21	1415	77,100	7.96
Nov. 30	1345	55,400	6.97	Mar. 16	1945	136,000	10.09

Minimum daily discharge, 577 ft³/s, Sept. 22, does not include diversion for municipal use; minimum daily (adjusted) discharge, 1,270 ft³/s, Sept. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1760	3730	49700	6300	5300	22800	9060	7890	4730	1450	1100	1010		
2	1560	3500	40000	6300	6000	19300	8640	7310	4490	1840	910	1050		
3	1790	3380	35000	6200	6500	15700	8180	7300	4280	1770	1150	1170		
4	2150	8160	30000	6000	8300	14600	7830	7110	3930	1810	1130	1440		
5	2150	58800	26500	5800	11900	13900	7420	6760	3530	2090	1010	1590		
6	2060	190000	23000	5700	21600	13600	8110	6510	3220	2860	1030	1380		
7	1940	293000	20500	5400	29500	13300	8390	6220	3140	3300	1570	1220		
8	1820	136000	18000	5000	27000	12600	8280	6060	3400	2670	1700	1280		
9	1710	54400	16000	4700	24300	11600	8320	5890	3780	2440	1730	1240		
10	1490	40100	15000	4300	21800	10900	8650	5540	3340	2840	1520	1140		
11	1480	31400	13500	4100	20600	10600	8680	5150	4140	2320	1370	1150		
12	1470	26300	12500	4100	20100	11400	8420	4960	4330	1940	1430	916		
13	1340	22900	12000	3900	18100	14500	8340	4570	3930	1760	1150	932		
14	1350	19900	14000	3800	15700	19800	8250	4350	3290	1760	1030	880		
15	1450	16400	16000	3700	13900	42800	8010	4300	3140	1530	916	811		
16	1510	14100	19000	3600	12500	122000	14600	4340	3020	1510	866	712		
17	1490	13400	20000	3500	12200	110000	16500	4470	2750	1490	1130	725		
18	1390	23900	16000	3400	14400	61200	18900	4830	2450	1470	1560	704		
19	1340	24300	14500	3880	24200	41400	24300	4610	2110	1210	1700	657		
20	1340	17600	13000	4520	50900	31900	24200	4570	1930	1280	2040	741		
21	1910	14600	11000	5500	74600	26500	20700	5210	2060	3050	2290	597		
22	2950	14200	10000	6800	64300	22600	18500	9220	2060	2290	2190	577		
23	3940	17200	9500	7800	52000	18800	16300	16000	1820	2090	2000	677		
24	7040	29200	9000	8000	40300	16500	14600	15000	1640	1740	1900	668		
25	13000	31100	9500	7500	32800	14800	13000	12200	1600	1600	1850	848		
26	11900	24700	8500	8900	30000	13700	11800	10000	1610	1650	1800	942		
27	9310	20500	8000	9000	29200	12800	10700	8150	1510	1470	1750	988		
28	7210	23200	7500	7700	25900	11700	9930	7140	1520	1340	1740	922		
29	5580	38900	7000	5300	---	10900	9240	6090	1520	1340	1280	965		
30	4770	46000	6800	4900	---	10300	8580	5360	1400	1280	1160	944		
31	4130	---	6600	4900	---	9830	---	4950	---	1240	1020	---		
TOTAL	104330	1260870	517600	170500	713900	782330	356430	212060	85670	58430	45022	28876		
MEAN	3365	42030	16700	5500	25500	25240	11880	6841	2856	1885	1452	963		
MAX	13000	293000	49700	9000	74600	122000	24300	16000	4730	3300	2290	1590		
MIN	1340	3380	6600	3400	5300	9830	7420	4300	1400	1210	866	577		
(*)	607	543	551	545	530	539	563	630	725	704	655	632		
MEAN†	3971	42620	17250	6045	26020	25800	12450	7474	3581	2590	2109	1595		
CFSM†	.34	3.69	1.49	.52	2.25	2.23	1.08	.65	.31	.22	.18	.14		
IN.†	.40	4.11	1.72	.60	2.34	2.57	1.20	.75	.35	.26	.21	.15		
CAL YR 1985	TOTAL	4222123	MEAN	11570	MAX	293000	MIN	993	MEAN†	12160	CFSM†	1.05	IN.†	14.28
WTR YR 1986	TOTAL	4336018	MEAN	11880	MAX	293000	MIN	577	MEAN†	12490	CFSM†	1.08	IN.†	14.67

* Diversions, in cubic feet per second, for municipal supply of Washington, D.C., Washington Suburban Sanitary District, city of Rockville, city of Fairfax (from Goose Creek), Fairfax County, and the Chesapeake and Ohio Canal (insignificant diversion to canal during current water year). Records provided by U.S. Army Corps of Engineers, Washington Suburban Sanitary Commission, city of Rockville, city of Fairfax, and Fairfax County Water Authority.

† Adjusted for diversion.

POTOMAC RIVER BASIN

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01646580 POTOMAC RIVER AT CHAIN BRIDGE AT WASHINGTON, DC
(National stream-quality accounting network station)

LOCATION.--Lat 38°55'46", long 77°07'02", Arlington County, Va., Hydrologic Unit 02070010, under right downstream side of bridge on Virginia State Highway 123, and at river mile 115.9.

DRAINAGE AREA.--11,570 mi².

PERIOD OF RECORD.--Water years 1973 to current year. Prior to October 1977, published as "at Great Falls."

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1978 to September 1981 (discontinued).

pH: June 1978 to September 1981 (discontinued).

WATER TEMPERATURE: June 1978 to September 1981 (discontinued).

DISSOLVED OXYGEN: June 1978 to September 1981 (discontinued).

SUSPENDED-SEDIMENT DISCHARGE: October 1978 to September 1981 (discontinued).

INSTRUMENTATION.--Water-quality monitor June 1978 to September 1981.

REMARKS.--High flows are sampled from the George Mason Memorial Bridge (14th Street) located 6 mi downstream from Chain Bridge.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (water years 1979, 1981): Maximum, 598 microsiemens, Sept. 12, 1981; minimum, 116 microsiemens, Jan. 25, 1979.

pH (water years 1979, 1981): Maximum, 9.3 units, Mar. 29, 1981; minimum, 6.7 units, June 2, 1981.

WATER TEMPERATURE (water years 1979, 1981): Maximum, 31.0°C, July 23, 24, 1978; minimum, 0.0°C on many days during winter periods.

DISSOLVED OXYGEN (water years 1979, 1981): Maximum, 16.4 mg/L, on many days in 1979; minimum, 5.6 mg/L, June 2, 1981.

SEDIMENT CONCENTRATION: Maximum daily mean, 812 mg/L, Sept. 6, 1979; minimum daily mean, 1 mg/L on many days during winter periods.

SEDIMENT LOAD: Maximum daily, 281,000 tons, Feb. 27, 1979; minimum daily, 3.2 tons, Jan. 5, 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE, AIR (DEG C)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV											
05...	1045	50200	283	7.80	14.0	14.0	751	190	10.6	104	>2000
05...	1100	50200	283	7.80	14.0	14.0	751	--	10.6	104	--
07...	1430	318000	162	7.40	20.0	13.0	759	2700	--	--	>30000
JAN											
09...	1030	5090	370	9.07	-1.0	1.0	778	3.4	14.9	103	K3
09...	1115	5090	350	8.30	1.0	2.0	777	--	14.9	106	--
MAR											
05...	1120	14900	278	7.96	7.0	5.0	765	4.0	13.5	105	--
05...	1121	14900	268	8.00	7.0	5.0	765	--	13.5	105	K4
05...	1125	14900	278	7.96	7.0	5.0	765	--	13.5	105	--
MAY											
06...	1130	7310	280	8.50	26.0	21.0	763	--	8.5	95	--
06...	1135	7310	285	8.50	26.0	21.0	763	--	8.3	93	K25
JUL											
02...	1100	1740	355	7.96	24.0	26.0	756	1.0	6.6	82	50
02...	1110	1740	328	7.85	24.0	26.0	756	--	6.6	82	--
SEP											
03...	1100	936	435	8.11	21.0	23.0	770	2.6	10.1	117	90
03...	1105	936	435	8.16	21.0	23.0	770	--	10.1	117	--

POTOMAC RIVER BASIN

01646580 POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CACO3
NOV											
05...	>10000	110	42	33	7.8	13	19	0.5	3.7	89	73
05...	--	--	--	--	--	--	--	--	--	102	84
07...	67000	68	14	23	2.6	2.4	7	0.1	3.0	66	52
JAN											
09...	2600	160	55	47	9.9	11	13	0.4	1.9	108	105
09...	--	--	--	--	--	--	--	--	--	113	93
MAR											
05...	--	110	52	33	7.3	8.6	14	0.4	1.8	74	61
05...	78	--	--	--	--	--	--	--	--	76	62
05...	--	--	--	--	--	--	--	--	--	76	62
MAY											
06...	--	--	--	--	--	--	--	--	--	80	66
06...	K29	--	--	--	--	--	--	--	--	78	67
JUL											
02...	98	120	46	31	10	18	24	0.7	3.0	89	73
02...	--	--	--	--	--	--	--	--	--	92	76
SEP											
03...	K310	150	58	41	12	26	27	1	3.3	115	94
03...	--	--	--	--	--	--	--	--	--	115	94

DATE	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS NO3)
NOV											
05...	2.2	37	13	<0.1	7.7	177	160	0.24	24000	1.19	--
05...	2.6	--	--	--	6.8	--	--	--	--	1.19	--
07...	4.2	20	3.3	0.2	4.6	98	92	0.13	84100	0.86	--
JAN											
09...	0.1	44	11	0.1	5.5	200	210	0.27	2750	1.98	8.9
09...	0.9	--	--	--	4.4	--	--	--	--	1.89	--
MAR											
05...	1.3	27	14	0.2	5.6	145	130	0.2	5830	1.89	--
05...	1.2	--	--	--	5.8	--	--	--	--	1.79	--
05...	1.3	--	--	--	5.8	--	--	--	--	1.79	--
MAY											
06...	0.4	--	--	--	0.1	--	--	--	--	0.598	--
06...	0.4	--	--	--	--	--	--	--	--	0.61	--
JUL											
02...	1.6	53	19	0.1	3.2	190	180	0.26	894	0.19	--
02...	2.1	--	--	--	3.2	--	--	--	--	0.187	--
SEP											
03...	1.4	78	29	0.2	4.4	250	250	0.34	632	0.38	--
03...	1.3	--	--	--	4.1	--	--	--	--	0.401	--

POTOMAC RIVER BASIN

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01646580 POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS NO2)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)
NOV											
05...	0.01	0.03	--	1.20	0.11	0.09	0.12	3.1	--	3.2	--
05...	0.01	0.03	--	1.20	--	0.10	0.13	--	0.5	2.7	0.6
07...	0.01	0.03	--	0.87	1.00	0.23	0.3	7.9	0.37	8.9	0.6
JAN											
09...	0.02	0.07	--	2.00	0.07	0.07	0.09	0.23	--	0.3	--
09...	0.01	0.03	--	1.90	--	0.08	0.1	--	0.32	0.4	0.4
MAR											
05...	0.01	0.03	--	1.90	0.02	0.03	0.04	0.18	--	0.2	--
05...	0.014	0.05	--	1.80	--	0.03	0.04	--	0.47	0.3	0.5
05...	0.014	0.05	--	1.80	--	0.03	0.04	--	0.37	0.3	0.4
MAY											
06...	0.012	0.04	--	0.61	--	0.03	0.04	--	0.27	0.7	0.3
06...	0.01	0.03	--	0.62	0.05	0.04	0.05	0.65	--	0.7	--
JUL											
02...	0.01	0.03	--	0.20	0.10	0.10	0.13	0.7	--	0.8	--
02...	0.013	0.04	--	0.20	--	0.13	0.17	--	0.37	0.9	0.5
SEP											
03...	0.01	0.03	--	0.39	0.08	0.07	0.09	0.32	--	0.4	--
03...	0.009	0.03	0.40	0.41	--	0.08	0.1	--	0.42	0.3	0.5

DATE	NITRO- GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO- GEN, DIS- SOLVED (MG/L AS N)	NITRO- GEN DIS- SOLVED (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS TOTAL (MG/L AS PO4)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV											
05...	--	--	--	--	0.82	2.5	0.07	0.06	0.18	30	--
05...	2.1	--	--	--	0.83	2.5	0.07	0.05	0.15	20	29
07...	8.3	--	1.5	--	2.20	6.7	0.03	0.02	0.06	100	--
JAN											
09...	--	--	--	--	0.04	0.12	0.03	0.03	0.09	--	--
09...	0.0	--	2.3	--	0.04	0.12	0.03	0.03	0.09	<10	1.8
MAR											
05...	--	--	--	--	0.03	--	0.04	0.01	0.03	20	--
05...	--	--	--	--	0.03	--	0.03	0.01	0.03	40	3.9
05...	--	--	--	--	0.03	--	0.03	0.01	0.03	30	3.6
MAY											
06...	--	--	--	--	0.04	--	<0.01	<0.01	--	20	5.2
06...	--	--	--	--	0.04	--	<0.01	<0.01	--	--	--
JUL											
02...	--	--	--	--	0.06	--	0.02	0.01	0.03	--	--
02...	--	--	--	--	0.06	--	0.02	<0.01	--	20	4.4
SEP											
03...	--	--	--	--	0.04	--	0.01	<0.01	--	<10	--
03...	--	0.7	--	3.1	0.04	--	0.01	0.01	0.03	<10	4.3

DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV										
05...	<1	40	<0.5	<1	<1	<3	<1	34	<1	4
07...	<1	36	<0.5	<1	<1	<3	2	92	1	<4
MAR										
05...	<1	43	<0.5	<1	<1	<3	1	9	<1	5
SEP										
03...	<1	47	1	<1	<1	<3	2	<3	<5	13

POTOMAC RIVER BASIN

01646580 POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 05...	29	<0.1	--	<10	<1	<1	<1	130	<6	20
07...	5	<0.1	--	<10	1	<1	<1	76	<6	10
MAR 05...	20	--	0.2	<10	1	<1	<1	150	<6	27
SEP 03...	6	--	--	<10	1	<1	<1	240	<6	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM
NOV 05...	1045	50200	675	91500	84
05...	1100	50200	117	15900	49
JAN 09...	1030	5090	3	41	82
09...	1115	5090	3	41	--
MAR 05...	1120	14900	5	201	84
05...	1125	14900	6	241	92
MAY 06...	1130	7310	11	217	--
JUL 02...	1110	1740	18	85	--
SEP 03...	1100	1210	17	56	66

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM
NOV 07...	1430	318000	2990	2570000	46	64	79

DATE	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. FALL DIAM. % FINER THAN .062 MM	SED. SUSP. FALL DIAM. % FINER THAN .125 MM	SED. SUSP. FALL DIAM. % FINER THAN .250 MM	SED. SUSP. FALL DIAM. % FINER THAN .500 MM
NOV 07...	90	95	97	99	99	100

01654000 ACCOTINK CREEK NEAR ANNANDALE, VA

LOCATION.--Lat 38°48'46", long 77°13'43", Fairfax County, Hydrologic Unit 02070010, on left bank 800 ft upstream from bridge on State Highway 620, 0.2 mi upstream from Long Branch, and 2.3 mi southwest of Annandale.

DRAINAGE AREA.--23.5 mi².

PERIOD OF RECORD.--March 1947 to current year (fragmentary prior to October 1947).

REVISED RECORDS.--WSP 1502: 1952. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 191.24 ft above National Geodetic Vertical Datum of 1929 (levels by Stone and Webster Engineering Corporation). Prior to May 12, 1949, nonrecording gage at site 800 ft downstream at datum 0.33 ft lower. May 12, 1949, to June 4, 1970, water-stage recorder at site 800 ft downstream at datum 0.33 ft lower.

REMARKS.--Estimated daily discharges: Jan. 14, Feb. 7-10, 15, 16, Apr. 24 to July 30, and Aug. 12 to Sept. 30. Records good except those for periods with ice effect, Jan. 14 and Feb. 7-10, 15, 16, and periods of no gage-height record, Apr. 24 to July 30 and Aug. 12 to Sept. 30, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--39 years, 27.6 ft³/s, 15.95 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s, June 22, 1972, gage height, 15.96 ft, from high-water mark in gage house, from rating curve extended above 6,600 ft³/s on basis of contracted-opening and flow-over-road measurement of peak flow; minimum, 0.10 ft³/s, Sept. 25, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 16	0200	*777	*6.49	No peak equal to or greater than base discharge.			

Minimum daily discharge, 0.37 ft³/s, Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	6.7	53	6.6	11	18	10	8.4	4.2	1.0	1.1	1.6
2	2.7	5.2	30	5.9	13	17	9.8	8.2	3.8	12	66	8.0
3	63	6.7	15	6.7	14	17	9.5	8.0	3.6	15	22	5.0
4	6.6	232	12	6.7	120	20	9.4	8.0	3.5	5.0	2.3	4.5
5	3.5	73	11	6.2	34	21	11	8.2	3.5	2.0	1.3	3.0
6	2.5	38	11	5.9	21	18	44	7.8	3.4	1.5	110	2.4
7	2.1	11	9.3	5.7	19	16	38	7.5	3.1	1.2	63	2.0
8	1.7	7.7	8.9	5.1	17	12	14	7.2	5.0	1.2	79	2.0
9	2.0	6.0	8.8	5.3	18	13	12	7.0	5.4	1.1	9.5	2.4
10	2.0	5.3	8.7	5.8	21	14	11	6.8	3.6	2.1	2.9	1.8
11	2.0	5.3	8.7	5.8	28	13	15	6.3	2.7	1.4	2.1	1.5
12	2.0	5.6	10	5.9	23	12	14	6.2	2.6	1.0	1.6	1.5
13	1.6	5.5	45	5.9	17	16	12	6.6	4.5	.80	1.4	1.3
14	12	5.9	15	4.6	14	60	14	10	3.3	.70	1.3	1.1
15	43	4.9	8.9	5.2	13	67	49	8.4	2.2	.60	1.2	.95
16	9.4	14	8.7	5.3	12	26	170	8.0	1.8	.56	1.1	.78
17	2.6	27	8.5	5.5	23	18	46	7.5	1.9	2.0	30	.65
18	1.7	6.0	7.7	6.2	149	16	27	9.2	1.8	1.5	12	.54
19	1.5	4.9	6.7	37	52	15	14	7.2	1.5	.70	7.0	.69
20	6.0	4.8	7.0	44	31	14	12	20	2.5	25	16	.82
21	179	4.6	7.2	14	24	13	18	24	4.4	40	21	.75
22	139	218	7.0	8.6	21	13	23	14	2.8	3.0	9.0	.68
23	52	30	7.7	7.5	53	12	14	10	1.7	3.3	5.0	.62
24	12	13	7.5	6.8	33	12	11	8.0	2.0	2.6	3.5	.52
25	7.3	9.9	18	47	40	12	10	6.0	2.0	2.1	2.3	.48
26	4.8	8.8	8.1	226	24	12	10	5.8	1.5	2.0	1.8	.45
27	4.1	9.1	6.4	52	33	12	9.8	5.7	1.1	1.5	1.6	.44
28	3.5	41	6.9	20	21	12	9.5	6.3	1.9	1.5	9.0	.37
29	3.6	85	6.9	14	---	11	9.1	5.8	2.1	2.0	4.5	.44
30	3.8	207	6.4	12	---	10	8.8	5.3	1.5	3.5	2.4	.45
31	3.6	---	6.4	12	---	10	---	4.8	---	1.6	1.7	---
TOTAL	583.4	1101.9	382.4	605.2	899	552	664.9	262.2	84.9	139.46	492.6	47.73
MEAN	18.8	36.7	12.3	19.5	32.1	17.8	22.2	8.46	2.83	4.50	15.9	1.59
MAX	179	232	53	226	149	67	170	24	5.4	40	110	8.0
MIN	1.5	4.6	6.4	4.6	11	10	8.8	4.8	1.1	.56	1.1	.37
CFSM	.80	1.56	.52	.83	1.37	.76	.94	.36	.12	.19	.68	.07
IN.	.92	1.74	.61	.96	1.42	.87	1.05	.42	.13	.22	.78	.08
CAL YR 1985	TOTAL	7285.92	MEAN	20.0	MAX	710	MIN	.42	CFSM	.85	IN.	11.53
WTR YR 1986	TOTAL	5815.69	MEAN	15.9	MAX	232	MIN	.37	CFSM	.68	IN.	9.21

POTOMAC RIVER BASIN

01655500 CEDAR RUN NEAR WARRENTON, VA

LOCATION.--Lat 38°44'25", long 77°47'16", Fauquier County, Hydrologic Unit 02070010, on right bank at downstream side of bridge on State Highway 672, 1.9 mi north of Warrenton, and 14.5 mi upstream from Licking Run.

DRAINAGE AREA.--12.3 mi².

PERIOD OF RECORD.--July 1950 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 1382: 1951-53. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 419.40 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Jan. 30 to Feb. 24. Records good except for period of no gage-height record, Jan. 30 to Feb. 24, which is fair. No estimated daily discharges for period October to December 1986. Some regulation by town of Warrenton at municipal water-supply reservoir 400 ft upstream, capacity, 368 acre-ft, from which an average of less than 1.0 ft³/s is diverted for industrial and municipal use. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--36 years, 12.7 ft³/s, 14.02 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,840 ft³/s, June 21, 1972, gage height, 12.87 ft, from rating curve extended above 600 ft³/s on basis of areal study of flood of 1942; no flow part or all of each day Aug. 11-14, 1967, Sept. 2-9, 16-26, 1985, Aug. 13, 1986, probably caused by dam 400 ft upstream from gage.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of about 13 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 14	2400	*144	*4.11	No peak equal to or greater than base discharge.			

October 1985 to September 1986: No flow for part of Aug. 13.

October to December 1986: Maximum discharge during period, 111 ft³/s, Dec. 25, gage height, 3.85 ft; minimum, 0.02 ft³/s, many days in October.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.22	38	2.8	4.6	13	4.6	5.2	.13	.03	.02	.03
2	.02	.39	31	2.7	4.5	12	4.5	4.1	.47	.03	.02	.04
3	.03	1.6	18	3.1	10	12	4.0	3.6	.03	.03	.02	.11
4	.03	9.6	14	2.8	27	13	4.5	2.6	.03	.03	.02	.04
5	.03	54	13	3.1	17	14	5.7	3.0	.03	.03	.02	.03
6	.03	33	12	2.7	14	14	8.5	3.5	.02	.03	.02	.03
7	.03	17	9.2	2.5	15	14	11	3.8	.02	.03	.02	.03
8	.03	10	7.9	1.8	13	9.1	6.9	2.9	.02	.03	.02	.03
9	.03	7.3	6.7	1.7	16	11	5.7	2.6	.02	.03	.02	.03
10	.03	5.8	5.8	2.1	18	11	4.6	2.6	.02	.03	.02	.03
11	.03	4.8	5.6	2.1	20	10	4.7	2.3	.03	.04	.02	.03
12	.03	4.0	6.1	2.2	13	8.4	4.8	1.9	.03	.04	.02	.03
13	.03	3.8	8.5	2.4	10	9.2	4.4	2.1	.03	.04	.02	.03
14	.03	3.1	8.9	1.9	9.5	25	4.2	3.2	.03	.04	.02	.03
15	.03	3.4	5.4	1.8	9.0	89	9.7	3.0	.03	.04	.02	.03
16	.03	2.9	5.1	1.7	8.8	51	50	2.9	.02	.04	.02	.03
17	.03	4.3	5.1	1.9	10	35	37	2.4	.03	.04	.02	.03
18	.03	3.2	5.2	2.2	40	26	32	1.9	.02	.04	.02	.03
19	.03	3.0	3.3	4.9	30	22	24	1.3	.02	.04	.03	.03
20	.05	3.0	3.6	11	25	17	18	1.4	.03	.04	.04	.03
21	.58	2.7	3.6	5.5	20	12	16	2.2	.03	.04	.08	.03
22	1.1	21	3.1	5.4	16	11	18	2.3	.03	.04	.03	.03
23	.93	20	3.5	3.4	20	10	13	1.3	.03	.04	.03	.03
24	.60	12	3.9	3.1	22	8.9	9.8	1.3	.04	.07	.03	.03
25	.34	9.5	6.5	4.3	21	7.5	9.0	.67	.09	.06	.03	.03
26	.24	7.8	3.6	8.9	18	7.2	8.5	.55	.07	.04	.03	.02
27	.17	7.2	3.0	12	18	7.1	7.4	.63	.07	.03	.04	.02
28	.16	9.6	3.1	5.5	15	5.9	6.6	1.1	.04	.03	.10	.02
29	.11	24	3.3	5.2	---	5.6	5.9	.59	.04	.03	.03	.03
30	.11	48	2.9	5.0	---	5.3	4.8	.47	.03	.03	.03	.03
31	.11	---	2.7	4.8	---	5.0	---	.59	---	.03	.03	---
TOTAL	5.05	336.21	251.6	120.5	464.4	501.2	347.8	68.00	1.53	1.14	.89	.97
MEAN	.16	11.2	8.12	3.89	16.6	16.2	11.6	2.19	.05	.04	.03	.03
MAX	1.1	54	38	12	40	89	50	5.2	.47	.07	.10	.11
MIN	.02	.22	2.7	1.7	4.5	5.0	4.0	.47	.02	.03	.02	.02
CFSM	.01	.91	.66	.32	1.35	1.32	.94	.18	.00	.00	.00	.00
IN.	.02	1.02	.76	.36	1.40	1.52	1.05	.21	.00	.00	.00	.00
CAL YR 1985	TOTAL	2096.50	MEAN	5.74	MAX	343	MIN	.00	CFSM	.47	IN.	6.34
WTR YR 1986	TOTAL	2099.29	MEAN	5.75	MAX	89	MIN	.02	CFSM	.47	IN.	6.35

POTOMAC RIVER BASIN

85

01655500 CEDAR RUN NEAR WARRENTON, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.03	.04									
2	.02	.03	2.9									
3	.02	.03	5.0									
4	.03	.03	.67									
5	.02	.03	.33									
6	.02	.04	.22									
7	.02	.03	.15									
8	.02	.04	.14									
9	.02	.03	.20									
10	.09	.03	.27									
11	.02	.12	.52									
12	.02	.07	.90									
13	.02	.04	.50									
14	.03	.03	.35									
15	.02	.03	.31									
16	.02	.03	.27									
17	.02	.03	.25									
18	.02	.03	.53									
19	.02	.03	.59									
20	.02	.11	.44									
21	.03	.17	.39									
22	.03	.11	.37									
23	.02	.04	.36									
24	.02	.04	20									
25	.02	.04	66									
26	.02	.30	28									
27	.02	.40	19									
28	.02	.15	12									
29	.03	.07	8.8									
30	.03	.04	6.9									
31	.03	---	5.8									
TOTAL	.77	2.20	182.20									
MEAN	.02	.07	5.88									
MAX	.09	.40	66									
MIN	.02	.03	.04									
CFSM	.00	.01	.48									
IN.	.00	.01	.55									
CAL YR 1986	TOTAL	1691.60	MEAN	4.63	MAX	89	MIN	.02	CFSM	.38	IN.	5.12

POTOMAC RIVER BASIN

01656000 CEDAR RUN NEAR CATLETT, VA

LOCATION.--Lat 38°38'12", long 77°37'31", Fauquier County, Hydrologic Unit 02070010, on right bank 100 ft downstream from bridge on State Highway 806, 0.9 mi downstream from Licking Run, and 1.4 mi southeast of Catlett.

DRAINAGE AREA.--93.4 mi².

PERIOD OF RECORD.--July 1950 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-79-1: 1973-77(P).

GAGE.--Water-stage recorder. Datum of gage is 199.15 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Dec. 20-22, 26, 27, Jan. 7-9, 13-16, 29, 30, and Feb. 14. Records good except those for periods with ice effect, Dec. 20-22, 26, 27, Jan. 7-9, 13-16, 29, 30, and Feb. 14, which are fair. No estimated daily discharges for period October to December 1986. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--36 years, 87.8 ft³/s, 12.77 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,600 ft³/s, June 22, 1972, gage height, 27.66 ft, from flood-marks, from rating curve extended above 5,000 ft³/s on basis of contracted-opening measurement of peak flow; no flow many days in 1954, 1957, 1959, 1963-64, 1966, and 1983.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of about 22 ft, discharge not determined, from information by local residents.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 15	0330	*1,420	*7.64			No peak equal to or greater than base discharge.	

October 1985 to September 1986: Minimum discharge, 0.02 ft³/s, Sept. 30.

October to December 1986: Maximum discharge during period, 2,910 ft³/s, Dec. 24, gage height, 10.27 ft; minimum daily, 0.01 ft³/s, Oct. 7-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.75	6.2	338	22	43	88	30	29	7.9	2.3	.57	.93
2	.54	11	237	23	40	78	29	25	7.8	2.7	.55	1.1
3	2.2	111	130	22	47	82	28	22	6.6	2.3	.51	6.3
4	1.5	833	97	23	276	92	28	21	6.4	2.0	.29	18
5	.60	527	82	21	179	96	31	20	6.6	1.9	.20	5.1
6	.42	252	74	21	114	88	45	25	4.4	1.6	.18	2.9
7	.63	113	64	20	126	77	93	49	4.1	1.4	8.9	2.1
8	.40	70	59	20	99	55	53	47	3.3	1.4	3.7	1.6
9	.39	50	53	19	124	52	40	43	2.8	1.9	1.4	1.1
10	.58	41	48	19	140	56	36	41	2.9	2.3	.88	2.4
11	.54	36	47	19	152	52	33	40	3.0	2.0	.48	1.0
12	.47	33	52	20	111	45	31	38	3.0	3.2	.29	.52
13	.41	31	91	18	80	45	29	36	2.9	2.7	.30	.28
14	.48	30	86	17	68	112	28	34	2.8	2.3	.34	.20
15	.60	27	52	16	65	749	32	18	2.6	1.4	.24	.16
16	.46	25	47	17	62	284	323	17	2.2	1.0	.20	.23
17	.42	39	45	17	102	170	153	16	2.1	.80	21	.25
18	.45	34	42	18	377	126	133	14	1.9	.62	16	.20
19	1.5	28	40	22	285	104	92	12	1.9	.50	6.1	.16
20	3.3	26	37	72	195	89	70	13	1.9	.52	4.3	.13
21	79	27	35	43	155	69	62	18	1.7	.52	90	.11
22	225	398	33	32	124	57	65	16	1.9	2.6	24	.08
23	157	210	32	28	160	52	61	14	1.9	1.9	6.3	.07
24	95	95	33	24	163	48	45	12	2.1	39	2.7	.06
25	40	66	39	25	155	43	39	11	1.8	34	1.4	.05
26	17	55	35	213	120	41	38	10	1.9	5.6	.91	.04
27	11	53	30	194	134	41	35	9.9	2.1	2.8	.51	.03
28	7.1	119	26	79	105	38	32	9.6	2.1	1.3	4.1	.03
29	5.3	410	26	62	---	35	32	9.9	2.4	1.5	15	.03
30	6.8	714	26	52	---	33	28	9.5	1.9	1.1	3.2	.03
31	7.0	---	25	48	---	31	---	8.2	---	.91	1.5	---
TOTAL	666.84	4470.2	2061	1246	3801	3028	1774	688.1	96.9	126.07	216.05	45.19
MEAN	21.5	149	66.5	40.2	136	97.7	59.1	22.2	3.23	4.07	6.97	1.51
MAX	225	833	338	213	377	749	323	49	7.9	39	90	18
MIN	.39	6.2	25	16	40	31	28	8.2	1.7	.50	.18	.03
CFSM	.23	1.60	.71	.43	1.46	1.05	.63	.24	.03	.04	.07	.02
IN.	.27	1.78	.82	.50	1.51	1.21	.71	.27	.04	.05	.09	.02
CAL YR 1985	TOTAL	19340.49	MEAN	53.0	MAX	1930	MIN	.02	CFSM	.57	IN.	7.70
WTR YR 1986	TOTAL	18219.35	MEAN	49.9	MAX	833	MIN	.03	CFSM	.53	IN.	7.26

POTOMAC RIVER BASIN

87

01656000 CEDAR RUN NEAR CATLETT, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	1.6	6.4									
2	.03	2.1	197									
3	.03	2.4	489									
4	.03	4.6	96									
5	.03	4.1	44									
6	.02	22	30									
7	.01	7.9	23									
8	.01	3.8	20									
9	.01	7.8	22									
10	.01	3.5	43									
11	.01	3.6	86									
12	.01	22	128									
13	.03	10	51									
14	.04	3.8	29									
15	.07	3.0	24									
16	.06	2.6	21									
17	.05	2.4	20									
18	.70	4.0	55									
19	.57	3.1	55									
20	.30	4.4	29									
21	.08	57	22									
22	.04	17	19									
23	.06	8.4	17									
24	.07	5.8	694									
25	.17	7.8	920									
26	.53	19	186									
27	.70	65	119									
28	2.3	20	92									
29	2.6	13	70									
30	2.0	8.4	61									
31	1.8	---	54									
TOTAL	12.39	340.1	3722.4									
MEAN	.40	11.3	120									
MAX	2.6	65	920									
MIN	.01	1.6	6.4									
CFSM	.00	.12	1.28									
IN.	.00	.14	1.48									
CAL YR 1986	TOTAL	15096.20	MEAN	41.4	MAX	920	MIN	.01	CFSM	.44	IN.	6.01

POTOMAC RIVER BASIN

01656100 CEDAR RUN NEAR ADEN, VA

LOCATION.--Lat 38°36'58", long 77°33'16", Prince William County, Hydrologic Unit 02070010, on left bank at upstream side of bridge on State Highway 611, 0.5 mi downstream from Darrels Run, 0.8 mi downstream from Town Run, and 3.0 mi southwest of Aden.

DRAINAGE AREA.--155 mi².

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 166.27 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 22, 26, Jan. 7-10, 13-16, 28-31, and Feb. 12-15. Records good except those for periods with ice effect, Dec. 22, 26, Jan. 7-10, 13-16, 28-31, and Feb. 12-15, which are fair. Occasional diurnal fluctuation during low flow caused by irrigation dam 4.5 mi upstream from gage. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--14 years, 184 ft³/s, 16.12 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,900 ft³/s, Oct. 1, 1979, gage height, 15.29 ft, from rating curve extended above 6,600 ft³/s; minimum daily, 0.25 ft³/s, Oct. 14, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 21.37 ft, from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1530	*2,600	*10.21	No peak equal to or greater than base discharge.			

Minimum discharge, 0.45 ft³/s, Sept. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	17	956	37	73	165	43	40	11	3.5	3.7	2.5
2	1.1	24	528	34	81	144	42	36	11	4.4	4.3	3.0
3	3.0	114	263	36	101	144	39	31	9.9	4.1	4.8	2.6
4	4.3	1950	184	36	580	160	37	28	9.3	3.3	3.4	13
5	3.8	1180	154	35	418	163	42	27	11	2.9	3.2	12
6	2.8	508	137	32	242	145	56	26	11	2.8	3.3	5.4
7	2.1	219	116	31	256	128	129	52	8.6	2.8	4.8	2.9
8	1.8	141	102	22	194	93	94	55	7.8	2.7	3.1	2.2
9	1.4	95	92	22	245	85	65	50	5.2	4.4	3.1	1.8
10	1.1	75	81	23	276	90	54	47	3.8	5.4	3.1	1.8
11	1.2	65	76	26	327	87	48	47	3.8	5.1	3.1	1.8
12	1.7	57	84	26	200	76	46	45	4.2	8.3	3.1	1.8
13	1.6	53	153	25	128	72	42	43	4.2	7.4	2.9	1.8
14	1.6	50	191	20	112	114	40	43	4.3	7.6	2.9	1.5
15	2.4	43	101	20	104	1230	42	30	4.3	8.0	2.5	1.3
16	2.6	40	83	20	116	447	581	24	3.8	8.4	2.4	1.2
17	2.6	61	77	22	182	250	254	23	2.8	10	2.7	1.1
18	2.8	58	70	25	726	183	218	21	2.3	7.8	3.4	1.1
19	3.1	47	58	32	665	154	146	18	1.9	8.6	4.3	.95
20	5.4	42	50	92	435	133	111	19	2.2	9.5	5.7	.86
21	168	41	49	75	304	103	98	25	1.9	11	81	.76
22	626	835	46	53	231	89	111	26	1.7	6.2	54	.79
23	445	558	47	45	285	80	107	22	1.7	5.3	18	.55
24	282	213	52	37	338	73	77	18	2.1	4.7	7.2	.65
25	152	143	60	36	298	65	64	16	2.0	41	4.2	.84
26	68	112	52	559	235	61	59	15	1.9	16	3.2	.88
27	41	104	43	559	260	60	54	13	2.1	7.1	3.2	1.1
28	29	169	40	165	208	56	49	14	3.6	4.1	3.9	1.4
29	21	1180	40	97	---	51	47	13	5.5	3.0	3.1	1.3
30	18	1780	36	85	---	49	41	13	4.3	3.7	8.6	1.2
31	18	---	35	77	---	46	---	12	---	3.8	3.9	---
TOTAL	1915.5	9974	4056	2404	7620	4796	2836	892	149.2	222.9	260.1	70.08
MEAN	61.8	332	131	77.5	272	155	94.5	28.8	4.97	7.19	8.39	2.34
MAX	626	1950	956	559	726	1230	581	55	11	41	81	13
MIN	1.1	17	35	20	73	46	37	12	1.7	2.7	2.4	.55
CFSM	.40	2.14	.85	.50	1.75	1.00	.61	.19	.03	.05	.05	.02
IN.	.46	2.39	.97	.58	1.83	1.15	.68	.21	.04	.05	.06	.02
CAL YR 1985	TOTAL	39812.54	MEAN	109	MAX	3940	MIN	.50	CFSM	.70	IN.	9.56
WTR YR 1986	TOTAL	35195.78	MEAN	96.4	MAX	1950	MIN	.55	CFSM	.62	IN.	8.45

01656500 BROAD RUN AT BUCKLAND, VA

LOCATION.--Lat 38°46'50", long 77°40'22", Prince William County, Hydrologic Unit 02070010, on right bank at downstream side of bridge on U.S. Highway 29 at Buckland and 1.1 mi upstream from South Run.

DRAINAGE AREA.--50.5 mi².

PERIOD OF RECORD.--July 1950 to September 1979, October 1980 to December 1986 (discontinued).

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 284.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Jan. 30 and Sept. 19-29. Records good except those for period with ice effect, Jan. 30, and period of backwater from beaver dam, Sept. 19-29, which are fair. No estimated daily discharges for period October to December 1986. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--35 years, 51.4 ft³/s, 13.82 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft³/s, June 21, 1972, gage height, 13.92 ft, from rating curve extended above 3,200 ft³/s on basis of slope-area measurements at gage heights 13.08 ft and 13.92 ft; minimum, 0.20 ft³/s, Oct. 10, 1954.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1030	*692	*4.45	No peak equal to or greater than base discharge.			

October 1985 to September 1986: Minimum discharge, 0.86 ft³/s, Aug. 5-6, gage height, 1.49 ft.

October to December 1986: Maximum discharge during period, 1,130 ft³/s, Dec. 24, gage height, 5.35 ft; minimum, 0.70 ft³/s, Oct. 10, 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	15	185	21	24	56	28	25	7.4	1.8	1.0	1.7
2	2.0	27	138	19	27	53	27	24	6.4	2.7	.99	4.9
3	4.7	85	85	21	31	55	25	23	6.0	5.4	1.1	10
4	4.5	489	66	22	108	62	25	23	4.8	2.6	.99	9.1
5	3.8	318	58	22	110	68	26	22	4.8	1.8	.88	5.7
6	3.0	163	56	20	76	64	38	22	4.7	1.5	1.4	4.6
7	2.7	85	49	16	71	59	56	22	4.7	1.5	41	3.3
8	2.7	57	44	14	57	44	37	20	5.5	1.3	34	2.9
9	2.6	43	40	13	58	45	30	18	5.9	1.4	5.2	2.9
10	2.7	36	36	15	66	47	28	19	4.5	2.2	2.4	2.3
11	2.7	30	35	16	72	45	26	19	3.9	1.7	1.9	2.2
12	3.0	26	35	16	57	40	25	19	8.5	1.7	1.7	2.4
13	2.3	24	49	16	45	43	24	18	6.4	1.8	1.5	2.6
14	5.1	22	55	14	42	86	24	22	4.3	1.5	1.3	1.9
15	13	20	37	14	41	386	29	23	3.0	1.5	1.3	1.7
16	5.4	18	34	12	38	166	280	23	2.9	1.4	1.5	1.8
17	3.4	25	33	13	39	112	149	21	3.0	3.3	18	1.5
18	2.3	21	31	16	126	90	127	17	2.8	2.2	9.4	1.3
19	2.4	19	24	23	179	79	87	15	2.1	1.6	4.7	1.2
20	2.9	18	24	65	146	68	69	16	1.9	2.1	3.7	1.1
21	29	17	24	36	120	54	61	18	2.2	2.7	39	1.2
22	112	124	21	28	97	48	66	17	1.8	2.0	15	1.1
23	137	125	25	25	96	46	56	16	1.7	1.6	7.0	1.0
24	87	65	26	22	97	42	44	14	2.0	2.0	3.9	.96
25	40	48	33	23	86	38	39	12	2.0	2.5	2.4	.92
26	23	42	22	49	73	36	38	11	1.8	1.7	1.8	.87
27	18	38	23	63	73	36	35	11	1.6	1.5	1.7	.87
28	16	45	23	36	63	33	33	12	2.2	1.4	4.8	.87
29	13	151	22	27	---	31	30	10	2.7	1.4	4.4	1.4
30	12	214	21	26	---	30	27	8.8	2.0	1.4	2.3	1.4
31	11	---	20	25	---	29	---	8.4	---	1.3	1.8	---
TOTAL	571.2	2410	1374	748	2118	2091	1589	549.2	113.5	60.5	218.06	75.69
MEAN	18.4	80.3	44.3	24.1	75.6	67.5	53.0	17.7	3.78	1.95	7.03	2.52
MAX	137	489	185	65	179	386	280	25	8.5	5.4	41	10
MIN	2.0	15	20	12	24	29	24	8.4	1.6	1.3	.88	.87
CFSM	.36	1.59	.88	.48	1.50	1.34	1.05	.35	.07	.04	.14	.05
IN.	.42	1.78	1.01	.55	1.56	1.54	1.17	.40	.08	.04	.16	.06
CAL YR 1985	TOTAL	11471.24	MEAN	31.4	MAX	1200	MIN	.54	CFSM	.62	IN.	8.45
WTR YR 1986	TOTAL	11918.15	MEAN	32.7	MAX	489	MIN	.87	CFSM	.65	IN.	8.78

POTOMAC RIVER BASIN

01656500 BROAD RUN AT BUCKLAND, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	1.9	3.7									
2	1.4	4.4	68									
3	1.5	5.7	182									
4	1.5	3.3	53									
5	1.3	7.9	31									
6	1.2	18	22									
7	1.0	9.4	19									
8	1.2	11	17									
9	.90	8.4	17									
10	.82	6.4	22									
11	.74	8.1	28									
12	.77	15	41									
13	.92	9.3	28									
14	1.5	7.6	20									
15	1.5	6.1	18									
16	1.3	6.1	16									
17	1.2	4.9	15									
18	1.2	4.7	24									
19	1.2	7.3	26									
20	1.2	11	20									
21	1.2	21	17									
22	1.2	10	14									
23	1.1	6.9	12									
24	1.1	5.9	266									
25	1.2	5.0	326									
26	1.8	14	98									
27	2.3	22	62									
28	3.9	9.8	46									
29	2.4	6.3	38									
30	1.8	4.7	35									
31	1.8	---	31									
TOTAL	43.65	262.1	1615.7									
MEAN	1.41	8.74	52.1									
MAX	3.9	22	326									
MIN	.74	1.9	3.7									
CFSM	.03	.17	1.03									
IN.	.03	.19	1.19									
CAL YR 1986	TOTAL	9484.40	MEAN	26.0	MAX	386	MIN	.74	CFSM	.51	IN.	6.99

01656650 BROAD RUN NEAR BRISTOW, VA

LOCATION.--Lat 38°44'56", long 77°33'50", Prince William County, Hydrologic Unit 02070010, on left bank 50 ft downstream from bridge on State Highway 619, 0.2 mi upstream from Dawkins Branch, 1.9 mi downstream from Rocky Branch, and 2.3 mi northwest of Bristow.

DRAINAGE AREA.--89.6 mi².

PERIOD OF RECORD.--October 1974 to December 1986 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 185 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Oct. 8 to Feb. 5, Feb. 18, Mar. 15, May 1-7, 10-20, May 29 to June 24, July 4-30, Aug. 15, 16, and Aug. 30 to Sept. 6. Estimated daily discharge for period October to December 1986: Nov. 21. Records poor. Town of Manassas diverts about 3.0 ft³/s daily from municipal water-supply reservoir 6.0 mi upstream. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--12 years, 99.2 ft³/s, 15.04 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,800 ft³/s, Oct. 9, 1976, gage height, 16.11 ft, from rating curve extended above 4,100 ft³/s; minimum, 0.90 ft³/s, Sept. 30, 1977.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	Unknown	*a750	Unknown	Mar. 15	Unknown	a600	Unknown

a Daily mean discharge; actual peak is known to be greater than the value shown.

October 1985 to September 1986: Minimum daily discharge, 1.3 ft³/s, Sept. 26-28.

October to December 1986: Maximum discharge during period, 2,540 ft³/s, Dec. 24, gage height, 9.90 ft; minimum daily, 1.0 ft³/s, Oct. 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	18	250	22	32	95	41	26	9.0	2.8	1.6	2.3
2	1.5	80	150	20	40	84	41	31	8.0	7.6	1.5	8.0
3	5.4	200	100	25	54	89	38	27	7.4	7.3	1.5	13
4	5.4	750	88	22	200	107	25	26	7.0	4.5	1.6	13
5	4.1	350	75	18	220	132	23	25	6.9	3.0	1.5	9.2
6	3.2	150	70	14	166	127	38	24	6.8	2.6	60	7.0
7	3.2	90	60	13	146	122	100	22	6.7	2.5	41	6.0
8	3.0	62	52	12	105	74	80	24	7.5	2.3	11	5.7
9	2.7	50	45	11	109	63	55	22	8.5	2.8	3.6	5.4
10	3.3	44	40	14	124	64	36	22	7.3	3.6	2.4	3.4
11	3.6	42	38	17	152	74	25	22	6.2	2.8	2.4	4.1
12	4.0	39	40	17	119	55	23	22	10	2.9	2.2	4.8
13	2.8	35	62	16	74	55	22	20	8.4	3.0	1.9	3.6
14	9.0	30	70	14	49	122	22	20	6.5	2.6	1.6	3.2
15	20	27	56	12	52	600	45	20	5.8	2.6	1.5	2.8
16	6.0	23	45	11	44	395	432	23	5.0	2.5	5.1	2.6
17	2.7	35	39	13	52	251	299	24	5.2	5.5	20	2.6
18	1.7	27	33	20	240	196	248	24	5.0	3.3	7.6	2.3
19	2.3	26	25	50	389	163	160	22	4.2	2.6	6.0	2.0
20	5.0	25	24	120	314	157	95	20	3.5	3.6	9.6	1.6
21	45	22	23	54	239	124	93	25	3.8	4.5	62	2.0
22	200	210	18	40	182	93	89	22	3.3	3.4	11	1.8
23	250	250	21	34	180	89	97	16	3.0	2.7	5.1	1.8
24	110	110	29	30	185	78	63	12	3.5	3.5	3.0	1.6
25	54	70	44	34	188	66	50	12	3.6	4.4	2.4	1.5
26	27	56	24	100	119	61	44	12	2.3	3.0	2.3	1.3
27	18	46	25	120	114	66	42	13	2.4	2.5	2.6	1.3
28	14	70	25	60	117	63	35	15	3.9	2.3	4.8	1.3
29	12	250	23	42	---	52	32	13	3.9	2.3	9.9	1.5
30	11	400	21	38	---	50	27	11	3.0	2.2	5.0	1.5
31	10	---	20	35	---	49	---	10	---	2.1	3.0	---
TOTAL	841.3	3587	1635	1048	4005	3816	2420	627	167.6	103.3	294.7	118.2
MEAN	27.1	120	52.7	33.8	143	123	80.7	20.2	5.59	3.33	9.51	3.94
MAX	250	750	250	120	389	600	432	31	10	7.6	62	13
MIN	1.4	18	18	11	32	49	22	10	2.3	2.1	1.5	1.3
CFSM	.30	1.34	.59	.38	1.60	1.37	.90	.23	.06	.04	.11	.04
IN.	.35	1.49	.68	.44	1.66	1.58	1.00	.26	.07	.04	.12	.05
CAL YR 1985	TOTAL	17611.1	MEAN	48.2	MAX	1550	MIN	1.4	CFSM	.54	IN.	7.31
WTR YR 1986	TOTAL	18663.1	MEAN	51.1	MAX	750	MIN	1.3	CFSM	.57	IN.	7.75

POTOMAC RIVER BASIN

01656650 BROAD RUN NEAR BRISTOW, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.7	4.1									
2	1.3	3.6	118									
3	1.4	4.8	204									
4	1.4	4.3	39									
5	1.3	7.6	23									
6	1.2	17	21									
7	1.0	9.2	19									
8	1.0	11	18									
9	1.2	12	21									
10	1.2	7.6	30									
11	1.1	16	62									
12	1.1	19	63									
13	1.3	7.3	31									
14	1.5	3.9	22									
15	1.6	3.4	21									
16	1.6	3.4	20									
17	1.6	3.0	19									
18	1.5	2.8	34									
19	1.3	3.0	45									
20	1.3	5.9	26									
21	1.3	35	23									
22	1.3	8.4	20									
23	1.2	6.4	18									
24	1.4	4.5	617									
25	1.5	3.4	942									
26	1.6	33	296									
27	1.8	35	146									
28	2.0	10	93									
29	2.0	4.8	70									
30	1.9	4.3	61									
31	1.7	---	50									
TOTAL	43.9	291.3	3176.1									
MEAN	1.42	9.71	102									
MAX	2.0	35	942									
MIN	1.0	1.7	4.1									
CFSM	.02	.11	1.14									
IN.	.02	.12	1.32									
CAL YR 1986	TOTAL	16111.1	MEAN	44.1	MAX	942	MIN	1.0	CFSM	.49	IN.	6.69

01656725 BULL RUN NEAR CATHARPIN, VA

LOCATION.--Lat 38°53'21", long 77°34'14", Prince William County, Hydrologic Unit 02070010, on right bank 20 ft downstream from bridge on State Highway 705, 0.7 mi downstream from Chestnut Lick, 2.5 mi north of Catharpin, and 6.7 mi northeast of Gainesville.

DRAINAGE AREA.--25.8 mi².

PERIOD OF RECORD.--May 1969 to December 1986 (discontinued). Prior to October 1970, published as "on State Highway 705."

REVISED RECORDS.--WDR VA-75-1: 1974(P).

GAGE.--Water-stage recorder. Datum of gage is 237.78 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Jan. 28 and Mar. 8. Records good except those for periods with ice effect, Jan. 28 and Mar. 8, which are fair. No estimated daily discharges for period October to December 1986. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--17 years, 33.0 ft³/s, 17.37 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,400 ft³/s, June 22, 1972, gage height, 18.92 ft, from flood-marks, from rating curve extended above 3,000 ft³/s on basis of slope-area measurement of peak flow; no flow many days in 1970, 1977, 1980, 1983, 1985, and July, August, and October 1986.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 820 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1000	953	5.35	Mar. 15	0030	*1,190	*5.81

October 1985 to September 1986: No flow many days in July and August.

October to December 1986: Maximum discharge during period, 2,320 ft³/s, Dec. 24, gage height, 7.32 ft; no flow Oct. 8-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.23	12	98	6.1	10	31	9.8	9.2	1.4	.01	.00	1.3
2	.22	19	71	5.6	13	30	9.4	8.2	1.2	.04	.00	1.9
3	.72	64	36	6.2	14	35	8.6	7.3	1.2	.04	.01	6.3
4	1.1	444	28	6.3	156	48	7.8	6.8	1.2	.02	.01	5.6
5	1.3	159	24	6.0	81	49	7.8	6.6	1.1	.02	.00	3.9
6	1.1	58	24	5.2	48	41	18	6.4	1.2	.02	28	3.2
7	.79	32	20	4.4	42	31	33	7.0	1.1	.01	11	2.8
8	.57	21	17	3.7	32	20	16	5.7	1.0	.01	8.4	2.5
9	.42	16	15	3.5	39	21	12	4.9	1.0	.01	1.7	1.8
10	.31	13	13	4.1	46	22	10	5.0	1.1	.01	.70	1.5
11	.22	11	13	4.5	47	19	10	4.5	.89	.01	.40	1.3
12	.20	9.9	13	4.6	32	16	9.1	3.9	.72	.01	.24	1.1
13	.20	9.8	29	4.6	23	19	8.4	3.5	.74	.00	.17	.81
14	1.1	9.8	25	3.9	19	114	7.9	5.1	.85	.00	.12	.58
15	7.1	8.4	14	3.4	20	304	24	5.7	.96	.00	.10	.33
16	9.5	7.6	13	3.0	18	71	195	5.8	.58	.00	2.7	.28
17	8.6	12	12	3.5	21	47	82	5.1	.29	.00	30	.23
18	6.7	8.6	10	4.9	202	37	59	3.8	.15	.00	12	.16
19	6.8	7.5	8.2	6.6	140	33	34	3.5	.16	.00	4.8	.12
20	12	7.3	7.6	19	97	27	27	4.3	.17	.00	2.8	.08
21	35	6.9	7.9	11	77	22	25	6.4	.18	.01	62	.05
22	81	123	6.5	8.1	56	19	28	4.7	.14	.01	16	.02
23	65	58	7.9	7.2	68	18	23	3.2	.12	.02	6.1	.02
24	30	27	8.6	6.1	63	16	18	2.7	.12	.09	3.6	.02
25	17	19	11	7.2	53	14	17	2.6	.09	.15	2.0	.02
26	9.9	16	7.7	61	44	13	15	2.4	.03	.09	1.3	.01
27	8.3	14	6.6	60	46	13	14	2.1	.02	.04	1.2	.02
28	9.1	43	7.1	20	37	12	12	2.4	.02	.02	1.8	.02
29	11	140	6.8	14	---	11	11	2.8	.02	.01	2.9	.02
30	11	170	6.3	12	---	11	9.7	2.2	.02	.01	1.8	.02
31	11	---	5.9	10	---	9.9	---	1.6	---	.01	1.2	---
TOTAL	347.48	1546.8	573.1	325.7	1544	1173.9	761.5	145.4	17.77	.67	203.05	36.01
MEAN	11.2	51.6	18.5	10.5	55.1	37.9	25.4	4.69	.59	.02	6.55	1.20
MAX	81	444	98	61	202	304	195	9.2	1.4	.15	62	6.3
MIN	.20	6.9	5.9	3.0	10	9.9	7.8	1.6	.02	.00	.00	.01
CFSM	.43	2.00	.72	.41	2.14	1.47	.98	.18	.02	.00	.25	.05
IN.	.50	2.23	.83	.47	2.23	1.69	1.10	.21	.03	.00	.29	.05
CAL YR 1985	TOTAL	5636.55	MEAN	15.4	MAX	843	MIN	.00	CFSM	.60	IN.	8.13
WTR YR 1986	TOTAL	6675.38	MEAN	18.3	MAX	444	MIN	.00	CFSM	.71	IN.	9.62

POTOMAC RIVER BASIN

01656725 BULL RUN NEAR CATHARPIN, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.09	1.1									
2	.01	.18	136									
3	.01	.38	203									
4	.01	.54	29									
5	.01	.85	17									
6	.01	5.7	13									
7	.01	3.2	11									
8	.00	2.6	9.5									
9	.00	4.0	12									
10	.00	3.1	17									
11	.00	3.0	29									
12	.00	10	38									
13	.01	3.8	18									
14	.02	1.9	12									
15	.01	.91	11									
16	.01	.56	9.7									
17	.01	.45	8.9									
18	.01	.38	26									
19	.01	1.1	21									
20	.01	2.5	13									
21	.01	12	10									
22	.01	3.3	8.7									
23	.01	1.4	7.7									
24	.01	1.1	556									
25	.01	.85	209									
26	.07	7.1	56									
27	.07	14	38									
28	.21	3.6	29									
29	.19	2.1	23									
30	.18	1.4	20									
31	.14	---	17									
TOTAL	1.07	92.09	1609.6									
MEAN	.03	3.07	51.9									
MAX	.21	14	556									
MIN	.00	.09	1.1									
CFSM	.00	.12	2.01									
IN.	.00	.13	2.32									
CAL YR 1986	TOTAL	5910.76	MEAN	16.2	MAX	556	MIN	.00	CFSM	.63	IN.	8.52

01656960 CUB RUN NEAR BULL RUN, VA

LOCATION.--Lat 38°49'16", long 77°27'57", Fairfax County, Hydrologic Unit 02070010, on right bank 20 ft downstream from bridge on State Highway 658, 0.6 mi downstream from Big Rocky Run, 1.2 mi southeast of Bull Run, and 2.3 mi upstream from mouth.

DRAINAGE AREA.--49.9 mi².

PERIOD OF RECORD.--October 1972 to December 1986 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 151.54 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--14 years, 56.2 ft³/s, 15.29 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s, Oct. 1, 1979, gage height, 16.43 ft, from rating curve extended above 4,100 ft³/s; minimum daily, 0.10 ft³/s, Oct. 23, 1980, Sept. 30, Oct. 15, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 28.64 ft, from floodmarks, discharge not determined.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 16	0700	*890	*7.45	No peak equal to or greater than base discharge.			

October 1985 to September 1986: Minimum discharge, 0.35 ft³/s, July 8-9.

October to December 1986: Maximum discharge during period, 2,830 ft³/s, Dec. 25, gage height, 11.54 ft; minimum daily, 0.33 ft³/s, Oct. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	9.8	295	11	19	49	9.3	9.4	1.9	.52	.84	2.5
2	4.5	11	182	10	22	43	7.7	7.9	2.0	2.6	.96	9.1
3	25	13	76	11	33	51	12	7.0	2.1	7.1	6.9	11
4	16	373	50	11	345	71	12	6.5	1.5	2.0	5.6	7.4
5	9.0	352	50	11	226	82	11	17	1.6	1.1	2.8	5.5
6	6.0	209	37	10	100	63	17	7.0	1.5	.74	67	3.9
7	4.6	64	28	8.5	74	48	64	4.8	1.3	.66	205	2.7
8	3.6	36	24	6.7	53	31	32	4.0	1.5	.46	52	2.6
9	3.4	24	22	6.1	68	25	20	3.5	1.4	.49	19	2.7
10	3.6	19	19	6.4	86	27	12	3.2	1.2	.97	8.0	2.1
11	3.4	16	18	6.6	95	26	10	3.0	1.1	.80	5.3	1.9
12	3.3	14	17	6.5	65	21	9.5	3.2	1.2	.59	4.0	1.9
13	3.6	13	36	6.5	44	20	8.6	3.7	1.1	.59	3.9	1.4
14	33	12	62	6.2	33	63	9.1	5.5	.92	1.1	3.0	1.2
15	71	11	29	5.9	27	478	13	5.6	.80	.65	2.3	1.1
16	28	11	22	5.6	26	127	426	5.4	.76	.76	2.4	1.2
17	11	19	20	5.6	28	66	140	5.0	1.0	4.9	15	1.1
18	6.3	17	18	6.0	334	48	116	5.2	.79	2.8	29	.83
19	5.0	13	15	7.8	374	39	52	5.1	.45	1.8	18	.96
20	8.1	12	13	18	248	33	35	11	.54	4.0	73	.95
21	224	10	12	17	129	27	30	16	.64	33	160	1.0
22	400	320	12	14	93	22	32	13	.41	9.0	43	1.2
23	255	204	12	12	108	20	36	9.0	.38	4.8	17	1.2
24	68	61	12	9.7	140	18	28	6.6	.53	3.2	10	1.0
25	39	36	16	12	101	17	21	7.0	.63	2.4	6.2	1.0
26	24	27	15	289	79	18	18	4.9	.66	2.0	4.4	*1.0
27	16	28	13	255	77	16	15	9.1	.43	1.5	3.6	.88
28	12	37	12	72	63	13	13	11	.47	1.2	11	.88
29	11	351	12	38	---	13	12	4.5	.66	1.1	10	.83
30	9.4	451	12	26	---	12	10	2.5	.70	.92	4.6	.73
31	9.2	---	11	21	---	12	---	2.2	---	.91	2.9	---
TOTAL	1320.3	2773.8	1172	932.1	3090	1599	1231.2	208.8	30.17	94.66	796.70	71.76
MEAN	42.6	92.5	37.8	30.1	110	51.6	41.0	6.74	1.01	3.05	25.7	2.39
MAX	400	451	295	289	374	478	426	17	2.1	33	205	11
MIN	3.3	9.8	11	5.6	19	12	7.7	2.2	.38	.46	.84	.73
CFSM	.85	1.85	.76	.60	2.20	1.03	.82	.14	.02	.06	.52	.05
IN.	.98	2.07	.87	.69	2.30	1.19	.92	.16	.02	.07	.59	.05
CAL YR 1985	TOTAL	13042.1	MEAN	35.7	MAX	1550	MIN	1.1	CFSM	.72	IN.	9.72
WTR YR 1986	TOTAL	13320.49	MEAN	36.5	MAX	478	MIN	.38	CFSM	.73	IN.	9.93

POTOMAC RIVER BASIN

01656960 CUB RUN NEAR BULL RUN, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.66	4.2	11									
2	.79	27	116									
3	.75	16	506									
4	.64	8.9	85									
5	.66	38	42									
6	.70	68	28									
7	.72	17	21									
8	.65	26	17									
9	.61	17	19									
10	.69	11	40									
11	.49	43	67									
12	.41	68	149									
13	.33	22	50									
14	3.0	12	27									
15	5.1	9.7	20									
16	2.8	8.1	18									
17	2.0	6.8	16									
18	1.3	6.0	63									
19	1.2	13	70									
20	.98	23	30									
21	.78	119	21									
22	.69	31	17									
23	.67	17	14									
24	.51	12	392									
25	1.2	12	1280									
26	7.1	54	132									
27	20	110	66									
28	33	32	46									
29	7.6	19	35									
30	3.7	13	32									
31	2.9	---	27									
TOTAL	102.63	863.7	3457									
MEAN	3.31	28.8	112									
MAX	33	119	1280									
MIN	.33	4.2	11									
CFSM	.07	.58	2.24									
IN.	.08	.64	2.58									
CAL YR 1986	TOTAL	12477.72	MEAN	34.2	MAX	1280	MIN	.33	CFSM	.69	IN.	9.30

POTOMAC RIVER BASIN

97

01657020 BULL RUN NEAR MANASSAS PARK, VA

LOCATION.--Lat 38°48'12", long 77°26'59", Fairfax County, Hydrologic Unit 02070010, on left bank 34 ft upstream from bridge on State Highway 28, 1.2 mi upstream from Little Rocky Run, 1.5 mi downstream from Cub Run, and 1.5 mi northeast of Manassas.

DRAINAGE AREA.--148 mi².

PERIOD OF RECORD.--November 1984 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 135 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,800 ft³/s, Feb. 12, 1985, gage height, 15.80 ft, from rating curve extended above 2,900 ft³/s; minimum, 5.6 ft³/s, Sept. 26, 1985.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of about 44.8 ft, discharge, 76,000 ft³/s, by slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Aug. 6	2130	*3,520	*11.37	No peak equal to or greater than base discharge.			

Minimum discharge, 8.5 ft³/s, June 17, gage height, 2.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	36	839	39	82	203	49	29	16	14	13	20
2	20	39	546	36	87	188	45	33	16	34	15	42
3	70	68	292	37	120	209	44	30	15	31	21	44
4	48	1720	210	40	835	244	41	29	14	17	22	42
5	31	1240	189	39	670	293	41	38	15	15	18	34
6	25	537	166	36	348	246	69	32	15	14	621	28
7	19	272	138	33	284	201	196	29	14	14	664	24
8	15	188	118	28	223	136	123	25	15	14	228	23
9	14	137	105	27	253	123	82	24	15	16	85	22
10	14	112	88	28	295	130	58	21	14	16	41	19
11	14	93	82	29	326	127	51	19	16	14	28	18
12	12	79	83	30	248	106	49	20	15	13	22	17
13	12	68	132	31	180	101	43	20	13	13	18	16
14	336	62	221	25	137	192	43	22	12	14	18	15
15	366	54	122	27	137	1540	59	30	11	13	17	16
16	120	51	94	24	125	443	1180	24	12	16	18	13
17	56	81	85	23	135	275	406	23	11	25	48	13
18	34	73	79	26	856	212	368	21	13	18	107	13
19	23	57	60	35	1060	185	206	19	13	15	76	13
20	39	50	53	71	734	158	150	35	14	48	161	13
21	565	48	50	76	428	122	132	50	14	97	453	14
22	1260	718	45	54	338	105	135	41	13	30	200	13
23	829	643	47	45	338	97	141	28	13	21	89	14
24	337	248	51	39	446	90	101	23	26	18	55	14
25	216	168	68	47	340	79	82	22	15	16	39	14
26	133	133	55	564	283	76	72	19	14	16	30	13
27	96	121	48	671	284	71	62	18	15	16	42	14
28	76	159	42	225	245	62	55	30	21	15	76	14
29	61	939	44	134	---	58	48	21	17	26	42	14
30	55	1320	41	115	---	56	41	17	15	17	28	13
31	45	---	38	90	---	52	---	16	---	14	22	---
TOTAL	4964	9514	4231	2724	9837	6180	4172	808	442	660	3317	582
MEAN	160	317	136	87.9	351	199	139	26.1	14.7	21.3	107	19.4
MAX	1260	1720	839	671	1060	1540	1180	50	26	97	664	44
MIN	12	36	38	23	82	52	41	16	11	13	13	13
CFSM	1.08	2.14	.92	.59	2.37	1.34	.94	.18	.10	.14	.72	.13
IN.	1.25	2.39	1.06	.68	2.47	1.55	1.05	.20	.11	.17	.83	.15
CAL YR 1985	TOTAL	42037.4	MEAN	115	MAX	3400	MIN	8.4	CFSM	.78	IN.	10.57
WTR YR 1986	TOTAL	47431	MEAN	130	MAX	1720	MIN	11	CFSM	.88	IN.	11.92

01658500 SOUTH FORK QUANTICO CREEK NEAR INDEPENDENT HILL, VA

LOCATION.--Lat 38°35'14", long 77°25'44", Prince William County, Hydrologic Unit 02070011, on left bank at upstream side of bridge on State Highway 619, 3.4 mi south of Independent Hill, 5.6 mi west of Dumfries, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--7.64 mi².

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 238.88 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 5-17, 27-31, Nov. 1-3, 7-28, and Jan. 24 to Feb. 27. Records fair except those for periods of doubtful or no gage-height record, Oct. 5-17, 27-31, Nov. 1-3, 7-28, and Jan. 24 to Feb. 27, which are poor. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years, 6.88 ft³/s, 12.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,940 ft³/s, June 21, 1972, gage height, 11.35 ft; no flow at times in 1954, 1957, 1962-66, 1983, and 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1245	*170	*4.81	No peak equal to or greater than base discharge.			

Minimum discharge, 0.05 ft³/s, June 27-28; minimum gage height, 1.92 ft, Aug. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.52	2.5	46	2.4	4.7	6.7	2.6	2.6	2.5	.18	.11	.20
2	.52	6.0	17	2.1	4.3	6.2	2.5	2.2	2.3	.26	.14	.37
3	2.1	13	8.2	2.4	5.2	6.0	2.4	1.9	2.2	.28	.13	.41
4	2.4	82	5.6	2.2	20	6.2	2.4	1.8	2.1	.24	.09	.38
5	1.0	27	4.7	2.2	13	5.6	2.6	1.8	2.0	.19	.09	.34
6	.40	11	4.2	2.0	9.0	5.1	4.6	1.7	2.1	.22	.08	.32
7	.27	5.0	3.4	1.9	12	4.5	9.0	1.6	2.0	.26	.63	.26
8	.17	4.0	3.2	1.6	7.8	3.5	5.1	1.5	1.9	.18	.43	.29
9	.13	3.0	3.0	1.6	8.3	3.8	4.0	1.3	1.5	.24	.32	.43
10	.10	2.6	2.7	2.0	10	3.8	3.5	1.4	1.2	.51	.23	.31
11	.15	2.5	2.8	2.2	13	4.0	4.2	1.5	1.4	.52	.18	.34
12	.14	2.4	3.0	2.2	8.6	3.3	4.2	1.2	1.1	.80	.19	.36
13	.12	2.8	6.1	2.2	7.0	3.6	3.5	1.3	.90	.62	.15	.33
14	.25	2.7	5.5	1.9	8.0	8.8	3.5	1.8	.65	.36	.12	.30
15	.50	2.5	3.4	1.8	6.2	23	4.2	2.0	.51	.27	.09	.27
16	.30	2.4	3.1	1.7	5.4	9.8	40	1.9	.31	.19	.09	.19
17	.37	3.5	2.9	2.0	5.8	6.5	13	1.7	.26	.54	.26	.09
18	.46	3.3	2.6	2.6	16	5.4	11	1.7	.15	.45	.33	.09
19	.65	2.8	2.2	3.4	21	5.2	7.3	1.6	.12	.27	.40	.08
20	2.2	2.7	2.1	8.1	15	4.7	5.5	2.3	.17	.60	.59	.07
21	28	2.2	2.2	5.0	10	3.8	6.6	3.1	.15	6.4	3.4	.10
22	32	20	2.1	3.3	8.0	3.5	8.8	2.7	.11	1.0	2.3	.14
23	18	15	2.6	2.7	8.5	3.5	8.2	1.8	.07	.52	.91	.13
24	6.4	10	2.8	3.5	13	3.3	5.5	1.9	.19	.41	.53	.11
25	3.2	6.0	3.0	11	11	3.2	4.6	1.9	.18	.34	.31	.11
26	1.8	3.5	2.0	50	9.6	3.2	4.1	1.7	.11	.26	.41	.15
27	1.1	3.0	2.0	25	9.4	3.3	3.7	1.7	.07	.21	.48	.15
28	1.0	13	2.3	11	7.6	3.0	3.2	2.2	.10	.19	.53	.09
29	.96	65	2.3	13	---	3.0	3.1	2.2	.14	.17	.32	.10
30	.93	94	2.0	9.0	---	2.9	2.8	2.0	.18	.20	.24	.09
31	.90	---	2.1	6.2	---	2.8	---	2.5	---	.13	.22	---
TOTAL	107.04	415.4	157.1	188.2	277.4	161.2	185.7	58.5	26.67	17.01	14.30	6.60
MEAN	3.45	13.8	5.07	6.07	9.91	5.20	6.19	1.89	.89	.55	.46	.22
MAX	32	94	46	50	21	23	40	3.1	2.5	6.4	3.4	.43
MIN	.10	2.2	2.0	1.6	4.3	2.8	2.4	1.2	.07	.13	.08	.07
CFSM	.45	1.81	.66	.79	1.30	.68	.81	.25	.12	.07	.06	.03
IN.	.52	2.02	.76	.92	1.35	.78	.90	.28	.13	.08	.07	.03
CAL YR 1985	TOTAL	2167.74	MEAN	5.94	MAX	140	MIN	.00	CFSM	.78	IN.	10.55
WTR YR 1986	TOTAL	1615.12	MEAN	4.42	MAX	94	MIN	.07	CFSM	.58	IN.	7.86

POTOMAC RIVER BASIN

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01660400 AQUIA CREEK NEAR GARRISONVILLE, VA

LOCATION.--Lat 38°29'25", long 77°26'02", Stafford County, Hydrologic Unit 02070011, on right bank at bridge on State Highway 641, 1.1 mi northwest of Garrisonville, and 3.0 mi upstream from Beaverdam Run.

DRAINAGE AREA.--34.9 mi².

PERIOD OF RECORD.--September 1971 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 120 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Dec. 19-22, 26, Jan. 7-9, 13-16, Feb. 14, and June 22 to Sept. 30. Records good except those for periods with ice effect, Dec. 19-22, 26, Jan. 7-9, 13-16, and Feb. 14, which are fair, and period of backwater from beaver dam, June 22 to Sept. 30, which is poor. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--15 years, 37.0 ft³/s, 14.40 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft³/s, June 22, 1972, gage height, 16.32 ft, from rating curve extended above 1,600 ft³/s on basis of contracted-opening measurement of peak flow; no flow Sept. 15-17, 1980, Aug. 24-27, 1983.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0930	813	4.18	Nov. 30	1100	700	3.92
Nov. 28	2300	*1,010	*4.61				

Minimum daily discharge, 0.35 ft³/s, Sept. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.74	9.8	216	13	22	29	17	11	8.2	2.5	.65	1.1
2	.48	25	96	16	21	26	16	11	7.0	2.7	.73	1.5
3	31	64	48	12	24	25	14	10	5.3	3.0	.80	2.3
4	16	479	35	12	87	25	14	9.9	4.2	2.3	.69	2.0
5	6.1	167	30	12	65	24	15	11	4.0	1.7	.58	1.7
6	3.0	63	27	12	41	23	20	10	3.9	1.8	.45	1.5
7	1.7	33	22	11	49	21	25	9.9	4.7	2.0	4.0	1.3
8	1.4	22	20	11	36	18	24	9.5	5.4	1.5	2.4	1.4
9	.68	17	20	11	36	18	21	9.1	4.9	2.1	1.7	2.0
10	.46	14	18	13	40	19	19	8.8	4.1	3.0	1.3	1.8
11	.71	14	17	13	55	21	18	8.8	3.1	4.5	1.0	1.9
12	.72	14	18	14	40	20	17	8.3	2.9	6.0	.80	1.9
13	.60	14	24	12	31	19	18	8.2	2.4	4.0	.60	1.6
14	1.1	14	29	11	30	34	16	9.8	2.6	2.5	.50	1.4
15	1.8	13	20	11	27	102	21	12	2.1	1.7	.45	1.2
16	1.2	13	18	12	25	52	87	11	1.5	1.5	.45	1.0
17	1.5	18	17	12	28	34	43	11	1.1	2.5	1.5	.70
18	1.6	17	16	12	74	28	38	9.5	.87	1.9	2.0	.50
19	2.0	14	16	15	83	26	28	9.4	.75	1.6	2.5	.40
20	34	14	16	27	76	25	25	15	.80	5.0	4.0	.35
21	163	12	16	22	48	21	25	24	.77	20	15	.45
22	184	102	15	15	38	19	26	25	.70	7.0	11	.70
23	118	83	15	12	40	19	28	16	.66	3.0	6.0	.62
24	67	34	16	12	49	18	22	11	1.3	2.0	2.5	.52
25	39	23	17	14	46	17	19	8.9	1.1	1.7	1.3	.51
26	20	19	16	188	39	17	18	8.1	.90	1.4	1.6	.73
27	10	17	13	126	39	18	19	7.8	.80	1.2	2.3	.73
28	7.1	144	13	47	37	17	18	8.1	1.9	1.0	3.0	.50
29	6.4	409	13	55	---	16	16	7.7	4.0	.90	2.2	.49
30	6.2	509	16	45	---	17	13	7.8	3.2	1.2	1.7	.48
31	5.6	---	16	29	---	16	---	8.7	---	.90	1.2	---
TOTAL	733.09	2390.8	889	827	1226	784	700	336.3	85.15	94.10	74.90	33.28
MEAN	23.6	79.7	28.7	26.7	43.8	25.3	23.3	10.8	2.84	3.04	2.42	1.11
MAX	184	509	216	188	87	102	87	25	8.2	20	15	2.3
MIN	.46	9.8	13	11	21	16	13	7.7	.66	.90	.45	.35
CFSM	.68	2.28	.82	.77	1.26	.72	.67	.31	.08	.09	.07	.03
IN.	.78	2.55	.95	.88	1.31	.84	.75	.36	.09	.10	.08	.04
CAL YR 1985	TOTAL	9967.30	MEAN	27.3	MAX	533	MIN	.04	CFSM	.78	IN.	10.62
WTR YR 1986	TOTAL	8173.62	MEAN	22.4	MAX	509	MIN	.35	CFSM	.64	IN.	8.71

01661800 BUSH MILL STREAM NEAR HEATHSVILLE, VA

LOCATION.--Lat 37°52'36", long 76°29'42", Northumberland County, Hydrologic Unit 02080102, on right bank 12 ft upstream from bridge on State Highway 601, 2.2 mi northwest of Howland, 3.0 mi southwest of Heathsville, and 3.5 mi upstream from mouth.

DRAINAGE AREA.--6.82 mi².

PERIOD OF RECORD.--October 1963 to March 1969, October 1969 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 22.22 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 19, 1969, 52 ft downstream at datum 0.82 ft higher.

REMARKS.--No estimated daily discharges. Records good. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--22 years (water years 1964-68, 1970-86), 7.31 ft³/s, 14.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 714 ft³/s, July 30, 1979, gage height, 8.52 ft, from rating curve extended above 130 ft³/s; no flow many days in August and September 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 20, 1969, reached a stage of 6.13 ft, present datum, from flood-marks, discharge, about 450 ft³/s.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 28	0800	*77	*4.99	No peak equal to or greater than base discharge.			

October 1985 to September 1986: Minimum daily discharge, 0.02 ft³/s, July 8, 9, 13-16, 26.

October to December 1986: Maximum discharge during period, 176 ft³/s, Dec. 24, gage height, 5.93 ft; minimum, 0.22 ft³/s, Oct. 7-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	20	13	3.0	7.1	8.0	7.3	5.5	1.2	.09	.21	.63
2	4.7	13	7.5	2.7	8.4	7.2	7.3	5.3	1.1	.26	.04	.89
3	19	15	5.3	4.8	7.1	7.2	7.4	4.9	1.1	.21	.09	1.2
4	8.6	20	4.6	3.9	12	7.2	7.5	5.1	.88	.06	.22	.86
5	5.5	14	4.7	3.6	8.4	7.2	7.8	5.0	.84	.04	.26	.99
6	4.1	10	5.0	2.9	7.5	7.2	10	4.5	.71	.03	.20	3.9
7	3.6	8.9	4.2	2.9	11	7.2	10	3.9	.69	.03	.13	1.6
8	3.6	8.4	4.4	2.6	8.1	6.6	8.0	3.6	.69	.02	.09	1.9
9	3.7	7.5	4.2	2.6	7.7	6.8	7.6	2.7	.63	.02	.08	2.9
10	3.6	7.6	4.5	3.2	7.8	6.9	7.4	2.6	.49	.04	.05	1.6
11	3.4	7.7	4.6	3.2	20	7.0	7.5	2.6	.44	.03	.05	1.3
12	3.2	7.6	4.8	3.1	10	7.1	7.4	2.4	.39	.03	1.2	1.0
13	3.1	7.5	5.8	3.3	8.5	12	7.3	2.3	.34	.02	1.8	.90
14	3.0	7.4	4.7	2.9	7.6	10	7.2	5.4	.33	.02	1.1	.65
15	3.0	6.7	3.7	2.7	8.6	8.7	7.4	5.1	.30	.02	.48	.70
16	3.6	6.1	3.5	2.8	8.3	8.8	8.2	3.8	.26	.02	.31	.52
17	3.0	6.7	3.6	3.4	10	8.0	7.5	2.9	.23	.17	.91	.38
18	2.9	5.6	3.7	3.7	10	7.9	7.5	2.5	.14	.09	3.1	.33
19	2.8	5.2	3.4	5.2	9.8	8.1	7.0	2.2	.07	.04	4.9	.35
20	4.9	4.8	3.5	5.9	12	8.3	6.5	6.9	.06	.03	22	.43
21	25	22	4.0	4.1	9.2	7.9	6.9	5.5	.06	.51	17	.58
22	38	27	4.1	3.6	9.0	7.9	7.4	3.1	.05	.17	4.4	.53
23	18	10	4.9	3.6	11	8.0	7.6	2.1	.05	.16	1.5	.52
24	9.8	6.9	5.0	3.6	9.1	8.1	7.1	1.8	.04	.05	.65	1.3
25	7.9	5.9	4.1	4.5	8.8	7.9	6.7	1.7	.04	.03	.37	.64
26	6.9	5.6	3.3	37	8.6	7.7	6.7	1.6	.03	.02	.34	.56
27	6.4	5.5	3.4	17	8.7	7.7	6.5	1.5	.03	.03	1.2	.52
28	5.8	5.4	3.4	8.3	8.2	7.7	6.4	1.6	.03	.29	7.2	.48
29	5.2	5.1	3.1	6.9	---	7.6	6.3	1.6	.03	7.1	4.8	.47
30	5.3	19	2.7	6.9	---	7.7	6.2	1.4	.04	1.5	1.8	.48
31	5.6	---	2.6	6.4	---	7.6	---	1.3	---	1.0	1.0	---
TOTAL	226.0	302.1	139.3	170.3	262.5	243.2	221.6	102.4	11.29	40.84	77.48	29.11
MEAN	7.29	10.1	4.49	5.49	9.37	7.85	7.39	3.30	.38	1.32	2.50	.97
MAX	38	27	13	37	20	12	10	6.9	1.2	.29	.22	3.9
MIN	2.8	4.8	2.6	2.6	7.1	6.6	6.2	1.3	.03	.02	.04	.33
CFSM	1.07	1.48	.66	.80	1.37	1.15	1.08	.48	.06	.19	.37	.14
IN.	1.23	1.65	.76	.93	1.43	1.33	1.21	.56	.06	.22	.42	.16
CAL YR 1985	TOTAL	1619.06	MEAN	4.44	MAX	142	MIN	.02	CFSM	.65	IN.	8.83
WTR YR 1986	TOTAL	1826.12	MEAN	5.00	MAX	38	MIN	.02	CFSM	.73	IN.	9.96

GREAT WICOMICO RIVER BASIN

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01661800 BUSH MILL STREAM NEAR HEATHSVILLE, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.46	2.4	2.3									
2	.41	2.5	11									
3	.38	2.9	17									
4	.34	2.8	7.4									
5	.33	3.5	5.7									
6	.30	5.8	5.1									
7	.25	4.8	4.8									
8	.24	5.0	4.7									
9	.28	4.8	6.5									
10	.41	3.8	8.1									
11	.48	4.8	13									
12	.53	8.5	12									
13	.95	6.1	6.6									
14	6.4	4.5	5.5									
15	4.1	2.4	5.7									
16	1.7	2.3	5.4									
17	1.2	2.3	5.2									
18	.99	2.3	6.3									
19	.96	6.7	7.1									
20	.99	4.6	5.7									
21	1.0	8.6	5.2									
22	1.1	5.4	5.0									
23	1.2	3.2	4.9									
24	1.3	3.2	54									
25	1.4	3.3	60									
26	22	3.4	10									
27	9.9	8.0	6.6									
28	5.3	5.3	6.1									
29	3.8	3.6	5.7									
30	3.2	2.7	5.4									
31	2.6	---	5.2									
TOTAL	74.50	129.5	313.2									
MEAN	2.40	4.32	10.1									
MAX	22	8.6	60									
MIN	.24	2.3	2.3									
CFSM	.35	.63	1.48									
IN.	.41	.71	1.71									
CAL YR 1986	TOTAL	1675.92	MEAN	4.59	MAX	60	MIN	.02	CFSM	.67	IN.	9.14

RAPPAHANNOCK RIVER BASIN

01662000 RAPPAHANNOCK RIVER NEAR WARRENTON, VA

LOCATION.--Lat 38°41'05", long 77°54'15"; Fauquier County, Hydrologic Unit 02080103, on left bank 50 ft downstream from westbound bridge on U.S. Highway 211, 0.9 mi downstream from Carter Run, 6.2 mi southwest of Warrenton, and 15 mi upstream from Hazel River.

DRAINAGE AREA.--195 mi².

PERIOD OF RECORD.--August 1942 to September 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 1302: 1944(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 312.57 ft above National Geodetic Vertical Datum of 1929. Oct. 8, 1942, to Dec. 17, 1944, nonrecording gage 50 ft upstream at present datum.

REMARKS.--Estimated daily discharges: Jan. 15, 16. Records good except for period with ice effect, Jan. 15, 16, which is fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--44 years, 195 ft³/s, 13.58 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s, Oct. 15, 1942, gage height, 23.5 ft, from flood-mark, from rating curve extended above 24,000 ft³/s; minimum, 0.22 ft³/s, Sept. 26, 1985; minimum daily, 0.26 ft³/s, Sept. 26, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1330	*5,600	*14.47	Nov. 5	0700	4,080	11.96

Minimum daily discharge, 1.3 ft³/s, Sept. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	68	550	122	135	259	152	155	101	19	4.6	3.4
2	3.5	467	493	113	133	253	149	146	75	28	3.8	5.4
3	5.2	480	368	112	151	256	143	134	63	36	5.3	10
4	6.4	3570	303	112	250	254	138	132	57	31	4.8	18
5	8.2	2740	274	109	303	267	144	132	55	18	4.3	14
6	7.9	1090	269	103	253	262	191	122	53	14	3.8	9.8
7	6.9	645	246	103	266	247	249	123	49	11	5.7	7.2
8	7.2	474	216	101	233	197	193	112	49	9.1	6.1	6.1
9	7.4	358	199	118	225	221	165	102	47	8.4	6.4	4.9
10	6.5	293	185	123	235	222	156	103	40	12	5.6	4.0
11	6.6	243	177	116	261	221	149	100	35	19	5.1	3.4
12	6.9	209	177	110	227	203	143	94	35	41	4.5	3.0
13	6.9	190	200	114	199	204	137	90	34	32	3.6	2.3
14	6.9	174	224	99	202	298	133	117	31	17	3.2	2.0
15	7.9	157	172	98	211	1260	152	115	27	12	2.8	1.8
16	14	144	164	105	189	691	990	110	23	9.3	3.3	1.8
17	16	178	162	114	187	516	598	98	21	11	3.9	1.7
18	15	150	153	109	291	434	536	88	18	30	4.6	1.3
19	17	136	129	141	511	384	429	83	16	22	4.9	1.8
20	25	129	146	315	512	331	364	97	17	22	10	1.6
21	82	122	142	196	473	276	336	300	20	30	33	1.5
22	303	365	120	158	416	252	343	236	19	25	47	1.9
23	629	514	148	144	386	241	299	145	16	17	18	2.0
24	439	326	145	130	386	226	251	117	18	13	9.3	2.1
25	203	258	154	131	354	202	228	102	16	13	5.8	2.1
26	127	215	113	159	314	194	216	91	14	14	4.1	2.1
27	97	199	145	202	318	190	200	84	12	14	3.6	2.2
28	76	206	131	146	284	180	186	89	14	12	6.5	2.0
29	61	402	125	155	---	170	177	79	35	9.2	7.0	1.9
30	54	509	121	152	---	166	162	70	26	8.0	5.4	1.9
31	53	---	129	141	---	160	---	210	---	5.9	4.2	---
TOTAL	2307.9	15011	6280	4151	7905	9237	7709	3776	1036	562.9	240.2	123.2
MEAN	74.4	500	203	134	282	298	257	122	34.5	18.2	7.75	4.11
MAX	629	3570	550	315	512	1260	990	300	101	41	47	18
MIN	2.5	68	113	98	133	160	133	70	12	5.9	2.8	1.3
CFSM	.38	2.56	1.04	.69	1.45	1.53	1.32	.63	.18	.09	.04	.02
IN.	.44	2.86	1.20	.79	1.51	1.76	1.47	.72	.20	.11	.05	.02
CAL YR 1985	TOTAL	49038.65	MEAN	134	MAX	3570	MIN	.26	CFSM	.69	IN.	9.36
WTR YR 1986	TOTAL	58339.2	MEAN	160	MAX	3570	MIN	1.3	CFSM	.82	IN.	11.13

01662800 BATTLE RUN NEAR LAUREL MILLS, VA

LOCATION.--Lat 38°39'20", long 78°04'27", Rappahannock County, Hydrologic Unit 02080103, on left bank just upstream from bridge on State Highway 729, 0.8 mi upstream from mouth, and 1.0 mi northeast of Laurel Mills.

DRAINAGE AREA.--27.6 mi².

PERIOD OF RECORD.--April 1958 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-72-1: 1971. WDR VA-74-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 374.62 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 7, 8, 14, Feb. 13, 14, 27, Mar. 8, June 9 to July 22, July 29 to Aug. 7, Aug. 11-21, and Sept. 19-21. Records good except those for periods with ice effect, Jan. 7, 8, 14, Feb. 13, 14, 27, and Mar. 8, and periods of backwater from beaver dam, June 9 to July 22, July 29 to Aug. 7, Aug. 11-21, and Sept. 19-21, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--28 years, 26.4 ft³/s, 12.99 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,120 ft³/s, Oct. 9, 1976, gage height, 13.90 ft, from flood-mark, from rating curve extended above 2,500 ft³/s on basis of velocity-area study; no flow many days in September 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 310 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0300	*5,060	*12.46	Nov. 4	2400	1,670	8.91

Minimum daily discharge, 0.35 ft³/s, Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	27	75	16	15	35	20	20	7.8	3.6	1.5	1.9
2	.54	93	65	15	17	34	20	19	7.4	6.0	1.3	4.6
3	1.6	220	49	15	17	34	19	18	6.3	5.0	2.0	5.2
4	1.7	1370	44	15	32	33	19	17	5.6	4.4	3.3	4.9
5	1.2	394	40	15	30	32	23	17	5.2	2.5	2.7	3.8
6	.98	131	39	14	27	31	31	16	4.7	2.0	2.2	3.6
7	.90	84	35	12	32	29	38	15	4.2	1.7	7.8	2.8
8	.78	60	31	12	28	28	28	14	4.7	1.6	3.2	3.0
9	.78	47	28	12	29	27	25	14	4.0	1.5	2.6	2.7
10	1.0	46	26	14	32	26	23	14	3.7	1.7	2.0	2.3
11	.98	32	26	13	36	25	25	13	3.5	2.1	1.9	2.2
12	.93	28	25	15	32	23	22	12	3.6	1.8	1.8	1.9
13	.92	26	31	13	30	25	20	13	3.6	1.4	1.7	1.6
14	1.2	25	27	12	28	50	19	16	3.1	1.3	1.6	1.4
15	1.7	26	24	12	26	136	53	15	2.8	1.1	1.5	1.4
16	2.1	23	23	12	25	80	125	14	2.6	1.1	1.4	1.4
17	2.3	29	22	12	26	61	79	13	2.5	1.3	3.5	1.2
18	2.5	21	21	15	46	52	63	17	2.4	1.5	5.2	1.1
19	3.4	20	19	21	58	47	52	13	2.3	2.0	4.5	1.1
20	12	19	19	31	57	40	44	16	2.2	3.0	4.0	1.2
21	25	18	19	18	52	35	44	30	2.1	4.0	8.0	1.1
22	67	71	18	17	46	32	45	23	2.0	1.4	6.5	1.1
23	93	59	19	16	45	31	37	16	1.9	18	3.9	1.2
24	49	44	19	15	44	29	32	14	2.4	7.5	2.9	1.2
25	25	36	19	17	42	27	30	13	3.0	4.9	2.0	1.3
26	17	32	17	20	39	27	28	12	2.5	3.0	1.7	1.3
27	14	35	16	22	38	26	26	13	2.1	3.3	1.7	1.5
28	11	34	16	18	37	24	25	12	2.5	2.9	6.0	1.3
29	8.9	48	16	16	---	23	23	9.8	3.3	2.6	3.9	1.3
30	8.6	80	16	16	---	22	21	9.1	4.3	2.1	2.3	1.4
31	8.2	---	17	15	---	21	---	8.8	---	1.8	1.9	---
TOTAL	364.56	3178	861	486	966	1145	1059	466.7	108.3	98.1	96.5	62.0
MEAN	11.8	106	27.8	15.7	34.5	36.9	35.3	15.1	3.61	3.16	3.11	2.07
MAX	93	1370	75	31	58	136	125	30	7.8	18	8.0	5.2
MIN	.35	18	16	12	15	21	19	8.8	1.9	1.1	1.3	1.1
CFSM	.43	3.84	1.01	.57	1.25	1.34	1.28	.55	.13	.11	.11	.07
IN.	.49	4.28	1.16	.66	1.30	1.54	1.43	.63	.15	.13	.13	.08
CAL YR 1985	TOTAL	8021.84	MEAN	22.0	MAX	1370	MIN	.26	CFSM	.80	IN.	10.81
WTR YR 1986	TOTAL	8891.16	MEAN	24.4	MAX	1370	MIN	.35	CFSM	.88	IN.	11.98

01663500 HAZEL RIVER AT RIXEYVILLE, VA

LOCATION.--Lat 38°35'30", long 77°57'55", Culpeper County, Hydrologic Unit 02080103, on right bank at downstream side of bridge on State Highway 229, 0.4 mi upstream from Waterford Run, 1.1 mi northeast of Rixeyville, 2.8 mi downstream from Thornton River, and 9.1 mi upstream from mouth.

DRAINAGE AREA.--287 mi².

PERIOD OF RECORD.--August 1942 to current year.

REVISED RECORDS.--WSP 971: 1942. WSP 1622: 1957-58. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 288.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-22, Jan. 8-23, Jan. 30 to Feb. 1, and Aug. 26 to Sept. 30. Records good except those for periods of doubtful gage-height record, Oct. 1-22 and Aug. 26 to Sept. 30, and periods with ice effect, Jan. 8-23 and Jan. 30 to Feb. 1, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--44 years, 342 ft³/s, 16.18 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,000 ft³/s, Oct. 15, 1942, gage height, 31.8 ft, from rating curve extended above 27,000 ft³/s; minimum, 1.1 ft³/s, Sept. 10-13, 1966, gage height, 1.69 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 26, 1937, reached a stage of 28.4 ft, from floodmarks, discharge, 43,500 ft³/s, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	1400	4,170	11.83	Nov. 5	0930	18,100	20.96
Nov. 4	1130	*29,500	*24.79				

Minimum daily discharge, 10 ft³/s, Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	487	968	212	215	422	277	287	117	53	25	35
2	25	3200	933	201	215	402	272	272	108	82	23	40
3	22	2380	746	204	242	394	258	252	99	76	29	60
4	27	18500	652	204	431	386	254	244	91	58	52	78
5	34	13500	594	199	488	376	266	241	90	45	44	62
6	30	3340	563	188	428	363	367	232	87	37	34	52
7	29	1780	505	187	475	351	445	224	83	31	91	40
8	26	1220	462	165	426	296	368	209	85	26	68	34
9	24	902	426	180	408	326	338	194	85	25	47	30
10	23	734	392	190	431	323	354	196	74	27	38	26
11	24	623	373	190	469	335	319	191	66	37	31	23
12	26	549	371	180	412	312	306	180	68	33	30	19
13	27	495	405	180	352	315	287	176	68	25	29	18
14	29	449	430	170	340	428	279	235	59	23	28	17
15	31	405	345	165	359	1650	291	223	53	18	26	15
16	34	369	328	160	321	1060	1380	209	50	15	25	13
17	35	423	319	165	324	821	965	190	46	19	29	12
18	35	360	301	170	427	690	884	232	40	29	64	11
19	41	327	263	204	664	619	729	209	37	35	60	10
20	50	310	293	447	661	551	644	196	36	55	50	11
21	195	290	291	303	617	480	599	328	36	58	241	12
22	1000	703	254	255	560	440	580	320	35	56	203	13
23	1720	868	306	239	543	416	516	227	33	232	98	13
24	999	619	279	220	542	391	450	192	39	231	69	13
25	605	526	273	222	519	360	413	172	46	145	54	12
26	405	467	234	258	477	347	393	159	40	104	40	12
27	310	439	270	298	481	339	363	148	34	67	36	12
28	255	441	244	219	457	321	340	163	35	59	40	12
29	215	629	225	261	---	308	324	145	54	54	52	13
30	191	900	232	245	---	303	301	127	65	38	43	13
31	176	---	231	220	---	289	---	124	---	30	36	---
TOTAL	6664	56235	12508	6701	12284	14414	13562	6497	1859	1823	1735	731
MEAN	215	1875	403	216	439	465	452	210	62.0	58.8	56.0	24.4
MAX	1720	18500	968	447	664	1650	1380	328	117	232	241	78
MIN	21	290	225	160	215	289	254	124	33	15	23	10
CFSM	.75	6.53	1.40	.75	1.53	1.62	1.57	.73	.22	.20	.20	.09
IN.	.86	7.29	1.62	.87	1.59	1.87	1.76	.84	.24	.24	.22	.09
CAL YR 1985	TOTAL	125599.6	MEAN	344	MAX	18500	MIN	4.4	CFSM	1.20	IN.	16.28
WTR YR 1986	TOTAL	135013	MEAN	370	MAX	18500	MIN	10	CFSM	1.29	IN.	17.50

RAPPAHANNOCK RIVER BASIN

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01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA

LOCATION.--Lat 38°31'50", long 77°48'50", Fauquier County, Hydrologic Unit 02080103, on left bank 80 ft upstream from bridge on alternate U.S. Highway 29, at Remington, 0.3 mi upstream from Tinpot Run, 0.4 mi downstream from Ruffans Run, and 2.5 mi downstream from Hazel River.

DRAINAGE AREA.--620 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WSP 1171: 1944. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 252.53 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 21, 1951, nonrecording gage at bridge 80 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 1-8, Dec. 23, Jan. 13-15, and Jan. 30 to Feb. 1. Records good except for period of doubtful gage-height record, Oct. 1-8, which is fair. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--44 years, 679 ft³/s, 14.87 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,000 ft³/s, Oct. 16, 1942, gage height, 30.0 ft, from flood-marks, from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.8 ft³/s, Sept. 13, 1966, gage height, 2.31 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since at least 1828, that of Oct. 16, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2115	*26,400	*19.73	No other peak equal to or greater than base discharge.			

Minimum discharge, 15 ft³/s, Sept. 19, 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	212	2150	427	430	864	525	525	286	80	40	38
2	40	3460	1850	385	423	819	507	497	208	88	37	39
3	31	2980	1420	390	456	801	491	456	184	109	35	64
4	45	14500	1210	389	819	800	473	436	163	94	50	104
5	60	20100	1100	377	1080	798	490	433	155	73	56	98
6	50	8290	1030	356	903	776	639	419	152	56	44	82
7	43	3130	947	350	913	754	865	399	143	48	65	66
8	44	2090	858	286	862	646	768	381	140	41	93	54
9	41	1540	792	345	816	640	639	346	142	37	66	46
10	39	1260	733	364	859	653	651	334	128	45	55	41
11	40	1090	692	370	961	668	582	331	112	47	44	36
12	43	954	690	347	883	630	554	314	108	68	40	31
13	43	858	721	350	729	607	517	296	108	78	39	29
14	47	790	864	340	638	755	495	357	99	61	37	25
15	52	714	690	330	752	3770	491	393	88	46	33	23
16	73	648	625	292	661	2310	2550	361	80	37	32	20
17	76	734	607	331	670	1630	1860	328	72	34	32	19
18	75	682	579	357	844	1340	1660	327	65	57	45	18
19	82	593	494	381	1420	1200	1340	325	58	71	75	16
20	108	554	493	829	1380	1090	1180	299	55	71	58	17
21	485	522	542	682	1290	945	1090	585	57	75	145	18
22	1300	1120	445	504	1180	860	1080	697	58	93	332	19
23	2910	2040	535	453	1130	817	1030	488	54	310	152	19
24	1860	1250	534	412	1140	778	864	358	54	308	93	19
25	1030	1040	542	399	1100	715	789	314	67	397	65	19
26	641	902	442	533	1000	682	752	283	59	162	51	21
27	430	828	421	690	995	669	705	262	51	97	41	20
28	333	831	509	504	948	635	656	270	54	97	42	19
29	265	1410	450	425	---	597	615	261	67	79	60	20
30	222	2140	434	480	---	578	564	225	98	59	63	19
31	199	---	452	450	---	553	---	290	---	47	46	---
TOTAL	10742	77262	23851	13128	25282	29380	25422	11590	3165	2965	2066	1059
MEAN	347	2575	769	423	903	948	847	374	106	95.6	66.6	35.3
MAX	2910	20100	2150	829	1420	3770	2550	697	286	397	332	104
MIN	31	212	421	286	423	553	473	225	51	34	32	16
CFSM	.56	4.15	1.24	.68	1.46	1.53	1.37	.60	.17	.15	.11	.06
IN.	.64	4.64	1.43	.79	1.52	1.76	1.53	.70	.19	.18	.12	.06
CAL YR 1985	TOTAL	204183.5	MEAN	559	MAX	20100	MIN	5.7	CFSM	.90	IN.	12.25
WTR YR 1986	TOTAL	225912	MEAN	619	MAX	20100	MIN	16	CFSM	1.00	IN.	13.55

RAPPAHANNOCK RIVER BASIN

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1951 to September 1956, October 1965 to current year.

WATER TEMPERATURE: May 1951 to September 1956, October 1965 to September 1976, October 1977 to current year.

SUSPENDED-SEDIMENT DISCHARGE: April 1951 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 150 microsiemens, Sept. 3, 1974; minimum daily, 24 microsiemens, July 6, 1975.

WATER TEMPERATURE: Maximum, 33.0°C, July 6, 1986; minimum, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,910 mg/L, Mar. 15, 1986; minimum daily mean, 1 mg/L on many days during each year.

SEDIMENT LOAD: Maximum daily, 55,600 tons, Sept. 26, 1975; minimum daily, 0.03 ton, Sept. 9, 11, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE.--Maximum daily, 108 microsiemens, May 5; minimum daily, 60 microsiemens, Dec. 31.

WATER TEMPERATURE.--Maximum daily, 33.0°C, July 6; minimum daily, 1.0°C, Jan. 9.

SEDIMENT CONCENTRATION: Maximum daily mean, 1,910 mg/L, Mar. 15; minimum daily mean, 1 mg/L on many days during the year.

SEDIMENT LOAD: Maximum daily, 26,700 tons, Nov. 4; minimum daily, 0.06 ton, Sept. 15.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
OCT 22...	1345	1110	80	81	7.00	6.70	14.0	--	5	--
DEC 18...	1030	580	62	69	6.90	7.60	2.0	757	10	13.0
FEB 06...	0845	915	71	75	7.20	7.20	5.0	754	25	12.0
MAR 26...	1000	682	63	67	7.00	7.80	10.0	764	10	11.1
MAY 06...	1300	418	65	68	6.90	7.70	18.0	752	10	9.2
JUN 16...	1215	80	75	76	7.20	7.80	26.0	753	10	8.1

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 22...	--	24	5	6.3	2.1	4.1	4.0	19	7.9
DEC 18...	95	22	7	5.5	2.0	3.2	1.2	15	8.1
FEB 06...	95	24	12	6.0	2.1	3.6	1.4	12	8.4
MAR 26...	98	20	4	5.1	1.8	3.3	1.0	16	7.7
MAY 06...	99	22	2	5.7	1.8	3.5	1.2	20	10
JUN 16...	101	24	0	6.4	1.9	4.1	1.9	26	5.6

RAPPAHANNOCK RIVER BASIN

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01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 22...	5.7	<0.10	9.0	60	51	<0.010	0.350	0.090	180
DEC 18...	4.1	<0.10	12	50	45	<0.010	0.580	<0.010	120
FEB 06...	5.4	<0.10	12	45	46	<0.010	0.770	<0.010	97
MAR 26...	3.7	<0.10	11	46	43	<0.010	0.530	<0.010	92
MAY 06...	3.7	<0.10	10	44	48	<0.010	0.260	<0.010	200
JUN 16...	3.7	<0.10	1.9	43	41	<0.010	0.160	<0.010	71

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	83	80	77	73	75	83	105	88	103	93	90
2	---	82	80	76	73	75	80	105	88	98	90	91
3	81	95	80	75	73	80	80	105	90	98	93	90
4	83	80	83	76	75	80	78	105	90	90	93	90
5	73	73	83	78	73	80	78	108	90	100	93	91
6	80	70	83	78	73	80	78	105	90	100	95	90
7	73	73	80	70	73	80	78	105	88	95	95	90
8	80	72	83	76	73	80	78	105	88	100	93	90
9	80	75	83	75	73	75	78	105	88	105	90	90
10	80	95	83	76	73	75	78	105	93	105	90	90
11	81	85	83	76	73	73	78	105	88	103	90	90
12	78	85	83	86	73	73	80	107	88	103	90	93
13	79	80	83	72	73	75	78	105	88	103	90	90
14	80	83	83	75	75	75	78	97	88	100	95	92
15	78	83	85	75	75	80	78	80	88	103	93	91
16	75	83	88	75	77	75	78	97	93	103	93	91
17	73	83	88	75	75	75	78	100	88	105	93	91
18	77	80	88	73	75	78	78	100	85	103	93	90
19	78	78	85	76	75	80	78	100	85	90	93	90
20	76	80	85	82	75	80	100	102	88	90	90	90
21	69	80	77	81	73	80	100	100	85	92	91	90
22	75	80	77	76	73	80	105	100	90	90	87	90
23	77	78	79	79	80	80	105	100	98	90	87	90
24	78	80	83	84	75	80	105	102	98	90	90	92
25	75	80	78	85	75	80	105	102	85	90	91	92
26	78	80	77	84	75	80	102	100	93	92	90	90
27	80	80	76	78	75	80	97	100	93	92	91	90
28	---	73	78	78	77	80	105	102	98	92	92	90
29	73	80	76	79	---	78	105	100	100	92	90	90
30	74	80	77	73	---	80	105	88	103	92	90	90
31	85	---	60	70	---	80	---	88	---	92	89	---
MEAN	78	80	81	77	74	78	88	101	91	97	91	90
WTR YR 1986	MEAN	86	MAX	108	MIN	60						

RAPPAHANNOCK RIVER BASIN

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.0	11.5	6.0	4.5	5.5	7.0	13.0	18.0	20.0	30.0	29.5	30.0
2	---	11.0	5.5	5.0	6.0	9.0	13.0	17.5	20.0	29.5	30.5	29.0
3	20.0	---	4.0	4.0	4.5	9.5	12.5	17.0	21.0	30.0	29.5	28.0
4	20.0	13.5	5.5	6.0	5.0	9.0	13.5	18.0	22.0	30.5	30.0	26.0
5	18.0	14.0	5.0	5.5	5.5	8.5	12.0	18.5	21.0	31.5	31.0	25.5
6	17.5	13.0	6.5	3.0	6.5	8.0	13.5	19.0	22.5	33.0	29.5	25.0
7	15.5	11.5	4.5	2.0	5.0	7.0	14.0	18.5	23.5	31.5	29.0	24.5
8	16.0	12.0	6.0	2.0	5.5	7.5	13.5	19.5	23.0	32.0	30.0	24.5
9	16.0	13.0	5.0	1.0	6.5	8.5	14.5	20.0	25.5	32.0	29.0	23.0
10	16.5	11.5	5.5	1.5	5.0	9.0	12.5	19.0	26.0	31.5	29.5	23.0
11	15.5	12.0	6.0	2.0	5.0	8.5	14.0	19.5	27.5	32.5	29.5	22.5
12	17.0	11.0	5.5	3.0	5.5	9.0	15.5	21.0	27.5	31.5	29.0	21.5
13	16.5	9.0	5.5	3.0	6.0	9.0	15.0	18.5	28.0	32.5	28.5	19.0
14	15.0	10.0	6.0	3.5	5.0	9.5	16.0	19.0	27.0	31.0	29.0	18.5
15	17.0	9.5	6.0	3.0	5.0	8.0	16.5	20.0	28.5	31.5	30.5	18.5
16	16.0	9.0	6.5	4.0	5.5	8.5	15.0	21.0	29.0	32.0	29.5	17.5
17	16.5	10.5	5.0	4.0	6.0	9.0	15.0	20.0	29.5	31.0	30.0	17.0
18	16.0	10.0	4.0	4.0	5.0	8.0	15.5	21.0	29.5	30.0	29.5	16.5
19	15.0	8.5	4.5	5.5	6.5	10.5	16.5	22.0	30.0	29.0	28.5	16.5
20	17.0	8.0	5.5	7.0	6.0	10.0	17.0	19.5	29.0	29.5	29.0	16.0
21	16.0	7.0	6.5	6.5	7.5	10.0	16.5	22.5	30.0	29.0	29.5	16.0
22	14.5	7.5	6.5	5.0	6.5	11.0	17.0	22.0	29.5	27.0	29.5	16.0
23	15.0	8.5	4.5	6.0	6.0	11.5	17.5	23.0	29.5	26.0	30.0	15.5
24	15.0	9.0	5.0	6.5	6.5	11.0	17.0	21.5	28.5	26.0	29.0	15.0
25	15.0	7.0	7.0	7.0	5.5	11.5	17.0	22.0	29.0	27.0	29.0	15.0
26	11.5	7.0	6.5	7.5	7.0	11.5	18.0	23.0	30.0	27.5	29.5	14.5
27	15.5	7.5	6.0	7.0	8.0	12.0	18.5	19.5	29.5	26.5	30.0	14.0
28	---	7.0	5.0	6.5	6.5	12.0	17.5	19.5	29.0	27.0	30.5	13.5
29	12.0	---	4.5	7.0	---	12.5	18.5	20.0	28.5	27.0	29.5	13.5
30	11.5	7.0	5.0	---	---	12.0	18.5	19.5	28.5	29.5	29.5	13.0
31	12.0	---	5.5	---	---	12.5	---	19.0	---	30.0	29.5	---
MEAN	16.0	10.0	5.5	4.5	6.0	9.5	15.5	20.0	26.5	30.0	29.5	19.5
WTR YR 1986	MEAN	16.0		MAX	33.0	MIN	1.0					

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)		LOADS (T/DAY)		
	OCTOBER	NOVEMBER		DECEMBER	JANUARY		FEBRUARY	MARCH									
1	6	.57		8	4.6	70	406	5	5.8	5	5.8	6	14				
2	7	.76		410	3830	40	200	5	5.2	4	4.6	5	11				
3	6	.50		186	1570	25	96	4	4.2	7	8.6	5	11				
4	7	.85		704	26700	18	59	5	5.3	33	80	7	15				
5	2	.32		220	11900	17	50	5	5.1	32	93	6	13				
6	1	.14		155	3470	17	47	6	5.8	10	24	5	10				
7	1	.12		60	507	15	38	8	7.6	10	25	9	18				
8	1	.12		40	226	12	28	10	7.7	7	16	8	14				
9	1	.11		30	125	10	21	8	7.5	6	13	10	17				
10	1	.11		30	102	10	20	11	11	8	19	11	19				
11	1	.11		25	74	10	19	10	10	16	42	9	16				
12	1	.12		20	52	11	20	6	5.6	15	36	10	17				
13	1	.12		18	42	14	27	6	5.7	13	26	9	15				
14	1	.13		15	32	15	35	9	8.3	15	26	10	20				
15	1	.14		15	29	11	20	9	8.0	16	32	1910	22200				
16	1	.20		14	24	9	15	9	7.1	15	27	230	1430				
17	1	.21		16	32	7	11	8	7.1	14	25	56	246				
18	1	.20		16	29	7	11	4	3.9	25	61	30	109				
19	1	.22		15	24	5	6.7	5	5.1	32	124	16	52				
20	5	1.5		15	22	5	6.7	6	13	22	82	9	26				
21	72	94		12	17	4	5.9	5	9.2	21	73	11	28				
22	129	514		60	181	4	4.8	5	6.8	13	41	12	28				
23	283	1690		80	441	5	7.2	5	6.1	7	21	10	22				
24	70	352		47	159	3	4.3	4	4.4	6	18	11	23				
25	14	39		28	79	3	4.4	3	3.2	6	18	13	25				
26	11	19		23	56	4	4.8	4	5.8	5	13	14	26				
27	5	5.8		22	49	4	4.5	1	1.9	5	13	12	22				
28	1	.90		22	49	7	9.6	4	5.4	5	13	13	22				
29	4	2.9		40	152	3	3.6	5	5.7	---	---	13	21				
30	7	4.2		70	404	4	4.7	8	10	---	---	14	22				
31	8	4.3		---	---	4	4.9	5	6.1	---	---	14	21				
TOTAL	---	2732.65		---	50381.6	---	1195.1	---	203.6	---	980.0	---	24533				
	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER	
1	13	18		2	2.8	4	3.1	1	.22	2	.22	2	.21				
2	13	18		2	2.7	4	2.2	1	.24	1	.10	1	.11				
3	12	16		2	2.5	6	3.0	1	.29	3	.28	3	.52				
4	12	15		2	2.4	6	2.6	1	.25	3	.41	3	.84				
5	12	16		2	2.3	5	2.1	1	.20	3	.45	3	.79				
6	16	28		3	3.4	6	2.5	1	.15	2	.24	4	.89				
7	23	54		3	3.2	6	2.3	1	.13	11	3.2	4	.71				
8	14	29		2	2.1	4	1.5	1	.11	15	3.8	4	.58				
9	10	17		1	.93	5	1.9	1	.10	1	.25	3	.37				
10	7	12		1	.90	4	1.4	1	.12	5	.74	3	.33				
11	5	7.9		1	.89	1	.30	1	.13	2	.24	2	.19				
12	3	4.5		3	2.5	2	.58	2	.37	3	.32	2	.17				
13	2	2.8		2	1.6	1	.29	2	.42	6	.63	3	.23				
14	2	2.7		1	.96	3	.80	1	.16	2	.20	2	.14				
15	3	4.0		2	2.1	5	1.2	1	.12	4	.36	1	.06				
16	357	2920		2	1.9	3	.65	1	.10	2	.17	4	.22				
17	40	201		2	1.8	1	.19	1	.09	2	.17	6	.31				
18	6	27		1	.88	3	.53	1	.15	3	.36	6	.29				
19	4	14		2	1.8	3	.47	6	1.2	2	.41	5	.22				
20	7	22		2	1.6	1	.15	6	1.2	6	.94	4	.18				
21	9	26		3	4.7	1	.15	8	1.6	8	3.1	4	.19				
22	5	15		1	1.9	1	.16	9	2.3	10	9.0	5	.26				
23	3	8.3		1	1.3	1	.15	52	87	12	4.9	5	.26				
24	5	12		2	1.9	1	.15	80	67	9	2.3	6	.31				
25	5	11		2	1.7	1	.18	34	36	5	.88	6	.31				
26	5	10		1	.76	2	.32	1	.44	5	.69	6	.34				
27	4	7.6		1	.71	1	.14	1	.26	7	.77	6	.32				
28	4	7.1		2	1.5	1	.15	1	.26	9	1.0	5	.26				
29	3	5.0		2	1.4	1	.18	2	.43	9	1.5	5	.27				
30	2	3.0		5	3.0	1	.26	1	.16	8	1.4	5	.26				
31	---	---		5	3.9	---	---	1	.13	8	.99	---	---				
TOTAL	---	3533.9		---	62.03	---	29.60	---	201.33	---	40.02	---	10.14				
TOTAL LOAD FOR YEAR:		83902.97	TONS.														

RAPPAHANNOCK RIVER BASIN

01665000 MOUNTAIN RUN NEAR CULPEPER, VA

LOCATION.--Lat 38°28'50", long 78°03'10", Culpeper County, Hydrologic Unit 02080103, on left bank 30 ft upstream from bridge on State Highway 641, 2.4 mi upstream from Bond Branch, and 3.0 mi west of Culpeper.

DRAINAGE AREA.--15.9 mi², of which 10.9 mi² are above flood-detention structures.

PERIOD OF RECORD.--September 1949 to current year.

REVISED RECORDS.--WSP 1332: 1950-51. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 389.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharge: Jan. 9. Records good except for period with ice effect, Jan. 9, which is fair. Some regulation since 1959 by two reservoirs, combined flood storage, 2,240 acre-ft; 531 acre-ft additional storage used for low-water regulation for municipal supply for town of Culpeper. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--37 years, 16.7 ft³/s, 14.26 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,440 ft³/s, Aug. 18, 1955, from rating curve extended above 910 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 11.20 ft, Dec. 4, 1950; minimum discharge, 0.09 ft³/s, Sept. 30, Oct. 1, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 3	2030	*548	*6.04	Nov. 4	2145	420	5.37
Nov. 4	0730	408	5.30				

Minimum discharge, 0.88 ft³/s, Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	23	68	11	11	18	11	8.3	3.3	3.8	1.8	1.5
2	1.6	84	43	11	12	17	11	7.7	3.3	3.6	2.1	2.3
3	2.3	147	28	11	13	17	11	7.0	2.8	2.4	2.9	4.8
4	1.8	297	23	11	31	17	11	6.8	2.7	1.7	3.3	4.2
5	1.9	224	20	11	26	16	12	7.0	2.6	1.5	2.2	2.7
6	1.7	171	20	9.9	20	15	13	6.8	2.4	1.5	2.0	2.2
7	1.5	93	18	9.8	23	14	17	6.9	2.5	1.6	2.3	1.8
8	1.3	73	17	9.1	19	13	14	6.5	2.5	1.7	2.0	1.7
9	1.6	58	15	9.0	19	13	15	5.8	2.0	1.6	2.0	1.7
10	2.1	20	14	9.0	22	14	15	6.0	1.8	1.9	1.9	1.7
11	2.3	16	14	9.1	27	14	13	5.6	1.9	1.8	1.9	1.8
12	2.5	14	15	9.1	22	13	12	5.4	2.3	1.7	1.9	1.6
13	2.5	14	19	9.3	18	14	11	5.8	1.8	1.6	1.9	1.5
14	2.4	14	19	8.9	16	36	11	7.5	1.8	1.7	1.9	1.5
15	2.9	13	15	8.4	16	105	17	7.5	1.8	1.6	1.7	1.5
16	3.3	14	14	8.2	16	41	52	7.3	1.9	1.2	1.7	1.6
17	3.3	17	14	8.5	18	27	29	6.7	1.9	1.8	2.4	1.6
18	3.7	14	13	9.1	27	22	22	6.1	1.7	1.7	3.4	1.6
19	4.8	14	12	12	29	20	17	5.5	1.8	1.8	2.6	1.5
20	15	13	12	15	24	18	15	6.2	1.8	2.2	3.0	1.7
21	30	13	12	12	22	15	14	7.0	1.6	3.0	11	1.8
22	103	68	12	12	20	14	16	8.7	1.5	2.3	4.8	1.6
23	144	48	12	11	21	14	14	6.7	1.5	3.0	2.9	1.8
24	63	28	13	10	22	13	12	5.7	1.7	10	2.2	1.7
25	23	21	14	11	22	13	11	5.0	1.8	4.2	1.9	1.6
26	15	18	12	15	20	13	11	4.8	1.5	3.0	1.8	1.5
27	12	17	11	17	20	13	10	4.8	1.3	5.6	1.8	1.6
28	9.9	24	12	13	20	13	9.7	5.6	2.4	7.3	2.8	1.6
29	8.7	56	12	12	---	12	9.3	4.7	3.9	3.6	2.5	1.7
30	8.2	122	11	12	---	12	8.6	4.3	2.3	2.5	1.8	1.7
31	7.7	---	11	11	---	12	---	3.8	---	2.0	1.7	---
TOTAL	484.2	1748	545	335.4	576	608	444.6	193.5	64.1	84.9	80.1	57.1
MEAN	15.6	58.3	17.6	10.8	20.6	19.6	14.8	6.24	2.14	2.74	2.58	1.90
MAX	144	297	68	17	31	105	52	8.7	3.9	10	11	4.8
MIN	1.2	13	11	8.2	11	12	8.6	3.8	1.3	1.2	1.7	1.5
CFSM	.98	3.67	1.11	.68	1.30	1.23	.93	.39	.13	.17	.16	.12
IN.	1.13	4.09	1.28	.78	1.35	1.42	1.04	.45	.15	.20	.19	.13
CAL YR 1985	TOTAL	5382.89	MEAN	14.7	MAX	297	MIN	.89	CFSM	.92	IN.	12.59
WTR YR 1986	TOTAL	5220.9	MEAN	14.3	MAX	297	MIN	1.2	CFSM	.90	IN.	12.21

RAPPAHANNOCK RIVER BASIN

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01665500 RAPIDAN RIVER NEAR RUCKERSVILLE, VA

LOCATION.--Lat 38°16'50", long 78°20'25", Madison County, Hydrologic Unit 02080103, on left bank 250 ft downstream from bridge on U.S. Highway 29, 0.2 mi downstream from Elk Run, 1.7 mi upstream from White Run, 3.6 mi north-east of Ruckersville, and at mile 63.5.

DRAINAGE AREA.--114 mi².

PERIOD OF RECORD.--September 1942 to current year.

REVISED RECORDS.--WSP 1171: 1944-45(M). WSP 1382: 1943(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.44 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-31, Dec. 21, 22, 27, Jan. 8-10, 15, 20, 28-30, and Sept. 12-30.

Records good except those for periods of doubtful gage-height record, Oct. 1-31 and Sept. 12-30, and periods with ice effect, Dec. 21, 22, 27, and Jan. 8-10, 15, 20, 28-30, which are fair. Diversion 0.4 mi upstream from station since 1973 by Rapidan Service Authority for municipal supply of Greene County and town of Stanardsville has averaged less than 0.25 ft³/s. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--44 years, 149 ft³/s, 17.75 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,700 ft³/s, Oct. 15, 1942, gage height, 20.8 ft, from flood-mark in gage house, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement at gage height 17.78 ft; minimum daily, 0.90 ft³/s, Sept. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0500	9,000	12.62	Nov. 30	0700	1,590	4.76
Nov. 5	0130	*12,600	*14.72				

Minimum daily discharge, 11 ft³/s, July 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	241	587	80	67	156	103	106	46	41	14	19
2	22	1000	514	76	68	146	100	101	48	49	13	36
3	30	1180	419	77	75	143	95	95	42	44	15	83
4	25	5750	362	75	173	137	94	92	39	27	32	82
5	20	5790	322	74	174	130	96	88	37	22	15	59
6	18	1730	292	70	159	126	105	85	36	19	14	46
7	15	1010	257	70	182	119	143	82	35	16	13	35
8	14	690	234	58	162	106	106	76	35	14	13	30
9	14	523	213	62	160	108	101	72	35	15	14	26
10	14	423	195	69	168	110	100	73	30	16	14	23
11	13	352	183	68	190	120	94	70	29	16	18	22
12	13	303	176	66	162	111	91	66	36	21	16	20
13	13	266	189	66	141	115	86	70	28	16	14	19
14	14	237	174	61	131	189	84	102	24	13	14	18
15	15	212	150	62	129	643	158	83	23	12	13	17
16	16	195	142	61	122	459	558	75	22	11	12	16
17	14	198	134	63	124	371	363	69	21	15	26	15
18	14	172	127	63	187	314	303	63	18	14	36	14
19	15	157	115	78	252	281	260	65	17	12	23	15
20	24	147	112	101	248	247	235	64	17	16	24	16
21	160	136	108	82	236	216	227	75	18	26	72	15
22	319	361	105	75	221	197	211	118	17	18	46	14
23	427	346	110	75	214	184	187	79	16	34	30	14
24	350	276	105	71	206	168	170	71	16	121	24	14
25	251	241	105	75	196	153	159	66	18	108	19	13
26	191	221	87	83	185	145	153	62	16	50	16	14
27	150	206	92	87	184	137	139	59	15	40	14	27
28	122	259	90	62	171	127	129	65	16	50	78	16
29	105	423	86	70	---	120	121	55	34	26	43	15
30	95	910	82	69	---	114	112	49	27	19	27	14
31	89	---	80	69	---	109	---	49	---	16	22	---
TOTAL	2603	23955	5947	2218	4687	5801	4883	2345	811	917	744	767
MEAN	84.0	799	192	71.5	167	187	163	75.6	27.0	29.6	24.0	25.6
MAX	427	5790	587	101	252	643	558	118	48	121	78	83
MIN	13	136	80	58	67	106	84	49	15	11	12	13
CFSM	.74	7.01	1.68	.63	1.46	1.64	1.43	.66	.24	.26	.21	.22
IN.	.85	7.82	1.94	.72	1.53	1.89	1.59	.77	.26	.30	.24	.25
CAL YR 1985	TOTAL	55155.5	MEAN	151	MAX	5790	MIN	8.9	CFSM	1.32	IN.	18.00
WTR YR 1986	TOTAL	55678	MEAN	153	MAX	5790	MIN	11	CFSM	1.34	IN.	18.17

RAPPAHANNOCK RIVER BASIN

01666500 ROBINSON RIVER NEAR LOCUST DALE, VA

LOCATION.--Lat 38°19'30", long 78°05'45", Madison County, Hydrologic Unit 02080103, on right bank 100 ft upstream from bridge on State Highway 614, 1.1 mi upstream from Great Run, 1.7 mi upstream from mouth, 2.0 mi southeast of Locust Dale, and 3.4 mi downstream from Crooked Run.

DRAINAGE AREA.--179 mi².

PERIOD OF RECORD.--July 1943 to current year. Prior to October 1965, published as Robertson River near Locust Dale.

REVISED RECORDS.--WSP 1171: 1948(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 283.70 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20-23, Jan. 9-11, 15-17, 28-31, and Feb. 13, 14. Records good except those for periods with ice effect, Dec. 20-23, Jan. 9-11, 15-17, 28-31, and Feb. 13, 14, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--43 years, 221 ft³/s, 16.77 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s, June 22, 1972, gage height, 20.92 ft, from rating curve extended above 9,100 ft³/s on basis of records for other stations in Rappahannock River basin; minimum, 1.2 ft³/s, Sept. 7, 13, 1954; minimum daily, 1.8 ft³/s, Sept. 13, 27, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.9 ft, from floodmarks, discharge, about 44,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0900	3,500	11.46	Nov. 5	0730	*17,200	*20.17
Nov. 4	1100	14,000	19.09	Nov. 30	1030	2,260	8.95

Minimum discharge, 13 ft³/s, July 17, gage height, 1.12 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	476	828	149	139	248	164	150	74	45	23	31
2	21	2790	725	144	144	234	160	143	73	62	60	43
3	49	2240	559	147	151	230	154	135	67	54	43	65
4	52	10100	474	144	350	226	153	132	64	41	33	71
5	36	10400	425	143	330	216	155	129	63	35	27	60
6	30	2510	391	137	283	210	167	124	61	31	22	55
7	24	1300	348	136	323	201	202	121	58	28	24	46
8	23	901	322	129	286	182	175	116	59	24	23	43
9	24	685	296	120	275	185	175	110	63	22	21	39
10	24	555	275	130	293	187	181	113	53	24	21	34
11	24	458	261	125	342	198	168	109	50	25	25	33
12	24	389	256	129	291	189	160	104	86	38	26	31
13	24	347	281	131	240	190	152	105	62	26	23	29
14	24	312	278	123	220	318	150	137	51	19	22	26
15	27	280	236	120	225	1050	165	124	47	16	22	25
16	28	257	226	115	219	591	677	116	44	15	19	24
17	26	285	219	120	224	450	447	106	41	36	20	22
18	24	252	207	127	299	377	380	101	37	44	66	21
19	27	238	189	146	392	340	327	98	35	26	36	22
20	61	228	180	249	365	304	293	102	34	32	38	25
21	383	213	170	170	344	267	277	105	35	83	132	24
22	824	631	160	152	317	245	267	134	31	38	95	23
23	1180	603	180	145	315	234	241	107	29	28	58	23
24	676	413	180	139	312	222	217	97	31	69	46	23
25	430	349	183	144	304	208	205	92	32	65	36	22
26	306	313	156	176	284	202	199	89	29	59	31	21
27	238	291	150	200	285	197	185	86	27	53	28	19
28	199	409	159	135	272	187	175	96	29	47	59	20
29	170	819	156	115	---	181	167	86	47	40	67	25
30	153	1460	150	120	---	175	156	80	43	32	39	24
31	140	---	148	130	---	170	---	77	---	26	33	---
TOTAL	5289	40504	8768	4390	7824	8414	6694	3424	1455	1183	1218	969
MEAN	171	1350	283	142	279	271	223	110	48.5	38.2	39.3	32.3
MAX	1180	10400	828	249	392	1050	677	150	86	83	132	71
MIN	18	213	148	115	139	170	150	77	27	15	19	19
CFSM	.96	7.54	1.58	.79	1.56	1.51	1.25	.61	.27	.21	.22	.18
IN.	1.10	8.42	1.82	.91	1.63	1.75	1.39	.71	.30	.25	.25	.20
CAL YR 1985	TOTAL	93192	MEAN	255	MAX	10400	MIN	16	CFSM	1.42	IN.	19.37
WTR YR 1986	TOTAL	90132	MEAN	247	MAX	10400	MIN	15	CFSM	1.38	IN.	18.73

RAPPAHANNOCK RIVER BASIN

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01667500 RAPIDAN RIVER NEAR CULPEPER, VA

LOCATION.--Lat 38°21'01", long 77°58'31", Culpeper County, Hydrologic Unit 02080103, on left bank 0.7 mi upstream from Cedar Run and bridge on U.S. Highway 522, 8.5 mi south of Culpeper, and at mile 29.6.

DRAINAGE AREA.--472 mi².

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 741: 1931. WSP 801: 1934(M), 1936(M). WSP 1081: 1943-46. WSP 1171: 1932(M), 1933-35. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 241.36 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 21, Jan. 17, 18, and Jan. 28 to Feb. 1. Records good except those for periods with ice effect, Dec. 21, Jan. 17, 18, and Jan. 28 to Feb. 1, which are fair. Diurnal fluctuation at low flow caused by mill at Rapidan. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--56 years, 527 ft³/s, 15.16 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,100 ft³/s, Oct. 16, 1942, gage height, 30.3 ft, from flood-mark, from rating curve extended above 43,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.1 ft³/s, Oct. 4, 5, 11, 1954; minimum daily, 2.2 ft³/s, Oct. 4, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	1145	5,200	7.86	Nov. 30	1400	6,240	9.35
Nov. 5	1315	*28,500	*22.52				

Minimum discharge, 33 ft³/s, July 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	579	2410	341	285	587	390	365	175	104	58	79
2	60	4310	1790	330	301	549	382	344	161	151	94	86
3	113	3590	1370	329	319	531	366	321	154	187	288	152
4	142	13600	1150	330	744	532	358	305	139	127	110	237
5	103	22500	1040	323	795	503	367	300	136	89	111	199
6	86	7330	957	309	654	479	394	290	133	76	63	164
7	74	2670	865	299	759	462	523	284	128	65	54	138
8	67	1850	797	261	708	412	458	270	130	58	55	117
9	66	1450	741	242	664	410	413	252	132	53	49	107
10	65	1190	676	331	694	412	443	251	122	56	55	93
11	66	1030	636	307	889	428	397	247	110	61	62	84
12	66	914	626	296	781	424	376	237	139	94	59	80
13	65	827	661	290	646	412	358	231	136	66	55	74
14	66	757	696	269	551	544	348	317	111	54	51	68
15	67	683	573	247	544	2370	358	309	97	42	49	66
16	69	617	538	243	520	1430	1510	280	92	36	46	61
17	72	671	515	250	513	1110	1130	256	86	55	45	57
18	70	595	491	260	633	951	947	236	79	113	158	53
19	69	547	451	301	881	861	804	225	71	69	110	53
20	99	516	430	496	835	785	720	244	68	54	91	56
21	584	485	410	383	787	687	680	256	66	188	262	61
22	1490	1150	390	326	737	621	675	385	63	140	285	58
23	2080	1430	471	308	748	588	626	301	59	126	156	56
24	1380	981	433	292	734	555	543	243	61	130	109	56
25	938	835	436	298	723	512	502	226	60	201	85	53
26	687	747	366	396	676	491	491	216	57	208	68	53
27	531	694	358	493	676	477	460	205	54	144	60	51
28	437	793	388	330	652	453	430	221	55	125	78	77
29	367	2930	361	280	---	434	412	215	72	130	238	65
30	325	4430	349	300	---	421	385	190	99	87	126	60
31	298	---	335	290	---	406	---	179	---	68	91	---
TOTAL	10661	80701	21710	9750	18449	19837	16246	8201	3045	3157	3221	2614
MEAN	344	2690	700	315	659	640	542	265	102	102	104	87.1
MAX	2080	22500	2410	496	889	2370	1510	385	175	208	288	237
MIN	59	485	335	242	285	406	348	179	54	36	45	51
CFSM	.73	5.70	1.48	.67	1.40	1.36	1.15	.56	.22	.22	.22	.18
IN.	.84	6.36	1.71	.77	1.45	1.56	1.28	.65	.24	.25	.25	.21
CAL YR 1985	TOTAL	209247	MEAN	573	MAX	22500	MIN	34	CFSM	1.21	IN.	16.49
WTR YR 1986	TOTAL	197592	MEAN	541	MAX	22500	MIN	36	CFSM	1.15	IN.	15.57

RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA
(National stream-quality accounting network station)

LOCATION.--Lat 38°19'20", long 77°31'05", Spotsylvania County, Hydrologic Unit 02080104, on right bank 1.6 mi upstream from dam of Virginia Power, 2.2 mi downstream from Motts Run, and 3.8 mi upstream from Fredericksburg.
DRAINAGE AREA.--1,596 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1907 to current year. Monthly discharge only for some periods, published in WSP 1302.
REVISED RECORDS.--WSP 801: 1924(M). WSP 951: 1937(M). WSP 1302: 1907-12, 1913(M), 1916(M), 1918(M), 1920-21(M).
WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 55.18 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 15, 1922, nonrecording gage, and Jan. 15, 1922, to Aug. 2, 1966, water-stage recorder at same site at datum 1.00 ft higher.

REMARKS.--Estimated daily discharges: Mar. 12-25 and June 7-23. Records good except those for periods of no gage-height record, Mar. 12-25 and June 7-23, which are fair.

AVERAGE DISCHARGE.--79 years, 1,663 ft³/s, 14.15 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 140,000 ft³/s, Oct. 16, 1942, gage height, 26.9 ft, present datum, from floodmarks, from rating curve extended above 76,000 ft³/s on basis of flow-over-dam and slope-area measurements at gage heights 26.1 ft and 26.9 ft, present datum; minimum, 5 ft³/s, Oct. 11, 12, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1889 was probably several feet lower than that of Oct. 16, 1942.
EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 16,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	0530	*50,200	*14.33	Nov. 30	2400	18,000	8.69

Minimum discharge, 97 ft³/s, Oct. 18; minimum gage height, 1.20 ft, Sept. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	594	11500	1010	1100	1960	1060	983	615	232	186	224
2	121	4120	5730	965	1040	1770	1030	934	586	288	159	204
3	165	7980	4180	940	1070	1690	996	872	485	299	142	201
4	190	18700	3160	944	2180	1690	960	817	444	362	307	237
5	227	44300	2720	931	3280	1670	966	798	413	329	221	428
6	187	41600	2470	904	2440	1600	1030	795	402	257	227	407
7	161	9280	2290	870	2260	1530	1340	766	390	210	196	336
8	150	5250	2070	798	2340	1420	1610	739	380	185	155	303
9	135	3780	1920	753	2120	1250	1270	702	390	168	183	257
10	125	3020	1770	901	2150	1300	1220	654	360	168	180	226
11	123	2570	1650	1030	2740	1320	1180	651	320	159	187	209
12	120	2230	1610	951	2650	1260	1080	640	350	220	158	190
13	114	1990	1630	851	2110	1200	1020	616	340	208	148	173
14	113	1810	2060	868	1700	1500	966	639	300	236	137	159
15	108	1670	1800	876	1580	6500	965	808	260	206	131	149
16	104	1510	1510	879	1650	8000	3420	787	245	170	123	137
17	101	1480	1440	853	1610	3500	4290	732	220	145	119	129
18	99	1620	1380	907	1900	2650	3160	670	210	125	119	123
19	103	1410	1300	863	3290	2400	2590	663	180	162	160	116
20	137	1310	1100	1260	3010	2150	2160	681	172	226	262	112
21	547	1250	1190	1790	2700	1900	1950	734	170	235	272	111
22	2990	1600	1340	1260	2480	1670	1900	1100	172	274	543	111
23	7770	5700	1170	1070	2290	1700	1920	1160	160	310	667	113
24	5300	3320	1380	977	2520	1520	1640	870	172	587	410	116
25	2960	2460	1280	935	2430	1400	1440	736	167	592	290	117
26	1810	2090	1250	1800	2320	1300	1340	675	163	599	232	116
27	1260	1880	1160	2870	2180	1270	1290	642	173	454	198	120
28	975	1830	1240	1910	2200	1240	1200	616	167	331	189	115
29	805	7720	1180	1170	---	1180	1120	639	179	292	177	114
30	688	11600	1130	1160	---	1140	1060	617	195	286	271	124
31	622	---	1150	1250	---	1100	---	548	---	232	288	---
TOTAL	28441	195674	66760	34546	61340	61780	47173	23284	8780	8547	7037	5477
MEAN	917	6522	2154	1114	2191	1993	1572	751	293	276	227	183
MAX	7770	44300	11500	2870	3290	8000	4290	1160	615	599	667	428
MIN	99	594	1100	753	1040	1100	960	548	160	125	119	111
CFSM	.57	4.09	1.35	.70	1.37	1.25	.98	.47	.18	.17	.14	.11
IN.	.66	4.56	1.56	.81	1.43	1.44	1.10	.54	.20	.20	.16	.13
CAL YR 1985	TOTAL	559694	MEAN	1533	MAX	44300	MIN	75	CFSM	.96	IN.	13.05
WTR YR 1986	TOTAL	548839	MEAN	1504	MAX	44300	MIN	99	CFSM	.94	IN.	12.79

RAPPAHANNOCK RIVER BASIN

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01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1929-30, 1956, 1967-74, 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1955 to September 1956, April 1968 to August 1974.

WATER TEMPERATURE: October 1955 to September 1956, April 1968 to August 1974.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT 23...	1000	8440	100	89	6.60	6.80	15.5	771	3.7	10.8	107	--
NOV 05...	1200	49200	50	56	6.80	7.20	14.0	740	70	10.0	100	--
DEC 04...	1030	3170	74	69	6.60	7.40	5.5	776	17	12.3	96	--
JAN 28...	1000	2000	98	92	7.10	7.30	0.5	766	17	12.4	86	130
FEB 26...	1015	2360	76	83	6.90	7.90	3.0	762	5.9	14.0	104	<8
MAR 25...	1100	1390	69	72	6.80	7.80	9.0	770	2.0	11.8	101	--
APR 22...	1000	1920	63	67	7.20	7.70	14.5	758	4.0	10.0	99	86
MAY 27...	1200	643	67	72	8.20	8.80	22.5	756	2.0	7.3	85	--
JUN 24...	0830	170	90	82	7.30	7.60	25.0	760	2.0	6.4	78	110
AUG 26...	1000	232	90	92	7.10	7.60	23.0	758	3.5	7.8	91	13

DATE	STREP- TOCOCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	ALKA- LITY WH WAT TOTAL FIELD (MG/L AS CACO3)	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 23...	--	--	--	--	--	--	--	16	--	--	--	--
NOV 05...	--	16	8	4.2	1.3	2.0	2.7	10	11	8.0	10	7.8
DEC 04...	--	--	--	--	--	--	--	15	--	--	--	--
JAN 28...	230	31	13	7.6	2.9	4.1	2.2	16	19	18	22	12
FEB 26...	46	26	10	6.6	2.4	3.8	1.4	16	17	16	19	9.8
MAR 25...	--	--	--	--	--	--	--	17	--	--	--	--
APR 22...	15	20	2	4.9	1.8	3.1	1.1	17	18	18	22	6.8
MAY 27...	--	--	--	--	--	--	--	22	--	--	--	--
JUN 24...	180	25	0	6.0	2.4	4.5	2.2	28	27	27	33	4.9
AUG 26...	58	24	3	5.8	2.4	5.8	4.3	23	22	21	26	8.9

RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
OCT 23...	--	--	9.4	--	--	0.040	1.00	0.120	--	2.3	0.310	0.060
NOV 05...	3.0	<0.10	6.3	45	33	<0.010	0.230	0.050	0.120	1.3	0.190	0.040
DEC 04...	--	--	12	--	--	<0.010	0.840	0.030	--	0.40	0.040	0.030
JAN 28...	7.3	<0.10	10	58	57	<0.010	0.870	0.100	0.100	0.70	0.060	0.030
FEB 26...	6.2	<0.10	11	46	51	0.010	0.750	0.040	0.040	0.40	0.030	0.010
MAR 25...	--	--	11	--	--	<0.010	0.630	0.020	--	0.30	0.020	0.010
APR 22...	3.6	<0.10	10	43	42	0.010	0.450	0.030	--	0.20	0.030	--
MAY 27...	--	--	11	--	--	0.010	0.320	0.010	--	0.40	0.020	0.010
JUN 24...	4.6	0.10	4.3	43	45	<0.010	<0.100	0.020	0.020	0.20	0.020	0.020
AUG 26...	6.6	0.10	10	63	57	<0.010	0.520	0.040	0.070	0.40	0.050	0.040

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
OCT 23...	0.050	--	--	--	--	--	--	--	--	--	--	--
NOV 05...	0.030	120	<1	98	<0.5	1	<1	<3	5	230	10	<4
DEC 04...	0.030	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	0.020	--	--	--	--	--	--	--	--	--	--	--
FEB 26...	<0.010	40	<1	19	<0.5	<1	1	<3	3	86	1	<4
MAR 25...	<0.010	--	--	--	--	--	--	--	--	--	--	--
APR 22...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	<0.010	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	<0.010	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	0.030	40	<1	22	<0.5	1	4	<3	2	180	<5	<4

RAPPAHANNOCK RIVER BASIN

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01668500 CAT POINT CREEK NEAR MONTROSS, VA

LOCATION.--Lat 38°02'23", long 76°49'38", Richmond County, Hydrologic Unit 02080104, on right bank 200 ft upstream from bridge on State Highway 637, 1.7 mi west of Farmers Fork, 3.8 mi south of Montross, and 11.4 mi upstream from mouth.

DRAINAGE AREA.--45.6 mi².

PERIOD OF RECORD.--September 1943 to current year.

REVISED RECORDS.--WSP 1382: 1944(M), 1945, 1946-51(M), 1952(P), 1953-54(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3.04 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 19, 1953, nonrecording gage near right bank at downstream side of highway bridge at same datum.

REMARKS.--Estimated daily discharges: Jan. 7-10, 14-16, and Jan. 28 to Feb. 1. Records good except those for periods of no gage-height record, Jan. 7-10, 14-16, and Jan. 28 to Feb. 1, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--43 years, 44.8 ft³/s, 13.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s, Aug. 20, 1969, gage height, 10.45 ft, from rating curve extended above 1,400 ft³/s; no flow at times in 1943, 1957, 1959-60, 1966, and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1935 exceeded 9.3 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 1	1400	*238	*5.42	No peak equal to or greater than base discharge.			

Minimum daily discharge, 0.32 ft³/s, June 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	51	217	45	64	50	34	27	12	1.2	2.8	11
2	32	64	151	43	68	49	34	24	11	4.2	2.5	11
3	62	70	94	50	62	48	32	21	12	7.3	2.7	11
4	79	125	74	49	80	48	32	22	12	6.3	3.0	9.8
5	63	150	66	47	81	49	33	20	12	4.4	2.5	12
6	43	105	61	43	70	47	47	20	11	3.2	2.1	17
7	34	74	55	42	86	44	63	19	11	2.2	1.7	13
8	31	59	52	38	87	41	54	19	9.8	1.4	1.5	12
9	29	50	52	35	75	42	46	18	9.2	1.9	1.3	11
10	28	46	50	39	69	42	41	18	7.7	3.7	1.2	10
11	27	43	46	42	84	42	37	19	6.6	2.3	1.0	9.9
12	27	42	46	41	84	40	34	17	6.1	1.8	1.1	9.2
13	27	41	51	41	75	54	32	18	5.5	1.2	1.5	8.3
14	28	37	52	37	71	71	31	29	4.5	.94	1.7	7.4
15	27	36	46	38	68	75	31	35	3.3	.74	2.8	6.7
16	29	35	43	39	65	73	35	33	2.3	.63	2.8	6.1
17	28	48	43	40	64	67	36	29	1.8	.55	5.1	5.6
18	29	43	42	41	65	55	36	25	1.3	.52	23	4.9
19	30	40	40	51	70	53	36	21	1.1	.43	60	4.1
20	35	37	41	72	65	50	32	38	.73	2.0	39	3.8
21	78	45	41	67	61	46	33	60	1.4	18	35	3.5
22	171	104	43	55	58	44	44	52	.62	21	26	3.5
23	167	124	44	46	63	44	50	45	.38	15	23	3.4
24	120	79	46	42	62	42	43	33	.41	12	18	3.2
25	87	59	46	44	59	46	38	25	.39	9.4	14	3.2
26	63	50	45	132	56	47	34	21	.33	7.9	12	3.2
27	51	48	44	156	57	43	31	19	.32	7.3	11	2.9
28	44	54	45	96	54	40	29	18	.35	6.9	14	2.8
29	40	55	46	80	---	38	27	17	.65	5.8	16	2.8
30	39	111	45	67	---	36	28	15	.74	4.5	14	2.7
31	37	---	46	69	---	35	---	13	---	3.4	13	---
TOTAL	1624	1925	1813	1727	1923	1501	1113	790	146.52	158.11	355.3	215.0
MEAN	52.4	64.2	58.5	55.7	68.7	48.4	37.1	25.5	4.88	5.10	11.5	7.17
MAX	171	150	217	156	87	75	63	60	12	21	60	17
MIN	27	35	40	35	54	35	27	13	.32	.43	1.0	2.7
CFSM	1.15	1.41	1.28	1.22	1.51	1.06	.81	.56	.11	.11	.25	.16
IN.	1.32	1.57	1.48	1.41	1.57	1.22	.91	.64	.12	.13	.29	.18
CAL YR 1985	TOTAL	13274.85	MEAN	36.4	MAX	1170	MIN	.27	CFSM	.80	IN.	10.83
WTR YR 1986	TOTAL	13290.93	MEAN	36.4	MAX	217	MIN	.32	CFSM	.80	IN.	10.84

01668800 HOSKINS CREEK NEAR TAPPAHANNOCK, VA

LOCATION.--Lat 37°55'38", long 76°57'16", Essex County, Hydrologic Unit 02080104, at bridge on State Highway 717, 0.4 mi upstream from Criddlin Swamp, 2.9 mi downstream from site of Hutchinson Mill Pond (destroyed by flood of August 1969), and 5.0 mi west of Tappahannock.

DRAINAGE AREA.--15.5 mi².

PERIOD OF RECORD.--October 1964 to September 1969, June 1970 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 36.28 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Jan. 8, 9, 14. Records good except those for periods with ice effect, Jan. 8, 9, 14, which are fair. No estimated daily discharges for period October to December 1986. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--21 years, 16.8 ft³/s, 14.72 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,380 ft³/s, Aug. 20, 1969, gage height, 10.23 ft, from rating curve extended above 100 ft³/s on basis of velocity-area study; minimum, 0.20 ft³/s, Sept. 12, 13, 1966.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 22	1430	*98	*4.07	No peak equal to or greater than base discharge.			

October 1985 to September 1986: Minimum discharge, 0.94 ft³/s, June 28.

October to December 1986: Maximum discharge during period, 239 ft³/s, Dec. 25, gage height, 5.05 ft; minimum, 1.4 ft³/s, Oct. 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	25	48	18	18	16	13	8.9	2.4	2.0	2.0	2.5
2	6.2	36	31	17	20	14	13	8.0	2.9	2.7	1.9	2.5
3	20	33	22	21	19	14	12	7.4	3.0	2.8	3.2	2.6
4	20	58	20	20	28	15	12	6.9	2.5	2.5	4.2	2.5
5	15	48	20	17	23	14	13	7.1	2.1	2.1	3.4	2.6
6	10	29	20	16	18	13	18	6.9	1.8	1.8	2.7	2.7
7	8.0	21	19	15	28	13	22	6.7	1.9	1.6	2.6	2.7
8	7.1	18	18	13	25	12	20	6.5	2.2	1.4	2.3	2.6
9	7.0	17	18	12	20	12	17	6.0	2.2	1.4	2.2	2.5
10	9.3	16	18	13	18	13	14	6.1	2.1	2.2	2.1	2.3
11	7.9	16	18	13	30	14	13	5.6	2.1	2.6	1.9	2.4
12	7.4	16	18	12	27	13	12	5.3	2.1	2.2	2.4	2.3
13	7.6	17	21	12	21	20	12	5.2	2.2	2.1	3.1	2.0
14	7.7	16	21	11	19	24	12	14	2.2	2.1	3.2	1.9
15	7.8	15	18	11	20	23	11	14	2.2	2.1	2.6	1.9
16	7.8	16	18	12	20	24	13	11	2.1	2.1	2.4	1.9
17	7.8	20	18	12	20	20	13	8.0	1.9	3.5	3.6	1.7
18	7.9	18	18	13	21	17	13	6.1	1.7	2.7	8.2	1.5
19	8.1	17	16	19	22	17	12	5.0	1.7	2.2	6.4	1.4
20	12	17	16	22	24	16	12	11	1.6	2.0	7.6	1.5
21	41	24	17	16	21	15	12	20	1.6	3.9	9.1	1.6
22	86	51	17	12	18	14	14	12	1.4	5.0	5.7	1.7
23	56	40	18	11	22	14	13	7.3	1.4	3.9	3.5	1.8
24	32	24	19	10	21	14	11	4.6	1.3	4.6	2.8	1.8
25	22	19	18	12	19	14	11	3.8	1.3	4.0	2.3	1.8
26	18	17	16	44	17	14	11	3.7	1.2	3.2	1.9	1.8
27	14	17	16	42	18	14	9.5	3.3	1.1	2.7	2.7	2.2
28	14	16	16	26	16	14	8.8	3.5	.98	2.6	8.6	2.2
29	14	16	17	21	---	14	9.4	3.4	1.3	2.6	7.1	2.2
30	13	36	17	18	---	14	10	2.6	1.4	2.4	3.9	2.2
31	13	---	17	18	---	14	---	2.4	---	2.3	3.0	---
TOTAL	513.4	729	604	529	593	479	386.7	222.3	55.88	81.3	118.6	63.3
MEAN	16.6	24.3	19.5	17.1	21.2	15.5	12.9	7.17	1.86	2.62	3.83	2.11
MAX	86	58	48	44	30	24	22	20	3.0	5.0	9.1	2.7
MIN	5.8	15	16	10	16	12	8.8	2.4	.98	1.4	1.9	1.4
CFSM	1.07	1.57	1.26	1.10	1.37	1.00	.83	.46	.12	.17	.25	.14
IN.	1.23	1.75	1.45	1.27	1.42	1.15	.93	.53	.13	.20	.28	.15
CAL YR 1985	TOTAL	4807.29	MEAN	13.2	MAX	154	MIN	.70	CFSM	.85	IN.	11.54
WTR YR 1986	TOTAL	4375.48	MEAN	12.0	MAX	86	MIN	.98	CFSM	.77	IN.	10.50

RAPPAHANNOCK RIVER BASIN

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01668800 HOSKINS CREEK NEAR TAPPAHANNOCK, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	4.4	5.0									
2	1.9	4.6	9.6									
3	1.8	4.8	27									
4	1.8	4.8	18									
5	1.7	5.3	9.4									
6	1.5	6.1	6.2									
7	1.4	6.6	5.2									
8	1.5	6.6	4.6									
9	1.8	6.8	6.8									
10	1.9	6.5	13									
11	1.9	6.9	17									
12	1.9	8.8	26									
13	2.0	8.5	14									
14	7.5	7.1	8.0									
15	16	6.4	6.0									
16	9.2	6.0	5.3									
17	4.8	5.9	4.8									
18	3.5	6.0	5.5									
19	3.5	6.8	6.0									
20	3.2	7.2	4.9									
21	2.8	9.4	4.3									
22	2.7	10	4.0									
23	2.8	7.5	3.7									
24	2.9	6.6	43									
25	3.0	6.0	144									
26	5.4	7.2	46									
27	6.6	16	27									
28	6.6	11	20									
29	5.8	7.2	17									
30	5.3	5.9	16									
31	4.8	---	15									
TOTAL	119.6	212.9	542.3									
MEAN	3.86	7.10	17.5									
MAX	16	16	144									
MIN	1.4	4.4	3.7									
CFSM	.25	.46	1.13									
IN.	.29	.51	1.30									
CAL YR 1986	TOTAL	3403.88	MEAN	9.33	MAX	144	MIN	.98	CFSM	.60	IN.	8.17

RAPPAHANNOCK RIVER BASIN

01669000 PISCATAWAY CREEK NEAR TAPPAHANNOCK, VA

LOCATION.--Lat 37°52'37", long 76°54'03", Essex County, Hydrologic Unit 02080104, on right bank at upstream side of bridge on State Highway 691, 0.6 mi south of Hensley Fork, 2.3 mi downstream from Sturgeon Swamp, and 4.2 mi southwest of Tappahannock.

DRAINAGE AREA.--28.0 mi².

PERIOD OF RECORD.--July 1951 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-79-1: 1970-76(P), 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 2.50 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 29 to Nov. 21, Dec. 21, 22, and Jan. 8, 15, 16. Records good except those for period of no gage-height record, Oct. 29 to Nov. 21, and periods with ice effect, Dec. 21, 22, and Jan. 8, 15, 16, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--35 years, 32.1 ft³/s, 15.57 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,380 ft³/s, Aug. 20, 1969, gage height, 7.52 ft, from rating curve extended above 1,400 ft³/s; minimum, 0.01 ft³/s, Oct. 2, 1954; minimum gage height, 0.07 ft, July 24, 25, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 22	1530	*201	*3.45	No peak equal to or greater than base discharge.			

Minimum discharge, 0.87 ft³/s, July 20, gage height, 0.10 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	58	95	36	43	41	28	20	9.2	4.3	1.7	5.9
2	29	78	72	34	47	41	28	17	8.7	6.5	1.5	5.6
3	58	72	59	39	45	42	27	15	7.5	8.3	2.7	5.0
4	77	125	54	41	62	41	26	15	7.0	6.7	5.7	4.6
5	49	100	53	36	60	40	27	15	7.1	4.4	8.4	5.0
6	36	70	52	33	49	39	36	15	6.9	3.0	5.7	5.4
7	28	54	50	32	59	38	44	14	6.8	2.0	4.2	4.8
8	24	47	49	30	58	35	37	13	6.7	1.7	3.0	5.2
9	23	42	48	35	48	35	31	12	6.2	2.3	2.3	5.1
10	22	37	46	32	46	36	28	12	6.0	4.0	2.2	5.3
11	21	36	45	32	68	36	27	12	6.0	4.4	2.2	4.5
12	20	35	46	31	69	35	25	11	5.1	4.4	3.3	3.8
13	19	37	50	31	53	41	25	12	4.4	2.9	8.5	3.7
14	19	35	51	29	47	56	24	26	4.0	2.6	11	2.7
15	19	34	44	30	50	51	23	38	3.4	1.9	8.0	2.5
16	18	35	42	29	50	46	28	26	3.4	1.6	6.1	2.3
17	17	40	42	31	50	41	29	19	3.0	1.7	6.5	2.1
18	17	38	41	33	54	37	27	15	2.5	1.4	17	1.9
19	17	36	39	40	57	36	26	13	2.2	1.2	17	1.9
20	26	35	38	56	56	38	24	27	2.1	.98	15	1.8
21	83	76	40	41	53	36	24	64	1.8	2.4	22	1.9
22	185	135	40	34	49	33	27	43	1.7	14	18	1.8
23	117	104	41	31	57	33	27	24	1.8	15	12	1.8
24	71	72	43	29	54	33	25	17	1.8	17	7.7	1.8
25	55	63	40	31	48	32	22	14	2.0	11	5.3	1.7
26	45	58	37	98	45	31	22	13	1.8	6.3	4.2	1.6
27	41	56	35	100	45	32	21	13	1.4	4.2	5.2	1.8
28	39	54	36	64	43	31	20	13	1.5	3.4	12	1.8
29	36	53	36	54	---	30	19	13	1.9	3.2	15	1.9
30	33	72	34	48	---	30	21	11	2.0	2.5	11	1.9
31	31	---	34	47	---	29	---	10	---	2.0	7.9	---
TOTAL	1304	1787	1432	1267	1465	1155	798	582	125.9	147.28	252.3	97.1
MEAN	42.1	59.6	46.2	40.9	52.3	37.3	26.6	18.8	4.20	4.75	8.14	3.24
MAX	185	135	95	100	69	56	44	64	9.2	17	22	5.9
MIN	17	34	34	29	43	29	19	10	1.4	.98	1.5	1.6
CFSM	1.50	2.13	1.65	1.46	1.87	1.33	.95	.67	.15	.17	.29	.12
IN.	1.73	2.37	1.90	1.68	1.95	1.53	1.06	.77	.17	.20	.34	.13
CAL YR 1985	TOTAL	9960.73	MEAN	27.3	MAX	419	MIN	.82	CFSM	.97	IN.	13.23
WTR YR 1986	TOTAL	10412.58	MEAN	28.5	MAX	185	MIN	.98	CFSM	1.02	IN.	13.83

PIANKATANK RIVER BASIN

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01669520 DRAGON SWAMP AT MASCOT, VA

LOCATION.--Lat 37°38'01", long 76°41'48", King and Queen County, Hydrologic Unit 02080102, on right bank at upstream side of bridge on State Highway 603, 0.8 mi east of Mascot, 2.1 mi downstream from Church Swamp, and 3.3 mi west of Warner.

DRAINAGE AREA.--108 mi².

PERIOD OF RECORD.--August 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 21.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20-22, Jan. 8, 9, 14-16, and Feb. 14. Records good except those for periods with ice effect, Dec. 20-22, Jan. 8, 9, 14-16, and Feb. 14, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--5 years, 111 ft³/s, 13.96 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s, Apr. 17, 1983, gage height, 8.85 ft, from rating curve extended above 1,400 ft³/s; minimum, 0.18 ft³/s, July 18-20, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 1	0100	652	a6.58	Oct. 24	0900	*745	*6.81

a Stage falling, peak occurred Sept. 28, 1985.

Minimum discharge, 0.18 ft³/s, July 18-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	546	173	331	118	224	188	93	60	22	.42	33	17
2	379	246	335	113	219	174	91	54	18	.50	28	15
3	286	278	325	119	217	165	88	46	14	.62	29	12
4	253	354	320	123	226	160	86	40	11	.74	25	8.9
5	216	429	299	121	229	154	86	36	8.8	.48	18	9.1
6	224	446	261	115	226	147	87	34	7.4	.46	12	10
7	231	428	225	112	241	142	91	32	6.6	.41	9.7	9.4
8	204	399	200	100	246	134	93	30	7.5	.36	7.2	11
9	168	354	183	90	230	128	93	26	9.5	.34	5.4	11
10	134	293	171	93	213	124	100	23	9.4	.36	4.3	9.8
11	109	237	164	93	248	122	103	21	8.8	.30	4.8	9.5
12	89	196	159	98	279	119	98	18	8.6	.27	11	9.8
13	72	172	166	95	287	128	92	17	11	.23	18	7.8
14	60	155	168	90	285	159	85	40	8.5	.40	24	6.5
15	52	141	160	90	275	189	81	65	7.0	.55	22	5.6
16	59	129	156	87	251	208	84	68	5.9	.27	17	5.4
17	68	126	155	85	238	211	82	61	5.0	.22	15	4.7
18	66	124	152	91	232	188	85	63	4.0	.20	29	3.9
19	65	123	142	105	222	169	85	58	3.6	.18	34	4.2
20	62	122	130	133	279	165	82	83	3.2	.19	47	3.8
21	134	180	124	125	318	162	80	122	2.5	.22	93	3.4
22	402	398	115	123	304	148	87	105	.76	.42	90	3.4
23	654	535	112	126	309	137	99	96	.59	.63	67	2.7
24	734	555	120	122	294	127	92	102	.61	.40	60	2.4
25	662	521	124	115	269	118	84	100	.54	.37	55	1.8
26	515	431	132	203	246	113	77	87	.48	.42	45	1.9
27	382	345	127	299	229	107	71	70	.44	.76	38	1.4
28	288	285	120	371	207	104	69	58	.42	.91	40	1.2
29	220	249	119	386	---	101	69	47	.44	.65	36	1.6
30	172	269	125	321	---	98	65	37	.41	.60	25	1.2
31	142	---	131	264	---	96	---	29	---	.48	20	---
TOTAL	7648	8693	5551	4526	7043	4485	2578	1728	186.99	571.72	962.4	195.4
MEAN	247	290	179	146	252	145	85.9	55.7	6.23	18.4	31.0	6.51
MAX	734	555	335	386	318	211	103	122	.22	.91	.93	17
MIN	52	122	112	85	207	96	65	17	.41	.18	4.3	1.2
CFSM	2.29	2.69	1.66	1.35	2.33	1.34	.80	.52	.06	.17	.29	.06
IN.	2.63	2.99	1.91	1.56	2.43	1.54	.89	.60	.06	.20	.33	.07
CAL YR 1985	TOTAL	39143.6	MEAN	107	MAX	1500	MIN	1.1	CFSM	.99	IN.	13.48
WTR YR 1986	TOTAL	44168.51	MEAN	121	MAX	734	MIN	.18	CFSM	1.12	IN.	15.21

WARE RIVER BASIN

01670000 BEAVERDAM SWAMP NEAR ARK, VA

LOCATION.--Lat 37°28'14", long 76°33'48", Gloucester County, Hydrologic Unit 02080102, on right bank 300 ft downstream from bridge on State Highway 606, 1.4 mi upstream from Beech Swamp, 2.3 mi north of Ark, and 4.3 mi northwest of Gloucester.

DRAINAGE AREA.--6.63 mi².

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1502: 1950, 1951-52(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 36.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 11-20. Records fair except for period of doubtful gage-height record, Oct. 11-20, which is poor. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--37 years, 7.16 ft³/s, 14.67 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 570 ft³/s, Sept. 12, 1960, gage height, 5.88 ft, from rating curve extended above 130 ft³/s; no flow July 30 to Aug. 2, 1953, Aug. 18, Sept. 4, Sept. 29 to Oct. 2, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 65 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 4	1100	*141	*3.74	Nov. 30	2300	83	3.50

Minimum daily discharge, 0.06 ft³/s, July 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	19	49	7.4	8.0	9.1	6.0	3.6	1.5	.23	.80	.70
2	7.4	29	22	6.8	10	8.3	6.0	3.2	1.7	.45	.68	.70
3	13	19	16	7.6	10	8.3	6.0	2.7	1.7	.41	1.0	.85
4	95	20	13	8.0	13	8.5	6.0	2.5	1.7	.33	.85	.75
5	43	20	12	6.8	11	8.0	5.8	2.4	1.6	.27	.65	.90
6	15	13	11	6.2	9.1	7.6	6.3	2.2	1.5	.18	.45	.95
7	9.4	11	11	5.6	12	7.3	6.5	3.0	1.5	.17	.35	.85
8	7.6	8.7	9.6	5.0	11	6.8	6.3	3.2	1.8	.12	.41	1.2
9	7.1	7.4	9.1	4.5	8.7	6.8	6.3	2.7	2.7	.17	.52	1.0
10	6.8	7.1	8.7	5.2	8.5	6.6	6.0	3.3	2.2	.32	.41	.75
11	6.3	7.0	8.5	5.7	14	6.6	6.0	3.1	1.7	.24	.35	.68
12	5.7	6.8	8.5	5.6	14	6.5	5.8	3.2	1.6	.20	18	.62
13	5.2	7.0	15	5.4	10	7.6	5.7	4.6	1.3	.10	20	.60
14	4.8	6.8	15	5.0	8.3	11	5.7	6.8	1.2	.08	7.4	.58
15	4.6	6.5	10	4.5	9.1	11	6.0	8.3	.90	.08	3.2	.55
16	5.4	6.2	8.7	4.3	11	9.1	7.4	7.4	.75	.09	1.8	.55
17	5.2	6.6	8.3	5.0	12	7.3	7.3	5.8	.58	.08	1.8	.55
18	5.2	6.3	7.8	5.7	13	7.0	8.3	4.8	.50	.08	3.5	.55
19	5.8	6.2	7.0	7.0	12	7.0	6.8	4.0	.45	.06	4.8	.55
20	8.3	6.0	6.8	9.1	18	8.0	5.7	6.0	.43	.07	9.6	.55
21	16	15	7.0	6.8	14	8.3	5.6	8.5	.48	.19	11	.55
22	21	39	6.8	5.7	12	7.0	6.4	7.4	.35	.29	4.2	.55
23	17	24	7.8	5.0	17	6.8	6.6	5.2	.27	4.4	1.8	.52
24	12	14	8.7	4.8	13	6.3	5.4	3.8	.24	5.2	.80	.52
25	9.6	9.6	7.4	5.4	12	6.3	4.5	3.6	.20	1.7	.58	.50
26	8.3	7.8	6.2	21	10	6.3	4.6	3.0	.19	1.3	.48	.50
27	8.0	7.4	6.2	20	10	6.2	4.4	3.0	.17	1.2	.75	.52
28	7.6	7.0	6.6	11	9.8	6.2	3.6	2.8	.12	1.3	8.7	.52
29	6.7	7.4	6.5	7.8	---	6.2	4.1	2.2	.13	1.3	5.8	.45
30	6.6	37	6.2	7.6	---	6.2	5.2	2.2	.12	1.3	2.9	.45
31	6.8	---	6.3	7.4	---	6.0	---	1.7	---	1.0	1.4	---
TOTAL	385.4	387.8	332.7	222.9	320.5	230.2	176.3	126.2	29.58	22.91	114.98	19.51
MEAN	12.4	12.9	10.7	7.19	11.4	7.43	5.88	4.07	.99	.74	3.71	.65
MAX	95	39	49	21	18	11	8.3	8.5	2.7	5.2	20	1.2
MIN	4.6	6.0	6.2	4.3	8.0	6.0	3.6	1.7	.12	.06	.35	.45
CFSM	1.87	1.95	1.61	1.08	1.72	1.12	.89	.61	.15	.11	.56	.10
IN.	2.16	2.18	1.87	1.25	1.80	1.29	.99	.71	.17	.13	.65	.11
CAL YR 1985	TOTAL	2361.29	MEAN	6.47	MAX	254	MIN	.08	CFSM	.98	IN.	13.25
WTR YR 1986	TOTAL	2368.98	MEAN	6.49	MAX	95	MIN	.06	CFSM	.98	IN.	13.29

YORK RIVER BASIN

123

01670300 CONTRARY CREEK NEAR MINERAL, VA

LOCATION.--Lat 38°03'53", long 77°52'45", Louisa County, Hydrologic Unit 02080106, on left bank 400 ft downstream from bridge on U.S. Highway 522 and 4.0 mi northeast of Mineral.

DRAINAGE AREA.--5.53 mi².

PERIOD OF RECORD.--October 1975 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Elevation of gage is 275 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Dec. 20-22, 26, Jan. 8, 9, 14-16, 29, and Feb. 14. Records good except those for periods with ice effect, Dec. 20-22, 26, Jan. 8, 9, 14-16, 29, and Feb. 14, which are fair. No estimated daily discharges for period October to December 1986. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--11 years, 5.09 ft³/s, 12.50 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,280 ft³/s, Aug. 18, 1985, gage height, 4.70 ft, from rating curve extended above 310 ft³/s; minimum, 0.03 ft³/s, Aug. 22, 1983.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0145	290	2.50	Nov. 4	2145	435	2.80
Nov. 4	0730	*532	*2.97				

October 1985 to September 1986: Minimum discharge, 0.08 ft³/s, June 27, gage height, 0.67 ft.

October to December 1986: Maximum discharge during period, 420 ft³/s, Dec. 24, gage height, 2.77 ft; minimum, 0.09 ft³/s, Oct. 6, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.75	7.8	23	3.3	3.7	4.5	3.1	2.7	1.3	1.8	.41	.61
2	.88	26	13	3.0	3.9	4.3	3.0	2.5	1.3	4.4	.61	1.1
3	8.0	62	7.1	3.2	4.1	4.3	2.9	2.2	1.2	2.2	.78	.95
4	2.3	223	5.7	3.0	17	4.4	3.3	2.3	1.1	.94	.58	.85
5	1.6	55	5.3	3.1	8.2	4.1	3.4	2.3	1.1	.68	.42	.84
6	1.2	15	4.7	2.8	5.5	3.9	3.5	2.2	1.0	.55	.38	.78
7	1.2	8.3	4.4	2.8	13	3.8	6.0	2.1	1.0	.47	.41	.63
8	1.1	5.7	4.3	2.6	7.7	3.5	3.8	1.9	1.2	.40	.52	.80
9	1.1	4.5	4.1	2.8	7.3	3.4	5.4	1.8	1.0	1.3	.58	.62
10	1.0	4.1	3.8	2.9	6.5	3.5	4.4	1.9	.75	1.1	.54	.58
11	.94	3.9	3.9	2.8	12	3.9	3.5	1.9	.75	.62	.68	.60
12	.91	3.8	4.2	2.9	7.2	3.5	3.3	1.8	.74	.47	.57	.55
13	.90	3.7	5.4	2.8	5.7	4.1	3.1	2.7	.63	.40	.88	.44
14	.85	3.6	4.8	2.6	5.3	15	3.0	5.1	.55	.34	.76	.38
15	.83	3.5	3.8	2.4	5.0	17	12	3.1	.51	.28	.60	.37
16	.74	3.5	3.7	2.6	4.9	7.1	28	2.7	.47	.27	.51	.28
17	.69	4.3	3.6	2.8	4.8	5.0	14	2.3	.40	.46	3.5	.22
18	.76	3.6	3.5	3.1	8.2	4.4	7.7	1.9	.29	.53	2.2	.23
19	.84	3.5	3.4	3.8	7.1	4.4	5.3	1.8	.25	.67	1.5	.27
20	1.8	3.4	3.4	4.1	5.6	4.1	4.6	2.8	.29	1.1	3.1	.31
21	15	3.8	3.1	3.2	5.0	3.6	4.5	3.5	.28	1.4	9.9	.36
22	42	16	3.4	2.9	5.6	3.5	5.2	4.4	.22	1.2	2.5	.32
23	22	7.4	3.7	2.7	9.9	3.5	5.0	2.4	.23	5.9	1.2	.34
24	10	4.8	3.6	2.5	6.1	3.5	3.9	1.9	.30	2.4	.89	.31
25	4.5	4.1	3.4	3.6	6.0	3.4	3.7	1.7	.21	1.1	.68	.28
26	3.2	3.8	3.1	23	6.0	3.4	3.6	1.6	.14	5.0	.61	.37
27	2.7	3.8	3.1	12	6.0	3.4	3.4	1.7	.14	2.7	.72	.71
28	2.6	4.8	3.1	6.4	5.4	3.2	3.1	1.9	.16	1.8	2.2	.45
29	2.3	14	3.1	4.3	---	3.1	3.1	1.5	.87	.98	1.1	.41
30	2.2	59	2.9	3.9	---	3.2	2.8	1.3	.71	.64	.74	.41
31	2.2	---	3.2	3.8	---	3.1	---	1.4	---	.47	.62	---
TOTAL	137.09	569.7	150.8	127.7	192.7	145.1	161.6	71.3	19.09	42.57	40.69	15.37
MEAN	4.42	19.0	4.86	4.12	6.88	4.68	5.39	2.30	.64	1.37	1.31	.51
MAX	.42	223	23	23	17	17	28	5.1	1.3	5.9	9.9	1.1
MIN	.69	3.4	2.9	2.4	3.7	3.1	2.8	1.3	.14	.27	.38	.22
CFSM	.80	3.44	.88	.75	1.24	.85	.97	.42	.12	.25	.24	.09
IN.	.92	3.83	1.01	.86	1.30	.98	1.09	.48	.13	.29	.27	.10
CAL YR 1985	TOTAL	2095.02	MEAN	5.74	MAX	315	MIN	.09	CFSM	1.04	IN.	14.09
WTR YR 1986	TOTAL	1673.71	MEAN	4.59	MAX	223	MIN	.14	CFSM	.83	IN.	11.26

YORK RIVER BASIN

01670300 CONTRARY CREEK NEAR MINERAL, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	.64	1.2									
2	.35	.94	17									
3	.31	.87	21									
4	.31	.75	4.0									
5	.26	2.1	2.6									
6	.16	2.4	2.1									
7	.12	1.6	2.0									
8	.15	2.6	1.8									
9	.21	1.5	3.1									
10	.21	1.1	3.8									
11	.18	2.4	14									
12	.21	2.9	9.3									
13	1.2	1.4	3.6									
14	3.4	1.0	2.6									
15	1.0	1.0	2.4									
16	.62	1.0	2.2									
17	.58	1.0	2.1									
18	.51	1.0	3.0									
19	.50	1.0	2.6									
20	.50	2.2	2.1									
21	.50	5.2	1.8									
22	.50	1.8	1.6									
23	.50	1.3	1.6									
24	.50	1.3	82									
25	.72	1.2	27									
26	2.7	3.0	7.5									
27	1.2	3.5	4.5									
28	.87	1.9	3.6									
29	.73	1.4	3.2									
30	.70	1.3	3.1									
31	.66	---	2.7									
TOTAL	20.76	51.30	241.1									
MEAN	.67	1.71	7.78									
MAX	3.4	5.2	82									
MIN	.12	.64	1.2									
CFSM	.12	.31	1.41									
IN.	.14	.35	1.62									
CAL YR 1986	TOTAL	1129.28	MEAN	3.09	MAX	82	MIN	.12	CFSM	.56	IN.	7.60

YORK RIVER BASIN

125

01670400 NORTH ANNA RIVER NEAR PARTLOW, VA

LOCATION.--Lat 38°00'46", long 77°42'06", Spotsylvania County, Hydrologic Unit 02080106, on left downstream side of bridge on State Highway 601, 1.1 mi upstream from Northeast Creek, and 3.8 mi southwest of Partlow.

DRAINAGE AREA.--344 mi².

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 168.25 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since January 1972 by Lake Anna, capacity, 373,000 acre-ft, 0.5 mi upstream. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--8 years, 296 ft³/s, 11.69 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft³/s, Feb. 26, 1979, gage height, 25.30 ft, from rating curve extended above 7,200 ft³/s; minimum, 33 ft³/s, Sept. 27, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1972, reached a stage of 36.32 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,690 ft³/s, Nov. 5, gage height, 21.48 ft; minimum, 43 ft³/s, Oct. 1; minimum daily, 46 ft³/s, Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	225	3620	106	245	290	285	495	147	56	59	52
2	55	720	2140	108	245	289	157	1140	145	57	62	53
3	60	1000	1600	111	252	289	55	61	55	55	55	54
4	60	5340	458	110	370	289	55	61	49	53	53	53
5	61	7970	285	113	525	288	56	60	51	52	63	54
6	60	5500	286	112	527	287	56	60	51	52	60	54
7	60	2820	267	113	536	286	58	61	49	52	63	53
8	60	2010	228	113	535	280	58	60	54	50	63	53
9	60	1800	228	113	530	279	60	60	59	55	63	52
10	59	421	228	113	527	278	60	59	58	60	61	51
11	59	245	227	113	537	279	59	59	58	59	62	47
12	61	246	248	114	535	289	60	59	57	61	63	54
13	65	273	416	117	527	302	61	59	56	65	59	60
14	65	412	271	115	518	309	61	62	55	65	51	59
15	65	381	111	115	513	326	63	62	54	62	57	58
16	65	405	103	115	505	326	454	63	61	58	57	58
17	64	329	100	115	499	322	1420	62	64	58	58	59
18	63	137	101	116	497	322	64	62	62	59	59	59
19	63	107	99	193	382	320	64	62	60	58	58	61
20	65	133	99	476	274	322	65	128	58	61	57	61
21	75	612	100	287	275	318	67	179	56	69	58	61
22	78	655	100	285	275	314	70	182	55	67	53	60
23	494	626	100	282	278	311	73	179	54	69	56	60
24	724	236	101	268	283	310	71	176	54	67	58	60
25	549	147	102	332	291	306	71	170	53	65	58	64
26	213	148	103	554	291	304	72	117	52	65	57	65
27	61	142	104	598	292	304	72	56	51	64	61	67
28	63	364	105	578	291	301	73	57	55	66	60	66
29	62	694	104	358	---	298	73	57	56	62	54	65
30	61	2810	104	256	---	292	73	70	54	64	53	66
31	62	---	104	245	---	288	---	146	---	62	53	---
TOTAL	3658	36908	12242	6744	11355	9318	3986	4184	1843	1868	1804	1739
MEAN	118	1230	395	218	406	301	133	135	61.4	60.3	58.2	58.0
MAX	724	7970	3620	598	537	326	1420	1140	147	69	63	67
MIN	46	107	99	106	245	278	55	56	49	50	51	47
CFSM	.34	3.58	1.15	.63	1.18	.87	.39	.39	.18	.18	.17	.17
IN.	.40	3.99	1.32	.73	1.23	1.01	.43	.45	.20	.20	.20	.19
CAL YR 1985	TOTAL	111851	MEAN	306	MAX	7970	MIN	43	CFSM	.89	IN.	12.10
WTR YR 1986	TOTAL	95649	MEAN	262	MAX	7970	MIN	46	CFSM	.76	IN.	10.34

01671000 NORTH ANNA RIVER NEAR DOSWELL, VA

LOCATION.--Lat 37°53'15", long 77°29'15", Caroline County, Hydrologic Unit 02080106, on left bank 1.5 mi upstream from bridge on U.S. Highway 1, 2.5 mi northwest of Doswell, and 4.4 mi upstream from Bull Run.

DRAINAGE AREA.--441 mi².

PERIOD OF RECORD.--March 1926 to December 1986 (discontinued). Monthly discharge only for some periods, published in WSP 1302. Published as "near Hewlett," 1926-28.

REVISED RECORDS.--WSP 1171: 1943: WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 55.66 ft above National Geodetic Vertical Datum of 1929. Mar. 23, 1926, to Aug. 11, 1928, nonrecording gage at site 10.2 mi upstream at different datum. Mar. 17, 1929, to Nov. 7, 1930, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharge: Oct. 3. Records good. Flow regulated since January 1972 by Lake Anna, capacity, 373,000 acre-ft, 20.5 mi upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--60 years, 385 ft³/s, 11.86 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,800 ft³/s, Aug. 21, 1969, gage height, 32.60 ft; maximum gage height, 33.7 ft, Aug. 12, 1928, from floodmarks, present site and datum; minimum discharge, 1.0 ft³/s, Sept. 30, Oct. 1, 2, 1932.

EXTREMES FOR CURRENT PERIOD.--Water year 1986: Maximum discharge, 10,700 ft³/s, Nov. 6, gage height, 20.44 ft; minimum, 53 ft³/s, Aug. 15, gage height, 0.66 ft; minimum daily, 57 ft³/s, Aug. 15.

October to December 1986: Maximum discharge during period, 2,810 ft³/s, Dec. 25, gage height, 9.30 ft; minimum, 57 ft³/s, Oct. 20-21; minimum daily, 58 ft³/s, Oct. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	112	4390	155	331	373	354	117	219	73	64	65
2	66	686	2680	154	332	366	343	1270	209	108	64	66
3	123	885	1810	155	334	364	142	318	176	103	72	67
4	130	4430	957	158	411	365	105	97	82	78	63	68
5	104	8600	410	156	684	363	110	93	70	69	59	69
6	90	9600	381	157	650	360	112	91	71	66	67	69
7	80	4200	372	154	687	358	134	90	71	63	67	67
8	74	2150	328	150	682	352	140	88	70	62	72	67
9	71	1730	315	150	643	347	130	87	74	63	71	65
10	69	1050	311	150	626	347	124	84	78	69	68	63
11	68	354	308	153	688	350	120	82	76	71	67	61
12	67	338	313	154	693	348	115	82	75	69	68	58
13	67	338	386	157	638	372	113	83	74	68	71	61
14	70	427	524	155	606	448	112	108	71	66	69	68
15	69	494	221	150	594	554	112	116	68	63	57	67
16	68	405	173	149	588	587	174	112	68	62	63	65
17	67	569	165	149	576	464	1360	102	75	64	73	63
18	66	290	158	154	579	422	645	96	75	65	90	66
19	66	193	154	178	566	409	174	91	73	66	104	65
20	74	182	149	533	385	406	150	177	71	69	110	69
21	206	493	150	376	367	395	142	489	69	186	332	69
22	732	1040	151	350	365	384	143	669	66	83	238	68
23	734	982	152	341	394	380	160	320	65	74	110	67
24	999	585	158	335	390	377	149	277	65	69	85	66
25	804	302	161	318	392	373	137	259	63	67	76	65
26	384	263	152	641	387	370	132	244	62	66	71	69
27	159	257	150	859	386	369	130	140	61	75	71	73
28	110	318	150	769	381	368	126	97	60	180	109	73
29	102	681	152	583	---	365	123	94	73	102	95	71
30	96	1980	150	358	---	361	120	90	68	70	72	69
31	93	---	148	334	---	356	---	154	---	67	66	---
TOTAL	5977	43934	16179	8735	14355	12053	6131	6217	2498	2456	2764	1999
MEAN	193	1464	522	282	513	389	204	201	83.3	79.2	89.2	66.6
MAX	999	9600	4390	859	693	587	1360	1270	219	186	332	73
MIN	66	112	148	149	331	347	105	82	60	62	57	58
CFSM	.44	3.32	1.18	.64	1.16	.88	.46	.46	.19	.18	.20	.15
IN.	.50	3.71	1.36	.74	1.21	1.02	.52	.52	.21	.21	.23	.17
CAL YR 1985	TOTAL	137669	MEAN	377	MAX	9600	MIN	53	CFSM	.85	IN.	11.61
WTR YR 1986	TOTAL	123298	MEAN	338	MAX	9600	MIN	57	CFSM	.77	IN.	10.40

01671000 NORTH ANNA RIVER NEAR DOSWELL, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	64	76									
2	69	64	86									
3	66	65	281									
4	65	65	234									
5	63	76	158									
6	61	88	114									
7	60	83	98									
8	59	87	94									
9	62	90	102									
10	62	87	122									
11	63	88	140									
12	61	98	289									
13	69	90	199									
14	124	84	141									
15	108	78	113									
16	70	75	103									
17	63	75	99									
18	61	75	99									
19	59	75	101									
20	58	75	99									
21	60	88	97									
22	64	96	93									
23	64	89	90									
24	62	86	531									
25	63	82	2360									
26	75	84	2080									
27	80	99	591									
28	72	93	449									
29	68	87	922									
30	67	81	371									
31	66	---	341									
TOTAL	2113	2467	10673									
MEAN	68.2	82.2	344									
MAX	124	99	2360									
MIN	58	64	76									
CFSM	.15	.19	.78									
IN.	.18	.21	.90									
CAL YR 1986	TOTAL	72461	MEAN	199	MAX	2360	MIN	57	CFSM	.45	IN.	6.11

YORK RIVER BASIN

01671020 NORTH ANNA RIVER AT HART CORNER, NEAR DOSWELL, VA

LOCATION.--Lat 37°51'00", long 77°25'41", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 30, 0.3 mi west of Hart Corner, 2.1 mi east of Doswell, and 5.4 mi upstream from confluence with South Anna River.

DRAINAGE AREA.--463 mi².

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 43 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since January 1972 by Lake Anna, capacity, 373,000 acre-ft, 27.7 mi upstream. About 3.0 ft³/s diverted since June 1975, by Hanover County Department of Public Utilities, 0.8 mi upstream. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--7 years, 383 ft³/s, 11.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft³/s, Mar. 30, 1984, gage height, 21.28 ft; minimum, 44 ft³/s, Sept. 28, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1969 reached a stage of 28.02 ft, from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,980 ft³/s, Nov. 6, gage height, 20.47 ft; minimum, 49 ft³/s, Sept. 13; minimum daily, 53 ft³/s, Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	145	4240	167	347	418	363	111	191	69	64	64
2	68	648	3400	170	349	405	358	1050	188	89	61	67
3	129	963	2170	171	349	398	182	569	174	111	74	69
4	169	3320	1220	173	438	398	113	116	96	80	67	70
5	118	7470	555	173	710	396	117	103	75	71	58	70
6	100	9550	462	171	714	390	118	99	74	65	60	73
7	84	5970	441	171	737	381	130	97	73	61	67	67
8	75	3150	383	169	750	374	144	94	73	61	70	67
9	70	2340	358	174	706	365	128	91	74	58	73	65
10	68	1560	345	169	679	365	120	88	77	71	69	62
11	66	662	341	171	742	368	117	86	75	71	69	61
12	65	537	341	171	768	363	113	85	74	71	69	58
13	63	430	379	173	704	392	110	84	74	69	70	53
14	67	483	601	173	660	501	110	116	70	68	76	65
15	67	559	282	164	645	639	108	121	67	63	55	65
16	66	485	210	164	641	723	146	116	67	60	62	63
17	64	607	195	160	631	579	1180	106	69	62	68	58
18	62	368	188	167	627	489	892	99	75	62	104	61
19	61	245	181	194	633	468	192	94	72	63	95	63
20	72	216	176	488	456	456	151	125	69	66	164	63
21	280	438	176	469	411	436	142	553	68	159	350	67
22	1060	1160	184	383	403	417	144	888	64	95	430	66
23	1040	1160	171	361	458	411	153	381	64	75	228	66
24	1210	781	180	350	453	407	149	277	64	72	100	65
25	968	405	183	334	445	400	133	244	63	67	77	64
26	563	313	176	611	447	394	128	225	59	64	73	66
27	254	298	169	900	439	392	123	162	59	72	72	72
28	137	338	170	845	432	388	118	106	57	134	100	72
29	122	660	171	687	---	385	120	101	67	126	103	71
30	114	1580	169	415	---	377	116	92	68	74	75	72
31	119	---	166	361	---	368	---	114	---	65	66	---
TOTAL	7473	46841	18383	9449	15774	13243	6218	6593	2440	2394	3169	1965
MEAN	241	1561	593	305	563	427	207	213	81.3	77.2	102	65.5
MAX	1210	9550	4240	900	768	723	1180	1050	191	159	430	73
MIN	61	145	166	160	347	363	108	84	57	58	55	53
CFSM	.52	3.37	1.28	.66	1.22	.92	.45	.46	.18	.17	.22	.14
IN.	.60	3.76	1.48	.76	1.27	1.06	.50	.53	.20	.19	.25	.16
CAL YR 1985	TOTAL	154534	MEAN	423	MAX	9550	MIN	55	CFSM	.91	IN.	12.41
WTR YR 1986	TOTAL	133942	MEAN	367	MAX	9550	MIN	53	CFSM	.79	IN.	10.76

YORK RIVER BASIN

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01671100 LITTLE RIVER NEAR DOSWELL, VA

LOCATION.--Lat 37°52'21", long 77°30'48", Hanover County, Hydrologic Unit 02080106, on left bank at downstream side of bridge on State Highway 685, 0.8 mi southwest of Verdon, 2.9 mi west of Doswell, and 9.6 mi upstream from mouth.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 132.30 ft above National Geodetic Vertical Datum of 1929 (levels by La Prade Bros., Engineers).

REMARKS.--Estimated daily discharges: Jan. 8, 9, 15, 16. Records good except those for periods with ice effect, Jan. 8, 9, 15, 16, which are fair. Frequent quarry dewatering by the General Crushed Stone Company upstream from gage adds about 0.5 ft³/s at times. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--25 years, 98.7 ft³/s, 12.53 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s, Aug. 21, 1969, gage height, 11.09 ft, from rating curve extended above 7,600 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 0.10 ft³/s, Sept. 25, 26, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 23	1430	724	4.48	May 22	0830	650	4.34
Nov. 5	1430	*2,240	*6.21	Aug. 22	1930	741	4.51

Minimum discharge, 2.9 ft³/s, June 27-28, gage height, 1.83 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	52	442	67	89	103	66	49	72	7.9	18	43
2	19	140	406	69	89	97	64	45	62	19	17	36
3	40	184	237	69	90	92	63	39	45	43	17	32
4	80	647	158	69	120	90	60	34	39	72	16	30
5	59	1930	127	69	154	89	61	32	35	48	14	29
6	45	1430	113	65	148	86	65	31	32	31	13	29
7	37	594	105	61	151	82	77	31	29	22	13	28
8	28	257	101	55	161	76	83	29	27	17	13	27
9	23	169	96	49	144	72	81	27	25	15	13	24
10	19	125	92	54	124	70	78	26	22	17	12	23
11	16	107	90	55	138	71	77	26	21	14	10	21
12	14	97	89	56	180	70	72	25	18	13	9.8	20
13	13	91	92	59	158	74	67	24	16	24	9.6	18
14	11	85	99	59	121	128	63	39	15	33	9.1	16
15	12	79	99	48	114	235	59	48	14	29	9.1	14
16	11	75	93	49	119	307	75	54	12	27	8.4	12
17	12	79	87	55	115	252	106	50	11	23	9.7	11
18	11	80	82	58	112	164	126	42	10	18	18	11
19	11	79	75	72	111	130	117	36	8.8	15	50	9.5
20	14	76	70	100	111	117	97	57	8.0	16	435	9.3
21	120	88	67	106	108	103	84	194	7.7	13	491	9.3
22	542	271	66	93	105	93	79	542	6.8	14	653	9.3
23	712	422	68	80	118	87	84	247	6.2	17	509	11
24	612	276	73	68	122	83	86	162	5.8	25	184	10
25	301	170	78	62	122	79	82	92	5.5	26	89	9.8
26	153	127	79	95	117	76	73	66	4.9	40	54	9.8
27	100	110	83	190	113	75	66	52	4.0	37	38	11
28	69	102	77	199	110	73	61	46	3.1	48	38	12
29	52	101	75	164	---	70	56	41	5.1	36	40	12
30	44	175	72	106	---	69	52	38	5.9	27	48	12
31	39	---	66	92	---	67	---	37	---	21	52	---
TOTAL	3241	8218	3557	2493	3464	3280	2280	2261	576.8	807.9	2910.7	549.0
MEAN	105	274	115	80.4	124	106	76.0	72.9	19.2	26.1	93.9	18.3
MAX	712	1930	442	199	180	307	126	542	72	72	653	43
MIN	11	52	66	48	89	67	52	24	3.1	7.9	8.4	9.3
CFSM	.98	2.56	1.07	.75	1.16	.99	.71	.68	.18	.24	.88	.17
IN.	1.13	2.86	1.24	.87	1.20	1.14	.79	.79	.20	.28	1.01	.19
CAL YR 1985	TOTAL	36279.8	MEAN	99.4	MAX	2300	MIN	2.9	CFSM	.93	IN.	12.61
WTR YR 1986	TOTAL	33638.4	MEAN	92.2	MAX	1930	MIN	3.1	CFSM	.86	IN.	11.69

01672500 SOUTH ANNA RIVER NEAR ASHLAND, VA

LOCATION.--Lat 37°47'48", long 77°32'57", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 54, 4.5 mi northwest of Ashland, and 7.6 mi upstream from Newfound River.

DRAINAGE AREA.--394 mi².

PERIOD OF RECORD.--October 1930 to current year.

REVISED RECORDS.--WSP 801: 1935(M). WSP 1502: 1935, 1939. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 83.74 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: May 22, 23, June 1-16, and July 12-14. Records good except those for periods of doubtful gage-height record, May 22, 23, June 1-16, and July 12-14, which are fair. Since 1966, diversion 150 ft upstream from station for town of Ashland water supply has averaged less than 0.6 ft³/s. Capacity of the diversion pickup is about 1.5 ft³/s. Small diurnal fluctuation at low flow in some years caused by gristmills upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--56 years, 367 ft³/s, 12.65 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s, Aug. 23, 1969, gage height, 24.99 ft; minimum, 0.10 ft³/s, Sept. 12, 1966, caused by diversion upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 15, 1928, reached a stage of about 24 ft, discharge, about 14,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1600	*6,690	*16.30	No other peak equal to or greater than base discharge.			

Minimum discharge, 26 ft³/s, June 27, 28, 30; minimum gage height, 1.38 ft, June 28, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	230	1690	227	299	416	242	189	200	42	93	123
2	70	553	1930	224	300	379	235	175	140	143	80	103
3	165	1130	1710	223	298	348	229	160	125	484	115	114
4	287	3290	758	223	413	337	224	151	113	248	126	118
5	312	5420	564	222	587	328	224	143	100	189	110	103
6	184	5560	468	216	598	318	238	148	94	148	81	132
7	129	6520	417	212	594	302	251	140	91	120	71	123
8	101	5760	379	198	717	281	264	134	89	113	66	104
9	87	2830	346	167	631	267	278	129	88	104	70	91
10	78	676	326	192	512	261	262	123	112	97	71	80
11	72	504	309	195	620	265	277	117	93	90	65	74
12	69	409	303	195	759	266	261	116	78	70	65	71
13	66	355	324	201	668	280	235	116	68	50	64	66
14	65	322	372	198	497	446	219	166	64	46	64	60
15	64	302	367	178	431	723	210	199	60	31	64	54
16	63	283	318	170	419	1290	230	200	56	32	64	52
17	69	284	286	198	408	948	933	181	49	34	67	47
18	68	286	272	202	402	594	753	159	45	32	95	44
19	57	290	256	239	422	473	495	142	39	31	151	43
20	54	269	241	307	485	423	373	198	35	173	858	42
21	195	443	228	295	466	381	321	672	34	122	1190	42
22	968	1150	204	281	417	335	302	840	32	386	1320	43
23	1660	1160	246	240	478	306	306	520	32	458	534	44
24	1390	795	259	216	544	293	313	281	31	400	274	45
25	768	561	257	209	504	284	276	211	31	400	179	43
26	476	441	242	360	451	272	249	184	29	219	130	44
27	336	385	219	806	437	267	237	164	27	156	105	42
28	265	357	234	752	425	261	232	160	27	713	113	41
29	222	360	220	485	---	252	215	155	29	314	275	44
30	193	741	217	357	---	248	203	147	29	155	311	47
31	177	---	213	312	---	245	---	155	---	120	186	---
TOTAL	8794	41666	14175	8500	13782	12089	9087	6575	2040	5720	7057	2079
MEAN	284	1389	457	274	492	390	303	212	68.0	185	228	69.3
MAX	1660	6520	1930	806	759	1290	933	840	200	713	1320	132
MIN	54	230	204	167	298	245	203	116	27	31	64	41
CFSM	.72	3.53	1.16	.70	1.25	.99	.77	.54	.17	.47	.58	.18
IN.	.83	3.93	1.34	.80	1.30	1.14	.86	.62	.19	.54	.67	.20
CAL YR 1985	TOTAL	160528	MEAN	440	MAX	7680	MIN	28	CFSM	1.12	IN.	15.16
WTR YR 1986	TOTAL	131564	MEAN	360	MAX	6520	MIN	27	CFSM	.91	IN.	12.42

YORK RIVER BASIN

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01673000 PAMUNKEY RIVER NEAR HANOVER, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°46'03", long 77°19'57", Hanover County, Hydrologic Unit 02080106, on right bank 100 ft downstream from bridge on State Highway 614, 0.3 mi upstream from Mechumps Creek, 2.0 mi east of Hanover, and 7.0 mi upstream from Millpond Creek.

DRAINAGE AREA.--1,081 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1941 to current year. Monthly discharge only for some periods, published in WSP 1302.

REVISED RECORDS.--WSP 1302: 1944(M). WSP 1382: 1949. WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 14.72 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 15, 1976, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharge: Jan. 28. Records good. Some regulation since January 1972 by Lake Anna, capacity, 373,000 acre-ft, and occasional diurnal fluctuation at low flow caused by mill upstream from station. Unknown amount of diversion for irrigation upstream from gage.

AVERAGE DISCHARGE.--45 years, 1,005 ft³/s, 12.62 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,300 ft³/s, Aug. 23, 1969, gage height, 31.12 ft, from flood-marks, from rating curve extended above 22,000 ft³/s; minimum, 12 ft³/s, Sept. 12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 32.6 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,800 ft³/s, Nov. 7, gage height, 23.62 ft; minimum, 81 ft³/s, June 27-28, gage height, 2.48 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

	DAY OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	490	4210	623	943	1140	793	434	375	127	188	290
2	203	1260	5740	630	944	1100	779	824	458	159	161	235
3	312	2310	6540	618	935	1030	698	1450	395	392	161	220
4	699	4020	5690	621	1110	1010	516	459	329	512	214	220
5	684	7230	3110	620	1540	993	490	329	238	339	196	220
6	532	11900	1540	615	1830	969	507	311	210	241	168	208
7	362	13600	1280	594	1810	943	549	304	198	179	154	227
8	282	12100	1170	572	1930	894	601	284	184	151	153	217
9	234	9990	1070	502	1950	863	612	268	186	135	143	200
10	205	7600	1010	554	1660	850	599	258	184	122	119	183
11	186	4560	984	569	1760	847	569	252	189	141	135	169
12	170	1920	968	571	2100	843	572	247	176	125	152	162
13	161	1190	995	571	2020	901	527	243	171	103	145	151
14	155	1080	1250	570	1670	1170	493	315	146	104	137	141
15	155	1140	1140	531	1490	1760	471	447	128	110	140	145
16	154	1100	899	492	1440	2460	503	443	139	112	98	140
17	147	1100	803	557	1420	2550	1350	421	138	115	120	132
18	152	1090	756	577	1390	1720	2740	369	133	115	206	118
19	152	861	717	622	1420	1370	1320	326	127	107	251	116
20	144	787	685	871	1370	1230	863	310	117	118	730	121
21	331	1040	648	1200	1250	1130	721	1360	131	259	2110	121
22	2420	2870	591	975	1170	1030	672	2050	109	311	2580	124
23	3770	3950	676	877	1300	971	655	2080	108	617	2150	122
24	3970	3250	701	802	1360	938	673	1120	124	598	1040	121
25	3350	1990	707	763	1380	912	644	759	120	546	547	123
26	2000	1360	686	1010	1280	888	575	594	106	455	353	122
27	1160	1160	634	1950	1230	873	532	509	90	305	266	123
28	727	1060	655	2370	1190	858	504	376	82	332	239	126
29	565	1190	647	1840	---	839	499	327	91	957	289	127
30	482	1940	630	1290	---	822	469	308	98	387	464	127
31	433	---	605	1010	---	808	---	285	---	232	401	---
TOTAL	24544	105138	47737	25967	40892	34712	21496	18062	5280	8506	14210	4851
MEAN	792	3505	1540	838	1460	1120	717	583	176	274	458	162
MAX	3970	13600	6540	2370	2100	2550	2740	2080	458	957	2580	290
MIN	144	490	591	492	935	808	469	243	82	103	98	116
CFSM	.73	3.24	1.42	.78	1.35	1.04	.66	.54	.16	.25	.42	.15
IN.	.84	3.62	1.64	.89	1.41	1.19	.74	.62	.18	.29	.49	.17
CAL YR 1985	TOTAL	405338	MEAN	1111	MAX	13600	MIN	106	CFSM	1.03	IN.	13.95
WTR YR 1986	TOTAL	351395	MEAN	963	MAX	13600	MIN	82	CFSM	.89	IN.	12.09

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946, 1952, 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to January 1976.

WATER TEMPERATURE: October 1945 to September 1946, April 1968 to January 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT 16...	1500	154	165	177	6.60	7.00	16.0	760	2.0	7.8	79	--
NOV 04...	1500	4500	67	68	6.60	6.90	16.0	740	35	8.9	93	--
DEC 05...	0830	3470	71	66	7.00	7.60	8.0	775	12	11.6	96	--
JAN 29...	1230	1810	76	76	7.50	7.20	2.0	766	18	13.1	94	90
FEB 19...	1200	1430	76	77	7.30	7.00	8.0	761	5.5	11.6	98	110
MAR 26...	1000	895	85	87	6.80	7.60	11.5	758	2.7	10.2	94	--
APR 23...	0900	658	99	105	6.40	7.60	12.5	755	3.6	8.7	82	30
MAY 22...	0845	1760	78	84	6.20	7.20	19.0	753	67	7.5	82	--
JUN 25...	1300	120	170	169	7.10	7.70	24.0	758	2.5	6.8	81	K14
AUG 07...	1030	150	182	182	7.10	7.40	24.5	754	6.0	5.7	69	42

DATE	STREP- TOCOC FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	ALKA- LINITY WH WAT TOTAL FIELD (MG/L AS CACO3)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 16...	--	--	--	--	--	--	--	31	--	--	--	--
NOV 04...	--	20	8	4.5	2.0	4.7	2.5	13	13	12	15	9.2
DEC 05...	--	--	--	--	--	--	--	11	--	--	--	--
JAN 29...	81	18	6	3.9	2.0	6.1	2.1	12	14	12	15	11
FEB 19...	19	19	6	4.1	2.1	6.5	1.9	13	14	13	15	17
MAR 26...	--	--	--	--	--	--	--	17	--	--	--	--
APR 23...	16	24	4	5.7	2.3	9.4	1.7	22	19	20	24	15
MAY 22...	--	--	--	--	--	--	--	19	--	--	--	--
JUN 25...	17	33	2	8.1	3.0	18	2.4	31	30	31	38	33
AUG 07...	140	33	5	8.4	2.8	21	3.3	30	28	28	34	41

YORK RIVER BASIN

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01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
OCT 16...	--	--	12	--	--	0.050	0.240	<0.010	--	0.50	0.060	0.020
NOV 04...	5.3	<0.10	9.9	59	46	0.010	0.170	0.060	0.070	0.90	0.160	0.040
DEC 05...	--	--	12	--	--	<0.010	0.310	0.050	--	0.50	0.030	0.010
JAN 29...	5.8	<0.10	12	53	51	0.020	0.270	0.080	0.080	0.70	0.050	0.040
FEB 19...	6.2	<0.10	12	43	58	0.010	0.290	0.050	0.060	0.40	0.030	0.010
MAR 26...	--	--	10	--	--	<0.010	0.200	0.040	--	0.40	0.030	0.020
APR 23...	5.4	<0.10	12	65	63	<0.010	0.230	0.070	0.040	0.50	0.030	0.020
MAY 22...	--	--	11	--	--	0.020	0.380	0.120	--	0.80	0.130	0.030
JUN 25...	6.3	0.10	7.8	103	98	0.010	0.340	0.030	0.040	0.50	0.070	0.060
AUG 07...	6.9	0.10	11	135	110	<0.010	0.340	0.050	0.040	0.60	0.100	0.070

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
OCT 16...	0.030	--	--	--	--	--	--	--	--	--	--	--
NOV 04...	0.030	90	<1	64	<0.5	2	1	<3	3	410	8	<4
DEC 05...	<0.010	--	--	--	--	--	--	--	--	--	--	--
JAN 29...	0.030	--	--	--	--	--	--	--	--	--	--	--
FEB 19...	<0.010	40	<1	33	<0.5	<1	<1	<3	2	180	<1	<4
MAR 26...	0.010	--	--	--	--	--	--	--	--	--	--	--
APR 23...	0.020	--	--	--	--	--	--	--	--	--	--	--
MAY 22...	0.020	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	0.040	--	--	--	--	--	--	--	--	--	--	--
AUG 07...	0.070	110	<1	33	<0.5	<1	<1	<3	4	570	<5	<4

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDE (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 16...	--	--	--	--	--	--	--	--	--	--	5	--
NOV 04...	24	0.1	<10	4	<1	<1	30	<6	20	14	5	93
DEC 05...	--	--	--	--	--	--	--	--	--	6.2	--	--
JAN 29...	--	--	--	--	--	--	--	--	--	4.6	63	98
FEB 19...	24	0.1	<10	2	<1	<1	32	<6	23	6.3	9	90
MAR 26...	--	--	--	--	--	--	--	--	--	4.9	10	82
APR 23...	--	--	--	--	--	--	--	--	--	4.8	5	88
MAY 22...	--	--	--	--	--	--	--	--	--	9.4	47	97
JUN 25...	--	--	--	--	--	--	--	--	--	8.8	2	85
AUG 07...	160	<0.1	<10	3	<1	<1	48	<6	26	--	13	91

01673550 TOTOPOTOMOY CREEK NEAR STUDLEY, VA

LOCATION.--Lat 37°39'44", long 77°15'29", Hanover County, Hydrologic Unit 02080106, on right bank at downstream side of bridge on State Highway 606, 2.0 mi southeast of Studley, 2.4 mi downstream from Hawes millrace, and 4.1 mi upstream from mouth.

DRAINAGE AREA.--26.2 mi².

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 38.36 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 22, Jan. 15, 16, and May 14-17, 20, 21. Records good except those for periods with ice effect, Dec. 22 and Jan. 15, 16, and periods of no gage-height record, May 14-17, 20, 21, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--9 years, 30.0 ft³/s, 15.55 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 802 ft³/s, Aug. 19, 1985, gage height, 8.22 ft; maximum gage height, 8.77 ft, Feb. 25, 1979; minimum daily discharge, 0.35 ft³/s, Oct. 1-7, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 160 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 22	2230	202	5.65	Nov. 22	1800	304	6.41
Nov. 5	0630	*448	*7.09				

Minimum discharge, 2.2 ft³/s, July 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	27	126	27	32	33	22	13	7.5	4.4	8.0	7.2
2	8.4	56	86	25	34	32	22	12	6.9	5.8	11	7.2
3	31	69	57	28	33	31	21	11	6.5	7.0	17	8.0
4	89	227	46	28	45	32	20	10	6.1	6.5	9.7	8.2
5	42	366	42	26	44	31	21	9.9	5.7	4.4	8.6	8.8
6	20	146	41	24	37	30	22	9.8	5.4	3.6	7.5	8.4
7	14	74	39	24	55	29	22	9.3	5.2	3.2	7.3	7.2
8	11	49	37	22	58	27	22	8.8	7.5	2.9	6.4	8.2
9	9.7	40	36	22	41	27	21	8.4	9.4	2.8	5.9	8.5
10	8.7	35	34	23	36	27	20	8.3	7.6	2.9	5.8	8.1
11	8.0	32	34	23	73	27	19	8.0	5.9	2.9	6.1	8.3
12	7.1	31	34	23	87	25	19	7.7	5.1	2.8	14	7.3
13	6.8	30	37	23	50	30	19	8.0	4.7	2.7	18	5.6
14	6.8	29	38	22	39	43	18	24	4.3	2.6	17	4.1
15	7.2	28	34	21	41	62	19	33	4.3	2.5	12	3.3
16	7.5	28	33	20	40	47	24	38	3.8	2.4	8.8	3.2
17	6.7	30	32	23	40	38	34	20	3.6	2.4	10	3.1
18	6.8	30	31	24	41	32	34	16	3.5	2.3	15	2.9
19	7.8	28	29	30	46	31	27	10	3.3	2.3	15	2.8
20	7.1	27	29	36	71	33	23	18	3.4	2.4	20	2.9
21	43	98	29	29	51	31	23	76	3.7	3.6	34	2.9
22	168	262	27	25	44	28	25	57	4.8	17	38	2.8
23	152	243	31	23	57	26	28	27	6.3	69	22	2.9
24	60	107	32	22	53	27	24	18	4.6	39	14	2.9
25	34	68	31	23	42	25	21	15	3.7	18	8.8	2.8
26	24	54	27	69	38	24	19	13	3.3	18	7.2	2.8
27	20	48	27	79	38	24	18	12	3.2	19	7.2	3.1
28	16	45	27	52	36	23	17	12	3.1	19	9.3	3.0
29	14	43	26	37	---	23	16	11	3.1	14	8.5	3.0
30	13	74	25	35	---	22	15	9.8	3.1	11	8.1	3.0
31	13	---	25	32	---	22	---	8.5	---	9.4	8.3	---
TOTAL	871.7	2424	1182	920	1302	942	655	542.5	148.6	305.8	388.5	152.5
MEAN	28.1	80.8	38.1	29.7	46.5	30.4	21.8	17.5	4.95	9.86	12.5	5.08
MAX	168	366	126	79	87	62	34	76	9.4	69	38	8.8
MIN	6.7	27	25	20	32	22	15	7.7	3.1	2.3	5.8	2.8
CFSM	1.07	3.08	1.45	1.13	1.77	1.16	.83	.67	.19	.38	.48	.19
IN.	1.24	3.44	1.68	1.31	1.85	1.34	.93	.77	.21	.43	.55	.22
CAL YR 1985	TOTAL	9887.4	MEAN	27.1	MAX	607	MIN	2.2	CFSM	1.03	IN.	14.04
WTR YR 1986	TOTAL	9834.6	MEAN	26.9	MAX	366	MIN	2.3	CFSM	1.03	IN.	13.96

01673800 PO RIVER NEAR SPOTSYLVANIA, VA

LOCATION.--Lat 38°10'17", long 77°35'42", Spotsylvania County, Hydrologic Unit 02080105, on right bank at upstream side of bridge on State Highway 208, 1.6 mi north of Snell, 2.0 mi south of Spotsylvania, 4.8 mi downstream from Gladys Run, and 4.9 mi upstream from U.S. Highway 1.

DRAINAGE AREA.--77.4 mi².

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.76 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1964, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 21 and Jan. 8, 9, 14, 15. Records good except those for periods with ice effect, Dec. 21 and Jan. 8, 9, 14, 15, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--24 years, 75.8 ft³/s, 13.30 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,900 ft³/s, June 22, 1972, gage height, 19.03 ft, from rating curve extended above 3,400 ft³/s; minimum daily, 0.10 ft³/s, Oct. 24-29, 1963, Sept. 6-13, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	1030	*2,110	*10.67	Dec. 1	1230	2,050	10.53

Minimum daily discharge, 0.13 ft³/s, Sept. 21, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	28	1680	35	61	77	37	27	8.9	2.7	1.5	1.6
2	3.2	73	564	35	61	68	36	24	7.6	4.7	1.2	1.8
3	21	143	178	35	66	64	35	21	6.5	5.6	1.2	2.4
4	27	696	116	36	141	64	34	20	5.6	4.2	1.1	1.8
5	23	1820	97	35	205	63	36	19	5.4	4.5	.95	1.4
6	13	669	84	33	125	60	39	18	5.1	4.3	.89	1.4
7	8.5	149	72	31	139	56	50	17	5.0	3.6	.84	1.1
8	5.8	99	64	27	146	51	69	16	5.1	3.0	.89	.94
9	4.5	74	59	26	120	46	54	15	7.2	3.8	.95	1.4
10	3.8	58	54	27	116	47	48	14	6.0	5.6	.91	.91
11	4.8	50	51	30	141	47	45	13	5.8	5.3	.99	.78
12	5.0	45	52	31	138	47	41	12	6.9	8.1	.93	.66
13	5.0	42	56	31	103	48	37	13	6.0	11	.85	.47
14	7.1	38	67	28	87	93	35	23	5.0	10	.95	.36
15	7.9	38	61	26	79	208	41	29	4.3	6.3	.89	.30
16	8.5	37	51	26	83	171	202	28	3.9	4.3	.76	.31
17	8.5	41	47	27	84	114	187	22	3.7	3.2	.68	.22
18	7.7	46	45	31	95	89	106	19	3.2	2.6	.80	.20
19	8.1	41	40	40	126	77	81	16	3.0	2.4	1.3	.22
20	20	37	37	69	109	72	65	16	3.8	2.3	3.2	.15
21	168	36	35	74	95	63	58	32	5.6	3.7	11	.13
22	455	80	35	53	86	54	56	39	4.0	4.7	7.2	.17
23	541	162	38	43	92	50	57	29	3.4	10	8.7	.14
24	246	102	42	38	100	40	52	21	3.5	8.0	6.0	.18
25	107	72	44	36	94	37	44	17	3.2	6.2	2.9	.21
26	66	55	39	139	91	36	40	14	2.5	5.5	1.6	.19
27	45	49	34	344	89	36	37	13	1.8	4.7	1.4	.23
28	36	47	34	156	87	35	34	12	2.0	3.5	4.7	.24
29	28	160	34	96	---	36	32	12	2.5	2.6	4.3	.21
30	25	650	35	79	---	38	29	11	2.1	2.1	2.2	.13
31	21	---	32	65	---	38	---	10	---	1.7	2.0	---
TOTAL	1934.8	5637	3877	1782	2959	2025	1717	592	138.6	150.2	73.78	20.25
MEAN	62.4	188	125	57.5	106	65.3	57.2	19.1	4.62	4.85	2.38	.67
MAX	541	1820	1680	344	205	208	202	39	8.9	11	11	2.4
MIN	3.2	28	32	26	61	35	29	10	1.8	1.7	.68	.13
CFSM	.81	2.43	1.61	.74	1.37	.84	.74	.25	.06	.06	.03	.01
IN.	.93	2.71	1.86	.86	1.42	.97	.83	.28	.07	.07	.04	.01
CAL YR 1985	TOTAL	24809.55	MEAN	68.0	MAX	1820	MIN	.81	CFSM	.88	IN.	11.92
WTR YR 1986	TOTAL	20906.63	MEAN	57.3	MAX	1820	MIN	.13	CFSM	.74	IN.	10.05

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA

LOCATION.--Lat 38°03'42", long 77°23'10", Caroline County, Hydrologic Unit 02080105, on right bank 0.1 mi upstream from bridge on State Highway 605, 2.2 mi northwest of Bowling Green, 2.4 mi upstream from South River, and 7.1 mi downstream from confluence of Matta and Poni Rivers.

DRAINAGE AREA.--257 mi².

PERIOD OF RECORD.--September 1942 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 1382: 1943, 1945(M), 1948(M), 1949, 1953(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 85.14 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 17, 1978, gage located on left bank at same datum.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Nov. 4-21, Dec. 20, 21, 26, 27, and Jan. 8-10, 14-17. Records good except those for period of doubtful gage-height record, Nov. 4-21, and periods with ice effect, Dec. 20, 21, 26, 27, and Jan. 8-10, 14-17, which are fair. Estimated daily discharges for period October to December 1986: Oct. 8-12, 15-17, and Oct. 27 to Nov. 5. Records good except those for periods of backwater from beaver dam, Oct. 8-12, 15-17, and Oct. 27 to Nov. 5, which are fair. Some diurnal fluctuation from gristmill upstream on Po River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--44 years, 239 ft³/s, 12.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s, June 23, 1972, gage height, 18.95 ft, from high-water mark in well, from rating curve extended above 8,100 ft³/s; no flow at times in September and October 1954 and September 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 19.5 ft based on relative difference in stage between this flood and flood of Oct. 17, 1942, at Milford 4 mi downstream, discharge, 15,000 ft³/s, from rating curve extended above 8,100 ft³/s.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	Unknown	*3,240	*all.30	Dec. 2	2130	3,140	11.18

a From high-water mark.

October 1985 to September 1986: Minimum daily discharge, 2.0 ft³/s, Sept. 30.

October to December 1986: Maximum discharge during period, 2,280 ft³/s, Dec. 26, gage height, 10.12 ft; minimum daily, 0.50 ft³/s, Oct. 9-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	150	889	157	285	287	139	103	43	11	10	15
2	31	360	2710	152	264	269	134	92	39	17	8.5	13
3	124	522	2480	151	260	248	129	78	34	26	8.0	16
4	276	1100	1240	151	313	236	122	68	30	23	7.7	26
5	204	2300	759	148	417	233	132	62	28	18	6.8	22
6	143	2940	518	141	508	223	140	59	25	14	6.0	19
7	91	2700	395	134	528	210	163	56	23	11	5.5	17
8	62	1400	333	105	494	192	184	52	22	10	5.2	14
9	46	1000	294	112	489	181	193	48	20	12	5.1	14
10	34	700	268	120	442	176	183	44	19	14	5.0	12
11	27	560	249	121	422	174	163	42	19	20	5.8	10
12	23	400	240	123	460	171	151	39	22	25	5.9	9.9
13	20	330	238	131	465	175	140	39	25	26	5.9	9.0
14	18	260	253	111	382	244	130	57	24	25	6.0	8.5
15	19	220	251	104	332	372	125	88	20	23	5.5	7.4
16	23	200	236	115	310	498	235	94	17	19	4.9	6.7
17	22	220	216	117	302	568	431	87	15	15	6.2	5.5
18	19	230	203	128	303	448	520	73	13	12	13	4.8
19	18	190	185	157	318	341	429	60	12	10	12	4.6
20	26	170	162	231	341	293	319	69	11	9.7	12	4.6
21	239	184	150	246	346	256	250	311	11	20	48	4.4
22	539	289	164	229	321	226	217	484	11	22	240	4.3
23	934	459	180	195	322	203	204	330	11	17	155	3.8
24	1560	529	182	163	334	188	194	188	13	18	79	3.3
25	1290	486	193	150	333	169	175	126	12	23	44	3.8
26	787	349	152	241	322	161	156	94	11	19	28	2.7
27	425	278	156	420	312	156	142	75	9.1	16	20	3.0
28	249	243	152	578	303	152	130	68	8.7	18	21	2.4
29	182	263	150	657	---	147	123	63	11	23	25	2.3
30	147	421	142	446	---	145	113	54	10	16	24	2.0
31	128	---	139	318	---	143	---	48	---	12	20	---
TOTAL	7751	19453	13879	6352	10228	7485	5866	3151	568.8	544.7	849.0	271.0
MEAN	250	648	448	205	365	241	196	102	19.0	17.6	27.4	9.03
MAX	1560	2940	2710	657	528	568	520	484	43	25	240	26
MIN	18	150	139	104	260	143	113	39	8.7	9.7	4.9	2.0
CFSM	.97	2.52	1.74	.80	1.42	.94	.76	.40	.07	.07	.11	.04
IN.	1.12	2.82	2.01	.92	1.48	1.08	.85	.46	.08	.08	.12	.04

CAL YR 1985	TOTAL	83473.6	MEAN	229	MAX	2940	MIN	4.0	CFSM	.89	IN.	12.08
WTR YR 1986	TOTAL	76398.5	MEAN	209	MAX	2940	MIN	2.0	CFSM	.81	IN.	11.06

YORK RIVER BASIN

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	2.0	20	50										
2	2.1	14	46										
3	1.8	12	179										
4	1.5	12	316										
5	1.2	15	348										
6	.85	17	252										
7	.61	30	139										
8	.55	48	93										
9	.50	68	81										
10	.50	60	96										
11	.50	60	125										
12	.50	75	256										
13	2.1	76	335										
14	12	65	302										
15	92	56	188										
16	72	44	130										
17	20	35	103										
18	9.6	28	94										
19	7.6	23	96										
20	6.0	22	90										
21	5.8	47	86										
22	6.4	63	72										
23	6.5	92	59										
24	6.9	58	146										
25	8.1	43	708										
26	16	39	1710										
27	39	57	2140										
28	36	77	1190										
29	35	85	569										
30	35	69	335										
31	27	---	267										
TOTAL	455.61	1410	10601										
MEAN	14.7	47.0	342										
MAX	92	92	2140										
MIN	.50	12	46										
CFSM	.06	.18	1.33										
IN.	.07	.20	1.53										
CAL YR 1986	TOTAL	47782.11		MEAN	131	MAX	2140	MIN	.50	CFSM	.51	IN.	6.92

YORK RIVER BASIN

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01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°53'16", long 77°09'48", King and Queen County, Hydrologic Unit 02080105, on left bank 0.4 mi upstream from bridge on State Highway 628, 2.4 mi north of Beulahville, and 2.7 mi downstream from Maracossic Creek.

DRAINAGE AREA.--601 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1941 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 12.43 ft above National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Highways and Transportation). Prior to Oct. 14, 1942, nonrecording gage, and Oct. 14, 1942, to Aug. 8, 1974, water-stage recorder at site 80 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation at times during low flow caused by gristmill on Po River.

AVERAGE DISCHARGE.--45 years, 591 ft³/s, 13.35 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft³/s, June 25, 1972, gage height, 23.97 ft, from flood-marks; maximum gage height, 24.04 ft, Aug. 23, 1969; minimum discharge, 5.9 ft³/s, Sept. 14, 1966, gage height, 0.94 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,370 ft³/s, Nov. 9, gage height, 14.52 ft; minimum, 23 ft³/s, Sept. 26, gage height, 1.99 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	305	389	1130	412	773	648	378	299	171	40	78	114
2	220	556	1440	423	674	612	366	274	154	62	61	96
3	248	762	1590	437	646	583	352	248	154	92	85	88
4	404	1070	1810	444	698	562	343	225	141	101	104	87
5	625	1720	2460	434	817	548	343	211	126	104	100	91
6	593	2100	2800	416	917	535	360	205	114	84	82	108
7	397	2250	2370	397	1000	517	420	197	100	65	64	108
8	289	2700	1730	374	1090	492	487	181	93	52	53	98
9	224	3270	1010	336	1090	469	497	166	88	46	46	92
10	185	3190	753	343	1030	450	467	157	85	49	42	80
11	161	2540	682	382	1010	444	434	146	76	57	38	75
12	142	1750	638	384	1030	431	399	137	71	83	36	71
13	126	881	630	385	1010	461	374	133	64	84	37	63
14	114	626	658	378	965	625	351	188	59	79	39	54
15	107	573	659	354	893	778	340	276	57	74	40	49
16	114	536	624	331	793	912	367	310	56	62	39	45
17	105	534	592	362	733	1040	507	292	51	54	39	40
18	98	539	566	381	708	1090	722	257	46	48	85	35
19	101	547	558	408	718	1060	804	217	40	42	196	32
20	104	522	517	540	715	866	791	197	36	40	263	31
21	285	557	485	615	711	692	657	308	35	132	257	30
22	846	843	442	611	720	600	554	595	34	218	296	29
23	1420	1180	474	551	742	543	505	888	31	191	451	26
24	1700	1350	511	516	748	503	462	1080	31	168	471	26
25	1760	1390	510	457	754	472	430	1170	31	139	303	27
26	1860	1350	487	560	722	448	400	616	32	103	196	24
27	2030	1150	455	788	703	439	368	329	31	80	140	25
28	2000	837	432	946	679	423	343	269	30	72	139	28
29	1500	708	440	983	---	406	329	240	29	68	165	30
30	595	769	422	992	---	399	319	215	38	128	172	31
31	395	---	413	952	---	390	---	194	---	117	147	---
TOTAL	19053	37189	28288	15892	23089	18438	13469	10220	2104	2734	4264	1733
MEAN	615	1240	913	513	825	595	449	330	70.1	88.2	138	57.8
MAX	2030	3270	2800	992	1090	1090	804	1170	171	218	471	114
MIN	98	389	413	331	646	390	319	133	29	40	36	24
CFSM	1.02	2.06	1.52	.85	1.37	.99	.75	.55	.12	.15	.23	.10
IN.	1.18	2.30	1.75	.98	1.43	1.14	.83	.63	.13	.17	.26	.11
CAL YR 1985	TOTAL	190847	MEAN	523	MAX	3270	MIN	28	CFSM	.87	IN.	11.81
WTR YR 1986	TOTAL	176473	MEAN	483	MAX	3270	MIN	24	CFSM	.80	IN.	10.92

YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968, 1969, 1979 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT 22...	1400	920	51	51	6.10	6.40	15.5	758	18	7.8	79	--
NOV 04...	1300	1080	51	51	6.20	6.50	15.5	743	25	8.4	86	--
DEC 05...	1000	2410	42	40	5.80	6.00	6.0	775	15	11.2	88	--
JAN 29...	0830	974	54	58	7.00	6.90	1.5	767	7.3	13.7	97	68
FEB 19...	0900	718	51	51	7.00	6.70	6.0	761	4.7	12.0	96	52
MAR 26...	1300	447	50	54	6.10	7.50	11.0	763	2.5	10.4	94	--
APR 25...	0915	434	52	55	6.50	7.50	13.0	755	3.5	9.4	90	36
MAY 22...	1000	576	45	33	6.40	7.00	19.0	753	16	7.4	81	--
JUN 23...	1230	31	58	62	6.90	7.40	22.5	752	4.5	6.5	76	34
AUG 07...	1400	63	49	53	6.40	7.30	24.0	752	2.5	6.2	75	36

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	ALKA- LINITY WH WAT TOTAL FIELD MG/L AS CACO3	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 22...	--	--	--	--	--	--	--	6.0	--	--	--	--
NOV 04...	--	14	8	3.2	1.4	2.9	1.9	6.0	6	6.0	7.0	7.0
DEC 05...	--	--	--	--	--	--	--	4.0	--	--	--	--
JAN 29...	87	12	4	2.6	1.4	4.6	3.0	6.0	9	8.0	9.0	5.1
FEB 19...	19	13	7	2.7	1.4	3.8	1.5	5.0	7	6.0	7.0	6.3
MAR 26...	--	--	--	--	--	--	--	9.0	--	--	--	--
APR 25...	17	14	4	3.0	1.5	3.9	1.3	11	9	10	12	11
MAY 22...	--	--	--	--	--	--	--	12	--	--	--	--
JUN 23...	35	18	0	3.7	2.1	3.9	1.2	18	18	18	21	9.6
AUG 07...	97	14	4	2.9	1.7	3.8	1.6	12	9	10	12	9.9

YORK RIVER BASIN

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01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
OCT 22...	--	--	8.0	--	--	0.030	<0.100	0.030	--	0.60	0.080	0.020
NOV 04...	6.4	<0.10	8.8	43	36	<0.010	<0.100	0.010	0.040	0.70	0.100	0.030
DEC 05...	--	--	9.0	--	--	<0.010	<0.100	0.030	--	0.70	0.050	<0.010
JAN 29...	7.9	<0.10	9.1	40	39	<0.010	0.200	0.040	0.040	0.50	0.170	0.140
FEB 19...	5.8	<0.10	8.9	33	34	<0.010	0.240	0.070	0.050	0.40	0.020	0.010
MAR 26...	--	--	6.4	--	--	<0.010	0.140	0.020	--	0.40	0.030	0.020
APR 25...	5.3	<0.10	6.6	41	39	<0.010	0.140	0.040	0.030	0.50	0.040	0.020
MAY 22...	--	--	7.7	--	--	0.010	0.170	0.070	--	0.70	0.100	0.030
JUN 23...	4.5	<0.10	3.0	43	38	<0.010	0.100	<0.010	<0.010	0.40	0.060	0.040
AUG 07...	5.0	<0.10	7.0	48	39	<0.010	<0.100	0.020	<0.010	0.50	0.050	0.030

DATE	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
OCT 22...	0.010	--	--	--	--	--	--	--	--	--	--	--
NOV 04...	0.020	90	<1	66	<0.5	2	<1	<3	1	670	6	<4
DEC 05...	<0.010	--	--	--	--	--	--	--	--	--	--	--
JAN 29...	0.130	--	--	--	--	--	--	--	--	--	--	--
FEB 19...	<0.010	50	<1	33	<0.5	<1	<1	<3	1	270	<1	<4
MAR 26...	<0.010	--	--	--	--	--	--	--	--	--	--	--
APR 25...	0.020	--	--	--	--	--	--	--	--	--	--	--
MAY 22...	0.020	--	--	--	--	--	--	--	--	--	--	--
JUN 23...	0.030	--	--	--	--	--	--	--	--	--	--	--
AUG 07...	0.010	40	<1	30	<0.5	<1	<1	<3	2	1300	<5	<4

YORK RIVER BASIN

01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 22...	--	--	--	--	--	--	--	--	--	12	28	87
NOV 04...	86	<0.1	<10	1	<1	<1	22	<6	20	12	50	92
DEC 05...	--	--	--	--	--	--	--	--	--	7.6	--	--
JAN 29...	--	--	--	--	--	--	--	--	--	4.4	25	66
FEB 19...	32	0.2	<10	2	<1	<1	21	<6	11	5.9	14	44
MAR 26...	--	--	--	--	--	--	--	--	--	5.7	6	97
APR 25...	--	--	--	--	--	--	--	--	--	6.0	4	76
MAY 22...	--	--	--	--	--	--	--	--	--	10	33	77
JUN 23...	--	--	--	--	--	--	--	--	--	6.3	4	61
AUG 07...	110	<0.1	<10	1	<1	1	28	<6	7	--	6	87

YORK RIVER BASIN

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01677000 WARE CREEK NEAR TOANO, VA

LOCATION.--Lat 37°26'17", long 76°47'12", New Kent County, Hydrologic Unit 02080107, on left bank at upstream side of bridge on State Highway 600, 0.8 mi upstream from France Swamp, and 4.9 mi north of Toano.

DRAINAGE AREA.--6.29 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1979 to October 1981, March 1982 to current year.

REVISED RECORDS.--WDR VA-83-1: 1981.

GAGE.--Water-stage recorder. Elevation of gage is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1-11, 16-18. Records fair except those for periods of doubtful or no gage-height record, Oct. 1-11, 16-18, which are poor.

AVERAGE DISCHARGE.--6 years, 6.46 ft³/s, 13.95 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260 ft³/s, Sept. 27, 1985, gage height, 2.60 ft, from floodmark, from rating curve extended above 120 ft³/s; no flow at times September 1980 and July to September 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 61 ft³/s, July 23, gage height, 1.51 ft; minimum, 0.05 ft³/s, July 19, 20, gage height, 0.58 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	23	22	7.0	8.5	7.4	6.0	5.0	3.6	1.3	3.0	4.7
2	6.4	27	11	6.3	11	7.1	6.3	4.5	3.3	2.8	2.7	4.8
3	9.0	15	7.4	6.8	12	7.1	6.0	4.0	2.9	2.6	3.8	5.0
4	20	15	6.7	6.9	14	7.4	5.6	4.0	2.9	1.9	3.9	4.9
5	10	11	7.0	6.1	12	7.3	5.9	4.2	2.9	1.4	3.6	4.9
6	7.0	7.1	6.9	5.5	8.8	6.9	6.5	4.2	2.8	1.2	3.1	5.5
7	5.6	5.8	6.6	5.5	12	6.6	6.7	4.1	2.8	.93	2.8	5.1
8	5.2	5.2	6.5	5.0	10	6.3	6.6	9.7	3.0	.71	4.7	5.2
9	5.0	4.9	6.5	4.9	8.0	6.5	9.2	7.7	3.5	.54	11	5.8
10	4.8	4.9	6.5	5.4	7.5	6.7	7.0	5.3	3.0	.45	6.1	5.1
11	5.8	4.9	6.6	5.7	13	6.7	6.0	4.5	2.6	.45	3.8	5.5
12	5.9	5.0	6.9	5.6	12	6.6	5.6	4.1	2.5	.46	21	5.4
13	5.6	5.4	11	5.5	8.4	9.9	5.2	4.1	2.4	.37	19	5.7
14	5.2	5.6	10	5.0	7.4	13	5.5	10	2.1	.24	9.9	5.1
15	4.6	5.4	6.8	5.1	8.6	13	5.6	9.9	2.0	.10	6.2	3.8
16	6.0	5.1	6.4	4.6	9.0	11	7.1	6.5	2.0	.15	4.4	3.1
17	5.6	5.8	6.4	5.3	10	8.9	7.1	5.0	1.8	.20	4.3	2.8
18	5.2	5.7	6.2	6.0	11	7.3	7.2	4.1	1.2	.22	6.4	2.5
19	4.8	5.6	5.8	7.6	9.9	7.3	6.8	3.9	1.0	.12	18	2.6
20	6.0	5.5	5.7	10	15	9.2	6.1	6.5	1.1	.09	33	2.7
21	19	15	6.1	7.0	11	10	7.1	11	1.0	1.1	29	2.6
22	22	23	5.8	6.3	9.4	7.9	8.8	7.9	.95	15	11	2.7
23	11	13	6.5	6.1	13	7.0	8.9	5.6	1.1	34	6.5	2.6
24	6.9	8.1	7.1	5.7	11	6.6	7.8	4.2	1.2	22	5.4	2.6
25	6.4	6.6	6.5	6.2	8.5	6.7	6.8	3.8	1.1	7.3	4.6	2.8
26	6.1	5.9	5.5	25	7.5	6.4	6.2	3.6	.96	3.9	4.3	2.7
27	6.2	6.2	5.3	19	8.0	6.5	6.0	3.7	.97	3.4	5.3	2.4
28	8.1	5.9	5.8	13	7.9	6.6	5.4	4.0	1.0	16	21	2.2
29	10	6.5	6.0	9.7	---	6.5	5.5	3.8	1.0	11	14	2.0
30	12	20	5.7	9.3	---	6.4	5.6	3.5	.93	5.2	7.6	2.3
31	12	---	5.6	8.5	---	6.7	---	3.7	---	3.8	5.5	---
TOTAL	252.4	283.1	224.8	235.6	284.4	239.5	196.1	166.1	59.61	138.93	284.9	115.1
MEAN	8.14	9.44	7.25	7.60	10.2	7.73	6.54	5.36	1.99	4.48	9.19	3.84
MAX	22	27	22	25	15	13	9.2	11	3.6	34	33	5.8
MIN	4.6	4.9	5.3	4.6	7.4	6.3	5.2	3.5	.93	.09	2.7	2.0
CFSM	1.29	1.50	1.15	1.21	1.62	1.23	1.04	.85	.32	.71	1.46	.61
IN.	1.49	1.67	1.33	1.39	1.68	1.42	1.16	.98	.35	.82	1.68	.68
CAL YR 1985	TOTAL	2466.04	MEAN	6.76	MAX	150	MIN	.60	CFSM	1.07	IN.	14.58
WTR YR 1986	TOTAL	2480.54	MEAN	6.80	MAX	34	MIN	.09	CFSM	1.08	IN.	14.67

YORK RIVER BASIN

01677000 WARE CREEK NEAR TOANO, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979-81, October 1985 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	ALKA- LITY LAB (MG/L AS CACO3)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)
OCT 11...	0845	5.8	94	7.00	5.0	--	--	--	<0.010
DEC 06...	1045	7.0	78	6.70	8.0	765	9.6	24	<0.010
FEB 11...	0845	12	94	7.00	5.0	--	--	21	--
APR 11...	0930	5.9	110	6.70	14.5	756	9.0	38	<0.010
JUL 22...	1145	2.0	142	9.00	29.0	770	10.0	59	<0.010
AUG 18...	1200	6.6	93	6.90	27.0	--	--	34	<0.010
SEP 03...	1245	4.9	72	7.60	22.5	759	9.2	29	<0.010

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 11...	0.400	0.090	0.50	0.030	0.010	--	--	3.8
DEC 06...	0.100	0.070	0.60	0.030	<0.010	650	30	4.5
FEB 11...	--	--	--	--	--	380	40	--
APR 11...	<0.100	0.030	0.70	0.050	<0.010	550	30	15
JUL 22...	<0.100	0.070	1.8	0.070	<0.010	400	20	14
AUG 18...	<0.100	<0.010	--	0.080	<0.010	1200	<10	8.4
SEP 03...	<0.100	<0.010	0.30	0.060	0.010	1300	10	9.6

JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA

LOCATION.--Lat 38°02'32", long 79°52'54", Bath County, Hydrologic Unit 02080201, on left bank 0.1 mi downstream from ford, 1.8 mi upstream from Back Creek, and 2.2 mi southwest of Bacova.

DRAINAGE AREA.--158 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,639.20 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 4-7, Dec. 22, 26, Jan. 7-10, 14-16, 28-31, Feb. 14-16, and June 6 to July 8. Records good except those for periods of doubtful or no gage-height record, Nov. 4-7 and June 6 to July 8, and periods with ice effect, Dec. 22, 26, Jan. 7-10, 14-16, 28-31, and Feb. 14-16, which are fair. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam.

AVERAGE DISCHARGE.--12 years, 172 ft³/s, 14.78 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s, Nov. 4, 1985, gage height, 22.25 ft, from floodmark, from rating curve extended above 1,300 ft³/s on basis of slope-area measurements at gage heights 8.88 ft, 11.40 ft, 13.88 ft, and 22.25 ft; minimum, 17 ft³/s, Sept. 29, 30, Oct. 1, 14, 15, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 11.40 ft, discharge, 4,800 ft³/s, and flood of Dec. 26, 1973, reached a stage of 13.88 ft, discharge, 7,560 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	Unknown	*30,000	*a22.25	May 20	0645	1,560	7.43
Mar. 15	0300	4,540	11.19				

a From floodmark.

Minimum discharge, 23 ft³/s, Sept. 17, 18, 26, 27, gage height, 2.58 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	35	500	75	74	154	106	146	101	70	32	28
2	33	59	460	75	78	144	102	127	93	300	31	38
3	34	146	360	69	119	144	97	112	84	160	30	59
4	30	5700	294	71	400	137	94	102	78	100	29	60
5	28	7500	261	68	360	131	91	96	74	65	28	51
6	27	1900	241	63	306	129	111	90	65	56	28	46
7	26	1100	207	55	310	127	123	86	70	50	29	37
8	26	655	184	40	294	108	117	82	68	47	30	32
9	25	454	168	35	263	111	111	76	66	44	30	30
10	25	343	151	45	241	122	110	73	62	47	29	28
11	26	270	140	80	241	197	105	69	58	46	35	28
12	26	220	154	66	203	223	99	67	70	42	32	28
13	26	184	170	57	174	231	93	69	64	40	29	27
14	26	167	197	50	100	938	90	77	54	38	29	26
15	27	147	181	45	110	2850	88	68	52	37	28	25
16	27	131	174	46	120	1100	95	65	55	36	28	25
17	25	141	163	60	136	684	95	71	52	35	28	24
18	25	123	149	53	166	493	89	81	50	34	31	24
19	25	111	127	97	229	400	84	86	49	33	32	28
20	26	104	127	180	251	324	80	1070	48	32	33	28
21	47	99	117	119	243	267	93	580	46	32	35	26
22	71	319	100	103	233	228	93	372	45	34	36	25
23	47	439	115	102	234	204	87	279	44	35	35	25
24	43	319	109	97	229	183	82	222	55	40	45	25
25	43	255	103	95	214	164	79	182	50	35	35	25
26	44	217	75	101	196	151	79	157	45	40	30	24
27	37	260	97	98	194	144	77	156	44	50	29	24
28	34	301	86	70	175	133	75	168	42	44	30	30
29	31	579	82	45	---	123	185	135	44	38	27	28
30	29	581	85	50	---	117	182	119	43	35	26	25
31	29	---	95	65	---	112	---	111	---	33	26	---
TOTAL	994	22859	5472	2275	5893	10573	3012	5194	1771	1728	955	929
MEAN	32.1	762	177	73.4	210	341	100	168	59.0	55.7	30.8	31.0
MAX	71	7500	500	180	400	2850	185	1070	101	300	45	60
MIN	25	35	75	35	74	108	75	65	42	32	26	24
CFSM	.20	4.82	1.12	.46	1.33	2.16	.63	1.06	.37	.35	.19	.20
IN.	.23	5.38	1.29	.54	1.39	2.49	.71	1.22	.42	.41	.22	.22
CAL YR 1985	TOTAL	67985	MEAN	186	MAX	7500	MIN	25	CFSM	1.18	IN.	16.01
WTR YR 1986	TOTAL	61655	MEAN	169	MAX	7500	MIN	24	CFSM	1.07	IN.	14.52

JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1978 to September 1981, October 1982 to current year.

INSTRUMENTATION.--Water-temperature recorder March 1978 to September 1981, and since October 1982.

REMARKS.--Interruptions in the record were due to malfunction of the instrument. Some record in prior years fragmentary due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded (water years 1978-81, 1983-86), 29.5°C, July 21, 1980; minimum recorded (water years 1978-81, 1984-86), 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 29.0°C, July 20, 21; minimum, 0.0°C on many days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.0	14.0	15.0	12.0	12.0	12.0	10.5	10.0	10.0	1.0	.0	.0
2	15.5	14.5	15.5	---	---	---	10.0	5.0	8.0	1.0	.0	.5
3	16.0	14.0	15.0	---	---	---	5.0	3.5	4.0	2.0	.5	1.5
4	19.5	15.0	17.0	---	---	---	4.5	3.0	3.5	2.5	1.0	2.0
5	17.5	14.5	16.0	---	---	---	5.5	4.5	5.0	2.0	.5	1.5
6	14.5	11.5	13.5	---	---	---	5.5	5.0	5.5	1.0	.0	.5
7	14.5	13.5	14.0	---	---	---	6.0	4.5	5.0	1.5	.0	.5
8	13.5	13.0	13.5	---	---	---	5.5	4.0	5.0	.0	.0	.0
9	15.0	12.5	13.5	---	---	---	7.0	5.5	6.0	.0	.0	.0
10	15.0	12.5	13.5	---	---	---	7.0	5.0	6.0	.0	.0	.0
11	14.5	14.0	14.0	---	---	---	7.5	5.5	6.5	.0	.0	.0
12	14.5	14.5	14.5	---	---	---	9.5	7.5	8.5	.5	.0	.0
13	15.0	14.5	14.5	---	---	---	9.0	7.5	8.5	.5	.0	.0
14	15.5	15.0	15.0	---	---	---	7.5	2.5	5.5	.0	.0	.0
15	16.0	15.0	15.5	14.0	13.0	13.5	2.5	1.0	2.0	.0	.0	.0
16	15.5	15.0	15.5	13.0	11.0	11.5	3.5	1.5	2.5	.0	.0	.0
17	15.0	14.5	15.0	11.5	10.0	11.0	4.0	2.0	3.0	.0	.0	.0
18	14.5	14.5	14.5	11.5	9.5	10.5	3.5	.5	2.0	2.0	.0	1.0
19	15.0	14.5	14.5	13.5	11.0	12.5	.5	.0	.0	3.5	1.5	2.5
20	15.5	14.0	15.0	14.5	12.0	13.0	.0	.0	.0	2.5	2.0	2.0
21	14.5	13.5	14.0	13.5	11.5	13.0	.0	.0	.0	3.0	1.0	2.0
22	13.5	13.0	13.5	11.5	9.0	10.0	.0	.0	.0	2.5	1.0	2.0
23	14.0	13.5	13.5	9.0	7.5	8.5	.0	.0	.0	3.5	1.5	2.5
24	14.5	14.0	14.0	8.5	7.5	8.0	2.0	.0	1.0	2.5	.5	2.0
25	15.0	14.5	14.5	9.0	7.5	8.0	2.0	.0	1.0	2.5	1.5	2.0
26	14.5	13.5	14.0	10.0	8.0	9.0	.0	.0	.0	3.0	2.0	2.5
27	13.5	13.0	13.5	12.5	10.0	11.5	.0	.0	.0	2.0	.0	.5
28	13.5	13.0	13.5	13.0	12.0	12.5	.5	.0	.0	.0	.0	.0
29	13.0	12.5	12.5	12.5	11.0	12.0	.5	.0	.0	.0	.0	.0
30	12.5	12.0	12.0	11.0	10.5	10.5	.0	.0	.0	.0	.0	.0
31	12.0	12.0	12.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	19.5	11.5	14.0	14.5	7.5	11.0	10.5	.0	3.0	3.5	.0	1.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.5	.0	.0	4.5	1.0	3.0	16.5	12.0	14.5	17.5	14.0	16.0
2	1.0	.0	.5	4.0	1.0	3.0	16.5	13.0	15.0	17.5	13.5	15.5
3	3.5	1.0	2.5	4.0	2.5	3.5	16.5	12.0	14.5	16.0	11.0	13.5
4	5.0	3.0	4.0	4.5	3.5	4.0	17.0	13.5	15.5	16.0	10.0	13.0
5	7.0	5.0	5.5	5.5	3.5	4.5	16.5	13.5	15.0	17.5	11.0	14.5
6	6.5	5.5	6.0	4.5	3.0	4.0	17.0	14.0	15.5	---	---	---
7	5.5	4.5	5.0	5.0	1.5	3.5	18.5	14.0	16.0	---	---	---
8	6.0	4.5	5.0	3.5	.0	1.5	17.0	12.5	14.0	---	---	---
9	6.0	5.0	5.5	7.0	1.5	4.0	14.0	10.0	12.0	---	---	---
10	5.0	4.5	5.0	10.0	4.0	7.0	10.0	7.0	8.0	---	---	---
11	4.5	2.5	3.5	11.5	9.0	10.0	10.5	6.0	8.0	---	---	---
12	2.5	1.0	1.5	8.5	6.5	7.5	13.5	7.5	10.5	---	---	---
13	1.5	.0	.5	7.0	6.5	6.5	12.0	9.0	11.0	---	---	---
14	.5	.0	.0	8.0	7.0	7.5	---	---	---	---	---	---
15	2.5	.0	1.0	8.5	7.0	7.5	---	---	---	19.0	14.0	16.5
16	4.0	.5	2.0	8.5	6.5	7.5	12.5	10.0	11.5	21.5	16.5	19.0
17	4.5	2.5	3.5	8.5	6.0	7.5	10.0	8.5	9.0	22.5	18.5	20.5
18	6.5	4.0	5.0	8.5	6.0	7.5	14.0	7.5	11.0	22.5	19.5	21.0
19	7.0	5.5	6.0	11.5	8.5	10.0	16.5	9.5	13.0	21.0	18.0	20.0
20	9.0	6.0	7.5	10.0	6.0	8.5	16.0	13.0	14.5	16.0	14.5	15.5
21	9.5	7.5	8.5	7.5	4.0	5.5	14.5	13.5	14.0	16.5	14.0	15.0
22	7.5	4.5	6.0	7.5	3.0	5.0	13.0	9.0	11.0	14.5	12.5	13.5
23	5.5	3.5	4.5	9.0	3.5	6.5	12.0	7.0	9.5	14.5	11.5	13.0
24	4.0	3.5	4.0	11.5	6.0	8.5	14.0	7.5	11.0	18.0	12.5	15.0
25	4.5	2.5	3.5	12.0	6.5	9.0	14.0	9.5	12.0	16.5	14.5	15.5
26	2.5	1.5	2.0	12.5	7.5	10.0	18.0	12.5	15.5	15.5	14.5	15.0
27	3.5	1.5	2.5	13.5	9.5	11.0	20.0	14.0	17.0	15.0	14.5	15.0
28	5.0	2.0	3.5	13.0	7.5	10.0	21.0	15.5	18.5	19.0	14.5	16.5
29	---	---	---	13.0	7.5	10.5	20.0	16.5	18.0	21.0	16.5	18.5
30	---	---	---	14.5	8.5	11.5	19.5	13.5	16.5	21.5	17.5	19.5
31	---	---	---	15.5	10.0	13.0	---	---	---	22.0	18.0	20.0
MONTH	9.5	.0	3.5	15.5	.0	7.0	21.0	6.0	13.5	22.5	10.0	16.5
	JUNE			JULY			AUGUST			SEPTEMBER		
1	22.0	18.5	20.5	23.0	21.5	22.0	26.5	21.0	23.5	18.5	17.5	18.0
2	22.0	19.0	20.5	23.0	20.5	21.5	27.0	22.0	24.0	17.5	17.0	17.0
3	20.5	17.0	19.0	23.0	19.5	21.5	27.0	23.0	24.5	18.0	16.5	17.5
4	22.0	16.5	19.0	23.5	18.5	21.0	---	---	---	18.0	17.5	17.5
5	22.5	19.5	21.0	24.5	20.0	22.5	---	---	---	20.5	17.5	18.5
6	24.0	20.5	22.0	26.5	21.5	24.0	---	---	---	22.0	18.5	20.0
7	25.5	21.0	23.5	26.0	23.0	24.5	---	---	---	20.0	17.5	19.0
8	24.0	21.5	22.5	26.5	23.0	25.0	24.5	22.5	23.5	21.0	17.0	18.5
9	24.5	20.0	22.0	26.5	23.5	24.5	23.5	21.0	22.5	19.0	16.0	17.5
10	22.0	19.5	20.5	25.5	22.5	24.0	25.0	21.0	22.5	20.5	16.0	18.0
11	23.5	19.0	21.0	26.5	23.0	24.5	22.5	21.5	22.0	22.0	18.5	20.0
12	24.0	21.0	22.5	27.0	23.5	25.0	22.5	20.5	21.5	21.0	19.0	20.0
13	22.5	20.5	21.5	27.5	23.0	25.0	21.5	20.5	21.0	22.0	17.5	19.5
14	24.0	19.0	21.5	27.5	23.0	25.0	22.5	20.0	21.0	21.5	17.0	19.0
15	24.5	20.5	22.5	26.0	23.5	24.5	25.5	20.0	22.5	21.0	17.5	19.0
16	25.5	21.5	23.5	27.5	23.0	25.0	27.0	22.5	24.0	21.5	17.5	19.0
17	25.5	21.5	23.0	28.0	23.5	26.0	25.0	23.0	24.0	19.5	15.5	17.0
18	24.0	19.0	21.5	28.0	24.5	26.5	23.5	22.0	23.0	17.0	15.0	16.0
19	23.5	18.0	21.0	28.5	24.5	26.5	23.0	21.0	22.0	18.5	16.0	17.0
20	22.0	20.0	21.0	29.0	25.0	27.0	21.5	20.5	21.0	20.5	17.5	19.0
21	24.0	18.5	21.0	29.0	24.5	26.5	22.0	20.0	20.5	22.5	18.5	20.0
22	25.0	19.5	22.5	26.5	24.5	25.5	25.0	20.5	22.5	22.0	18.5	20.0
23	24.5	20.5	22.5	27.0	23.5	25.0	22.5	21.0	22.0	22.0	19.5	20.5
24	25.0	21.0	22.5	27.0	24.5	25.5	24.0	20.0	22.0	21.5	20.0	20.5
25	24.5	19.5	22.0	27.0	23.5	25.0	23.5	18.5	21.0	23.0	19.5	21.0
26	24.0	19.0	21.5	25.5	23.0	24.5	24.5	19.5	22.0	24.0	20.0	22.0
27	24.0	19.5	22.0	26.0	21.5	24.0	23.0	21.0	22.0	22.0	20.5	21.5
28	25.5	22.0	23.5	26.5	23.5	25.0	22.0	18.5	20.5	23.5	20.0	21.5
29	26.5	22.5	24.5	27.0	23.0	25.0	21.0	16.0	18.0	23.5	21.0	22.0
30	25.0	22.5	24.0	26.0	22.5	24.0	20.5	15.5	17.5	24.0	21.0	22.0
31	---	---	---	25.5	21.0	23.0	20.0	16.5	18.0	---	---	---
MONTH	26.5	16.5	22.0	29.0	18.5	24.5	27.0	15.5	22.0	24.0	15.0	19.5
YEAR	29.0	.0	13.0									

JAMES RIVER BASIN

02011460 BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°14'43", long 79°46'08", Bath County, Hydrologic Unit 02080201, on right bank 900 ft upstream from bridge on State Highway 600, 0.8 mi upstream from Gap Run, and 4.8 mi northeast of Sunrise.

DRAINAGE AREA.--60.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,200.02 ft above National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Highways and Transportation).

REMARKS.--Estimated daily discharges: Dec. 22, 26, Jan. 7-9, 13-17, 28-31, and Feb. 14-16. Records good except those for periods with ice effect, Dec. 22, 26, Jan. 7-9, 13-17, 28-31, and Feb. 14-16, which are fair. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam.

AVERAGE DISCHARGE.--12 years, 94.2 ft³/s, 21.29 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s, Nov. 4, 1985, gage height, 10.01 ft, from rating curve extended above 3,800 ft³/s; minimum, 1.5 ft³/s, Sept. 13, 14, 1980; minimum gage height, 0.07 ft, July 21, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1615	*17,500	*10.01	Mar. 14	2200	4,150	6.27

Minimum discharge, 3.5 ft³/s, Oct. 1, gage height, 0.27 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	12	224	29	43	75	36	61	35	36	11	43
2	5.2	37	211	26	48	72	33	57	31	220	9.8	41
3	6.8	176	171	27	98	73	31	50	27	183	8.9	36
4	6.6	6280	136	27	608	68	30	45	23	104	7.9	27
5	5.6	4110	116	26	399	63	30	41	20	67	7.4	21
6	5.2	880	102	25	269	61	35	38	24	45	6.9	16
7	4.8	400	85	20	210	59	48	36	38	33	7.7	13
8	4.7	246	73	15	174	68	49	33	40	26	7.9	11
9	4.4	175	68	18	155	53	50	29	30	23	7.9	10
10	4.4	138	62	26	144	96	52	28	23	26	7.6	9.1
11	4.4	163	59	25	134	335	50	24	22	20	9.3	8.2
12	4.4	113	80	24	106	249	48	24	30	17	8.2	7.5
13	4.4	90	135	23	94	187	52	24	24	14	7.5	6.8
14	4.7	82	190	20	45	1050	54	28	20	12	7.2	6.5
15	4.9	69	157	17	50	1460	52	24	17	12	6.7	6.4
16	5.1	58	124	18	60	395	52	22	16	10	6.6	6.3
17	4.7	63	102	22	71	232	52	21	15	9.8	7.0	6.2
18	4.7	58	84	23	149	171	48	28	13	9.0	7.9	6.0
19	4.7	57	64	39	274	146	45	55	12	8.2	9.7	6.0
20	5.1	57	61	142	247	122	47	261	12	7.8	8.1	6.0
21	40	54	57	115	195	101	55	206	13	7.8	11	6.0
22	35	204	45	101	161	86	52	142	12	8.1	15	5.8
23	26	369	53	118	137	78	48	107	10	27	13	5.3
24	22	199	51	108	125	71	46	84	18	16	18	5.3
25	29	137	45	96	114	62	44	67	21	13	15	5.3
26	22	110	35	91	104	55	44	55	14	22	11	5.3
27	17	104	37	77	102	52	40	54	12	48	8.5	7.1
28	14	145	35	30	87	48	37	58	29	30	7.6	12
29	12	483	31	20	---	44	56	50	40	22	7.0	9.5
30	10	301	42	23	---	40	60	46	34	17	9.5	8.4
31	9.9	---	28	30	---	38	---	41	---	13	31	---
TOTAL	335.4	15370	2763	1401	4403	5710	1376	1839	675	1106.7	307.8	363.0
MEAN	10.8	512	89.1	45.2	157	184	45.9	59.3	22.5	35.7	9.93	12.1
MAX	40	6280	224	142	608	1460	60	261	40	220	31	43
MIN	3.7	12	28	15	43	38	30	21	10	7.8	6.6	5.3
CFSM	.18	8.52	1.48	.75	2.61	3.06	.76	.99	.37	.59	.17	.20
IN.	.21	9.51	1.71	.87	2.73	3.53	.85	1.14	.42	.69	.19	.22
CAL YR 1985	TOTAL	39627.8	MEAN	109	MAX	6280	MIN	3.5	CFSM	1.81	IN.	24.53
WTR YR 1986	TOTAL	35649.9	MEAN	97.7	MAX	6280	MIN	3.7	CFSM	1.63	IN.	22.07

JAMES RIVER BASIN

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02011460 BACK CREEK NEAR SUNRISE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1984 to current year.

INSTRUMENTATION.--Water-temperature recorder since October 1984.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 26.0°C on several days during summer periods; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 26.0°C, July 18, 20, 24; minimum, 0.0°C on many days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.0	11.5	13.5	11.0	10.0	10.5	10.0	9.0	9.5	1.5	.0	.5
2	15.0	13.5	14.0	11.5	10.0	10.5	9.5	4.0	7.0	1.5	.0	.5
3	16.0	13.0	14.0	10.5	10.0	10.0	4.5	3.0	3.5	2.5	1.0	2.0
4	19.5	14.5	16.5	11.5	10.5	11.0	4.5	3.0	4.0	2.0	.5	1.5
5	17.0	12.5	15.0	10.5	9.5	10.0	5.5	4.5	5.0	1.5	.0	1.0
6	14.0	10.0	12.0	11.0	9.5	10.0	5.0	4.5	4.5	1.0	.0	.0
7	14.0	7.5	10.0	11.0	9.0	9.5	5.5	4.0	4.5	1.0	.0	.5
8	14.0	8.0	10.5	10.0	8.0	9.0	5.5	3.5	4.5	.0	.0	.0
9	16.0	9.0	12.0	9.5	7.5	8.5	6.5	5.0	5.5	.0	.0	.0
10	15.5	10.5	13.0	10.5	7.5	9.0	6.5	4.0	5.0	.5	.0	.0
11	16.5	12.0	14.0	11.0	9.0	10.0	6.5	4.5	5.5	.5	.0	.0
12	14.5	14.0	14.0	11.5	10.0	11.0	8.5	7.0	7.5	1.0	.0	.5
13	18.0	13.5	15.0	12.0	10.5	11.5	7.5	5.5	6.5	.0	.0	.0
14	17.5	13.5	15.5	13.0	11.5	12.0	5.5	1.5	3.5	.0	.0	.0
15	16.5	14.0	15.5	13.5	12.5	13.0	3.0	.5	1.5	.5	.0	.0
16	17.0	12.5	14.5	12.5	10.5	11.0	4.0	2.5	3.0	.5	.0	.0
17	15.5	9.5	12.5	11.0	10.0	10.5	3.5	2.0	3.0	1.0	.0	.5
18	16.0	11.0	13.0	11.0	9.5	10.0	3.0	.0	1.5	2.5	.5	1.5
19	16.5	11.5	13.5	13.0	11.0	12.0	1.0	.0	.5	3.5	2.0	2.5
20	15.0	12.5	14.0	13.0	11.5	12.5	1.0	.0	.5	1.5	.0	.5
21	12.5	10.5	11.0	12.5	10.5	11.0	.5	.0	.0	1.5	.0	.5
22	12.5	10.5	11.5	10.0	8.5	9.0	.0	.0	.0	1.5	.0	.5
23	14.0	11.5	13.0	9.0	7.5	8.0	2.5	.0	1.5	2.0	.0	1.0
24	14.5	13.0	13.5	9.0	7.0	8.0	2.5	1.5	2.0	1.5	.0	.5
25	16.0	12.0	14.0	8.5	7.0	8.0	2.5	.0	1.0	1.5	.5	1.0
26	13.0	8.0	10.5	10.0	8.0	9.0	.0	.0	.0	2.0	1.0	1.5
27	13.5	8.5	10.5	11.5	10.0	11.0	.0	.0	.0	1.0	.0	.0
28	13.0	9.5	11.0	12.0	11.0	11.5	.5	.0	.0	.0	.0	.0
29	10.5	7.0	8.5	11.5	10.0	11.0	1.0	.0	.0	.0	.0	.0
30	9.5	7.5	8.5	10.0	9.5	9.5	.5	.0	.0	.0	.0	.0
31	10.5	9.5	10.0	---	---	---	.5	.0	.0	.5	.0	.0
MONTH	19.5	7.0	12.5	13.5	7.0	10.5	10.0	.0	3.0	3.5	.0	.5

02011460 BACK CREEK NEAR SUNRISE, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1.0	.0	.5	4.0	.0	1.5	14.5	9.0	11.5	17.0	13.0	15.0
2	1.5	.5	1.0	3.0	.0	1.5	15.5	10.0	12.5	16.0	11.5	13.5
3	2.5	1.5	2.0	3.0	1.5	2.0	14.5	9.0	12.0	15.0	9.5	12.0
4	4.5	1.5	3.0	3.5	2.0	2.5	15.5	11.0	13.0	15.0	9.0	12.0
5	6.0	4.0	5.0	5.0	2.0	3.0	14.0	11.0	12.5	17.0	10.0	13.0
6	5.5	4.0	4.5	4.5	1.5	2.5	14.0	11.5	12.5	17.5	12.0	15.0
7	4.5	3.5	4.0	4.0	.0	1.5	16.5	11.0	13.0	18.5	14.5	16.5
8	5.0	3.0	4.0	2.0	.0	.5	15.0	9.5	12.0	20.0	15.5	17.5
9	4.5	3.5	4.0	6.5	.0	3.0	10.5	7.5	9.0	17.0	13.5	14.5
10	4.0	3.5	3.5	7.5	2.5	5.0	7.0	5.5	6.5	18.0	11.5	14.5
11	3.5	1.5	2.5	7.0	4.5	6.0	10.0	4.5	7.0	19.0	12.5	15.5
12	2.5	.0	1.0	5.0	3.0	4.0	12.5	6.0	9.0	18.0	13.0	15.5
13	1.0	.0	.5	6.0	4.5	5.0	10.5	7.5	9.0	15.5	13.0	14.0
14	.5	.0	.0	7.0	5.5	6.0	13.0	7.0	10.0	14.0	12.5	13.0
15	3.0	.0	1.0	7.5	6.0	6.5	11.0	9.5	10.5	17.0	13.0	15.0
16	4.0	.0	1.5	8.5	5.0	6.5	9.5	8.0	8.5	19.0	15.0	17.0
17	3.0	1.5	2.5	8.5	4.5	6.0	8.0	7.0	7.5	20.0	16.0	18.0
18	4.5	2.5	3.0	8.0	4.0	6.0	12.5	6.0	9.0	20.0	17.0	18.5
19	5.0	3.0	4.0	10.0	7.0	8.5	14.5	8.0	11.0	18.5	16.5	17.5
20	7.5	4.5	5.5	8.0	4.5	6.5	13.5	10.5	12.0	16.5	14.0	15.0
21	7.5	5.5	6.5	7.0	2.0	4.0	12.0	10.5	11.5	16.0	12.5	14.0
22	5.0	3.0	3.5	7.5	1.5	4.0	10.5	7.5	9.0	14.0	11.5	12.5
23	6.0	2.5	4.0	8.5	2.5	5.5	11.0	5.5	8.0	13.0	10.5	12.0
24	3.5	2.5	3.0	10.0	5.0	7.0	12.5	6.0	9.0	16.5	12.0	14.0
25	4.0	1.0	2.5	10.5	4.5	7.5	13.5	8.0	10.5	15.0	13.0	14.0
26	1.5	.5	1.0	11.5	5.5	8.5	16.0	10.0	13.0	14.5	13.5	14.0
27	3.0	1.0	2.0	12.0	8.0	9.0	17.5	11.5	14.5	14.0	13.5	14.0
28	4.5	.5	2.0	11.5	5.0	8.0	18.5	12.5	15.5	18.0	13.5	15.5
29	---	---	---	12.5	6.0	9.0	13.5	14.0	15.5	19.5	15.0	17.0
30	---	---	---	13.5	7.0	10.0	18.0	12.0	15.0	19.5	16.0	17.5
31	---	---	---	13.5	8.5	11.0	---	---	---	20.0	16.0	18.0
MONTH	7.5	.0	3.0	13.5	.0	5.5	18.5	4.5	11.0	20.0	9.0	15.0
	JUNE			JULY			AUGUST			SEPTEMBER		
1	20.0	16.5	18.0	21.0	19.5	20.0	23.5	19.5	21.5	17.0	16.0	16.5
2	20.0	16.5	18.5	19.5	17.0	18.5	23.5	20.5	22.0	16.5	16.0	16.5
3	19.5	15.0	17.0	18.5	15.5	17.0	23.5	20.5	22.0	17.0	16.0	16.5
4	20.5	15.0	17.5	20.0	15.0	17.5	23.0	19.5	21.5	17.0	16.0	16.5
5	21.0	17.5	19.5	21.5	16.5	19.0	22.5	19.5	21.0	19.0	16.5	17.5
6	20.5	18.5	19.5	23.0	18.5	20.5	22.5	20.0	21.0	20.5	16.5	18.0
7	23.5	19.0	21.0	23.5	19.5	21.5	23.5	20.5	22.0	18.0	15.5	17.0
8	21.5	19.0	20.5	24.0	20.0	22.0	22.5	21.0	21.5	19.0	15.5	17.0
9	23.0	18.5	20.5	23.0	21.0	22.0	23.0	20.0	21.0	18.0	13.5	15.5
10	20.0	17.5	18.5	23.5	20.5	22.0	22.5	20.0	21.0	19.5	14.5	17.0
11	21.0	18.0	19.5	24.0	20.5	22.0	21.5	20.5	21.0	20.0	17.0	18.5
12	22.0	19.0	20.5	25.0	21.0	23.0	21.5	20.0	20.5	19.5	17.5	18.5
13	20.5	18.5	19.5	24.0	21.5	23.0	20.5	20.0	20.0	20.5	16.5	18.0
14	22.5	17.0	19.5	24.5	21.0	22.5	23.0	19.5	21.0	20.0	15.0	17.0
15	23.0	18.5	21.0	24.0	21.0	22.5	23.5	20.0	22.0	19.0	15.5	17.0
16	24.0	19.5	21.5	24.5	20.5	22.5	24.0	21.5	22.5	19.5	16.0	17.0
17	24.0	20.0	21.5	25.5	21.5	23.5	24.0	21.5	22.5	18.0	13.5	15.5
18	22.0	17.5	19.5	26.0	22.5	24.0	22.5	21.5	22.0	15.0	13.0	14.5
19	22.0	16.5	19.5	25.5	22.5	24.0	22.0	21.0	21.5	16.5	14.5	15.5
20	21.0	18.5	19.5	26.0	22.5	24.0	21.0	20.5	21.0	19.5	16.0	17.5
21	22.0	17.0	19.5	25.5	22.0	24.0	21.5	20.5	21.0	20.0	16.5	18.0
22	23.0	18.0	20.5	25.0	22.5	23.5	23.5	20.5	21.5	20.5	16.5	18.0
23	23.5	19.0	21.0	25.5	22.0	23.5	22.5	21.0	21.5	20.0	17.5	18.5
24	23.5	19.5	21.0	26.0	22.5	24.0	23.5	20.5	22.0	19.5	18.0	18.5
25	22.5	18.0	20.0	25.0	22.5	24.0	22.5	19.0	21.0	21.0	18.0	19.0
26	22.5	17.0	19.5	24.0	22.0	23.0	22.5	19.5	21.0	21.5	17.5	19.0
27	22.0	18.0	20.0	23.5	20.5	22.0	21.0	19.0	20.0	20.0	18.0	19.0
28	23.0	20.0	21.5	24.5	21.5	23.0	19.5	16.0	18.5	22.5	18.0	19.5
29	24.0	20.5	22.0	25.0	21.0	23.0	19.0	14.0	16.0	21.5	18.5	19.5
30	23.0	20.0	21.5	23.0	21.0	22.0	19.0	13.5	16.0	22.0	19.0	20.0
31	---	---	---	23.5	19.5	21.5	18.5	14.5	16.5	---	---	---
MONTH	24.0	15.0	20.0	26.0	15.0	22.0	24.0	13.5	21.0	22.5	13.0	17.5
YEAR	26.0	.0	12.0									

JAMES RIVER BASIN

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02011470 BACK CREEK AT SUNRISE, VA

LOCATION.--Lat 38°11'25", long 79°48'43", Bath County, Hydrologic Unit 02080201, on left bank 75 ft upstream from bridge on State Highway 600 at Sunrise, 180 ft upstream from Beaver Run, 0.5 mi downstream from Back Creek Dam, and 7.6 mi northeast of Mountain Grove.

DRAINAGE AREA.--76.1 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control since Oct. 24, 1984. Datum of gage is 1,968.52 ft above National Geodetic Vertical Datum of 1929 (Virginia Power bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1984 by Back Creek Lake 0.5 mi upstream, amount unknown. Virginia Power gage-height transmitter at station, receiver at Back Creek Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,100 ft³/s, Nov. 5, 1985, gage height, 11.37 ft, from rating curve extended above 960 ft³/s on basis of release from Back Creek Lake at peak flow; minimum daily, 5.2 ft³/s, Nov. 3, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,100 ft³/s, Nov. 5, gage height, 11.37 ft, from rating curve extended as explained above; minimum, 7.6 ft³/s, Nov. 19, gage height, 3.74 ft; minimum daily, 9.5 ft³/s, Oct. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	12	291	15	34	37	69	48	125	20	29	16
2	11	14	294	14	85	42	43	47	82	46	29	18
3	11	15	197	14	103	74	49	50	82	88	28	18
4	10	1270	174	31	675	75	26	114	61	127	20	16
5	11	3160	128	14	606	61	18	72	26	127	19	16
6	11	1080	110	14	261	79	55	46	16	139	19	15
7	10	512	22	14	307	96	186	48	17	148	20	15
8	10	305	22	13	250	87	38	48	28	87	17	15
9	10	296	81	13	200	79	55	47	76	83	15	15
10	11	191	162	14	156	81	18	74	29	81	15	15
11	11	164	201	14	158	106	18	114	33	64	18	15
12	10	144	85	14	103	395	17	49	15	15	15	15
13	9.7	112	17	14	45	526	51	37	15	15	15	15
14	9.9	102	216	14	83	939	87	20	29	15	15	14
15	10	82	185	14	117	1920	58	14	38	15	15	14
16	9.5	64	121	14	201	556	69	13	36	15	15	14
17	9.8	63	204	14	124	248	80	13	32	16	15	14
18	10	57	210	14	116	207	67	15	33	21	15	14
19	10	59	110	18	163	185	40	21	32	16	15	14
20	10	105	36	23	193	104	97	102	34	15	15	14
21	13	476	29	63	273	86	118	140	16	18	15	14
22	11	361	28	139	321	82	68	140	15	18	15	14
23	11	564	42	132	126	161	41	136	15	19	15	14
24	11	307	65	145	60	160	27	132	16	20	15	15
25	11	203	102	167	254	143	26	132	15	21	15	14
26	11	106	105	182	255	62	26	106	15	20	15	14
27	11	179	33	119	159	51	18	146	15	19	15	14
28	11	191	26	16	81	40	18	136	16	19	15	14
29	11	483	14	16	---	31	24	134	16	23	14	14
30	11	457	14	15	---	31	27	138	15	39	14	14
31	11	---	14	15	---	74	---	123	---	32	14	---
TOTAL	327.9	11134	3338	1318	5509	6818	1534	2455	993	1401	526	443
MEAN	10.6	371	108	42.5	197	220	51.1	79.2	33.1	45.2	17.0	14.8
MAX	13	3160	294	182	675	1920	186	146	125	148	29	18
MIN	9.5	12	14	13	34	31	17	13	15	15	14	14
CAL YR 1985	TOTAL	34044.5	MEAN	93.3	MAX	3160	MIN	9.5				
WTR YR 1986	TOTAL	35796.9	MEAN	98.1	MAX	3160	MIN	9.5				

JAMES RIVER BASIN

02011470 BACK CREEK AT SUNRISE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1984 to current year.

INSTRUMENTATION.--Water-temperature recorder since October 1984.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 27.5°C, Aug. 10, 1985; minimum, 0.0°C, Jan. 20, 21, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 25.0°C, Aug. 22; minimum, 1.5°C, Jan. 28.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.0	11.5	13.0	14.0	13.5	14.0	13.5	13.0	13.5	8.5	6.0	7.0
2	12.5	11.5	12.5	14.5	13.5	14.0	13.5	12.5	13.0	8.0	6.0	7.0
3	13.5	11.5	12.5	14.0	13.5	13.5	12.5	10.5	11.5	8.5	6.5	7.5
4	16.5	12.0	13.5	14.0	13.0	13.5	12.0	10.5	11.5	7.5	6.5	7.0
5	14.5	11.0	12.5	14.5	14.0	14.0	12.0	11.5	12.0	7.5	5.0	6.5
6	14.5	10.5	11.5	14.5	14.0	14.0	12.0	10.0	11.5	8.0	5.0	6.0
7	15.0	10.0	11.5	14.5	14.0	14.0	11.5	9.5	10.5	7.5	5.0	6.0
8	15.0	10.0	12.0	14.5	14.0	14.0	11.0	9.0	9.5	7.0	4.0	5.0
9	16.0	10.5	12.5	14.5	14.0	14.0	11.0	10.0	10.5	7.5	4.5	5.5
10	15.0	11.0	13.0	14.0	14.0	14.0	11.5	10.0	11.0	7.5	5.0	6.0
11	14.5	12.0	13.0	14.0	14.0	14.0	11.5	11.0	11.5	8.0	5.0	6.0
12	13.0	12.0	12.5	14.0	13.5	14.0	12.5	11.5	12.0	8.5	5.0	6.5
13	15.5	12.5	13.5	13.5	13.5	13.5	11.0	9.5	11.0	6.5	4.5	5.5
14	16.0	12.0	13.5	14.0	13.5	13.5	11.5	9.5	11.0	6.0	4.0	5.0
15	14.5	13.0	13.5	14.0	14.0	14.0	11.5	10.0	10.5	6.5	4.0	5.0
16	16.5	12.0	13.5	14.0	14.0	14.0	10.0	9.5	10.0	8.0	4.5	5.5
17	15.5	11.0	13.0	14.0	14.0	14.0	10.5	10.0	10.0	7.0	5.0	6.0
18	16.0	12.0	13.5	14.0	13.5	14.0	10.0	9.0	10.0	9.0	6.5	7.5
19	16.0	12.0	13.5	16.0	13.5	14.5	10.0	9.0	9.5	7.5	6.0	7.0
20	14.5	12.5	13.5	16.5	13.5	14.5	9.0	8.0	8.5	6.0	5.0	5.5
21	13.0	12.0	12.5	14.0	13.5	13.5	9.0	7.5	8.0	7.5	4.5	5.5
22	14.5	13.0	13.5	13.5	13.0	13.5	8.0	7.0	7.5	5.5	5.0	5.5
23	15.5	13.5	14.5	13.5	13.0	13.5	8.5	8.0	8.0	6.0	5.0	5.5
24	15.0	14.5	14.5	13.5	12.5	13.0	9.0	8.0	8.5	5.5	5.0	5.0
25	17.5	13.0	15.0	13.0	12.5	12.5	8.0	7.5	8.0	5.0	5.0	5.0
26	16.5	12.0	13.5	13.5	12.5	13.0	8.0	7.0	7.5	5.0	5.0	5.0
27	16.5	12.5	14.0	13.5	13.5	13.5	7.5	6.5	7.0	4.5	2.5	4.0
28	16.5	12.5	14.0	14.0	13.0	13.5	8.5	6.5	7.0	4.5	1.5	3.0
29	14.5	11.5	12.5	13.5	13.0	13.5	8.0	6.0	6.5	4.5	3.0	3.5
30	13.5	12.0	13.0	13.5	13.5	13.5	8.0	5.0	6.0	5.5	3.5	4.0
31	14.0	13.0	13.5	---	---	---	7.0	5.5	6.5	6.5	3.5	4.5
MONTH	17.5	10.0	13.0	16.5	12.5	13.5	13.5	5.0	9.5	9.0	1.5	5.5

JAMES RIVER BASIN

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA

LOCATION.--Lat 38°12'52", long 79°50'16", Bath County, Hydrologic Unit 02080201, in George Washington National Forest, on right bank 600 ft downstream from Long Spring Run, 1.2 mi downstream from Little Back Creek Dam, and 8.5 mi northeast of Mountain Grove.

DRAINAGE AREA.--4.91 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Water-stage recorder. Concrete control with rectangular weir plate. Datum of gage is 2,638.48 ft above National Geodetic Vertical Datum of 1929 (Virginia Power bench mark).

REMARKS.--Estimated daily discharges: Nov. 14-19, Dec. 21, 22, Dec. 26 to Jan. 17, Jan. 28 to Feb. 2, and Feb. 13-16. Records good except those for period of doubtful gage-height record, Nov. 14-19, and periods with ice effect, Dec. 21, 22, Dec. 26 to Jan. 17, Jan. 28 to Feb. 2, and Feb. 13-16, which are poor. Flows regulated since January 1985 by Little Back Creek Lake, 1.2 mi upstream, amount unknown.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 580 ft³/s, Nov. 4, 1985, gage height, 4.06 ft, from rating curve extended above 30 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.89 ft³/s, Oct. 12, 13, 1984, gage height, 0.66 ft; minimum daily, 0.90 ft³/s, Oct. 13, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 580 ft³/s, Nov. 4, gage height, 4.06 ft, from rating curve extended as explained above; minimum, 1.7 ft³/s, Aug. 22, gage height, 0.75 ft; minimum daily, 1.9 ft³/s, June 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	3.4	10	3.0	4.0	3.4	2.8	3.6	2.7	3.0	2.3	2.4
2	2.7	5.1	9.2	2.7	4.5	3.3	2.7	3.5	2.6	5.4	2.2	2.8
3	2.7	7.7	7.5	3.0	5.2	3.3	2.7	3.3	2.4	4.0	2.2	4.3
4	2.6	158	6.0	2.9	20	3.1	2.5	3.1	2.3	2.8	2.3	3.5
5	2.6	48	5.0	2.8	16	2.9	2.5	3.2	2.3	2.4	2.4	3.3
6	2.6	20	4.4	2.7	10	2.9	2.6	3.0	2.3	2.2	2.4	3.2
7	2.6	12	3.7	2.5	7.9	2.7	2.9	2.7	2.4	2.2	2.4	2.7
8	2.6	8.2	3.4	2.2	6.5	2.4	2.9	2.7	2.7	2.1	2.3	2.7
9	2.4	6.3	3.4	2.5	5.8	2.6	3.0	2.3	2.5	2.0	2.3	2.6
10	2.6	6.4	3.4	3.0	5.5	5.1	2.9	2.2	2.3	2.0	2.4	2.5
11	2.7	3.7	3.4	3.2	5.1	12	2.7	2.2	2.1	2.2	3.0	2.4
12	2.7	3.9	3.9	3.1	4.3	11	2.7	2.5	2.1	2.3	2.5	2.3
13	2.8	3.6	4.7	3.0	3.5	8.0	2.7	2.6	1.9	2.2	2.4	2.2
14	2.7	3.3	6.0	2.7	2.5	32	2.9	2.1	3.8	2.3	2.3	2.1
15	2.8	2.7	5.7	2.4	2.7	43	3.3	2.0	5.1	2.3	2.2	2.3
16	2.8	2.5	5.1	2.6	3.0	15	3.8	2.2	5.4	2.3	2.1	2.3
17	2.7	3.5	4.5	3.0	3.8	8.7	4.1	2.2	5.1	2.4	2.1	2.2
18	2.8	2.8	3.9	3.3	5.1	6.5	4.5	2.3	2.9	2.3	2.3	2.2
19	2.8	2.4	3.7	3.4	8.3	5.4	4.9	2.6	2.5	2.2	2.3	2.2
20	2.7	2.6	3.7	10	8.6	4.5	4.9	13	2.8	2.1	2.2	2.2
21	4.3	2.6	3.2	7.2	7.7	3.9	4.9	12	2.6	2.3	2.3	2.2
22	3.7	6.6	2.7	6.7	6.5	3.4	4.5	8.4	2.4	2.4	2.2	2.3
23	3.1	11	3.6	6.6	5.5	3.2	4.1	5.9	2.5	2.5	2.5	2.3
24	3.3	7.8	3.5	6.6	5.2	3.1	3.7	4.6	2.6	2.4	2.7	2.2
25	3.5	5.8	3.4	6.5	4.7	2.9	3.4	3.9	2.4	2.2	2.4	2.1
26	3.2	4.8	3.2	5.6	4.3	2.9	3.1	3.6	2.4	2.3	2.3	2.0
27	3.0	4.6	3.1	5.1	4.1	2.9	3.0	3.8	2.4	2.4	2.5	2.1
28	2.9	5.2	2.9	4.5	3.6	2.7	2.8	3.8	3.4	2.4	2.2	2.2
29	2.9	12	2.7	3.0	---	2.6	3.9	3.5	2.7	2.4	2.1	2.3
30	3.0	12	3.2	2.7	---	2.6	3.7	3.3	2.6	2.3	2.2	2.3
31	2.9	---	2.8	3.5	---	2.7	---	3.0	---	2.3	2.2	---
TOTAL	89.1	378.5	134.9	122.0	173.9	210.7	101.1	119.1	84.2	76.6	72.2	74.4
MEAN	2.87	12.6	4.35	3.94	6.21	6.80	3.37	3.84	2.81	2.47	2.33	2.48
MAX	4.3	158	10	10	20	43	4.9	13	5.4	5.4	3.0	4.3
MIN	2.4	2.4	2.7	2.2	2.5	2.4	2.5	2.0	1.9	2.0	2.1	2.0
CAL YR 1985	TOTAL	1962.8	MEAN	5.38	MAX	158	MIN	1.0				
WTR YR 1986	TOTAL	1636.7	MEAN	4.48	MAX	158	MIN	1.9				

JAMES RIVER BASIN

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02011490 LITTLE BACK CREEK NEAR SUNRISE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1984 to current year.

INSTRUMENTATION.--Water-temperature recorder since October 1984.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 25.0°C, July 18, 1986; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 25.0°C, July 18; minimum, 0.0°C, Dec. 26, Jan. 28.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	11.0	10.5	10.5	10.0	9.5	9.5	2.0	1.5	1.5
2	---	---	---	11.0	10.5	10.5	10.0	6.0	8.0	3.0	1.5	2.0
3	---	---	---	10.5	10.5	10.5	6.0	5.0	5.5	3.0	2.0	2.5
4	16.0	14.5	15.0	---	---	---	5.5	4.5	5.0	3.0	2.0	2.5
5	---	---	---	---	---	---	5.5	4.5	5.0	2.5	1.5	2.0
6	14.0	13.0	13.5	10.0	7.5	9.5	5.0	4.5	5.0	2.5	1.5	2.0
7	14.0	12.0	13.0	---	---	---	5.0	4.0	4.5	2.5	1.0	2.0
8	14.5	12.5	13.5	9.0	8.0	8.5	4.5	3.5	4.0	2.0	1.0	1.5
9	15.0	13.0	14.0	9.0	7.0	8.5	5.5	4.5	5.0	2.0	1.0	1.5
10	14.5	13.0	13.5	9.5	5.5	8.0	5.5	4.0	4.5	2.5	1.5	2.0
11	15.5	13.5	14.5	10.5	8.5	9.5	6.0	4.5	5.0	2.5	2.0	2.0
12	15.0	14.5	14.5	11.0	10.0	10.5	6.5	6.0	6.0	3.0	2.0	2.5
13	15.0	14.0	14.5	11.0	10.5	11.0	7.0	5.5	6.5	2.5	1.5	2.5
14	15.5	14.5	15.0	11.5	10.5	11.0	5.5	3.0	4.0	3.0	1.5	2.0
15	15.5	14.5	15.0	12.0	11.0	11.5	3.5	2.5	3.0	2.5	2.0	2.0
16	15.0	13.0	14.0	10.5	10.0	10.0	4.0	3.5	3.5	3.5	2.0	2.5
17	15.0	12.0	14.0	10.0	9.0	9.5	3.5	3.0	3.0	3.5	2.5	3.0
18	15.0	14.0	14.5	10.5	7.0	9.5	3.0	1.0	2.0	4.0	3.0	3.5
19	15.0	14.0	14.5	11.5	10.0	11.0	1.0	.5	.5	3.5	1.5	2.5
20	15.0	13.0	14.0	12.0	11.0	11.5	1.0	1.0	1.0	3.0	1.5	2.5
21	13.0	12.5	13.0	11.5	10.0	11.0	1.0	.5	1.0	3.0	2.0	2.5
22	13.0	10.0	11.5	10.0	9.0	9.5	1.5	.5	1.0	3.0	2.5	3.0
23	13.5	9.5	11.5	9.5	8.5	9.0	2.0	1.5	2.0	3.5	2.5	3.0
24	13.0	13.0	13.0	9.0	8.5	8.5	2.5	2.0	2.0	3.5	2.5	2.5
25	13.0	11.0	12.5	9.0	8.0	8.5	2.0	.5	1.0	3.0	2.5	3.0
26	13.0	11.0	12.0	9.5	8.5	9.0	1.0	.0	.5	3.0	2.5	3.0
27	13.0	10.5	12.0	10.5	9.5	10.0	2.0	1.0	1.5	2.5	1.0	1.5
28	13.0	11.5	12.5	11.0	10.5	11.0	1.5	1.5	1.5	1.0	.0	.5
29	11.5	9.0	10.0	11.0	10.0	11.0	2.0	1.0	1.5	1.5	1.0	1.0
30	11.5	9.0	11.0	10.0	9.5	10.0	2.0	1.0	1.5	1.0	.5	1.0
31	11.0	10.0	10.5	---	---	---	2.5	1.5	2.0	2.0	.5	1.0
MONTH	16.0	9.0	13.0	12.0	5.5	10.0	10.0	.0	3.5	4.0	.0	2.0

02011490 LITTLE BACK CREEK NEAR SUNRISE, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	2.5	1.5	2.0	2.5	1.0	1.5	13.0	11.0	12.0	15.5	13.0	14.0
2	2.5	2.0	2.0	2.5	1.0	1.5	14.0	11.0	12.5	14.5	12.0	13.0
3	3.0	2.0	2.5	2.5	1.5	2.0	13.5	10.5	11.5	13.5	10.5	11.5
4	4.5	3.0	4.0	3.0	2.0	2.5	14.0	11.5	12.5	14.0	10.0	11.5
5	5.5	4.5	5.0	3.5	2.0	2.5	14.5	12.5	13.5	15.0	11.0	13.0
6	5.5	4.0	5.0	3.5	1.5	2.5	14.5	13.0	13.5	16.0	12.5	14.0
7	4.5	4.0	4.0	3.0	1.0	2.0	15.0	12.5	13.5	16.5	14.0	15.5
8	4.5	4.0	4.0	2.5	.5	1.5	15.0	12.0	13.0	17.5	15.0	16.0
9	4.5	4.0	4.0	4.0	1.5	2.5	12.0	10.0	11.0	15.5	13.5	14.5
10	4.0	3.5	4.0	5.0	2.5	4.0	9.5	8.5	9.0	16.0	12.5	14.0
11	3.5	2.5	3.0	6.5	4.5	5.0	10.5	8.0	9.0	16.5	13.5	15.0
12	2.5	1.5	2.0	5.0	4.5	5.0	11.0	7.5	9.0	16.0	14.0	15.0
13	1.5	1.0	1.0	6.0	5.0	5.5	---	---	---	15.0	13.5	14.5
14	1.0	1.0	1.0	6.0	5.5	6.0	---	---	---	14.0	13.5	13.5
15	1.5	1.0	1.5	6.5	6.0	6.5	---	---	---	16.0	13.5	14.5
16	2.5	1.0	1.5	7.5	5.5	6.5	9.5	7.0	8.5	16.5	14.5	15.5
17	2.5	2.0	2.0	7.5	5.5	6.5	8.5	7.0	8.0	17.5	15.0	16.5
18	3.5	2.5	3.0	7.0	5.5	6.5	11.0	7.5	9.0	17.5	16.0	16.5
19	4.5	3.5	4.0	8.5	5.5	7.5	12.0	8.5	10.0	16.5	15.5	16.0
20	6.0	4.5	5.0	7.5	5.0	6.5	12.0	9.5	10.5	15.0	13.5	14.0
21	6.0	4.5	5.5	6.0	4.0	4.5	10.0	8.5	9.0	13.5	12.5	13.0
22	4.5	3.5	4.0	6.0	3.5	4.5	9.5	6.5	8.0	12.5	11.5	12.0
23	4.5	3.5	3.5	7.0	4.0	5.5	9.5	6.5	8.0	12.5	11.0	11.5
24	3.5	3.0	3.0	8.0	5.0	6.5	10.5	7.0	8.5	14.0	11.5	13.0
25	3.0	2.0	2.5	8.5	5.5	7.0	11.5	8.0	10.0	13.5	12.5	13.0
26	2.5	1.5	2.0	9.5	7.0	8.0	13.5	9.5	11.5	14.0	13.5	13.5
27	2.5	2.0	2.0	9.5	7.5	8.5	15.0	11.0	13.0	13.5	13.5	13.5
28	3.0	1.0	1.5	9.5	6.5	8.0	16.5	12.0	14.0	16.0	13.0	14.5
29	---	---	---	10.5	7.0	8.5	16.0	13.0	14.0	17.0	14.5	15.5
30	---	---	---	12.0	8.5	10.0	15.5	12.0	14.0	17.0	15.0	16.0
31	---	---	---	13.0	9.5	11.5	---	---	---	18.0	15.5	16.5
MONTH	6.0	1.0	3.0	13.0	.5	5.5	16.5	6.5	11.0	18.0	10.0	14.0
	JUNE			JULY			AUGUST			SEPTEMBER		
1	17.5	16.0	17.0	21.0	19.5	20.5	23.0	20.5	21.5	18.0	17.5	17.5
2	18.0	16.5	17.0	19.5	19.0	19.5	22.5	21.5	22.0	17.5	17.0	17.5
3	17.0	15.0	16.0	20.0	18.5	19.0	22.5	21.0	22.0	17.0	16.5	17.0
4	18.0	15.5	16.5	20.0	18.0	19.0	22.5	21.0	21.5	17.0	17.0	17.0
5	19.0	17.5	18.0	21.5	18.5	20.0	22.5	21.0	22.0	17.5	16.5	17.0
6	20.0	18.0	19.0	22.5	20.0	21.0	22.5	21.0	22.0	18.0	16.0	17.0
7	20.5	18.5	19.5	22.5	20.5	21.5	22.5	21.5	22.0	17.0	16.0	16.5
8	20.5	18.5	19.5	23.0	20.5	22.0	21.5	21.0	21.5	17.5	15.5	16.5
9	21.5	18.5	20.0	22.0	21.0	21.5	22.0	20.5	21.0	17.0	15.5	16.0
10	19.5	18.5	19.0	22.0	20.5	21.5	21.5	20.5	21.0	18.0	15.5	17.0
11	20.0	18.5	19.0	22.5	21.0	21.5	21.0	20.5	21.0	18.0	17.0	17.5
12	20.0	19.0	19.5	22.5	21.0	22.0	20.5	20.0	20.5	17.5	17.0	17.0
13	19.5	18.5	19.0	22.5	21.0	22.0	20.5	20.0	20.0	17.5	16.5	17.5
14	20.5	18.0	19.5	22.5	21.0	22.0	20.5	19.5	20.0	18.0	16.0	17.0
15	21.0	19.5	20.0	23.0	21.5	22.0	21.5	19.5	20.5	18.0	17.0	17.5
16	20.5	19.0	20.0	23.0	21.5	22.0	21.0	20.0	20.5	18.0	16.5	17.5
17	20.5	19.0	19.5	24.0	22.0	23.0	21.0	20.5	21.0	17.5	15.5	16.5
18	19.5	17.5	18.5	25.0	22.5	23.5	20.5	20.5	20.5	16.5	16.0	16.5
19	19.5	17.5	18.5	24.0	22.5	23.5	20.5	20.0	20.0	17.5	16.5	17.0
20	19.5	18.5	19.0	24.5	23.0	23.5	---	---	---	17.5	16.5	17.0
21	20.5	17.5	19.0	24.5	22.5	23.5	---	---	---	18.5	17.0	17.5
22	21.0	18.0	19.5	24.5	23.0	23.5	---	---	---	18.0	17.0	17.5
23	20.5	19.0	19.5	24.5	23.0	23.5	---	---	---	18.5	17.5	18.0
24	20.0	19.0	19.5	24.0	23.0	23.5	---	---	---	18.5	18.0	18.0
25	20.0	18.0	19.0	24.0	23.0	23.5	---	---	---	19.0	17.5	18.5
26	20.5	18.0	19.5	23.5	22.0	22.5	---	---	---	19.5	18.0	19.0
27	21.0	19.0	20.0	23.0	21.5	22.5	20.0	19.5	20.0	19.0	18.5	19.0
28	21.5	20.0	20.5	23.5	22.0	22.5	19.5	17.5	18.5	19.5	18.5	19.0
29	22.5	20.5	21.0	23.0	22.0	22.5	18.5	16.5	17.5	19.5	19.0	19.5
30	22.5	20.0	21.0	22.5	21.5	22.0	18.5	17.0	17.5	20.0	19.0	19.5
31	---	---	---	22.5	20.5	21.5	19.0	17.0	18.0	---	---	---
MONTH	22.5	15.0	19.0	25.0	18.0	22.0	23.0	16.5	20.5	20.0	15.5	17.5
YEAR	25.0	.0	11.5									

JAMES RIVER BASIN

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02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA

LOCATION.--Lat 38°04'10", long 79°53'50", Bath County, Hydrologic Unit 02080201, on left bank 0.3 mi downstream from Cummings Run, 0.8 mi downstream from bridge on State Highway 39, and 2.1 mi south of Mountain Grove.

DRAINAGE AREA.--134 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,701.45 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20-22, Jan. 7-9, 15, 28-31, Feb. 13, and Sept. 19-30. Records good except those for periods with ice effect, Dec. 20-22, Jan. 7-9, 15, 28-31, and Feb. 13, and period of no gage-height record, Sept. 19-30, which are fair. Flow regulated since October 1984 by Back Creek Lake 11.3 mi upstream, amount unknown, and since January 1985 by Little Back Creek Lake 14.4 mi upstream, amount unknown. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam.

AVERAGE DISCHARGE.--35 years, 183 ft³/s, 18.55 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s, Nov. 4, 1985, gage height, 11.24 ft, from rating curve extended above 4,000 ft³/s on basis of slope-area measurements at gage heights 7.39 ft, 9.05 ft, and 9.35 ft; minimum, 1.5 ft³/s, Aug. 18, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,200 ft³/s, Nov. 4, gage height, 11.24 ft, from rating curve extended as explained above; minimum, 11 ft³/s, Jan. 8, gage height, 1.78 ft, result of freezeup; minimum daily, 15 ft³/s, Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	22	562	29	55	114	111	73	158	29	33	22
2	18	29	506	28	114	97	49	79	115	46	33	30
3	18	41	397	28	161	126	67	68	135	108	32	38
4	17	4840	283	39	878	128	49	121	64	133	27	34
5	16	6820	227	32	941	108	44	118	71	138	24	37
6	17	1470	218	27	454	127	66	65	41	145	22	33
7	17	675	93	24	501	141	243	64	45	154	23	30
8	17	391	78	21	425	128	99	64	52	112	23	28
9	17	356	105	19	366	123	98	61	92	92	19	26
10	18	241	186	25	290	127	63	68	61	89	19	25
11	18	199	250	24	288	241	54	125	60	88	22	24
12	18	174	163	24	226	482	51	85	37	31	21	21
13	18	143	75	24	90	653	55	54	33	22	19	21
14	18	123	184	24	138	1600	135	42	36	21	20	20
15	18	111	336	23	175	4010	89	34	49	21	19	20
16	19	87	188	24	250	984	95	30	49	20	19	20
17	18	87	259	24	193	617	116	30	45	20	19	19
18	18	79	282	24	180	447	121	29	46	24	21	21
19	19	78	173	57	254	324	81	37	45	23	21	21
20	20	70	60	177	296	234	120	243	45	20	22	20
21	31	437	52	151	385	148	165	319	36	20	22	20
22	25	542	50	239	437	118	124	268	27	23	22	20
23	22	655	62	237	277	201	68	228	27	24	23	19
24	22	501	93	234	152	206	52	206	28	24	30	21
25	23	332	118	252	335	183	48	189	26	24	24	20
26	22	188	140	258	367	119	50	154	25	39	23	20
27	22	288	69	230	267	72	39	195	25	39	23	19
28	22	307	46	30	161	68	39	194	22	28	22	24
29	21	836	39	28	---	52	51	181	24	26	20	23
30	20	764	31	26	---	50	62	182	22	37	20	20
31	20	---	30	27	---	64	---	165	---	39	19	---
TOTAL	604	20886	5355	2409	8656	12092	2504	3771	1541	1659	706	716
MEAN	19.5	696	173	77.7	309	390	83.5	122	51.4	53.5	22.8	23.9
MAX	31	6820	562	258	941	4010	243	319	158	154	33	38
MIN	15	22	30	19	55	50	39	29	22	20	19	19
CAL YR 1985	TOTAL	61448	MEAN	168	MAX	6820	MIN	15				
WTR YR 1986	TOTAL	60899	MEAN	167	MAX	6820	MIN	15				

JAMES RIVER BASIN

02011500 BACK CREEK NEAR MOUNTAIN GROVE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1978 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1978.

REMARKS.--Interruptions in the record were due to malfunction of the instrument. Some record in prior years fragmentary due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.0°C, Aug. 5, 11, 1980, July 21, Aug. 21, 1983, July 30, 1985; minimum recorded, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.5°C, June 17, Sept. 28, 30, but may have been higher during periods of instrument malfunction June 21-30 and July 11 to Aug. 26; minimum, 0.0°C on many days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	17.5	13.0	15.5	12.5	11.0	11.5	11.5	11.0	11.0	3.0	1.0	1.5
2	16.5	15.0	16.0	13.0	12.0	12.5	11.0	6.0	8.5	2.0	.5	1.0
3	17.0	14.0	15.5	12.5	11.5	12.0	8.0	5.5	6.5	3.5	1.0	2.0
4	22.0	15.5	18.0	13.0	11.5	12.0	7.5	4.5	6.5	3.5	1.5	2.5
5	18.5	14.0	16.5	12.0	11.0	11.5	8.0	7.0	7.5	3.0	.5	2.0
6	16.0	10.5	13.0	12.5	11.0	11.5	8.0	6.5	7.5	2.0	.0	.5
7	15.0	7.5	11.0	13.0	10.0	11.5	7.5	5.5	6.5	2.5	.0	1.0
8	15.5	8.0	11.5	12.0	9.0	10.0	7.0	4.5	6.0	.0	.0	.0
9	17.0	9.5	13.0	12.5	8.0	10.0	8.5	6.5	7.0	.0	.0	.0
10	16.5	11.0	14.0	13.5	8.5	10.5	9.0	5.0	7.0	.0	.0	.0
11	17.5	13.0	15.0	13.5	9.5	11.5	9.5	6.5	8.0	.0	.0	.0
12	15.5	14.5	15.0	13.5	10.5	12.0	11.0	9.5	10.0	.0	.0	.0
13	18.5	14.5	16.5	13.0	11.0	12.0	9.0	7.0	8.5	.0	.0	.0
14	19.0	15.0	17.0	15.0	11.5	13.0	7.0	4.0	5.0	.0	.0	.0
15	18.0	16.0	17.0	14.5	12.5	13.5	6.0	4.5	5.0	.0	.0	.0
16	19.0	13.5	16.0	12.5	10.0	11.0	6.5	4.5	5.5	.0	.0	.0
17	16.5	10.0	13.5	12.0	10.0	11.0	7.0	4.5	5.5	.0	.0	.0
18	17.5	12.0	14.5	12.5	10.0	11.0	6.0	3.0	4.5	.0	.0	.0
19	17.0	13.0	15.0	15.0	12.0	13.0	4.0	1.0	2.5	.0	.0	.0
20	16.5	12.5	15.0	15.0	12.0	13.5	3.0	2.0	2.5	.0	.0	.0
21	13.5	10.5	12.5	13.0	11.0	12.0	3.5	.0	1.5	.0	.0	.0
22	14.0	12.0	12.5	11.5	10.0	10.5	.5	.0	.0	.5	.0	.0
23	15.5	13.0	14.5	12.0	8.5	10.0	3.0	.5	2.0	1.0	.0	.0
24	16.0	14.5	15.0	11.5	9.0	10.0	4.5	2.5	3.5	.5	.0	.0
25	19.0	13.5	16.0	11.0	8.5	10.0	4.0	.0	2.0	.0	.0	.0
26	14.5	8.5	11.5	12.0	9.0	10.5	1.0	.0	.5	.5	.0	.0
27	14.5	8.5	11.5	13.0	12.0	12.5	3.0	1.0	2.0	.0	.0	.0
28	15.0	10.5	12.5	13.0	12.0	12.5	4.0	2.0	2.5	.0	.0	.0
29	11.0	7.0	9.5	12.5	11.0	12.0	3.0	1.0	2.0	.5	.0	.0
30	10.5	8.0	9.0	11.5	11.0	11.0	3.5	.0	1.0	.0	.0	.0
31	11.0	10.5	10.5	---	---	---	1.0	.5	1.0	1.0	.0	.0
MONTH	22.0	7.0	14.0	15.0	8.0	11.5	11.5	.0	5.0	3.5	.0	.5

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	3.0	.0	1.5	5.5	.5	3.0	15.5	8.5	12.0	18.5	12.5	15.5
2	4.0	1.5	3.0	5.0	1.5	3.5	16.5	10.5	13.5	18.5	11.0	14.0
3	4.5	4.0	4.0	4.5	3.0	4.0	17.0	9.5	13.5	17.0	8.5	12.5
4	5.0	3.5	4.0	4.5	3.5	4.0	19.0	12.0	15.0	17.0	7.5	12.0
5	6.0	4.0	4.5	6.5	3.0	4.5	17.0	12.0	14.5	19.0	8.5	13.0
6	6.0	4.0	4.5	5.0	2.5	3.5	18.0	13.0	15.0	19.5	11.5	15.5
7	5.0	3.5	4.0	5.0	1.0	3.0	16.5	9.0	12.5	21.0	13.5	17.5
8	6.0	3.5	4.5	5.0	.0	2.5	16.0	8.5	12.0	22.5	15.5	18.5
9	5.0	4.0	4.5	9.5	2.0	5.5	11.0	7.5	9.5	17.0	12.5	14.0
10	4.5	4.0	4.0	10.0	3.5	7.0	7.5	6.0	6.5	20.0	10.0	14.5
11	4.0	2.0	3.5	9.0	5.0	7.5	12.0	5.5	8.5	20.0	10.0	15.0
12	3.5	1.0	2.0	6.0	4.0	5.0	16.5	6.0	10.5	18.0	11.0	14.5
13	2.5	.0	1.0	6.0	5.0	5.0	12.5	7.5	10.0	16.0	12.5	14.0
14	1.5	.0	1.0	7.0	5.5	6.0	14.5	7.0	10.5	14.0	12.0	12.5
15	4.0	1.0	2.5	7.0	5.5	6.0	13.5	10.5	11.5	20.5	12.5	16.0
16	5.5	1.0	3.0	9.5	5.0	6.5	10.5	8.0	9.0	22.5	15.0	18.5
17	4.5	3.0	3.5	9.5	4.5	6.5	8.5	7.0	8.0	23.0	16.5	19.5
18	6.0	4.0	5.0	9.0	4.5	6.5	15.5	6.5	10.5	23.0	17.0	19.5
19	6.0	4.0	5.0	11.5	7.0	9.0	18.0	7.5	12.5	19.0	17.0	18.0
20	8.5	4.5	6.0	7.5	4.5	6.5	15.0	10.5	12.5	17.5	15.0	16.5
21	7.5	4.0	5.5	8.0	2.5	5.0	12.0	9.5	11.0	17.0	13.0	14.5
22	4.0	3.5	4.0	9.0	1.5	5.0	9.5	6.5	8.5	13.5	11.5	12.5
23	6.5	3.5	4.5	11.0	2.5	6.5	12.5	5.5	8.5	15.0	11.0	12.5
24	4.0	3.0	3.5	12.0	4.5	7.5	16.5	5.5	10.5	17.5	12.0	14.5
25	6.0	2.5	3.5	12.5	4.0	8.0	16.5	8.0	12.5	15.0	12.5	14.0
26	3.5	1.5	2.5	12.5	5.0	9.0	19.5	11.5	15.0	14.0	13.0	13.5
27	4.5	3.0	4.0	14.5	8.0	10.5	21.5	11.5	16.5	14.0	13.0	13.5
28	6.0	1.5	3.5	14.0	5.0	9.0	22.5	12.5	17.5	18.0	13.5	15.0
29	---	---	---	15.5	6.0	10.5	22.0	14.5	17.5	18.5	13.5	16.0
30	---	---	---	16.5	7.0	11.5	21.0	11.0	16.0	18.5	14.5	16.5
31	---	---	---	16.5	8.5	13.0	---	---	---	19.5	14.5	17.0
MONTH	8.5	.0	3.5	16.5	.0	6.5	22.5	5.5	12.0	23.0	7.5	15.0
	JUNE			JULY			AUGUST			SEPTEMBER		
1	19.5	14.5	17.0	21.0	19.0	20.5	---	---	---	18.5	17.0	17.5
2	20.5	14.5	17.0	23.0	19.5	20.5	---	---	---	17.5	16.5	17.0
3	19.0	14.0	16.0	22.0	18.5	20.5	---	---	---	19.0	17.0	18.0
4	21.5	13.5	17.5	22.0	17.0	19.5	---	---	---	18.5	18.0	18.0
5	22.0	17.0	19.0	22.5	17.5	20.0	---	---	---	22.5	18.0	19.5
6	23.5	18.5	20.5	23.5	18.5	21.0	---	---	---	24.5	18.0	20.5
7	25.0	19.0	21.5	23.5	19.0	21.0	---	---	---	21.0	17.0	19.0
8	23.5	20.0	21.5	25.0	19.0	22.0	---	---	---	23.0	16.5	19.0
9	23.0	19.0	21.0	24.0	20.0	22.0	---	---	---	20.0	14.0	17.0
10	20.5	17.0	18.0	24.5	19.5	22.0	---	---	---	22.5	15.5	18.5
11	22.0	17.0	19.0	---	---	---	---	---	---	23.0	18.5	20.5
12	24.5	19.0	21.5	---	---	---	---	---	---	22.0	19.0	20.0
13	21.5	18.0	20.0	---	---	---	---	---	---	23.5	16.5	19.5
14	24.0	16.5	20.0	---	---	---	---	---	---	22.5	15.5	19.0
15	23.5	18.5	21.0	---	---	---	---	---	---	22.5	16.5	19.0
16	25.0	20.0	22.0	---	---	---	---	---	---	23.0	16.5	19.0
17	25.5	20.0	22.0	---	---	---	---	---	---	21.0	13.5	17.0
18	23.5	17.0	20.0	---	---	---	---	---	---	17.0	14.5	16.0
19	23.0	16.5	19.5	---	---	---	---	---	---	20.0	16.5	18.0
20	21.5	18.5	19.5	---	---	---	---	---	---	22.5	18.0	20.0
21	---	---	---	---	---	---	---	---	---	25.0	19.0	21.5
22	---	---	---	---	---	---	---	---	---	24.0	18.0	20.5
23	---	---	---	---	---	---	---	---	---	24.0	19.5	21.5
24	---	---	---	---	---	---	---	---	---	22.5	20.0	21.0
25	---	---	---	---	---	---	---	---	---	25.0	20.0	22.0
26	---	---	---	---	---	---	---	---	---	24.5	20.0	22.0
27	---	---	---	---	---	---	23.0	20.0	21.5	22.0	19.5	21.0
28	---	---	---	---	---	---	22.0	17.0	20.0	25.5	20.0	22.0
29	---	---	---	---	---	---	22.0	13.5	17.0	24.5	21.0	22.5
30	---	---	---	---	---	---	21.5	13.5	17.0	25.5	21.0	22.5
31	---	---	---	---	---	---	21.0	15.0	18.0	---	---	---
MONTH	25.5	13.5	19.5	25.0	17.0	21.0	23.0	13.5	18.5	25.5	13.5	19.5
YEAR	25.5	.0	11.0									

02011795 LAKE MOOMAW NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°57'04", long 79°59'21", Alleghany County, Hydrologic Unit 02080201, in control tower at Gathright Dam on Jackson River, 0.9 mi upstream from Cedar Creek, 7.6 mi southwest of Hot Springs, and 19 mi upstream from Covington.

DRAINAGE AREA.--344 mi².

PERIOD OF RECORD.--December 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Lake is formed by rolled rockfill dam with an impervious compacted earth (clay) core. Spillway with crest at elevation 1,667.5 ft is in a divide about 2.5 mi south of the dam, ungated, and 2,450 ft long with a base width of 100 ft. Except for flood flows, all discharge will be through a diversion tunnel with the invert of the entrance being in an intake tower 260 ft high. Elevation of invert is 1,430.5 ft. Portals in the tower at nine levels permit oxygenated water from the surface and cold water from the bottom of the lake to be mixed for water-quality control. Sluice gates in the tower control flood flow releases. Storage began Dec. 10, 1979. Total capacity at top of dam, elevation 1,684.5 ft, is 502,600 acre-ft of which 81,100 acre-ft is above spillway crest. Capacity at maximum conservation pool, elevation 1,582.0 ft, is 123,700 acre-ft; capacity at minimum conservation pool, elevation 1,554.0 ft, is 63,000 acre-ft. Lake is used for flood control, low-water augmentation for water-quality control, and recreation.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 147,500 acre-ft, Nov. 6, 1985, elevation, 1,591.0 ft; minimum, (after first filling to minimum conservation pool), 85,700 acre-ft, Nov. 1, 2, 1985, elevation, 1,565.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 147,500 acre-ft, Nov. 6, elevation, 1,591.0 ft; minimum, 85,700 acre-ft, Nov. 1, 2, elevation, 1,565.6 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,568.0	90,800	-
Oct. 31.....	1,565.7	85,900	-4,900
Nov. 30.....	1,581.8	123,200	+37,300
Dec. 31.....	1,582.0	123,700	+500
CAL YR 1985.....	-	-	0
Jan. 31.....	1,581.9	123,500	-200
Feb. 28.....	1,581.8	123,200	-300
Mar. 31.....	1,581.9	123,500	+300
Apr. 30.....	1,582.0	123,700	+200
May 31.....	1,581.9	123,500	-200
June 30.....	1,579.3	117,000	-6,500
July 31.....	1,575.7	108,300	-8,700
Aug. 31.....	1,570.7	96,800	-11,500
Sept. 30.....	1,567.1	88,900	-7,900
WTR YR 1986.....	-	-	-1,900

JAMES RIVER BASIN

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02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°56'54", long 79°56'58", Alleghany County, Hydrologic Unit 02080201, on right bank 0.4 mi upstream from Cedar Creek, 0.5 mi downstream from Gathright Dam and Moomaw Lake, and 7.3 mi southwest of Hot Springs.

DRAINAGE AREA.--345 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to current year.

REVISED RECORDS.--WDR VA-81-1: 1980.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Dec. 20, 1973, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharge: Nov. 4. Records good. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 0.5 mi upstream; since October 1984 by Back Creek Lake 28.5 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 31.6 mi upstream, amount unknown. U.S. Army Corps of Engineers water-quality and gage-height transmitters at station, receiver at Gathright Dam.

AVERAGE DISCHARGE.--13 years, 455 ft³/s, 17.91 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,000 ft³/s, Dec. 26, 1973, result of cofferdam failure during construction of Gathright Dam, gage height, 18.77 ft, from rating curve extended above 9,200 ft³/s on basis of slope-area measurement of peak flow; minimum, 3.0 ft³/s, July 12, 1979, result of gate closure at Gathright Dam, gage height, 7.78 ft; minimum daily, 47 ft³/s, Sept. 2, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 17.20 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,400 ft³/s, Nov. 7, gage height, 15.29 ft; minimum, 9.9 ft³/s, Nov. 15, gage height, 7.87 ft; minimum daily, 130 ft³/s, Jan. 9-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	149	1320	166	201	325	217	264	259	269	268	223
2	153	149	1060	166	201	317	217	264	259	269	268	223
3	143	149	743	166	201	317	217	251	257	269	267	223
4	146	142	744	166	506	317	217	243	257	271	268	223
5	150	1380	744	166	967	317	217	243	257	270	263	223
6	150	7130	606	149	1150	317	217	241	257	268	263	223
7	150	8670	475	138	2000	317	217	241	257	268	266	223
8	150	3880	317	133	1240	317	218	239	257	268	264	222
9	150	1010	201	130	670	317	289	241	257	268	264	221
10	150	819	198	130	670	317	276	242	257	268	264	221
11	150	497	232	130	670	371	220	242	261	268	264	220
12	150	370	201	130	670	670	220	240	261	268	267	221
13	150	370	286	130	585	1010	220	242	259	268	271	220
14	150	366	414	130	319	553	220	243	258	268	271	220
15	162	266	530	130	234	2370	220	209	257	268	266	220
16	174	313	618	130	357	4730	220	240	257	268	264	222
17	178	279	503	130	454	4680	220	240	257	271	264	223
18	178	279	414	130	490	3520	220	240	257	275	264	223
19	178	279	414	130	522	1150	220	240	257	275	264	223
20	178	279	333	130	547	723	220	420	257	275	264	223
21	179	341	261	287	717	464	220	1210	257	275	262	223
22	179	408	213	400	842	368	340	1160	257	275	258	223
23	178	876	166	400	787	412	303	572	257	275	257	223
24	178	1620	166	400	548	458	220	450	257	275	257	223
25	178	1100	166	400	409	490	220	505	257	275	257	223
26	161	710	166	483	581	418	220	491	264	275	257	223
27	149	641	166	428	713	318	220	448	268	275	257	223
28	148	568	166	345	488	281	220	448	268	275	257	223
29	148	1840	166	256	---	242	220	446	268	275	237	200
30	148	2180	166	201	---	217	245	342	268	274	223	178
31	148	---	166	201	---	217	---	260	---	272	223	---
TOTAL	4956	37060	12321	6611	17739	26840	6930	11357	7776	8413	8059	6602
MEAN	160	1235	397	213	634	866	231	366	259	271	260	220
MAX	179	8670	1320	483	2000	4730	340	1210	268	275	271	223
MIN	143	142	166	130	201	217	217	209	257	268	223	178
(*)	-80	+627	+8	-3	-5	+5	+3	-3	-109	-141	-187	-133
MEAN†	79.9	1862	405	210	629	871	234	363	150	130	73.0	87.1
CFSM†	.23	5.40	1.17	.61	1.82	2.52	.68	1.05	.43	.38	.21	.25
IN.†	.27	6.02	1.36	.70	1.90	2.91	.76	1.21	.49	.44	.24	.28
CAL YR 1985	TOTAL	165812	MEAN	454	MAX	8670	MIN	142	MEAN†	454	CFSM†	1.32
WTR YR 1986	TOTAL	154664	MEAN	424	MAX	8670	MIN	130	MEAN†	421	CFSM†	1.22
											IN.†	17.88
											IN.†	16.56

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.

pH: October 1978 to current year.

WATER TEMPERATURE: October 1978 to current year.

DISSOLVED OXYGEN: October 1978 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1978.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. The intake tower at Gathright Dam permits selective withdrawal of water from one or more reservoir depths. Some record in prior years fragmentary due to instrument malfunction. Maximum conductance occurred during gage closure at dam.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE (water years 1979, 1981-86): Maximum recorded, 249 microsiemens, Nov. 5, 1985; minimum recorded, 78 microsiemens, May 14, 1979.

pH (water years 1979, 1981-86): Maximum recorded, 8.60 units, Jan. 29, 1982, Jan. 13, 1983; minimum recorded, 6.90 units, Aug. 14-17, 1984, Nov. 5-7, 1985.

WATER TEMPERATURE (water years 1979, 1981-86): Maximum recorded, 28.0°C, Aug. 1, 2, 1979; minimum recorded, 0.0°C, Feb. 16-19, 1979.

DISSOLVED OXYGEN (water years 1979, 1981, 1984-86): Maximum recorded, 19.5 mg/L, Jan. 16, 1979; minimum recorded, 6.1 mg/L, June 10, 15, 1979.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 249 microsiemens, Nov. 5; minimum, 91 microsiemens, Nov. 8.

pH: Maximum, 8.30 units on several days from Apr. 29 to June 29; minimum, 6.90 units, Nov. 5-7.

WATER TEMPERATURE: Maximum, 25.0°C, July 18, 19; minimum, 3.5°C on several days during winter period.

DISSOLVED OXYGEN: Maximum, 15.6 mg/L, Mar. 15; minimum, 6.2 mg/L, June 24.

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	181	167	170	150	145	147	125	119	122	126	124	125
2	188	168	172	152	147	149	135	124	130	125	123	124
3	175	171	173	153	147	149	134	128	131	132	122	124
4	177	173	175	212	147	160	130	128	129	126	122	123
5	176	173	175	249	116	169	135	128	131	122	120	121
6	173	169	171	118	106	111	136	129	132	125	123	124
7	170	164	167	108	95	103	135	133	134	156	124	147
8	184	166	170	103	91	97	140	137	139	150	137	143
9	180	169	174	102	98	100	139	135	137	152	135	138
10	174	167	169	103	99	102	137	135	136	152	135	141
11	178	163	168	---	---	---	136	132	134	139	137	138
12	184	170	174	---	---	---	139	134	136	138	133	135
13	185	168	172	---	---	---	136	130	133	134	131	133
14	173	166	169	---	---	---	131	129	130	137	133	135
15	175	166	171	---	---	---	131	129	130	136	134	135
16	173	166	169	---	---	---	130	129	130	177	132	146
17	174	168	171	---	---	---	147	129	135	175	144	155
18	173	162	167	---	---	---	136	131	133	145	141	143
19	167	164	166	---	---	---	132	130	130	145	138	141
20	166	160	165	136	132	134	133	129	131	144	134	138
21	169	163	166	134	127	129	133	131	132	137	127	132
22	166	164	165	134	127	132	134	130	133	131	124	128
23	166	162	165	136	96	119	163	132	143	126	121	124
24	165	162	163	98	95	96	137	132	134	124	121	122
25	164	162	163	127	96	112	166	132	152	126	120	123
26	165	161	163	127	123	125	138	135	136	130	118	121
27	167	159	163	127	118	122	137	134	135	125	119	121
28	168	158	161	134	118	123	134	131	133	130	119	123
29	155	151	152	124	104	113	132	130	131	130	123	126
30	155	151	153	119	107	113	130	128	129	135	125	128
31	154	150	153	---	---	---	129	124	126	136	126	130
MONTH	188	150	167	249	91	124	166	119	133	177	118	132

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	133	126	129	128	125	126	133	125	128	126	115	120
2	130	123	126	129	126	127	132	127	130	130	117	124
3	127	122	124	130	126	127	136	126	130	132	126	129
4	127	119	121	129	127	127	139	128	131	129	122	124
5	119	117	118	130	125	127	135	128	131	133	121	126
6	119	117	118	126	124	124	135	130	132	135	123	127
7	119	117	118	124	122	123	137	131	133	140	131	133
8	122	117	118	122	121	121	---	---	---	136	128	133
9	130	119	124	123	121	121	---	---	---	137	131	134
10	124	121	122	122	120	121	---	---	---	136	131	134
11	126	119	122	125	116	120	---	---	---	137	133	136
12	121	117	119	117	114	115	---	---	---	137	130	133
13	120	116	118	118	115	116	---	---	---	140	137	138
14	140	118	123	129	116	122	---	---	---	145	133	137
15	134	120	123	128	117	121	---	---	---	144	130	135
16	136	121	123	118	114	116	---	---	---	135	129	132
17	131	120	123	117	115	115	127	121	124	142	132	137
18	124	121	122	118	116	117	124	121	122	141	136	138
19	125	122	123	120	117	118	124	120	122	145	138	141
20	168	122	128	118	115	116	122	117	120	142	130	135
21	130	124	126	120	116	118	126	119	123	134	109	122
22	124	121	122	120	117	119	126	120	122	138	109	125
23	127	122	123	121	118	119	129	121	124	136	132	134
24	127	123	124	122	118	120	130	122	126	135	132	133
25	125	121	123	122	117	120	128	120	123	135	130	132
26	123	121	122	140	118	122	127	121	123	136	132	134
27	127	123	124	161	121	127	126	123	125	135	134	134
28	134	125	129	129	122	126	129	120	123	136	134	135
29	---	---	---	133	126	129	129	120	124	137	133	135
30	---	---	---	137	126	128	125	119	121	139	133	136
31	---	---	---	129	124	127	---	---	---	140	136	138
MONTH	168	116	123	161	114	122	139	117	126	145	109	132
	JUNE			JULY			AUGUST			SEPTEMBER		
1	137	134	135	157	154	156	164	162	163	163	158	160
2	145	133	139	157	153	155	174	161	165	159	157	158
3	149	139	144	160	155	158	166	162	164	160	158	159
4	150	144	147	160	154	157	161	150	157	161	159	160

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.80	7.60	7.70	7.60	7.50	7.60	7.40	7.30	7.30	7.70	7.70	7.70
2	7.70	7.60	7.60	7.70	7.60	7.60	7.50	7.30	7.40	7.70	7.70	7.70
3	7.80	7.60	7.70	7.60	7.50	7.60	7.50	7.50	7.50	7.80	7.70	7.70
4	7.90	7.70	7.80	7.70	7.50	7.60	7.50	7.50	7.50	7.80	7.70	7.70
5	8.00	7.80	7.90	7.60	6.90	7.30	7.50	7.50	7.50	7.70	7.70	7.70
6	8.10	7.90	8.00	6.90	6.90	6.90	7.50	7.50	7.50	7.70	7.70	7.70
7	8.00	7.90	8.00	7.00	6.90	7.00	7.50	7.50	7.50	7.80	7.70	7.70
8	8.00	7.80	7.90	7.20	7.00	7.10	7.60	7.50	7.50	7.80	7.70	7.70
9	8.00	7.70	7.90	7.20	7.10	7.20	7.60	7.50	7.50	7.80	7.70	7.70
10	8.00	7.70	7.90	7.20	7.20	7.20	7.50	7.50	7.50	7.80	7.70	7.70
11	7.90	7.70	7.80	---	---	---	7.60	7.50	7.50	7.80	7.70	7.70
12	7.90	7.70	7.80	---	---	---	7.60	7.50	7.60	7.80	7.70	7.70
13	8.00	7.70	7.80	---	---	---	7.60	7.50	7.50	7.80	7.70	7.70
14	8.00	7.70	7.80	---	---	---	7.60	7.50	7.50	7.80	7.70	7.70
15	7.80	7.70	7.80	---	---	---	7.50	7.50	7.50	7.80	7.70	7.70
16	7.80	7.60	7.80	---	---	---	7.50	7.50	7.50	7.80	7.70	7.70
17	7.80	7.70	7.70	---	---	---	7.70	7.50	7.60	7.80	7.70	7.70
18	7.80	7.70	7.70	---	---	---	7.70	7.70	7.70	7.80	7.70	7.70
19	7.80	7.70	7.70	---	---	---	7.70	7.60	7.70	7.80	7.70	7.70
20	7.80	7.70	7.70	7.60	7.50	7.50	7.70	7.60	7.70	7.90	7.70	7.80
21	7.80	7.70	7.70	7.60	7.40	7.50	7.70	7.70	7.70	7.80	7.70	7.70
22	7.80	7.70	7.70	7.60	7.40	7.50	7.70	7.70	7.70	7.80	7.70	7.70
23	7.80	7.70	7.70	7.60	7.00	7.30	7.70	7.70	7.70	7.80	7.70	7.70
24	7.80	7.50	7.60	7.20	7.10	7.10	7.70	7.70	7.70	7.80	7.70	7.70
25	7.70	7.50	7.60	7.50	7.20	7.40	7.70	7.60	7.70	7.80	7.70	7.70
26	7.70	7.60	7.60	7.50	7.50	7.50	7.70	7.60	7.60	7.80	7.70	7.70
27	7.70	7.50	7.60	7.50	7.40	7.40	7.70	7.70	7.70	7.80	7.70	7.70
28	7.70	7.50	7.60	7.50	7.40	7.40	7.70	7.70	7.70	7.80	7.70	7.70
29	7.70	7.50	7.60	7.40	7.10	7.20	7.80	7.70	7.70	7.80	7.70	7.70
30	7.70	7.50	7.60	7.30	7.20	7.20	7.70	7.70	7.70	7.80	7.70	7.70
31	7.60	7.50	7.60	---	---	---	7.70	7.70	7.70	7.80	7.70	7.70
MONTH	8.10	7.50	7.74	7.70	6.90	7.34	7.80	7.30	7.58	7.90	7.70	7.70
FEBRUARY			MARCH			APRIL			MAY			
1	7.80	7.70	7.70	7.90	7.80	7.90	7.90	7.70	7.80	8.20	7.60	7.90
2	7.80	7.70	7.70	8.00	7.90	7.90	7.90	7.70	7.80	8.30	7.60	8.00
3	7.80	7.70	7.70	8.00	7.90	7.90	7.90	7.70	7.80	8.30	7.80	8.00
4	7.80	7.70	7.70	8.00	7.90	7.90	7.90	7.70	7.80	8.00	7.70	7.90
5	7.90	7.80	7.80	8.00	7.90	7.90	7.90	7.70	7.80	8.10	7.70	7.90
6	7.80	7.70	7.80	8.00	7.90	7.90	7.90	7.70	7.80	8.20	7.70	7.90
7	7.70	7.70	7.70	8.00	7.90	7.90	8.10	7.70	7.80	8.20	7.70	7.90
8	7.80	7.70	7.80	8.00	7.80	7.90	---	---	---	8.00	7.70	7.90
9	7.80	7.80	7.80	8.00	7.80	7.90	---	---	---	8.00	7.80	7.90
10	7.80	7.70	7.80	8.00	7.90	7.90	---	---	---	8.00	7.70	7.90
11	7.80	7.70	7.70	8.00	7.80	7.90	---	---	---	8.10	7.70	7.90
12	7.80	7.70	7.80	7.90	7.80	7.80	---	---	---	8.00	7.70	7.80
13	7.80	7.80	7.80	7.80	7.80	7.80	---	---	---	7.90	7.70	7.80
14	7.90	7.80	7.80	7.90	7.70	7.80	---	---	---	7.90	7.70	7.80
15	7.80	7.70	7.80	7.80	7.70	7.70	---	---	---	7.80	7.60	7.70
16	7.80	7.70	7.80	7.70	7.70	7.70	---	---	---	7.80	7.60	7.70
17	7.80	7.70	7.80	7.70	7.70	7.70	7.90	7.70	7.80	8.00	7.60	7.80
18	7.80	7.70	7.70	7.70	7.70	7.70	8.00	7.70	7.80	7.90	7.60	7.70
19	7.80	7.70	7.80	7.80	7.70	7.80	8.00	7.70	7.80	7.80	7.70	7.70
20	7.90	7.70	7.80	7.80	7.70	7.70	7.90	7.60	7.80	7.80	7.70	7.70
21	7.90	7.90	7.90	7.80	7.70	7.70	8.10	7.60	7.80	7.70	7.30	7.50
22	7.90	7.80	7.90	7.80	7.70	7.70	8.20	7.70	8.00	7.80	7.20	7.50
23	7.90	7.90	7.90	7.80	7.70	7.80	8.20	7.90	8.00	7.80	7.70	7.70
24	7.90	7.90	7.90	7.80	7.70	7.70	8.00	7.90	7.90	7.80	7.60	7.70
25	7.90	7.90	7.90	7.80	7.70	7.70	8.10	7.70	7.90	7.70	7.60	7.70
26	7.90	7.80	7.90	7.80	7.70	7.70	8.10	7.70	7.90	7.70	7.60	7.60
27	7.90	7.80	7.90	7.90	7.70	7.80	8.00	7.80	7.90	7.70	7.60	7.60
28	7.90	7.80	7.90	7.80	7.70	7.80	8.00	7.70	7.80	7.70	7.60	7.60
29	---	---	---	7.90	7.70	7.80	8.30	7.60	7.90	7.70	7.60	7.60
30	---	---	---	7.90	7.70	7.80	7.90	7.70	7.80	7.70	7.50	7.60
31	---	---	---	7.90	7.70	7.80	---	---	---	7.70	7.50	7.60
MONTH	7.90	7.70	7.80	8.00	7.70	7.80	8.30	7.60	7.84	8.30	7.20	7.76

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	18.0	17.0	17.5	14.0	13.5	14.0	10.5	10.5	10.5	6.0	6.0	6.0
2	17.5	17.0	17.0	13.5	13.5	13.5	11.0	10.5	11.0	6.0	6.0	6.0
3	17.0	17.0	17.0	13.5	13.5	13.5	11.0	10.5	10.5	6.0	6.0	6.0
4	17.5	17.0	17.5	13.5	13.0	13.5	10.5	10.5	10.5	6.0	6.0	6.0
5	17.5	16.5	17.0	12.5	7.5	10.0	10.5	10.5	10.5	6.0	5.5	5.5
6	17.0	16.0	16.5	10.5	9.0	10.0	10.5	10.0	10.0	5.5	5.5	5.5
7	16.5	15.5	16.0	11.0	10.0	10.5	10.0	10.0	10.0	5.5	5.0	5.5
8	16.0	15.5	16.0	11.0	11.0	11.0	10.0	10.0	10.0	5.5	5.0	5.0
9	16.0	15.5	16.0	11.0	10.5	11.0	10.0	10.0	10.0	5.5	5.0	5.0
10	16.5	15.5	16.0	11.0	11.0	11.0	10.0	9.5	10.0	5.5	5.0	5.0
11	16.5	16.0	16.0	---	---	---	10.0	8.5	9.5	5.0	5.0	5.0
12	16.5	16.0	16.0	---	---	---	10.0	9.5	9.5	5.5	5.0	5.0
13	16.5	15.5	16.0	---	---	---	9.5	9.0	9.0	5.5	5.0	5.0
14	16.5	16.0	16.5	---	---	---	9.0	8.5	9.0	5.0	5.0	5.0
15	17.0	16.0	16.5	---	---	---	8.5	8.5	8.5	5.0	5.0	5.0
16	16.0	15.5	16.0	---	---	---	8.5	8.5	8.5	5.0	4.5	5.0
17	16.0	15.5	16.0	---	---	---	8.5	8.5	8.5	5.0	4.5	5.0
18	16.0	15.5	15.5	---	---	---	8.5	8.0	8.0	5.0	5.0	5.0
19	16.0	15.5	15.5	---	---	---	8.0	8.0	8.0	5.5	5.0	5.0
20	16.0	15.5	15.5	12.5	12.0	12.5	8.0	8.0	8.0	5.0	5.0	5.0
21	15.5	15.0	15.5	12.5	11.5	12.0	8.0	7.5	7.5	5.0	4.5	4.5
22	15.5	15.0	15.5	12.0	11.5	12.0	7.5	7.5	7.5	4.5	4.5	4.5
23	15.5	15.0	15.0	11.5	10.0	11.0	7.5	7.5	7.5	4.5	4.5	4.5
24	15.5	15.0	15.5	11.0	10.5	10.5	7.5	7.0	7.5	4.5	4.5	4.5
25	15.5	15.0	15.5	11.5	11.0	11.0	7.5	6.5	7.0	4.5	4.5	4.5
26	15.5	14.5	15.0	11.5	11.5	11.5	6.5	6.5	6.5	4.5	4.5	4.5
27	15.0	14.5	14.5	12.0	11.5	11.5	6.5	6.5	6.5	4.5	4.0	4.0
28	15.0	14.5	14.5	12.0	11.5	11.5	6.5	6.5	6.5	3.5	3.5	3.5
29	14.5	14.0	14.0	11.5	10.5	11.0	6.5	6.5	6.5	4.0	3.5	4.0
30	14.0	14.0	14.0	11.0	10.5	11.0	6.5	6.0	6.0	4.0	3.5	4.0
31	14.0	14.0	14.0	---	---	---	6.0	6.0	6.0	4.0	3.5	4.0
MONTH	18.0	14.0	16.0	14.0	7.5	11.5	11.0	6.0	8.5	6.0	3.5	5.0
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	4.0	4.0	4.0	3.5	4.0	8.5	7.0	7.5	13.5	10.0	11.5
2	4.0	4.0	4.0	4.0	3.5	4.0	8.5	7.0	7.5	14.5	10.5	12.5
3	4.5	4.0	4.5	4.0	4.0	4.0	8.5	7.0	8.0	14.0	11.5	12.5
4	4.5	4.0	4.0	4.0	4.0	4.0	8.5	7.0	8.0	13.0	10.5	11.5
5	4.0	4.0	4.0	4.0	4.0	4.0	8.5	6.5	8.0	13.0	10.5	11.5
6	4.0	4.0	4.0	4.0	4.0	4.0	8.5	7.5	8.0	13.5	10.5	12.0
7	4.0	4.0	4.0	4.0	3.5	4.0	11.5	7.5	9.5	13.5	11.5	12.5
8	4.0	3.5	4.0	4.0	3.5	3.5	---	---	---	13.5	11.0	12.5
9	4.0	4.0	4.0	4.0	4.0	4.0	---	---	---	13.0	11.5	12.5
10	4.0	4.0	4.0	4.5	4.0	4.5	---	---	---	13.0	11.5	12.0
11	4.0	3.5	4.0	4.5	4.5	4.5	---	---	---	13.5	11.5	12.5
12	3.5	3.5	3.5	4.5	4.0	4.5	---	---	---	13.0	11.0	12.0
13	3.5	3.5	3.5	4.5	4.0	4.0	---	---	---	13.0	12.0	12.5
14	4.0	3.5	3.5	5.0	4.0	5.0	---	---	---	12.5	11.5	12.0
15	4.0	3.5	3.5	5.0	4.5	4.5	---	---	---	12.5	10.5	12.0
16	3.5	3.5	3.5	5.0	4.5	4.5	---	---	---	12.0	10.5	11.0
17	3.5	3.5	3.5	5.0	4.5	4.5	9.5	8.5	9.5	14.5	11.0	13.0
18	4.0	3.5	4.0	5.0	4.5	4.5	10.5	9.0	9.5	14.5	13.0	13.5
19	4.0	4.0	4.0	6.0	4.5	5.5	10.5	9.0	9.5	14.0	13.0	13.5
20	4.0	4.0	4.0	5.5	5.0	5.5	9.5	8.0	9.0	14.0	12.5	13.0
21	4.0	4.0	4.0	5.5	5.0	5.0	10.5	8.5	9.5	13.0	5.5	9.0
22	4.0	4.0	4.0	5.5	5.0	5.5	11.0	10.0	10.5	14.0	5.5	10.5
23	4.0	4.0	4.0	6.0	5.0	5.5	11.5	10.0	11.0	14.0	13.0	13.5
24	4.0	4.0	4.0	6.0	5.5	6.0	11.0	10.0	10.5	14.0	12.5	13.5
25	4.0	4.0	4.0	6.0	5.5	6.0	10.5	9.5	10.0	14.0	13.0	13.5
26	4.0	4.0	4.0	6.0	5.5	6.0	11.0	9.5	10.5	13.5	13.0	13.5
27	4.0	3.5	4.0	8.0	6.0	7.0	11.5	10.5	11.0	13.5	13.5	13.5
28	4.0	3.5	3.5	7.5	6.5	7.5	11.5	9.5	10.5	14.0	13.5	13.5
29	---	---	---	8.0	6.5	7.5	13.0	9.5	11.5	14.5	13.5	14.0
30	---	---	---	8.0	6.5	7.5	12.0	10.5	11.0	14.5	13.5	14.0
31	---	---	---	8.0	7.0	7.5	---	---	---	15.0	13.5	14.5
MONTH	4.5	3.5	4.0	8.0	3.5	5.0	13.0	6.5	9.5	15.0	5.5	12.5

JAMES RIVER BASIN

02011800 JACKSON RIVER BELOW GATHRIGHT DAM, NEAR HOT SPRINGS, VA--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.4	9.0	9.2	8.8	8.5	8.6	10.8	10.7	10.8	11.5	11.3	11.4
2	9.3	9.0	9.2	8.8	8.4	8.6	10.7	10.3	10.5	11.7	11.4	11.5
3	9.2	8.6	8.9	8.7	8.4	8.5	10.6	10.5	10.5	11.5	11.4	11.4
4	8.9	8.5	8.7	8.4	7.6	8.2	10.6	10.6	10.6	11.7	11.4	11.5
5	8.9	8.5	8.7	10.5	7.3	8.9	10.7	10.6	10.6	11.6	11.3	11.5
6	9.0	8.6	8.8	11.2	10.4	10.8	10.7	10.5	10.6	11.6	11.4	11.5
7	9.1	8.7	8.8	12.2	11.1	11.7	10.7	10.6	10.6	11.7	9.5	10.9
8	9.1	8.8	8.9	12.2	11.0	11.6	10.6	10.4	10.5	12.5	10.4	11.7
9	9.2	8.7	8.9	11.1	10.8	10.9	10.6	10.5	10.5	12.4	12.0	12.1
10	9.2	8.7	8.9	11.0	10.5	10.7	10.7	10.6	10.6	12.3	12.0	12.1
11	9.1	8.6	8.8	---	---	---	11.0	10.5	10.7	12.4	12.1	12.2
12	9.0	8.7	8.8	---	---	---	10.7	10.5	10.6	12.4	12.1	12.2
13	9.2	8.6	8.9	---	---	---	10.9	10.7	10.8	12.3	12.0	12.1
14	9.1	8.6	8.8	---	---	---	11.1	10.9	11.0	12.5	12.0	12.2
15	9.0	8.6	8.8	---	---	---	11.3	11.1	11.2	12.5	12.2	12.3
16	9.2	8.8	8.9	---	---	---	11.4	11.3	11.3	12.5	12.2	12.3
17	9.2	8.9	9.0	---	---	---	11.4	11.2	11.3	12.6	12.2	12.3
18	9.3	8.9	9.1	---	---	---	11.4	11.2	11.3	12.6	12.1	12.3
19	9.3	8.8	9.0	---	---	---	11.4	11.4	11.4	12.3	11.9	12.0
20	9.2	8.9	9.0	9.7	9.5	9.6	11.4	11.1	11.3	12.3	11.8	12.1
21	9.1	8.9	9.0	9.8	9.6	9.7	11.3	11.2	11.2	12.7	12.0	12.4
22	9.3	8.9	9.1	9.8	9.7	9.8	11.3	11.0	11.1	12.7	12.5	12.6
23	9.3	9.0	9.1	10.6	9.8	10.1	11.1	11.0	11.0	12.7	12.6	12.6
24	9.3	8.9	9.1	10.7	10.6	10.7	11.2	11.0	11.1	12.8	12.6	12.6
25	9.1	8.8	8.9	10.8	10.1	10.4	11.3	11.1	11.2	12.8	12.4	12.6
26	9.1	8.7	8.8	10.2	10.1	10.1	11.3	11.1	11.2	12.6	12.4	12.5
27	9.1	8.7	8.8	10.2	10.0	10.1	11.4	11.2	11.3	12.5	12.2	12.4
28	9.0	8.7	8.8	10.1	10.1	10.1	11.5	11.3	11.3	12.6	12.3	12.4
29	9.0	8.7	8.8	11.5	10.1	10.9	11.4	11.3	11.3	12.9	12.2	12.4
30	8.9	8.6	8.7	11.6	10.7	11.1	11.5	11.3	11.4	12.7	12.2	12.5
31	8.8	8.5	8.6	---	---	---	11.4	11.3	11.3	12.8	12.4	12.5
MONTH	9.4	8.5	8.9	12.2	7.3	10.1	11.5	10.3	11.0	12.9	9.5	12.1
FEBRUARY			MARCH			APRIL			MAY			
1	12.8	12.4	12.5	12.3	12.1	12.2	12.9	10.8	11.6	12.2	10.5	11.2
2	12.6	12.3	12.5	12.3	12.1	12.2	12.7	10.5	11.3	12.0	9.8	10.8
3	12.7	12.3	12.4	12.3	12.1	12.2	12.7	10.5	11.5	11.0	9.6	10.3
4	12.9	11.6	12.4	12.3	12.1	12.2	12.8	10.5	11.4	10.9	9.6	10.4
5	12.1	11.4	11.7	12.3	12.1	12.2	12.5	10.2	11.2	10.4	9.4	9.9
6	12.2	8.6	11.1	12.2	11.9	12.1	12.0	10.2	10.9	10.2	9.7	9.9
7	12.2	9.1	11.2	12.3	11.9	12.1	11.4	9.9	10.5	10.1	9.4	9.8
8	12.2	8.8	10.6	12.4	12.1	12.2	---	---	---	10.1	9.4	9.8
9	12.5	11.2	12.1	12.3	12.1	12.2	---	---	---	10.1	9.5	9.7
10	12.6	12.1	12.4	12.3	11.9	12.1	---	---	---	10.0	9.7	9.9
11	12.5	9.2	11.5	13.6	11.8	12.5	---	---	---	9.9	9.4	9.7
12	12.4	9.4	11.3	14.5	13.5	14.1	---	---	---	10.0	9.5	9.8
13	12.5	11.7	12.2	14.9	14.4	14.7	---	---	---	9.8	9.6	9.7
14	12.3	11.8	12.1	14.9	13.9	14.4	---	---	---	10.6	9.7	10.2
15	12.2	11.7	12.0	15.6	12.4	13.9	---	---	---	10.8	10.2	10.5
16	12.3	11.9	12.1	14.5	12.8	13.6	---	---	---	10.8	10.6	10.7
17	12.1	11.9	12.0	14.6	12.3	13.9	14.5	13.5	13.9	10.7	9.9	10.3
18	11.9	11.8	11.8	14.5	12.1	13.3	14.3	13.5	13.9	10.3	9.9	10.1
19	11.8	11.6	11.7	12.7	12.3	12.5	14.1	13.3	13.8	10.1	9.9	10.0
20	11.9	10.5	11.5	12.5	11.9	12.0	13.9	13.4	13.7	10.7	9.9	10.3
21	11.9	11.5	11.7	12.6	11.7	11.9	13.7	12.7	13.1	13.1	10.4	11.8
22	12.1	11.8	12.0	13.9	11.7	12.3	13.1	12.4	12.7	13.0	10.3	11.4
23	12.3	12.0	12.2	13.7	11.7	12.4	13.2	12.2	12.7	10.6	10.2	10.4
24	12.3	11.9	12.1	13.5	11.8	12.3	13.2	12.1	12.6	10.5	10.2	10.4
25	12.2	11.9	12.1	13.6	11.4	11.8	12.9	12.1	12.5	10.5	10.2	10.4
26	12.3	12.0	12.2	13.3	11.3	11.8	12.7	11.6	12.2	10.5	10.3	10.4
27	12.4	12.1	12.2	12.7	10.9	11.7	12.5	11.2	11.9	10.4	10.3	10.4
28	12.5	12.2	12.3	12.9	11.0	11.7	12.3	11.2	11.8	10.5	10.3	10.4
29	---	---	---	13.0	10.9	11.7	13.3	11.2	12.0	10.4	10.2	10.3
30	---	---	---	13.0	11.0	11.7	12.4	11.0	11.6	10.3	10.0	10.1
31	---	---	---	12.8	10.8	11.6	---	---	---	10.1	9.8	9.9
MONTH	12.9	8.6	11.9	15.6	10.8	12.5	14.5	9.9	12.2	13.1	9.4	10.3

JAMES RIVER BASIN

02012500 JACKSON RIVER AT FALLING SPRING, VA

LOCATION.--Lat 37°52'36", long 79°58'39", Alleghany County, Hydrologic Unit 02080201, on right bank 20 ft upstream from Smith Bridge, 0.8 mi south of town of Falling Spring, 1.6 mi downstream from Falling Spring Creek, and 5.5 mi north of Covington.

DRAINAGE AREA.--411 mi².

PERIOD OF RECORD.--Water years 1930, 1948, 1968 to August 1986 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1968 to August 1986 (discontinued).

WATER TEMPERATURE: December 1968 to August 1986 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 500 microsiemens, Oct. 2, 1970; minimum daily, 61 microsiemens, Dec. 21, 26, 1977.

WATER TEMPERATURE: Maximum daily, 29.5°C, Aug. 2, 5, 1975; minimum daily, 0.0°C on several days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 225 microsiemens, Oct. 3; minimum daily, 124 microsiemens, Nov. 24.

WATER TEMPERATURE: Maximum daily, 27.5°C, July 20; minimum daily, 4.0°C, Jan. 28, 29.

WATER QUALITY DATA, OCTOBER 1985 TO MAY 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
OCT 03...	1630	158	220	216	8.60	7.70	17.5	726	5	9.2
NOV 26...	0940	783	158	165	7.40	8.30	11.0	730	10	9.9
JAN 07...	1345	161	190	209	8.00	8.60	4.0	728	5	13.0
FEB 19...	1415	578	165	179	8.40	8.30	6.0	715	10	11.6
APR 08...	0815	284	170	180	7.70	8.00	9.5	720	5	10.8
MAY 14...	1245	287	190	194	7.50	7.70	13.5	730	5	10.6

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 03...	101	100	26	32	5.0	2.5	1.9	75	31
NOV 26...	94	71	15	23	3.4	1.7	1.6	56	15
JAN 07...	104	97	29	31	4.7	2.1	2.1	68	18
FEB 19...	99	75	16	24	3.7	1.9	2.7	59	16
APR 08...	100	81	18	26	4.0	2.0	1.6	63	16
MAY 14...	106	84	18	27	4.1	2.2	1.8	66	22

JAMES RIVER BASIN

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02012500 JACKSON RIVER AT FALLING SPRING, VA--Continued

WATER QUALITY DATA, OCTOBER 1985 TO MAY 1986

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 03...	2.9	0.10	3.5	129	120	<0.010	<0.100	<0.010	13
NOV 26...	1.7	<0.10	5.0	86	85	<0.010	0.220	<0.010	10
JAN 07...	2.2	0.10	4.5	114	110	<0.010	0.210	0.010	21
FEB 19...	3.2	<0.10	4.5	108	91	0.020	0.240	<0.010	17
APR 08...	2.0	<0.10	3.5	101	93	<0.010	0.230	<0.010	11
MAY 14...	2.4	0.10	4.1	106	100	<0.010	0.230	0.020	42

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), OCTOBER 1985 TO AUGUST 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	211	220	160	210	205	181	199	179	200	195	200
2	216	215	171	205	203	185	200	181	200	205	200
3	225	207	175	200	210	185	199	181	200	200	198
4	222	200	175	205	173	181	195	185	200	200	195
5	220	218	175	203	165	185	199	189	198	198	200
6	221	157	180	205	163	181	190	199	200	198	195
7	218	140	179	209	155	181	195	190	200	198	193
8	220	144	199	208	200	180	190	195	200	195	193
9	220	160	219	209	195	180	185	200	200	198	195
10	220	170	215	209	173	179	182	199	200	198	200
11	218	183	199	207	175	179	198	199	200	198	198
12	220	179	205	209	173	160	195	195	200	198	200
13	221	180	200	199	180	159	195	198	198	195	200
14	218	188	181	203	200	161	190	198	198	193	200
15	220	210	170	207	220	162	190	195	198	195	200
16	215	194	169	200	205	155	199	195	195	195	---
17	213	196	180	218	180	150	199	195	195	195	---
18	213	200	179	180	178	150	195	198	195	197	---
19	217	198	178	183	177	175	195	198	195	200	---
20	214	195	185	183	180	179	195	200	195	200	---
21	220	185	190	160	165	195	195	180	195	200	---
22	220	180	215	130	161	200	180	183	190	200	---
23	218	178	210	168	165	195	185	195	195	200	---
24	220	124	215	180	180	180	195	195	195	200	---
25	217	165	215	185	180	179	190	185	195	205	---
26	220	165	210	190	159	185	195	185	190	205	---
27	223	165	210	190	165	195	195	190	193	213	---
28	221	157	205	195	179	199	185	183	190	203	---
29	220	126	210	198	---	200	185	183	190	200	---
30	222	140	205	198	---	200	185	195	190	200	---
31	224	---	210	200	---	200	---	198	---	200	---
MEAN	219	178	193	195	181	180	193	192	196	199	198
WTR YR 1986	MEAN	193		MAX	225	MIN	124				

JAMES RIVER BASIN

02012500 JACKSON RIVER AT FALLING SPRING, VA--Continued

TEMPERATURE, WATER (DEG. C), OCTOBER 1985 TO AUGUST 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	15.0	16.0	12.0	7.5	7.0	5.5	13.0	15.5	18.0	21.5	26.0
2	13.5	16.0	12.0	8.0	7.0	6.0	13.0	15.5	19.0	21.0	26.0
3	14.0	16.0	11.5	8.5	8.0	6.0	13.5	15.0	19.0	24.0	26.0
4	22.0	13.0	11.0	8.0	6.0	6.0	14.0	16.5	21.0	23.5	25.5
5	19.0	13.0	11.5	7.5	6.5	7.0	13.5	17.0	21.0	25.0	24.0
6	17.0	12.0	11.0	7.5	6.0	6.5	13.5	17.0	21.5	24.0	22.5
7	17.0	12.0	11.5	7.0	5.5	6.5	15.0	17.0	20.5	24.0	24.0
8	18.0	12.0	12.0	5.5	7.0	6.5	13.0	16.0	21.5	25.0	22.5
9	14.0	12.0	12.0	6.5	6.0	8.5	11.0	16.0	22.5	25.0	22.5
10	19.0	13.0	11.0	7.0	5.5	9.0	10.0	16.5	19.5	24.5	22.5
11	17.0	14.0	11.5	7.5	5.0	9.0	10.0	17.5	22.0	25.0	22.0
12	16.0	14.0	12.5	7.5	5.0	6.0	12.0	17.0	22.0	25.0	22.0
13	16.0	14.0	11.0	6.0	4.5	6.0	12.5	16.0	21.0	25.5	21.5
14	14.0	15.0	9.0	6.0	5.5	7.0	13.0	16.0	22.0	25.5	22.5
15	19.0	15.5	10.0	6.5	5.0	7.0	12.5	15.5	23.0	25.0	24.0
16	19.0	13.0	10.0	7.0	5.0	7.0	10.0	15.5	23.0	26.0	---
17	18.0	15.0	10.0	7.0	5.5	6.5	9.0	17.0	23.0	26.0	---
18	19.0	14.0	8.0	9.0	6.5	6.5	14.0	17.0	22.5	26.5	---
19	17.0	16.0	9.0	7.0	6.0	9.5	12.5	16.0	23.5	26.0	---
20	18.0	15.0	8.0	6.5	8.0	7.0	12.0	16.0	21.0	27.5	---
21	15.0	14.0	8.0	6.5	7.0	9.0	12.0	12.5	22.5	27.0	---
22	17.0	12.0	8.0	7.0	6.0	7.0	13.0	13.0	23.0	27.0	---
23	18.0	12.5	9.0	7.0	6.0	8.0	13.5	15.5	23.0	26.0	---
24	17.5	13.0	9.0	7.0	6.0	10.0	15.0	15.0	22.5	27.0	---
25	18.5	13.0	8.0	6.5	7.0	11.0	13.5	14.5	23.5	26.5	---
26	18.0	14.0	5.0	6.5	5.0	10.5	14.5	14.5	24.0	26.0	---
27	16.0	14.0	8.0	5.5	6.0	11.0	14.0	14.5	23.5	26.0	---
28	17.0	14.0	8.0	4.0	7.0	11.0	17.0	16.5	23.5	26.0	---
29	15.0	13.0	7.0	4.0	---	12.5	16.0	18.0	23.5	26.5	---
30	15.0	13.0	7.5	5.0	---	12.5	17.0	18.0	24.0	25.0	---
31	15.0	---	7.0	6.5	---	13.0	---	18.0	---	26.0	---
MEAN	17.0	14.0	9.5	6.5	6.0	8.0	13.0	16.0	22.0	25.5	23.5
WTR YR 1986	MEAN	14.5		MAX	27.5	MIN	4.0				

JAMES RIVER BASIN

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02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA

LOCATION.--Lat 37°48'39", long 79°59'19", Covington City, Hydrologic Unit 02080201, on left bank 250 ft upstream from Dry Run and 1.7 mi upstream from Dunlap Creek and bridge on U.S. Highway 60.

DRAINAGE AREA.--439 mi².

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1978 to current year.

INSTRUMENTATION.--Water-temperature recorder since June 1978.

REMARKS.--Interruption in the record was due to malfunction of the instrument. Some record in prior years fragmentary due to instrument malfunction.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.5°C, July 21, 1980; minimum recorded, 0.0°C on several days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 27.0°C, July 18-22; minimum, 0.0°C on several days during winter period.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.5	15.0	15.5	12.0	11.0	11.5	11.5	11.0	11.0	4.0	2.0	3.0
2	18.0	14.5	16.5	12.5	12.0	12.0	11.0	8.5	10.0	3.0	1.5	2.5
3	17.0	14.0	16.0	12.0	11.5	11.5	9.0	8.0	8.5	5.0	2.5	4.0
4	19.5	16.0	17.5	12.0	11.0	12.0	10.0	8.0	9.0	4.0	3.0	3.5
5	19.0	15.0	17.0	11.0	8.5	10.0	10.0	9.0	9.5	4.0	2.0	3.0
6	15.0	12.0	14.0	9.5	8.5	9.0	10.0	8.5	9.5	2.0	.5	1.5
7	13.5	11.0	12.0	10.0	9.0	9.5	9.5	8.5	8.5	2.5	.5	2.0
8	14.0	11.0	12.5	11.0	9.5	10.0	9.5	8.0	8.5	.0	.0	.0
9	15.0	11.5	13.5	10.5	9.0	9.5	9.5	8.5	9.0	.0	.0	.0
10	16.0	13.5	14.5	11.0	9.5	10.0	8.5	8.0	8.5	1.5	.0	.5
11	16.5	12.0	14.5	11.5	9.5	10.5	10.0	8.0	9.0	2.0	.0	1.0
12	16.0	15.0	15.5	11.5	10.5	11.5	10.5	10.0	10.0	2.5	.5	1.5
13	16.5	14.0	15.5	12.0	11.0	11.5	10.0	8.5	9.5	2.5	.5	2.0
14	17.5	14.0	16.0	13.0	11.5	12.5	8.5	5.0	7.0	1.0	.0	.5
15	16.5	15.0	16.0	13.5	13.0	13.0	7.0	4.0	5.5	2.0	.0	1.0
16	16.5	14.5	15.0	13.0	11.0	12.0	7.5	6.0	7.0	2.0	.0	1.0
17	15.0	12.0	13.5	12.5	11.0	11.5	7.5	6.0	7.0	2.5	1.0	2.0
18	15.0	12.0	13.5	13.0	11.0	12.0	7.0	4.5	5.5	5.0	2.5	3.5
19	15.5	13.0	14.0	14.0	12.5	13.5	4.5	3.0	4.0	6.0	5.0	5.5
20	16.0	14.0	15.0	14.0	13.0	13.5	4.5	3.5	4.5	5.0	2.5	3.5
21	15.5	12.5	14.0	13.5	12.0	13.0	4.5	3.0	3.5	3.5	2.0	2.5
22	15.0	11.0	13.5	12.0	10.5	11.0	3.0	1.5	2.5	4.0	2.5	3.0
23	16.0	13.0	15.0	11.5	9.5	10.5	5.0	3.0	4.0	4.0	2.5	3.5
24	16.5	11.5	15.0	11.5	10.0	10.5	5.5	4.5	5.0	3.5	2.0	3.0
25	17.0	11.5	15.5	12.0	9.5	11.0	5.0	1.5	3.5	4.0	2.5	3.0
26	15.0	11.5	13.5	12.5	10.5	11.5	1.0	.0	.0	4.5	3.0	3.5
27	12.5	11.0	11.5	13.5	12.0	13.0	3.0	.0	1.5	3.0	.5	2.0
28	14.0	11.5	12.5	13.0	12.5	13.0	4.0	2.5	3.0	.0	.0	.0
29	12.0	10.0	11.0	13.0	11.5	12.5	3.0	2.0	2.5	.5	.0	.0
30	10.5	9.5	10.0	11.5	11.0	11.5	2.5	1.0	2.0	2.5	.0	1.0
31	11.5	10.5	11.0	---	---	---	2.5	1.5	2.0	2.5	1.0	2.0
MONTH	19.5	9.5	14.0	14.0	8.5	11.5	11.5	.0	6.0	6.0	.0	2.0

02012800 JACKSON RIVER AT FILTRATION PLANT, AT COVINGTON, VA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	4.0	1.0	3.0	4.0	1.5	3.0	12.5	10.0	11.5	15.5	13.5	14.5
2	5.0	3.5	4.5	4.5	2.5	3.5	13.0	10.0	11.5	15.5	12.5	13.5
3	5.0	4.5	5.0	4.5	3.0	3.5	12.5	9.0	11.0	14.5	11.5	13.0
4	5.0	4.0	4.5	4.5	3.5	4.0	13.0	11.0	12.0	14.5	10.5	12.5
5	5.5	3.5	4.5	5.0	3.0	4.0	14.5	11.0	12.5	15.5	12.0	13.5
6	4.5	3.0	4.0	4.5	3.0	3.5	13.0	10.5	12.0	16.0	13.0	14.5
7	4.0	2.5	3.5	4.5	2.5	3.5	15.5	12.0	13.5	17.0	14.0	15.5
8	5.0	2.5	3.5	3.5	.5	2.0	14.0	10.5	12.0	18.5	15.0	16.5
9	4.5	3.0	4.5	6.5	3.0	4.5	12.0	8.5	10.5	16.0	12.5	14.0
10	4.5	3.0	3.5	8.5	5.0	6.5	9.0	7.0	8.0	16.0	11.0	13.0
11	3.5	1.5	3.0	8.5	7.5	8.0	10.5	6.5	8.0	17.0	13.0	15.0
12	3.0	1.0	2.0	7.0	4.0	5.0	13.0	9.0	10.5	16.5	14.0	15.0
13	2.5	1.0	2.0	4.5	4.0	4.0	11.0	9.5	10.5	15.5	12.0	14.0
14	2.5	1.0	1.5	7.0	4.0	5.0	12.0	9.0	10.5	14.0	11.5	12.5
15	4.0	1.5	2.5	7.5	4.0	6.5	14.0	11.0	12.0	17.0	12.5	14.5
16	5.0	2.5	3.5	5.5	4.0	4.5	13.5	8.0	10.5	18.0	15.5	16.5
17	4.5	3.5	4.0	5.5	4.0	4.5	9.0	7.5	8.0	18.0	15.0	16.0
18	5.5	4.0	4.5	5.5	3.5	4.5	12.5	7.0	10.0	17.0	15.0	16.0
19	5.5	4.0	5.0	7.5	4.5	6.0	14.5	10.5	12.5	17.0	13.5	15.5
20	7.5	3.5	5.5	7.0	4.5	5.5	14.0	12.0	13.0	17.0	11.0	14.5
21	6.5	5.0	5.5	6.0	2.5	4.5	12.5	10.5	11.5	13.5	7.0	12.0
22	4.5	2.5	3.5	6.5	3.0	5.0	10.5	8.5	9.5	11.5	5.5	7.0
23	5.0	3.0	4.0	7.5	3.0	5.5	11.5	7.5	9.5	14.0	11.0	12.5
24	4.0	3.0	3.5	9.0	5.5	7.5	13.5	8.5	11.0	15.5	12.0	14.0
25	4.5	3.0	3.5	9.0	4.5	7.0	13.5	11.0	12.0	15.0	12.5	13.5
26	3.5	2.0	2.5	9.0	5.5	7.5	15.0	12.0	13.5	15.0	13.0	13.5
27	4.0	3.0	3.5	9.5	7.0	8.0	17.0	13.0	15.0	13.5	12.5	13.0
28	4.5	2.5	3.5	9.5	6.5	8.5	17.0	13.5	15.5	15.5	12.5	14.0
29	---	---	---	10.0	7.0	9.0	17.5	14.5	15.5	16.5	13.0	15.0
30	---	---	---	11.5	8.0	10.0	17.0	12.5	15.0	16.5	14.0	15.5
31	---	---	---	12.5	9.0	10.5	---	---	---	17.5	15.5	16.5
MONTH	7.5	1.0	3.5	12.5	.5	5.5	17.5	6.5	11.5	18.5	5.5	14.0
	JUNE			JULY			AUGUST			SEPTEMBER		
1	18.0	16.0	17.0	---	---	---	25.5	22.0	24.0	19.5	18.0	19.0
2	19.0	15.5	17.0	---	---	---	25.5	23.0	24.5	18.5	18.0	18.0
3	20.5	18.5	19.0	---	---	---	25.5	23.5	24.5	19.0	18.0	18.5
4	21.0	18.5	19.5	---	---	---	25.5	21.5	24.0	19.0	18.5	18.5
5	21.0	19.5	20.0	---	---	---	25.0	22.0	23.5	20.5	18.5	19.5
6	21.5	20.5	21.0	---	---	---	23.0	21.0	22.0	22.5	19.5	20.5
7	21.0	17.5	19.5	---	---	---	25.5	22.0	24.0	21.0	19.0	19.5
8	21.0	17.5	18.5	---	---	---	24.0	22.0	23.0	21.5	18.5	19.5
9	20.5	17.5	19.5	25.5	23.0	24.0	23.0	20.5	22.0	19.5	17.5	18.5
10	23.5	19.0	21.0	24.0	22.0	23.0	24.0	20.0	22.5	21.0	17.5	19.0
11	---	---	---	25.5	22.5	23.5	23.0	20.5	22.5	22.0	19.0	20.0
12	---	---	---	25.5	23.0	24.0	22.0	20.5	21.0	21.5	19.0	20.0
13	---	---	---	25.5	22.5	24.0	22.0	21.0	21.5	21.5	18.0	19.5
14	---	---	---	26.0	23.0	24.5	22.5	20.5	21.5	21.5	18.5	19.5
15	---	---	---	25.0	23.0	24.0	24.5	20.0	22.5	20.5	18.5	19.0
16	---	---	---	25.5	22.5	24.0	25.5	22.5	23.5	21.5	18.5	19.5
17	---	---	---	26.5	24.0	25.0	23.5	22.5	23.0	19.0	17.0	18.0
18	---	---	---	27.0	24.5	25.5	22.5	22.0	22.0	17.5	16.5	17.0
19	---	---	---	27.0	24.5	25.5	23.0	21.5	22.0	19.0	17.0	18.0
20	---	---	---	27.0	25.0	26.0	22.5	21.5	23.5	20.0	18.5	19.0
21	---	---	---	27.0	24.5	26.0	22.0	20.5	21.5	22.0	18.5	20.0
22	---	---	---	27.0	25.0	25.5	24.5	21.5	22.5	21.5	18.5	19.5
23	---	---	---	26.5	24.0	25.0	23.0	22.0	22.5	21.5	19.0	20.5
24	---	---	---	26.5	25.0	25.5	24.5	22.0	22.5	21.0	19.5	20.5
25	---	---	---	25.5	24.5	25.0	23.0	20.0	21.5	22.0	19.0	20.5
26	---	---	---	25.5	24.5	24.5	24.0	21.0	22.5	22.5	19.5	21.0
27	---	---	---	25.5	22.0	24.0	23.5	22.0	22.5	22.0	20.0	21.0
28	---	---	---	25.5	24.0	25.0	22.0	19.5	21.0	22.5	19.5	21.0
29	---	---	---	26.0	24.0	25.0	21.0	17.5	19.0	22.5	21.0	21.5
30	---	---	---	25.5	23.0	24.5	21.0	17.5	19.0	23.0	21.0	21.5
31	---	---	---	25.5	22.0	23.5	21.5	18.5	19.5	---	---	---
MONTH	23.5	15.5	19.0	27.0	22.0	24.5	25.5	17.5	22.5	23.0	16.5	19.5
YEAR	27.0	.0	12.5									

JAMES RIVER BASIN

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02013000 DUNLAP CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°48'10", long 80°02'50", Alleghany County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on U.S. Highway 60, 2.2 mi downstream from Ogle Creek, and 3.0 mi west of Covington.

DRAINAGE AREA.--164 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1929-30, 1932-34, 1942. WSP 1303: 1929-35(M), 1937-38(M), 1941-48(M). WSP 2104:

Drainage area. WDR VA-74-1: 1969(M), 1972, 1973(P).

GAGE.--Water-stage recorder. Datum of gage is 1,294.70 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 8, 1949, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 22, 26, Jan. 7-10, 13-16, 28-31, and Feb. 14-16. Records good except those for periods with ice effect, Dec. 22, 26, Jan. 7-10, 13-16, 28-31, and Feb. 14-16, which are fair.

Occasional diurnal fluctuation caused by dam 7.9 mi upstream from station. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--58 years, 167 ft³/s, 13.83 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,400 ft³/s, June 21, 1972, gage height, 15.65 ft, from rating curve extended above 4,500 ft³/s on basis of step-backwater computations and contracted-opening measurement at gage height 15.65 ft; minimum, 2.0 ft³/s, July 4, 1970; minimum daily, 7.0 ft³/s, Sept. 9, 1966; minimum gage height, 0.69 ft, June 6, July 14, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 18 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2015	*17,400	*13.42	May 20	0900	4,300	7.67
Nov. 30	1130	2,320	5.69	May 20	1930	4,640	8.00
Mar. 15	0200	5,450	8.60				

Minimum discharge, 14 ft³/s, Oct. 1, gage height, 1.17 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	24	965	53	79	150	76	46	83	34	18	27
2	19	45	571	51	81	147	73	46	74	65	17	50
3	21	81	366	50	135	145	71	45	66	61	16	57
4	20	6460	269	50	912	137	68	44	60	46	16	93
5	18	5020	222	49	594	130	65	43	55	36	16	71
6	17	1060	192	46	404	129	64	41	51	31	23	85
7	17	463	159	38	496	126	65	41	55	29	34	64
8	17	283	137	25	498	108	63	44	52	27	26	48
9	17	197	123	20	397	110	61	45	48	26	24	39
10	17	153	110	30	317	109	60	42	44	25	23	34
11	17	128	100	41	300	123	59	40	43	52	29	31
12	17	109	100	42	264	134	56	38	40	38	28	29
13	17	97	101	35	221	140	54	47	37	31	26	27
14	17	87	101	30	170	1080	52	72	35	28	24	25
15	17	80	95	25	130	3090	50	85	33	30	23	24
16	18	74	96	30	120	905	50	82	34	29	24	23
17	17	73	95	38	149	519	51	83	31	24	26	22
18	17	68	92	39	163	361	50	221	29	23	108	22
19	17	63	78	49	206	293	46	239	28	21	105	22
20	18	60	77	83	254	238	45	3330	27	20	88	23
21	24	58	78	84	245	189	47	1420	26	20	121	24
22	29	429	65	87	228	157	48	590	25	18	83	22
23	27	633	79	111	277	140	46	359	24	20	58	21
24	25	349	77	123	268	127	44	250	29	22	47	21
25	24	236	72	120	239	113	42	186	26	20	41	21
26	22	184	50	122	211	104	47	153	25	21	36	21
27	21	169	60	118	202	99	48	139	24	23	32	21
28	21	221	59	60	174	94	46	137	23	24	30	22
29	20	1110	56	45	---	88	48	118	24	21	28	23
30	19	1770	53	55	---	83	47	105	23	19	26	21
31	20	---	52	65	---	79	---	95	---	18	24	---
TOTAL	601	19784	4750	1814	7734	9447	1642	8226	1174	902	1220	1033
MEAN	19.4	659	153	58.5	276	305	54.7	265	39.1	29.1	39.4	34.4
MAX	29	6460	965	123	912	3090	76	3330	83	65	121	93
MIN	14	24	50	20	79	79	42	38	23	18	16	21
CFSM	.12	4.02	.93	.36	1.68	1.86	.33	1.62	.24	.18	.24	.21
IN.	.14	4.49	1.08	.41	1.75	2.14	.37	1.87	.27	.20	.28	.23
CAL YR 1985	TOTAL	63578	MEAN	174	MAX	6460	MIN	14	CFSM	1.06	IN.	14.42
WTR YR 1986	TOTAL	58327	MEAN	160	MAX	6460	MIN	14	CFSM	.98	IN.	13.23

02013100 JACKSON RIVER BELOW DUNLAP CREEK, AT COVINGTON, VA

LOCATION.--Lat 37°47'19", long 80°00'03", Covington City, Hydrologic Unit 02080201, on left bank in city recreation park and 0.5 mi downstream from Dunlap Creek.

DRAINAGE AREA.--614 mi².

PERIOD OF RECORD.--October 1974 to current year.

REVISED RECORDS.--WDR VA-76-1: 1975(M).

GAGE.--Water-stage recorder. Datum of gage is 1,206.53 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diurnal fluctuation at low flow caused by Westvaco plant 0.8 mi upstream and occasionally by dam on Dunlap Creek 12.7 mi upstream. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 19.9 mi upstream; since October 1984 by Back Creek Lake 47.9 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 51.0 mi upstream, amount unknown. Diversion by Westvaco plant averages 47 ft³/s for industrial use of which approximately 42 ft³/s is returned upstream from station. Diversion 2.0 mi upstream from station for city of Covington water supply averages less than 4.0 ft³/s. U.S. Army Corps of Engineers gage-height transmitter at station, receiver at Gathright Dam. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 730 ft³/s, 16.15 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,300 ft³/s, Nov. 4, 1985, gage height, 23.31 ft, from rating curve extended above 19,000 ft³/s; minimum, 41 ft³/s, Jan. 5, 1981, gage height, 4.38 ft, result of freezeup; minimum daily, 67 ft³/s, Sept. 3, 27-29, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 24.36 ft, discharge, 34,000 ft³/s, from floodmarks, and flood of Dec. 27, 1973, reached a stage of 22.09 ft, from floodmarks, discharge, 28,300 ft³/s, from rating curve extended above 19,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 31,300 ft³/s, Nov. 4, gage height, 23.31 ft, from rating curve extended above 19,000 ft³/s; minimum, 180 ft³/s, Oct. 4, gage height, 4.77 ft; minimum daily, 200 ft³/s, Oct. 4, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	208	2820	271	343	630	389	346	417	360	312	296
2	226	238	2140	266	348	602	385	346	404	390	312	330
3	203	289	1440	266	398	600	377	341	387	376	311	353
4	200	10800	1280	267	1600	585	376	325	379	350	312	388
5	204	10700	1200	264	1750	568	372	319	368	332	313	359
6	204	7820	1050	253	1800	568	371	316	367	319	334	356
7	203	8900	799	231	2520	563	371	315	366	314	341	331
8	206	5480	667	218	2340	532	366	326	364	310	336	311
9	206	1560	436	206	1310	529	391	318	358	313	330	299
10	203	1320	410	214	1210	524	465	323	352	322	329	292
11	203	922	416	213	1200	568	363	317	351	345	359	288
12	204	650	396	215	1150	808	355	313	347	333	338	284
13	208	612	420	216	1040	1220	351	335	340	321	337	281
14	206	584	602	213	791	2260	346	358	339	314	331	278
15	209	507	660	214	548	5780	343	338	331	318	326	275
16	227	478	808	211	612	5970	343	372	332	320	327	273
17	228	452	725	213	723	5390	342	400	327	311	343	273
18	234	439	574	213	803	4600	336	556	322	312	457	273
19	233	424	552	241	877	1950	328	543	323	309	455	277
20	234	416	505	400	997	1250	324	3890	321	309	413	278
21	256	435	400	396	1090	970	333	2790	324	306	453	280
22	251	1080	364	574	1270	671	377	2260	314	313	394	275
23	248	1630	311	595	1330	719	471	1250	312	312	363	272
24	239	2230	310	608	1140	715	316	884	333	311	354	273
25	232	1730	301	600	856	749	308	818	316	307	338	274
26	231	1060	279	658	903	689	318	817	313	351	326	271
27	205	1040	281	700	1100	569	314	722	319	374	326	270
28	205	1000	280	501	937	488	310	714	313	340	323	271
29	200	3100	277	474	---	458	317	677	318	327	314	264
30	203	4790	271	374	---	401	318	610	315	323	287	220
31	203	---	269	352	---	392	---	437	---	320	283	---
TOTAL	6741	70894	21243	10637	30986	42318	10676	22676	10272	10162	10677	8765
MEAN	217	2363	685	343	1107	1365	356	731	342	328	344	292
MAX	256	10800	2820	700	2520	5970	471	3890	417	390	457	388
MIN	200	208	269	206	343	392	308	313	312	306	283	220
(*)	-80	+627	+8	-3	-5	+5	+3	-3	-109	-141	-187	-133
MEAN†	137	2990	693	340	1102	1307	359	728	233	187	157	159
CFSM†	.22	4.87	1.13	.55	1.79	2.23	.58	1.19	.38	.30	.26	.26
IN.†	.26	5.43	1.30	.64	1.87	2.57	.65	1.37	.42	.35	.30	.29

CAL YR 1985 TOTAL 272053 MEAN 745 MAX 10800 MIN 200 MEAN† 745 CFSM† 1.21 IN.† 16.48
WTR YR 1986 TOTAL 256047 MEAN 701 MAX 10800 MIN 200 MEAN† 698 CFSM† 1.14 IN.† 15.45

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

JAMES RIVER BASIN

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02014000 POTTS CREEK NEAR COVINGTON, VA

LOCATION.--Lat 37°43'44", long 80°02'33", Alleghany County, Hydrologic Unit 02080201, on left bank at downstream side of bridge on State Highway 18, 0.8 mi downstream from Blue Spring Creek, and 5.2 mi southwest of Covington.

DRAINAGE AREA.--153 mi².

PERIOD OF RECORD.--October 1928 to September 1956, October 1965 to current year.

REVISED RECORDS.--WSP 1723: 1935, 1936(M), 1940(M), 1942(M), 1948-49(M), 1951-52(M), 1954(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,273.93 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1956, nonrecording gage at site 1.3 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 21-23, 26-28, 30, 31, and Jan. 7, 8. Records good except those for periods with ice effect, Dec. 21-23, 26-28, 30, 31, and Jan. 7, 8, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--49 years, 179 ft³/s, 15.89 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,400 ft³/s, Nov. 4, 1985, gage height, 13.46 ft, from rating curve extended above 12,000 ft³/s; minimum observed, 13 ft³/s, Nov. 29, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1600	*15,400	*13.46	Mar. 15	0500	3,940	8.38

Minimum daily discharge, 24 ft³/s, Aug. 3-5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	43	1180	72	86	137	107	67	106	46	25	30
2	33	164	789	63	97	129	103	66	95	55	25	55
3	38	250	533	67	141	129	99	64	85	57	24	64
4	38	6600	396	64	597	124	95	63	78	46	24	155
5	35	6240	322	61	495	118	92	62	73	37	24	106
6	33	2000	275	50	383	114	92	61	70	34	25	100
7	31	1000	225	55	496	113	97	60	69	32	28	77
8	31	608	194	38	455	99	93	63	67	31	25	61
9	31	408	171	41	381	101	88	71	64	30	25	51
10	31	305	150	51	325	100	86	64	60	31	25	44
11	31	243	137	55	331	103	84	61	58	40	25	40
12	32	200	133	53	282	102	81	61	57	38	25	37
13	32	172	134	58	226	101	77	79	53	34	26	34
14	34	151	141	43	195	680	75	130	49	33	26	32
15	32	135	128	52	204	2790	74	128	46	33	25	30
16	33	120	124	44	171	1110	74	120	45	33	25	29
17	33	116	119	51	177	697	74	112	48	30	31	28
18	33	106	114	51	193	509	74	113	43	29	44	26
19	33	96	94	64	214	415	69	153	40	27	47	28
20	33	90	92	136	212	333	67	1340	39	26	59	32
21	44	85	92	107	200	266	73	1070	38	25	67	33
22	59	213	70	101	192	223	75	618	37	25	71	30
23	51	351	100	108	204	197	73	419	36	26	50	27
24	45	270	100	108	188	178	68	296	38	29	40	26
25	38	226	90	106	181	158	66	225	41	26	37	26
26	36	196	62	112	167	146	73	191	38	28	32	30
27	35	179	67	114	171	140	74	175	35	59	30	29
28	33	184	78	76	158	133	69	176	33	51	32	28
29	33	639	70	75	---	124	72	148	33	35	29	29
30	33	1600	62	100	---	117	70	130	32	29	28	29
31	33	---	62	90	---	112	---	120	---	27	26	---
TOTAL	1096	22990	6304	2266	7122	9798	2414	6506	1606	1082	1025	1346
MEAN	35.4	766	203	73.1	254	316	80.5	210	53.5	34.9	33.1	44.9
MAX	59	6600	1180	136	597	2790	107	1340	106	59	71	155
MIN	29	43	62	38	86	99	66	60	32	25	24	26
CFSM	.23	5.01	1.33	.48	1.66	2.07	.53	1.37	.35	.23	.22	.29
IN.	.27	5.59	1.53	.55	1.73	2.38	.59	1.58	.39	.26	.25	.33
CAL YR 1985	TOTAL	74051	MEAN	203	MAX	6600	MIN	29	CFSM	1.33	IN.	18.00
WTR YR 1986	TOTAL	63555	MEAN	174	MAX	6600	MIN	24	CFSM	1.14	IN.	15.45

02015700 BULLPASTURE RIVER AT WILLIAMSVILLE, VA

LOCATION.--Lat 38°11'43", long 79°34'14", Bath County, Hydrologic Unit 02080201, on left bank 15 ft downstream from bridge on State Highway 614 at Williamsville and 0.62 mi upstream from mouth.

DRAINAGE AREA.--110 mi².

PERIOD OF RECORD.--August 1960 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,610.14 ft above National Geodetic Vertical Datum of 1929. Prior to July 12, 1974, at site 700 ft upstream at datum 11.84 ft higher.

REMARKS.--Estimated daily discharges: Nov. 4, 16-22, Dec. 2 to Mar. 26, and Sept. 24. Records good except those for periods of no gage-height record, Nov. 4, 16-22, Dec. 2 to Mar. 26, and Sept. 24, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--26 years, 148 ft³/s, 18.27 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,900 ft³/s, Nov. 4, 1985, gage height, 14.39 ft, from floodmarks, from rating curve extended above 3,300 ft³/s on basis of slope-area measurement of peak flow; minimum, 19 ft³/s, Jan. 4, 1981, result of freezeup; minimum daily, 23 ft³/s, Sept. 8, 9, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	Unknown	*22,900	*a14.39	May 20	0430	2,370	4.90
Mar. 15	Unknown	6,640	a7.63				

a From floodmarks.

Minimum daily discharge, 30 ft³/s, Oct. 8, 9, Sept. 17-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	45	465	66	80	170	95	124	94	60	36	34
2	37	109	400	64	70	160	94	110	87	103	35	42
3	40	558	330	62	76	150	92	99	80	88	35	63
4	38	7550	280	62	220	140	85	92	75	64	35	61
5	36	6520	240	62	300	135	92	88	72	57	34	58
6	33	1930	200	60	280	130	120	83	82	51	35	49
7	31	848	180	56	300	130	144	83	166	47	36	41
8	30	435	160	52	300	130	120	78	203	46	36	38
9	30	274	140	46	260	130	110	74	124	45	36	36
10	32	203	125	47	240	110	105	72	103	47	35	35
11	32	165	120	47	250	120	101	70	95	46	37	35
12	32	137	120	45	250	150	95	67	95	44	37	35
13	33	126	130	40	200	200	90	70	85	42	36	34
14	33	116	140	34	170	250	88	74	75	41	35	32
15	34	103	150	35	160	2300	82	70	70	40	35	32
16	36	95	140	35	150	1500	99	69	70	40	34	32
17	33	92	135	34	150	990	97	72	64	38	34	30
18	33	88	130	40	180	750	94	92	58	37	37	30
19	34	83	115	60	260	500	87	129	56	37	41	30
20	36	82	100	80	300	300	87	1420	56	36	37	33
21	100	79	90	110	280	240	97	681	57	36	38	32
22	88	440	80	100	270	190	95	380	53	37	44	32
23	77	405	90	96	280	170	88	254	50	37	40	32
24	64	246	98	90	270	150	83	197	54	40	38	31
25	75	172	95	86	250	130	82	160	57	37	35	32
26	62	151	82	86	230	120	80	142	49	41	33	32
27	52	137	75	90	210	122	78	146	46	60	33	34
28	48	223	78	76	190	116	77	153	72	45	34	37
29	45	442	76	64	---	110	194	124	69	40	34	35
30	44	516	72	78	---	105	148	110	57	37	32	34
31	44	---	68	86	---	101	---	103	---	37	32	---
TOTAL	1374	22370	4704	1989	6176	9999	2999	5486	2374	1456	1109	1111
MEAN	44.3	746	152	64.2	221	323	100	177	79.1	47.0	35.8	37.0
MAX	100	7550	465	110	300	2300	194	1420	203	103	44	63
MIN	30	45	68	34	70	101	77	67	46	36	32	30
CFSM	.40	6.78	1.38	.58	2.01	2.94	.91	1.61	.72	.43	.33	.34
IN.	.46	7.57	1.59	.67	2.09	3.38	1.01	1.86	.80	.49	.38	.38
CAL YR 1985	TOTAL	63010	MEAN	173	MAX	7550	MIN	30	CFSM	1.57	IN.	21.31
WTR YR 1986	TOTAL	61147	MEAN	168	MAX	7550	MIN	30	CFSM	1.53	IN.	20.68

02016000 COWPASTURE RIVER NEAR CLIFTON FORGE, VA

LOCATION.--Lat 37°47'30", long 79°45'35", Alleghany County, Hydrologic Unit 02080201, on left bank 100 ft downstream from bridge on State Highway 633, 2.5 mi upstream from confluence with Jackson River, and 4.0 mi southeast of Clifton Forge.

DRAINAGE AREA.--461 mi².

PERIOD OF RECORD.--March 1925 to current year. Records for May 1907 to August 1908, published in WSP 242, are unreliable and should not be used.

REVISED RECORDS.--WSP 952: 1925-41. WSP 2104: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 1,006.93 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to October 1934, nonrecording gage at site 100 ft upstream at present datum.

REMARKS.--Estimated daily discharges: Dec. 22, 23, 27, and Jan. 10-12, 14. Records good except those for periods with ice effect, Dec. 22, 23, 27, and Jan. 10-12, 14, which are fair. Low flow affected by springs and by occasional regulation from unknown source. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--61 years, 527 ft³/s, 15.52 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,900 ft³/s, Nov. 5, 1985, gage height, 19.15 ft, from rating curve extended above 13,000 ft³/s on basis of slope-area measurements at gage heights 15.70 ft and 19.15 ft; minimum, 38 ft³/s, Sept. 2, 1932; minimum daily, 40 ft³/s, Sept. 1, 1932; minimum gage height, 1.43 ft, Jan. 31, 1981, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.8 ft, from floodmarks, discharge, about 45,000 ft³/s, from rating curve extended above 13,000 ft³/s on basis of records for other stations in James River basin.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	1230	*40,900	*19.15	Mar. 15	1730	14,900	12.22

Minimum discharge, 74 ft³/s, Oct. 1, Jan. 16, gage height, 1.63 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	161	2310	209	228	533	290	292	276	147	92	87
2	91	655	1690	203	213	499	276	260	250	153	89	102
3	107	1180	1330	195	239	482	265	239	225	178	87	135
4	101	13900	1000	193	683	471	254	221	204	192	84	205
5	100	33900	823	193	976	447	245	210	193	145	80	212
6	88	9150	721	185	829	429	239	202	188	127	80	295
7	82	2740	628	179	915	421	286	198	197	118	82	183
8	79	1600	540	158	920	384	324	195	428	113	85	139
9	78	1070	483	142	805	340	319	187	472	110	82	117
10	79	806	430	155	743	346	297	179	309	110	83	108
11	79	655	392	166	785	366	283	173	247	109	90	101
12	80	543	378	163	771	470	266	166	223	110	95	98
13	80	480	412	171	625	522	250	179	207	103	89	94
14	81	433	465	146	532	1380	237	200	188	98	85	92
15	80	391	495	170	506	11600	228	195	172	96	84	89
16	79	350	460	146	469	4360	232	184	172	94	82	86
17	80	336	444	163	433	2130	244	197	176	93	111	86
18	78	333	413	151	454	1450	244	214	154	91	103	84
19	78	304	365	177	632	1120	228	270	138	88	104	84
20	79	283	316	279	840	936	216	1490	132	86	113	87
21	114	264	313	373	799	752	239	2160	128	89	123	87
22	179	716	253	320	738	623	262	1280	126	104	121	85
23	212	2220	289	299	808	549	261	847	122	149	108	84
24	162	1320	311	280	786	499	240	635	130	223	116	83
25	149	910	300	265	747	451	229	508	124	123	119	81
26	137	712	253	269	665	405	225	425	121	181	101	80
27	134	631	239	275	634	382	220	391	115	182	92	79
28	119	722	243	219	596	360	212	414	111	128	92	81
29	110	2190	239	193	---	337	221	401	119	123	89	80
30	104	3400	227	263	---	318	313	333	142	104	84	83
31	101	---	212	262	---	303	---	305	---	95	84	---
TOTAL	3196	82355	16974	6562	18371	33665	7645	13150	5789	3862	2929	3307
MEAN	103	2745	548	212	656	1086	255	424	193	125	94.5	110
MAX	212	33900	2310	373	976	11600	324	2160	472	223	123	295
MIN	76	161	212	142	213	303	212	166	111	86	80	79
CFSM	.22	5.95	1.19	.46	1.42	2.36	.55	.92	.42	.27	.20	.24
IN.	.26	6.65	1.37	.53	1.48	2.72	.62	1.06	.47	.31	.24	.27
CAL YR 1985	TOTAL	218954	MEAN	600	MAX	33900	MIN	74	CFSM	1.30	IN.	17.67
WTR YR 1986	TOTAL	197805	MEAN	542	MAX	33900	MIN	76	CFSM	1.18	IN.	15.96

JAMES RIVER BASIN

02016500 JAMES RIVER AT LICK RUN, VA

LOCATION.--Lat 37°46'25", long 79°47'05", Botetourt County, Hydrologic Unit 02080201, on right bank at community of Lick Run, 1,000 ft downstream from bridge on U.S. Highway 220, 0.9 mi downstream from confluence of Cowpasture and Jackson Rivers, 1.8 mi south of Iron Gate, and at mile 342.3.

DRAINAGE AREA.--1,373 mi².

PERIOD OF RECORD.--April 1925 to current year.

REVISED RECORDS.--WSP 852: 1936-37. WSP 972: 1927, 1930(M), 1932(M), 1935-36. WSP 1303: 1927-28(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 978.30 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 26, 1928, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 22, 23 and Jan. 15. Records good. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 43.7 mi upstream from station; since October 1984 by Back Creek Lake 71.7 mi upstream; and since January 1985 by Little Back Creek Lake 74.8 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--61 years, 1,613 ft³/s, 15.95 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,500 ft³/s, Nov. 5, 1985, gage height, 30.22 ft, from rating curve extended above 66,000 ft³/s; minimum, 133 ft³/s, Jan. 6, 1981, result of freezeup; minimum daily, 156 ft³/s, Oct. 12, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of about 33 ft, discharge, about 120,000 ft³/s. Flood in March 1913 reached a stage of 30.4 ft, from floodmarks, discharge, about 98,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 87,500 ft³/s, Nov. 5, gage height, 30.22 ft, from rating curve extended above 66,000 ft³/s; minimum, 333 ft³/s, Oct. 8, 9, 10; minimum gage height, 1.72 ft, Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	404	458	8470	666	780	1480	863	761	915	611	466	442
2	411	1150	6100	650	767	1360	834	734	844	659	456	516
3	433	2110	4190	638	866	1340	810	705	777	670	451	646
4	393	32900	3310	640	2740	1310	788	668	733	652	446	793
5	392	67500	2820	634	3820	1250	773	650	709	575	444	808
6	359	23100	2530	618	3590	1220	762	637	689	538	457	833
7	346	15200	1960	573	4250	1210	806	630	701	520	489	689
8	338	11000	1710	539	4910	1130	844	642	898	505	487	585
9	339	4020	1310	455	2980	1080	824	626	971	508	466	547
10	339	3150	1180	520	2670	1080	887	621	775	516	469	509
11	339	2340	1100	539	2720	1120	808	604	710	531	514	482
12	342	1700	1100	532	2630	1300	756	590	682	550	499	467
13	342	1500	1110	532	2240	1840	728	643	649	516	481	452
14	345	1380	1300	491	1810	4200	713	728	622	497	474	442
15	345	1280	1360	513	1430	22900	701	754	600	487	468	433
16	353	1110	1500	481	1350	14000	714	720	602	504	462	422
17	369	1110	1470	502	1410	10100	722	853	594	488	497	415
18	369	1070	1240	499	1550	8560	720	994	564	481	566	408
19	370	1000	1160	582	1880	4550	694	1080	540	473	679	413
20	375	960	1080	973	2420	3020	675	7870	530	466	647	425
21	483	927	963	1060	2370	2390	721	8040	524	480	696	426
22	576	1970	825	1150	2560	1660	733	5440	517	495	657	421
23	614	5100	862	1150	2790	1560	892	3140	510	565	583	419
24	536	4660	872	1150	2610	1450	730	2120	564	652	554	430
25	502	3800	835	1130	2100	1420	676	1700	533	516	534	427
26	466	2340	716	1140	1890	1330	684	1570	517	662	501	422
27	441	2240	704	1270	2170	1180	683	1390	513	707	483	426
28	406	2190	725	964	2050	1060	670	1400	500	597	485	436
29	387	6520	702	898	---	1010	684	1320	520	544	466	431
30	375	12400	669	878	---	928	752	1200	536	497	435	390
31	377	---	648	839	---	891	---	995	---	480	420	---
TOTAL	12466	216185	54521	23206	65353	98929	22647	49825	19339	16942	15732	14955
MEAN	402	7206	1759	749	2334	3191	755	1607	645	547	507	499
MAX	614	67500	8470	1270	4910	22900	892	8040	971	707	696	833
MIN	338	458	648	455	767	891	670	590	500	466	420	390
(*)	-80	+627	+8	-3	-5	+5	+3	-3	-109	-141	-187	-133
MEAN†	322	7833	1767	746	2329	3196	758	1604	536	406	320	366
CFSM†	.23	5.71	1.29	.54	1.70	2.33	.55	1.17	.39	.30	.23	.27
IN.†	.27	6.37	1.48	.63	1.77	2.68	.62	1.35	.44	.34	.27	.30
CAL YR 1985	TOTAL	666352	MEAN	1826	MAX	67500	MIN	338	MEAN†	1826	CFSM†	1.33
WTR YR 1986	TOTAL	610100	MEAN	1672	MAX	67500	MIN	338	MEAN†	1669	CFSM†	1.22
											IN.†	18.06
											IN.†	16.51

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake, provided by U.S. Army Corps of Engineers; and for the initial storage in Back Creek Lake, provided by Virginia Power.

† Adjusted for change in contents.

JAMES RIVER BASIN

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02017500 JOHNS CREEK AT NEW CASTLE, VA

LOCATION.--Lat 37°30'22", long 80°06'25", Craig County, Hydrologic Unit 02080201, on right bank 20 ft downstream from bridge on State Highway 615 at New Castle and 1,700 ft upstream from mouth.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--April 1926 to current year.

REVISED RECORDS.--WSP 972: 1935-36(M), 1940(M). WSP 1203: 1928, 1935. WSP 1303: 1927(M), 1928, 1929-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,254.30 ft above National Geodetic Vertical Datum of 1929. Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 20-22, 26, 27, 29-31, and Jan. 2, 6-12, 14, 16, 28, 29. Records good except those for periods with ice effect, Dec. 20-22, 26, 27, 29-31, and Jan. 2, 6-12, 14, 16, 28, 29, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--60 years, 127 ft³/s, 16.58 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s, Jan. 23, 1935, from rating curve extended above 3,200 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 12.48 ft, June 21, 1972; minimum discharge, 6.0 ft³/s, Dec. 5, 1946, result of freezeup; minimum daily, 6.6 ft³/s, Oct. 1, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1530	*7,010	*11.96	Mar. 15	0200	2,480	8.78

Minimum discharge, 11 ft³/s, Aug. 17, gage height, 2.48 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	82	678	47	62	113	74	39	114	16	15	20
2	16	250	521	48	69	108	71	38	96	27	14	46
3	24	270	393	43	97	108	67	36	78	31	13	143
4	24	3580	318	42	330	105	63	35	66	23	12	273
5	21	2560	268	40	273	100	61	35	57	19	12	221
6	18	895	227	34	229	98	62	34	52	18	12	196
7	16	596	186	30	306	94	65	33	72	16	14	168
8	16	461	160	29	268	83	59	38	56	15	13	144
9	16	363	140	34	229	81	55	44	46	14	12	117
10	15	295	122	36	206	80	54	41	39	16	12	86
11	15	227	110	37	221	81	51	38	38	18	13	58
12	15	187	105	37	201	78	48	36	37	17	12	42
13	15	152	108	34	174	85	46	49	32	16	13	35
14	15	125	107	34	159	629	44	86	29	18	13	30
15	15	105	96	35	151	1480	44	96	27	20	13	26
16	16	91	94	35	134	684	43	107	28	17	12	23
17	17	85	93	35	135	533	42	179	34	16	11	22
18	15	73	88	31	164	416	41	172	28	15	22	21
19	16	65	81	42	184	350	39	148	24	14	22	21
20	16	60	80	85	182	286	38	552	22	13	27	21
21	24	57	76	82	172	231	40	524	20	12	49	21
22	31	209	71	75	166	189	40	404	20	12	61	21
23	28	263	80	73	163	164	38	326	19	14	49	19
24	27	206	73	72	151	145	36	257	19	14	41	18
25	24	176	69	73	142	129	35	212	20	13	33	18
26	22	157	52	79	132	118	40	183	17	27	29	18
27	20	143	56	79	133	111	40	170	16	51	24	17
28	18	194	54	56	123	101	37	170	16	33	21	17
29	18	528	52	66	---	92	38	157	16	23	19	17
30	17	888	48	84	---	84	41	145	14	18	18	17
31	19	---	48	66	---	79	---	132	---	16	17	---
TOTAL	581	13343	4654	1593	4956	7035	1452	4516	1152	592	648	1896
MEAN	18.7	445	150	51.4	177	227	48.4	146	38.4	19.1	20.9	63.2
MAX	31	3580	678	85	330	1480	74	552	114	51	61	273
MIN	12	57	48	29	62	78	35	33	14	12	11	17
CFSM	.18	4.28	1.44	.49	1.70	2.18	.47	1.40	.37	.18	.20	.61
IN.	.21	4.77	1.66	.57	1.77	2.52	.52	1.62	.41	.21	.23	.68
CAL YR 1985	TOTAL	48150.0	MEAN	132	MAX	3580	MIN	9.2	CFSM	1.27	IN.	17.22
WTR YR 1986	TOTAL	42418	MEAN	116	MAX	3580	MIN	11	CFSM	1.12	IN.	15.17

02018000 CRAIG CREEK AT PARR, VA

LOCATION.--Lat 37°39'57", long 79°54'42", Botetourt County, Hydrologic Unit 02080201, on right bank 12 ft upstream from Chesapeake and Ohio Railway bridge, 700 ft downstream from Stony Run, 0.2 mi northeast of Horton, 0.4 mi northwest of Parr, and 12 mi upstream from mouth.

DRAINAGE AREA.--329 mi².

PERIOD OF RECORD.--April 1925 to current year.

REVISED RECORDS.--WSP 852: 1937. WSP 892: 1935-36. WSP 1303: 1929-30(M), 1932-35(M), 1937-38(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 992.50 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 17 to Nov. 7, Dec. 22, 26, 27, and Jan. 28-30. Records good except those for period of no gage-height record, Oct. 17 to Nov. 7, and periods with ice effect, Dec. 22, 26, 27, and Jan. 28-30, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--61 years, 386 ft³/s, 15.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,500 ft³/s, Nov. 4, 1985, gage height, 24.76 ft, from high-water mark in gage house, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 20 ft³/s, probably occurred Dec. 21, 25, 1980, or Jan. 4, 1981, gage height, 3.20 ft, result of freezeup; minimum daily, 25 ft³/s, Sept. 4, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	Unknown	*58,500	*a24.76	Mar. 15	1100	6,630	10.52

a From high-water mark.

Minimum discharge, 42 ft³/s, Aug. 6, gage height, 3.46 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	340	2430	157	192	351	225	122	303	57	52	55
2	54	720	1540	155	186	332	215	118	261	62	50	62
3	60	900	1100	149	210	327	209	114	224	78	48	100
4	71	21000	859	148	597	323	200	111	194	82	45	753
5	72	20000	726	145	879	308	192	110	174	70	44	554
6	65	4600	637	141	728	293	189	108	162	61	44	451
7	59	2200	547	133	815	287	192	105	151	57	44	367
8	58	1400	466	128	950	273	188	107	163	53	44	298
9	56	990	414	103	789	250	174	114	144	51	50	242
10	56	788	369	119	678	248	168	121	128	50	46	198
11	56	651	332	136	682	246	165	116	118	57	45	157
12	55	546	311	125	741	241	159	110	115	60	45	125
13	56	450	311	124	635	237	153	125	108	61	45	103
14	55	382	322	122	540	540	148	178	97	55	44	89
15	55	335	297	112	515	5120	144	241	91	51	45	79
16	55	296	282	118	449	2290	144	243	87	56	45	71
17	55	278	279	112	418	1360	143	354	81	62	44	64
18	53	257	272	117	457	1020	140	421	83	55	45	61
19	55	232	253	131	569	842	136	663	79	51	60	59
20	55	216	229	177	595	726	130	1350	72	48	95	62
21	82	204	230	232	551	604	133	1960	68	46	109	60
22	110	251	213	218	512	514	139	1150	65	61	204	58
23	99	759	244	211	497	446	136	826	62	49	163	57
24	92	663	227	208	443	405	128	643	60	45	132	54
25	80	552	217	202	421	362	122	525	60	49	111	52
26	74	468	207	209	397	330	127	453	62	102	92	52
27	68	420	213	223	394	310	134	411	57	121	81	52
28	63	418	187	181	386	291	130	439	54	149	72	51
29	62	1030	172	213	---	269	125	426	53	96	63	51
30	60	2000	163	286	---	251	122	383	51	71	58	50
31	68	---	155	283	---	237	---	344	---	59	54	---
TOTAL	2006	63346	14204	5118	15226	19633	4710	12491	3427	2025	2119	4487
MEAN	64.7	2112	458	165	544	633	157	403	114	65.3	68.4	150
MAX	110	21000	2430	286	950	5120	225	1960	303	149	204	753
MIN	47	204	155	103	186	237	122	105	51	45	44	50
CFSM	.20	6.42	1.39	.50	1.65	1.92	.48	1.22	.35	.20	.21	.46
IN.	.23	7.16	1.61	.58	1.72	2.22	.53	1.41	.39	.23	.24	.51
CAL YR 1985	TOTAL	166244	MEAN	455	MAX	21000	MIN	42	CFSM	1.38	IN.	18.80
WTR YR 1986	TOTAL	148792	MEAN	408	MAX	21000	MIN	44	CFSM	1.24	IN.	16.82

02018500 CATAWBA CREEK NEAR CATAWBA, VA

LOCATION.--Lat 37°28'05", long 80°00'20", Botetourt County, Hydrologic Unit 02080201, on right bank 80 ft upstream from bridge on State Highway 779, 1.0 mi downstream from Little Catawba Creek, 1.9 mi west of Haymarket town, and 8.2 mi northeast of Catawba.

DRAINAGE AREA.--34.3 mi².

PERIOD OF RECORD.--September 1943 to current year.

REVISED RECORDS.--WSP 1303: 1944-45(M), WSP 2104: Drainage area. WDR VA-72-1: 1954, 1955(P), 1957-58(P), 1959, 1960-62(P), 1963, 1964(M), 1965-67(P), 1968(M), 1969, 1970(M), 1971.

GAGE.--Water-stage recorder. Datum of gage is 1,299.96 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 1, 1953, nonrecording gage at site 80 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 4-7, Dec. 21-25, 27-29, Jan. 7-9, 15-17, 26-31, and Feb. 13-16.

Records good except those for period of no gage-height record, Nov. 4-7, and periods with ice effect, Dec. 21-25, 27-29, Jan. 7-9, 15-17, 26-31, and Feb. 13-16, which are fair. At a point 5.3 mi upstream from station, there is transmountain diversion through a tunnel into Roanoke River basin for municipal water supply of city of Roanoke since December 1974. Prior to October 1976, monthly means adjusted for pumpage by Citadel Cement Corporation. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--43 years, 36.4 ft³/s, 14.41 in/yr, adjusted for pumpage from October 1952 to September 1976, and transmountain diversion since December 1974.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,200 ft³/s, Nov. 4, 1985, gage height, 19.19 ft, from high-water mark, from rating curve extended above 1,700 ft³/s on basis of slope-area measurements at gage heights 10.35 ft and 19.19 ft; minimum, 0.33 ft³/s, Aug. 16, 1983, result of pumpage; minimum daily, 0.67 ft³/s, Aug. 14, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.26 ft, from information by observer.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,200 ft³/s, Nov. 4, gage height, 19.19 ft, from high-water mark, from rating curve extended as explained above; minimum, 1.6 ft³/s, July 20, 21, gage height, 1.50 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	51	193	20	16	42	29	13	11	7.7	3.6	5.6
2	14	374	142	19	17	39	27	12	11	11	2.9	8.1
3	17	257	105	19	21	40	25	12	11	7.4	2.8	12
4	13	7400	87	19	55	37	25	11	12	5.1	2.7	13
5	9.5	1200	77	18	51	36	25	11	13	5.3	3.1	15
6	8.0	400	69	17	49	35	24	11	13	4.9	3.3	14
7	7.8	270	59	15	113	33	24	11	13	4.6	7.7	11
8	6.8	176	53	13	95	30	22	12	12	3.7	4.7	11
9	5.4	132	49	12	79	29	21	9.5	9.9	3.6	3.4	7.8
10	5.7	104	44	16	70	29	20	9.4	7.9	4.6	2.9	7.1
11	7.3	89	41	15	115	28	19	8.7	11	5.6	3.6	7.7
12	7.9	78	39	15	93	27	19	9.6	11	4.0	3.5	6.4
13	7.5	70	45	15	70	30	18	17	10	4.3	3.2	5.6
14	7.3	62	44	14	57	357	17	19	9.7	2.8	3.2	5.3
15	6.8	57	39	13	45	490	18	16	9.4	3.6	3.0	5.5
16	6.8	53	38	12	49	209	19	18	8.5	4.5	2.8	5.2
17	6.0	50	36	13	58	135	17	28	7.0	3.0	2.9	4.8
18	4.2	45	35	14	77	102	16	27	9.2	2.5	5.8	4.8
19	3.2	43	32	20	78	87	15	33	7.8	2.2	6.4	5.3
20	4.1	42	31	28	72	75	15	65	8.1	1.8	13	5.2
21	6.4	39	29	22	67	64	20	84	8.0	2.6	16	5.0
22	7.0	76	27	20	63	56	17	71	7.2	4.5	9.5	4.8
23	5.8	80	26	19	59	51	16	57	6.4	8.6	11	4.9
24	6.0	67	25	17	55	47	15	47	6.4	7.6	7.7	5.6
25	5.4	60	24	17	52	42	14	41	6.9	4.6	5.7	6.5
26	4.8	56	23	16	49	39	16	38	5.8	13	6.6	5.2
27	4.6	53	22	14	49	37	15	40	6.3	11	6.0	5.3
28	4.5	49	21	12	46	35	14	39	5.8	8.6	5.0	5.2
29	4.4	71	20	12	---	33	14	34	5.6	7.9	4.5	5.1
30	4.4	208	20	13	---	31	13	26	4.6	5.7	3.8	5.5
31	7.0	---	20	15	---	30	---	11	---	4.0	3.7	---
TOTAL	215.9	11712	1515	504	1720	2355	569	841.2	268.5	170.3	164.0	213.5
MEAN	6.96	390	48.9	16.3	61.4	76.0	19.0	27.1	8.95	5.49	5.29	7.12
MAX	17	7400	193	28	115	490	29	84	13	13	16	15
MIN	3.2	39	20	12	16	27	13	8.7	4.6	1.8	2.7	4.8
(*)	0	6.3	0	0	0	0	0	0	0	0	2.2	3.2
MEAN†	6.96	396	48.9	16.3	61.4	76.0	19.0	27.1	8.95	5.49	7.49	10.3
CFSM†	.20	11.5	1.43	.48	1.79	2.22	.55	.79	.26	.16	.22	.30
IN.‡	.23	12.88	1.64	.55	1.86	2.56	.62	.91	.29	.18	.25	.34
CAL YR 1980	TOTAL	20997.3	MEAN	57.5	MAX	7400	MIN	3.2	MEAN†	59.6	CFSM†	1.74
WTR YR 1986	TOTAL	20248.4	MEAN	55.5	MAX	7400	MIN	1.8	MEAN†	59.6	CFSM†	1.74
											IN.‡	23.59
												23.59

* Average diversion, equivalent in cubic feet per second, provided by city of Roanoke.

‡ Adjusted for diversion.

02019500 JAMES RIVER AT BUCHANAN, VA

LOCATION.--Lat 37°31'50", long 79°40'45", Botetourt County, Hydrologic Unit 02080201, on left bank 300 ft upstream from bridge on U.S. Highway 11 at Buchanan (revised), 1,000 ft upstream from Purgatory Creek, 1.5 mi downstream from Looney Creek, and at mile 306.4.
DRAINAGE AREA.--2,075 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1898 to current year. Monthly discharge only for some periods, published in WSP 1303.

Records for August 1895 to Feb. 11, 1898, published in WSP 11, 15, and 27 are in error and should not be used.

Gage-height records collected at this site since 1893 are contained in reports of the National Weather Service. REVISED RECORDS.--WSP 602: 1917-24. WSP 972: 1935-36. WSP 1303: 1898-1916, 1917-20(M), 1922(M), 1924(M).

WSP 1383: 1927. WSP 2104: Drainage area. WDR VA-72-1: 1913(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 802.90 ft above National Geodetic Vertical Datum of 1929. Prior to July 1, 1927, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 4-12, Jan. 8, 9, 14, 15, Jan. 30 to Feb. 1, and Feb. 14-17. Records good except those for period of no gage-height record, Nov. 4-12, and periods with ice effect, Jan. 8, 9, 14, 15, Jan. 30 to Feb. 1, and Feb. 14-17, which are fair. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 79.6 mi upstream; since October 1984 by Back Creek Lake 107.6 mi upstream, amount unknown; and since January 1985 by Little Back Creek Lake 110.7 mi upstream, amount unknown. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--88 years, 2,472 ft³/s, 16.18 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 179,000 ft³/s, Nov. 5, 1985, gage height, 38.84 ft, from floodmarks, from rating curve extended above 110,000 ft³/s; minimum, 202 ft³/s, Sept. 8, 1966, gage height, 1.44 ft; minimum daily, 207 ft³/s, Sept. 12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of 34.9 ft, from floodmark, discharge, about 142,000 ft³/s, from rating curve extended above 110,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 179,000 ft³/s, Nov. 5, gage height, 38.84 ft, from floodmarks, from rating curve extended above 110,000 ft³/s; minimum, 452 ft³/s, part of each day Oct. 15-17, gage height, 2.12 ft; minimum daily, 459 ft³/s, Oct. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	542	532	15200	922	900	2480	1440	1040	1570	714	630	574
2	558	1630	9510	892	1030	2160	1400	1000	1430	870	618	640
3	613	4470	6590	875	1060	2080	1330	959	1310	879	604	768
4	590	38000	4770	860	2000	2050	1260	924	1200	888	584	1160
5	548	102000	3970	852	4660	1960	1240	885	1140	839	573	1840
6	527	40000	3530	822	4280	1890	1220	872	1080	747	600	1560
7	494	25000	3020	793	4440	1840	1220	861	1060	698	663	1440
8	477	15000	2590	600	6550	1760	1250	858	1080	669	637	1160
9	469	6200	2240	500	4650	1630	1260	857	1400	647	631	990
10	464	4800	1920	631	3800	1600	1220	849	1220	663	618	892
11	461	3600	1750	708	3850	1610	1270	837	1070	676	633	805
12	461	2700	1680	705	4000	1710	1150	811	1010	691	670	737
13	466	2370	1670	711	3520	2100	1100	843	950	700	637	684
14	464	2120	1750	600	2400	3000	1070	1040	902	655	625	645
15	463	1940	1900	550	1500	30100	1060	1120	858	628	613	622
16	459	1710	1910	642	1700	23400	1070	1120	836	625	603	604
17	462	1630	1970	648	2000	13500	1060	1190	819	637	601	578
18	477	1520	1830	654	2370	10600	1060	1530	794	624	673	565
19	481	1440	1640	691	2620	7250	1030	1890	758	607	793	565
20	482	1350	1520	1080	3260	4620	990	5420	732	593	934	580
21	534	1280	1430	1460	3310	3690	1020	13000	717	583	1010	582
22	709	1510	1230	1440	3300	3010	1050	8130	702	700	1070	577
23	777	5050	1260	1500	3530	2590	1080	5130	689	856	1020	568
24	737	5210	1250	1470	3510	2440	1150	3630	687	877	882	559
25	667	4490	1220	1450	3130	2300	970	2900	744	750	815	551
26	623	3300	1080	1450	2770	2190	955	2550	687	685	756	542
27	590	2750	974	1560	2820	2030	967	2350	679	1390	711	543
28	553	2600	1020	1380	2880	1850	955	2270	666	969	695	548
29	527	6570	987	1140	---	1710	980	2290	653	863	655	560
30	507	15000	928	800	---	1610	947	2080	675	740	626	552
31	501	---	897	850	---	1510	---	1840	---	661	580	---
TOTAL	16683	305772	83236	29236	85840	142270	33774	71076	28118	23124	21760	22991
MEAN	538	10190	2685	943	3066	4589	1126	2293	937	746	702	766
MAX	777	102000	15200	1560	6550	30100	1440	13000	1570	1390	1070	1840
MIN	459	532	897	500	900	1510	947	811	653	583	573	542
(*)	-80	+627	+8	-3	-5	+5	+3	-3	-109	-141	-187	-133
MEAN†	458	10820	2693	940	3061	4594	1129	2290	828	605	515	633
CFSM†	.22	5.21	1.30	.45	1.48	2.21	.54	1.10	.40	.29	.25	.31
IN.†	.25	5.82	1.50	.52	1.54	2.55	.61	1.27	.45	.34	.29	.34

CAL YR 1985 TOTAL 980874 MEAN 2687 MAX 102000 MIN 459 MEAN† 2687 CFSM† 1.29 IN.† 17.58
WTR YR 1986 TOTAL 863880 MEAN 2367 MAX 102000 MIN 459 MEAN† 2364 CFSM† 1.14 IN.† 15.47

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

JAMES RIVER BASIN

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02019500 JAMES RIVER AT BUCHANAN, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1948, 1951-56, 1968 to August 1986 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1952 to September 1956, April 1968 to August 1986 (discontinued).

WATER TEMPERATURE: October 1947 to September 1948, May 1951 to September 1956, April 1968 to August 1986 (discontinued).

SUSPENDED-SEDIMENT DISCHARGE: May 1951 to September 1956.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 945 microsiemens, Sept. 27, 1954; minimum daily, 67 microsiemens, Oct. 20, 1975, Oct. 10, 1976.

WATER TEMPERATURE: Maximum daily, 31.0°C, July 5, 1955, July 17, 21, 1980; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 550 microsiemens, Oct. 1; minimum daily, 95 microsiemens, Mar. 15.

WATER TEMPERATURE: Maximum daily, 30.5°C, July 21; minimum daily, 1.0°C, Dec. 21, Jan. 28.

WATER QUALITY DATA, OCTOBER 1985 TO MAY 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
OCT										
03...	1015	613	355	358	7.60	7.40	17.0	745	25	7.9
NOV										
25...	1055	4440	160	170	7.60	7.90	10.0	750	40	11.1
JAN										
06...	1100	824	360	368	7.80	8.10	1.5	740	20	12.8
FEB										
12...	1000	4060	175	188	7.35	8.00	3.0	742	10	10.8
APR										
15...	1015	1060	295	312	7.90	8.00	14.0	736	20	9.9
MAY										
16...	1000	983	345	354	8.00	7.70	17.5	744	20	8.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT									
03...	84	120	24	38	7.0	23	4.0	100	46
NOV									
25...	100	61	13	19	3.4	6.0	1.6	48	14
JAN									
06...	94	130	31	39	6.8	23	3.0	94	20
FEB									
12...	82	66	16	20	3.9	6.9	2.9	50	15
APR									
15...	100	110	20	34	6.2	18	2.5	90	20
MAY									
16...	95	110	29	36	5.7	22	2.7	84	29

JAMES RIVER BASIN

02019500 JAMES RIVER AT BUCHANAN, VA--Continued

WATER QUALITY DATA, OCTOBER 1985 TO MAY 1986

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 03...	18	0.10	3.7	215	200	<0.010	0.200	1.20	23
NOV 25...	8.0	<0.10	6.0	91	87	<0.010	0.280	0.170	58
JAN 06...	38	0.10	3.5	194	190	0.010	0.220	0.440	38
FEB 12...	13	<0.10	4.9	102	97	0.020	0.270	0.020	44
APR 15...	22	<0.10	2.3	171	160	0.010	<0.100	0.490	36
MAY 16...	36	0.10	4.5	197	190	0.010	0.260	0.020	33

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), OCTOBER 1985 TO AUGUST 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	550	---	---	265	290	215	280	---	263	440	445
2	400	---	---	285	320	215	295	370	280	---	430
3	380	---	---	260	310	240	300	358	300	425	433
4	400	---	---	260	320	240	---	338	323	395	---
5	410	---	---	265	180	239	310	330	323	405	500
6	420	---	---	---	170	258	300	350	350	420	510
7	---	---	400	260	180	---	---	370	340	425	520
8	470	---	345	290	---	250	340	360	280	425	500
9	470	---	401	281	160	270	335	384	350	440	440
10	470	---	380	300	182	271	340	380	310	---	423
11	510	---	375	275	190	285	320	370	---	480	430
12	530	---	380	259	188	260	360	380	360	478	418
13	---	---	370	239	196	280	315	375	360	480	470
14	---	---	375	240	208	239	335	382	---	463	---
15	---	---	360	225	218	95	335	362	397	495	---
16	---	---	335	220	220	120	340	360	397	460	---
17	---	---	355	380	240	---	360	339	405	478	---
18	---	---	360	420	260	135	365	310	418	490	---
19	---	---	339	378	240	160	330	280	420	493	---
20	---	---	340	360	205	170	330	260	---	418	---
21	---	---	339	350	202	185	340	120	405	470	---
22	---	---	330	300	210	179	370	140	385	455	---
23	---	---	340	284	200	215	380	160	405	440	---
24	---	---	320	298	200	245	---	170	---	445	---
25	---	---	310	280	200	235	---	200	425	450	---
26	---	---	305	276	210	250	---	225	445	395	---
27	---	---	310	276	205	255	340	240	420	380	---
28	---	---	299	300	220	250	---	245	425	---	---
29	---	---	285	---	---	260	358	233	405	398	---
30	---	---	279	---	---	265	360	235	450	408	---
31	---	---	200	310	---	279	---	255	---	420	---
MEAN	455	---	337	291	219	226	335	296	371	442	460
WTR YR 1986	MEAN	327	MAX	550	MIN	95					

JAMES RIVER BASIN

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02019500 JAMES RIVER AT BUCHANAN, VA--Continued

TEMPERATURE, WATER (DEG. C), OCTOBER 1985 TO AUGUST 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	19.5	---	---	3.0	3.0	5.0	18.0	---	24.0	26.0	27.5
2	18.0	---	---	3.0	5.0	5.0	18.0	16.0	24.5	---	28.0
3	18.0	---	---	4.0	6.0	6.0	17.5	18.5	23.0	26.0	27.0
4	20.0	---	---	4.5	6.0	6.0	---	18.5	21.0	26.0	---
5	18.5	---	---	4.0	7.0	6.5	19.0	17.0	24.5	27.0	27.0
6	17.5	---	7.0	---	7.5	6.0	18.0	20.5	25.0	28.5	26.0
7	---	---	---	3.5	6.5	---	---	22.0	26.5	29.0	27.5
8	17.0	---	7.5	3.0	---	5.0	18.0	23.5	26.0	29.5	27.0
9	18.0	---	8.0	3.0	7.0	7.0	14.5	20.5	26.5	28.5	26.5
10	18.5	---	8.5	3.0	7.0	10.0	12.5	20.5	24.5	---	27.0
11	18.5	---	9.0	2.5	5.5	12.0	12.0	21.5	---	28.0	25.0
12	17.5	---	9.5	3.5	4.0	11.0	18.0	21.0	26.5	28.5	24.5
13	---	---	7.5	2.5	3.0	10.0	14.0	18.5	26.0	29.0	24.0
14	---	---	6.5	2.5	2.0	10.0	14.0	17.0	---	29.0	---
15	---	---	6.0	3.5	2.5	10.5	15.5	15.0	26.0	27.5	---
16	---	---	5.0	3.5	4.0	8.5	13.5	20.0	26.5	28.0	---
17	---	---	5.0	3.0	5.0	---	12.0	22.0	25.0	28.5	---
18	---	---	2.5	5.0	6.5	8.5	14.5	23.0	26.5	29.0	---
19	---	---	3.0	6.0	7.5	8.5	15.5	22.0	27.5	30.0	---
20	---	---	2.0	5.0	8.5	9.5	17.0	20.5	---	30.0	---
21	---	---	1.0	5.5	9.5	9.0	17.0	17.0	24.5	30.5	---
22	---	---	1.5	5.5	8.0	8.5	15.5	16.5	26.5	29.0	---
23	---	---	3.0	5.5	7.0	9.0	14.5	16.0	26.5	29.0	---
24	---	---	4.0	5.0	6.0	10.5	---	18.0	---	28.0	---
25	---	---	3.0	4.5	5.5	10.5	---	17.5	26.5	29.0	---
26	---	---	1.5	4.5	4.0	13.0	---	18.0	26.0	27.5	---
27	---	---	2.0	2.0	4.5	14.0	19.5	17.5	27.0	27.5	---
28	---	---	2.5	1.0	5.5	13.5	---	18.5	28.0	---	---
29	---	---	3.0	---	---	15.0	22.5	21.0	28.5	27.5	---
30	---	---	2.5	---	---	14.5	22.5	22.0	29.0	27.5	---
31	---	---	3.0	2.0	---	16.5	---	23.0	---	27.5	---
MEAN	18.5	---	4.5	3.5	5.5	9.5	16.5	19.5	26.0	28.5	26.5
WTR YR 1986	MEAN	15.0		MAX	30.5	MIN	1.0				

02020500 CALFPASTURE RIVER ABOVE MILL CREEK, AT GOSHEN, VA

LOCATION.--Lat 37°59'16", long 79°29'38", Rockbridge County, Hydrologic Unit 02080202, on left bank 20 ft upstream from bridge on State Highway 42 at Goshen and 400 ft upstream from Mill Creek.

DRAINAGE AREA.--144 mi².

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,384.84 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20, 21, Jan. 8, 14, 28, 29, and Feb. 14, 15. Records good except those for periods with ice effect, Dec. 20, 21, Jan. 8, 14, 28, 29, and Feb. 14, 15, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--48 years, 165 ft³/s, 15.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,300 ft³/s, Nov. 4, 1985, gage height, 20.23 ft, from rating curve extended above 9,200 ft³/s on basis of slope-area measurements of gage heights 12.78 ft and 20.23 ft; no flow Sept. 5, 6, 1957, Sept. 28, 1959, result of diversion.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2400	*56,300	*20.23	Mar. 15	0600	5,960	8.29

Minimum discharge, 0.36 ft³/s, Jan. 14, gage height, 1.17 ft, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	28	1050	61	29	138	58	56	40	16	7.2	9.1
2	19	306	748	58	27	124	55	52	38	21	6.7	20
3	25	1080	550	51	30	122	52	48	38	23	6.1	28
4	21	11800	413	44	69	112	49	45	34	22	6.0	27
5	20	21900	333	41	153	103	47	42	31	18	4.3	24
6	14	2100	287	36	193	97	47	40	29	15	5.0	20
7	10	927	240	25	206	94	56	39	29	14	6.1	14
8	12	560	201	15	194	76	68	36	35	12	6.5	12
9	12	381	178	16	201	78	82	33	41	11	5.0	10
10	13	290	156	16	225	74	81	32	36	11	4.7	9.3
11	15	225	140	15	242	87	75	30	32	10	15	8.1
12	15	177	138	14	205	152	68	28	29	8.8	13	8.1
13	15	141	144	16	157	184	61	31	25	7.5	8.9	6.8
14	17	120	157	8.2	133	506	56	34	24	7.7	6.0	5.8
15	21	107	158	9.6	111	3740	53	32	22	8.0	4.7	5.1
16	17	96	168	11	98	1440	60	30	20	7.6	6.0	5.4
17	18	95	164	10	94	899	67	32	18	7.1	11	6.0
18	18	86	153	7.9	137	653	67	83	16	6.7	10	5.7
19	21	78	138	14	297	510	69	59	14	6.8	14	5.0
20	19	72	122	35	350	384	74	95	14	6.2	18	5.1
21	35	69	100	39	309	279	101	346	12	6.2	18	5.9
22	53	395	109	41	271	212	109	308	11	10	14	6.7
23	53	1060	102	40	259	174	101	196	11	11	11	5.7
24	47	633	100	37	233	146	93	134	11	21	11	6.2
25	42	425	96	35	235	118	88	94	11	12	8.0	5.8
26	38	320	79	38	205	100	85	73	8.7	12	5.9	5.7
27	36	275	83	40	201	88	78	68	8.0	11	9.2	5.6
28	32	324	75	23	174	81	70	69	8.2	15	17	5.3
29	29	854	71	28	---	73	69	55	13	12	12	7.5
30	28	1280	65	32	---	67	62	50	13	10	8.1	8.2
31	27	---	64	31	---	62	---	47	---	8.3	6.0	---
TOTAL	754	46204	6582	887.7	5038	10973	2101	2317	671.9	367.9	284.4	297.1
MEAN	24.3	1540	212	28.6	180	354	70.0	74.7	22.4	11.9	9.17	9.90
MAX	53	21900	1050	61	350	3740	109	346	41	23	18	28
MIN	10	28	64	7.9	27	62	47	28	8.0	6.2	4.3	5.0
CFSM	.17	10.7	1.47	.20	1.25	2.46	.49	.52	.16	.08	.06	.07
IN.	.19	11.94	1.70	.23	1.30	2.83	.54	.60	.17	.10	.07	.08
CAL YR 1985	TOTAL	91521	MEAN	251	MAX	21900	MIN	10	CFSM	1.74	IN.	23.64
WTR YR 1986	TOTAL	76478.0	MEAN	210	MAX	21900	MIN	4.3	CFSM	1.46	IN.	19.76

02021500 MAURY RIVER AT ROCKBRIDGE BATHS, VA

LOCATION.--Lat 37°54'26", long 79°25'20", Rockbridge County, Hydrologic Unit 02080202, on right bank at Rockbridge Baths, 1,200 ft upstream from bridge on State Highway 39, and 1.0 mi upstream from Hays Creek.

DRAINAGE AREA.--329 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River at Rockbridge Baths.

REVISED RECORDS.--WSP 972: 1929-40, 1941(M). WSP 1002: 1930(m). WSP 1553: 1931(m).

GAGE.--Water-stage recorder. Datum of gage is 1,100.33 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharges: June 1-19 and Aug. 8-14. Records good except those for periods of no gage-height record, June 1-19 and Aug. 8-14, which are fair. Since 1966, some regulation at times by Lake Merriweather on Little Calpasture River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--58 years, 377 ft³/s, 15.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,700 ft³/s, Nov. 5, 1985, gage height, 19.19 ft, from floodmark, from rating curve extended above 16,000 ft³/s on basis of slope-area measurement at peak flow; minimum, 5.8 ft³/s, Sept. 10, 1966, gage height, 0.79 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0330	*87,700	*a19.19	Mar. 15	0800	11,500	9.05

a From floodmark.

Minimum discharge, 13 ft³/s, Aug. 6, gage height, 0.93 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	58	2390	117	123	409	214	117	100	44	17	22
2	123	533	1670	109	126	381	207	107	87	53	16	30
3	136	1910	1160	109	141	376	197	98	80	56	16	45
4	136	12900	880	108	287	360	183	94	74	49	16	69
5	107	41500	725	105	449	337	156	91	68	43	14	77
6	73	4420	624	99	470	334	153	88	64	38	13	88
7	68	2010	522	107	533	340	169	85	62	35	16	79
8	84	1190	446	93	532	307	165	82	68	32	17	63
9	91	814	394	98	548	301	160	77	66	30	18	52
10	100	636	351	96	567	297	154	73	62	30	19	47
11	110	517	322	90	614	308	147	71	60	30	21	43
12	92	428	302	95	538	360	139	66	62	27	26	41
13	66	347	343	97	431	379	129	77	56	26	24	38
14	79	286	388	83	381	952	122	101	49	23	22	35
15	84	265	362	93	377	7820	119	88	45	22	20	33
16	59	252	365	79	333	2660	152	79	42	21	20	30
17	65	210	358	87	325	1550	176	80	39	21	21	27
18	96	229	304	89	436	1070	165	146	37	20	25	26
19	72	190	242	109	676	852	146	142	35	19	38	26
20	59	208	223	195	738	701	151	199	34	18	44	27
21	73	263	217	170	659	571	191	561	33	16	51	27
22	111	770	204	154	600	483	211	452	33	19	45	26
23	113	1890	217	148	644	430	196	322	32	22	39	25
24	98	1140	210	139	587	394	181	241	33	38	43	24
25	86	786	207	134	574	356	174	190	34	31	35	24
26	76	619	170	145	521	332	172	161	32	34	28	23
27	70	553	166	155	516	315	163	152	29	32	27	22
28	64	647	135	141	464	296	149	169	28	31	32	22
29	60	2050	128	128	---	266	142	146	33	26	28	22
30	56	3050	118	131	---	239	129	124	36	23	24	22
31	56	---	117	124	---	226	---	124	---	20	22	---
TOTAL	2646	80671	14260	3627	13190	24002	4912	4603	1513	929	797	1135
MEAN	85.4	2689	460	117	471	774	164	148	50.4	30.0	25.7	37.8
MAX	136	41500	2390	195	738	7820	214	561	100	56	51	88
MIN	56	58	117	79	123	226	119	66	28	16	13	22
CFSM	.26	8.17	1.40	.36	1.43	2.35	.50	.45	.15	.09	.08	.11
IN.	.30	9.12	1.61	.41	1.49	2.71	.56	.52	.17	.09	.09	.13
CAL YR 1985	TOTAL	184213	MEAN	505	MAX	41500	MIN	34	CFSM	1.53	IN.	20.83
WTR YR 1986	TOTAL	152285	MEAN	417	MAX	41500	MIN	13	CFSM	1.27	IN.	17.22

02022500 KERRS CREEK NEAR LEXINGTON, VA

LOCATION.--Lat 37°49'32", long 79°26'36", Rockbridge County, Hydrologic Unit 02080202, on right bank 100 ft upstream from bridge on Interstate Highway 64, 1.4 mi upstream from mouth, and 2.9 mi north of Lexington.

DRAINAGE AREA.--35.0 mi².

PERIOD OF RECORD.--October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1203: 1927-29, 1930-34(M), 1935-40, 1941(M), 1942, 1943-48(M), 1949. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 980.32 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Jan. 27, 1927, to Sept. 30, 1953, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 22 and Jan. 9, 28, 29. Records good except those for periods with ice effect, Dec. 22 and Jan. 9, 28, 29, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--60 years, 35.6 ft³/s, 13.81 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft³/s, Sept. 10, 1950, gage height, 13.8 ft, from flood-marks, site and datum then in use, from rating curve extended above 800 ft³/s on basis of contracted-opening and slope-area measurements of peak flow; minimum, 0.90 ft³/s, July 22, 1966 (result of temporary dam upstream); minimum daily, 4.0 ft³/s many days in August and September 1932, Nov. 21, 1938, July 22, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 3	1345	781	5.32	Nov. 30	0600	1,080	5.82
Nov. 4	1615	*9,450	*11.37	Mar. 14	1945	2,410	7.22

Minimum daily discharge, 7.2 ft³/s, Aug. 31, Sept. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	34	184	15	16	34	22	12	13	14	7.9	7.6
2	9.7	196	118	15	17	32	22	11	13	11	7.7	9.6
3	10	356	82	15	18	32	21	11	12	10	7.7	9.5
4	9.8	2890	66	15	38	31	20	11	11	9.0	7.6	11
5	9.4	1000	56	15	35	30	20	11	11	8.6	7.5	10
6	8.9	208	50	14	32	29	20	11	10	8.3	7.6	11
7	8.5	111	43	14	56	27	19	11	11	8.1	8.0	8.9
8	8.1	75	39	13	51	25	18	11	19	8.1	7.6	8.3
9	8.0	56	35	12	49	25	18	11	11	8.5	7.4	8.0
10	7.8	46	32	14	48	25	17	11	10	8.9	7.6	8.0
11	7.6	39	30	14	63	25	17	10	11	8.7	8.5	7.9
12	7.5	34	29	14	54	24	16	10	11	8.6	8.0	7.9
13	7.5	31	33	13	44	25	16	15	9.7	9.0	7.6	7.6
14	7.5	28	30	13	40	416	15	15	9.4	8.9	7.7	7.5
15	7.5	25	27	13	38	392	16	12	9.2	8.9	7.6	7.3
16	7.9	25	26	13	34	141	17	12	9.0	8.6	7.4	7.3
17	7.7	25	25	13	34	92	16	12	8.6	8.6	9.0	7.3
18	8.0	22	24	14	40	71	15	11	8.3	8.7	9.2	7.4
19	10	20	22	17	45	61	14	13	8.2	8.8	11	7.7
20	12	19	21	21	43	51	14	51	8.4	8.8	11	7.8
21	24	18	21	17	40	44	17	56	8.4	9.2	12	7.7
22	28	72	20	16	41	39	15	30	8.2	11	9.6	7.5
23	22	64	21	16	51	36	14	22	8.5	20	8.7	7.4
24	17	46	21	15	47	33	13	18	11	21	8.3	7.3
25	15	38	20	16	43	31	13	17	9.0	10	7.7	7.3
26	14	34	18	17	41	29	13	16	8.3	10	7.7	7.2
27	14	31	18	17	40	28	13	19	8.1	9.7	7.6	7.3
28	15	92	17	14	37	26	12	19	8.1	8.9	7.8	7.4
29	16	160	16	15	---	25	13	16	10	8.4	7.4	7.3
30	16	488	16	16	---	24	12	15	8.9	8.2	7.3	7.3
31	20	---	15	16	---	23	---	14	---	8.1	7.2	---
TOTAL	372.7	6283	1175	462	1135	1926	488	514	302.3	306.6	254.9	241.3
MEAN	12.0	209	37.9	14.9	40.5	62.1	16.3	16.6	10.1	9.89	8.22	8.04
MAX	28	2890	184	21	63	416	22	56	19	21	12	11
MIN	7.5	18	15	12	16	23	12	10	8.1	8.1	7.2	7.2
CFSM	.34	5.97	1.08	.43	1.16	1.77	.47	.47	.29	.28	.23	.23
IN.	.40	6.68	1.25	.49	1.21	2.05	.52	.55	.32	.33	.27	.26
CAL YR 1985	TOTAL	15853.2	MEAN	43.4	MAX	2890	MIN	7.5	CFSM	1.24	IN.	16.85
WTR YR 1986	TOTAL	13460.8	MEAN	36.9	MAX	2890	MIN	7.2	CFSM	1.05	IN.	14.31

02024000 MAURY RIVER NEAR BUENA VISTA, VA

LOCATION.--Lat 37°45'45", long 79°23'30", Rockbridge County, Hydrologic Unit 02080202, on right bank 0.5 mi downstream from South River and 2.8 mi northwest of Buena Vista.

DRAINAGE AREA.--646 mi².

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1945, published as North River near Buena Vista.

REVISED RECORDS.--WSP 952: 1940-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 846.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Since 1966, some regulation at times by Lake Merriweather on Little Calpasture River. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--48 years, 661 ft³/s, 13.90 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 105,000 ft³/s, Aug. 20, 1969, gage height, 31.23 ft, from flood-marks, from rating curve extended above 17,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 20 ft³/s, Oct. 10, 1941, occurred during filling of a small reservoir 2 mi upstream; unqualified minimum, 37 ft³/s, Sept. 9, 1966; minimum gage height, 0.98 ft, Jan. 5, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0700	*72,100	*26.30	Mar. 15	1130	11,900	11.16

Minimum discharge, 72 ft³/s, July 21; minimum gage height, 1.12 ft, July 15, 17, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	237	3990	319	269	709	434	313	299	154	86	117
2	198	1110	2770	299	273	662	421	296	259	165	85	152
3	249	2910	2050	294	294	643	405	277	227	159	86	170
4	244	17200	1620	292	411	629	388	265	208	136	89	195
5	224	41200	1360	285	600	601	363	256	195	123	87	215
6	185	7270	1190	274	658	576	351	248	183	114	88	205
7	157	3340	1020	273	765	578	361	242	176	107	93	190
8	159	2160	896	248	792	540	356	234	197	101	83	162
9	166	1540	804	240	787	520	339	225	194	97	86	141
10	190	1240	730	267	813	515	336	218	183	95	89	127
11	178	1020	687	258	936	519	328	213	173	95	100	116
12	203	877	645	250	868	536	316	204	177	92	108	111
13	169	760	667	253	731	588	303	236	155	87	105	108
14	152	659	713	231	654	1050	292	307	143	83	98	104
15	172	587	655	246	645	8680	293	255	137	77	97	103
16	163	583	640	226	594	3890	358	231	131	78	96	102
17	140	527	628	232	565	2290	364	231	126	78	122	99
18	157	483	594	233	650	1690	368	258	119	117	126	97
19	175	477	496	263	903	1390	333	319	114	89	132	96
20	156	440	470	360	1060	1170	327	347	112	77	166	95
21	213	470	470	356	993	980	368	737	109	75	183	97
22	280	829	422	318	937	846	401	675	108	110	173	94
23	271	2240	473	309	1010	761	378	522	108	89	148	88
24	237	1610	447	296	949	701	358	428	120	166	164	84
25	212	1180	451	287	925	642	347	364	122	129	141	86
26	191	956	357	300	858	602	344	325	108	138	123	86
27	177	860	391	315	840	573	332	315	102	197	115	85
28	169	1060	355	234	785	543	318	332	97	125	131	86
29	159	3300	331	270	---	515	351	317	147	109	143	86
30	153	4870	314	285	---	472	330	275	140	97	125	85
31	154	---	310	275	---	453	---	411	---	87	119	---
TOTAL	5784	101995	26946	8588	20565	34864	10563	9876	4669	3446	3587	3582
MEAN	187	3400	869	277	734	1125	352	319	156	111	116	119
MAX	280	41200	3990	360	1060	8680	434	737	299	197	183	215
MIN	131	237	310	226	269	453	292	204	97	75	83	84
CFSM	.29	5.26	1.35	.43	1.14	1.74	.54	.49	.24	.17	.18	.18
IN.	.33	5.87	1.55	.49	1.18	2.01	.61	.57	.27	.20	.21	.21
CAL YR 1985	TOTAL	287548	MEAN	788	MAX	41200	MIN	116	CFSM	1.22	IN.	16.56
WTR YR 1986	TOTAL	234465	MEAN	642	MAX	41200	MIN	75	CFSM	.99	IN.	13.50

JAMES RIVER BASIN

02025500 JAMES RIVER AT HOLCOMBS ROCK, VA

LOCATION.--Lat 37°30'04", long 79°15'46", Bedford County, Hydrologic Unit 02080203, on right bank at Holcombs Rock, 0.9 mi downstream from Pedlar River, and at mile 268.6.

DRAINAGE AREA.--3,259 mi².

PERIOD OF RECORD.--January 1900 to September 1915 (gage heights only), October 1926 to current year. Monthly discharge only for some periods, published in WSP 1303. Published as "at Salt Creek" December 1926 to June 1931.

REVISED RECORDS.--WSP 972: 1913(M), 1932-33, 1935(M), 1936. WSP 1303: 1928(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 548.53 ft above National Geodetic Vertical Datum of 1929. January 1900 to September 1915, nonrecording gage in powerhouse of Owens Illinois Glass Company 1,000 ft upstream at different datum. December 1926 to June 1931, water-stage recorder at site 2 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 5-9. Records good except for period of no gage-height record, Nov. 5-9, which is fair. Some diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 117.4 mi upstream; since October 1984 by Back Creek Lake 145.4 mi upstream; and since January 1985 by Little Back Creek Lake 148.5 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--60 years, 3,591 ft³/s, 14.96 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 207,000 ft³/s, Nov. 5, 1985, gage height, 42.15 ft, from high-water mark in gage house, from rating curve extended above 73,000 ft³/s on basis of records for other stations in James River basin; minimum, 71 ft³/s, Oct. 24, 1963; minimum daily, 223 ft³/s, July 28, 1930; minimum gage height, 2.91 ft, Oct. 5, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 31.3 ft, from floodmarks, discharge, 118,000 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 25,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	a1530	*207,000	*b42.15	Mar. 15	1900	45,000	19.33
Dec. 1	0445	26,400	14.81				

a About.

b From high-water mark.

Minimum discharge, 83 ft³/s, Sept. 29; minimum daily, 650 ft³/s, Sept. 18.

JAMES RIVER BASIN

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02025500 JAMES RIVER AT HOLCOMBS ROCK, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	827	1050	22900	1750	1900	3980	2170	1690	2160	1020	658	698		
2	815	4590	15300	1750	1850	3330	2120	1720	1950	1160	750	975		
3	1110	13500	11100	1720	1870	3230	2060	1550	1670	1280	797	1060		
4	1020	51600	8160	1680	2210	3120	1990	1450	1660	1110	781	1290		
5	987	180000	6740	1720	5110	3060	1950	1480	1560	1070	841	2140		
6	918	86000	5930	1720	5710	2940	1920	1410	1460	1070	820	2090		
7	839	35800	5220	1630	5770	2820	1920	1360	1410	1000	856	1850		
8	745	22300	4450	1410	7280	2700	1890	1480	1420	981	1010	1570		
9	750	12000	4010	1340	6670	2610	1900	1420	1540	939	731	1370		
10	854	7510	3450	1390	5270	2520	1840	1410	1720	686	715	1240		
11	800	6160	3140	1420	5310	2500	1850	1410	1530	888	876	1150		
12	805	5040	2970	1490	5630	2520	1840	1230	1470	918	962	1040		
13	790	4240	3030	1460	5070	2810	1740	1340	1210	923	743	1010		
14	808	3790	3080	1420	4430	3700	1710	1750	1240	903	883	970		
15	803	3430	3110	1380	3980	30000	1580	1690	1200	932	850	831		
16	764	3160	3120	1490	3510	31300	1950	1680	1150	937	690	935		
17	750	2910	3190	1280	3300	17700	1870	1620	1130	687	772	849		
18	753	2740	3100	1360	3410	13600	1680	1840	1090	791	935	650		
19	804	2630	2710	1490	3870	10500	1760	2220	1050	833	1040	753		
20	847	2480	2580	1770	4730	7050	1670	3050	1040	807	1320	869		
21	896	2410	2490	2250	5030	5450	1700	13400	1050	761	1680	823		
22	1330	2810	2260	2300	4840	4590	1780	9470	1040	870	1510	785		
23	1440	5800	2210	2280	5080	3850	1720	6520	983	1110	1200	811		
24	1300	8200	2280	2260	5200	3580	1780	4570	748	1240	1110	762		
25	1090	6970	2270	2240	4870	3270	1730	3600	1010	1350	1370	736		
26	1070	5690	2130	2240	4340	3130	1640	3010	958	1000	832	799		
27	989	4450	1860	2310	4160	2950	1640	2870	984	1290	1040	678		
28	942	4200	1930	2260	4260	2740	1580	2720	970	1580	1000	800		
29	1040	8580	1900	1910	---	2580	1690	2690	889	1170	838	676		
30	780	18100	1870	1940	---	2350	1700	2510	864	998	1020	850		
31	776	---	1650	1960	---	2300	---	2400	---	973	670	---		
TOTAL	28442	518140	140140	54620	124660	188780	54370	86560	38156	31277	29300	31060		
MEAN	917	17270	4521	1762	4452	6090	1812	2792	1272	1009	945	1035		
MAX	1440	180000	22900	2310	7280	31300	2170	13400	2160	1580	1680	2140		
MIN	745	1050	1650	1280	1850	2300	1580	1230	748	686	658	650		
(*)	-80	+627	+8	-3	-5	+5	+3	-3	-109	-141	-187	-133		
MEAN†	837	17900	4529	1759	4447	6095	1815	2789	1163	868	758	902		
CFSM†	.26	5.49	1.39	.54	1.36	1.87	.56	.86	.36	.27	.23	.28		
IN.†	.30	6.13	1.60	.62	1.42	2.16	.62	.99	.40	.31	.27	.31		
CAL YR 1985	TOTAL	1487980	MEAN	4077	MAX	180000	MIN	736	MEAN†	4077	CFSM†	1.25	IN.†	16.99
WTR YR 1986	TOTAL	1325505	MEAN	3632	MAX	180000	MIN	650	MEAN†	3629	CFSM†	1.11	IN.†	15.12

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake, provided by U.S. Army Corps of Engineers; and for the initial storage in Back Creek Lake, provided by Virginia Power.

† Adjusted for change in contents.

02026000 JAMES RIVER AT BENT CREEK, VA

LOCATION.--Lat 37°32'10", long 78°49'30", Nelson County, Hydrologic Unit 02080203, on left bank at town of Bent Creek, 150 ft downstream from Bent Creek, 525 ft upstream from bridge on U.S. Highway 60, 1.3 mi southeast of Gladstone, and at mile 227.8.

DRAINAGE AREA.--3,683 mi².

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to 1926, published as "at Bent Creek, near Gladstone."

REVISED RECORDS.--WSP 742: 1931(m). WSP 972: 1935-36. WSP 1066: 1940. WSP 1203: 1942. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 381.39 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 12, 1930, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 5-8 and July 17. Records good except those for periods of no gage-height record, Nov. 5-8 and July 17, which are fair. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 158.3 mi upstream; since October 1984 by Back Creek Lake 186.3 mi upstream; and since January 1985 by Little Back Creek Lake 189.4 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--62 years, 4,185 ft³/s, 15.43 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 226,000 ft³/s, Nov. 5, 1985, gage height, 30.76 ft, from floodmarks, from rating curve extended above 177,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 222 ft³/s, Oct. 13, 14, 1930, gage height, 2.21 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 26,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	Unknown	*226,000	*a30.76	Mar. 16	0200	46,000	13.61

a From floodmarks.

Minimum daily discharge, 654 ft³/s, Aug. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	927	1100	24600	1880	2190	4650	3120	2000	2610	1110	925	938
2	1090	5630	17100	1940	1980	4420	2490	2090	2840	1500	795	838
3	1280	17000	12600	2000	2010	4160	2820	1940	1870	1190	785	1040
4	2020	35300	9640	2110	2310	3690	2740	1820	1890	1410	794	1590
5	1080	142000	7970	2080	3840	3680	2030	1650	1640	1160	873	2210
6	1120	112000	7040	2020	6530	3560	2470	1830	1820	1150	987	2640
7	1110	34000	6300	1840	7010	3490	2730	1530	1500	1140	1010	2080
8	1260	22200	5490	1860	7180	3140	2630	1710	1570	974	927	2110
9	888	15900	4760	1780	8340	3130	2340	1640	1750	1100	1210	2090
10	894	9380	4660	1580	6490	3380	2580	1680	1790	962	768	1490
11	1060	7630	3970	1570	6170	3100	1860	1600	2030	1010	757	1100
12	892	6260	3260	1600	6460	3070	2320	1540	2270	891	955	1370
13	1060	4500	3600	1640	6430	2810	2170	1480	1900	870	1000	1170
14	974	4670	3750	1480	5030	4550	2120	3050	1130	942	878	1260
15	1010	4180	3660	1550	5000	17800	2160	1540	1430	1070	1010	815
16	1050	3980	3840	1590	4270	37700	2550	2120	1210	891	865	808
17	830	3530	3700	1560	4280	20200	2740	1740	1430	1040	654	937
18	1020	3420	3820	1980	4630	14800	2130	1910	1200	902	866	1200
19	961	3170	3580	1420	4100	12400	2090	2710	1120	932	1160	763
20	885	3090	3030	1610	6110	8860	2000	2870	1240	929	1270	755
21	1210	2920	2740	2230	6250	7080	2320	9570	1160	778	2040	829
22	1710	3600	2830	2640	5690	5730	1990	11400	1050	1020	2150	818
23	2110	4800	2790	2980	6040	4970	2450	8380	1190	1140	1770	810
24	1670	9540	2720	2610	6140	4610	1890	5900	1190	1230	1060	780
25	1440	8090	2740	2570	6100	4400	2300	4540	821	1350	1210	1010
26	1190	7010	2690	2670	5280	4030	1790	4010	1050	1520	1710	745
27	1180	5380	2790	2660	5190	3750	1860	3460	1100	1060	818	725
28	1190	4960	1970	2670	4980	3120	2250	3570	925	1540	1050	762
29	1330	6820	2010	2670	---	3380	1840	3130	1180	1570	1120	754
30	1070	15100	2560	2480	---	3100	1960	3070	965	1380	975	744
31	1260	---	2360	1720	---	3160	---	2520	---	1210	1060	---
TOTAL	36771	507160	164570	62990	146030	209920	68740	98000	44871	34971	33452	35181
MEAN	1186	16910	5309	2032	5215	6772	2291	3161	1496	1128	1079	1173
MAX	2110	142000	24600	2980	8340	37700	3120	11400	2840	1570	2150	2640
MIN	830	1100	1970	1420	1980	2810	1790	1480	821	778	654	725
(*)	-80	+627	+8	-3	-5	+5	+3	-3	-109	-141	-187	-133
MEAN†	1106	17537	5317	2029	5210	6777	2294	3158	1387	987	892	1040
CFSM†	.30	4.76	1.44	.55	1.41	1.84	.62	.86	.38	.27	.24	.28
IN.†	.35	5.31	1.66	.64	1.47	2.12	.70	.99	.42	.31	.28	.32

CAL YR 1985 TOTAL 1646666 MEAN 4511 MAX 142000 MIN 641 MEAN† 4511 CFSM† 1.22 IN.† 16.63
WTR YR 1986 TOTAL 1442656 MEAN 3952 MAX 142000 MIN 654 MEAN† 3949 CFSM† 1.07 IN.† 14.56

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake, provided by U.S. Army Corps of Engineers; and for the initial storage in Back Creek Lake, provided by Virginia Power.

† Adjusted for change in contents.

02027000 TYE RIVER NEAR LOVINGSTON, VA

LOCATION.--Lat 37°42'55", long 78°58'55", Nelson County, Hydrologic Unit 02080203, on right bank at downstream side of bridge on State Highway 158, 3.5 mi downstream from Hat Creek, 4.8 mi upstream from Piney River, and 6.8 mi southwest of Lovingsston.

DRAINAGE AREA.--92.8 mi².

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 578.39 ft above National Geodetic Vertical Datum of 1929. Sept. 15, 1969, to Oct. 15, 1970, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec 23-25, Jan. 9, 10, 14-16, 28-30, Feb. 14-16, Apr. 11-14, May 5-13, 16, 17, 23-25, May 30 to June 28, and July 2-23. Records good except those for periods with ice effect, Dec. 23-25, Jan. 9, 10, 14-16, 28-30, and Feb. 14-16, which are fair, and those for periods of doubtful gage-height record, Apr. 11-14, May 5-13, 16, 17, 23-25, May 30 to June 28, and July 2-23, which are poor. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--48 years, 155 ft³/s, 22.68 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,000 ft³/s, Aug. 20, 1969, gage height, 29.0 ft, from flood-marks, from rating curve extended above 7,600 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.50 ft³/s, Sept. 10, 11, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0515	5,200	9.40	Nov. 4	2145	*12,700	*14.46

Minimum daily discharge, 11 ft³/s, Aug. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	210	685	114	87	149	114	92	52	52	14	24
2	51	794	572	106	87	142	111	85	47	60	13	35
3	62	1610	468	106	100	142	106	77	45	50	13	49
4	67	5760	406	105	125	138	103	73	43	38	12	90
5	65	4260	364	102	113	133	102	69	40	33	12	114
6	58	1570	329	96	114	128	100	66	40	27	12	89
7	54	1030	297	96	159	123	106	63	48	25	12	61
8	51	753	267	91	140	111	97	62	42	23	12	52
9	49	574	243	88	137	115	93	61	39	22	12	44
10	49	482	225	85	140	116	93	60	37	20	11	41
11	48	414	216	89	168	115	89	58	36	18	21	38
12	46	367	208	87	151	107	87	55	40	16	19	35
13	46	342	219	87	133	107	84	70	35	15	16	32
14	46	298	201	83	125	181	81	93	32	14	14	29
15	46	234	184	80	120	488	109	75	31	14	14	26
16	45	219	178	85	125	357	169	70	31	13	16	25
17	43	220	171	87	131	295	122	65	28	15	41	24
18	42	200	164	87	160	256	118	81	27	20	47	23
19	42	191	151	114	161	233	110	76	26	15	39	23
20	42	182	151	129	171	211	105	113	25	13	58	26
21	56	172	145	101	168	193	116	167	22	12	121	28
22	118	307	136	96	175	178	109	127	23	15	60	24
23	150	289	130	92	190	167	101	100	23	16	42	24
24	130	261	125	88	177	158	96	86	26	46	35	22
25	108	245	115	90	171	149	93	82	24	23	29	22
26	93	231	110	98	166	143	92	86	21	26	25	20
27	85	220	140	100	167	141	88	89	20	32	25	20
28	79	224	125	90	160	132	84	94	19	25	52	20
29	73	500	117	83	---	126	121	76	55	20	40	21
30	70	786	111	86	---	122	101	70	59	18	29	28
31	66	---	109	88	---	118	---	60	---	15	26	---
TOTAL	2031	22945	7062	2929	4021	5274	3100	2501	1036	751	892	1109
MEAN	65.5	765	228	94.5	144	170	103	80.7	34.5	24.2	28.8	37.0
MAX	150	5760	685	129	190	488	169	167	59	60	121	114
MIN	42	172	109	80	87	107	81	55	19	12	11	20
CFSM	.71	8.24	2.46	1.02	1.55	1.83	1.11	.87	.37	.26	.31	.40
IN.	.81	9.20	2.83	1.17	1.61	2.11	1.24	1.00	.42	.30	.36	.44
CAL YR 1985	TOTAL	70067	MEAN	192	MAX	5760	MIN	37	CFSM	2.07	IN.	28.09
WTR YR 1986	TOTAL	53651	MEAN	147	MAX	5760	MIN	11	CFSM	1.58	IN.	21.51

JAMES RIVER BASIN

02027500 PINEY RIVER AT PINEY RIVER, VA

LOCATION.--Lat 37°42'08", long 79°01'40", Nelson County, Hydrologic Unit 02080203, on left bank at upstream side of bridge on State Highway 151, 0.2 mi southwest of Piney River post office, 1.7 mi downstream from Indian Creek, and 2.5 mi southeast of Lowesville.

DRAINAGE AREA.--47.6 mi².

PERIOD OF RECORD.--July 1949 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-72-1: 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 633.58 ft above National Geodetic Vertical Datum of 1929. Prior to May 27, 1969, water-stage recorder, and Nov. 4, 1969, to Feb. 26, 1970, nonrecording gage at site 20 ft downstream from former highway bridge at same datum. Feb. 26, 1970, to Sept. 20, 1973, on right bank 20 ft upstream from bridge at same datum.

REMARKS.--Estimated daily discharges: Dec. 22-25, Jan. 9, 27-30, Feb. 14, 15, Apr. 20, 24-28, May 1-13, June 27, 28, and July 8-23. Records good except those for periods with ice effect, Dec. 22-25, Jan. 9, 27-30, and Feb. 14, 15, and periods of doubtful gage-height record, Apr. 20, 24-28, May 1-13, June 27, 28, and July 8-23, which are fair. Periodic dewatering of upstream quarries adds small amount of inflow. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--37 years, 94.4 ft³/s, 26.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s, Aug. 20, 1969, gage height, 13.8 ft, from floodmarks, from rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.1 ft³/s, Sept. 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1949 reached a stage of 9.9 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1930	*25,200	*12.63	No other peak equal to or greater than base discharge.			

Minimum daily discharge, 6.0 ft³/s, July 21, Aug. 10, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	71	399	49	40	85	61	56	49	21	7.9	8.6
2	22	401	358	47	41	81	59	47	46	26	7.3	18
3	32	1580	304	46	46	78	57	42	41	22	7.2	22
4	24	8110	262	45	58	76	55	38	39	17	6.5	61
5	20	3400	230	44	51	73	54	36	38	16	6.2	56
6	19	1100	203	42	51	70	53	35	36	15	6.5	43
7	17	608	178	42	73	68	53	34	37	13	6.5	33
8	17	425	159	39	67	61	49	33	38	12	6.5	29
9	17	325	143	38	69	60	47	32	33	10	6.2	26
10	16	260	129	40	74	59	46	31	31	9.5	6.0	23
11	16	215	118	38	89	59	45	30	31	8.5	8.4	22
12	17	184	110	38	79	56	43	28	36	8.0	7.8	20
13	17	160	117	37	73	57	42	43	29	7.5	6.5	17
14	17	145	100	36	66	96	41	55	26	7.2	6.7	16
15	17	130	92	36	64	245	53	45	25	6.8	6.5	16
16	16	121	87	36	68	223	67	42	27	6.4	6.0	14
17	16	114	82	35	68	197	49	41	26	8.4	8.4	13
18	16	100	77	35	80	175	47	64	23	12	9.5	12
19	16	94	71	49	79	159	46	67	22	8.0	11	13
20	16	88	69	53	84	140	44	90	19	7.0	21	12
21	56	84	67	43	86	125	52	111	20	6.0	27	12
22	84	151	64	43	98	113	48	108	20	7.6	17	12
23	94	154	61	41	103	104	47	99	20	9.0	12	12
24	77	153	60	40	100	96	45	89	22	32	11	11
25	63	145	58	42	97	90	44	81	21	19	9.0	10
26	55	138	55	45	95	84	43	75	17	18	7.9	9.8
27	50	132	71	40	95	79	42	76	15	25	8.2	9.9
28	46	128	53	38	89	73	41	72	14	17	18	9.9
29	42	198	51	35	---	69	66	62	24	13	14	11
30	39	392	49	37	---	67	59	56	19	10	9.4	10
31	38	---	48	41	---	65	---	53	---	9.1	8.6	---
TOTAL	1010	19306	3925	1270	2083	3083	1498	1771	844	407.0	300.7	582.2
MEAN	32.6	644	127	41.0	74.4	99.5	49.9	57.1	28.1	13.1	9.70	19.4
MAX	94	8110	399	53	103	245	67	111	49	32	27	61
MIN	16	71	48	35	40	56	41	28	14	6.0	6.0	8.6
CFSM	.68	13.5	2.67	.86	1.56	2.09	1.05	1.20	.59	.28	.20	.41
IN.	.79	15.09	3.07	.99	1.63	2.41	1.17	1.38	.66	.32	.24	.45
CAL YR 1985	TOTAL	47753	MEAN	131	MAX	8110	MIN	16	CFSM	2.75	IN.	37.32
WTR YR 1986	TOTAL	36079.9	MEAN	98.8	MAX	8110	MIN	6.0	CFSM	2.08	IN.	28.20

JAMES RIVER BASIN

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02027800 BUFFALO RIVER NEAR TYE RIVER, VA

LOCATION.--Lat 37°36'20", long 78°55'25", Nelson County, Hydrologic Unit 02080203, on right bank 35 ft upstream from bridge on State Highway 657, 2.1 mi upstream from mouth, and 3.5 mi southeast of town of Tye River.

DRAINAGE AREA.--147 mi².

PERIOD OF RECORD.--August 1960 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 444.39 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 29-31, Nov. 6-22, 25-27, Dec. 20-25, 27, Jan. 9, 10, 15, 29-31, Feb. 13-16, Apr. 25-28, May 4-12, 15-19, 21, 23-26, May 28 to June 23, 26-30, July 2, 4-16, 19-21, 24-28, and Aug. 14-17, 28, 29. Records good except those for periods with ice effect, Dec. 20-25, 27, Jan. 9, 10, 15, 29-31, and Feb. 13-16, which are fair, and those for periods of doubtful or no gage-height record, Oct. 29-31, Nov. 6-22, 25-27, Apr. 25-28, May 4-12, 15-19, 21, 23-26, May 28 to June 23, 26-30, July 2, 4-16, 19-21, 24-28, and Aug. 14-17, 28, 29, which are poor. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--26 years, 170 ft³/s, 15.70 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft³/s, Aug. 20, 1969, gage height, 27.95 ft, from flood-mark, from rating curve extended above 1,800 ft³/s on basis of computation of flow over dam at gage height 11.03 ft and slope-area measurement at gage height 27.95 ft; minimum, 3.2 ft³/s, Sept. 8-13, 1966; minimum gage height, 0.28 ft, Sept. 9-13, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 3	2215	6,750	11.43	Nov. 5	0200	*13,500	*15.26

Minimum discharge, 11 ft³/s, Aug. 6-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	110	707	141	122	149	146	111	70	40	15	20
2	40	739	571	132	110	140	143	105	65	82	14	21
3	96	2540	426	129	111	136	142	102	60	65	13	31
4	69	4600	377	127	159	132	136	98	57	47	13	79
5	51	5560	346	126	144	127	136	94	54	37	12	121
6	44	1400	320	123	134	124	136	90	55	32	12	98
7	41	800	323	124	220	116	137	85	65	25	13	72
8	40	500	378	114	194	104	131	82	57	23	18	53
9	39	380	333	110	168	107	126	80	53	20	19	45
10	40	330	241	130	156	106	120	78	50	19	16	39
11	41	290	228	138	214	107	118	77	47	19	14	35
12	40	260	222	139	208	103	117	76	52	18	16	32
13	41	240	232	116	160	99	115	120	48	16	16	30
14	41	220	224	104	148	143	114	155	45	15	21	27
15	40	215	199	100	135	473	119	130	43	14	16	25
16	39	205	191	119	130	350	219	100	42	14	14	24
17	38	205	185	126	145	297	151	94	39	20	13	22
18	37	190	177	106	162	265	133	100	35	32	14	22
19	37	180	162	117	175	249	124	120	32	24	17	21
20	38	175	165	137	294	234	118	134	30	20	27	21
21	110	170	160	118	203	210	121	180	29	14	94	22
22	191	255	160	112	183	196	117	147	32	18	63	22
23	151	352	155	109	212	189	107	125	38	21	43	21
24	99	355	150	103	191	183	103	115	40	26	32	21
25	81	300	140	103	181	174	100	105	41	50	26	21
26	68	240	132	110	166	169	94	105	30	40	22	19
27	61	210	150	118	170	166	90	124	28	36	19	18
28	58	175	159	86	162	159	88	140	27	42	44	18
29	59	200	140	90	---	154	127	100	26	24	35	18
30	57	529	137	105	---	151	120	90	25	19	28	19
31	60	---	144	120	---	149	---	78	---	17	22	---
TOTAL	1883	21925	7634	3632	4757	5461	3748	3340	1315	889	741	1037
MEAN	60.7	731	246	117	170	176	125	108	43.8	28.7	23.9	34.6
MAX	191	5560	707	141	294	473	219	180	70	82	94	121
MIN	36	110	132	86	110	99	88	76	25	14	12	13
CFSM	.41	4.97	1.67	.80	1.16	1.20	.85	.73	.30	.20	.16	.24
IN.	.48	5.55	1.93	.92	1.20	1.38	.95	.85	.33	.22	.19	.26
CAL YR 1985	TOTAL	69974	MEAN	192	MAX	5560	MIN	36	CFSM	1.31	IN.	17.71
WTR YR 1986	TOTAL	56362	MEAN	154	MAX	5560	MIN	12	CFSM	1.05	IN.	14.26

02028500 ROCKFISH RIVER NEAR GREENFIELD, VA

LOCATION.--Lat 37°52'10", long 78°49'25", Nelson County, Hydrologic Unit 02080203, on left bank 50 ft downstream from bridge on State Highway 634, 2.8 mi downstream from confluence of North and South Forks, and 4.1 mi south of Greenfield.

DRAINAGE AREA.--94.6 mi².

PERIOD OF RECORD.--April 1943 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 530.29 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 21, 1943, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 2-14, 25-27, Dec. 23-26, Jan. 9, 29, 30, and Feb. 13, 14. Records good except those for periods of no gage-height record, Nov. 2-14, 25-27, and periods with ice effect, Dec. 23-26, Jan. 9, 29, 30, and Feb. 13, 14, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--43 years, 141 ft³/s, 20.24 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,000 ft³/s, Aug. 20, 1969, gage height, 31.2 ft, from floodmarks, from rating curve extended above 8,500 ft³/s on basis of contracted-opening measurement at gage height 18.11 ft, slope-area measurements at gage heights 17.2 ft, 23.4 ft, and 31.2 ft, and peak runoff comparison with nearby stations; minimum, 0.20 ft³/s, Sept. 8-12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.4 ft, from floodmarks, discharge, about 30,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 1	2400	1,890	a5.80	Nov. 30	1030	1,550	5.15
Nov. 4	Unknown	*9,970	*b13.24				

a About.

b From high-water mark.

Minimum discharge, 6.4 ft³/s, Aug. 10, gage height, 0.11 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	603	781	110	77	124	101	70	39	33	11	28
2	35	1300	621	108	79	119	101	67	37	34	10	44
3	50	1600	493	104	84	117	95	63	35	29	10	55
4	43	5000	413	95	110	115	94	61	34	21	11	60
5	39	3500	371	94	104	112	95	60	33	19	11	66
6	35	1500	334	87	106	108	92	58	34	17	9.2	61
7	34	900	292	87	161	103	97	56	34	16	9.2	52
8	33	700	264	84	144	97	88	53	35	14	8.0	47
9	33	540	239	86	140	101	87	49	33	12	7.6	43
10	33	420	214	92	142	101	84	49	28	12	7.6	36
11	33	360	200	87	175	99	82	48	28	12	11	34
12	33	310	188	84	155	97	82	46	28	12	9.2	32
13	33	270	197	82	130	103	82	58	25	10	8.4	28
14	34	240	181	76	112	196	77	76	22	8.8	8.8	26
15	33	209	164	74	126	434	98	61	21	8.0	8.8	25
16	31	209	159	76	119	332	172	56	21	8.0	38	24
17	31	195	150	77	119	278	122	53	20	9.2	108	23
18	30	179	144	77	132	236	117	54	19	22	43	22
19	31	168	132	90	142	209	110	54	19	12	48	23
20	32	159	130	101	150	183	104	58	18	8.8	89	26
21	115	148	128	92	146	164	110	74	18	7.6	168	26
22	212	393	126	88	150	150	104	64	16	16	79	25
23	194	304	120	84	157	144	97	55	15	18	52	24
24	122	262	118	82	148	136	92	53	16	22	52	22
25	94	240	115	84	142	128	90	52	16	65	37	22
26	80	230	105	92	136	122	87	52	15	28	31	20
27	69	220	115	95	140	121	80	52	15	29	32	20
28	66	212	115	80	134	117	77	53	13	28	56	21
29	61	625	115	78	---	112	82	47	25	18	42	22
30	58	997	112	74	---	108	73	44	21	15	33	22
31	59	---	110	77	---	104	---	41	---	13	29	---
TOTAL	1819	21993	6946	2697	3660	4670	2872	1737	733	577.4	1077.8	979
MEAN	58.7	733	224	87.0	131	151	95.7	56.0	24.4	18.6	34.8	32.6
MAX	212	5000	781	110	175	434	172	76	39	65	168	66
MIN	30	148	105	74	77	97	73	41	13	7.6	7.6	20
CFSM	.62	7.75	2.37	.92	1.38	1.60	1.01	.59	.26	.20	.37	.34
IN.	.72	8.65	2.73	1.06	1.44	1.84	1.13	.68	.29	.23	.42	.38
CAL YR 1985	TOTAL	61753	MEAN	169	MAX	5000	MIN	26	CFSM	1.79	IN.	24.28
WTR YR 1986	TOTAL	49761.2	MEAN	136	MAX	5000	MIN	7.6	CFSM	1.44	IN.	19.57

02029000 JAMES RIVER AT SCOTTSVILLE, VA

LOCATION.--Lat 37°47'50", long 78°29'30", Albemarle County, Hydrologic Unit 02080203, on left bank 900 ft downstream from bridge on State Highway 20 at Scottsville, 6.8 mi upstream from Hardware River, and at mile 188.6.

DRAINAGE AREA.--4,584 mi².

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 727: 1931(M). WSP 972: 1936(M), 1940(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 253.18 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 28, 1928, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 5-8, May 7, 8, and Sept. 8, 9. Records good except those for periods of no gage-height record, Nov. 5-8, May 7, 8, and Sept. 8, 9, which are fair. Large diurnal fluctuation caused by powerplants upstream from station. Flow regulated since December 1979 by Moomaw Lake (station 02011795) 197.5 mi upstream; since October 1984 by Back Creek Lake 225.5 mi upstream; and since January 1985 by Little Back Creek Lake 228.6 mi upstream, amount unknown. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--62 years, 5,159 ft³/s, 15.28 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301,000 ft³/s, June 22, 1972, gage height, 34.02 ft, from floodmarks, from rating curve extended above 120,000 ft³/s on basis of slope-conveyance study; minimum daily, 300 ft³/s, Sept. 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1870 reached a stage of 30.7 ft, discharge, about 215,000 ft³/s, and flood in November 1877 reached a stage of 27.9 ft, discharge, about 160,000 ft³/s, from information by local resident. Flood in March 1913 reached a stage of 25.16 ft, from floodmarks, discharge, 121,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 35,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	Unknown	*243,000	*a31.77	Mar. 16	1100	43,400	16.07

a From high-water mark.

Minimum discharge, 728 ft³/s, July 22, gage height, 2.29 ft; minimum daily, 768 ft³/s, Aug. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1290	1950	27700	3150	2440	6100	4200	2710	3020	1190	1240	1160		
2	1100	9350	23800	2790	2980	5570	3310	2770	3090	1600	925	1060		
3	1470	21800	17400	2830	2760	5070	3550	2720	3350	1830	768	1100		
4	2360	60000	13600	2900	3090	5100	3650	2410	2140	1470	778	1490		
5	1890	132000	11100	2980	3670	4850	3270	2210	2400	1710	797	2220		
6	1310	199000	9590	2890	6550	4620	2920	2280	1860	1290	890	3200		
7	1350	100000	8630	2760	8420	4550	3250	2430	2210	1330	1040	2540		
8	1350	44000	7890	2630	8100	4350	3390	1970	1710	1320	1130	2470		
9	1430	22400	6850	2520	9570	3670	3170	2390	2030	1160	1060	2610		
10	1080	14500	6410	2540	8680	4080	3060	2250	2290	1200	1300	1980		
11	1090	10900	5900	2360	7530	4100	3380	2010	2500	1060	854	1690		
12	1260	9220	4960	2340	8020	3810	2380	2170	2070	1140	828	1380		
13	1090	6980	5180	2380	7800	4080	3060	2130	2580	973	1050	1520		
14	1280	7000	5170	2350	7140	4300	2740	2770	1780	908	1130	1270		
15	1190	5980	5070	2140	6020	8620	2890	3260	1410	986	998	1410		
16	1270	5680	4970	2220	6030	38900	3720	2580	1620	1120	1100	936		
17	1240	5490	5130	2230	5080	25700	3610	2380	1550	971	966	907		
18	1020	4960	4980	2620	5730	18000	3760	2230	1490	1090	983	1130		
19	1210	4760	4900	2490	5550	15000	2930	2590	1350	963	1190	1210		
20	1150	4520	4470	2320	6690	11900	2590	3550	1310	970	1570	982		
21	1400	4300	3990	2660	7640	9250	2910	4910	1360	938	2340	907		
22	2940	4970	3830	3070	7240	7600	3240	14300	1300	771	2780	989		
23	3410	6400	3930	3540	7530	6500	2860	10300	1150	1050	2410	979		
24	3290	9920	3900	3790	7390	5710	3050	7850	1330	1220	1720	965		
25	2420	10500	3880	3220	7530	5990	2670	6090	1330	1380	1270	927		
26	1830	9290	3760	3440	7110	4980	3050	5020	933	1680	1690	1190		
27	1580	7890	3530	3610	6400	4810	2460	4200	1180	1670	1590	891		
28	1640	6520	3650	3420	6290	4670	2710	4370	1200	1240	1100	862		
29	1730	7060	2830	3280	---	4120	2790	4130	1060	1970	1390	910		
30	1720	15500	3130	3510	---	3890	2730	3710	1360	1570	1350	915		
31	1610	---	3410	3050	---	3880	---	3530	---	1360	1160	---		
TOTAL	50000	752840	223540	88030	178980	243770	93300	118220	53963	39130	39402	41800		
MEAN	1613	25090	7211	2840	6392	7864	3110	3814	1799	1262	1271	1393		
MAX	3410	199000	27700	3790	9570	38900	4200	14300	3350	1970	2780	3200		
MIN	1020	1950	2830	2140	2440	3670	2380	1970	933	771	768	862		
(*)	-80	+627	+8	-3	-5	+5	+3	-3	-109	-141	-187	-133		
MEAN†	1533	25717	7219	2837	6387	7869	3113	3811	1690	1121	1084	1260		
CFSM†	.33	5.61	1.57	.62	1.39	1.72	.68	.83	.37	.24	.24	.27		
IN.†	.39	6.26	1.82	.71	1.45	1.98	.76	.96	.41	.28	.27	.31		
CAL YR 1985	TOTAL	2230457	MEAN	6111	MAX	199000	MIN	845	MEAN†	6111	CFSM†	1.33	IN.†	18.10
WTR YR 1986	TOTAL	1922975	MEAN	5268	MAX	199000	MIN	768	MEAN†	5265	CFSM†	1.15	IN.†	15.60

* Change in contents, equivalent in cubic feet per second, in Moomaw Lake, provided by U.S. Army Corps of Engineers; and for the initial storage in Back Creek Lake, provided by Virginia Power.

† Adjusted for change in contents.

02030000 HARDWARE RIVER BELOW BRIERY RUN, NEAR SCOTTSVILLE, VA

LOCATION.--Lat 37°48'45", long 78°27'20", Fluvanna County, Hydrologic Unit 02080203, on left bank 75 ft upstream from bridge on State Highway 637, 0.8 mi downstream from Briery Run, 2.4 mi northeast of Scottsville, and 10.8 mi upstream from mouth.

DRAINAGE AREA.--116 mi².

PERIOD OF RECORD.--October 1938 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 952: 1941(M). WSP 1002: 1940, 1943. WSP 1032: 1940, 1944.

GAGE.--Water-stage recorder. Datum of gage is 294.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 21-25, 27, 28, Jan. 9, 14-17, 29-31, Feb. 13-16, and July 2 to Aug. 16. Records good except those for periods with ice effect, Dec. 21-25, 27, 28, Jan. 9, 14-17, 29-31, and Feb. 13-16, and period with backwater from beaver dam, July 2 to Aug. 16, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--48 years, 128 ft³/s, 14.98 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,000 ft³/s, Aug. 20, 1969, gage height, 31.0 ft, from flood-marks, from rating curve extended above 18,000 ft³/s on basis of slope-area measurements at gage heights 23.8 ft and 31.0 ft; minimum, 0.10 ft³/s, Sept. 5-8, 1966; minimum gage height, 0.81 ft, Sept. 8, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0700	*5,010	*14.57	Nov. 5	0930	4,270	13.73

Minimum daily discharge, 7.5 ft³/s, July 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	147	460	104	85	113	83	61	46	37	11	32
2	29	1140	404	100	86	108	82	58	39	45	10	39
3	63	1240	282	103	89	106	80	56	37	35	9.0	62
4	52	4050	236	100	133	106	82	55	35	24	9.4	70
5	38	3160	213	98	121	102	83	55	35	20	10	55
6	34	807	199	99	108	100	86	53	33	17	9.0	49
7	31	434	181	111	181	97	98	55	33	16	9.0	39
8	29	306	172	93	155	88	85	53	35	14	10	38
9	29	246	163	91	135	93	84	50	34	15	9.0	38
10	29	216	155	111	127	93	78	50	30	16	9.4	32
11	29	198	152	101	195	94	76	49	28	18	12	30
12	28	183	149	91	175	89	74	47	29	14	11	30
13	29	172	164	92	135	89	72	49	26	11	10	27
14	29	163	155	82	110	119	72	75	24	9.5	11	25
15	29	153	137	78	100	346	78	61	24	9.0	12	25
16	28	146	135	76	110	188	236	57	24	8.4	14	24
17	27	156	131	89	115	151	139	51	22	10	56	24
18	27	141	127	89	124	133	118	48	20	13	35	24
19	28	136	119	98	126	127	102	54	19	11	49	25
20	28	132	118	103	120	122	97	53	20	9.5	96	26
21	69	129	116	91	117	109	94	50	19	7.5	138	27
22	229	257	110	86	116	107	89	70	19	26	81	26
23	230	259	106	83	148	104	82	48	19	19	48	26
24	126	190	104	80	130	101	77	44	19	32	38	26
25	88	166	102	85	127	94	75	42	19	25	31	24
26	75	154	100	101	118	93	79	42	18	15	27	22
27	64	146	100	121	125	93	73	42	17	25	24	21
28	59	140	104	82	124	89	69	47	17	21	73	27
29	54	255	106	80	---	87	71	43	27	18	52	29
30	51	406	103	75	---	86	63	41	28	15	47	26
31	51	---	103	82	---	85	---	56	---	13	36	---
TOTAL	1740	15428	5006	2875	3535	3512	2677	1615	795	568.9	996.8	968
MEAN	56.1	514	161	92.7	126	113	89.2	52.1	26.5	18.4	32.2	32.3
MAX	230	4050	460	121	195	346	236	75	46	45	138	70
MIN	27	129	100	75	85	85	63	41	17	7.5	9.0	21
CFSM	.48	4.43	1.39	.80	1.09	.97	.77	.45	.23	.16	.28	.28
IN.	.56	4.95	1.61	.92	1.13	1.13	.86	.52	.25	.18	.32	.31
CAL YR 1985	TOTAL	49199	MEAN	135	MAX	4050	MIN	24	CFSM	1.16	IN.	15.78
WTR YR 1986	TOTAL	39716.7	MEAN	109	MAX	4050	MIN	7.5	CFSM	.94	IN.	12.74

JAMES RIVER BASIN

201

02030500 SLATE RIVER NEAR ARVONIA, VA

LOCATION.--Lat 37°42'10", long 78°22'40", Buckingham County, Hydrologic Unit 02080203, on left bank 250 ft upstream from bridge on State Highway 676, 1.8 mi northwest of Arvonion, 2.9 mi upstream from Hunts Creek, and 3.8 mi upstream from mouth.

DRAINAGE AREA.--226 mi².

PERIOD OF RECORD.--April 1926 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1928-29, 1932, 1933-34(M), 1935. WSP 2104: 1928(M), 1935-37(M), 1940(M), 1944(M), 1949(M), 1955(M), drainage area. WDR VA-72-1: 1935, 1937, 1944, 1949, 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 238.78 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 15, 1936, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 21-23, 27-29, and Jan. 29-31. Records good except those for periods with ice effect, Dec. 21-23, 27-29, and Jan. 29-31, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years, 229 ft³/s, 13.76 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft³/s, June 22, 1972, gage height, 25.10 ft, from high-water mark in gage house, from rating curve extended above 5,900 ft³/s on basis of slope-area measurement of peak flow; minimum, 2.0 ft³/s, Sept. 28 to Oct. 2, 1930; minimum gage height, 1.35 ft, Sept. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	1430	2,760	9.53	Nov. 5	0100	*6,930	*14.10

Minimum discharge, 7.3 ft³/s, Aug. 3, gage height, 1.77 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	247	710	155	155	237	140	99	63	29	9.7	25
2	52	2360	442	155	155	215	137	96	64	67	7.9	27
3	110	2770	310	147	160	201	136	90	74	81	8.7	35
4	180	5720	244	146	274	194	134	86	65	55	11	55
5	103	5950	219	141	270	185	134	86	58	39	10	54
6	77	2230	207	137	219	178	137	87	55	32	9.9	52
7	67	814	193	134	453	174	141	86	54	28	11	45
8	62	618	182	126	401	161	139	97	54	25	10	37
9	60	466	177	124	270	157	137	95	53	22	20	33
10	60	269	171	174	227	160	129	85	50	19	17	32
11	59	208	167	153	362	162	124	84	45	17	15	31
12	58	191	168	155	409	159	123	82	44	19	13	28
13	57	179	190	136	268	154	121	83	42	22	13	27
14	59	173	251	130	218	199	120	107	40	22	14	25
15	61	166	199	126	212	418	123	121	36	17	19	22
16	59	160	176	138	221	322	180	108	35	14	20	21
17	56	173	169	154	234	237	191	98	34	17	17	20
18	54	171	164	136	267	201	165	89	31	23	15	18
19	55	158	156	138	289	190	146	99	29	17	27	17
20	62	154	149	159	379	189	135	109	27	15	58	18
21	166	159	150	149	309	173	134	99	27	13	167	43
22	537	433	148	135	263	160	138	94	27	11	124	36
23	576	530	170	131	388	156	132	89	25	9.4	60	29
24	260	310	163	125	326	155	119	79	25	9.2	41	25
25	169	238	159	127	272	150	116	74	24	12	31	23
26	133	206	143	188	239	150	121	72	23	11	26	22
27	111	194	122	288	233	150	118	72	22	12	23	20
28	101	187	128	219	243	147	112	77	21	18	35	19
29	94	190	135	148	---	143	109	79	23	16	38	19
30	90	384	143	138	---	142	104	74	24	19	36	19
31	88	---	143	145	---	140	---	67	---	14	29	---
TOTAL	3728	26008	6248	4657	7716	5759	3995	2763	1194	724.6	936.2	877
MEAN	120	867	202	150	276	186	133	89.1	39.8	23.4	30.2	29.2
MAX	576	5950	710	288	453	418	191	121	74	81	167	55
MIN	52	154	122	124	155	140	104	67	21	9.2	7.9	17
CFSM	.53	3.84	.89	.66	1.22	.82	.59	.39	.18	.10	.13	.13
IN.	.61	4.28	1.03	.77	1.27	.95	.66	.45	.20	.12	.15	.14
CAL YR 1985	TOTAL	84323	MEAN	231	MAX	5950	MIN	31	CFSM	1.02	IN.	13.88
WTR YR 1986	TOTAL	64605.8	MEAN	177	MAX	5950	MIN	7.9	CFSM	.78	IN.	10.63

02031000 MECHUMS RIVER NEAR WHITE HALL, VA

LOCATION.--Lat 38°06'09", long 78°35'35", Albemarle County, Hydrologic Unit 02080204, on right bank 20 ft downstream from bridge on State Highway 614, 1.5 mi downstream from Rocky Run, 4.0 mi southeast of White Hall, and 4.9 mi upstream from confluence with Moormans River.

DRAINAGE AREA.--95.4 mi².

PERIOD OF RECORD.--October 1942 to September 1951, October 1979 to current year. Prior to September 1951, published as Mechum River near Ivy.

GAGE.--Water-stage recorder. Datum of gage is 429.75 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1942, to Sept. 30, 1951, on right bank 20 ft downstream from former highway bridge at different datum.

REMARKS.--Estimated daily discharges: Dec. 21-25, 27, Jan. 8-10, 14-17, 29, 30, Aug. 4-11, 26, and Sept. 5-11. Records good except those for periods with ice effect, Dec. 21-25, 27, and Jan. 8-10, 14-17, 29, 30, and periods of doubtful gage-height record, Aug. 4-11, 26, and Sept. 5-11, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--16 years, 108 ft³/s, 15.37 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s, Oct. 15, 1942, gage height, 30.3 ft, datum then in use, from floodmarks, from rating curve extended above 8,000 ft³/s; minimum, 0.6 ft³/s, Sept. 9, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 6, 1979, reached a stage of 24.5 ft, from floodmarks, discharge, about 13,500 ft³/s, from rating curve extended above 8,300 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0430	2,040	10.48	Nov. 29	0030	1,620	9.63
Nov. 4	0530	7,480	18.66	Nov. 30	1030	1,900	10.20
Nov. 5	0230	*9,960	*21.11				

Minimum discharge, 5.5 ft³/s, July 22, gage height, 4.00 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	344	573	80	66	109	86	57	44	32	9.8	22
2	15	1350	438	75	67	104	83	55	38	35	8.3	38
3	34	1530	330	75	73	101	82	51	34	34	8.0	65
4	31	4800	272	75	106	101	82	51	33	22	7.4	53
5	23	3960	237	73	103	96	79	50	31	19	8.0	44
6	18	902	215	69	96	95	82	50	32	17	7.2	37
7	16	585	187	69	161	90	92	58	30	15	7.2	29
8	15	335	173	66	143	79	83	51	43	13	7.8	26
9	16	260	159	62	133	85	79	50	37	13	7.0	24
10	15	221	145	72	133	86	74	45	32	13	7.3	21
11	14	195	137	73	185	89	73	45	29	16	7.0	20
12	14	173	135	68	175	83	74	42	28	13	11	20
13	15	159	141	71	141	82	71	44	25	10	12	18
14	15	149	133	62	123	106	71	69	24	8.6	12	18
15	15	133	117	59	120	355	72	58	24	7.5	13	16
16	13	123	114	54	112	245	206	56	25	7.2	11	16
17	12	131	109	64	109	199	120	53	22	8.0	57	15
18	12	115	103	68	119	173	107	47	20	10	40	14
19	13	111	95	72	127	159	95	46	18	10	32	15
20	15	104	93	82	125	141	87	47	18	7.8	63	15
21	64	99	92	74	120	125	89	54	18	6.8	106	16
22	134	266	91	68	117	117	82	61	17	16	57	15
23	152	262	90	66	137	112	75	46	17	48	36	14
24	91	203	90	63	125	106	72	42	17	46	31	13
25	66	173	88	66	125	99	69	41	17	29	24	14
26	53	157	85	75	117	95	72	41	15	22	21	13
27	45	147	86	87	122	93	67	40	15	27	18	12
28	42	274	86	78	117	89	64	48	16	20	53	15
29	37	738	83	76	---	86	65	43	32	17	40	18
30	35	1080	80	60	---	87	60	48	29	13	26	18
31	36	---	79	72	---	89	---	79	---	11	22	---
TOTAL	1088	19079	4856	2174	3397	3676	2513	1568	780	566.9	770.0	674
MEAN	35.1	636	157	70.1	121	119	83.8	50.6	26.0	18.3	24.8	22.5
MAX	152	4800	573	87	185	355	206	79	44	48	106	65
MIN	12	99	79	54	66	79	60	40	15	6.8	7.0	12
CFSM	.37	6.67	1.65	.73	1.27	1.25	.88	.53	.27	.19	.26	.24
IN.	.42	7.44	1.89	.85	1.32	1.43	.98	.61	.30	.22	.30	.26
CAL YR 1985	TOTAL	45180	MEAN	124	MAX	4800	MIN	12	CFSM	1.30	IN.	17.62
WTR YR 1986	TOTAL	41141.9	MEAN	113	MAX	4800	MIN	6.8	CFSM	1.18	IN.	16.04

02032250 MOORMANS RIVER NEAR FREE UNION, VA

LOCATION.--Lat 38°08'26", long 78°33'22", Albemarle County, Hydrologic Unit 02080204, on right bank 130 ft upstream from bridge on State Highway 601, 0.4 mi upstream from confluence with Mechums River, 0.8 mi downstream from Wards Creek, and 1.1 mi southeast of Free Union.

DRAINAGE AREA.--74.6 mi².

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 403.11 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 15-19, Nov. 11-14, 19, 20, 25-28, Dec. 16-18, 20-25, 27, 28, Jan. 29 to Feb. 1, Feb. 20-23, Apr. 17 to July 2, and July 10, 11. Records good except those for periods of doubtful or no gage-height record, Oct. 15-19, Nov. 11-14, 19, 20, 25-28, Feb. 20-23, Apr. 17 to July 2, and July 10, 11, and periods with ice effect, Dec. 16-18, 20-25, 27, 28, and Jan. 29 to Feb. 1, which are fair. Flow regulated by Rivanna Water and Sewer Authority at Sugar Hollow Reservoir 12.0 mi upstream from station, capacity, 1,320 acre-ft, from which an average of 7.1 ft³/s is diverted for industrial and municipal use.

Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--7 years, 101 ft³/s, 18.39 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,500 ft³/s, Nov. 4, 1985, gage height, 20.41 ft, from high-water mark, from rating curve extended above 5,600 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.3 ft³/s, Sept. 16, 17, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD (REVISED).--Flood of June 21, 1972, reached a stage of 20.2 ft, from floodmarks, discharge, 15,100 ft³/s, and flood of Sept. 6, 1979, reached a stage of 21.55 ft, from floodmarks, discharge, about 16,500 ft³/s, from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0500	1,330	7.22	Nov. 28	2330	775	5.52
Nov. 4	0400	13,500	a19.24	Nov. 30	0730	1,710	7.36
Nov. 4	2200	*15,500	*a20.41				

a From high-water mark.

Minimum discharge, 1.4 ft³/s, July 17, 21-22, gage height, 2.71 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	370	870	47	31	102	92	47	17	12	3.1	15
2	3.8	1200	620	44	35	97	90	46	16	24	2.7	44
3	7.5	1670	410	45	38	97	88	45	14	21	2.4	174
4	7.5	9620	294	47	64	95	90	45	13	12	2.3	174
5	5.5	4700	238	45	78	90	92	43	13	7.2	2.3	147
6	4.7	1320	209	45	78	90	100	39	12	5.5	2.0	119
7	4.6	785	171	40	130	85	136	50	24	4.2	2.0	80
8	4.7	480	144	33	119	71	116	38	29	3.4	2.0	62
9	4.8	314	130	31	122	73	116	36	20	3.0	2.0	48
10	5.2	235	113	41	136	71	116	35	12	3.3	1.8	39
11	5.2	165	85	38	171	83	113	34	11	4.2	2.1	32
12	5.2	115	78	37	150	71	110	33	9.5	2.7	1.9	28
13	5.2	96	88	39	124	73	108	37	8.0	2.1	1.9	21
14	5.5	73	78	36	113	131	113	44	7.0	1.9	1.9	17
15	5.0	65	65	34	108	575	139	48	6.5	1.6	1.8	14
16	4.5	58	64	30	102	440	495	37	6.0	1.5	1.7	12
17	5.2	62	62	33	102	330	250	33	5.2	1.4	112	9.5
18	6.4	56	60	35	150	261	170	28	4.5	1.7	50	9.0
19	6.0	70	60	41	228	232	140	25	4.3	2.6	47	8.6
20	19	60	56	55	190	200	120	27	4.2	1.9	62	9.5
21	39	108	54	49	174	168	93	37	3.9	1.5	285	9.5
22	69	268	53	38	158	150	100	65	3.8	2.0	216	8.3
23	105	238	52	36	172	141	86	40	3.5	38	119	7.6
24	63	152	51	34	164	133	80	35	3.6	35	71	7.2
25	40	130	50	38	136	119	69	30	4.1	28	46	6.6
26	32	110	49	40	124	116	68	26	3.4	17	32	5.5
27	25	92	47	48	130	113	64	26	2.8	20	23	4.4
28	22	150	46	45	116	105	60	33	3.4	12	55	4.4
29	19	402	47	38	---	102	56	25	9.0	8.6	44	6.6
30	18	1250	47	35	---	100	50	20	12	5.3	28	6.2
31	17	---	44	33	---	97	---	27	---	4.0	20	---
TOTAL	568.5	24414	4435	1230	3443	4611	3520	1134	285.7	288.6	1243.9	1128.9
MEAN	18.3	814	143	39.7	123	149	117	36.6	9.52	9.31	40.1	37.6
MAX	105	9620	870	55	228	575	495	65	29	38	285	174
MIN	3.8	56	44	30	31	71	50	20	2.8	1.4	1.7	4.4
CFSM	.25	10.9	1.92	.53	1.65	2.00	1.57	.49	.13	.12	.54	.50
IN.	.28	12.18	2.21	.61	1.72	2.30	1.76	.57	.14	.14	.62	.56
CAL YR 1985	TOTAL	43946.8	MEAN	120	MAX	9620	MIN	3.5	CFSM	1.61	IN.	21.92
WTR YR 1986	TOTAL	46302.6	MEAN	127	MAX	9620	MIN	1.4	CFSM	1.70	IN.	23.10

02032400 BUCK MOUNTAIN CREEK NEAR FREE UNION, VA

LOCATION.--Lat 38°09'16", long 78°32'22", Albemarle County, Hydrologic Unit 02080204, on left bank at downstream side of bridge on State Highway 665, 0.2 mi downstream from Piney Creek, 1.6 mi east of Free Union, and 2.0 mi upstream from mouth.

DRAINAGE AREA.--37.0 mi².

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 408.71 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 16-20, Dec. 3-9, 20, 21, 23-25, Jan. 8, 9, 14-16, 31, and July 10-21. Records good except those for periods of doubtful gage-height record, Oct. 16-20, Dec. 3-9, and July 10-21, and periods with ice effect, Dec. 20, 21, 23-25, and Jan. 8, 9, 14-16, 31, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--7 years, 42.4 ft³/s, 15.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,800 ft³/s, Nov. 4, 1985, gage height, 9.30 ft, from rating curve extended above 1,200 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 0.60 ft³/s, Sept. 12, 1983, gage height, 0.42 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 22, 1979, reached a stage of 11.12 ft, from floodmarks, discharge, about 6,600 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0245	5,500	9.15	Nov. 28	2145	573	3.78
Nov. 4	2145	*5,800	*9.30	Nov. 30	0615	1,110	5.02

Minimum daily discharge, 0.70 ft³/s, July 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.80	33	281	20	16	38	20	18	7.9	10	2.7	5.9
2	1.3	213	210	19	17	36	20	16	7.1	12	2.4	25
3	6.1	560	150	19	19	33	19	15	6.5	11	2.3	54
4	4.5	2980	105	18	40	32	19	15	6.2	4.8	2.3	48
5	2.0	1310	85	18	36	30	19	14	5.9	3.8	2.1	34
6	1.6	399	72	18	35	29	21	13	5.7	2.9	1.9	27
7	1.7	228	60	17	58	27	32	13	12	2.4	2.0	17
8	2.3	129	50	17	51	23	25	12	14	2.1	2.0	15
9	1.6	98	45	16	49	24	25	11	8.2	1.9	1.9	12
10	1.1	81	41	19	54	23	23	11	5.3	1.8	1.8	9.9
11	1.2	68	39	18	70	25	22	11	5.1	2.5	1.9	8.7
12	1.4	58	38	18	56	24	21	10	4.9	2.1	2.0	7.8
13	1.7	52	45	17	46	24	20	13	4.1	1.5	2.1	6.5
14	1.8	47	41	16	42	67	19	20	3.6	1.3	2.1	5.5
15	1.7	42	34	15	36	194	55	16	3.4	1.0	2.0	5.3
16	1.3	40	33	15	33	106	148	15	3.2	.70	1.8	5.1
17	1.4	40	32	15	33	81	87	13	2.9	1.0	19	4.7
18	1.9	37	30	15	55	65	66	12	2.4	.85	14	4.4
19	1.8	36	28	20	75	57	53	11	2.3	.80	7.5	4.7
20	4.0	37	27	24	69	49	47	12	2.3	.95	10	4.6
21	36	37	26	20	61	40	43	17	2.2	1.0	33	4.8
22	55	128	25	18	55	35	38	30	2.1	4.2	24	4.6
23	73	106	24	17	56	33	33	18	2.0	58	13	5.1
24	46	79	24	15	52	31	30	17	2.3	50	9.5	3.8
25	33	61	23	17	50	28	27	13	2.5	18	6.2	3.8
26	25	53	23	21	45	27	27	12	2.1	23	4.8	3.6
27	22	47	22	25	44	27	24	12	1.9	19	4.1	3.3
28	19	124	22	20	41	25	23	14	1.9	13	29	3.7
29	13	193	21	18	---	24	21	11	4.5	7.1	18	4.9
30	11	612	21	17	---	23	19	9.1	3.8	4.5	10	4.4
31	10	---	26	16	---	22	---	9.3	---	3.4	7.1	---
TOTAL	384.20	7928	1703	558	1294	1302	1046	433.4	138.3	266.60	242.5	347.1
MEAN	12.4	264	54.9	18.0	46.2	42.0	34.9	14.0	4.61	8.60	7.82	11.6
MAX	73	2980	281	25	75	194	148	30	14	58	33	54
MIN	.80	33	21	15	16	22	19	9.1	1.9	.70	1.8	3.3
CFSM	.33	7.13	1.48	.49	1.25	1.13	.94	.38	.12	.23	.21	.31
IN.	.39	7.97	1.71	.56	1.30	1.31	1.05	.44	.14	.27	.24	.35

CAL YR 1985	TOTAL	15930.60	MEAN	43.6	MAX	2980	MIN	.70	CFSM	1.18	IN.	16.01
WTR YR 1986	TOTAL	15643.10	MEAN	42.9	MAX	2980	MIN	.70	CFSM	1.16	IN.	15.72

JAMES RIVER BASIN

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02032515 SOUTH FORK RIVANNA RIVER NEAR CHARLOTTESVILLE, VA

LOCATION.--Lat 38°06'06", long 78°27'39", Albemarle County, Hydrologic Unit 02080204, on left bank 10 ft downstream from upstream bridge on U.S. Highway 29, 0.4 mi downstream from South Fork Rivanna River dam, 2.5 mi northeast of Charlottesville city limits, and 2.9 mi upstream from mouth.

DRAINAGE AREA.--260 mi².

PERIOD OF RECORD.--August 1979 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 330 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Dec. 21, 23-25, 27, 28, Jan. 9, 13, 14, 29-31, and Mar. 31 to Sept. 8. Records good except those for periods with ice effect, Dec. 21, 23-25, 27, 28, and Jan. 9, 29-31, and those for periods of no gage-height record, Jan. 13, 14 and Mar. 31 to Sept. 8, which are fair. Flow regulated by Rivanna Water and Sewer Authority at South Fork Rivanna and Sugar Hollow Reservoirs, combined capacity, 6,540 acre-ft, from which an average of 15.2 ft³/s is diverted for industrial and municipal use. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--7 years, 294 ft³/s, 15.36 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft³/s, Sept. 6, 1979, gage height, 23.50 ft, from flood-marks, from rating curve extended above 12,000 ft³/s; minimum observed, 6.8 ft³/s, Aug. 15, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,300 ft³/s, Nov. 5, gage height, 22.70 ft; minimum observed, 6.8 ft³/s, Aug. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	481	1880	200	178	277	192	160	125	70	30	62
2	22	2960	1340	192	176	262	188	150	110	115	29	100
3	57	3300	950	192	186	257	185	144	96	138	27	270
4	57	11600	744	192	250	254	182	140	80	100	25	240
5	39	8610	634	188	270	246	185	136	73	62	22	212
6	25	2500	562	182	260	244	194	136	68	52	35	170
7	20	1430	483	176	368	232	230	140	80	45	47	150
8	20	938	428	148	364	210	220	134	110	42	37	132
9	21	688	384	145	341	212	210	124	120	36	30	110
10	20	562	350	190	347	216	200	115	100	33	23	85
11	20	472	310	180	454	226	190	112	80	33	27	74
12	19	400	297	172	432	218	180	110	66	34	32	64
13	20	336	313	170	355	212	175	120	62	29	25	51
14	21	341	308	164	308	262	168	145	54	26	17	41
15	20	272	264	158	300	993	200	154	47	22	12	44
16	16	257	254	152	282	709	700	145	45	18	11	32
17	18	262	257	176	272	526	600	135	44	24	26	24
18	22	238	246	176	319	436	500	125	40	23	110	21
19	21	252	232	190	412	384	400	118	36	26	140	22
20	36	228	226	212	425	342	340	120	32	30	190	24
21	156	230	220	204	393	296	310	138	30	34	250	26
22	411	620	208	180	364	272	330	160	28	60	230	28
23	512	682	210	174	377	261	280	150	26	112	170	29
24	310	454	205	166	347	250	240	125	24	128	120	34
25	200	387	200	176	336	234	205	115	22	92	80	24
26	144	374	196	196	308	225	205	108	21	88	62	21
27	118	344	195	220	313	223	198	100	20	87	100	15
28	100	555	200	160	302	213	194	108	30	126	160	14
29	86	1780	202	150	---	206	185	114	40	80	200	38
30	76	2940	198	160	---	200	175	110	56	54	130	29
31	78	---	190	178	---	198	---	102	---	38	86	---
TOTAL	2702	44493	12686	5519	9039	9296	7761	3993	1765	1857	2483	2186
MEAN	87.2	1483	409	178	323	300	259	129	58.8	59.9	80.1	72.9
MAX	512	11600	1880	220	454	993	700	160	125	138	250	270
MIN	16	228	190	145	176	198	168	100	20	18	11	14
*FT ³ /S	15.6	14.1	13.6	13.6	13.6	13.8	15.4	15.7	16.9	16.8	16.0	16.8
CAL YR 1985	TOTAL	110952		MEAN	304	MAX	11600	MIN	16	*FT ³ /S	14.4	
WTR YR 1986	TOTAL	103780		MEAN	284	MAX	11600	MIN	11	*FT ³ /S	15.2	

* Average diversion, in cubic feet per second, by city of Charlottesville; records were provided by Rivanna Water and Sewer Authority.

02032680 NORTH FORK RIVANNA RIVER NEAR PROFFIT, VA

LOCATION.--Lat 38°05'16", long 78°24'44", Albemarle County, Hydrologic Unit 02080204, on left bank 50 ft downstream from bridge on State Highway 649, 1.9 mi southeast of Proffit, and 2.2 mi upstream from confluence with South Fork.

DRAINAGE AREA.--176 mi².

PERIOD OF RECORD.--April 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 323.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 30, 31, Nov. 18-21, Dec. 21, 23-25, 27, 28, and Jan. 8-10, 15, 28-30. Records good except those for periods of doubtful gage-height record, Oct. 30, 31 and Nov. 18-21, and periods with ice effect, Dec. 21, 23-25, 27, 28, and Jan. 8-10, 15, 28-30, which are fair. Rivanna Water and Sewer Authority diverts about 0.2 ft³/s daily for municipal water supply 7.8 mi upstream from station. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--16 years, 250 ft³/s, 19.29 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,800 ft³/s, June 21, 1972, gage height, 30.4 ft, from flood-marks, from rating curve extended above 9,000 ft³/s; minimum, 1.8 ft³/s, Oct. 6, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1200	10,400	18.34	Nov. 29	0430	2,490	8.32
Nov. 5	0730	*10,900	*18.64	Nov. 30	1230	4,330	12.52

Minimum discharge, 13 ft³/s, July 16, gage height, 1.19 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	197	1490	112	93	179	112	113	56	44	15	31
2	26	763	952	107	95	170	111	108	50	64	14	62
3	53	1230	616	108	99	165	108	100	44	67	15	197
4	43	7990	478	107	181	162	106	97	40	40	20	172
5	34	7470	399	105	194	154	108	96	40	30	24	110
6	30	1850	348	99	177	149	117	91	38	28	19	87
7	27	976	278	100	275	143	165	101	40	25	20	60
8	26	617	248	100	254	128	146	89	64	22	18	52
9	28	423	225	96	235	130	136	79	48	17	16	43
10	30	328	216	99	250	129	137	80	38	15	16	36
11	23	273	202	100	361	134	127	78	35	15	18	31
12	25	239	191	102	304	128	122	74	37	17	18	29
13	26	222	206	92	248	127	116	76	33	16	17	25
14	26	206	198	92	213	194	112	112	29	15	18	23
15	26	188	167	88	200	1000	133	100	27	14	17	22
16	29	189	160	90	188	570	886	93	25	13	16	20
17	28	229	154	103	180	401	530	82	27	16	75	19
18	26	180	148	91	217	312	386	76	23	15	93	18
19	27	160	134	97	315	267	299	75	22	14	46	19
20	35	150	127	120	301	231	253	72	21	15	48	19
21	150	145	124	104	272	192	235	93	21	21	94	20
22	270	551	126	96	245	172	216	140	20	34	88	20
23	286	585	120	92	250	162	190	95	19	25	55	19
24	224	374	119	87	229	154	168	81	19	40	41	19
25	153	291	118	92	221	141	156	73	19	43	32	20
26	115	241	113	110	204	139	154	70	18	34	28	19
27	94	217	110	136	208	136	144	67	18	28	25	19
28	86	372	108	112	198	129	136	77	17	32	93	26
29	68	1480	109	105	---	124	128	67	22	25	107	23
30	66	2760	110	100	---	120	118	59	24	19	54	22
31	63	---	128	96	---	117	---	57	---	17	37	---
TOTAL	2166	30896	8222	3138	6207	6459	5855	2671	934	820	1197	1282
MEAN	69.9	1030	265	101	222	208	195	86.2	31.1	26.5	38.6	42.7
MAX	286	7990	1490	136	361	1000	886	140	64	67	107	197
MIN	23	145	108	87	93	117	106	57	17	13	14	18
CFSM	.40	5.85	1.51	.57	1.26	1.18	1.11	.49	.18	.15	.22	.24
IN.	.46	6.53	1.74	.66	1.31	1.37	1.24	.56	.20	.17	.25	.27
CAL YR 1985	TOTAL	76045	MEAN	208	MAX	7990	MIN	23	CFSM	1.18	IN.	16.07
WTR YR 1986	TOTAL	69847	MEAN	191	MAX	7990	MIN	13	CFSM	1.09	IN.	14.76

JAMES RIVER BASIN

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02034000 RIVANNA RIVER AT PALMYRA, VA

LOCATION.--Lat 37°51'28", long 78°15'58", Fluvanna County, Hydrologic Unit 02080204, on left bank 10 ft upstream from bridge on U.S. Highway 15 at Palmyra, 0.5 mi upstream from Cunningham Creek, and 15 mi upstream from mouth.

DRAINAGE AREA.--664 mi².

PERIOD OF RECORD.--October 1933 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1936(M). WSP 852: 1937. WSP 892: 1934-35. WSP 1303: 1945-46(M). WSP 1503: 1956. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 210.39 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 24, 1942, water-stage recorder at site 200 ft downstream at same datum. Oct. 24, 1942, to Dec. 18, 1947, nonrecording gage 10 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Jan. 9, 10, 29-31. Records good except those for periods with ice effect, Jan. 9, 10, 29-31, which are fair. Some diurnal fluctuation at times mostly at low and medium flow by South Fork Rivanna River Reservoir. Combined diversion for water supply and discharge from waste-water treatment plant upstream at Charlottesville resulted in an average gain of about 1.3 ft³/s upstream from the gage. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--53 years, 722 ft³/s, 14.77 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,000 ft³/s, Aug. 20, 1969, gage height, 39.85 ft, from rating curve extended above 76,000 ft³/s on basis of contracted-opening measurement of peak flow and velocity-area study; minimum, 5.2 ft³/s, Sept. 9-11, 1966, gage height, 2.13 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0430	*31,800	*26.53	Nov. 30	2000	10,100	16.64

Minimum discharge, 38 ft³/s, July 16, gage height, 2.38 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	352	5350	442	386	673	436	367	288	144	65	147
2	74	3790	3250	429	333	619	432	344	241	274	65	140
3	182	4610	2230	416	394	591	417	318	209	317	62	373
4	247	20600	1690	423	594	586	408	302	176	222	54	670
5	176	31000	1400	415	742	561	414	307	163	146	48	502
6	134	12400	1270	402	663	537	417	297	155	111	70	405
7	107	3370	1120	387	959	526	435	309	153	100	106	326
8	95	2050	993	367	998	485	527	309	273	91	83	265
9	89	1480	904	330	872	456	467	272	298	79	61	248
10	90	1200	828	390	820	468	467	257	216	71	51	201
11	99	1040	765	393	1140	480	434	258	168	71	55	166
12	81	925	722	370	1150	483	415	250	147	77	72	146
13	84	820	754	380	938	453	394	244	140	66	61	134
14	85	763	800	356	774	509	383	334	123	58	53	120
15	88	684	666	339	736	2180	393	362	103	46	48	105
16	88	596	610	323	681	1800	1610	321	99	40	47	100
17	83	636	594	337	637	1330	1370	305	98	55	52	94
18	85	595	580	367	662	1090	1070	274	93	50	216	78
19	84	545	538	387	909	951	870	257	74	52	328	75
20	95	553	498	470	978	855	747	268	69	67	373	84
21	334	515	498	447	946	725	685	268	67	71	537	80
22	1210	961	485	395	892	642	755	385	64	121	596	78
23	1390	1780	520	369	951	597	620	375	59	266	383	76
24	1110	1210	521	352	850	568	529	279	58	286	261	76
25	723	984	521	355	820	537	496	257	62	215	191	75
26	501	372	477	440	752	513	491	238	60	211	145	73
27	376	806	421	568	750	505	475	228	56	202	136	64
28	315	798	475	488	745	490	443	241	54	284	328	67
29	281	3380	449	385	---	470	424	261	93	185	480	86
30	241	6320	429	340	---	460	394	231	123	119	301	83
31	237	---	423	360	---	448	---	226	---	87	193	---
TOTAL	8853	105640	30781	12222	22122	21588	17468	8944	3982	4184	5521	5137
MEAN	286	3521	993	394	790	696	582	289	133	135	178	171
MAX	1390	31000	5350	568	1150	2180	1610	385	298	317	596	670
MIN	74	352	421	323	383	448	383	226	54	40	47	64
CFSM	.43	5.30	1.50	.59	1.19	1.05	.88	.44	.20	.20	.27	.26
IN.	.50	5.92	1.72	.68	1.24	1.21	.98	.50	.22	.23	.31	.29
CAL YR 1985	TOTAL	275590	MEAN	755	MAX	31000	MIN	72	CFSM	1.14	IN.	15.44
WTR YR 1986	TOTAL	246447	MEAN	675	MAX	31000	MIN	40	CFSM	1.02	IN.	13.81

02034500 WILLIS RIVER AT LAKESIDE VILLAGE, VA

LOCATION.--Lat 37°40'00", long 78°10'00", Cumberland County, Hydrologic Unit 02080205, on left bank 15 ft upstream from bridge on State Highway 690, 0.4 mi east of Lakeside Village, 6.9 mi upstream from mouth, and 7.7 mi downstream from Reynolds Creek.

DRAINAGE AREA.--262 mi².

PERIOD OF RECORD.--April 1926 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station). Monthly discharge only for some periods, published in WSP 1303. Prior to October 1978, published as Willis River at Flanagan Mills.

REVISED RECORDS.--WSP 872: 1936-37. WSP 892: 1928-29, 1932-34(M). WSP 972: 1937, 1940. WSP 1203: 1929. WSP 1303: 1928-30(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 178.98 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Jan. 3, 1935, nonrecording gage at site 1,300 ft upstream at same datum.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Dec. 22-26, 28, 29, Jan. 10, and Jan. 30 to Feb. 1. Records good except those for periods with ice effect, Dec. 22-26, 28, 29, Jan. 10, and Jan. 30 to Feb. 1, which are fair. No estimated daily discharges for period October to December 1986. Regulation of flow from Trice Lake 0.4 mi upstream from station, total capacity, about 1,100 acre-ft, tributary to Willis River, slightly affects flow at gage. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--60 years, 253 ft³/s, 13.11 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 24,000 ft³/s, June 22, 1972; maximum gage height, 29.8 ft, June 22, 1972, from floodmarks (backwater from James River); minimum discharge, 1.5 ft³/s, Sept. 13, 14, 1966, gage height, 2.26 ft.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO SEPTEMBER 1986.--Peak discharges equal to or greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	1900	*9,470	*22.97	No other peak equal to or greater than base discharge.			

October 1985 to September 1986: Minimum discharge, 13 ft³/s, Aug. 2, 3, 4.

October to December 1986: Maximum discharge during period, 1,080 ft³/s, Dec. 25, gage height, 10.54 ft; minimum, 13 ft³/s, Oct. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	113	713	147	215	307	163	94	55	21	15	22
2	40	601	700	147	221	297	158	87	52	57	14	21
3	107	1030	563	141	219	272	154	79	49	66	14	23
4	219	3320	389	141	332	251	150	75	47	41	13	27
5	160	5490	300	136	397	232	150	75	44	35	14	30
6	109	8470	262	131	334	216	150	72	42	31	14	32
7	75	6730	237	125	453	203	152	70	41	27	15	32
8	57	2150	217	120	535	184	152	86	40	25	14	28
9	51	1260	203	92	453	172	148	103	38	22	18	27
10	45	840	201	110	329	170	144	86	39	20	21	25
11	43	586	194	126	436	171	136	77	37	19	19	23
12	43	402	185	122	578	167	131	71	39	20	17	21
13	44	282	193	124	505	164	131	68	43	24	18	21
14	42	232	244	120	344	314	127	81	40	21	20	20
15	44	207	237	107	273	747	127	114	37	18	22	19
16	43	189	211	94	281	931	146	119	34	18	21	17
17	42	190	194	124	302	887	174	101	32	28	21	16
18	38	183	181	122	370	559	172	85	31	32	22	15
19	37	174	168	130	391	395	158	74	29	24	27	15
20	44	166	154	174	426	327	146	69	27	20	48	14
21	76	260	135	177	487	280	139	75	26	18	363	14
22	432	870	132	166	389	245	140	83	24	18	224	15
23	572	1030	130	150	481	225	139	73	23	17	101	16
24	430	952	128	130	502	215	128	62	22	16	59	19
25	286	644	126	123	436	202	121	57	22	18	41	17
26	198	398	120	272	354	193	123	55	21	19	32	16
27	149	305	118	534	310	190	124	56	21	22	27	17
28	118	261	124	482	310	188	116	56	20	21	27	17
29	101	245	130	322	---	177	109	58	20	21	29	16
30	93	374	131	230	---	171	104	55	20	19	27	16
31	87	---	124	210	---	167	---	54	---	17	23	---
TOTAL	3866	37954	7144	5329	10663	9219	4212	2370	1015	775	1340	611
MEAN	125	1265	230	172	381	297	140	76.5	33.8	25.0	43.2	20.4
MAX	572	8470	713	534	578	931	174	119	55	66	363	32
MIN	37	113	118	92	215	164	104	54	20	16	13	14
CFSM	.48	4.83	.88	.66	1.45	1.13	.53	.29	.13	.10	.16	.08
IN.	.55	5.39	1.01	.76	1.51	1.31	.60	.34	.14	.11	.19	.09
CAL YR 1985	TOTAL	93229	MEAN	255	MAX	8470	MIN	20	CFSM	.97	IN.	13.24
WTR YR 1986	TOTAL	84498	MEAN	232	MAX	8470	MIN	13	CFSM	.89	IN.	12.00

JAMES RIVER BASIN

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02034500 WILLIS RIVER AT LAKESIDE VILLAGE, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	38	68									
2	15	37	90									
3	15	36	351									
4	14	36	291									
5	15	41	214									
6	15	61	152									
7	14	72	116									
8	14	78	97									
9	14	92	105									
10	14	77	202									
11	14	69	255									
12	15	69	478									
13	16	77	382									
14	26	69	272									
15	35	66	190									
16	34	65	151									
17	30	62	127									
18	29	60	117									
19	27	58	120									
20	25	59	111									
21	24	80	98									
22	24	104	87									
23	25	90	79									
24	25	80	299									
25	28	73	1040									
26	38	75	999									
27	51	96	818									
28	53	104	464									
29	46	91	259									
30	41	78	194									
31	40	---	163									
TOTAL	792	2093	8389									
MEAN	25.5	69.8	271									
MAX	53	104	1040									
MIN	14	36	68									
CFSM	.10	.27	1.03									
IN.	.11	.30	1.19									
CAL YR 1986	TOTAL	46808	MEAN	128	MAX	1040	MIN	13	CFSM	.49	IN.	6.65

02035000 JAMES RIVER AT CARTERSVILLE, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°40'15", long 78°05'10", Goochland County, Hydrologic Unit 02080205, on left bank 200 ft downstream from bridge on State Highway 45 at Cartersville (revised), 1.8 mi downstream from Willis River, and at mile 156.4.

DRAINAGE AREA.--6,257 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1898 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1936(M). WSP 1203: 1901-2(M), 1923-25(M), 1928(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 163.90 ft above National Geodetic Vertical Datum of 1929. Prior to June 4, 1927, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 6-8, Dec. 9-30, and Feb. 27 to Mar. 5. Records good except those for periods of no gage-height record, Nov. 6-8, Dec. 9-30, and Feb. 27 to Mar. 5, which are fair. Moderate diurnal fluctuation caused by powerplants upstream from station. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--88 years, 7,068 ft³/s, 15.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 362,000 ft³/s, June 22, 1972, gage height, 37.87 ft, from flood-marks, from rating curve extended above 160,000 ft³/s on basis of slope-conveyance study; minimum, 316 ft³/s, Sept. 13, 14, 1966, gage height, 0.02 ft; minimum daily, 330 ft³/s, Sept. 14, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 40,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	Unknown	*225,000	*a32.60	Mar. 16	2030	46,400	15.34

a From high-water mark.

Minimum discharge, 888 ft³/s, Aug. 6; minimum gage height, 0.51 ft, Aug. 5-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1320	2350	36200	4300	3910	7600	4820	3390	3760	1580	1370	1620
2	1360	10700	33300	3930	3800	7100	5170	3350	3570	2290	1250	1550
3	1760	27700	23700	3760	3940	6500	3880	3410	3460	2590	1100	1520
4	2450	75300	18000	3830	4410	6150	4480	3260	3380	2110	967	2050
5	3120	112000	14400	3870	5350	6010	4470	2880	2340	1740	905	2890
6	1910	199000	12300	3860	6280	5950	3880	2720	2640	1790	899	3500
7	1590	136000	10900	3740	10100	5730	4110	2910	2180	1380	1830	4270
8	1560	46300	9850	3550	11300	5560	4370	2980	2420	1430	1340	3260
9	1610	29200	8400	3310	10800	5220	4270	2550	2100	1350	1270	3250
10	1420	20600	7440	3370	11000	4900	3960	2810	2360	1290	1240	3150
11	1250	14000	6960	3410	9980	5200	4070	2790	2560	1180	1290	2410
12	1300	11700	6400	3240	10900	5010	3980	2450	2780	1170	960	2160
13	1350	9730	6370	3230	10100	4910	3380	2660	2480	1190	952	1900
14	1280	7900	6550	3250	9270	5260	3740	2740	2610	1070	1170	1870
15	1350	7760	6260	3080	7770	9960	3680	4100	1680	1030	1240	1660
16	1360	6940	6020	2880	7670	34200	4960	3470	1640	1080	1100	1630
17	1330	6780	6040	3070	6950	35600	6550	3340	1680	1340	1200	1220
18	1340	6400	5830	3040	6990	22500	5500	2950	1760	1320	1280	1190
19	1140	6010	5720	3720	7710	18000	5180	2840	1460	1240	1640	1500
20	1380	5690	5380	3420	7790	15300	4310	3440	1450	1110	3270	1420
21	1520	5700	4900	3570	9530	11400	3760	4170	1490	1100	4820	1260
22	4090	6940	4670	3850	9270	9500	4230	11700	1400	1080	5220	1210
23	7120	10400	4920	4140	9270	8090	4330	12200	1340	1170	3960	1280
24	5840	10600	5000	4390	9650	7270	3950	9250	1320	1470	3070	1250
25	4580	13600	4860	4410	9340	6840	3740	7010	1360	1570	1940	1220
26	3460	11500	4680	4710	9020	6510	3840	5710	1390	1770	1650	1210
27	2630	10000	4430	5800	8200	6020	3930	5070	1120	2250	2210	1440
28	2220	8240	4570	5440	7800	5750	3360	4460	1260	1870	1860	1140
29	2230	9640	4030	4620	---	5300	3460	4650	1290	1650	2230	1120
30	2300	17600	3800	4410	---	5150	3510	4220	1250	2210	2260	1170
31	2110	---	4240	4470	---	4910	---	4030	---	1650	1830	---
TOTAL	69280	846280	286120	119670	228100	293400	126870	133510	61530	47070	57323	56320
MEAN	2235	28210	9230	3860	8146	9465	4229	4307	2051	1518	1849	1877
MAX	7120	199000	36200	5800	11300	35600	6550	12200	3760	2590	5220	4270
MIN	1140	2350	3800	2880	3800	4900	3360	2450	1120	1030	899	1120
CFSM	.36	4.51	1.48	.62	1.30	1.51	.68	.69	.33	.24	.30	.30
IN.	.41	5.03	1.70	.71	1.36	1.74	.75	.79	.37	.28	.34	.33
CAL YR 1985	TOTAL	2746910	MEAN	7526	MAX	199000	MIN	1100	CFSM	1.20	IN.	16.33
WTR YR 1986	TOTAL	2325473	MEAN	6371	MAX	199000	MIN	899	CFSM	1.02	IN.	13.83

JAMES RIVER BASIN

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02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1948, 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to January 1976, October 1980 to May 1981.

WATER TEMPERATURE: April 1968 to January 1976, October 1980 to May 1981.

SUSPENDED-SEDIMENT DISCHARGE: October 1980 to May 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT 25...	0830	5220	178	176	7.70	7.50	17.0	751	5.0	8.8	92	--
NOV 04...	1250	81100	100	91	6.80	7.20	13.0	--	55	--	--	--
06...	1330	209000	110	124	7.30	7.40	15.0	750	60	9.0	91	--
DEC 30...	1030	3800	157	169	6.80	8.20	1.5	755	2.9	13.5	97	--
JAN 29...	1000	4550	208	205	7.70	8.00	1.0	748	3.0	13.3	95	K10
FEB 26...	1200	8600	143	154	7.30	8.10	5.5	743	4.6	12.3	100	56
MAR 27...	1230	5450	140	149	7.60	8.10	13.0	752	2.2	10.4	100	--
APR 29...	1200	3670	185	189	8.80	9.00	21.0	748	3.6	9.2	105	K11
MAY 29...	1145	4280	136	141	7.80	7.90	22.5	748	3.5	8.5	100	--
JUN 26...	1215	1440	233	235	7.60	8.10	26.0	755	1.5	7.5	93	K4
AUG 27...	1215	2590	295	291	8.20	8.10	27.0	746	2.7	7.4	95	K11

DATE	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CACO3	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 25...	--	--	--	--	--	--	--	50	--	--	--	--
NOV 04...	--	31	6	8.7	2.1	4.4	2.2	23	24	25	31	9.3
06...	--	48	0	16	1.9	2.7	2.2	38	--	51	62	9.9
DEC 30...	--	--	--	--	--	--	--	54	--	--	--	--
JAN 29...	K15	71	12	21	4.5	11	1.9	61	59	59	71	13
FEB 26...	K10	60	14	18	3.6	6.2	1.4	47	46	46	56	13
MAR 27...	--	--	--	--	--	--	--	53	--	--	--	--
APR 29...	K14	65	7	19	4.3	9.8	1.8	61	58	58	69	11
MAY 29...	--	--	--	--	--	--	--	48	--	--	--	--
JUN 26...	K4	73	8	21	5.1	15	2.4	66	63	65	79	19
AUG 27...	31	91	17	27	5.7	22	3.1	76	73	74	90	24

JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
OCT 25...	--	--	8.7	--	--	0.030	0.250	0.040	--	0.50	0.240	0.210
NOV 04...	6.4	<0.10	5.8	66	55	0.010	0.170	0.050	0.090	1.5	0.480	0.050
06...	3.2	0.20	4.5	77	72	0.010	0.300	0.070	0.330	2.6	1.50	0.030
DEC 30...	--	--	8.7	--	--	0.010	0.350	0.030	--	0.40	0.180	0.150
JAN 29...	15	<0.10	6.1	103	110	<0.010	0.250	0.040	0.030	0.40	0.300	0.280
FEB 26...	8.3	<0.10	6.1	84	85	<0.010	<0.100	0.040	0.040	0.40	0.100	0.090
MAR 27...	--	--	6.9	--	--	0.010	0.280	0.030	--	0.30	0.070	0.060
APR 29...	11	0.10	1.8	101	95	0.010	<0.100	0.020	0.010	0.70	0.120	0.050
MAY 29...	--	--	7.0	--	--	0.010	0.390	0.010	--	0.40	0.100	0.080
JUN 26...	17	0.20	3.3	128	120	<0.010	<0.100	0.020	0.020	0.30	0.160	0.150
AUG 27...	28	0.10	7.3	171	160	<0.010	0.170	<0.010	0.020	0.30	0.310	0.270

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
OCT 25...	0.200	--	--	--	--	--	--	--	--	--	--	--
NOV 04...	0.020	130	<1	140	<0.5	<1	<1	<3	6	170	17	<4
06...	0.010	120	<1	54	<0.5	1	<1	<3	4	130	7	<4
DEC 30...	0.140	--	--	--	--	--	--	--	--	--	--	--
JAN 29...	0.270	--	--	--	--	--	--	--	--	--	--	--
FEB 26...	0.050	30	<1	29	<0.5	<1	<1	<3	1	74	<1	<4
MAR 27...	0.040	--	--	--	--	--	--	--	--	--	--	--
APR 29...	0.030	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	0.080	--	--	--	--	--	--	--	--	--	--	--
JUN 26...	0.130	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	0.250	40	1	41	<0.5	<1	3	<3	2	40	<5	7

JAMES RIVER BASIN

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02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 25...	--	--	--	--	--	--	--	--	--	5.5	12	93
NOV 04...	29	<0.1	<10	2	<1	<1	41	<6	26	20	437	67
06...	6	0.5	<10	7	<1	<1	49	<6	4	59	1700	94
DEC 30...	--	--	--	--	--	--	--	--	--	2.5	6	78
JAN 29...	--	--	--	--	--	--	--	--	--	2.7	8	75
FEB 26...	8	<0.1	<10	2	<1	<1	78	<6	9	4.6	10	85
MAR 27...	--	--	--	--	--	--	--	--	--	1.8	6	99
APR 29...	--	--	--	--	--	--	--	--	--	3.9	8	89
MAY 29...	--	--	--	--	--	--	--	--	--	2.8	10	93
JUN 26...	--	--	--	--	--	--	--	--	--	3.7	14	97
AUG 27...	9	<0.1	<10	2	<1	<1	130	<6	19	--	18	56

02036500 FINE CREEK AT FINE CREEK MILLS, VA

LOCATION.--Lat 37°35'52", long 77°49'12", Powhatan County, Hydrologic Unit 02080205, on right bank 75 ft downstream from bridge on State Highway 711 at Fine Creek Mills, 0.8 mi upstream from mouth, and 6.7 mi northeast of Powhatan.

DRAINAGE AREA.--22.1 mi².

PERIOD OF RECORD.--July 1944 to current year.

REVISED RECORDS.--WSP 1203: 1948. WSP 1303: 1945(M). WSP 1383: 1954. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 156.59 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 28, 1953, nonrecording gage and crest-stage gage at site 75 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 20, 21, 23-26, 28, 29, Jan. 10, and Jan. 30 to Feb. 2. Records good except those for periods with ice effect, Dec. 20, 21, 23-26, 28, 29, Jan. 10, and Jan. 30 to Feb. 2, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--42 years, 20.3 ft³/s, 12.47 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,180 ft³/s, Oct. 6, 1972, gage height, 9.02 ft, from rating curve extended above 2,600 ft³/s; minimum daily, 0.08 ft³/s, Oct. 1, 1968; minimum gage height, 1.53 ft, Sept. 30, Oct. 1, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1100	*3,000	*7.65	May 31	0430	620	3.86

Minimum discharge, 1.6 ft³/s, July 14, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	3.5	17	93	18	18	23	13	6.1	62	8.4	2.9	3.9	
2	3.1	56	53	17	19	20	13	5.5	33	13	6.9	4.0	
3	11	66	36	16	20	19	11	4.6	38	9.4	46	4.4	
4	19	1420	28	15	33	19	11	4.5	30	5.2	33	4.6	
5	13	455	25	14	30	19	12	4.6	21	3.5	11	5.1	
6	7.2	130	23	13	24	17	13	4.6	16	3.0	4.9	4.9	
7	4.9	67	21	13	43	16	13	4.7	13	2.6	4.2	4.5	
8	3.7	47	21	11	39	14	13	4.9	11	2.4	4.1	5.2	
9	3.2	39	20	10	28	13	12	4.7	9.5	2.2	3.8	4.2	
10	3.2	35	19	11	24	14	11	5.8	7.6	2.5	3.3	3.9	
11	3.2	29	19	13	57	16	11	4.8	7.1	2.2	3.1	3.8	
12	3.0	22	19	13	57	14	10	4.4	7.1	2.0	4.5	3.7	
13	3.0	20	24	13	32	17	9.5	5.6	7.0	1.7	6.9	3.6	
14	2.9	19	28	12	23	41	9.5	22	6.4	1.7	6.6	3.4	
15	3.0	17	22	11	27	52	9.7	29	5.3	1.7	5.1	3.1	
16	3.1	16	20	11	29	47	16	17	4.6	1.7	4.3	3.1	
17	3.0	18	18	12	28	35	23	11	4.1	1.9	4.6	3.1	
18	3.0	18	17	13	28	26	21	8.1	3.6	2.8	6.5	2.8	
19	3.4	17	15	24	28	24	15	7.3	3.2	6.3	10	2.8	
20	3.7	15	15	24	31	23	12	30	3.0	3.5	27	3.0	
21	24	51	14	18	30	21	13	103	2.8	3.8	65	3.0	
22	85	166	14	15	27	19	13	52	2.6	2.7	33	3.0	
23	65	130	12	13	38	17	12	25	2.6	3.7	14	3.0	
24	30	59	13	11	32	16	10	15	2.7	3.6	8.3	3.1	
25	18	40	13	13	31	17	9.1	11	2.5	3.2	6.0	3.2	
26	12	31	13	34	26	15	10	8.8	2.2	3.7	4.9	3.4	
27	9.5	28	13	45	25	15	10	8.1	2.2	4.1	4.8	3.8	
28	7.3	25	12	28	25	14	9.3	8.7	2.1	12	5.6	3.7	
29	6.2	26	13	19	---	13	7.7	7.7	3.1	12	6.1	4.0	
30	5.8	56	13	17	---	13	6.7	45	3.2	5.6	5.3	3.8	
31	5.8	---	14	16	---	13	---	358	---	3.6	4.2	---	
TOTAL	371.7	3135	680	513	852	642	359.5	831.5	318.5	135.7	355.9	111.1	
MEAN	12.0	105	21.9	16.5	30.4	20.7	12.0	26.8	10.6	4.38	11.5	3.70	
MAX	85	1420	93	45	57	52	23	358	62	13	65	5.2	
MIN	2.9	15	12	10	18	13	6.7	4.4	2.1	1.7	2.9	2.8	
CFSM	.54	4.75	.99	.75	1.38	.94	.54	1.21	.48	.20	.52	.17	
IN.	.63	5.28	1.14	.86	1.43	1.08	.61	1.40	.54	.23	.60	.19	
CAL YR 1985	TOTAL	7890.7		MEAN	21.6	MAX	1420	MIN	1.1	CFSM	.98	IN.	13.28
WTR YR 1986	TOTAL	8305.9		MEAN	22.8	MAX	1420	MIN	1.7	CFSM	1.03	IN.	13.98

JAMES RIVER BASIN

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02037000 JAMES RIVER AND KANAWHA CANAL NEAR RICHMOND, VA

LOCATION.--Lat 37°33'52", long 77°34'28", Henrico County, Hydrologic Unit 02080205, on left bank 75 ft downstream from Canal bridge, 400 ft downstream from head gates, 1,200 ft north of north end of Boshier Dam on James River, 1.6 mi upstream from Huguenot Memorial Bridge, and 2.0 mi west of Richmond city limits.

PERIOD OF RECORD.--September 1936 to current year.

GAGE.--Water-stage recorder. Datum of gage is 106.07 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, at datum 3.06 ft higher.

REMARKS.--Estimated daily discharges: Nov. 5-12, Dec. 20, and Jan. 30 to Feb. 1. Records good except those for period of no gage-height record, Nov. 5-12, and periods with ice effect, Dec. 20 and Jan. 30 to Feb. 1, which are fair. Canal diverts from James River 1,200 ft upstream from Boshier Dam and discharges into river at several points downstream from gaging station near Richmond. Above 2,540 ft³/s, gage height, 14.5 ft, there is interchange of flow with James River; discharge above 2,540 ft³/s included in discharge for James River near Richmond (station 02037500). Figures given show flow in canal only. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--50 years, 752 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 29.1 ft, June 23, 1972, from floodmarks, interchange of flow with James River makes maximum discharge indeterminate; no flow at times when head gates were closed.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 24.50 ft, Nov. 7, from high-water mark, interchange of flow with James River makes maximum discharge indeterminate; minimum, 2.0 ft³/s, May 3, result of head gates being closed.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	327	746	36	24	13	14	9.6	2.4	3.2	713	319	335
2	181	824	36	23	14	14	8.4	2.3	3.3	732	313	336
3	160	963	36	22	14	14	7.3	2.2	3.2	777	320	335
4	150	1070	36	21	21	14	6.4	2.3	3.2	769	232	333
5	152	2460	33	21	17	13	7.6	2.3	3.2	736	238	344
6	152	2540	30	21	15	13	8.6	2.2	3.3	724	404	354
7	148	2540	30	21	25	14	9.4	2.2	3.3	719	438	362
8	85	1100	28	21	22	14	10	2.6	186	704	169	481
9	63	450	26	21	23	14	13	2.5	146	707	299	112
10	152	110	26	19	16	15	14	2.4	321	698	308	336
11	77	25	26	18	30	17	12	2.5	248	701	146	352
12	76	26	28	16	20	21	11	2.5	121	691	221	345
13	76	30	29	16	16	23	11	2.6	474	693	120	342
14	76	31	28	16	16	27	10	5.3	486	688	47	340
15	76	34	26	16	16	23	10	6.2	487	679	50	339
16	73	34	26	16	16	20	13	3.9	327	673	59	336
17	71	34	26	17	17	22	18	3.2	696	682	65	335
18	71	34	26	16	17	19	12	2.9	714	695	43	127
19	70	34	24	19	17	18	3.4	3.1	722	693	117	13
20	70	35	22	17	23	19	2.9	18	705	684	357	13
21	85	35	25	16	19	19	4.1	28	705	583	696	13
22	95	35	25	14	18	17	5.5	8.5	708	373	891	12
23	89	35	25	14	22	16	4.2	5.6	704	173	839	33
24	86	35	26	14	17	15	3.6	4.7	699	177	793	125
25	83	35	26	14	17	14	3.4	4.3	621	305	500	79
26	81	36	25	22	16	14	3.3	4.0	683	331	337	79
27	80	36	24	21	16	13	3.5	3.4	699	336	335	80
28	79	35	24	16	15	12	3.2	3.4	687	342	347	81
29	76	34	24	14	---	12	2.8	3.3	701	328	339	80
30	461	35	24	13	---	12	2.8	3.2	701	322	345	78
31	743	---	24	12	---	11	---	3.3	---	329	342	---
TOTAL	4264	13471	850	551	508	503	234.0	145.3	12563.7	17757	10029	6530
MEAN	138	449	27.4	17.8	18.1	16.2	7.80	4.69	419	573	324	218
MAX	743	2540	36	24	30	27	18	28	722	777	891	481
MIN	63	25	22	12	13	11	2.8	2.2	3.2	173	43	12
CAL YR 1985	TOTAL	157565.5		MEAN	432	MAX	2540	MIN	1.6			
WTR YR 1986	TOTAL	67406.0		MEAN	185	MAX	2540	MIN	2.2			

JAMES RIVER BASIN

02037500 JAMES RIVER NEAR RICHMOND, VA

LOCATION.--Lat 37°33'47", long 77°32'50", Henrico County, Hydrologic Unit 02080205, on left bank 0.2 mi upstream from Huguenot Memorial Bridge, 0.5 mi southwest of Richmond city limits, 1.7 mi downstream from Boshier Dam, 3.3 mi upstream from Powhite Creek, and at mile 116.6.

DRAINAGE AREA.--6,758 mi².

PERIOD OF RECORD.--October 1934 to current year. Gage-height records collected in vicinity of Mayo's Bridge, at mile 109.5, 1876-1956, and at mile 108.7 since 1957, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 972: 1936(M). WSP 1433: 1951(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Control is Williams Island dams which divert flow for city of Richmond water supply. Datum of gage is 98.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 29, Jan. 31, and Feb. 1. Records good except those for periods with ice effect, Dec. 29, Jan. 31, and Feb. 1, which are fair. City of Richmond takes from 40 ft³/s to 90 ft³/s for water supply from river downstream from gage except during periods of low flow when supply is obtained from James River and Kanawha Canal. Flow regulated by powerplants upstream from station. Above 18.2 ft stage, there is interchange of flow with James River and Kanawha Canal. Records of daily discharge include diversion by city of Richmond but do not include flow in James River and Kanawha Canal (station 02037000) which diverts around station. National Weather Service gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--52 years, 7,533 ft³/s, 15.14 in/yr, includes flow in James River and Kanawha Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 313,000 ft³/s, includes canal flow, June 23, 1972, gage height, 28.62 ft; minimum daily, about 10 ft³/s, Sept. 8-15, 1966, Sept. 30, Oct. 5, 6, 1968, Oct. 8-10, 1970; minimum daily discharge of James River and James River and Kanawha Canal combined, 214 ft³/s, Oct. 5, 1941, caused by recharging of the pool above Boshier Dam after the canal gates were closed.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 50,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	0800	*218,000	*24.77	No other peak equal to or greater than base discharge.			

Minimum discharge, 437 ft³/s, July 16, gage height, 3.27 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	2740	30800	4440	4700	8560	5450	3810	4380	936	1500	1530
2	1420	3910	35900	4420	4660	8230	5430	3700	3800	1300	1220	1490
3	1920	20800	26500	4090	4660	7770	5390	3650	3930	2190	1730	1410
4	2700	59100	19800	3990	5140	7450	4660	3670	3900	2310	1430	1370
5	3270	103000	15600	4050	5950	7300	4860	3590	3160	1760	1050	1950
6	3430	155000	13000	4060	6570	6960	4810	3310	2740	1370	945	2640
7	2680	206000	11400	4030	8580	6720	4400	3150	2840	1350	891	3160
8	2300	119000	10200	3930	11600	6440	4540	3240	2460	1050	1830	3310
9	2230	35000	9320	3750	10900	6240	4740	3250	2530	983	1260	2980
10	2120	23300	8280	3560	11400	5910	4630	3010	2310	885	1090	2720
11	2030	15500	7720	3650	11200	5780	4380	3150	2260	790	1180	2570
12	1820	12100	7230	3680	11500	5900	4470	3140	2690	702	1340	2000
13	1770	10300	6640	3560	11100	5950	4280	2960	2530	657	994	1780
14	1810	8170	6610	3520	10100	6810	4070	3140	2330	640	1090	1600
15	1740	7840	6800	3530	9190	8360	4150	3370	2360	522	1250	1520
16	1770	6970	6500	3390	8160	21200	4170	4360	1650	459	1280	1360
17	1730	6680	6250	3260	8230	42400	6130	3790	1330	536	1220	1260
18	1750	6560	6270	3410	7620	26100	6300	3630	1290	868	1430	1110
19	1720	6010	6050	3590	8130	19900	5710	3340	1310	814	1510	1270
20	1620	5780	5940	4300	8890	17100	5040	3300	1110	696	2130	1540
21	1860	6560	5590	4100	9590	13700	4650	4610	1040	704	3840	1470
22	3390	9150	5090	4180	10200	11000	4340	6920	1040	840	5020	1320
23	6580	11100	4850	4370	10100	9350	4670	13700	1020	1050	4020	1270
24	7440	10800	5110	4610	10600	8290	4510	10200	931	1330	3020	1190
25	6220	12500	5190	4920	10300	7490	4370	7870	917	1460	2390	1220
26	5140	11700	5040	5140	9980	7420	4140	6350	996	1470	1620	1190
27	4410	10300	4860	6280	9350	6740	4250	5410	952	1860	1360	1230
28	3880	8870	4450	6610	8670	6410	4120	4860	739	2420	1970	1390
29	3500	7730	4300	5780	---	6210	3840	4730	813	2010	1610	1120
30	3290	12000	4180	5130	---	5810	3880	4640	882	1700	1930	1070
31	2910	---	4070	4800	---	5650	---	5550	---	2020	1850	---
TOTAL	89850	914470	299540	132130	247070	319150	140380	143400	60240	37682	55000	51040
MEAN	2898	30480	9663	4262	8824	10300	4679	4626	2008	1216	1774	1701
MAX	7440	206000	35900	6610	11600	42400	6300	13700	4380	2420	5020	3310
MIN	1400	2740	4070	3260	4660	5650	3840	2960	739	459	891	1070
(*)	138	449	27.4	17.8	18.1	16.2	7.80	4.69	419	573	324	218
MEAN†	3036	30930	9690	4280	8842	10320	4687	4631	2427	1789	2098	1919
CFSM†	.45	4.58	1.43	.63	1.31	1.53	.69	.69	.36	.26	.31	.28
IN.†	.52	5.11	1.65	.73	1.36	1.76	.77	.79	.40	.31	.36	.32

CAL YR	1985	TOTAL	2811680	MEAN	7703	MAX	206000	MIN	1190	MEAN†	8135	CFSM†	1.20	IN.†	16.34
WTR YR	1986	TOTAL	2489952	MEAN	6822	MAX	206000	MIN	459	MEAN†	7007	CFSM†	1.04	IN.†	14.08

* Average diversion, in cubic feet per second, by James River & Kanawha Canal.

† Adjusted for diversion.

JAMES RIVER BASIN

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02038000 FALLING CREEK NEAR CHESTERFIELD, VA

LOCATION.--Lat 37°26'37", long 77°31'21", Chesterfield County, Hydrologic Unit 02080206, on left bank at upstream side of bridge on State Highway 651, 0.8 mi downstream from Licking Creek, 2.8 mi upstream from Pocoshock Creek, and 4.7 mi northwest of Chesterfield.

DRAINAGE AREA.--32.8 mi².

PERIOD OF RECORD.--October 1955 to current year.

REVISED RECORDS.--WSP 1904: 1957(M), 1958-60.

GAGE.--Water-stage recorder. Datum of gage is 126.39 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 22, 23. Records good except for period of doubtful gage-height record, Jan. 22, 23, which is fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--31 years, 33.8 ft³/s, 13.99 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s, Oct. 1, 1979, gage height, 15.32 ft, from flood-marks, from rating curve extended above 3,200 ft³/s on basis of slope-conveyance study; minimum, 0.01 ft³/s, Sept. 20, Oct. 3, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1730	*1,820	*11.63	May 21	1315	516	8.16
Nov. 22	1015	670	8.87				

Minimum discharge, 1.3 ft³/s, July 9-10, 12-13, Aug. 2; minimum gage height, 2.76 ft, July 9-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	21	107	17	27	29	16	10	9.6	4.7	1.5	4.8
2	10	94	59	16	30	27	16	9.2	9.0	5.1	5.0	4.4
3	75	61	42	16	28	26	14	8.5	8.1	6.6	6.6	5.4
4	110	1050	33	16	55	25	14	8.0	6.9	4.1	2.6	5.4
5	27	710	30	16	44	23	14	7.7	6.7	2.6	2.3	4.9
6	17	134	29	14	35	23	14	7.5	6.6	2.0	3.8	5.1
7	13	58	26	13	72	21	15	8.1	5.8	1.6	5.5	4.4
8	10	42	24	13	55	19	15	9.2	7.5	1.5	2.4	5.9
9	8.7	31	23	12	40	18	15	8.4	11	1.4	1.8	5.5
10	7.1	25	21	13	35	18	16	8.5	9.4	1.4	1.6	4.9
11	5.9	23	20	13	80	19	15	8.1	7.1	1.4	2.0	4.7
12	5.3	21	20	13	75	18	13	7.6	6.2	1.4	61	4.3
13	5.4	21	30	13	45	25	13	7.2	5.1	1.4	75	3.6
14	5.2	20	34	12	37	76	13	18	4.1	1.4	17	2.9
15	5.0	19	24	12	40	90	13	28	3.5	1.5	9.9	2.7
16	5.2	18	21	12	41	64	21	17	3.1	1.5	6.1	2.4
17	4.9	21	19	12	44	44	39	12	2.9	1.5	12	2.3
18	4.9	20	18	13	45	34	35	9.4	2.4	1.7	63	2.3
19	5.8	18	17	23	41	31	23	7.9	2.3	1.8	85	2.4
20	6.3	17	16	37	55	38	18	20	2.5	2.7	153	2.5
21	25	205	17	23	43	42	19	328	3.0	3.3	168	2.6
22	149	599	16	18	39	30	28	77	2.4	2.0	45	3.7
23	96	245	17	17	69	25	21	35	2.2	2.0	19	2.3
24	43	75	18	16	47	23	16	24	2.2	1.7	13	2.2
25	25	52	17	16	45	21	15	19	2.1	2.4	9.5	2.0
26	18	42	15	82	37	20	14	16	1.9	2.5	7.4	2.0
27	15	37	14	95	37	20	13	13	1.9	2.4	5.7	1.9
28	13	33	15	51	35	19	12	13	1.9	2.5	8.0	1.8
29	12	32	15	34	---	18	11	12	1.9	1.9	8.4	1.7
30	10	85	14	31	---	17	11	11	2.1	1.6	7.1	1.7
31	9.7	---	14	27	---	17	---	10	---	1.5	5.8	---
TOTAL	754.0	3829	785	716	1276	920	512	778.3	141.4	71.1	814.0	102.7
MEAN	24.3	128	25.3	23.1	45.6	29.7	17.1	25.1	4.71	2.29	26.3	3.42
MAX	149	1050	107	95	80	90	39	328	11	6.6	168	5.9
MIN	4.9	17	14	12	27	17	11	7.2	1.9	1.4	1.5	1.7
CFSM	.74	3.90	.77	.70	1.39	.91	.52	.77	.14	.07	.80	.10
IN.	.86	4.34	.89	.81	1.45	1.04	.58	.88	.16	.08	.92	.12
CAL YR 1985	TOTAL	9688.5	MEAN	26.5	MAX	1050	MIN	1.3	CFSM	.81	IN.	10.99
WTR YR 1986	TOTAL	10699.5	MEAN	29.3	MAX	1050	MIN	1.4	CFSM	.89	IN.	12.13

JAMES RIVER BASIN

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA
(Hydrologic bench-mark station)

LOCATION.--Lat 37°24'55", long 78°38'10", Appomattox County, Hydrologic Unit 02080207, on right bank 350 ft downstream from culvert on State Highway 614, 1.0 mi upstream from Holiday Lake, and 5.2 mi southwest of Andersonville.

DRAINAGE AREA.--8.53 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1966 to current year.

REVISED RECORDS.--WDR VA-72-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 472.97 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20-22, 25-27, Dec. 30 to Jan. 1, Jan. 5-9, 16, 28-31, Feb. 14, 15, June 21-23, and July 31 to Aug. 20. Records good except those for periods with ice effect, Dec. 20-22, 25-27, Dec. 30 to Jan. 1, Jan. 5-9, 16, 28-31, and Feb. 14, 15, and periods of no gage-height record, June 21-23 and July 31 to Aug. 20, which are fair. Recording rain gage at station.

AVERAGE DISCHARGE.--20 years, 8.87 ft³/s, 14.12 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s, June 21, 1972, gage height, 14.64 ft, from high-water mark in gage house, from rating curve extended above 4,200 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.10 ft³/s, Sept. 11, 12, 1966; minimum gage height, 0.75 ft, July 28, 1966, June 29, 30, July 1, Aug. 26, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 3	1915	731	5.26	Nov. 4	1945	*1,220	*6.80

Minimum daily discharge, 0.48 ft³/s, July 31 to Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	40	18	5.6	6.3	8.5	5.6	4.0	2.5	1.3	.48	1.4
2	1.8	85	13	5.6	6.3	8.0	5.5	3.8	2.4	2.8	.48	1.8
3	9.9	221	9.0	5.7	7.7	8.0	5.6	3.6	2.3	2.2	.60	2.0
4	3.9	298	7.8	5.4	12	7.7	5.4	3.7	2.3	1.5	.56	1.7
5	2.9	81	7.4	5.2	8.8	7.5	5.5	3.8	2.4	1.4	.56	1.7
6	2.3	27	7.0	5.0	7.9	7.5	5.5	3.7	2.3	1.3	.60	1.6
7	2.1	19	6.5	4.9	15	7.2	5.9	3.5	2.3	1.1	.56	1.3
8	2.1	8.7	6.4	4.8	9.8	6.8	5.5	3.5	2.3	.97	1.1	1.5
9	2.1	7.6	6.2	6.2	8.2	7.0	5.3	3.4	2.1	.93	.96	1.5
10	2.0	10	6.1	5.6	7.8	7.2	5.3	3.5	2.0	.88	.82	1.3
11	2.0	6.8	6.0	5.4	15	7.3	5.3	3.4	2.7	.94	.73	1.3
12	2.0	6.0	6.1	5.2	10	6.8	5.0	3.2	3.5	1.2	.73	1.3
13	2.1	5.9	9.8	5.2	8.3	7.3	5.0	5.1	2.3	.97	.78	1.1
14	2.1	5.8	8.4	5.0	7.9	12	5.0	7.0	2.0	.83	1.0	1.0
15	2.0	5.5	6.7	5.2	7.7	14	5.4	5.3	1.9	.71	1.1	.98
16	2.0	5.6	6.4	5.6	7.9	11	7.7	4.4	1.9	.75	.95	.98
17	1.9	6.2	6.2	5.1	11	8.8	6.3	4.1	1.8	.82	.84	.93
18	1.9	5.5	6.0	5.3	12	7.9	5.8	3.6	1.6	.90	1.6	.96
19	2.0	5.4	5.6	5.9	12	7.9	5.3	4.5	1.6	.79	3.4	.99
20	2.1	5.4	5.6	6.3	15	7.4	5.3	4.3	1.6	.71	9.0	1.1
21	8.1	9.1	6.0	5.3	12	6.7	5.9	4.4	1.5	.65	7.6	1.2
22	15	27	7.0	5.2	12	6.4	5.4	3.8	1.5	.63	3.2	1.1
23	7.4	14	6.0	5.0	15	6.4	5.0	3.3	1.4	.69	2.0	1.1
24	4.4	9.6	5.9	4.9	11	6.2	4.8	3.1	1.4	.83	1.7	1.0
25	3.5	7.9	5.5	5.6	10	5.9	4.8	3.0	1.4	.73	1.3	.99
26	3.1	7.1	5.2	10	9.1	6.1	4.8	3.2	1.3	.70	1.3	.89
27	2.8	6.9	5.1	9.6	9.3	6.4	4.5	3.2	1.3	.82	1.3	.85
28	2.7	6.6	5.4	6.2	9.3	5.7	4.4	3.6	1.2	.69	1.9	.86
29	2.6	7.5	5.3	5.4	---	5.5	4.3	3.2	1.2	.58	1.7	.98
30	2.6	19	5.4	5.4	---	5.5	4.1	2.8	1.2	.51	1.4	.98
31	2.7	---	5.8	5.7	---	5.5	---	2.6	---	.48	1.3	---
TOTAL	105.8	970.1	216.8	176.5	284.3	232.1	159.2	117.6	57.2	30.31	51.55	36.39
MEAN	3.41	32.3	6.99	5.69	10.2	7.49	5.31	3.79	1.91	.98	1.66	1.21
MAX	15	298	18	10	15	14	7.7	7.0	3.5	2.8	9.0	2.0
MIN	1.7	5.4	5.1	4.8	6.3	5.5	4.1	2.6	1.2	.48	.48	.85
CFSM	.40	3.79	.82	.67	1.20	.88	.62	.44	.22	.11	.19	.14
IN.	.46	4.23	.95	.77	1.24	1.01	.69	.51	.25	.13	.22	.16
CAL YR 1985	TOTAL	3116.6	MEAN	8.54	MAX	298	MIN	1.2	CFSM	1.00	IN.	13.59
WTR YR 1986	TOTAL	2437.85	MEAN	6.68	MAX	298	MIN	.48	CFSM	.78	IN.	10.63

JAMES RIVER BASIN

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02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN 08...	0930	5.0	34	38	6.60	7.40	0.0	765	19	14.5	99
MAR 25...	0945	5.8	32	38	6.90	7.80	8.0	765	2.5	12.2	103
MAY 21...	0930	4.5	38	41	7.00	7.70	16.5	745	3.0	9.3	97
AUG 20...	0915	2.6	38	40	6.90	7.50	20.5	749	7.3	8.6	97

DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CAC03	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CAC03)	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CAC03	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CAC03)
JAN 08...	K3	K6	10	0	2.3	1.1	2.7	0.60	11	--	--
MAR 25...	<3	<13	10	0	2.2	1.1	2.7	0.50	14	14	14
MAY 21...	180	550	11	0	2.3	1.2	2.7	0.80	15	10	11
AUG 20...	250	2000	13	2	3.1	1.2	2.7	0.80	16	10	11

DATE	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
JAN 08...	--	5.5	1.9	14	30	35	<0.100	0.040	--	<0.20	0.020
MAR 25...	17	3.8	1.7	12	32	33	0.100	0.030	0.020	0.40	0.010
MAY 21...	13	5.1	1.5	13	39	33	0.310	0.030	0.030	0.30	0.030
AUG 20...	13	5.8	1.4	12	34	33	0.120	<0.010	0.030	0.30	0.040

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

[illegible][illegible][illegible]

02039000 BUFFALO CREEK NEAR HAMPDEN SYDNEY, VA

LOCATION.--Lat 37°15'25", long 78°29'12", Prince Edward County, Hydrologic Unit 02080207, on left bank 100 ft upstream from bridge on State Highway 658, 0.8 mi upstream from Locket Creek, 2.0 mi northwest of Hampden Sydney, and 6.0 mi southwest of Farmville.

DRAINAGE AREA.--69.7 mi².

PERIOD OF RECORD.--August 1946 to current year.

REVISED RECORDS.--WSP 1303: 1948-50(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 339.19 ft above National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Highways and Transportation). Prior to Aug. 19, 1953, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 22-29, Jan. 7-9, Jan. 29 to Feb. 1, and Apr. 21, 22. Records good except those for periods with ice effect, Dec. 22-29, Jan. 7-9, and Jan. 29 to Feb. 1, and period of doubtful gage-height record, Apr. 21, 22, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--40 years, 67.1 ft³/s, 13.07 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,160 ft³/s, June 21, 1972, gage height, 12.38 ft, from rating curve extended above 1,600 ft³/s on basis of slope-area measurement at gage height 11.96 ft; minimum daily, 2.7 ft³/s, Oct. 7, 8, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 15 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	2000	1,310	7.09	Nov. 5	0130	*2,590	*8.24
Nov. 4	0600	2,330	8.03	Nov. 22	1530	641	5.98

Minimum discharge, 11 ft³/s, July 30, 31, Aug. 1, 2, 3, 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	136	242	55	55	68	52	33	30	18	11	21
2	34	920	170	50	61	63	51	31	29	20	11	22
3	52	790	122	49	62	63	49	30	27	19	11	23
4	56	1810	96	48	80	63	47	30	26	17	12	22
5	49	1530	83	46	73	62	46	30	26	15	12	27
6	43	599	75	43	65	61	46	29	26	14	82	27
7	39	403	68	42	175	59	47	29	26	14	165	24
8	37	306	63	41	139	56	46	31	25	13	56	24
9	35	223	60	39	101	54	45	30	25	13	34	24
10	35	160	56	40	82	54	44	30	23	12	27	22
11	35	110	55	41	115	54	43	29	23	13	23	21
12	34	80	56	41	110	52	42	28	23	26	36	21
13	34	68	75	41	84	51	42	40	23	29	35	20
14	34	61	94	40	70	109	41	69	22	23	31	19
15	35	57	76	39	72	203	41	68	21	18	27	18
16	35	54	66	40	71	196	43	56	23	16	24	18
17	35	53	63	39	83	129	45	48	22	15	23	17
18	35	50	59	41	92	97	45	42	20	14	24	17
19	35	48	54	45	90	87	43	40	19	14	56	17
20	36	48	51	50	125	83	42	41	18	15	108	19
21	42	131	50	45	100	71	41	52	18	15	139	19
22	70	484	48	43	87	63	40	44	17	16	73	19
23	68	381	47	42	105	63	40	40	16	15	47	19
24	58	230	46	40	90	62	38	37	16	15	37	19
25	57	153	45	41	80	62	39	36	15	14	30	19
26	56	119	43	77	69	60	39	35	15	14	26	18
27	55	100	42	99	70	58	37	34	15	14	25	18
28	53	86	41	75	72	57	36	35	15	13	28	18
29	51	85	43	57	---	54	35	34	14	13	26	19
30	50	161	44	55	---	54	34	33	14	12	23	18
31	50	---	44	51	---	53	---	31	---	11	22	---
TOTAL	1370	9436	2177	1495	2478	2321	1279	1175	632	490	1284	609
MEAN	44.2	315	70.2	48.2	88.5	74.9	42.6	37.9	21.1	15.8	41.4	20.3
MAX	70	1810	242	99	175	203	52	69	30	29	165	27
MIN	32	48	41	39	55	51	34	28	14	11	11	17
CFSM	.63	4.52	1.01	.69	1.27	1.07	.61	.54	.30	.23	.59	.29
IN.	.73	5.04	1.16	.80	1.32	1.24	.68	.63	.34	.26	.69	.33
CAL YR 1985	TOTAL	28170	MEAN	77.2	MAX	1810	MIN	10	CFSM	1.11	IN.	15.03
WTR YR 1986	TOTAL	24746	MEAN	67.8	MAX	1810	MIN	11	CFSM	.97	IN.	13.21

02039500 APPOMATTOX RIVER AT FARMVILLE, VA

LOCATION.--Lat 37°18'25", long 78°23'20", Cumberland County, Hydrologic Unit 02080207, on left bank at downstream side of bridge on State Highway 45 at north town limits of Farmville and 1.1 mi downstream from Buffalo Creek.

DRAINAGE AREA.--303 mi².

PERIOD OF RECORD.--March 1926 to current year.

REVISED RECORDS.--WSP 972: 1927-37, 1938(M). WSP 1303: 1927(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 281.93 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 29, 1928, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 18-25 and Jan. 29. Records good except those for period of no gage-height record, Oct. 18-25, and period with ice effect, Jan. 29, which are fair. Diurnal fluctuation at low flow caused by Prince Edward Mill 0.2 mi upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years, 287 ft³/s, 12.86 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,100 ft³/s, June 22, 1972, gage height, 29.70 ft, from flood-marks, from rating curve extended above 12,000 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 3.8 ft³/s, Sept. 25, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0030	*9,400	*20.03	Nov. 23	0330	2,010	12.12

Minimum discharge, 34 ft³/s, Aug. 2, gage height, 3.20 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	237	1060	192	198	296	178	122	94	51	37	70
2	74	2360	738	185	208	266	174	118	88	57	36	73
3	162	4370	496	173	218	249	169	111	82	65	37	79
4	244	6750	381	170	342	239	163	109	77	62	42	81
5	146	8220	336	164	334	226	163	110	78	54	43	121
6	110	4150	310	155	277	217	166	110	78	50	200	107
7	92	1200	288	150	631	198	174	109	77	48	466	89
8	83	822	269	134	582	177	171	116	76	46	276	81
9	79	628	257	117	380	171	164	115	75	45	131	80
10	77	481	244	177	305	177	157	109	70	43	93	74
11	75	377	237	156	544	180	156	106	69	43	78	70
12	74	314	233	147	583	169	155	104	107	48	97	67
13	74	277	274	149	367	190	153	113	107	59	115	63
14	75	269	339	141	287	444	153	235	74	57	108	58
15	76	264	276	133	284	1060	153	275	67	49	94	54
16	76	259	239	124	291	752	180	200	66	46	84	53
17	74	264	223	147	324	514	199	161	64	45	80	51
18	73	255	211	144	439	373	181	138	61	44	90	50
19	72	243	195	159	443	333	167	126	59	43	124	52
20	74	239	184	188	609	323	160	152	57	43	299	59
21	100	402	178	166	484	281	166	169	58	44	533	58
22	310	1310	169	149	390	246	179	155	57	42	333	57
23	250	1610	208	143	557	232	162	133	57	52	198	57
24	200	816	192	136	459	223	149	119	57	49	140	54
25	160	530	191	139	367	211	143	112	56	47	105	51
26	136	405	160	289	313	203	148	112	53	45	88	50
27	118	353	167	444	304	204	144	110	53	44	79	47
28	108	322	172	285	310	196	138	113	52	43	84	45
29	101	325	164	211	---	187	134	117	51	42	88	45
30	96	567	154	205	---	183	127	108	51	40	81	46
31	95	---	152	201	---	180	---	100	---	38	73	---
TOTAL	3551	38619	8697	5473	10830	8900	4826	4087	2071	1484	4332	1942
MEAN	115	1287	281	177	387	287	161	132	69.0	47.9	140	64.7
MAX	310	8220	1060	444	631	1060	199	275	107	65	533	121
MIN	67	237	152	117	198	169	127	100	51	38	36	45
CFSM	.38	4.25	.93	.58	1.28	.95	.53	.44	.23	.16	.46	.21
IN.	.44	4.74	1.07	.67	1.33	1.09	.59	.50	.25	.18	.53	.24

CAL YR 1985	TOTAL	117609	MEAN	322	MAX	8220	MIN	34	CFSM	1.06	IN.	14.44
WTR YR 1986	TOTAL	94812	MEAN	260	MAX	8220	MIN	36	CFSM	.86	IN.	11.64

02040000 APPOMATTOX RIVER AT MATTOAX, VA

LOCATION.--Lat 37°25'17", long 77°51'33", Amelia County, Hydrologic Unit 02080207, on right bank 75 ft upstream from Southern Railway bridge at Mattoax, 0.3 mi upstream from Skinquarter Creek, and 3.7 mi upstream from Flat Creek.

DRAINAGE AREA.--726 mi².

PERIOD OF RECORD.--August 1900 to December 1905, March 1926 to current year.

REVISED RECORDS.--WSP 892: 1938. WSP 972: 1928, 1932, 1934-38. WSP 1303: 1901(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 174.51 ft above National Geodetic Vertical Datum of 1929. August 1900 to December 1905, nonrecording gage at same site, different datum. March 1926 to October 1936, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 3 to Nov. 17, Dec. 24-28, and Jan. 8, 9, 31. Records good except those for period of no gage-height record, Oct. 3 to Nov. 17, and periods with ice effect, Dec. 24-28 and Jan. 8, 9, 31, which are fair. Appomattox Water Authority gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--65 years, 722 ft³/s, 13.51 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s, Aug. 18, 1940, gage height, 35.3 ft, from flood-mark in gage house, from rating curve extended above 20,000 ft³/s on basis of records for stations at Farmville and near Petersburg; minimum, 11 ft³/s, Oct. 2, 1930, gage height, 3.52 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 7	1900	*12,300	*a26.64	Nov. 25	1530	5,070	20.76

a From high-water mark.

Minimum discharge, 41 ft³/s, Aug. 2, gage height, 5.58 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	270	2410	439	586	821	460	286	245	82	46	169
2	141	500	2740	487	590	786	450	272	270	87	64	160
3	270	1600	2160	498	614	725	439	258	277	87	124	162
4	450	4500	1260	470	744	679	429	245	215	91	116	171
5	380	6500	988	457	1000	648	422	237	192	99	60	181
6	300	7500	860	440	903	615	415	234	180	93	55	200
7	250	9000	790	424	1130	585	414	235	176	79	100	220
8	190	7000	733	380	1960	545	419	251	172	70	940	202
9	171	5000	689	360	1580	509	417	255	165	64	479	179
10	153	4000	655	350	997	495	405	254	157	61	252	165
11	147	1750	624	427	1150	499	392	238	177	56	166	157
12	142	1300	607	419	1760	501	373	226	233	57	211	144
13	140	1000	626	402	1410	514	367	222	192	54	471	132
14	138	880	758	396	938	749	360	260	210	57	620	123
15	135	750	859	389	797	1990	360	430	181	74	295	113
16	130	675	729	376	772	2690	379	537	147	77	216	105
17	130	625	634	363	831	2680	417	422	131	77	192	99
18	128	614	590	390	926	1510	450	342	119	93	187	96
19	130	598	555	422	1040	999	424	296	112	69	198	94
20	150	574	517	471	1290	887	390	366	106	59	690	94
21	215	1450	492	516	1780	843	376	602	103	101	1690	99
22	320	3680	476	472	1360	736	383	678	99	63	2040	107
23	530	4120	463	420	1280	651	396	477	96	59	972	109
24	600	4350	450	395	1450	604	376	345	93	65	510	105
25	460	4960	445	387	1190	572	343	291	88	72	350	103
26	360	4100	430	526	968	546	335	265	84	85	276	98
27	300	1390	430	1070	852	530	339	251	82	92	226	94
28	250	1100	434	1300	824	518	329	250	79	104	201	92
29	230	911	450	838	---	500	312	247	80	69	202	90
30	215	1140	450	614	---	480	296	251	81	58	207	86
31	200	---	434	590	---	468	---	331	---	51	190	---
TOTAL	7508	81837	24738	15488	30722	25875	11667	9854	4542	2305	12346	3949
MEAN	242	2728	798	500	1097	835	389	318	151	74.4	398	132
MAX	600	9000	2740	1300	1960	2690	460	678	277	104	2040	220
MIN	128	270	430	350	586	468	296	222	79	51	46	86
CFSM	.33	3.76	1.10	.69	1.51	1.15	.54	.44	.21	.10	.55	.18
IN.	.38	4.19	1.27	.79	1.57	1.33	.60	.50	.23	.12	.63	.20
CAL YR 1985	TOTAL	248756	MEAN	682	MAX	9000	MIN	71	CFSM	.94	IN.	12.75
WTR YR 1986	TOTAL	230831	MEAN	632	MAX	9000	MIN	46	CFSM	.87	IN.	11.83

02041000 DEEP CREEK NEAR MANNBORO, VA

LOCATION.--Lat 37°16'59", long 77°52'12", Amelia County, Hydrologic Unit 02080207, on left bank 300 ft upstream from bridge on State Highway 153, 0.9 mi upstream from Sweathouse Creek, 3.4 mi northwest of Mannboro, and 7.5 mi southeast of Amelia.

DRAINAGE AREA.--158 mi².

PERIOD OF RECORD.--September 1946 to current year.

REVISED RECORDS.--WSP 1203: 1948 (calendar year figures only). WSP 2104: Drainage area. WDR VA-79-1: 1973-76(P), 1978.

GAGE.--Water-stage recorder. Datum of gage is 177.20 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 2, 1949, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 22-28, Jan. 8-10, 16, and Jan. 30 to Feb. 2. Records good except those for periods with ice effect, Dec. 22-28, Jan. 8-10, 16, and Jan. 30 to Feb. 2, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--40 years, 151 ft³/s, 12.98 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s, Oct. 6, 1972, gage height, 24.04 ft, from high-water mark, from rating curve extended above 3,900 ft³/s; minimum, 0.03 ft³/s, Oct. 4, 5, 1968; minimum gage height, 0.29 ft, Aug. 9-12, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 14.8 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2130	*9,030	*14.35	Nov. 22	0830	5,410	11.59

Minimum discharge, 3.9 ft³/s, Aug. 6, gage height, 1.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	32	652	89	130	168	89	50	34	6.9	5.4	25
2	10	155	854	91	138	150	84	46	35	8.7	4.8	23
3	53	366	372	89	159	139	79	42	92	9.9	6.0	22
4	91	4200	224	86	206	129	76	38	100	11	5.3	21
5	106	5160	179	82	237	121	76	36	54	11	4.4	22
6	91	1870	158	77	193	113	76	34	36	9.3	4.3	25
7	50	745	142	73	255	107	82	34	29	8.3	32	23
8	29	339	129	64	391	97	83	42	27	7.8	54	25
9	20	185	119	60	269	92	90	58	26	7.1	45	28
10	14	128	112	66	194	90	90	51	22	6.5	32	24
11	12	104	108	67	240	92	80	42	20	6.2	24	23
12	9.6	90	104	70	393	91	71	37	19	6.4	206	23
13	8.2	84	123	74	285	110	66	35	19	6.7	627	21
14	7.9	79	177	68	187	265	65	45	17	6.8	657	19
15	7.5	74	163	68	168	652	63	75	16	6.2	192	17
16	6.6	68	126	65	191	703	76	84	15	6.0	81	15
17	7.1	67	110	68	200	416	100	64	14	5.7	47	14
18	6.6	65	103	71	209	256	103	49	12	5.6	56	12
19	6.5	65	94	92	194	201	88	41	11	5.5	48	12
20	6.5	65	86	139	281	232	76	66	9.9	5.5	104	11
21	13	784	84	133	342	242	72	257	10	7.8	323	11
22	103	4590	82	100	236	193	74	415	10	8.8	452	11
23	212	2550	80	84	266	159	80	213	9.3	7.1	232	11
24	201	1070	77	75	285	141	77	102	8.9	6.2	102	11
25	124	543	75	74	227	127	68	67	8.8	11	62	11
26	78	308	73	180	192	115	63	55	8.4	12	47	10
27	52	228	72	418	175	110	62	47	7.7	12	38	10
28	40	185	76	381	174	105	60	44	7.1	9.5	41	10
29	31	160	84	223	---	98	55	42	6.9	7.9	40	11
30	27	265	79	160	---	93	53	41	6.6	7.3	32	11
31	26	---	79	140	---	92	---	37	---	6.6	28	---
TOTAL	1459.0	24624	4996	3527	6417	5699	2277	2289	691.6	243.3	3632.2	512
MEAN	47.1	821	161	114	229	184	75.9	73.8	23.1	7.85	117	17.1
MAX	212	5160	854	418	393	703	103	415	100	12	657	28
MIN	6.5	32	72	60	130	90	53	34	6.6	5.5	4.3	10
CFSM	.30	5.20	1.02	.72	1.45	1.16	.48	.47	.15	.05	.74	.11
IN.	.34	5.80	1.18	.83	1.51	1.34	.54	.54	.16	.06	.86	.12
CAL YR 1985	TOTAL	55441.6	MEAN	152	MAX	5160	MIN	3.6	CFSM	.96	IN.	13.05
WTR YR 1986	TOTAL	56367.1	MEAN	154	MAX	5160	MIN	4.3	CFSM	.97	IN.	13.27

JAMES RIVER BASIN

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02041650 APPOMATTOX RIVER AT MATOACA, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°13'28", long 77°28'32", Chesterfield County, Hydrologic Unit 02080207, on left bank at upstream side of bridge on State Highway 600, 0.2 mi south of Matoaca, 2.0 mi upstream from Rohoic Creek, 2.8 mi downstream from Lake Chesdin, 3.5 mi west of Petersburg, and at mile 15.9.

DRAINAGE AREA.--1,344 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 68.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 10-15, Dec. 23-28, and Jan. 31. Records good except those for period of doubtful gage-height record, Oct. 10-15, and periods with ice effect, Dec. 23-28 and Jan. 31, which are fair. Flow regulated by Appomattox Water Authority at Lake Chesdin, capacity, 36,000 acre-ft, 2.8 mi upstream from which an average of 12.4 ft³/s is diverted for industrial and municipal use. Records do not include flow of Upper Appomattox Canal of city of Petersburg which diverts around station. National Weather Service gage-height telemeter at station.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--17 years, 1,482 ft³/s, 14.97 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,800 ft³/s, Oct. 7, 1972, gage height, 18.39 ft; minimum, 41 ft³/s, Oct. 4, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,400 ft³/s, Nov. 6, gage height, 12.07 ft; minimum, 60 ft³/s, July 19, gage height, 1.45 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	248	413	4950	733	1140	1450	802	514	423	139	89	261
2	355	753	5600	732	1180	1370	795	498	389	107	84	239
3	483	1910	4770	809	1190	1270	742	458	416	115	94	243
4	922	8240	2990	774	1350	1210	763	372	472	97	85	234
5	831	13100	1860	801	1610	1140	724	362	423	98	78	235
6	756	14100	1510	705	1690	1110	743	350	345	99	80	245
7	586	13200	1280	680	1850	1060	757	357	313	100	89	242
8	432	12500	1180	652	2590	913	746	360	311	98	195	280
9	383	12200	1110	588	3120	876	821	324	292	97	730	263
10	350	11400	1040	569	2300	849	766	389	241	97	594	233
11	340	9020	1000	598	2030	885	712	385	227	140	391	218
12	330	3300	978	638	2830	824	661	335	449	114	711	220
13	320	1370	1060	698	3010	903	637	347	490	98	1140	202
14	310	1040	1220	623	2110	1260	616	437	327	96	1440	179
15	305	889	1260	603	1650	2750	624	504	274	93	1320	167
16	300	829	1260	563	1440	4260	730	688	251	84	851	163
17	300	792	1110	591	1510	4560	830	736	223	77	553	151
18	305	763	1020	608	1640	3690	880	624	180	72	474	133
19	295	755	901	732	1720	2250	849	504	147	74	419	123
20	307	740	865	973	2080	1840	777	556	157	90	729	115
21	362	2950	822	971	2700	1790	755	1380	148	113	2090	115
22	548	8830	719	937	2830	1550	739	1970	128	90	2780	108
23	1100	10600	700	827	2430	1310	759	1650	118	89	2580	108
24	1330	10200	720	729	2450	1170	704	1050	120	86	1420	116
25	1200	8880	700	716	2460	1060	662	722	108	72	810	117
26	886	7660	695	1150	1900	1000	628	541	93	123	532	114
27	672	6400	690	2120	1660	986	601	467	85	103	419	121
28	527	2720	720	2580	1500	920	553	443	86	110	414	105
29	416	1640	736	2100	---	880	575	411	85	103	337	102
30	357	2250	732	1460	---	854	549	375	85	106	286	98
31	333	---	709	1100	---	824	---	400	---	96	273	---
TOTAL	16189	169444	44907	28360	55970	46814	21500	18509	7411	3076	22087	5250
MEAN	522	5648	1449	915	1999	1510	717	597	247	99.2	712	175
MAX	1330	14100	5600	2580	3120	4560	880	1970	490	140	2780	280
MIN	248	413	690	563	1140	824	549	324	85	72	78	98
CAL YR 1985	TOTAL	463820	MEAN	1271	MAX	14100	MIN	139				
WTR YR 1986	TOTAL	439517	MEAN	1204	MAX	14100	MIN	72				

JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV 05...	1400	13300	93	79	7.00	7.20	13.0	742	25	10.7	104	--
JAN 30...	0900	1500	80	83	6.90	7.60	3.5	760	5.9	13.9	105	K2
FEB 21...	0900	2600	71	74	6.70	7.30	4.5	749	22	13.1	103	52
MAY 21...	0930	1210	89	95	7.20	8.00	20.5	749	4.5	8.6	97	34
JUL 15...	1000	95	102	102	7.10	7.80	26.0	755	2.8	7.1	88	130
AUG 26...	0900	525	83	83	6.90	7.50	24.0	755	10	7.1	85	K2

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CACO3	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 05...	--	26	0	6.1	2.5	4.7	2.8	22	24	27	32	6.6
JAN 30...	K4	27	3	6.3	2.7	5.7	1.5	27	26	24	29	6.5
FEB 21...	91	23	6	5.2	2.3	5.0	1.8	18	17	17	21	7.3
MAY 21...	33	29	0	6.7	3.1	5.9	1.6	34	32	35	42	6.0
JUL 15...	88	36	0	8.6	3.5	5.9	3.4	41	38	38	46	9.1
AUG 26...	26	25	1	5.5	2.7	4.6	2.9	26	24	24	29	11

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
NOV 05...	5.0	<0.10	13	68	57	<0.010	0.110	0.050	0.070	0.60	0.080	0.020
JAN 30...	4.5	<0.10	17	51	58	<0.010	0.180	0.020	0.020	0.30	0.030	0.010
FEB 21...	4.9	<0.10	15	53	52	<0.010	0.240	0.050	0.050	0.70	0.040	0.020
MAY 21...	4.5	0.10	12	60	61	0.010	0.150	0.040	0.040	0.40	0.030	<0.010
JUL 15...	4.5	0.10	15	74	73	<0.010	0.210	0.020	0.020	0.50	0.030	0.030
AUG 26...	4.2	0.10	14	71	60	0.010	0.190	0.040	0.080	0.60	0.050	<0.010

JAMES RIVER BASIN

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02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 05...	0.010	50	<1	29	<0.5	1	1	<3	4	310	6	<4
JAN 30...	<0.010	--	--	--	--	--	--	--	--	--	--	--
FEB 21...	<0.010	80	<1	22	<0.5	<1	<1	<3	1	310	<1	<4
MAY 21...	<0.010	--	--	--	--	--	--	--	--	--	--	--
JUL 15...	<0.010	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	<0.010	400	<1	27	<0.5	1	<1	<3	2	370	<5	<4

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 05...	71	<0.1	<10	3	<1	<1	43	<6	5	42	--
JAN 30...	--	--	--	--	--	--	--	--	--	7	94
FEB 21...	37	<0.1	<10	1	<1	<1	40	<6	9	10	97
MAY 21...	--	--	--	--	--	--	--	--	--	13	97
JUL 15...	--	--	--	--	--	--	--	--	--	4	67
AUG 26...	140	0.1	<10	3	<1	<1	51	<6	18	9	99

02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA

LOCATION.--Lat 37°26'10", long 77°03'40", New Kent County, Hydrologic Unit 02080206, on left bank 100 ft downstream from bridge on State Highway 618, 1.1 mi southwest of Providence Forge, and 1.7 mi downstream from Schiminoe Creek.

DRAINAGE AREA.--248 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1942 to current year.

REVISED RECORDS.--WSP 1553: 1956. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 6.07 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20, 21, Jan. 28-30, and Sept. 15-30. Records fair except those for period of doubtful or no gage-height record, Sept. 15-30, which is poor.

AVERAGE DISCHARGE.--44 years, 264 ft³/s, 14.46 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,710 ft³/s, Aug. 15, 1955, gage height, 11.67 ft; minimum, 0.70 ft³/s, July 7, 1977; minimum gage height, 1.53 ft, Sept. 13, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,870 ft³/s, Nov. 8, gage height, 9.19 ft; minimum, 4.1 ft³/s, June 26, gage height, 1.81 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	466	429	769	189	503	383	174	114	198	7.3	65	157
2	390	461	704	186	504	354	168	100	157	8.2	55	124
3	506	468	637	190	450	324	162	85	104	8.9	55	99
4	653	513	596	193	426	300	156	72	72	8.7	50	74
5	679	587	656	189	415	282	152	63	55	8.7	43	59
6	656	849	686	196	405	265	148	57	43	8.3	36	53
7	550	1290	627	197	418	249	148	51	35	8.7	33	39
8	429	1820	544	188	434	233	150	46	31	9.0	34	29
9	392	1620	460	167	453	221	158	41	31	9.0	28	27
10	420	1230	399	189	436	214	150	37	29	8.8	20	21
11	397	931	356	183	463	209	140	35	25	8.5	15	16
12	342	717	329	180	522	203	133	33	22	8.2	46	11
13	279	589	326	175	540	206	128	30	24	7.5	85	10
14	217	496	337	167	518	227	123	64	22	7.1	72	9.1
15	165	418	317	158	507	266	122	103	22	6.6	81	8.6
16	117	355	302	145	556	285	130	115	14	6.4	79	8.2
17	89	306	285	161	539	287	149	118	11	6.1	73	8.0
18	70	270	272	157	494	331	160	101	8.9	6.6	98	7.8
19	60	247	264	169	458	417	171	90	7.9	7.2	116	7.6
20	52	236	253	192	466	449	173	126	6.9	6.2	173	8.0
21	94	291	235	199	468	439	172	181	6.5	5.8	264	8.5
22	277	501	234	209	453	403	181	195	5.8	5.4	295	9.3
23	433	929	237	203	474	351	189	236	6.0	6.3	301	9.8
24	603	1090	243	198	522	299	182	222	5.3	6.4	294	9.0
25	586	1310	232	205	516	262	171	193	4.6	6.0	257	8.4
26	496	1430	213	322	456	237	164	233	4.8	18	212	8.6
27	611	1250	199	480	420	216	158	264	5.1	41	196	8.5
28	727	978	201	589	406	204	152	234	6.2	56	232	8.4
29	656	737	196	553	---	192	141	199	6.9	62	258	8.0
30	572	685	190	490	---	184	128	184	7.5	70	234	7.8
31	484	---	186	496	---	177	---	254	---	72	194	---
TOTAL	12468	23033	11485	7515	13222	8669	4633	3876	977.4	504.9	3994	862.6
MEAN	402	768	370	242	472	280	154	125	32.6	16.3	129	28.8
MAX	727	1820	769	589	556	449	189	264	198	72	301	157
MIN	52	236	186	145	405	177	122	30	4.6	5.4	15	7.6
CFSM	1.62	3.10	1.49	.98	1.90	1.13	.62	.50	.13	.07	.52	.12
IN.	1.87	3.45	1.72	1.13	1.98	1.30	.69	.58	.15	.08	.60	.13
CAL YR 1985	TOTAL	98079.7	MEAN	269	MAX	2270	MIN	4.5	CFSM	1.08	IN.	14.71
WTR YR 1986	TOTAL	91239.9	MEAN	250	MAX	1820	MIN	4.6	CFSM	1.01	IN.	13.69

JAMES RIVER BASIN

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02042500 CHICKAHOMINY RIVER NEAR PROVIDENCE FORGE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-70, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
DEC 02...	1130	707	75	68	6.60	6.30	12.0	762	100	--
FEB 11...	1215	356	185	185	6.60	8.00	4.5	--	30	--
APR 11...	1200	104	120	112	6.30	7.90	13.0	756	100	8.9
JUL 22...	1000	4.7	138	127	6.90	7.20	25.0	770	45	4.4

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
DEC 02...	--	17	7	4.5	1.3	5.1	2.7	10	7.5
FEB 11...	--	26	22	7.2	1.9	20	2.6	4.0	12
APR 11...	85	29	3	8.2	2.0	11	1.6	26	11
JUL 22...	53	36	0	10	2.6	11	1.4	39	6.7

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
DEC 02...	9.1	<0.10	7.2	61	44	<0.010	<0.100	0.050	800
FEB 11...	41	<0.10	4.1	96	91	<0.010	0.110	<0.010	200
APR 11...	16	0.10	3.6	77	71	<0.010	<0.100	0.020	2000
JUL 22...	12	0.10	3.9	76	72	<0.010	<0.100	0.020	450

JAMES RIVER BASIN

02042720 CHICKAHOMINY RIVER ABOVE WALKERS DAM, AT WALKERS, VA

LOCATION.--Lat 37°24'31", long 76°56'18", New Kent County, Hydrologic Unit 02080206, on left bank 600 ft upstream from Walkers Dam at city of Newport News pumping station, 0.7 mi south of Walkers, and 8.0 mi upstream from Diascund Creek.

DRAINAGE AREA.--301 mi².

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCARB TOT FLD MG/L AS CACO3	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 23...	0930	72	6.30	17.5	50	763	6.5	68	18	9	5.1	1.2
NOV 26...	0900	70	6.20	10.0	100	760	7.4	66	18	6	4.9	1.3
DEC 12...	0930	75	6.30	8.5	60	754	10.6	92	17	8	4.7	1.2
FEB 04...	0900	83	6.70	4.0	50	759	11.8	90	20	11	5.5	1.4
MAR 19...	0830	118	6.60	14.5	40	750	9.7	97	22	11	6.2	1.5
APR 22...	0830	106	6.80	16.0	--	750	8.4	86	25	3	7.3	1.7
MAY 21...	0830	110	6.60	20.0	30	755	4.5	50	26	1	7.7	1.7
JUN 24...	0845	105	6.80	24.0	40	755	5.6	67	26	4	7.5	1.7
JUL 22...	0845	145	6.30	28.0	20	760	4.5	58	28	5	7.6	2.2
SEP 02...	0900	103	6.20	21.5	60	762	6.4	73	26	8	7.8	1.5

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT 23...	6.7	1.4	9.0	9.1	10	<0.1	7.6	47	0.033	<0.01	0.7	0.054
NOV 26...	5.2	3.3	12	5.2	10	<0.1	8.0	46	0.019	0.07	0.6	0.103
DEC 12...	5.7	2.7	9.0	11	9.8	<0.1	7.5	49	0.037	0.05	0.6	0.062
FEB 04...	7.7	2.2	9.0	11	11	<0.1	5.3	50	0.117	0.03	0.5	0.042
MAR 19...	12	1.8	11	11	22	0.1	0.7	62	<0.01	<0.01	0.5	0.036
APR 22...	10	1.7	22	11	14	0.1	1.8	61	<0.01	0.02	0.7	0.055
MAY 21...	9.7	1.5	25	8.8	10	0.1	1.6	56	0.013	0.06	0.8	0.049
JUN 24...	9.9	1.1	22	10	12	<0.1	4.7	60	<0.01	0.01	0.9	0.051
JUL 22...	15	1.6	23	9.3	22	0.1	2.5	75	0.031	0.04	1.0	0.067
SEP 02...	9.6	0.7	18	12	12	0.1	12	67	0.028	0.02	0.8	0.071

JAMES RIVER BASIN

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02042720 CHICKAHOMINY RIVER ABOVE WALKERS DAM, AT WALKERS, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CADMIUM DIS- SOLVED (UG/L AS CD)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 23...	0.024	0.004	2	1	1000	410	<1	50	33	0.1	11	11
NOV 26...	0.049	0.035	<1	1	2500	830	6	50	38	<0.1	21	16
DEC 12...	0.035	0.023	<1	1	1400	600	<1	40	30	<0.1	8	9.9
FEB 04...	0.015	0.007	<1	<1	770	280	2	40	40	<0.1	13	5.9
MAR 19...	0.013	0.003	<1	<1	710	260	2	70	44	<0.1	8	9.2
APR 22...	0.026	0.013	1	4	1400	500	<1	50	8	<0.1	16	12
MAY 21...	0.017	0.009	<1	2	800	210	1	130	27	<0.1	13	10
JUN 24...	0.011	0.005	<1	2	1600	250	<5	310	36	<0.1	25	9.6
JUL 22...	0.012	0.004	<1	3	1400	690	<5	530	480	0.1	5	10
SEP 02...	0.037	0.021	<1	<1	1500	730	<5	110	140	0.1	4	15

JAMES RIVER BASIN

02042726 DIASCUND CREEK AT RT. 628, NEAR NEW KENT, VA

LOCATION.--Lat 37°28'52", long 76°58'21", New Kent County, Hydrologic Unit 02080206, at bridge on State Highway 628, 2.4 mi south of New Kent, and 6.0 mi upstream from Timber Swamp.

DRAINAGE AREA.--9.25 mi².

PERIOD OF RECORD.--October 1985 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	ALKA- LITY LAB (MG/L AS CAC03)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 23...	1300	20	57	6.40	17.5	762	5.5	58	14	5.7	7.1
NOV 26...	1300	9.5	60	6.50	10.0	760	9.2	82	18	4.9	7.9
DEC 12...	1215	9.2	59	6.70	13.5	754	8.8	85	19	4.7	7.1
FEB 04...	1215	17	84	6.60	5.5	759	11.4	91	14	11	5.6
MAR 19...	1130	8.1	75	6.60	15.0	750	9.0	91	22	5.3	3.4
APR 22...	1130	7.6	78	6.30	13.0	750	8.1	78	29	4.4	5.0
MAY 21...	1130	21	60	6.30	20.0	755	6.5	72	20	3.7	5.9
JUN 24...	1100	1.6	80	6.80	23.0	755	6.3	74	34	4.2	5.5
JUL 22...	1030	1.1	92	6.40	25.0	760	5.9	72	36	4.3	6.5
SEP 02...	1100	3.0	68	6.40	18.0	762	4.7	50	25	5.4	7.1

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 23...	0.03	<0.01	0.6	0.123	0.025	1900	680	30	32	14
NOV 26...	<0.01	0.04	0.4	0.081	0.041	2000	840	50	44	7.7
DEC 12...	0.01	0.02	0.4	0.062	0.006	1700	400	50	40	4.5
FEB 04...	0.025	0.03	0.5	0.035	0.016	670	280	20	22	5.2
MAR 19...	<0.01	0.01	0.5	0.067	0.015	1500	280	100	90	6.5
APR 22...	0.011	0.04	0.5	0.095	0.019	2600	170	140	86	6.9
MAY 21...	0.014	0.04	0.6	0.181	0.035	4100	1400	70	63	15
JUN 24...	0.025	0.03	0.5	0.106	0.039	3900	530	270	160	7.3
JUL 22...	0.029	0.06	0.7	0.109	0.051	2600	1100	180	160	8.3
SEP 02...	0.037	0.02	0.4	0.116	0.033	3100	260	130	120	9.5

JAMES RIVER BASIN

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02042734 DIASCUND CREEK RESERVOIR OFF TIMBER SWAMP, NEAR WALKERS, VA

LOCATION.--Lat 37°25'48", long 76°54'19", New Kent County, Hydrologic Unit 02080206, in Diascund Creek Reservoir at mouth of Timber Swamp, 0.3 mi west of bridge on State Highway 603, and 2.1 mi east of Walkers.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)
OCT							
24...	0900	3.00	62	6.60	18.0	762	5.9
24...	0915	10.0	62	6.70	17.5	762	5.9
24...	0930	18.0	64	6.70	17.5	762	5.2
NOV							
27...	1130	3.00	57	6.70	15.0	755	8.6
27...	1145	10.0	57	6.80	14.0	755	8.4
27...	1200	18.0	60	6.80	14.0	755	8.2
DEC							
18...	1215	3.00	56	6.90	8.0	758	11.0
18...	1230	10.0	56	6.90	8.0	758	11.0
18...	1245	18.0	56	6.90	8.0	758	11.0
FEB							
05...	0900	3.00	62	6.50	5.0	760	13.2
05...	0915	10.0	61	6.60	4.5	760	13.1
05...	0920	18.0	61	6.70	4.5	760	12.6
MAR							
20...	0900	3.00	64	6.80	12.5	750	9.9
20...	0915	10.0	64	6.80	12.0	750	9.5
20...	0920	18.0	77	6.60	10.0	750	8.6
APR							
24...	0845	3.00	69	6.80	13.5	760	8.7
24...	0900	10.0	68	6.80	13.5	760	8.5
24...	0915	18.0	65	6.85	13.5	760	8.4
MAY							
28...	1000	3.00	80	6.80	22.5	757	8.2
28...	1015	10.0	78	6.90	21.5	757	6.5
28...	1030	18.0	100	6.60	16.0	757	0
JUN							
25...	0900	3.00	85	6.30	25.5	760	7.0
25...	0915	10.0	100	6.50	24.5	760	6.6
25...	0930	18.0	120	6.50	14.5	760	0
JUL							
23...	0900	3.00	88	6.20	27.0	760	6.1
23...	0915	10.0	88	6.50	27.0	760	5.2
23...	0930	17.0	160	6.50	17.5	760	0
SEP							
04...	0845	3.00	80	6.80	23.0	760	6.4
04...	0900	10.0	80	6.70	23.0	760	6.1
04...	0915	18.0	82	6.50	22.5	760	2.0

JAMES RIVER BASIN

02042734 DIASCUND CREEK RESERVOIR OFF TIMBER SWAMP, NEAR WALKERS, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
OCT						
24...	62	0.065	<0.01	0.9	0.037	<0.001
24...	62	0.056	<0.01	0.7	0.033	<0.001
24...	54	0.052	0.01	0.7	0.039	<0.001
NOV						
27...	86	0.094	0.07	0.6	0.036	0.006
27...	82	0.094	0.08	0.6	0.037	0.005
27...	80	0.086	0.08	0.6	0.042	0.006
DEC						
18...	93	0.094	0.05	0.6	0.034	0.006
18...	93	0.09	0.04	0.6	0.034	0.006
18...	93	0.099	0.05	0.6	0.036	0.005
FEB						
05...	104	0.031	0.09	0.6	0.03	0.012
05...	101	0.017	0.04	0.6	0.03	0.007
05...	98	0.033	0.08	0.6	0.025	0.005
MAR						
20...	94	<0.01	<0.01	0.6	0.027	0.004
20...	90	<0.01	<0.01	0.6	0.023	0.009
20...	77	<0.01	0.02	0.6	0.027	0.006
APR						
24...	84	0.013	0.04	0.5	0.026	0.023
24...	82	0.011	0.05	0.5	0.03	0.011
24...	81	<0.01	0.04	0.6	0.042	0.005
MAY						
28...	95	0.011	0.05	0.6	0.019	0.001
28...	74	0.01	0.03	0.5	0.018	0.001
28...	--	<0.01	0.10	0.5	0.022	0.001
JUN						
25...	86	0.014	0.02	0.6	0.03	0.005
25...	80	0.023	0.04	0.8	0.037	0.004
25...	--	0.015	0.47	1.1	0.031	0.009
JUL						
23...	77	0.016	0.03	0.7	0.03	0.006
23...	65	0.01	0.06	0.7	0.02	0.005
23...	--	<0.01	0.73	1.6	0.03	0.016
SEP						
04...	75	0.032	0.03	0.4	0.023	0.001
04...	71	0.033	0.02	0.6	0.024	0.003
04...	23	0.022	0.23	0.7	0.021	0.004

JAMES RIVER BASIN

235

02042736 BEAVERDAM CREEK AT RT. 632, NEAR BARHAMSVILLE, VA

LOCATION.--Lat 37°28'53", long 76°54'23", New Kent County, Hydrologic Unit 02080206, on State Highway 632, 4.0 mi northwest of Barhamsville, and 4.1 mi upstream from mouth.

DRAINAGE AREA.--4.82 mi².

PERIOD OF RECORD.--October 1985 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	ALKA- LITY LAB (MG/L AS CACO3)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 23...	1200	8.3	110	6.50	23.5	762	1.4	16	29	9.8	8.4
NOV 26...	1100	3.0	104	6.20	9.5	760	4.9	43	36	8.3	7.8
DEC 12...	1130	3.1	119	6.70	11.0	754	6.9	63	44	8.2	6.4
FEB 04...	1115	14	215	6.60	5.5	759	9.4	75	28	42	5.3
MAR 19...	1030	2.8	152	6.50	14.5	750	7.3	73	51	12	2.4
APR 22...	1015	1.2	163	6.60	13.0	750	7.9	76	69	9.7	5.7
MAY 21...	1045	16	120	6.50	20.0	755	4.2	47	36	9.2	6.8

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 23...	0.041	<0.01	1.0	0.154	0.041	3900	1200	90	95	7.9
NOV 26...	<0.01	0.04	0.5	0.085	0.034	2700	1200	50	29	11
DEC 12...	<0.01	0.03	0.4	0.044	0.009	1400	610	30	17	6.0
FEB 04...	0.035	0.02	0.3	0.026	0.006	720	260	20	19	4.8
MAR 19...	<0.01	0.01	0.5	0.038	0.004	1400	450	50	32	8.9
APR 22...	0.01	0.02	0.5	0.044	0.016	2200	1200	60	31	7.9
MAY 21...	0.015	0.05	0.6	0.152	0.04	4100	910	60	58	12

JAMES RIVER BASIN

02042742 WAHRANI SWAMP AT RT. 632, NEAR BARHAMSVILLE, VA

LOCATION.--Lat 37°27'30", long 76°51'57", New Kent County, Hydrologic Unit 02080206, on State Highway 632, 1.3 mi west of Barhamsville, and 1.8 mi upstream from Barnes Swamp.

DRAINAGE AREA.--4.02 mi².

PERIOD OF RECORD.--October 1985 to September 1986.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	ALKA- LITY LAB (MG/L AS CAO3)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SI02)
OCT 23...	1030	7.4	80	6.20	15.5	763	4.2	42	14		8.2	9.8
NOV 26...	1000	3.7	80	6.30	9.5	760	6.4	56	21		8.6	9.4
DEC 12...	1030	3.1	77	6.40	13.0	754	7.3	70	22		7.2	9.0
FEB 04...	1030	11	75	6.30	5.0	759	10.5	83	16		8.5	5.5
MAR 19...	0945	3.6	90	6.50	14.5	750	8.4	84	26		7.6	4.3
APR 22...	0930	3.1	95	6.50	13.0	750	6.9	67	35		7.0	5.6
MAY 21...	0930	7.4	85	6.50	18.5	755	5.1	55	30		5.3	7.9

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 23...	<0.01	<0.01	0.9	0.081	0.036	1900	1100	30	32	17
NOV 26...	0.048	0.05	0.5	0.097	0.044	3300	990	60	60	15
DEC 12...	0.091	0.04	0.5	0.068	0.022	2300	860	60	48	9.5
FEB 04...	0.141	0.02	1.1	0.058	0.007	3400	450	110	19	9.9
MAR 19...	0.179	<0.01	0.6	0.052	0.01	1600	720	80	64	8.9
APR 22...	0.104	0.04	0.7	0.118	0.017	3300	940	150	120	12
MAY 21...	0.047	0.04	0.7	0.195	0.071	5700	1800	180	170	17

JAMES RIVER BASIN

237

02042746 DIASCUND CREEK RESERVOIR OFF PUMP STATION, NEAR WALKERS, VA

LOCATION.--Lat 37°25'51", long 76°53'38", New Kent County, Hydrologic Unit 02080206, in Diascund Creek Reservoir
0.1 mi northwest of city of Newport News pumping station, 0.4 mi east of bridge on State Highway 603, and
2.8 mi east of Walkers.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	ALKA- LINEITY LAB (MG/L AS CACO3)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT											
24...	1000	3.00	70	6.60	18.0	762	5.9	62	20	5.7	3.4
24...	1015	10.0	70	6.80	18.0	762	5.6	59	20	5.8	3.4
24...	1030	18.0	70	6.80	17.5	762	5.2	54	19	5.7	3.5
NOV											
27...	1205	3.00	66	6.90	14.5	755	8.8	87	18	5.7	3.7
27...	1215	10.0	67	6.90	14.0	755	8.6	84	18	5.9	3.7
27...	1230	18.0	70	6.90	13.5	755	7.3	71	18	6.3	4.5
DEC											
18...	1300	3.00	66	6.90	8.0	758	11.5	98	17	6.1	4.2
18...	1315	10.0	66	6.90	8.0	758	11.5	98	17	6.2	4.3
18...	1330	18.0	66	6.90	8.0	758	11.5	98	17	6.3	4.3
FEB											
05...	0945	3.00	72	6.60	5.0	760	13.0	102	17	6.5	4.1
05...	1000	10.0	72	6.60	4.5	760	13.0	101	17	6.4	4.1
05...	1015	18.0	73	6.80	4.5	760	12.7	98	16	6.4	4.1
MAR											
20...	0945	3.00	81	6.60	12.0	750	9.9	93	18	9.5	3.4
20...	1000	10.0	82	6.80	12.0	750	9.6	90	19	9.6	3.3
20...	1015	18.0	82	6.80	10.5	750	8.9	81	19	9.5	3.3
APR											
24...	0930	3.00	77	6.80	13.5	760	8.5	82	24	10	1.9
24...	0945	10.0	80	6.90	13.5	760	8.5	82	21	9.7	1.9
24...	1000	18.0	81	7.00	13.5	760	8.4	81	21	9.6	2.0
MAY											
28...	0915	3.00	73	6.60	22.5	757	8.2	95	22	9.3	0.8
28...	0930	10.0	74	6.60	22.0	757	6.6	76	24	9.4	0.9
28...	0945	18.0	87	6.50	16.0	757	0	--	26	9.4	2.3
JUN											
25...	0945	3.00	90	6.50	25.0	760	7.1	87	26	8.1	1.2
25...	1000	10.0	91	6.90	24.0	760	6.9	82	26	8.5	1.2
25...	1015	18.0	120	6.60	14.0	760	0	--	31	8.5	2.4
JUL											
23...	1000	3.00	92	6.40	26.5	760	6.7	84	26	8.5	1.6
23...	1015	10.0	91	6.50	26.0	760	5.4	67	26	8.5	1.7
23...	1030	18.0	190	6.50	18.0	760	0	--	46	9.5	5.4
SEP											
04...	0930	3.00	81	7.00	23.0	760	6.6	77	25	7.8	2.8
04...	0945	10.0	83	6.95	23.0	760	5.7	67	25	7.8	2.9
04...	1000	18.0	82	6.80	22.5	760	1.3	15	24	7.9	3.4

JAMES RIVER BASIN

02042746 DIASCUND CREEK RESERVOIR OFF PUMP STATION, NEAR WALKERS, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
24...	0.027	<0.01	0.8	0.032	0.01	<0.001	790	330	70	14	8.2
24...	0.042	<0.01	0.7	0.028	0.011	<0.001	700	340	50	12	8.1
24...	0.047	<0.01	0.8	0.028	0.01	<0.001	790	360	80	33	8.1
NOV											
27...	0.074	0.06	0.6	0.03	0.011	0.005	1000	380	50	4	9.3
27...	0.066	0.06	0.6	0.03	0.011	0.003	1000	400	40	4	8.6
27...	0.06	0.08	0.7	0.046	0.019	0.012	1500	640	70	25	11
DEC											
18...	0.031	0.04	0.6	0.031	0.015	0.005	960	580	40	6	10
18...	0.029	0.04	0.6	0.032	0.017	0.006	1100	630	40	11	11
18...	0.029	0.04	0.6	0.035	0.014	0.005	990	440	50	4	11
FEB											
05...	0.014	0.02	0.7	0.025	0.013	0.004	820	560	50	12	8.4
05...	0.023	0.03	0.6	0.03	0.013	0.005	820	440	40	12	8.1
05...	0.017	0.03	0.5	0.03	0.013	0.005	810	540	40	12	8.6
MAR											
20...	<0.01	<0.01	0.6	0.023	0.009	0.004	510	260	40	1	7.3
20...	<0.01	<0.01	0.9	0.03	0.007	0.006	540	260	40	1	6.6
20...	0.023	<0.01	0.6	0.025	0.005	0.004	560	270	40	2	7.7
APR											
24...	0.013	0.04	0.5	0.026	0.009	0.009	530	160	70	31	5.8
24...	0.016	0.04	0.4	0.022	0.009	0.008	550	180	70	33	6.9
24...	0.015	0.05	0.6	0.026	0.011	0.011	520	240	70	31	6.3
MAY											
28...	0.055	0.11	0.4	0.014	<0.005	0.001	230	140	40	3	6.0
28...	<0.01	0.04	0.6	0.015	0.007	0.005	440	180	50	3	6.6
28...	0.011	0.12	0.5	0.019	0.008	0.007	2400	1900	740	760	6.8
JUN											
25...	0.014	0.02	0.6	0.027	0.012	0.006	190	91	60	25	7.9
25...	0.018	0.07	0.6	0.024	0.017	0.015	200	38	60	3	8.1
25...	0.013	0.27	0.9	0.035	0.006	0.005	2500	2000	1500	1600	8.3
JUL											
23...	<0.01	0.06	0.9	0.03	0.006	0.005	220	140	90	50	7.7
23...	0.03	0.10	0.7	0.02	0.013	0.008	350	72	210	110	7.4
23...	<0.01	1.30	2.3	0.035	0.007	0.007	17000	17000	2200	2200	12
SEP											
04...	0.023	0.03	0.6	0.02	0.005	0.002	590	190	90	<1	7.3
04...	0.043	0.06	0.6	0.023	<0.005	0.002	710	330	120	7	6.7
04...	0.024	0.24	0.8	0.027	0.005	0.006	1200	430	420	300	7.3

JAMES RIVER BASIN

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0204275430 LITTLE CREEK RESERVOIR (NORTH CENTRAL) NEAR NORGE, VA

LOCATION.--Lat 37°21'43", long 76°49'42", James City County, Hydrologic Unit 02080206, near city of Newport News
pumping station in north-central arm of Little Creek Reservoir, 1.8 mi south of Toano, and 3.3 mi west of Norge.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	ALKA- LITY LAB (MG/L AS CACO3)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT											
24...	1130	3.00	96	6.80	19.0	762	8.0	86	--	--	--
24...	1145	10.0	92	7.00	19.0	762	7.4	80	24	11	1.1
24...	1200	20.0	98	7.10	18.0	762	6.7	71	--	--	--
24...	1215	30.0	117	6.70	16.0	762	0	--	--	--	--
24...	1230	40.0	165	6.70	9.5	762	0	--	38	13	4.9
NOV											
27...	0900	3.00	108	7.00	15.0	755	8.1	81	--	--	1.6
27...	0915	10.0	108	7.00	15.0	755	8.0	80	25	11	1.6
27...	0930	20.0	108	7.00	15.0	755	8.0	80	--	--	1.6
27...	0945	30.0	107	7.00	15.0	755	7.8	78	--	--	1.7
27...	1000	40.0	108	7.00	15.0	755	7.5	75	24	11	1.8
DEC											
18...	0950	3.00	96	6.90	10.0	758	10.1	90	--	--	2.0
18...	1000	10.0	96	6.90	10.0	758	10.1	90	24	11	2.0
18...	1010	20.0	96	6.90	10.0	758	10.1	90	--	--	2.0
18...	1020	30.0	96	6.90	10.0	758	10.1	90	--	--	2.0
18...	1030	40.0	96	6.90	10.0	758	10.1	90	23	11	2.1
FEB											
05...	1100	3.00	99	6.50	5.0	760	12.2	96	--	--	1.6
05...	1115	10.0	101	6.60	5.0	760	11.9	93	24	11	1.6
05...	1130	20.0	101	6.80	5.0	760	12.0	94	--	--	1.6
05...	1145	30.0	100	6.80	5.0	760	11.9	93	--	--	1.6
05...	1200	40.0	103	6.90	4.5	760	12.0	93	23	11	1.6
MAR											
20...	1100	3.00	97	7.20	10.5	750	10.8	98	--	--	1.1
20...	1115	10.0	98	7.30	10.0	750	10.4	94	24	9.9	1.1
20...	1130	20.0	97	7.30	9.5	750	10.6	94	--	--	1.0
20...	1145	30.0	97	7.30	9.0	750	10.6	93	--	--	1.1
20...	1200	40.0	97	7.35	7.5	750	10.2	86	24	10	1.2
APR											
24...	1045	3.00	101	7.10	14.0	760	10.2	99	--	--	0.8
24...	1100	10.0	101	7.20	14.0	760	10.2	99	27	8.8	0.8
24...	1115	20.0	101	7.30	13.0	760	10.0	95	--	--	0.8
24...	1130	30.0	104	7.20	9.0	760	7.2	62	--	--	1.4
24...	1145	40.0	100	6.90	9.0	760	7.0	61	27	8.8	1.4
MAY											
28...	1100	3.00	103	7.00	22.5	757	8.5	99	--	--	0.3
28...	1115	10.0	103	7.00	22.0	757	8.4	97	27	10	0.3
28...	1130	20.0	104	7.00	18.0	757	7.0	74	--	--	0.1
28...	1145	30.0	110	6.90	12.0	757	4.1	38	--	--	1.1
28...	1200	40.0	110	6.60	10.0	757	2.1	19	29	9.5	1.5
JUN											
25...	1100	3.00	110	7.10	26.0	757	8.1	101	--	--	0.5
25...	1115	10.0	205	7.20	25.5	757	8.1	100	27	10	0.5
25...	1130	20.0	110	6.70	19.5	757	3.5	38	--	--	0.5
25...	1145	30.0	115	6.40	15.0	757	1.0	10	--	--	0.6
25...	1200	40.0	125	6.50	10.0	757	0	--	32	10	1.7
JUL											
23...	1130	3.00	110	6.40	26.0	760	8.6	106	--	--	0.8
23...	1145	10.0	110	6.80	25.5	760	8.2	101	26	9.7	0.9
23...	1200	20.0	115	6.60	22.0	760	0	--	--	--	0.9
23...	1215	30.0	120	6.00	16.5	760	0	--	--	--	1.0
23...	1230	40.0	160	6.40	11.0	760	0	--	37	9.8	2.0
SEP											
04...	1045	3.00	101	7.00	23.5	760	7.7	91	--	--	1.1
04...	1100	10.0	94	7.00	23.5	760	7.4	87	27	9.4	1.1
04...	1115	20.0	102	6.90	23.0	760	5.4	63	--	--	1.1
04...	1130	30.0	159	6.60	16.0	760	0	--	--	--	2.3
04...	1145	38.0	183	6.60	13.0	760	0	--	42	10	3.1

0204275430 LITTLE CREEK RESERVOIR (NORTH CENTRAL) NEAR NORGE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
24...	0.029	<0.01	0.5	0.011	0.002	<0.001	--	--	--	--	--
24...	0.054	<0.01	0.5	0.011	0.002	<0.001	130	50	30	11	7.6
24...	0.044	<0.01	0.5	0.011	0.004	<0.001	--	--	--	--	--
24...	0.049	0.04	0.8	0.021	0.004	<0.001	--	--	--	--	--
24...	0.063	1.10	1.6	0.018	0.004	<0.001	14000	14000	1400	1300	10
NOV											
27...	0.029	0.06	0.5	0.01	0.004	0.002	--	110	--	32	--
27...	0.064	0.06	0.5	0.02	0.005	0.002	670	120	100	32	6.4
27...	0.029	0.06	0.5	0.009	0.004	0.002	--	110	--	28	--
27...	0.032	0.06	0.5	0.014	0.005	0.002	--	180	--	42	--
27...	0.049	0.06	0.5	0.012	0.004	0.003	700	200	120	50	5.6
DEC											
18...	0.048	0.09	0.6	0.01	0.004	0.001	--	80	--	11	--
18...	0.046	0.10	0.6	0.012	0.006	0.002	600	71	90	10	5.6
18...	0.045	0.09	0.7	0.009	0.005	0.002	--	90	--	11	--
18...	0.048	0.09	0.6	0.009	0.007	0.003	--	67	--	11	--
18...	0.049	0.10	0.6	0.011	0.011	0.003	560	98	90	10	5.6
FEB											
05...	0.097	0.08	0.6	0.011	0.004	0.001	--	15	--	4	--
05...	0.10	0.09	0.5	0.008	0.006	0.002	170	24	40	4	6.3
05...	0.126	0.14	0.4	0.007	0.004	0.002	--	15	--	4	--
05...	0.101	0.08	0.4	0.011	0.005	0.002	--	16	--	4	--
05...	0.099	0.09	0.4	0.009	0.009	0.004	160	14	30	4	5.5
MAR											
20...	0.143	0.05	0.6	0.015	0.009	0.005	--	30	--	5	--
20...	0.142	0.05	0.6	0.009	0.002	0.001	100	22	20	5	5.1
20...	0.145	0.04	0.6	0.007	0.004	0.004	--	17	--	3	--
20...	0.127	0.05	0.6	0.005	0.005	0.002	--	13	--	4	--
20...	0.119	0.04	0.6	0.009	0.002	<0.001	150	15	30	12	6.4
APR											
24...	0.097	0.02	0.6	0.011	0.007	0.004	--	67	--	33	--
24...	0.098	0.04	0.5	0.011	0.007	0.005	150	29	40	31	5.5
24...	0.105	0.03	0.7	0.01	0.006	0.003	--	22	--	32	--
24...	0.11	0.10	0.5	0.007	<0.005	0.002	--	19	--	200	--
24...	0.142	0.16	0.5	0.009	0.005	0.003	420	21	220	220	5.4
MAY											
28...	0.049	0.04	0.4	0.007	<0.005	0.003	--	70	--	17	--
28...	0.06	0.03	0.5	0.012	0.007	0.004	170	110	10	4	6.9
28...	0.049	0.06	0.6	0.011	<0.005	0.002	--	27	--	4	--
28...	0.082	0.18	0.5	0.006	<0.005	0.002	--	32	--	270	--
28...	0.088	0.30	0.7	0.008	<0.005	0.002	1000	26	460	440	5.2
JUN											
25...	0.039	0.03	0.4	0.009	<0.005	0.003	--	67	--	3	--
25...	0.01	0.02	0.4	0.008	<0.005	0.002	210	71	30	3	7.6
25...	0.04	0.09	0.5	0.007	<0.005	0.003	--	120	--	47	--
25...	0.052	0.23	0.5	0.007	<0.005	0.006	--	77	--	290	--
25...	0.021	0.46	0.9	0.014	<0.005	0.004	2900	1900	990	970	8.1
JUL											
23...	<0.01	0.06	0.4	0.014	0.007	0.007	--	59	--	4	--
23...	0.042	0.07	0.9	0.013	0.005	0.004	200	50	20	10	6.9
23...	<0.01	0.06	0.9	0.018	0.005	0.005	--	250	--	270	--
23...	<0.01	0.27	0.8	0.015	0.015	0.004	--	2700	--	440	--
23...	<0.01	0.88	1.3	0.02	0.019	0.002	8900	8500	920	890	7.9
SEP											
04...	0.015	<0.01	0.4	0.008	<0.005	0.004	--	24	--	5	--
04...	<0.01	<0.01	0.5	0.005	0.005	0.004	160	18	60	1	6.7
04...	<0.01	0.10	0.5	0.008	0.005	0.003	--	32	--	13	--
04...	<0.01	1.00	1.5	0.016	<0.005	0.002	--	12000	--	930	--
04...	<0.01	1.40	2.0	0.013	<0.005	0.005	19000	18000	1100	1100	8.0

JAMES RIVER BASIN

241

0204275470 LITTLE CREEK RESERVOIR (SOUTH CENTRAL) NEAR NORGE, VA

LOCATION.--Lat 37°21'17", long 76°50'27", James City County, Hydrologic Unit 02080206, 0.3 mi north of Little Creek Reservoir dam, 0.9 mi southwest of city of Newport News pumping station, 2.7 mi southwest of Toano, and 4.0 mi west of Norge.

PERIOD OF RECORD.--Water years 1983 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)
OCT							
24...	1245	3.00	95	7.00	18.5	762	7.7
24...	1300	10.0	96	7.20	18.5	762	7.8
24...	1315	20.0	99	7.20	18.5	762	7.6
24...	1330	35.0	131	6.80	10.0	762	0
24...	1345	50.0	154	6.80	8.5	762	0
NOV							
27...	1015	3.00	109	7.00	15.0	755	8.1
27...	1030	10.0	108	7.10	15.0	755	8.0
27...	1045	20.0	108	7.00	15.0	755	7.7
27...	1100	35.0	108	6.90	15.0	755	6.4
27...	1115	50.0	178	6.80	12.0	755	0
DEC							
18...	1100	3.00	96	7.00	10.0	758	9.7
18...	1110	10.0	96	7.00	10.0	758	9.7
18...	1120	20.0	97	7.00	10.0	758	9.7
18...	1130	35.0	97	7.00	10.0	758	9.7
18...	1140	50.0	97	7.00	10.0	758	9.7
FEB							
05...	1200	3.00	98	6.60	5.0	760	12.0
05...	1215	10.0	99	6.70	5.0	760	12.0
05...	1230	20.0	100	6.70	5.0	760	12.0
05...	1245	35.0	100	6.80	4.5	760	11.6
05...	1300	50.0	100	6.80	4.5	760	11.5
MAR							
20...	1215	3.00	97	7.30	10.0	750	10.5
20...	1230	10.0	96	7.30	10.0	750	10.5
20...	1245	20.0	97	7.35	10.0	750	10.4
20...	1300	35.0	98	7.40	8.5	750	10.6
20...	1310	50.0	98	7.40	8.0	750	10.5
APR							
24...	1145	3.00	102	7.20	13.5	760	10.4
24...	1200	10.0	102	7.40	13.5	760	10.4
24...	1215	20.0	101	7.40	13.5	760	10.2
24...	1230	35.0	100	7.30	9.0	760	8.5
24...	1245	50.0	101	7.20	9.0	760	7.3
MAY							
28...	1215	3.00	100	7.10	23.0	757	8.8
28...	1230	10.0	102	7.10	22.5	757	8.2
28...	1245	20.0	102	7.10	17.0	757	9.2
28...	1300	35.0	104	6.80	10.0	757	5.3
28...	1315	50.0	108	6.70	9.0	757	2.0
JUN							
25...	1215	3.00	110	7.20	25.0	757	7.9
25...	1230	10.0	110	7.30	25.0	757	7.9
25...	1245	20.0	115	6.90	21.0	757	6.1
25...	1300	35.0	115	6.70	11.0	757	3.7
25...	1315	50.0	125	6.60	8.0	757	0
JUL							
23...	1245	3.00	105	6.60	25.5	760	8.6
23...	1300	10.0	105	6.90	25.0	760	8.4
23...	1315	20.0	115	6.80	21.5	760	0
23...	1330	35.0	120	6.60	13.5	760	0
23...	1345	50.0	125	6.60	13.0	760	0
SEP							
04...	1200	3.00	103	7.10	24.0	760	8.0
04...	1215	10.0	102	7.00	24.0	760	8.0
04...	1230	20.0	106	6.70	23.0	760	3.3
04...	1245	35.0	149	6.60	14.0	760	0
04...	1300	47.0	168	6.70	11.0	760	0

JAMES RIVER BASIN

0204275470 LITTLE CREEK RESERVOIR (SOUTH CENTRAL) NEAR NORGE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)
OCT						
24...	82	0.061	<0.01	0.7	0.017	<0.001
24...	83	0.041	<0.01	0.7	0.017	<0.001
24...	81	0.042	<0.01	0.5	0.017	<0.001
24...	--	<0.01	0.43	1.0	0.026	<0.001
24...	--	0.014	0.85	1.5	0.022	<0.001
NOV						
27...	81	0.026	0.06	0.6	0.013	0.002
27...	80	0.029	0.06	0.6	0.01	0.001
27...	77	0.023	0.06	0.7	0.009	<0.001
27...	64	0.03	0.11	0.5	0.011	0.002
27...	--	<0.01	1.10	1.6	0.017	0.01
DEC						
18...	86	0.085	0.15	0.6	0.012	0.003
18...	86	0.044	0.11	0.6	0.011	0.003
18...	86	0.043	0.12	0.6	0.011	0.002
18...	86	0.043	0.11	0.6	0.009	0.001
18...	86	0.044	0.12	0.7	0.015	0.002
FEB						
05...	94	0.128	0.17	0.6	0.006	0.001
05...	94	0.096	0.11	0.5	0.005	0.004
05...	94	0.096	0.09	0.6	0.008	0.006
05...	90	0.094	0.10	0.4	0.007	0.004
05...	89	0.092	0.09	0.6	0.007	0.003
MAR						
20...	94	0.131	0.03	0.6	0.009	0.005
20...	94	0.132	0.03	0.6	0.009	<0.001
20...	94	0.127	0.05	0.5	0.011	0.003
20...	92	0.119	0.05	0.5	0.009	<0.001
20...	90	0.127	0.04	0.6	0.009	0.001
APR						
24...	100	0.128	0.04	0.6	0.007	0.004
24...	100	0.106	0.03	0.5	0.008	0.003
24...	98	0.107	0.04	0.6	0.011	0.004
24...	74	0.13	0.09	0.6	0.009	0.003
24...	63	0.12	0.11	0.6	0.01	0.008
MAY						
28...	103	0.054	0.04	0.5	0.008	0.002
28...	95	0.05	0.03	0.5	0.007	0.001
28...	96	0.04	0.04	0.5	0.008	0.002
28...	47	0.102	0.11	0.6	0.006	<0.001
28...	17	0.094	0.34	0.7	0.007	0.002
JUN						
25...	97	0.044	0.04	0.4	0.009	0.004
25...	95	0.014	0.02	0.4	0.009	0.004
25...	69	0.011	0.07	0.4	0.008	0.004
25...	34	0.072	0.16	0.5	0.007	0.004
25...	--	<0.01	0.54	0.9	0.01	0.003
JUL						
23...	105	0.041	0.11	0.5	0.011	0.007
23...	102	<0.01	0.05	0.8	0.023	0.002
23...	--	<0.01	0.13	0.6	0.013	0.002
23...	--	0.029	0.30	0.8	0.024	0.01
23...	--	<0.01	0.32	0.7	0.011	0.003
SEP						
04...	95	<0.01	<0.01	0.5	0.011	0.005
04...	95	<0.01	<0.01	0.4	0.008	0.005
04...	39	<0.01	0.06	0.4	0.008	0.003
04...	--	<0.01	0.77	1.2	0.011	0.003
04...	--	0.011	1.20	1.8	0.015	0.002

GREAT DISMAL SWAMP BASIN

243

02043500 CYPRESS SWAMP AT CYPRESS CHAPEL, VA

LOCATION.--Lat 36°37'24", long 76°36'07", Suffolk City, Hydrologic Unit 03010205, near center of span on downstream side of bridge on State Highway 32, 0.5 mi downstream from Dragon Swamp, 0.8 mi northwest of Cypress Chapel, and 6.5 mi south of downtown Suffolk.

DRAINAGE AREA.--23.8 mi².

PERIOD OF RECORD.--October 1953 to September 1971, March 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 28.65 ft above National Geodetic Vertical Datum of 1929. October 1953 to September 1971, recording gage on right bank 30 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Jan. 28, 29. Records good except for period with ice effect, Jan. 28, 29, which is fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--26 years, 27.0 ft³/s, 15.41 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,330 ft³/s, Aug. 11, 1967, gage height, 6.85 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 22	2130	*385	*4.91	Dec. 1	1200	326	4.72
Nov. 5	1200	338	4.76				

No flow many days during year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	20	306	9.4	33	47	5.2	.28	.00	99	.06	.15
2	8.0	71	231	12	30	37	4.6	.12	.00	31	.02	.05
3	7.9	128	141	18	27	30	3.9	.05	.00	5.2	.01	.04
4	13	157	86	56	25	26	3.3	.03	.00	.53	.00	.02
5	26	308	62	59	23	22	3.3	.02	.00	.07	.00	.02
6	33	217	49	37	21	19	3.3	.02	.00	.03	.00	.01
7	22	116	42	27	21	18	20	.00	.00	.01	.00	.00
8	12	64	35	19	19	15	31	.00	.00	.00	.00	.00
9	6.7	41	30	15	17	12	19	.00	.00	.00	.00	.01
10	3.9	29	26	13	15	11	11	.00	.00	.00	.00	.01
11	2.4	21	24	13	20	11	8.4	.00	.00	.00	.00	.00
12	1.4	16	22	13	35	11	6.4	.00	.00	.00	.00	.00
13	.97	14	26	11	31	9.4	4.9	.00	.00	.00	.32	.00
14	.63	12	38	10	23	11	3.4	.00	.00	.00	2.9	.00
15	.43	11	39	8.5	27	23	3.0	.00	.00	.00	1.4	.00
16	.69	10	30	7.1	36	25	3.1	.00	.00	.00	.38	.00
17	.58	9.5	24	6.8	33	18	3.2	.00	.00	.00	.47	.00
18	.55	8.9	21	6.8	36	13	3.3	.00	.00	.00	2.2	.00
19	.55	8.4	18	7.9	64	12	3.4	.00	.00	.00	3.0	.00
20	.55	8.0	15	11	81	21	2.7	.00	.00	.00	2.4	.00
21	3.5	17	14	16	81	40	2.7	.00	.00	.00	1.3	.00
22	226	99	12	14	59	39	5.1	.00	.00	.00	1.6	.00
23	297	177	12	10	51	27	7.6	.00	.00	.00	1.6	.00
24	155	137	12	8.1	49	19	6.0	.00	.00	.00	1.0	.00
25	85	84	12	7.0	41	15	3.8	.00	.00	.00	.29	.00
26	52	55	10	32	33	13	2.4	.00	.00	.00	.06	.00
27	34	41	8.9	98	30	12	1.5	.00	.00	.00	.03	.00
28	22	33	8.3	96	45	10	.90	.00	.00	.00	.71	.00
29	15	34	8.7	63	---	8.9	.65	.00	.32	22	.84	.00
30	11	138	8.4	46	---	7.7	.47	.00	27	6.9	.44	.00
31	9.4	---	7.4	40	---	6.5	---	.00	---	.53	.46	---
TOTAL	1066.15	2084.8	1378.7	790.6	1006	589.5	177.52	.52	27.32	165.27	21.49	.31
MEAN	34.4	69.5	44.5	25.5	35.9	19.0	5.92	.02	.91	5.33	.69	.01
MAX	297	308	306	98	81	47	31	.28	27	99	3.0	.15
MIN	.43	8.0	7.4	6.8	15	6.5	.47	.00	.00	.00	.00	.00
CFSM	1.45	2.92	1.87	1.07	1.51	.80	.25	.00	.04	.22	.03	.00
IN.	1.67	3.26	2.15	1.24	1.57	.92	.28	.00	.04	.26	.03	.00
CAL YR 1985	TOTAL	9906.25	MEAN	27.1	MAX	384	MIN	.00	CFSM	1.14	IN.	15.48
WTR YR 1986	TOTAL	7308.18	MEAN	20.0	MAX	308	MIN	.00	CFSM	.84	IN.	11.42

GREAT DISMAL SWAMP BASIN

02043600 LAKE DRUMMOND IN GREAT DISMAL SWAMP, VA

LOCATION.--Lat 36°35'42", long 76°26'23", Chesapeake City, Hydrologic Unit 03010205, on right bank in outlet canal, 200 ft upstream from dam and gates, 0.5 mi downstream from Lake Drummond, 3.1 mi north of North Carolina State line, and 20 mi southwest of Norfolk.

PERIOD OF RECORD.--May 1926 to current year. Prior to October 1973, published as Lake Drummond in Dismal Swamp.

REVISED RECORDS.--WSP 1032: 1934-43.

GAGE.--Nonrecording gage. Datum of gage is 12.16 ft above National Geodetic Vertical Datum of 1929. Aug. 22, 1978, to Oct. 1, 1981, water-stage recorder at same site and datum.

REMARKS.--Mean daily gage heights are shown in table below.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 6.68 ft, Sept. 17, 1960; minimum, -0.67 ft, Nov. 3, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.29 ft, Apr. 7; minimum, 3.35 ft, Aug. 11.

GAGE HEIGHT (FEET), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.92	5.04	4.97	5.00	4.98	4.98	5.05	5.10	4.66	4.10	3.48	3.58
2	4.04	5.10	4.98	5.00	4.98	4.98	5.09	5.09	4.66	4.06	3.48	3.58
3	4.08	5.03	4.92	5.00	4.96	4.92	5.09	4.98	4.58	4.06	3.42	3.58
4	4.22	5.02	4.94	5.00	4.98	4.98	5.09	5.05	4.52	4.06	3.43	3.58
5	4.23	5.09	4.92	5.00	4.98	4.99	5.09	5.05	4.52	4.02	3.42	3.58
6	4.26	5.06	4.98	5.00	4.98	5.00	5.14	5.05	4.48	4.00	3.41	3.58
7	4.27	4.98	4.92	5.00	5.02	5.00	5.20	5.08	4.47	3.96	3.41	3.57
8	4.28	5.08	4.00	5.00	4.97	5.00	5.10	5.03	4.46	3.93	3.40	3.52
9	4.30	5.10	5.10	5.00	4.98	5.00	5.07	5.04	4.44	3.90	3.40	3.56
10	4.34	5.08	5.14	4.96	5.00	5.00	5.00	5.08	4.42	3.85	3.36	3.56
11	4.38	5.10	5.10	4.96	5.02	5.00	5.00	5.08	4.36	3.79	3.36	3.56
12	4.40	4.96	4.98	4.96	4.95	5.00	4.99	4.96	4.32	3.80	3.43	3.56
13	4.40	4.98	4.92	4.96	4.96	5.00	5.00	4.92	4.34	3.81	3.56	3.55
14	4.42	4.94	4.89	4.94	4.98	5.00	5.00	4.90	4.36	3.75	3.60	3.55
15	4.42	4.95	4.90	4.93	5.00	5.00	5.09	4.90	4.33	3.71	3.60	3.50
16	4.54	4.90	5.00	4.90	4.94	5.00	5.06	4.90	4.29	3.68	3.56	3.50
17	4.50	4.85	5.00	4.90	4.98	5.05	5.04	4.90	4.28	3.62	3.58	3.48
18	4.50	4.90	5.02	4.90	4.99	5.00	5.06	4.90	4.24	3.59	3.66	3.46
19	4.50	4.94	5.02	4.90	4.96	5.00	5.06	4.86	4.18	3.55	3.64	3.42
20	4.50	5.00	5.10	4.90	4.98	5.04	5.09	4.84	4.16	3.58	3.64	3.40
21	4.54	5.02	5.00	4.94	4.98	4.98	5.09	4.88	4.10	3.57	3.68	3.40
22	4.74	5.10	4.96	4.95	4.98	5.00	5.10	4.89	4.08	3.56	3.69	3.40
23	4.80	5.05	4.92	4.95	4.98	5.00	5.10	4.88	4.04	3.54	3.68	3.40
24	4.85	5.00	4.96	4.93	4.98	5.05	5.05	4.87	4.00	3.52	3.68	3.39
25	4.90	4.98	4.96	4.90	4.95	5.00	5.02	4.80	3.98	3.50	3.62	3.40
26	4.96	4.98	4.98	5.00	4.96	5.00	5.00	4.76	3.92	3.50	3.60	3.40
27	4.98	5.00	4.98	5.07	4.96	5.00	5.05	4.74	3.92	3.52	3.60	3.40
28	5.00	5.00	4.98	5.06	4.98	5.00	5.05	4.72	3.90	3.54	3.66	3.40
29	5.10	5.10	4.98	4.98	---	5.00	5.02	4.70	3.89	3.53	3.68	3.40
30	5.08	5.15	4.98	4.98	---	5.00	5.06	4.68	3.86	3.52	3.68	3.36
31	5.05	---	4.98	4.95	---	5.01	---	4.68	---	3.52	3.60	---
MEAN	4.53	5.02	4.95	4.97	4.98	5.00	5.06	4.91	4.26	3.73	3.55	3.49
MAX	5.10	5.15	5.14	5.07	5.02	5.05	5.20	5.10	4.66	4.10	3.69	3.58
MIN	3.92	4.85	4.00	4.90	4.94	4.92	4.99	4.68	3.86	3.50	3.36	3.36
CAL YR 1985	MEAN	4.56	MAX	5.20	MIN	3.30						
WTR YR 1986	MEAN	4.53	MAX	5.20	MIN	3.36						

02044000 NOTTOWAY RIVER NEAR BURKEVILLE, VA

LOCATION.--Lat 37°04'40", long 78°11'52", Lunenburg County, Hydrologic Unit 03010201, on right bank at downstream side of bridge on State Highway 723, 4.0 mi upstream from Modest Creek, 5.6 mi north of Victoria, and 7.5 mi south of Burkeville.

DRAINAGE AREA.--38.7 mi².

PERIOD OF RECORD.--September 1946 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 1383: 1946-47, 1949. WSP 1433: 1948. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 354.58 ft above National Geodetic Vertical Datum of 1929. Prior to July 4, 1951, nonrecording gage at same site and datum. Prior to Oct. 29, 1981, on left bank at downstream side of bridge at same datum.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Nov. 3-26, Dec. 21-26, 28-30, Jan. 29-31, and May 29 to June 20. Records good except those for periods of doubtful or no gage-height record, Nov. 3-26 and May 29 to June 20, and periods with ice effect, Dec. 21-26, 28-30, and Jan. 29-31, which are fair. Estimated daily discharges for October to December 1986: Oct. 18-25 and Nov. 9-12. Records good except those for periods of doubtful or no gage-height record, Oct. 18-25 and Nov. 9-12, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--40 years, 38.5 ft³/s, 13.51 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s, Oct. 23, 1971, gage height, 22.33 ft, from rating curve extended above 3,200 ft³/s on basis of slope-area measurement of peak flow; no flow Aug. 29 to Oct. 14, 1954, Sept. 3-5, 12-15, 1963.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1930, 27.4 ft in August 1940, from U.S. Army Corps of Engineers floodmark.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1200	1,620	13.62	Nov. 21	1600	*1,950	*a14.44
Nov. 5	0500	1,560	13.46				

a From high-water marks.

October 1985 to September 1986: Minimum discharge, 0.35 ft³/s, July 15.

October to December 1986: Maximum discharge during period, 417 ft³/s, Dec. 25, gage height, 8.27 ft; minimum, 1.2 ft³/s, Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	149	203	31	38	41	22	12	5.0	1.6	.66	1.7
2	2.0	671	96	27	44	34	21	11	4.5	1.6	.78	1.7
3	50	192	64	24	39	32	21	9.9	4.5	1.8	1.6	1.8
4	45	1800	50	23	70	30	20	9.2	4.4	1.8	1.5	1.9
5	17	900	43	22	54	28	20	8.8	4.3	1.7	1.2	1.9
6	9.7	60	39	21	42	27	20	8.6	4.0	1.5	1.6	2.6
7	6.8	43	34	19	151	25	21	7.9	3.8	1.5	30	3.1
8	5.1	33	30	18	83	22	21	7.7	3.7	1.1	8.8	2.6
9	4.3	28	28	15	56	23	30	7.5	3.5	1.0	5.0	3.3
10	3.6	25	26	16	44	23	24	7.0	3.3	.90	2.8	3.3
11	3.1	23	24	16	101	24	19	7.2	3.0	.78	1.9	2.6
12	3.0	21	25	16	83	22	18	6.8	3.5	.78	96	2.3
13	3.0	19	54	16	51	46	17	8.1	2.8	.62	40	2.0
14	3.1	19	63	15	38	210	16	19	2.7	.50	12	1.9
15	3.1	18	37	14	40	196	16	20	2.5	.41	7.2	1.9
16	2.8	17	31	14	45	162	17	13	2.4	.54	5.0	1.8
17	3.1	17	28	15	54	87	19	11	2.3	.58	3.4	1.7
18	3.0	16	25	17	48	62	20	9.0	2.0	.58	3.4	1.6
19	3.1	16	23	19	40	62	17	7.7	1.9	.47	4.6	1.6
20	3.3	50	21	44	62	88	16	11	1.7	.44	57	1.7
21	5.6	1000	21	27	48	70	15	122	1.6	1.0	146	1.9
22	52	800	20	21	42	52	18	28	1.4	.95	40	2.3
23	76	184	20	19	72	43	18	14	1.4	1.3	17	2.3
24	35	92	20	17	54	38	16	9.9	1.4	3.4	8.8	2.0
25	17	66	19	18	46	33	15	8.3	1.4	2.2	5.6	1.9
26	12	52	20	78	39	31	16	7.9	1.4	3.1	3.6	1.7
27	9.7	44	20	124	39	30	15	7.4	1.4	4.8	2.5	1.6
28	8.3	38	20	64	46	28	14	7.0	1.5	1.8	2.6	1.5
29	7.7	36	21	44	---	26	14	9.5	1.6	1.2	3.6	1.6
30	7.4	275	20	34	---	24	14	6.0	1.6	1.0	3.1	1.6
31	6.8	---	20	30	---	23	---	5.4	---	.78	2.0	---
TOTAL	413.3	6704	1165	878	1569	1642	550	427.8	80.5	41.73	519.24	61.4
MEAN	13.3	223	37.6	28.3	56.0	53.0	18.3	13.8	2.68	1.35	16.7	2.05
MAX	76	1800	203	124	151	210	30	122	5.0	4.8	146	3.3
MIN	1.7	16	19	14	38	22	14	5.4	1.4	.41	.66	1.5
CFSM	.34	5.76	.97	.73	1.45	1.37	.47	.36	.07	.03	.43	.05
IN.	.40	6.44	1.12	.84	1.51	1.58	.53	.41	.08	.04	.50	.06
CAL YR 1985	TOTAL	14299.43	MEAN	39.2	MAX	1800	MIN	.58	CFSM	1.01	IN.	13.75
WTR YR 1986	TOTAL	14051.97	MEAN	38.5	MAX	1800	MIN	.41	CFSM	.99	IN.	13.51

CHOWAN RIVER BASIN

02044000 NOTTOWAY RIVER NEAR BURKEVILLE, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	4.6	8.8									
2	1.6	4.6	11									
3	1.6	5.1	66									
4	1.6	5.3	50									
5	1.5	5.5	23									
6	1.4	6.2	16									
7	1.4	7.7	13									
8	1.4	29	12									
9	1.2	12	11									
10	1.3	7.6	20									
11	1.4	7.2	31									
12	1.4	11	73									
13	1.8	14	44									
14	10	8.4	25									
15	11	7.0	19									
16	5.5	6.3	16									
17	3.9	6.3	14									
18	3.5	6.0	13									
19	3.2	5.8	12									
20	2.7	6.2	11									
21	2.5	18	9.7									
22	2.3	17	9.0									
23	2.2	11	9.2									
24	2.2	8.8	44									
25	2.1	8.3	210									
26	11	8.4	73									
27	13	30	43									
28	7.5	23	30									
29	6.2	14	24									
30	5.1	11	20									
31	4.8	---	18									
TOTAL	117.9	315.3	978.7									
MEAN	3.80	10.5	31.6									
MAX	13	30	210									
MIN	1.2	4.6	8.8									
CFSM	.10	.27	.82									
IN.	.11	.30	.94									
CAL YR 1986	TOTAL	7181.57	MEAN	19.7	MAX	210	MIN	.41	CFSM	.51	IN.	6.90

CHOWAN RIVER BASIN

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02044500 NOTTOWAY RIVER NEAR RAWLINGS, VA

LOCATION.--Lat 36°59'00", long 77°48'00", Brunswick County, Hydrologic Unit 03010201, on right bank at downstream side of bridge on State Highway 612 at Harpers Bridge, 0.1 mi upstream from Beaver Pond Creek, and 2.6 mi northwest of Rawlings.

DRAINAGE AREA.--309 mi².

PERIOD OF RECORD.--October 1950 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 184.88 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 23-26, 28-30. Records good except those for periods with ice effect, Dec. 23-26, 28-30, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--36 years, 313 ft³/s, 13.76 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,900 ft³/s, Oct. 6, 1972, gage height, 23.25 ft, from rating curve extended above 16,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.40 ft³/s, Oct. 14, 15, 1954; minimum gage height, 1.83 ft, Oct. 15, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 20.8 ft, discharge, about 19,000 ft³/s, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1500	*12,200	*16.43	Dec. 1	2130	2,880	7.91
Nov. 22	2400	6,120	12.23				

Minimum discharge, 14 ft³/s, July 16-17, gage height, 2.24 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	124	2450	230	334	378	196	117	136	41	24	76
2	48	1060	1970	245	354	349	188	110	121	43	21	70
3	76	2560	755	242	365	326	182	99	132	49	28	72
4	421	9100	533	231	380	315	179	89	130	47	50	75
5	535	9440	445	222	419	305	177	87	118	39	50	74
6	285	4630	402	210	386	294	175	87	109	34	43	76
7	176	1260	369	200	441	284	184	88	97	31	155	77
8	128	524	341	192	664	264	188	136	97	27	210	73
9	101	376	318	171	500	250	196	124	117	24	128	76
10	87	299	302	184	407	246	205	111	101	23	92	77
11	78	254	291	196	480	252	185	95	89	20	73	74
12	72	222	287	196	736	246	166	87	89	20	269	70
13	68	205	367	196	552	254	158	81	107	22	715	66
14	66	191	526	190	421	480	153	107	91	20	453	61
15	66	181	425	182	397	1230	147	155	81	17	247	55
16	67	165	342	174	401	1010	171	164	75	14	150	51
17	65	157	307	177	411	652	207	137	69	15	105	47
18	64	150	290	192	423	441	211	110	62	19	121	42
19	65	170	270	256	405	377	188	93	55	37	194	42
20	66	187	256	355	467	531	170	110	53	31	690	42
21	94	706	250	310	485	550	166	503	55	30	1560	44
22	335	4130	237	262	418	433	182	609	51	25	973	45
23	536	5180	235	228	410	350	172	352	48	26	422	44
24	493	2230	230	211	448	310	159	247	46	283	261	46
25	315	752	225	206	413	280	144	199	42	219	177	45
26	206	543	225	452	374	259	143	177	38	94	125	45
27	153	453	220	848	363	249	143	166	36	66	102	44
28	125	398	220	693	383	233	135	166	34	54	92	42
29	102	362	218	441	---	220	130	162	32	44	100	44
30	90	802	220	376	---	208	124	164	36	35	96	45
31	85	---	217	343	---	203	---	153	---	29	84	---
TOTAL	5128	46811	13743	8611	12237	11779	5124	5085	2347	1478	7810	1740
MEAN	165	1560	443	278	437	380	171	164	78.2	47.7	252	58.0
MAX	536	9440	2450	848	736	1230	211	609	136	283	1560	77
MIN	48	124	217	171	334	203	124	81	32	14	21	42
CFSM	.53	5.05	1.43	.90	1.41	1.23	.55	.53	.25	.15	.82	.19
IN.	.62	5.64	1.65	1.04	1.47	1.42	.62	.61	.28	.18	.94	.21
CAL YR 1985	TOTAL	122499	MEAN	336	MAX	9440	MIN	17	CFSM	1.09	IN.	14.75
WTR YR 1986	TOTAL	121893	MEAN	334	MAX	9440	MIN	14	CFSM	1.08	IN.	14.67

CHOWAN RIVER BASIN

02045500 NOTTOWAY RIVER NEAR STONY CREEK, VA

LOCATION.--Lat 36°54'00", long 77°24'00", Sussex County, Hydrologic Unit 03010201, on left bank 15 ft downstream from bridge on U.S. Highway 301, 1.8 mi upstream from Island Swamp, 3.3 mi south of town of Stony Creek, and 4.4 mi upstream from Stony Creek.

DRAINAGE AREA.--579 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 802: 1935(M). WSP 972: 1931(M), 1932, 1934-35, 1939. WSP 2104: Drainage area.
WDR VA-74-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 58.42 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 11, 1934, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation at low flow caused by Baskerville Mill, 33 mi upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--57 years, 564 ft³/s, 13.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,200 ft³/s, Aug. 17, 1940, gage height, 23.66 ft, from rating curve extended above 13,000 ft³/s; minimum, 3.4 ft³/s, Aug. 15, 16, 1977; minimum gage height, 0.62 ft, Sept. 2, 5, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	1430	*14,800	*20.22	Dec. 2	1730	4,150	14.04
Nov. 24	2130	7,270	16.97	Aug. 21	2030	4,550	14.57

Minimum discharge, 16 ft³/s, July 20, gage height, 2.26 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	157	3330	422	678	777	397	209	168	71	50	147
2	89	937	4080	444	681	697	382	197	148	87	41	129
3	83	2670	2990	451	686	624	370	182	132	69	44	119
4	238	3970	1200	455	698	593	359	164	132	63	59	122
5	808	8070	911	431	735	567	346	154	139	61	71	132
6	634	14300	804	410	731	539	345	151	125	55	79	125
7	342	12300	730	392	742	517	373	149	116	47	119	125
8	205	6050	668	374	951	487	390	269	108	41	300	123
9	140	1270	622	347	990	454	377	342	108	37	295	120
10	105	767	586	343	777	443	376	225	120	36	192	121
11	89	637	558	363	824	444	360	192	112	32	148	115
12	77	558	543	369	1220	445	329	167	98	29	287	108
13	69	512	654	366	1140	436	305	152	91	27	758	99
14	63	479	1150	361	851	551	294	151	120	25	936	91
15	61	453	979	348	739	1200	283	185	103	23	536	83
16	73	433	747	330	767	1740	298	229	87	25	322	77
17	65	414	633	325	781	1220	381	232	80	23	220	69
18	70	405	579	336	779	899	468	202	73	21	191	64
19	64	396	537	390	789	711	409	171	65	19	210	61
20	61	385	500	608	952	779	352	236	59	18	890	65
21	70	1020	484	644	984	1270	329	1600	56	19	3990	68
22	288	4130	470	523	849	1010	335	1520	53	30	3660	65
23	726	5640	470	448	770	777	329	903	56	49	1330	64
24	834	6920	488	401	783	654	302	487	56	67	562	63
25	692	5940	498	375	765	584	278	330	53	288	353	61
26	455	1640	479	1220	692	533	260	259	49	251	251	60
27	306	956	441	2090	652	506	255	224	45	147	194	58
28	228	822	432	1670	775	484	246	205	42	107	206	58
29	188	739	441	1060	---	452	233	200	42	85	285	56
30	160	1040	433	801	---	426	221	191	58	71	226	54
31	141	---	414	719	---	412	---	185	---	59	177	---
TOTAL	7541	84010	27851	17816	22781	21231	9982	10063	2694	1982	16982	2702
MEAN	243	2800	898	575	814	685	333	325	89.8	63.9	548	90.1
MAX	834	14300	4080	2090	1220	1740	468	1600	168	288	3990	147
MIN	61	157	414	325	652	412	221	149	42	18	41	54
CFSM	.42	4.84	1.55	.99	1.41	1.18	.58	.56	.16	.11	.95	.16
IN.	.48	5.40	1.79	1.14	1.46	1.36	.64	.65	.17	.13	1.09	.17
CAL YR 1985	TOTAL	216370	MEAN	593	MAX	14300	MIN	18	CFSM	1.02	IN.	13.90
WTR YR 1986	TOTAL	225635	MEAN	618	MAX	14300	MIN	18	CFSM	1.07	IN.	14.50

02046000 STONY CREEK NEAR DINWIDDIE, VA

LOCATION.--Lat 37°04'01", long 77°36'10", Dinwiddie County, Hydrologic Unit 03010201, on right bank at upstream side of upstream bridge on U.S. Highway 1, 1.2 mi southwest of Dinwiddie, 1.7 mi downstream from Chamberlains Bed Creek, and 5.7 mi downstream from confluence of White Oak and Butterwood Creeks.

DRAINAGE AREA.--112 mi².

PERIOD OF RECORD.--September 1946 to current year. Published as "at Dinwiddie" September 1946 to September 1947 and October 1949 to September 1950.

REVISED RECORDS.--WSP 1303: 1947(M). WSP 1433: 1951(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 129.94 ft above National Geodetic Vertical Datum of 1929. Prior to June 12, 1957, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 23-26, 28-30, and Jan. 31 to Feb. 2. Records good except those for periods with ice effect, Dec. 23-26, 28-30, and Jan. 31 to Feb. 2, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--40 years, 113 ft³/s, 13.70 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s, Oct. 6, 1972, gage height, 20.84 ft, from rating curve extended above 5,800 ft³/s on basis of contracted-opening measurement of peak flow; no flow for part of Oct. 13, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0100	*5,780	*15.23	Dec. 1	0730	1,880	9.70
Nov. 22	2130	1,610	9.20				

Minimum discharge, 0.85 ft³/s, July 16, gage height, 0.87 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	47	1680	75	125	159	76	42	27	2.3	3.4	20
2	20	434	845	76	140	141	73	36	24	2.6	2.8	18
3	42	417	352	76	144	129	72	32	41	2.6	4.1	17
4	549	3000	227	77	178	107	71	28	48	2.4	4.4	16
5	341	3960	170	74	179	102	68	27	51	2.3	4.0	15
6	144	985	143	69	150	108	66	24	36	2.3	4.1	16
7	74	356	126	65	236	102	68	24	28	2.1	15	15
8	45	210	116	61	242	94	68	33	23	1.7	10	16
9	33	134	109	57	174	76	74	56	21	1.4	7.0	21
10	27	104	103	59	141	75	78	58	18	1.4	7.9	19
11	22	89	98	62	290	85	72	44	15	1.9	7.2	17
12	20	78	97	63	344	83	65	36	13	2.0	36	16
13	18	72	174	63	220	87	61	32	13	2.0	129	14
14	16	67	259	60	157	140	57	39	14	1.9	152	12
15	16	63	164	58	146	307	57	50	12	2.5	81	10
16	16	60	121	55	163	246	67	55	12	1.4	43	8.6
17	18	59	107	63	181	166	86	48	11	2.0	27	7.3
18	19	56	99	60	174	125	102	39	8.7	2.1	20	6.2
19	22	53	90	78	200	119	87	33	6.8	2.0	22	5.2
20	23	53	85	175	631	203	74	54	5.3	1.8	150	4.7
21	38	445	84	140	459	302	68	152	5.0	2.2	619	4.7
22	221	1320	81	99	259	193	67	286	4.5	1.8	477	4.8
23	241	1270	80	84	235	137	63	201	3.9	1.7	186	4.5
24	146	593	79	74	208	119	59	88	3.6	2.1	99	4.1
25	94	279	78	71	187	107	54	62	3.3	2.2	58	3.9
26	65	192	77	384	165	99	53	49	3.0	2.8	39	4.0
27	48	154	74	530	160	96	50	42	2.8	3.5	28	4.0
28	39	132	73	327	177	95	47	38	2.4	6.7	26	4.4
29	33	116	72	179	---	92	43	37	2.4	7.1	28	4.3
30	29	514	71	144	---	83	46	33	1.9	6.0	23	4.4
31	28	---	70	120	---	80	---	31	---	4.3	21	---
TOTAL	2471	15312	6004	3578	6065	4057	1992	1809	460.6	81.1	2333.9	317.1
MEAN	79.7	510	194	115	217	131	66.4	58.4	15.4	2.62	75.3	10.6
MAX	549	3960	1680	530	631	307	102	286	51	7.1	619	21
MIN	16	47	70	55	125	75	43	24	1.9	1.4	2.8	3.9
CFSM	.71	4.55	1.73	1.03	1.94	1.17	.59	.52	.14	.02	.67	.09
IN.	.82	5.09	1.99	1.19	2.01	1.35	.66	.60	.15	.03	.78	.11
CAL YR 1985	TOTAL	44020.43	MEAN	121	MAX	3960	MIN	.60	CFSM	1.08	IN.	14.62
WTR YR 1986	TOTAL	44480.7	MEAN	122	MAX	3960	MIN	1.4	CFSM	1.09	IN.	14.77

CHOWAN RIVER BASIN

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°46'13", long 77°09'59", Southampton County, Hydrologic Unit 03010201, on right bank 1,000 ft upstream from bridge on State Highway 653, 1 mi downstream from Three Creek, 2.5 mi southwest of Sebrell, and 5.5 mi upstream from Assamoosick Swamp.

DRAINAGE AREA.--1,421 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1942, 1944, 1948-49. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 5.94 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 23, 1950, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: July 17-22. Records good except for period of doubtful gage-height record, July 17-22, which is fair.

AVERAGE DISCHARGE.--45 years, 1,368 ft³/s, 13.07 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s, July 19, 1975, gage height, 24.43 ft; minimum, 4.0 ft³/s, Oct. 25, 1981; minimum gage height, 2.82 ft, Oct. 24-25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,800 ft³/s, Nov. 9, gage height, 20.39 ft; minimum daily, 36 ft³/s, July 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2900	499	4210	1090	3500	2200	1120	565	652	85	90	1400
2	1930	599	4600	1070	2700	2280	1060	528	508	101	80	1170
3	1230	1300	5070	1100	2280	2180	1010	486	394	122	75	864
4	893	2510	5970	1140	2100	2000	946	445	326	122	74	623
5	969	3480	6830	1150	2020	1840	908	403	293	103	89	482
6	1770	4690	6540	1140	2020	1690	888	369	292	93	91	451
7	2150	6170	5210	1080	2010	1560	913	345	281	88	98	404
8	1880	10100	3700	1000	1990	1450	936	332	254	81	106	368
9	1210	13500	2720	925	2160	1340	971	382	232	77	215	352
10	756	12700	2180	875	2310	1240	967	569	218	69	368	321
11	515	10000	1900	854	2220	1160	942	506	203	63	318	300
12	387	7020	1720	864	2170	1120	911	457	202	60	244	286
13	311	4250	1670	875	2470	1120	861	411	182	59	326	261
14	259	2450	1980	862	2750	1220	803	383	160	55	891	231
15	219	1600	2480	836	2700	1620	761	369	160	51	1260	204
16	197	1280	2770	801	2350	2260	742	384	171	48	1120	181
17	184	1150	2630	776	2180	2830	773	442	150	47	843	159
18	177	1070	2220	763	2180	3110	958	461	132	45	653	143
19	168	1010	1890	788	2200	2860	1190	431	119	42	519	130
20	164	962	1660	905	2280	2340	1190	399	113	39	577	122
21	176	1310	1500	1170	2550	2310	1050	686	113	36	2040	117
22	454	3000	1380	1370	2910	2730	977	1850	100	38	3510	117
23	822	4680	1330	1270	3210	3040	966	2690	95	48	4570	115
24	1530	6170	1330	1100	3290	2920	943	3130	93	99	4990	111
25	1880	7340	1330	985	2990	2510	874	3060	93	128	4800	109
26	1780	8470	1310	1140	2580	2110	791	2180	88	241	3470	105
27	1390	8960	1250	2060	2270	1770	728	1370	84	373	1760	103
28	1010	8210	1180	2970	2140	1530	684	882	79	257	1180	102
29	757	6410	1140	3590	---	1380	644	614	75	174	1170	101
30	590	4730	1120	4140	---	1270	604	504	80	128	1370	99
31	503	---	1100	4210	---	1190	---	491	---	105	1440	---
TOTAL	29161	145620	81920	42899	68530	60180	27111	26124	5942	3077	38337	9531
MEAN	941	4854	2643	1384	2448	1941	904	843	198	99.3	1237	318
MAX	2900	13500	6830	4210	3500	3110	1190	3130	652	373	4990	1400
MIN	164	499	1100	763	1990	1120	604	332	75	36	74	99
CFSM	.66	3.42	1.86	.97	1.72	1.37	.64	.59	.14	.07	.87	.22
IN.	.76	3.81	2.14	1.12	1.79	1.58	.71	.68	.16	.08	1.00	.25
CAL YR 1985	TOTAL	500371	MEAN	1371	MAX	13500	MIN	43	CFSM	.96	IN.	13.10
WTR YR 1986	TOTAL	538432	MEAN	1475	MAX	13500	MIN	36	CFSM	1.04	IN.	14.10

CHOWAN RIVER BASIN

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02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947, 1978 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1946 to September 1947.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV 09...	1700	13800	44	45	6.00	6.40	14.0	763	15	6.4	62	--
FEB 20...	0830	2250	61	64	6.40	7.00	8.5	753	10	10.4	90	40
MAY 23...	0815	2610	56	57	6.60	6.90	18.5	754	45	6.8	73	800
AUG 21...	1130	2080	67	66	6.10	6.50	23.0	756	25	6.0	71	K4100

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	ALKA- LINITY WH WAT TOTAL FIELD MG/L AS CACO3	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 09...	--	12	6	3.0	1.1	2.7	3.0	6.0	6	6.0	7.0	6.3
FEB 20...	49	17	9	4.4	1.5	4.8	1.5	11	10	8.0	10	7.0
MAY 23...	640	17	6	4.3	1.4	4.2	2.0	13	12	11	13	11
AUG 21...	K5900	22	11	6.1	1.6	3.4	1.7	12	10	11	13	14

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
NOV 09...	4.2	<0.10	7.1	38	32	<0.010	<0.100	0.020	0.080	0.80	0.080	0.050
FEB 20...	7.0	<0.10	9.9	47	42	<0.010	0.160	0.040	0.040	0.40	0.030	0.010
MAY 23...	4.6	<0.10	8.8	60	43	<0.010	0.170	0.060	0.080	0.90	0.120	0.030
AUG 21...	3.7	<0.10	10	60	48	<0.010	0.150	0.030	0.040	0.60	0.100	0.030

CHOWAN RIVER BASIN

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 09...	0.010	160	<1	32	<0.5	1	1	<3	9	550	42	5
FEB 20...	<0.010	80	<1	29	<0.5	<1	<1	<3	<1	350	<1	<4
MAY 23...	0.020	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	0.020	140	<1	46	<0.5	<1	<1	<3	3	570	<5	<4

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 09...	37	<0.1	<10	2	<1	<1	23	<6	40	20	73
FEB 20...	19	<0.1	<10	1	<1	<1	36	<6	7	8	89
MAY 23...	--	--	--	--	--	--	--	--	--	82	94
AUG 21...	88	0.1	<10	1	<1	<1	51	<6	52	47	97

CHOWAN RIVER BASIN

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02047100 ASSAMOOSICK SWAMP NEAR SEBRELL, VA

LOCATION.--Lat 36°46'22", long 77°05'57", Southampton County, Hydrologic Unit 03010201, near center of span on upstream side of bridge on State Highway 35, 0.7 mi upstream from Indian Branch, 1.7 mi southeast of Sebrell, and 2.8 mi upstream from mouth.

DRAINAGE AREA.--86.4 mi².

PERIOD OF RECORD.--March 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 20 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Dec. 22, 23, 28-31, and Jan. 22 to Feb. 26. Records good except those for periods of no gage-height record, Dec. 22, 23, and Jan. 22 to Feb. 26, and period with ice effect, Dec. 28-31, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,730 ft³/s, Sept. 28, 1985, gage height, 7.42 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 706 ft³/s, Nov. 24, gage height, 5.68 ft; no flow many days during year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	432	41	411	65	200	131	51	15	1.5	.00	1.5	100
2	264	72	506	61	150	121	44	11	.80	.00	.47	66
3	176	89	566	63	130	112	39	6.6	.47	.00	.23	37
4	112	142	478	65	120	105	36	4.8	.18	.00	.11	26
5	81	202	366	68	115	92	34	3.7	.08	.00	.04	20
6	66	259	282	68	112	81	34	2.8	.04	.00	.02	18
7	61	308	222	65	114	75	41	2.0	.03	.00	.02	14
8	55	325	182	58	118	65	41	1.7	.02	.00	.01	9.5
9	44	282	152	53	120	57	41	1.4	.00	.00	.00	8.5
10	35	232	133	51	130	51	39	.86	.00	.00	.00	6.6
11	27	168	116	48	131	48	36	.56	.00	.00	.00	6.0
12	20	119	103	45	132	44	34	.41	.00	.00	.02	5.0
13	15	88	105	44	135	46	32	.29	.00	.00	2.6	4.0
14	11	65	127	42	155	60	30	.41	.00	.00	34	2.8
15	8.0	50	136	40	150	112	28	.74	.00	.00	98	2.0
16	8.0	38	144	40	135	158	32	.56	.00	.00	248	1.5
17	6.6	34	148	40	130	170	34	.56	.00	.00	180	.98
18	5.6	31	156	38	120	166	36	.50	.00	.00	81	.74
19	4.8	28	150	40	122	154	41	.47	.00	.00	39	.50
20	4.7	26	127	52	135	150	51	1.4	.00	.00	41	.38
21	15	111	112	55	165	180	51	24	.00	.00	127	.32
22	81	342	105	76	215	194	49	43	.00	.00	305	.18
23	116	562	95	64	220	212	48	59	.00	.00	520	.11
24	152	692	85	56	175	212	48	66	.00	.00	330	.05
25	166	590	81	50	155	180	50	59	.00	.00	212	.04
26	156	459	77	80	150	146	49	39	.00	.00	129	.03
27	127	352	72	130	129	118	40	26	.00	.00	65	.02
28	92	270	64	175	133	95	32	16	.00	.00	92	.01
29	68	222	60	275	---	79	26	6.8	.00	8.0	156	.00
30	51	275	57	295	---	68	20	4.2	.00	16	166	.00
31	40	---	59	245	---	58	---	2.6	---	4.5	125	---
TOTAL	2500.7	6474	5477	2547	3996	3540	1167	401.36	3.12	28.50	2953.02	330.26
MEAN	80.7	216	177	82.2	143	114	38.9	12.9	.10	.92	95.3	11.0
MAX	432	692	566	295	220	212	51	66	1.5	16	520	100
MIN	4.7	26	57	38	112	44	20	.29	.00	.00	.00	.00
CFSM	.93	2.50	2.05	.95	1.66	1.32	.45	.15	.00	.01	1.10	.13
IN.	1.08	2.79	2.36	1.10	1.72	1.52	.50	.17	.00	.01	1.27	.14
CAL YR 1985	TOTAL	30595.67	MEAN	83.8	MAX	1440	MIN	.00	CFSM	.97	IN.	13.17
WTR YR 1986	TOTAL	29417.96	MEAN	80.6	MAX	692	MIN	.00	CFSM	.93	IN.	12.67

02047500 BLACKWATER RIVER NEAR DENDRON, VA

LOCATION.--Lat 37°01'30", long 76°52'30", Surry County, Hydrologic Unit 03010202, on left bank 10 ft upstream from Walls Bridge on State Highway 617, 1.2 mi downstream from Cypress Swamp, and 3.5 mi southeast of Dendron.

DRAINAGE AREA.--294 mi².

PERIOD OF RECORD.--October 1941 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 30.99 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Aug. 13, 1980, at site 25 ft upstream at same datum.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Dec. 28-31 and Jan. 10, 11, 28-30. Records good except those for periods with ice effect, Dec. 28-31 and Jan. 10, 11, 28-30, which are fair. No estimated daily discharges for period October to December 1986. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--45 years, 311 ft³/s, 14.37 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,850 ft³/s, Sept. 28, 1985, gage height, 9.11 ft, from rating curve extended above 4,900 ft³/s; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.1 ft, from U.S. Army Corps of Engineers floodmarks, discharge, 10,000 ft³/s, from rating curve extended above 4,900 ft³/s.

EXTREMES FOR CURRENT PERIOD.--Water year 1986: Maximum discharge, 1,730 ft³/s, Dec. 2, gage height, 5.82 ft; no flow many days in June and July.

October to December 1986: Maximum discharge during period, 878 ft³/s, Dec. 30, gage height, 4.79 ft; no flow Oct. 6-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	376	1290	291	787	545	199	114	42	.00	15	105
2	1270	376	1650	287	701	517	187	104	24	.00	10	87
3	1060	425	1600	276	623	479	177	90	14	.00	8.7	75
4	869	561	1330	269	591	387	169	77	11	.00	8.6	63
5	727	731	1270	263	551	351	161	63	10	.00	5.7	53
6	615	891	1200	254	476	335	151	51	7.9	.00	3.4	49
7	497	1030	1030	243	461	316	151	41	6.5	.00	2.0	43
8	445	1150	863	225	490	291	149	36	5.9	.00	.85	42
9	665	1160	694	198	446	266	158	31	6.2	.00	.27	47
10	785	1140	566	200	432	249	168	25	4.2	.00	.09	45
11	683	1030	478	195	454	238	170	30	1.8	.00	.49	47
12	538	858	417	197	490	226	149	39	.71	.00	.16	44
13	406	682	410	193	454	226	158	23	.20	.00	.66	36
14	307	549	461	185	453	263	146	34	.07	.00	248	27
15	239	448	528	179	502	399	140	46	.01	.00	337	22
16	202	372	564	164	477	408	150	55	.00	.00	199	17
17	175	324	596	176	501	364	175	54	.00	.00	102	13
18	152	291	491	171	520	341	166	40	.00	.00	.58	9.9
19	135	270	431	178	544	366	157	28	.00	.00	.59	8.2
20	124	261	404	188	554	401	151	53	.00	.00	153	6.9
21	137	303	373	185	662	456	155	82	.00	.00	440	5.8
22	212	508	340	188	806	403	195	89	.00	.00	785	4.6
23	276	905	335	186	870	426	199	103	.00	.07	693	4.3
24	345	1210	314	182	881	370	196	112	.00	.13	429	5.9
25	363	1240	299	183	851	328	174	122	.00	2.8	256	6.2
26	353	1240	279	247	827	332	163	170	.00	39	172	5.2
27	342	1220	255	376	714	335	168	199	.00	73	133	4.6
28	405	1180	240	450	607	313	144	177	.00	106	159	3.9
29	462	980	235	550	---	278	137	140	.00	85	159	3.6
30	449	948	230	640	---	246	127	101	.00	49	178	2.2
31	401	---	245	692	---	221	---	69	---	26	151	---
TOTAL	15139	22659	19418	8211	16725	10676	4890	2398	134.49	381.00	4848.10	886.3
MEAN	488	755	626	265	597	344	163	77.4	4.48	12.3	156	29.5
MAX	1500	1240	1650	692	881	545	199	199	42	106	785	105
MIN	124	261	230	164	432	221	127	23	.00	.00	.09	2.2
CFSM	1.66	2.57	2.13	.90	2.03	1.17	.55	.26	.02	.04	.53	.10
IN.	1.92	2.87	2.46	1.04	2.12	1.35	.62	.30	.02	.05	.61	.11
CAL YR 1985	TOTAL 122824.85	MEAN 337	MAX 5540	MIN .00	CFSM 1.15	IN. 15.54						
WTR YR 1986	TOTAL 106365.89	MEAN 291	MAX 1650	MIN .00	CFSM .99	IN. 13.46						

CHOWAN RIVER BASIN

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02047500 BLACKWATER RIVER NEAR DENDRON, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	17	97									
2	.45	17	104									
3	.13	17	133									
4	.06	18	146									
5	.02	18	156									
6	.00	17	153									
7	.00	18	153									
8	.00	21	146									
9	.00	28	140									
10	.00	31	146									
11	.00	37	166									
12	.00	48	187									
13	.00	53	199									
14	.00	49	205									
15	.00	50	210									
16	.00	55	204									
17	.00	60	191									
18	.00	59	185									
19	.00	58	178									
20	.00	56	167									
21	.00	83	155									
22	.00	90	146									
23	.00	72	138									
24	.00	65	170									
25	.00	74	304									
26	.16	76	522									
27	7.3	89	691									
28	13	101	733									
29	14	132	824									
30	16	111	864									
31	17	---	731									
TOTAL	69.12	1620	8544									
MEAN	2.23	54.0	276									
MAX	17	132	864									
MIN	.00	17	97									
CFSM	.01	.18	.94									
IN.	.01	.20	1.08									
CAL YR 1986	TOTAL	59383.01	MEAN	163	MAX	881	MIN	.00	CFSM	.55	IN.	7.51

02048000 BLACKWATER RIVER AT ZUNI, VA

LOCATION.--Lat 36°52'05", long 76°50'07", Isle of Wight County, Hydrologic Unit 03010202, on left bank at downstream side of bridge on U.S. Highway 460 at Zuni, 1.6 mi downstream from Pope Swamp, and 4.2 mi upstream from Antioch Swamp.

DRAINAGE AREA.--456 mi².

PERIOD OF RECORD.--October 1942 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 8.56 ft above National Geodetic Vertical Datum of 1929. Prior to July 18, 1957, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: June 4 to Sept. 30. Records good except for period of backwater from beaver dam, June 4 to Sept. 30, which is fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--44 years, 496 ft³/s, 14.77 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s, Mar. 21, 1975; maximum gage height, 17.51 ft, June 5, 1963; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 23.2 ft, discharge, 16,000 ft³/s, from rating curve extended above 5,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,640 ft³/s, Oct. 1, falling stage, peak occurred Sept. 29, 1985; maximum peak discharge, 2,970 ft³/s, Dec. 3, gage height, 11.01 ft; minimum daily discharge, 0.05 ft³/s, July 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4950	626	2520	380	1050	1250	382	162	89	1.2	45	209
2	3570	701	2730	390	1090	1100	348	155	52	1.5	25	175
3	2610	769	2950	411	1160	960	311	124	22	2.7	17	134
4	1980	888	2880	434	1120	869	282	96	32	4.5	14	120
5	1580	1090	2570	438	1030	796	260	80	20	5.5	12	105
6	1300	1220	2200	425	962	692	245	65	12	1.9	8.0	94
7	1120	1320	1960	409	896	597	248	51	8.0	.50	4.0	82
8	987	1420	1760	387	814	540	246	38	6.0	.78	2.1	76
9	834	1470	1560	356	750	500	251	28	3.5	1.1	.60	80
10	707	1500	1350	335	733	465	245	18	4.0	1.5	.30	84
11	722	1480	1140	329	745	431	234	12	2.0	2.3	3.1	80
12	845	1430	957	320	767	405	229	7.8	1.2	1.3	5.6	76
13	865	1330	853	315	781	386	234	4.8	.80	.75	18	70
14	780	1180	823	305	788	382	223	8.4	1.1	.40	61	55
15	655	1000	811	291	770	397	208	14	.70	.23	116	45
16	536	836	824	267	742	438	205	18	.53	.15	264	37
17	421	696	865	257	778	576	202	20	.34	.05	396	28
18	330	580	887	257	819	673	213	21	.25	.13	328	20
19	261	505	885	265	858	630	228	20	.20	.30	210	16
20	218	449	815	290	934	589	235	18	.18	.54	122	13
21	214	550	719	305	994	636	226	40	.15	.90	121	12
22	360	1430	617	312	1050	698	223	74	.10	2.5	287	9.6
23	418	1830	580	307	1210	735	228	90	.22	5.0	580	8.5
24	445	2010	561	298	1370	700	244	104	.55	6.9	900	7.5
25	486	2100	538	286	1430	656	261	104	.46	5.4	800	9.0
26	545	2110	507	324	1410	604	261	94	.33	4.5	550	9.2
27	577	2000	461	435	1380	535	244	88	.25	9.0	301	9.5
28	565	1890	432	565	1350	494	214	108	.20	14	265	8.4
29	529	1800	418	696	---	476	187	153	.25	25	258	5.0
30	507	2010	395	870	---	456	173	169	.52	37	241	3.0
31	545	---	377	995	---	421	---	137	---	62	235	---
TOTAL	30462	38220	36945	12254	27781	19087	7290	2122.0	258.83	199.53	6189.70	1680.7
MEAN	983	1274	1192	395	992	616	243	68.5	8.63	6.44	200	56.0
MAX	4950	2110	2950	995	1430	1250	382	169	89	62	900	209
MIN	214	449	377	257	733	382	173	4.8	.10	.05	.30	3.0
CFSM	2.16	2.79	2.61	.87	2.18	1.35	.53	.15	.02	.01	.44	.12
IN.	2.49	3.12	3.01	1.00	2.27	1.56	.59	.17	.02	.02	.50	.14
CAL YR 1985	TOTAL	206773.06	MEAN	567	MAX	6310	MIN	.20	CFSM	1.24	IN.	16.87
WTR YR 1986	TOTAL	182489.76	MEAN	500	MAX	4950	MIN	.05	CFSM	1.10	IN.	14.89

CHOWAN RIVER BASIN

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02049500 BLACKWATER RIVER NEAR FRANKLIN, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°45'45", long 76°53'55", Southampton County, Hydrologic Unit 03010202, on right bank 0.4 mi south of Burdette, 0.5 mi upstream from Black Creek, 3.3 mi downstream from Corrowaugh Swamp, and 6.0 mi north of Franklin.

DRAINAGE AREA.--617 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1944 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: July 7-11, 15-21, and Sept. 28, 29. Records good except those for periods of doubtful gage-height record, July 7-11, 15-21, and Sept. 28, 29, and periods of tidal effect below 20 ft³/s during May to September, which are poor. Low flow reversed by tide some years. Diversion upstream from station by city of Norfolk for municipal supply most years.

AVERAGE DISCHARGE.--42 years, 639 ft³/s, 14.06 in/yr, adjusted for diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s, Sept. 14, 1960, gage height, 17.14 ft, from flood-marks; minimum daily, 0.07 ft³/s, Oct. 16, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 22 ft, discharge, 21,000 ft³/s, from rating curve extended above 9,400 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,260 ft³/s, Oct. 1, stage falling, peak occurred Sept. 30, 1985; maximum peak discharge, 3,260 ft³/s, Dec. 2, gage height, 11.04 ft; minimum daily, 0.10 ft³/s, July 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP			
1	4980	533	3000	508	1140	1490	498	182	139	1.8	41	561			
2	4110	629	3250	508	1180	1420	457	168	91	3.0	39	462			
3	3230	724	3220	519	1200	1290	431	150	66	3.2	22	360			
4	2530	826	3070	547	1230	1150	370	123	39	1.6	9.0	269			
5	2020	1040	2830	564	1230	1030	325	100	20	3.9	3.0	194			
6	1640	1240	2530	562	1170	923	293	83	12	1.8	1.7	140			
7	1330	1340	2220	548	1100	823	298	72	8.8	.70	1.9	108			
8	1100	1390	1970	524	1040	748	311	60	4.7	.30	1.9	91			
9	927	1420	1770	492	954	690	312	46	5.2	.23	1.8	80			
10	774	1430	1590	465	888	646	318	34	3.0	.19	.33	73			
11	667	1410	1410	446	880	611	289	20	2.9	.15	2.1	69			
12	632	1380	1240	432	919	578	282	12	4.2	.93	5.2	63			
13	667	1330	1110	423	943	547	262	9.7	4.1	.93	2.4	55			
14	685	1240	1040	413	954	534	253	8.0	3.5	.95	7.1	42			
15	657	1120	987	396	958	546	241	11	2.0	.60	50	31			
16	618	987	963	374	948	562	233	15	3.3	.39	123	22			
17	546	852	955	356	946	611	231	16	2.6	.25	294	14			
18	460	731	956	346	971	728	230	17	.67	.20	481	7.4			
19	375	648	952	349	1010	799	236	19	.33	.10	502	4.8			
20	306	588	932	379	1090	806	247	20	1.6	.20	391	5.9			
21	281	668	883	412	1170	830	254	37	1.1	.35	288	5.9			
22	512	1670	794	427	1240	858	257	47	.47	.87	495	5.0			
23	716	2460	728	429	1330	893	255	61	.93	3.0	883	2.6			
24	703	2660	697	416	1440	910	253	78	4.7	4.7	1020	1.8			
25	672	2580	675	398	1500	869	262	104	6.4	6.2	1050	.60			
26	642	2430	649	449	1520	805	269	106	3.3	8.0	928	.20			
27	621	2250	615	614	1510	734	272	95	3.9	6.5	721	.60			
28	604	2070	584	757	1510	668	264	85	5.3	3.5	634	.20			
29	574	1930	559	877	---	617	232	92	5.4	5.4	612	.15			
30	536	2210	538	983	---	588	204	120	5.3	9.7	647	2.0			
31	506	---	515	1070	---	555	---	145	---	24	638	---			
TOTAL	34621	41786	43232	15983	31971	24859	8639	2135.7	450.70	93.64	9895.43	2671.15			
MEAN	1117	1393	1395	516	1142	802	288	68.9	15.0	3.02	319	89.0			
MAX	4980	2660	3250	1070	1520	1490	498	182	139	24	1050	561			
MIN	281	533	515	346	880	534	204	8.0	.33	.10	.33	.15			
(*)	0	0	0	0	0	4.69	34.1	34.4	15.2	10.3	29.2	29.5			
MEAN†	1117	1393	1395	516	1142	807	322	103	30.2	13.3	348	118			
CFSM†	1.81	2.26	2.26	.84	1.85	1.31	.52	.17	.05	.02	.56	.19			
IN.†	2.09	2.52	2.61	.96	1.93	1.51	.58	.19	.05	.02	.65	.21			
CAL YR 1985	TOTAL	221299.73		MEAN	606	MAX	5310	MIN	.20	MEAN†	623	CFSM†	1.01	IN.†	13.71
WTR YR 1986	TOTAL	216337.62		MEAN	593	MAX	4980	MIN	.10	MEAN†	606	CFSM†	.98	IN.†	13.32

* Average diversion, in cubic feet per second, by city of Norfolk.

† Adjusted for diversion.

CHOWAN RIVER BASIN

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken at bridge 2.0 mi upstream from discharge station.

PERIOD OF RECORD.--Water years 1947, 1952, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV 14...	1400	1230	87	86	6.50	6.80	16.5	757	2.5	6.2	64	58
FEB 19...	0945	1010	82	85	6.50	6.80	7.0	749	4.5	10.6	89	86
MAY 22...	1000	45	120	128	6.90	7.30	20.0	751	5.0	4.4	49	92
AUG 21...	1430	278	133	133	6.00	6.30	24.5	756	2.5	4.1	50	82

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	ALKA- LINITY WH WAT TOTAL FIELD (MG/L AS CACO3)	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 14...	110	32	15	10	1.7	3.8	2.7	17	17	17	21	8.1
FEB 19...	120	28	17	8.8	1.5	3.8	1.7	11	11	11	13	8.3
MAY 22...	77	46	11	15	2.1	4.7	2.3	36	34	35	42	11
AUG 21...	190	48	40	16	2.0	4.0	1.9	10	9	8.0	9.0	39

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
NOV 14...	13	<0.10	8.6	81	60	<0.010	<0.100	0.040	0.050	0.80	0.040	0.020
FEB 19...	10	<0.10	4.5	48	46	<0.010	0.460	0.050	0.040	0.60	0.030	<0.010
MAY 22...	11	<0.10	4.7	88	72	0.020	<0.100	0.070	0.080	0.70	0.050	0.020
AUG 21...	7.1	<0.10	11	112	87	<0.010	<0.100	0.050	0.060	0.60	0.040	0.020

CHOWAN RIVER BASIN

259

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 14...	0.010	130	1	47	1	<1	<1	<3	2	920	3	5
FEB 19...	<0.010	100	<1	38	<0.5	<1	<1	<3	<1	430	<1	<4
MAY 22...	0.020	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	0.010	110	<1	82	<0.5	<1	<1	<3	3	790	<5	<4

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 14...	37	0.1	<10	4	<1	<1	53	<6	9	6	81
FEB 19...	16	<0.1	<10	7	<1	<1	50	<6	<3	3	94
MAY 22...	--	--	--	--	--	--	--	--	--	6	93
AUG 21...	270	<0.1	<10	2	<1	<1	92	<6	45	7	66

CHOWAN RIVER BASIN

02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA

LOCATION.--Lat 36°59'53", long 78°21'03", Lunenburg County, Hydrologic Unit 03010204, on right bank at upstream side of bridge on State Highway 40, 0.5 mi downstream from Tusekiah Creek, 4.6 mi upstream from Juniper Creek, and 5.2 mi northwest of Lunenburg.

DRAINAGE AREA.--55.6 mi².

PERIOD OF RECORD.--August 1946 to September 1980, October 1981 to current year.

REVISED RECORDS.--WSP 1303: 1947(M), 1949(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 333.7 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 5, 1951, nonrecording gage at same site and datum. July 5, 1951, to July 11, 1980, water-stage recorder at site 20 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 1-13, Dec. 21-28, Jan. 8, 9, 15, 16, 28-31, May 4-7, and Sept. 25. Records good except those for periods of doubtful gage-height record, Nov. 1-13, May 4-7, and Sept. 25, and periods with ice effect, Dec. 21-28 and Jan. 8, 9, 15, 16, 28-31, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--39 years, 53.4 ft³/s, 13.04 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,400 ft³/s, Oct. 23, 1971, gage height, 28.30 ft, from rating curve extended above 1,700 ft³/s on basis of slope-area measurement of peak flow; no flow Sept. 5-21, Oct. 8-14, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 48 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 1	1630	2,240	13.44	Nov. 21	0500	2,360	13.95
Nov. 4	Unknown	*2,690	*a15.42				

a From high-water mark.

Minimum discharge, 0.95 ft³/s, Aug. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	780	242	41	42	48	28	16	14	6.2	1.5	5.2
2	11	800	114	32	48	43	27	15	12	6.8	1.2	5.5
3	108	200	69	30	42	42	28	14	12	6.8	1.1	7.8
4	92	2200	54	29	67	40	26	13	12	5.5	1.1	9.5
5	26	1350	49	28	53	38	26	13	12	4.6	1.0	7.5
6	16	110	45	26	44	37	26	12	11	4.2	1.1	8.5
7	12	68	41	26	212	36	28	12	10	3.8	5.4	7.2
8	10	48	39	23	90	32	27	14	10	3.4	3.7	6.5
9	9.5	40	37	22	63	31	36	13	10	3.0	2.5	8.0
10	8.8	36	35	25	55	33	27	13	9.0	2.5	2.0	6.2
11	8.5	33	34	26	156	34	25	12	8.0	2.8	1.9	3.6
12	8.2	32	35	26	91	31	24	12	7.8	3.6	72	3.0
13	8.0	29	89	25	60	62	23	46	7.5	3.4	18	2.7
14	8.5	28	69	23	51	292	23	49	7.2	2.6	9.2	2.5
15	8.2	26	46	23	55	227	23	37	6.8	2.1	6.2	2.4
16	8.2	24	40	22	60	207	24	24	6.5	1.9	5.0	2.3
17	8.2	24	37	24	68	85	26	19	6.3	1.9	4.3	2.3
18	8.0	23	35	25	59	61	26	16	5.5	1.9	4.8	2.4
19	8.5	22	31	29	54	82	23	14	5.2	1.8	38	2.4
20	8.8	23	30	44	49	95	22	212	4.8	1.9	165	2.4
21	25	1120	29	31	46	65	23	178	4.8	3.6	118	2.5
22	104	876	28	27	44	50	24	49	4.8	3.6	26	2.6
23	93	215	27	26	68	46	22	28	4.5	9.0	14	2.7
24	37	102	26	24	52	43	20	22	4.9	7.5	9.8	3.0
25	25	70	26	26	48	39	20	20	4.9	5.2	7.0	3.6
26	18	57	25	122	43	37	19	19	4.3	4.0	5.5	3.1
27	15	50	25	128	46	37	19	17	4.3	3.6	5.4	2.6
28	14	45	25	45	55	34	18	18	5.0	3.2	12	2.5
29	13	42	26	42	---	31	18	21	5.5	2.6	11	2.4
30	12	494	26	36	---	30	17	17	7.2	2.2	7.2	2.2
31	12	---	32	35	---	30	---	15	---	1.8	5.5	---
TOTAL	750.4	8967	1466	1091	1821	1998	718	980	227.8	117.0	566.4	125.1
MEAN	24.2	299	47.3	35.2	65.0	64.5	23.9	31.6	7.59	3.77	18.3	4.17
MAX	108	2200	242	128	212	292	36	212	14	9.0	165	9.5
MIN	6.0	22	25	22	42	30	17	12	4.3	1.8	1.0	2.2
CFSM	.44	5.38	.85	.63	1.17	1.16	.43	.57	.14	.07	.33	.07
IN.	.50	6.00	.98	.73	1.22	1.34	.48	.66	.15	.08	.38	.08
CAL YR 1985	TOTAL	21950.4	MEAN	60.1	MAX	2200	MIN	2.6	CFSM	1.08	IN.	14.69
WTR YR 1986	TOTAL	18827.7	MEAN	51.6	MAX	2200	MIN	1.0	CFSM	.93	IN.	12.60

02051500 MEHERRIN RIVER NEAR LAWRENCEVILLE, VA

LOCATION.--Lat 36°43'00", long 77°49'55", Brunswick County, Hydrologic Unit 03010204, on right bank 50 ft upstream from Gholson Bridge on State Highway 715, 0.6 mi upstream from Allen Creek, and 3.0 mi southeast of Lawrenceville.

DRAINAGE AREA.--552 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1932(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 136.56 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 17, 1931, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 4-8. Records good except for period of no gage-height record, Nov. 4-8, which is fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--58 years, 501 ft³/s, 12.33 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s, Aug. 17, 1940, gage height, 42.0 ft, from flood-mark, from rating curve extended above 13,000 ft³/s on basis of velocity-area studies and records for Nottoway River near Stony Creek; minimum, 4.2 ft³/s, Oct. 7, 8, 1954; minimum gage height, 0.72 ft, Sept. 23, 24, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	Unknown	*15,000	*a28.98	Dec. 2	0300	5,230	16.96
Nov. 23	1700	9,300	23.33				

a From high-water mark.

Minimum discharge, 24 ft³/s, Aug. 2, gage height, 1.43 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	208	4300	337	482	618	360	208	164	76	27	102
2	64	3640	3720	370	504	513	350	202	151	56	26	91
3	71	5400	1160	369	536	462	338	189	135	80	53	90
4	553	10100	811	347	514	438	328	183	119	77	102	98
5	719	14600	664	334	571	420	325	179	123	76	62	87
6	297	12200	587	318	532	400	319	186	123	49	46	106
7	169	5320	539	304	549	385	339	166	117	74	630	95
8	120	863	498	291	1140	362	342	175	123	45	207	88
9	101	607	470	251	733	343	333	175	116	37	88	92
10	90	498	446	274	576	338	327	166	99	37	67	89
11	85	451	426	307	643	344	313	161	102	66	73	95
12	81	419	420	287	1330	341	292	159	87	49	377	79
13	77	395	524	284	842	336	281	152	115	55	461	66
14	76	377	1030	283	615	853	277	214	98	64	382	74
15	75	358	757	248	552	3370	272	304	95	72	183	62
16	79	341	558	231	558	1960	292	263	95	39	119	60
17	86	330	490	287	590	1230	320	228	87	30	115	58
18	78	318	457	283	586	794	319	199	81	30	179	54
19	75	310	427	334	560	641	298	189	80	38	256	57
20	74	304	400	440	596	1160	282	315	82	36	837	53
21	86	1870	389	413	583	1160	280	1810	76	27	3390	56
22	251	6180	358	356	502	845	298	1270	69	37	1090	56
23	710	8890	375	314	482	645	296	487	61	41	433	56
24	614	6720	397	292	523	565	267	321	67	117	255	64
25	350	1270	383	290	496	513	249	251	91	132	168	49
26	232	836	359	894	448	472	245	224	94	89	127	49
27	174	680	323	1750	450	450	241	208	95	73	100	50
28	147	592	324	1240	590	432	234	196	62	56	462	49
29	127	554	327	676	---	406	225	188	48	63	270	49
30	114	946	324	554	---	384	218	185	73	42	155	48
31	110	---	301	507	---	372	---	176	---	31	122	---
TOTAL	5957	85577	22544	13465	17083	21552	8860	9329	2928	1794	10862	2122
MEAN	192	2853	727	434	610	695	295	301	97.6	57.9	350	70.7
MAX	719	14600	4300	1750	1330	3370	360	1810	164	132	3390	106
MIN	64	208	301	231	448	336	218	152	48	27	26	48
CFSM	.35	5.17	1.32	.79	1.11	1.26	.53	.55	.18	.10	.63	.13
IN.	.40	5.77	1.52	.91	1.15	1.45	.60	.63	.20	.12	.73	.14
CAL YR 1985	TOTAL	221543	MEAN	607	MAX	14600	MIN	36	CFSM	1.10	IN.	14.93
WTR YR 1986	TOTAL	202073	MEAN	554	MAX	14600	MIN	26	CFSM	1.00	IN.	13.62

CHOWAN RIVER BASIN

02051600 GREAT CREEK NEAR COCHRAN, VA

LOCATION.--Lat 36°48'46", long 77°55'19", Brunswick County, Hydrologic Unit 03010204, on left bank at upstream side of bridge on State Highway 763, 1.4 mi southwest of Cochran, and 9.5 mi upstream from Roses Creek.

DRAINAGE AREA.--30.7 mi².

PERIOD OF RECORD.--May 1958 to December 1986 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 215.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges for period October 1985 to September 1986: Dec. 23-26, 28-30, Jan. 10, 11, and Jan. 30 to Feb. 1. Records good except those for periods with ice effect, Dec. 23-26, 28-30, Jan. 10, 11, and Jan. 30 to Feb. 1, which are fair. No estimated daily discharges for period October to December 1986.

Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--28 years, 30.4 ft³/s, 13.45 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,100 ft³/s, Oct. 6, 1972, gage height, 16.65 ft, from rating curve extended above 3,700 ft³/s on basis of contracted-opening measurements at gage heights 12.08 ft, 14.57 ft, and 16.65 ft; minimum, 0.10 ft³/s, Oct. 11, 12, 1965, Sept. 23, 1968; minimum gage height, 1.50 ft, Aug. 19, 1965.

EXTREMES FOR CURRENT PERIOD OCTOBER 1985 TO DECEMBER 1986.--Peak discharges equal to or greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	1100	442	7.21	Dec. 1	0530	332	6.47
Nov. 4	1130	*4,030	*14.15	Aug. 21	0300	386	6.86
Nov. 22	2130	346	6.57				

October 1985 to September 1986: Minimum discharge, 0.90 ft³/s, July 19, Aug. 2, gage height, 1.70 ft.

October to December 1986: Maximum discharge during period, 903 ft³/s, Dec. 25, gage height, 9.09 ft; minimum, 2.3 ft³/s, Oct. 7, gage height, 1.84 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	78	236	25	35	36	21	11	7.2	3.0	1.1	8.2
2	3.4	392	91	22	38	32	21	10	6.6	3.5	1.8	7.8
3	21	159	60	23	35	31	20	9.4	7.0	3.9	10	8.2
4	70	1820	47	23	38	30	19	9.3	6.5	3.3	4.9	8.4
5	23	797	43	22	35	28	19	9.5	6.4	2.8	3.0	8.3
6	12	144	40	20	32	27	20	9.1	5.9	2.2	6.7	9.0
7	8.0	76	36	20	60	25	26	8.9	5.6	1.9	72	8.0
8	6.4	53	34	19	47	23	21	8.9	5.5	1.7	12	7.9
9	5.6	40	32	18	37	23	22	8.5	6.2	1.4	6.3	9.1
10	5.5	34	30	18	34	24	19	8.4	5.3	1.8	4.8	7.5
11	5.5	31	29	19	76	24	18	8.2	4.5	1.9	8.4	6.7
12	5.4	28	30	20	64	22	17	7.8	4.5	1.9	74	6.5
13	5.6	26	71	20	44	24	17	8.2	7.0	2.1	39	5.9
14	5.8	25	63	18	36	64	16	12	5.6	1.7	18	5.0
15	7.1	23	40	17	40	82	16	11	4.5	1.3	12	4.6
16	12	22	35	17	42	56	20	10	4.4	1.2	9.4	4.4
17	9.7	21	32	19	42	41	23	8.9	4.2	1.1	7.6	4.2
18	8.0	21	30	20	39	35	21	7.8	3.5	1.0	13	4.0
19	7.4	20	27	42	39	36	18	7.3	3.3	.92	26	4.9
20	7.8	20	26	47	48	55	17	41	2.9	1.2	123	5.6
21	19	155	26	28	39	57	18	70	3.0	1.3	234	4.9
22	72	298	25	23	35	38	19	21	2.9	1.0	49	4.5
23	54	191	25	22	41	33	17	14	3.1	2.8	25	4.7
24	29	81	24	20	35	31	16	11	10	6.0	17	4.7
25	20	58	23	22	34	28	15	9.9	5.8	3.7	13	4.4
26	16	48	22	108	30	27	16	9.7	4.0	2.6	10	4.1
27	13	42	22	106	38	26	14	8.9	3.5	5.8	8.9	3.7
28	12	38	22	57	48	24	13	9.6	3.2	3.3	15	3.6
29	11	38	22	41	---	23	13	10	3.8	2.3	17	3.5
30	10	124	21	36	---	22	12	9.1	3.5	1.7	11	3.7
31	10	---	21	33	---	22	---	8.1	---	1.4	9.0	---
TOTAL	498.3	4903	1285	945	1161	1049	544	396.5	149.4	71.72	861.9	176.0
MEAN	16.1	163	41.5	30.5	41.5	33.8	18.1	12.8	4.98	2.31	27.8	5.87
MAX	72	1820	236	108	76	82	26	70	10	6.0	234	9.1
MIN	3.1	20	21	17	30	22	12	7.3	2.9	.92	1.1	3.5
CFSM	.52	5.31	1.35	.99	1.35	1.10	.59	.42	.16	.08	.91	.19
IN.	.60	5.94	1.56	1.15	1.41	1.27	.66	.48	.18	.09	1.04	.21
CAL YR 1985	TOTAL	12140.0	MEAN	33.3	MAX	1820	MIN	1.2	CFSM	1.08	IN.	14.71
WTR YR 1986	TOTAL	12040.82	MEAN	33.0	MAX	1820	MIN	.92	CFSM	1.07	IN.	14.59

CHOWAN RIVER BASIN

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02051600 GREAT CREEK NEAR COCHRAN, VA--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, OCTOBER TO DECEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	4.3	12									
2	3.5	4.8	30									
3	3.2	5.4	62									
4	3.0	5.2	30									
5	2.8	5.0	20									
6	2.6	5.3	17									
7	2.5	5.9	15									
8	2.5	9.3	15									
9	2.5	8.3	15									
10	2.9	6.7	22									
11	2.9	7.0	64									
12	3.0	12	79									
13	3.5	10	36									
14	19	7.9	25									
15	16	7.4	22									
16	7.0	8.2	20									
17	5.1	7.6	19									
18	4.5	7.3	19									
19	4.2	7.2	19									
20	4.1	7.3	17									
21	4.1	16	16									
22	4.2	12	15									
23	4.2	8.9	14									
24	4.2	8.6	153									
25	4.5	14	504									
26	21	14	90									
27	20	40	52									
28	8.3	20	38									
29	5.8	15	32									
30	4.9	13	28									
31	4.5	---	25									
TOTAL	184.3	303.6	1525									
MEAN	5.95	10.1	49.2									
MAX	21	40	504									
MIN	2.5	4.3	12									
CFSM	.19	.33	1.60									
IN.	.22	.37	1.85									
CAL YR 1986	TOTAL	7367.42	MEAN	20.2	MAX	504	MIN	.92	CFSM	.66	IN.	8.93

CHOWAN RIVER BASIN

02052000 MEHERRIN RIVER AT EMPORIA, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°41'24", long 77°32'27", Emporia City, Hydrologic Unit 03010204, on left bank at downstream side of bridge on U.S. Highway 301 and 1.2 mi upstream from Falling Run.

DRAINAGE AREA.--747 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1951 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 67.17 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharges: Dec. 24-26, 29, 30, and Jan. 9. Records good except those for periods with ice effect, Dec. 24-26, 29, 30, and Jan. 9, which are fair. Prior to November 1965 and since April 1986, low and medium flow regulated by powerplant 0.8 mi upstream from station.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--35 years, 697 ft³/s, 12.67 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,100 ft³/s, Oct. 8, 1972, gage height, 27.38 ft; minimum, 5.0 ft³/s, Nov. 11, 1954, gage height, 1.00 ft; minimum daily, 7.1 ft³/s, July 20, 1986.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 31.5 ft, from floodmarks, discharge, about 40,000 ft³/s, from rating curve extended above 18,000 ft³/s on basis of record for station near Lawrenceville.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 6,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	0130	*17,500	*25.74	Dec. 2	1500	6,100	18.29
Nov. 24	0900	9,670	21.73				

Minimum discharge, 5.4 ft³/s, July 21, gage height, 1.37 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	177	3940	450	693	929	566	299	229	89	16	125
2	101	2340	5830	496	704	791	546	286	309	109	8.4	82
3	101	5410	3180	516	726	686	533	261	344	22	114	251
4	162	8260	1440	503	731	635	507	260	126	53	45	101
5	934	16300	1070	480	736	601	492	285	160	197	114	174
6	560	16900	921	453	759	571	484	224	179	25	48	178
7	260	12300	826	431	736	543	524	249	69	72	623	86
8	180	4140	751	415	1200	506	540	361	141	31	660	190
9	146	1180	701	360	1190	481	515	311	155	68	231	172
10	127	774	657	379	834	548	503	191	160	109	22	172
11	116	652	621	419	832	556	484	193	135	21	103	105
12	111	585	609	418	1470	548	445	313	150	15	495	151
13	108	540	716	405	1430	549	427	191	140	12	1490	102
14	104	503	1320	401	929	734	417	169	86	109	1030	74
15	110	475	1330	380	784	3170	421	314	88	93	299	87
16	111	453	896	344	777	3830	440	380	121	100	317	77
17	122	440	734	380	810	2180	493	295	119	82	63	99
18	120	422	660	400	819	1440	530	265	183	19	165	46
19	108	410	607	453	819	1120	476	254	86	10	366	70
20	103	404	567	651	848	1430	445	342	82	7.1	827	24
21	129	2360	547	633	894	2330	455	2960	125	78	4120	73
22	241	7090	522	539	756	1660	473	3160	83	15	3540	68
23	685	8460	509	464	698	1200	458	1260	123	75	1260	76
24	861	9410	500	424	702	990	419	603	116	120	372	67
25	544	5360	490	415	719	877	387	396	85	307	389	73
26	320	1700	485	1250	642	795	378	360	115	64	152	85
27	233	1140	471	2590	643	740	374	336	120	154	174	98
28	196	945	457	2330	856	696	368	368	125	75	1460	24
29	174	856	450	1270	---	650	403	237	71	52	1080	50
30	159	1330	445	844	---	609	324	258	93	55	400	56
31	153	---	443	765	---	582	---	211	---	32	275	---
TOTAL	7500	111316	32695	20258	23737	32977	13827	15592	4118	2270.1	20258.4	3036
MEAN	242	3711	1055	653	848	1064	461	503	137	73.2	653	101
MAX	934	16900	5830	2590	1470	3830	566	3160	344	307	4120	251
MIN	101	177	443	344	642	481	324	169	69	7.1	8.4	24
CFSM	.32	4.97	1.41	.87	1.14	1.42	.62	.67	.18	.10	.87	.14
IN.	.37	5.54	1.63	1.01	1.18	1.64	.69	.78	.21	.11	1.01	.15
CAL YR 1985	TOTAL	293014	MEAN	803	MAX	16900	MIN	41	CFSM	1.07	IN.	14.59
WTR YR 1986	TOTAL	287584.5	MEAN	788	MAX	16900	MIN	7.1	CFSM	1.05	IN.	14.32

CHOWAN RIVER BASIN

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02052000 MEHERRIN RIVER AT EMPORIA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to September 1971, October 1972 to September 1978.

WATER TEMPERATURE: April 1968 to September 1971, October 1972 to September 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV 14...	0930	503	78	68	7.10	7.00	14.5	758	15	11.2	110	44
FEB 20...	1230	844	72	74	7.00	7.40	8.0	751	9.5	11.8	101	50
MAY 22...	1530	2810	55	59	6.70	7.20	19.0	752	130	8.9	97	K1300
AUG 26...	1230	47	63	64	6.40	7.00	24.0	756	24	5.2	62	36

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CACO3)	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CACO3	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 14...	120	21	1	4.8	2.1	5.1	2.1	19	21	20	24	6.7
FEB 20...	33	20	1	4.7	2.1	6.1	1.4	19	19	19	23	5.8
MAY 22...	1800	16	1	3.9	1.6	4.2	1.7	16	14	15	18	12
AUG 26...	62	18	2	4.2	1.8	4.1	2.3	17	15	16	19	13

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
NOV 14...	4.9	<0.10	17	60	55	<0.010	0.160	0.070	0.080	0.40	0.060	0.030
FEB 20...	6.3	<0.10	16	55	54	<0.010	0.130	0.050	0.050	0.40	0.030	0.020
MAY 22...	3.5	0.10	11	57	47	0.010	0.190	0.060	0.140	0.90	0.130	0.020
AUG 26...	3.8	0.10	14	63	54	<0.010	0.140	0.050	0.080	0.80	0.070	0.020

CHOWAN RIVER BASIN

02052000 MEHERRIN RIVER AT EMPORIA, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 14...	0.010	60	<1	27	<0.5	<1	<1	<3	1	410	6	<4
FEB 20...	<0.010	50	<1	21	<0.5	<1	<1	<3	1	230	<1	<4
MAY 22...	0.010	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	0.020	60	<1	29	<0.5	1	<1	<3	2	510	<5	<4

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 14...	66	<0.1	<10	2	<1	<1	35	<6	4	14	88
FEB 20...	38	<0.1	<10	2	<1	<1	37	<6	6	11	91
MAY 22...	--	--	--	--	--	--	--	--	--	150	99
AUG 26...	180	<0.1	<10	2	<1	<1	35	<6	19	21	95

CHOWAN RIVER BASIN

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02052500 FOUNTAINS CREEK NEAR BRINK, VA

LOCATION.--Lat 36°36'55", long 77°42'00", Greenville County, Hydrologic Unit 03010204, on left bank 30 ft upstream from bridge on State Highway 603, 0.3 mi downstream from Quarrel Creek, 3.6 mi west of Brink, and 10 mi south-west of Emporia.

DRAINAGE AREA.--65.2 mi².

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1980, published as Fontaine Creek near Brink.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 152.59 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 21-26, 28-30, and Jan. 10-12. Records good except those for periods with ice effect, Dec. 21-26, 28-30, and Jan. 10-12, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--33 years, 68.8 ft³/s, 14.33 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s, Oct. 6, 1972, gage height, 24.14 ft, from flood-mark, from rating curve extended above 3,000 ft³/s; no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0115	*4,020	*18.02	May 22	1245	1,190	11.98
Nov. 22	0645	3,400	17.20	Aug. 13	1230	963	11.09

No flow for part of Aug. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	48	608	36	70	109	35	16	16	1.6	.11	26
2	5.5	237	340	37	68	78	33	14	14	1.4	.09	20
3	5.7	165	162	40	63	65	31	14	11	1.4	.10	18
4	8.3	1840	98	42	59	59	29	12	9.7	.96	.07	17
5	11	2720	77	39	56	54	29	11	8.9	.81	.04	15
6	8.7	626	69	35	54	50	29	10	8.7	.65	.09	14
7	5.9	172	62	32	67	47	38	9.7	8.6	.49	2.1	13
8	4.6	76	56	30	68	42	37	9.4	8.7	.42	1.1	13
9	3.2	48	52	28	58	40	36	9.0	7.9	.36	.78	14
10	3.0	36	49	27	52	39	32	8.3	6.9	.27	.73	12
11	3.9	30	46	28	79	39	28	8.0	5.9	.24	.95	11
12	4.2	26	46	30	88	37	26	7.6	5.0	.20	14	9.7
13	4.6	24	81	31	68	38	24	7.6	4.9	.17	502	8.8
14	5.1	24	126	29	54	83	24	8.4	4.8	.13	138	7.4
15	5.9	22	90	27	56	104	24	9.8	4.3	.11	39	6.1
16	7.5	20	63	26	66	80	27	11	4.0	.13	23	5.3
17	10	20	54	29	66	59	34	10	4.0	.14	17	4.7
18	9.7	19	49	29	61	49	38	9.3	4.7	.16	14	4.3
19	8.4	18	44	47	67	68	33	8.4	4.3	.17	12	3.7
20	8.2	19	41	68	123	185	29	26	4.2	.15	194	3.5
21	15	1020	40	58	111	286	32	589	3.8	.18	254	3.5
22	74	3010	39	45	78	157	37	983	3.7	.18	65	3.6
23	49	1420	38	36	65	95	32	336	3.7	.22	35	3.6
24	33	417	38	32	57	74	27	107	3.6	.28	24	3.5
25	24	179	37	31	56	60	24	47	3.1	.31	17	3.3
26	16	112	35	246	53	53	23	34	2.8	.36	12	3.0
27	11	84	34	363	68	51	22	27	2.3	.31	9.9	2.9
28	8.9	69	32	246	137	46	22	24	1.9	.25	195	2.5
29	7.1	66	31	118	---	41	21	22	1.5	.24	168	2.4
30	6.5	329	30	86	---	38	17	20	1.4	.19	72	2.5
31	6.2	---	33	76	---	36	---	18	---	.15	40	---
TOTAL	382.4	12896	2600	2027	1968	2262	873	2426.5	174.3	12.63	1851.06	257.3
MEAN	12.3	430	83.9	65.4	70.3	73.0	29.1	78.3	5.81	.41	59.7	8.58
MAX	74	3010	608	363	137	286	38	983	16	1.6	502	26
MIN	3.0	18	30	26	52	36	17	7.6	1.4	.11	.04	2.4
CFSM	.19	6.60	1.29	1.00	1.08	1.12	.45	1.20	.09	.01	.92	.13
IN.	.22	7.36	1.48	1.16	1.12	1.29	.50	1.38	.10	.01	1.06	.15
CAL YR 1985	TOTAL	27171.28	MEAN	74.4	MAX	3010	MIN	.09	CFSM	1.14	IN.	15.50
WTR YR 1986	TOTAL	27730.19	MEAN	76.0	MAX	3010	MIN	.04	CFSM	1.17	IN.	15.82

02053800 SOUTH FORK ROANOKE RIVER NEAR SHAWSVILLE, VA

LOCATION.--Lat 37°08'24", long 80°16'00", Montgomery County, Hydrologic Unit 03010101, on right bank 95 ft downstream from bridge on State Highway 637, 0.3 mi downstream from Georges Run, 1.3 mi downstream from Elliott Creek, and 2.0 mi southwest of Shawsville.

DRAINAGE AREA.--110 mi².

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,361.87 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 26, 1974, water-stage recorder, and Aug. 26, 1974, to July 24, 1975, nonrecording gage at site 95 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 2 to Jan. 8, Jan. 15, Jan. 26 to Feb. 1, and Feb. 14, 15. Records good except those for period of no gage-height record, Dec. 2 to Jan. 6, and periods with ice effect, Jan. 7, 8, 15, Jan. 26 to Feb. 1, and Feb. 14, 15, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--26 years, 108 ft³/s, 13.33 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s, June 21, 1972, gage height, 11.12 ft, from high-water mark in well, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum, 7.5 ft³/s, July 27-29, 1966, gage height, 0.37 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1959, reached a stage of 9.89 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0530	1,010	3.33	Mar. 15	0100	917	3.36
Nov. 4	1400	*7,070	*8.81	May 20	1630	1,170	3.68

Minimum discharge, 20 ft³/s, July 21-22, gage height, 0.80 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	300	542	90	74	104	81	60	74	25	21	44
2	63	770	350	82	91	99	80	59	68	31	21	73
3	108	498	280	80	122	101	77	58	62	30	22	137
4	54	3180	220	84	196	97	75	57	58	26	22	126
5	41	2100	195	78	181	93	75	57	56	24	25	114
6	35	753	170	70	158	92	76	56	54	23	22	178
7	32	453	155	60	194	89	74	56	54	22	23	100
8	32	318	140	50	168	78	73	61	72	22	22	76
9	32	244	130	63	154	84	73	58	55	22	21	63
10	32	204	115	75	146	84	72	56	49	29	22	54
11	32	177	110	73	171	86	71	54	49	36	21	48
12	32	157	100	72	144	80	70	53	45	28	22	45
13	32	145	135	72	121	93	68	90	41	25	22	40
14	32	135	130	63	110	274	68	91	40	26	22	35
15	33	124	105	60	100	662	83	74	39	24	22	33
16	34	117	100	65	115	351	104	70	42	24	21	31
17	32	121	95	68	133	235	78	168	37	24	22	30
18	32	107	90	71	202	183	73	250	34	22	61	29
19	32	102	78	108	211	163	69	182	33	22	35	36
20	33	99	74	118	193	142	68	766	32	21	182	36
21	44	114	70	88	169	123	80	522	31	20	272	33
22	64	275	64	87	159	111	72	239	30	29	103	29
23	44	263	62	84	155	106	68	151	30	47	79	29
24	41	212	60	78	140	101	66	112	31	28	89	29
25	39	177	55	77	132	95	65	94	29	25	58	31
26	35	156	53	70	123	93	71	85	27	28	46	29
27	33	151	84	56	125	92	67	91	27	44	38	28
28	32	143	78	45	115	88	64	91	26	28	36	28
29	32	179	74	52	---	85	63	88	25	24	33	28
30	31	446	70	60	---	83	61	84	25	22	29	28
31	59	---	82	68	---	82	---	89	---	21	28	---
TOTAL	1234	12220	4066	2267	4102	4249	2185	4022	1275	822	1462	1620
MEAN	39.8	407	131	73.1	147	137	72.8	130	42.5	26.5	47.2	54.0
MAX	108	3180	542	118	211	662	104	766	74	47	272	178
MIN	27	99	53	45	74	78	61	53	25	20	21	28
CFSM	.36	3.70	1.19	.66	1.34	1.25	.66	1.18	.39	.24	.43	.49
IN.	.42	4.13	1.38	.77	1.39	1.44	.74	1.36	.43	.28	.49	.55
CAL YR 1985	TOTAL	38911	MEAN	107	MAX	3180	MIN	22	CFSM	.97	IN.	13.16
WTR YR 1986	TOTAL	39524	MEAN	108	MAX	3180	MIN	20	CFSM	.98	IN.	13.37

02054500 ROANOKE RIVER AT LAFAYETTE, VA

LOCATION.--Lat 37°14'11", long 80°12'34", Montgomery County, Hydrologic Unit 03010101, on right bank 120 ft upstream from bridge on State Highway 603 at Lafayette, 0.4 mi downstream from confluence of North and South Forks, and 1.1 mi upstream from Cove Hollow.

DRAINAGE AREA.--257 mi².

PERIOD OF RECORD.--September 1943 to current year.

REVISED RECORDS.--WSP 1333: 1944-47(M), 1948-49.

GAGE.--Water-stage recorder. Datum of gage is 1,174.47 ft above National Geodetic Vertical Datum of 1929. Prior to July 30, 1949, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 20, 21, 23-25, 27, Jan. 7-9, 15, Jan. 26 to Feb. 1, and Feb. 14, 15. Records good except those for periods with ice effect, Dec. 20, 21, 23-25, 27, Jan. 7-9, 15, Jan. 26 to Feb. 1, and Feb. 14, 15, which are fair. Occasional diurnal fluctuation caused by meat-processing plant upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--43 years, 239 ft³/s, 12.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s, June 21, 1972, gage height, 15.60 ft, from flood-marks, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 10 ft³/s, Jan. 14, 15, 18, 19, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 12.2 ft, from information by local residents, discharge, 19,000 ft³/s, from rating curve extended above 12,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1800	*17,100	*13.34	No other peak equal to or greater than base discharge.			

Minimum discharge, 34 ft³/s, Aug. 2-3, 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	314	934	123	110	219	149	84	161	53	36	69
2	70	1100	620	111	126	209	145	82	143	66	35	155
3	159	735	436	112	194	209	140	78	128	67	36	472
4	100	6840	350	113	536	200	135	77	117	56	37	402
5	69	4360	309	108	396	190	133	77	110	52	42	301
6	58	1180	281	95	327	184	135	76	106	49	38	377
7	53	654	248	90	486	176	131	76	101	47	40	235
8	52	448	227	70	426	153	123	84	128	44	42	170
9	51	343	210	76	356	164	121	82	108	44	37	133
10	50	287	193	100	316	158	119	78	96	52	36	108
11	50	250	182	99	414	161	116	73	96	72	35	94
12	50	221	178	95	365	151	110	71	88	62	39	86
13	50	202	220	97	304	165	107	123	82	53	39	78
14	49	186	212	81	260	743	106	170	78	54	39	69
15	50	171	184	74	230	1910	109	128	78	50	39	64
16	51	160	181	85	251	855	161	112	94	50	36	60
17	50	160	178	91	280	564	122	142	78	49	41	57
18	47	146	170	93	437	432	114	315	73	45	109	56
19	47	138	143	115	455	375	105	271	69	42	82	65
20	49	130	140	179	401	326	102	1150	67	39	196	68
21	62	133	130	131	348	282	125	950	65	37	414	61
22	102	369	127	127	322	254	115	493	63	44	214	56
23	80	405	125	122	313	236	103	335	61	88	136	53
24	68	321	115	113	286	221	98	260	64	56	168	53
25	66	270	110	112	273	203	95	217	64	49	107	55
26	60	239	93	100	256	192	104	193	58	50	82	53
27	55	229	110	80	256	188	102	212	57	86	71	50
28	54	229	130	65	243	177	93	228	55	59	66	50
29	53	411	118	74	---	167	90	211	53	47	60	50
30	51	871	109	84	---	161	85	183	52	41	53	48
31	61	---	114	96	---	156	---	197	---	37	50	---
TOTAL	1916	21502	6877	3111	8967	9781	3493	6828	2593	1640	2455	3648
MEAN	61.8	717	222	100	320	316	116	220	86.4	52.9	79.2	122
MAX	159	6840	934	179	536	1910	161	1150	161	88	414	472
MIN	47	130	93	65	110	151	85	71	52	37	35	48
CFSM	.24	2.79	.86	.39	1.25	1.23	.45	.86	.34	.21	.31	.47
IN.	.28	3.11	1.00	.45	1.30	1.42	.51	.99	.38	.24	.36	.53
CAL YR 1985	TOTAL	74700	MEAN	205	MAX	6840	MIN	34	CFSM	.80	IN.	10.81
WTR YR 1986	TOTAL	72811	MEAN	199	MAX	6840	MIN	35	CFSM	.77	IN.	10.54

ROANOKE RIVER BASIN

02055000 ROANOKE RIVER AT ROANOKE, VA

LOCATION.--Lat 37°15'30", long 79°56'20", Roanoke City, Hydrologic Unit 03010101, on left bank 50 ft downstream from Walnut Street Bridge, 3.2 mi upstream from Tinker Creek, and at mile 360.6.

DRAINAGE AREA.--395 mi².

PERIOD OF RECORD.--February 1899 to current year. Monthly discharge only for some periods, published in WSP 1303. Records for July 1896 to January 1899 published in WSP 11, 15, 27, and 20th Annual Report, Part 4, are unreliable, due to doubtful gage-height record, and should not be used.

REVISED RECORDS.--WSP 972: 1928, 1930, 1933. WSP 1433: 1899-1904, 1914-17(M), 1918-24, 1925-27(M), 1929-34(M), 1935, 1936-39(M). WSP 2104: Drainage area. WDR VA-72-1: 1928(M), 1940(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 906.84 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to June 7, 1937, nonrecording gage on downstream side of highway bridge 50 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 4, 5, Dec. 26, Jan. 8, 9, 14-16, 27-31, Feb. 13-16, Apr. 21, 22, 26-29, and May 8-11. Records good except those for periods of doubtful or no gage-height record, Nov. 4, 5, Apr. 21, 22, 26-29, and May 8-11, and periods with ice effect, Dec. 26, Jan. 8, 9, 14-16, 27-31, and Feb. 13-16, which are fair. Prior to 1949, diurnal fluctuation at low flow caused by powerplants upstream from station. Appalachian Power Company gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--87 years, 371 ft³/s, 12.75 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,300 ft³/s, Nov. 4, 1985, gage height, 23.35 ft, from floodmark, from rating curve extended above 26,000 ft³/s; practically no flow Dec. 23, 1909, Dec. 19, 1963, when flow was retarded by freezing, gage height, 0.0 ft; minimum daily discharge, 19 ft³/s, Aug. 29, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0830	4,660	6.48	Mar. 15	0400	3,940	5.86
Nov. 4	Unknown	*32,300	*a23.35				

a From floodmark.

Minimum discharge, 32 ft³/s, Aug. 16, gage height, 0.31 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	996	1530	206	180	372	234	124	233	61	44	102
2	141	3620	1070	189	186	348	224	122	199	82	42	160
3	213	2330	781	180	237	337	215	121	173	74	42	418
4	188	15000	613	185	630	324	205	116	154	73	42	711
5	124	11000	533	180	643	311	207	114	145	63	41	435
6	96	2450	483	168	554	299	209	112	139	58	181	536
7	84	1340	428	163	748	288	201	114	133	54	72	397
8	78	954	380	100	784	267	188	130	137	48	49	275
9	77	750	348	110	654	258	180	125	145	47	50	218
10	74	646	327	154	570	254	177	120	125	66	49	173
11	72	571	310	157	700	255	172	105	119	64	42	146
12	72	517	301	155	687	250	166	110	113	75	42	130
13	72	454	368	157	450	265	157	294	105	63	42	120
14	71	423	371	130	300	554	154	231	99	55	44	109
15	67	374	322	110	350	2910	185	181	95	53	45	99
16	68	339	307	130	400	1390	229	178	96	54	39	91
17	66	327	302	143	453	938	200	167	101	48	40	84
18	66	310	290	146	664	719	169	384	86	47	108	81
19	65	285	264	192	775	615	157	372	81	44	279	87
20	66	267	248	252	709	536	149	958	77	41	535	90
21	121	267	256	228	618	457	190	1260	77	41	1110	88
22	117	565	217	203	584	407	170	754	74	60	477	80
23	125	765	257	199	556	376	161	517	71	87	268	74
24	116	626	257	189	500	351	146	397	70	87	233	76
25	94	528	254	182	475	321	139	318	71	62	188	73
26	87	465	160	201	437	301	160	283	68	140	136	71
27	81	429	197	150	433	294	150	302	65	105	123	67
28	78	424	220	100	412	283	140	316	63	95	109	65
29	75	617	203	130	---	267	135	284	60	68	95	65
30	74	1150	191	150	---	257	130	311	57	56	89	61
31	185	---	187	170	---	246	---	260	---	48	82	---
TOTAL	2971	48789	11975	5109	14689	15050	5299	9180	3231	2019	4738	5182
MEAN	95.8	1626	386	165	525	485	177	296	108	65.1	153	173
MAX	213	15000	1530	252	784	2910	234	1260	233	140	1110	711
MIN	58	267	160	100	180	246	130	105	57	41	39	61
CFSM	.24	4.12	.98	.42	1.33	1.23	.45	.75	.27	.16	.39	.44
IN.	.28	4.59	1.13	.48	1.38	1.42	.50	.86	.30	.19	.45	.49
CAL YR 1985	TOTAL	129722	MEAN	355	MAX	15000	MIN	49	CFSM	.90	IN.	12.22
WTR YR 1986	TOTAL	128232	MEAN	351	MAX	15000	MIN	39	CFSM	.89	IN.	12.08

02055100 TINKER CREEK NEAR DALEVILLE, VA

LOCATION.--Lat 37°25'03", long 79°56'08", Botetourt County, Hydrologic Unit 03010101, on left bank 1,100 ft downstream from Norfolk and Western Railway bridge, 0.2 mi downstream from unnamed tributary, 0.5 mi south of Glebe Mills, and 1.3 mi northwest of Daleville.

DRAINAGE AREA.--11.7 mi².

PERIOD OF RECORD.--April 1956 to current year.

REVISED RECORDS.--WSP 1904: 1958-60(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,217.47 ft above National Geodetic Vertical Datum of 1929 (Norfolk and Western Railway bench mark).

REMARKS.--Estimated daily discharges: Nov. 4, 5, Dec. 22, 23, 26, 27, Jan. 8, 9, 14-16, 27-30, and Feb. 13-16. Records good except those for period of no gage-height record, Nov. 4, 5, and periods with ice effect, Dec. 22, 23, 26, 27, Jan. 8, 9, 14-16, 27-30, and Feb. 13-16, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--30 years, 11.8 ft³/s, 13.70 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft³/s, Nov. 4, 1985, gage height, 13.36 ft, from floodmark, from rating curve extended above 130 ft³/s on basis of contracted-opening measurement at gage height 9.82 ft and slope-area measurements at gage heights 8.52 ft, 9.82 ft, and 13.36 ft; minimum, 0.20 ft³/s, Jan. 24, 1961, result of freezeup; minimum daily, 0.90 ft³/s, July 26, 1966; minimum gage height, 0.99 ft, June 12, 24, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1940 reached a stage of 9.0 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	Unknown	*10,400	*13.36	Mar. 14	1930	252	3.75

a From floodmark.

Minimum discharge, 1.1 ft³/s, July 21; minimum gage height, 1.07 ft, July 21, Aug. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	17	33	9.6	8.2	12	9.9	6.7	3.7	2.7	1.7	3.3
2	9.4	42	28	9.4	8.7	11	10	6.3	3.6	4.0	1.7	4.1
3	8.6	61	24	9.4	11	12	9.9	6.1	3.5	2.6	1.7	5.4
4	6.6	2560	22	9.3	13	12	10	6.2	3.5	2.3	1.6	5.2
5	6.5	211	21	9.2	12	11	10	6.1	3.6	2.0	1.6	12
6	6.6	72	20	8.5	11	11	11	6.2	3.7	1.8	1.8	5.7
7	6.4	51	18	8.1	19	11	11	5.9	3.6	1.6	2.5	3.0
8	6.4	41	17	5.0	17	10	9.6	6.2	3.9	1.5	1.9	2.4
9	6.4	36	17	5.5	15	10	9.2	5.8	3.6	1.5	1.8	2.2
10	6.3	32	16	7.9	15	11	9.0	5.6	3.6	2.0	1.8	2.1
11	6.5	30	15	7.8	23	11	8.8	5.4	3.6	2.1	1.9	2.3
12	6.8	28	15	7.9	18	11	8.6	5.2	3.4	2.0	2.1	2.3
13	7.2	26	18	7.8	12	12	8.4	9.2	3.2	2.3	2.0	2.2
14	7.1	22	16	6.0	9.0	50	8.1	8.1	3.0	1.7	2.1	2.0
15	7.5	20	15	5.4	11	45	8.6	6.7	2.9	1.7	2.0	2.0
16	8.2	20	14	6.5	13	29	8.4	7.6	2.7	1.8	1.9	2.0
17	8.1	19	14	7.7	18	23	8.1	8.4	2.5	1.6	1.9	2.0
18	8.1	17	13	8.1	21	20	8.0	7.4	2.3	1.4	2.6	1.9
19	8.0	17	12	12	17	19	7.8	7.4	2.3	1.3	3.1	2.1
20	7.3	16	13	11	15	17	7.7	17	2.4	1.3	4.1	1.9
21	9.9	15	12	9.2	15	15	9.3	9.3	2.3	1.3	5.0	1.9
22	9.7	24	10	8.9	15	15	7.9	5.8	2.2	1.8	4.3	1.9
23	8.4	20	11	8.3	14	14	7.4	4.9	2.2	4.0	3.6	1.8
24	8.7	18	12	8.0	13	13	7.2	4.5	2.5	2.6	3.7	1.9
25	8.1	16	12	8.1	13	12	7.2	4.3	2.3	2.3	2.9	2.0
26	7.4	16	8.0	9.4	13	12	8.9	4.3	2.2	2.6	2.8	1.8
27	7.2	15	9.0	7.0	13	12	7.5	5.4	2.1	2.6	2.7	1.9
28	7.1	16	10	5.0	13	11	7.7	4.9	2.1	2.1	2.9	1.9
29	6.8	19	10	6.0	---	11	9.2	4.3	2.1	1.9	2.7	1.7
30	6.6	37	9.8	7.0	---	11	7.0	4.0	2.0	1.7	2.6	1.6
31	8.1	---	9.7	7.9	---	11	---	3.9	---	1.7	2.6	---
TOTAL	231.4	3534	474.5	246.9	395.9	485	261.4	199.1	86.6	63.8	77.6	84.5
MEAN	7.46	118	15.3	7.96	14.1	15.6	8.71	6.42	2.89	2.06	2.50	2.82
MAX	9.9	2560	33	12	23	50	11	17	3.9	4.0	5.0	12
MIN	5.4	15	8.0	5.0	8.2	10	7.0	3.9	2.0	1.3	1.6	1.6
CFSM	.64	10.1	1.31	.68	1.21	1.33	.74	.55	.25	.18	.21	.24
IN.	.74	11.24	1.51	.79	1.26	1.54	.83	.63	.28	.20	.25	.27
CAL YR 1985	TOTAL	6989.7	MEAN	19.1	MAX	2560	MIN	2.8	CFSM	1.63	IN.	22.22
WTR YR 1986	TOTAL	6140.7	MEAN	16.8	MAX	2560	MIN	1.3	CFSM	1.44	IN.	19.52

02056000 ROANOKE RIVER AT NIAGARA, VA

LOCATION.--Lat 37°15'18", long 79°52'18", Roanoke County, Hydrologic Unit 03010101, on right bank 200 ft downstream from powerplant of Appalachian Power Company at Niagara, 2 mi downstream from Tinker Creek, 2.1 mi southeast of Vinton, and at mile 355.3.

DRAINAGE AREA.--512 mi².

PERIOD OF RECORD.--July 1926 to current year.

REVISED RECORDS.--WSP 972: 1927(M), 1929(M), 1934(M), 1937(M). WSP 1303: 1928, 1930, 1933-38, 1940. WSP 2104: Drainage area, WDR VA-72-1: 1928(M), 1930(M), 1933(M), 1935-36(M), 1938(M), 1940, 1944-45(M), 1948-49(M), 1951(M), 1955(M), 1960(M), 1967(M), 1969(M).

GAGE.--Water-stage recorder. Datum of gage is 820.15 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Estimated daily discharges: Nov. 4-6, Dec. 26, Jan. 8, 9, 14-16, 28-31, and Feb. 14-16. Records good except those for period of no gage-height record, Nov. 4-6, and periods with ice effect, Dec. 26, Jan. 8, 9, 14-16, 28-31, and Feb. 14-16, which are fair. Flow regulated by dam and powerplant 200 ft upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years, 510 ft³/s, 13.53 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,300 ft³/s, Nov. 4, 1985, gage height, 25.30 ft, from floodmark, from rating curve extended above 12,000 ft³/s on basis of slope-area measurements at gage heights 18.98 ft and 25.30 ft; minimum, 1.0 ft³/s, Oct. 16, 20, 1956; minimum daily, 8 ft³/s, Oct. 9, 1954; minimum gage height, 0.17 ft, Aug. 25, 1971.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0900	5,510	9.36	Mar. 15	0415	4,770	8.79
Nov. 4	Unknown	*52,300	*a25.30				

a From floodmark.

Minimum discharge, 36 ft³/s, Sept. 9, gage height, 1.02 ft; minimum daily, 89 ft³/s, Sept. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	138	1110	1960	303	263	489	338	231	350	164	126	195
2	259	4150	1420	295	265	448	388	220	320	219	127	259
3	351	2790	1080	295	339	367	383	211	266	155	129	522
4	282	19700	870	286	717	439	256	195	271	147	125	913
5	207	13900	749	279	722	414	279	210	250	134	124	628
6	174	3820	680	275	623	389	310	210	247	123	499	687
7	164	1960	602	265	789	389	304	210	243	137	255	534
8	145	1340	542	170	876	353	342	136	235	159	122	415
9	155	1060	512	200	748	343	326	172	166	132	138	232
10	153	869	479	248	657	370	287	203	215	143	142	319
11	150	736	449	255	792	377	280	196	242	206	149	259
12	146	665	435	253	799	348	272	245	230	161	133	251
13	146	577	533	250	683	334	260	380	178	138	135	215
14	177	554	517	200	400	602	192	429	179	118	137	189
15	157	546	462	170	450	3630	369	347	160	141	135	182
16	145	471	441	190	500	1830	355	308	224	141	128	191
17	144	458	431	243	548	1240	314	281	189	162	128	178
18	144	407	427	238	716	943	335	374	191	143	203	106
19	141	400	392	300	872	820	301	558	174	122	475	250
20	141	390	368	339	803	714	249	973	156	108	697	169
21	212	394	373	319	733	624	219	1670	157	128	1330	169
22	217	680	343	285	676	552	261	988	154	155	612	181
23	207	898	366	279	664	510	260	678	156	224	405	168
24	204	755	373	273	604	477	269	550	154	215	339	171
25	180	644	364	264	573	443	288	400	156	141	318	89
26	165	587	250	285	537	400	278	402	151	168	258	175
27	158	545	302	193	535	391	252	449	147	249	223	155
28	154	532	326	150	501	402	232	416	141	226	222	151
29	151	715	312	180	---	260	242	472	135	146	193	159
30	147	1360	308	210	---	350	219	403	137	134	180	137
31	279	---	295	230	---	347	---	401	---	127	170	---
TOTAL	5593	63013	16961	7722	17385	19595	8660	12918	5974	4866	8357	8249
MEAN	180	2100	547	249	621	632	289	417	199	157	270	275
MAX	351	19700	1960	339	876	3630	388	1670	350	249	1330	913
MIN	138	390	250	150	263	260	192	136	135	108	122	89
CFSM	.35	4.10	1.07	.49	1.21	1.23	.56	.81	.39	.31	.53	.54
IN.	.41	4.58	1.23	.56	1.26	1.42	.63	.94	.43	.35	.61	.60
CAL YR 1985	TOTAL	192166	MEAN	526	MAX	19700	MIN	112	CFSM	1.03	IN.	13.96
WTR YR 1986	TOTAL	179293	MEAN	491	MAX	19700	MIN	89	CFSM	.96	IN.	13.03

02056650 BACK CREEK NEAR DUNDEE, VA

LOCATION (REVISED).--Lat 37°13'39", long 79°52'06", Roanoke County, Hydrologic Unit 03010101, on right bank 80 ft upstream from bridge on State Highway 660, 0.9 mi upstream from Horseshoe Branch, 1.1 mi southeast of Dundee, 2.8 mi west of Hardy post office, and at mile 2.4.

DRAINAGE AREA.--56.8 mi².

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 822.67 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 4, 1975, nonrecording gage, and Apr. 4, 1975, to Nov. 4, 1985, water-stage recorder, at site 80 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 2 to Dec. 17, Dec. 21-23, 26, 27, Jan. 8, 9, 14-16, 27-30, and Feb. 14-16. Records good except those for period of no gage-height record, Oct. 2 to Dec. 17, and periods with ice effect, Dec. 21-23, 26, 27, Jan. 8, 9, 14-16, 27-30, and Feb. 14-16, which are fair. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--12 years, 59.7 ft³/s, 14.27 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s, Nov. 4, 1985, gage height, 25.1 ft, from floodmark, present site, from rating curve extended above 5,900 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 0.90 ft³/s, Aug. 30, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of May 30, 1971, and June 21, 1972, reached a stage of 17.5 ft and 20.0 ft, respectively, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	Unknown	*20,000	*a25.1	Aug. 21	0345	962	6.98
Aug. 20	1700	720	6.29				

a From floodmark.

Minimum daily discharge, 3.1 ft³/s, July 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	100	300	46	39	56	42	28	21	5.5	8.2	21
2	17	220	200	43	39	55	41	27	19	6.7	9.6	33
3	45	500	160	44	41	54	40	26	17	7.7	14	55
4	40	4000	120	43	53	51	39	26	16	7.4	9.4	89
5	25	800	100	42	48	49	39	26	16	5.8	8.4	70
6	20	500	90	40	48	48	39	26	16	5.1	60	58
7	17	300	80	40	99	47	39	25	14	4.7	46	44
8	16	200	70	25	84	43	38	25	15	4.0	19	36
9	15	150	65	30	72	46	37	25	15	3.8	14	33
10	15	130	60	44	66	45	36	25	13	4.1	22	29
11	15	120	55	44	86	45	36	24	13	13	14	26
12	14	110	50	46	76	44	35	23	13	9.4	13	24
13	14	90	65	39	65	46	34	38	12	6.7	12	22
14	14	80	80	32	40	87	34	52	10	5.0	12	20
15	13	75	68	27	45	157	37	34	11	4.6	13	19
16	14	68	64	34	55	105	55	31	10	4.6	12	18
17	13	65	62	38	63	88	38	32	9.8	4.6	11	16
18	13	62	58	37	88	78	36	44	9.1	4.0	33	16
19	13	58	53	48	87	74	34	50	8.4	3.6	27	16
20	14	52	57	53	83	67	34	82	8.1	3.1	284	19
21	25	55	52	43	77	59	37	88	8.8	3.4	506	17
22	22	110	45	40	74	56	35	54	7.6	3.5	131	15
23	27	160	50	39	79	54	32	44	7.4	39	74	14
24	23	120	53	37	71	52	32	38	7.1	19	57	15
25	20	75	52	36	69	49	31	35	7.0	13	40	17
26	18	65	35	41	64	48	34	34	6.6	13	33	15
27	17	62	40	30	66	47	33	36	6.2	28	28	13
28	16	60	48	24	62	46	31	41	6.3	17	27	14
29	15	120	50	29	---	46	30	34	6.1	13	24	13
30	14	250	52	35	---	44	28	35	5.0	11	21	13
31	50	---	55	39	---	43	---	24	---	8.6	20	---
TOTAL	607	8757	2389	1188	1839	1829	1086	1132	334.5	281.9	1602.6	810
MEAN	19.6	292	77.1	38.3	65.7	59.0	36.2	36.5	11.1	9.09	51.7	27.0
MAX	50	4000	300	53	99	157	55	88	21	39	506	89
MIN	13	52	35	24	39	43	28	23	5.0	3.1	8.2	13
CFSM	.35	5.14	1.36	.67	1.16	1.04	.64	.64	.20	.16	.91	.48
IN.	.40	5.74	1.56	.78	1.20	1.20	.71	.74	.22	.18	1.05	.53
CAL YR 1985	TOTAL	23948.8	MEAN	65.6	MAX	4000	MIN	5.2	CFSM	1.15	IN.	15.68
WTR YR 1986	TOTAL	21856.0	MEAN	59.9	MAX	4000	MIN	3.1	CFSM	1.05	IN.	14.31

ROANOKE RIVER BASIN

02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA

LOCATION.--Lat 37°02'42", long 79°50'40", Franklin County, Hydrologic Unit 03010101, on right bank 45 ft downstream from bridge on State Highway 122, 3.0 mi northeast of Rocky Mount, and 4.1 mi upstream from Maggoodee Creek.

DRAINAGE AREA.--115 mi².

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.45 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 23-25, 27, 28, Jan. 3-9, 26, 27, Jan. 29 to Feb. 1, Feb. 14-16, and May 15 to June 17. Records good except those for periods with ice effect, Dec. 23-25, 27, 28, Jan. 7-9, 26, 27, Jan. 29 to Feb. 1, and Feb. 14-16, and periods of doubtful or no gage-height record, Jan. 3-6 and May 15 to June 17, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--10 years, 131 ft³/s, 15.47 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s, Nov. 5, 1985, gage height, 21.92 ft, from rating curve extended above 7,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 6.6 ft³/s, July 21, 1986, gage height, 1.13 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 3	1600	1,530	5.95	Nov. 5	0030	*20,800	*21.92

Minimum discharge, 6.6 ft³/s, July 21, gage height, 1.13 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	253	298	112	86	120	97	64	56	23	20	52
2	49	958	243	106	93	117	97	62	52	24	19	77
3	131	953	208	100	96	115	96	59	50	30	41	225
4	88	3680	192	98	119	114	93	60	47	26	37	264
5	60	5410	184	92	107	111	94	60	44	21	25	316
6	49	1010	179	87	104	108	93	60	46	20	23	341
7	45	586	169	84	194	106	92	61	50	18	26	169
8	43	406	163	78	171	99	88	57	70	16	27	129
9	43	297	156	85	146	103	87	55	67	15	25	114
10	42	251	143	117	134	101	85	57	54	15	22	96
11	41	224	138	97	163	103	84	55	43	18	22	86
12	42	203	137	93	150	99	83	53	41	22	26	80
13	45	189	169	93	128	105	82	63	40	19	26	72
14	46	178	171	84	120	167	81	100	38	16	26	66
15	44	167	145	93	115	368	86	76	36	14	27	61
16	40	159	140	88	120	210	122	62	35	14	26	59
17	40	161	138	90	134	174	92	56	34	13	29	55
18	39	148	136	90	179	155	86	54	33	13	50	53
19	41	143	130	101	177	148	82	58	31	11	51	57
20	41	139	129	130	164	141	80	80	30	9.2	279	58
21	57	146	129	102	151	129	87	115	30	7.6	463	54
22	101	293	114	96	146	122	85	95	29	7.8	274	50
23	72	267	110	94	159	119	76	78	28	101	151	49
24	59	206	105	90	143	116	74	68	27	52	330	48
25	57	184	100	90	141	111	73	60	26	40	127	47
26	52	172	94	89	131	109	77	61	24	50	91	46
27	49	166	90	66	133	109	76	66	23	110	75	44
28	47	161	100	58	129	105	71	78	23	48	70	42
29	46	157	113	60	---	103	69	74	22	31	66	43
30	44	262	114	70	---	102	65	90	21	26	54	43
31	57	---	109	80	---	100	---	63	---	22	50	---
TOTAL	1645	17529	4546	2813	3833	3989	2553	2100	1150	852.6	2578	2896
MEAN	53.1	584	147	90.7	137	129	85.1	67.7	38.3	27.5	83.2	96.5
MAX	131	5410	298	130	194	368	122	115	70	110	463	341
MIN	35	139	90	58	86	99	65	53	21	7.6	19	42
CFSM	.46	5.08	1.28	.79	1.19	1.12	.74	.59	.33	.24	.72	.84
IN.	.53	5.67	1.47	.91	1.24	1.29	.83	.68	.37	.28	.83	.94
CAL YR 1985	TOTAL	49594	MEAN	136	MAX	5410	MIN	26	CFSM	1.18	IN.	16.04
WTR YR 1986	TOTAL	46484.6	MEAN	127	MAX	5410	MIN	7.6	CFSM	1.10	IN.	15.04

ROANOKE RIVER BASIN

275

02057400 SMITH MOUNTAIN LAKE NEAR PENHOOK, VA

LOCATION.--Lat 37°02'28", long 79°32'09", Pittsylvania County, Hydrologic Unit 03010101, at dam on Roanoke (Staunton) River 6.5 mi northeast of Penhook and at mile 314.0.

DRAINAGE AREA.--1,024 mi².

PERIOD OF RECORD.--September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to July 19, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete dam. Two ungated spillways, one near each end of dam, with crests at elevation 795 ft, are each 105 ft long. Initial filling began in September 1963 during construction; water in reservoir first reached minimum power pool, elevation, 787 ft, in May 1965. Total capacity at maximum pool elevation, 811 ft, is 1,517,000 acre-ft of which 375,000 acre-ft is upstream from the spillway crest; 157,800 acre-ft is normally used for power between elevation 787 ft, minimum power pool, and the spillway crest. Capacity at invert of lowest penstock, elevation, 601 ft, is 100 acre-ft. Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (pumped storage) which is used for hydroelectric power, flood control, low-water regulation for pollution abatement and water supply, water releases for downstream fish spawning, and recreation.

COOPERATION.--Records were provided by the Appalachian Power Company.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,250,200 acre-ft, Apr. 27, 1978, elevation, 799.8 ft; minimum (after first filling to minimum power pool), 995,400 acre-ft, Jan. 23, 1970, elevation, 787.6 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,243,400 acre-ft, Nov. 5, elevation, 799.5 ft; minimum, 1,056,300 acre-ft, Aug. 15, elevation, 790.8 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	794.3	1,127,700	-
Oct. 31.....	793.3	1,107,300	-20,400
Nov. 30.....	794.8	1,137,900	+30,600
Dec. 31.....	794.5	1,131,800	-6,100
CAL YR 1985.....	-	-	+2,000
Jan. 31.....	794.1	1,123,600	-8,200
Feb. 28.....	793.9	1,119,600	-4,000
Mar. 31.....	795.0	1,142,000	+22,400
Apr. 30.....	794.3	1,127,700	-14,300
May 31.....	793.3	1,107,300	-20,400
June 30.....	794.1	1,123,600	+16,300
July 31.....	792.5	1,091,000	-32,600
Aug. 31.....	792.8	1,097,100	+6,100
Sept. 30.....	792.6	1,093,000	-4,100
WTR YR 1986.....	-	-	-34,700

ROANOKE RIVER BASIN

02058400 PIGG RIVER NEAR SANDY LEVEL, VA

LOCATION.--Lat 36°56'45", long 79°31'30", Pittsylvania County, Hydrologic Unit 03010101, on left bank 300 ft downstream from Harpen Creek, 0.5 mi upstream from bridge on State Highway 40, and 1.1 mi south of Sandy Level.

DRAINAGE AREA.--350 mi².

PERIOD OF RECORD.--May 1963 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 617.00 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Nov. 18, 1963, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 22, 23, 26-28, Jan. 9, 10, 28-31, and Apr. 18 to May 6. Records good except those for periods with ice effect, Dec. 22, 23, 26-28, Jan. 9, 10, 28-31, and period of no gage-height record, Apr. 18 to May 6, which are fair. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--23 years, 362 ft³/s, 14.05 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,400 ft³/s, Apr. 27, 1978, gage height, 25.56 ft, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 24 ft³/s, Aug. 29, 30, 1981, gage height, 1.95 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1830	*13,800	*19.50	No other peak equal to or greater than base discharge.			

Minimum discharge, 65 ft³/s, July 23, gage height, 2.19 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	324	1140	283	250	274	233	185	162	161	74	129
2	180	1670	728	265	246	262	232	178	154	120	72	166
3	703	1900	537	259	247	260	235	172	148	130	107	253
4	489	6360	451	258	274	257	233	169	144	113	144	733
5	256	6360	416	254	273	253	232	167	142	99	111	542
6	202	1350	392	244	261	250	238	165	142	89	95	966
7	181	795	365	242	473	244	258	164	148	84	130	360
8	171	600	348	234	471	232	236	174	191	78	124	247
9	168	488	337	220	354	230	228	161	176	74	106	228
10	166	426	324	270	316	235	219	157	149	76	92	193
11	161	393	317	253	366	246	218	154	147	208	85	172
12	158	365	317	240	384	239	215	152	143	207	100	160
13	163	346	382	240	321	251	214	192	140	171	127	148
14	167	327	455	233	294	385	211	372	130	122	120	137
15	163	314	361	229	306	928	214	283	125	95	110	131
16	156	306	331	229	309	570	244	218	122	88	104	127
17	153	309	316	230	325	412	249	195	120	89	114	124
18	152	299	306	236	369	352	230	191	115	86	180	119
19	154	289	292	264	378	336	225	191	110	77	167	127
20	156	285	286	332	346	336	220	244	109	71	286	136
21	193	349	290	283	320	299	235	258	105	72	1450	150
22	411	1260	260	253	305	278	230	209	102	72	526	130
23	342	1140	290	245	309	271	220	180	101	72	263	128
24	246	621	301	236	300	265	215	169	106	120	499	129
25	216	473	287	236	301	257	210	166	101	106	303	141
26	199	414	230	249	290	254	215	170	94	96	186	130
27	186	389	250	264	293	250	222	186	94	367	153	128
28	181	404	270	185	294	245	210	234	89	163	147	141
29	176	416	274	200	---	240	200	287	89	120	157	135
30	168	867	262	235	---	237	190	198	97	95	140	131
31	182	---	285	255	---	236	---	176	---	81	124	---
TOTAL	6732	29839	11400	7656	8975	9384	6731	6117	3795	3602	6396	6541
MEAN	217	995	368	247	321	303	224	197	127	116	206	218
MAX	703	6360	1140	332	473	928	258	372	191	367	1450	966
MIN	133	285	230	185	246	230	190	152	89	71	72	119
CFSM	.62	2.84	1.05	.71	.92	.87	.64	.56	.36	.33	.59	.62
IN.	.72	3.17	1.21	.81	.95	1.00	.72	.65	.40	.38	.68	.70
CAL YR 1985	TOTAL	140461	MEAN	385	MAX	10600	MIN	99	CFSM	1.10	IN.	14.93
WTR YR 1986	TOTAL	107168	MEAN	294	MAX	6360	MIN	71	CFSM	.84	IN.	11.39

ROANOKE RIVER BASIN

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02059400 LEESVILLE LAKE NEAR LEESVILLE, VA

LOCATION.--Lat 37°05'35", long 79°24'09", Campbell County, Hydrologic Unit 03010101, at Leesville Dam on Roanoke (Staunton) River, 2.0 mi south of Leesville, 3.5 mi upstream from Goose Creek, and at mile 296.

DRAINAGE AREA.--1,505 mi².

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to June 6, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete dam. Spillway, with crest at elevation 578.0 ft, is equipped with 4 radial gates 35 ft high by 50 ft wide. Storage began on Sept. 29, 1962, during construction, and water in reservoir first reached minimum power pool, elevation, 600.0 ft, on Mar. 5, 1963. Total capacity at maximum pool elevation, 613 ft, is 94,960 acre-ft of which 75,960 acre-ft is upstream from the spillway crest elevation; 38,200 acre-ft is normally used for power between elevations 600.0 ft, minimum power pool, and 613.0 ft. Capacity at invert of lowest penstock, elevation, 579.75 ft, is 21,010 acre-ft. Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (see station 02057400).

COOPERATION.--Records were provided by the Appalachian Power Company.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 98,180 acre-ft, Feb. 1, 1965, elevation, 614.0 ft; minimum (after first filling to minimum power pool), 39,880 acre-ft, Mar. 19, 1963, elevation, 592.0 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 96,250 acre-ft, Nov. 5, 6, elevation, 613.4 ft; minimum, 57,200 acre-ft, June 16, elevation, 600.0 ft.

REVISIONS.--The minimum acre-ft and elevation for water year 1985 have been revised to 57,200 acre-ft, Sept. 7, 1985, elevation, 600.0 ft. These supersede figures published in the report for 1985.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	602.1	62,830	-
Oct. 31.....	608.1	79,710	+16,880
Nov. 30.....	604.0	67,920	-11,790
Dec. 31.....	603.9	67,650	-270
CAL YR 1985.....	-	-	+5,360
Jan. 31.....	607.8	78,830	+11,180
Feb. 28.....	608.0	79,420	+590
Mar. 31.....	602.8	64,700	-14,720
Apr. 30.....	605.9	73,250	+8,550
May 31.....	611.8	91,100	+17,850
June 30.....	600.1	57,470	-33,630
July 31.....	604.1	68,190	+10,720
Aug. 31.....	605.7	72,660	+4,470
Sept. 30.....	610.2	85,940	+13,280
WTR YR 1986.....	-	-	+23,110

ROANOKE RIVER BASIN

02059500 GOOSE CREEK NEAR HUDDLESTON, VA

LOCATION.--Lat 37°10'23", long 79°31'14", Bedford County, Hydrologic Unit 03010101, on left bank 0.3 mi upstream from Haden Bridge on State Highway 732, 0.4 mi upstream from Rockcastle Creek, and 3.5 mi northwest of Huddleston.

DRAINAGE AREA.--188 mi².

PERIOD OF RECORD.--March 1925 to August 1928 (gage heights only), September 1930 to current year.

REVISED RECORDS.--WSP 892: 1933, 1935(M), 1939. WSP 972: 1931-32(M), 1934(M), 1935-38, 1940, 1941(M). WSP 1082: 1940(P). WSP 1142: 1938-40(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 592.91 ft above National Geodetic Vertical Datum of 1929. Mar. 15, 1925, to Aug. 4, 1928, nonrecording gage at site 1,300 ft downstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 20, 21, 23-25, 27, 28, Jan. 7, 8, 15, 26, 27, 29-31, and Feb. 13-15. Records good except those for periods with ice effect, Dec. 20, 21, 23-25, 27, 28, Jan. 7, 8, 15, 26, 27, 29-31, and Feb. 13-15, which are fair. Prior to October 1954, diurnal fluctuation at low flow caused by mill upstream from station. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--56 years, 176 ft³/s, 12.71 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,300 ft³/s, Oct. 19, 1937, gage height, 25.75 ft, from flood-marks, from rating curve extended above 11,000 ft³/s on basis of slope-area measurements at gage heights 19.25 ft, 24.1 ft, and 24.89 ft; minimum, 3 ft³/s, Aug. 31, 1932, Jan. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1930	*14,600	*22.05	No other peak equal to or greater than base discharge.			

Minimum discharge, 25 ft³/s, July 21-22, gage height, 0.99 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	62	652	131	110	191	116	85	76	51	31	44
2	51	214	483	128	119	184	115	81	71	57	33	58
3	93	364	357	111	122	181	116	77	64	57	45	69
4	71	5860	288	106	147	179	112	75	63	41	34	186
5	54	4750	248	104	138	175	113	77	64	36	31	387
6	48	910	220	100	137	172	112	77	63	35	50	366
7	46	613	187	92	188	168	118	81	61	34	147	149
8	45	472	171	82	175	157	112	78	67	31	55	109
9	46	395	162	86	166	160	106	73	65	30	41	89
10	46	348	157	123	163	162	102	74	58	32	38	76
11	46	316	151	113	218	165	105	72	83	43	38	68
12	46	294	151	106	217	159	101	70	68	56	39	62
13	47	281	177	100	180	164	100	121	54	39	39	56
14	47	263	173	97	170	216	100	187	49	35	40	51
15	46	243	147	90	160	735	112	114	48	31	39	49
16	46	232	143	95	185	445	213	99	49	31	36	48
17	46	226	141	102	197	298	162	93	49	31	36	45
18	44	202	136	89	256	233	144	83	43	30	40	44
19	45	188	129	105	275	207	129	87	43	28	79	46
20	46	179	125	136	248	190	120	144	42	26	189	49
21	54	201	120	110	224	167	123	211	43	25	289	64
22	67	412	119	103	215	156	117	164	41	450	184	54
23	60	407	118	103	244	150	106	122	41	169	122	46
24	53	295	115	103	220	145	102	103	42	93	82	46
25	51	246	110	102	214	138	101	92	41	53	60	49
26	48	216	107	100	201	135	108	93	37	50	50	46
27	47	201	115	84	203	132	105	104	37	63	46	44
28	46	192	120	73	205	125	97	127	35	48	49	44
29	46	198	127	84	---	121	93	108	34	39	47	44
30	46	483	120	94	---	118	87	91	35	35	41	44
31	47	---	121	100	---	117	---	84	---	33	40	---
TOTAL	1569	19263	5690	3152	5297	6045	3447	3147	1566	1812	2090	2532
MEAN	50.6	642	184	102	189	195	115	102	52.2	58.5	67.4	84.4
MAX	93	5860	652	136	275	735	213	211	83	450	289	387
MIN	44	62	107	73	110	117	87	70	34	25	31	44
CFSM	.27	3.41	.98	.54	1.01	1.04	.61	.54	.28	.31	.36	.45
IN.	.31	3.81	1.13	.62	1.05	1.20	.68	.62	.31	.36	.41	.50
CAL YR 1985	TOTAL	64485	MEAN	177	MAX	5860	MIN	44	CFSM	.94	IN.	12.76
WTR YR 1986	TOTAL	55610	MEAN	152	MAX	5860	MIN	25	CFSM	.81	IN.	11.00

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA

LOCATION.--Lat 37°06'16", long 79°17'44", Pittsylvania County, Hydrologic Unit 03010101, on right bank 12 ft upstream from bridge on alternate U.S. Highway 29, 0.3 mi south of Altavista, 0.3 mi downstream from Sycamore Creek, 3.5 mi upstream from Big Otter River, and at mile 286.5.

DRAINAGE AREA.--1,789 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1930 to current year.

REVISED RECORDS.--WSP 892: 1938(M). WSP 972: 1931-33. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 503.10 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 21, 1951, on left bank 50 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1962 by Leesville Lake (station 02059400) 9.5 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 27.5 mi upstream. Gage-height and U.S. Army Corps of Engineers satellite telemeters at station. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke.

AVERAGE DISCHARGE.--51 years, 1,780 ft³/s, 13.51 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 105,000 ft³/s, Aug. 15, 1940, gage height, 40.08 ft, from floodmark, from rating curve extended above 52,000 ft³/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers and records for other stations in Roanoke River basin; minimum, 13 ft³/s, Jan. 30, 1966; minimum daily, 39 ft³/s, July 10, 1966; minimum gage height, 1.53 ft, Jan. 2, 1977, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 35,700 ft³/s, Nov. 5, gage height, 27.38 ft; minimum, 126 ft³/s, Oct. 20; minimum daily, 149 ft³/s, Oct. 13, July 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	937	1250	3420	464	368	590	1080	1180	233	1000	755	368		
2	913	3570	3560	1330	326	332	968	1190	866	1000	253	809		
3	1040	9220	3310	1060	1000	1030	750	1210	866	1090	198	860		
4	834	18300	2920	386	1840	1450	965	1200	843	254	878	930		
5	271	33700	2080	318	2050	1580	337	1200	841	149	852	1810		
6	264	28000	1900	970	2080	1810	322	1200	1370	156	899	687		
7	1060	23500	493	959	4810	1380	914	1150	281	827	957	303		
8	899	11700	361	962	567	536	932	1080	202	796	805	912		
9	805	9110	1530	937	361	292	910	1050	789	786	279	919		
10	814	3860	1750	974	1540	1180	734	1080	921	796	164	827		
11	1050	2780	2610	386	2720	1340	793	1090	806	1050	852	887		
12	243	2810	2640	354	2090	1400	777	1080	822	317	877	877		
13	149	2200	1950	1090	1970	1690	863	1160	941	184	886	260		
14	928	1790	517	963	2050	1600	1110	1290	258	837	936	177		
15	873	1740	351	1010	597	995	1240	1150	206	782	732	891		
16	863	457	1760	912	364	2720	1760	1110	859	803	260	840		
17	935	328	1740	1110	1060	3350	1210	1070	770	907	175	835		
18	979	2060	1950	375	2660	2240	1130	1080	808	801	825	832		
19	231	2680	1620	338	2860	2670	1110	1110	758	246	885	929		
20	158	2750	1170	995	2820	2780	1120	1120	1160	178	988	261		
21	986	4840	397	1030	2770	2070	1160	1130	251	863	1090	179		
22	1020	5150	312	916	637	564	1150	1090	156	1120	861	865		
23	1010	756	1930	971	455	335	1070	1040	868	1010	341	845		
24	991	504	2060	1100	2590	1580	1110	1040	822	939	199	845		
25	946	1780	560	348	2090	1700	1190	1030	814	813	834	846		
26	246	1730	1570	277	1700	1720	1200	1070	822	275	848	788		
27	158	2830	1160	1050	2730	1720	1210	1050	809	194	892	246		
28	943	746	402	4230	2090	1680	1220	1040	229	917	849	169		
29	945	2680	330	1130	---	553	1200	1020	170	866	835	870		
30	927	2870	1510	823	---	332	1190	1190	1030	848	266	800		
31	924	---	1550	516	---	1470	---	294	---	828	186	---		
TOTAL	23342	185691	49413	28284	49195	44689	30725	33794	20571	21632	20657	21667		
MEAN	753	6190	1594	912	1757	1442	1024	1090	686	698	666	722		
MAX	1060	33700	3560	4230	4810	3350	1760	1290	1370	1120	1090	1810		
MIN	149	328	312	277	326	292	322	294	156	149	164	169		
(*)	-57	+316	-103	+49	-61	+125	-96	-42	-291	-356	+172	+154		
MEAN†	696	6506	1491	961	1696	1567	928	1048	395	342	838	876		
CFSM‡	.39	3.64	.83	.54	.95	.88	.52	.59	.22	.19	.47	.49		
IN.‡	.45	4.06	.96	.62	.99	1.01	.58	.68	.25	.27	.54	.55		
CAL YR 1985	TOTAL	636758	MEAN	1745	MAX	33700	MIN	142	MEAN†	1755	CFSM‡	.98	IN.‡	13.32
WTR Yr. 1986	TOTAL	529660	MEAN	1451	MAX	33700	MIN	149	MEAN†	1435	CFSM‡	.80	IN.‡	10.89

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.

† Adjusted for change in contents.

ROANOKE RIVER BASIN

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951, 1953-56, 1968 to August 1986 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1950 to September 1951, February 1953 to September 1956, April 1968 to August 1986 (discontinued).

WATER TEMPERATURE: October 1950 to September 1951, February 1953 to September 1956, April 1968 to August 1986 (discontinued).

SUSPENDED-SEDIMENT DISCHARGE: February 1953 to September 1956.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 580 microsiemens, Jan. 17, 1969; minimum daily, 54 microsiemens, Aug. 18, 1955.

WATER TEMPERATURE: Maximum daily, 30.0°C, Aug. 10, 1951, Aug. 11, 1980; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 220 microsiemens, Aug. 1; minimum daily, 94 microsiemens, Nov. 6.

WATER TEMPERATURE: Maximum daily, 26.5°C, July 17, 20; minimum daily, 3.0°C Jan. 8, 9, 14, 16, 29, Feb. 13.

WATER QUALITY DATA, OCTOBER 1985 TO AUGUST 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
DEC 16...	1024	1570	136	137	7.20	8.10	5.0	750	30	12.0
FEB 05...	0945	510	158	155	7.40	7.80	6.0	741	30	12.5
MAR 19...	1055	2090	114	129	7.60	8.00	10.0	--	15	--
MAY 07...	1115	1190	168	169	7.70	8.10	17.0	740	5	9.2
JUN 18...	1030	327	189	190	7.70	8.00	19.5	749	5	8.3

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
DEC 16...	95	53	9	13	5.0	5.1	2.0	44	11
FEB 05...	103	49	5	12	4.7	11	2.0	44	14
MAR 19...	--	49	8	12	4.6	4.9	1.9	41	11
MAY 07...	98	61	4	15	5.8	6.6	2.2	57	12
JUN 18...	92	66	4	16	6.3	10	2.3	62	16

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
DEC 16...	6.0	<0.10	10	64	79	<0.010	0.370	0.020	84
FEB 05...	11	0.10	8.9	72	91	<0.010	0.350	0.120	60
MAR 19...	5.2	0.10	9.6	73	74	<0.010	0.360	0.010	83
MAY 07...	7.1	<0.10	6.4	88	89	<0.010	0.320	0.020	13
JUN 18...	9.5	0.10	6.3	106	100	<0.010	0.310	0.070	39

02060500 ROANOKE (STAUNTON) RIVER AT ALTAVISTA, VA--Continued

SPECIFIC CONDUCTANCE, (MICROSIEMENS/CM AT 25 DEG. C), OCTOBER 1985 TO AUGUST 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	170	156	110	130	132	159	159	175	140	178	220
2	156	---	108	135	132	150	145	165	178	178	200
3	139	135	142	139	128	125	165	165	178	190	183
4	145	127	140	139	140	150	155	165	180	198	185
5	145	115	143	135	150	155	159	165	180	205	195
6	162	94	141	135	142	150	141	170	180	200	195
7	162	150	142	141	133	155	145	170	180	180	190
8	163	162	120	145	130	155	150	173	160	193	178
9	162	160	120	144	125	155	159	175	160	200	178
10	160	156	137	145	125	145	155	175	180	205	185
11	159	158	150	145	138	150	165	173	182	195	180
12	159	162	150	155	130	159	160	165	165	180	195
13	162	160	145	150	140	160	158	165	190	178	185
14	161	164	145	150	138	145	158	150	188	195	190
15	161	162	110	145	138	145	158	165	180	195	185
16	157	165	139	150	140	148	155	168	182	195	---
17	150	164	150	141	140	145	155	168	190	198	---
18	150	163	150	141	130	155	158	170	190	200	---
19	148	162	145	149	135	158	160	170	190	200	---
20	144	161	141	150	128	159	158	168	190	190	---
21	156	146	145	140	140	160	158	170	190	190	---
22	155	144	138	150	138	160	160	170	180	198	---
23	146	140	135	143	130	155	163	168	180	170	---
24	150	125	138	152	133	160	160	170	190	175	---
25	157	123	139	152	150	162	165	175	190	183	---
26	160	145	141	140	153	165	165	176	196	183	---
27	135	154	140	115	158	165	163	176	178	183	---
28	157	120	141	145	158	159	163	176	180	185	---
29	161	118	150	143	---	159	165	180	178	195	---
30	163	157	144	173	---	120	163	176	178	198	---
31	158	---	145	135	---	120	---	178	---	183	---
MEAN	155	146	138	144	138	152	158	170	180	190	190
WTR YR 1986	MEAN	159	MAX	220	MIN	94					

TEMPERATURE, WATER (DEG. C), OCTOBER 1985 TO AUGUST 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	21.0	17.0	15.0	4.5	4.0	6.0	14.0	18.0	23.0	21.5	25.5
2	21.0	16.0	13.0	3.5	4.5	5.5	15.0	16.0	19.0	18.5	26.0
3	19.0	16.0	11.0	6.0	5.5	6.0	14.0	15.5	19.0	17.5	25.0
4	20.5	17.0	10.0	5.5	5.5	7.0	15.0	14.5	17.5	17.5	24.0
5	21.5	15.5	13.0	5.0	5.5	5.5	16.0	15.0	18.5	19.0	23.0
6	18.0	16.0	12.0	3.5	6.0	7.0	16.0	17.0	21.0	20.0	22.5
7	17.0	16.5	11.0	5.0	5.5	6.5	16.5	18.0	21.5	21.0	22.0
8	17.0	16.0	10.5	3.0	5.0	5.5	16.0	19.0	21.5	21.0	23.0
9	18.0	16.5	9.5	3.0	5.5	7.0	14.0	16.5	23.0	22.0	24.5
10	19.0	16.0	12.0	4.0	7.0	9.0	11.0	15.0	20.0	22.5	25.5
11	18.5	15.0	13.0	4.0	5.5	10.5	12.0	15.0	19.5	23.0	25.0
12	19.0	16.5	13.0	4.0	4.0	8.0	11.0	15.5	21.5	24.0	22.5
13	19.5	16.0	12.0	5.0	3.0	8.0	12.0	15.5	23.5	24.0	22.0
14	19.0	16.0	7.0	3.0	3.5	8.5	15.0	14.5	21.5	26.0	21.5
15	19.5	16.0	5.5	3.5	4.0	9.0	14.0	16.5	22.0	22.5	22.0
16	21.5	16.5	5.0	3.0	5.0	9.5	13.0	17.0	21.0	23.0	---
17	20.0	15.5	8.0	4.5	7.0	9.0	11.5	17.5	24.0	26.5	---
18	19.5	14.5	8.0	4.0	7.0	9.0	12.0	16.5	24.0	23.0	---
19	18.0	17.0	6.5	5.0	6.5	11.0	12.0	17.5	22.5	26.0	---
20	18.0	16.0	6.0	6.0	7.5	9.0	13.0	19.0	20.5	26.5	---
21	17.0	15.5	4.0	4.5	8.0	7.5	15.0	18.0	23.0	26.0	---
22	17.0	15.5	4.0	6.5	7.0	7.5	14.0	18.0	23.5	25.0	---
23	18.0	14.5	5.0	6.0	7.0	6.5	15.0	18.0	22.5	25.0	---
24	19.0	13.5	6.5	4.5	6.5	11.0	16.0	18.0	20.0	24.0	---
25	19.0	12.0	4.0	4.0	6.5	11.0	14.0	18.0	19.5	23.5	---
26	17.0	14.0	4.5	4.0	6.0	10.0	16.0	17.0	19.0	24.5	---
27	15.5	16.0	5.0	3.5	5.5	11.0	16.0	16.0	20.0	24.0	---
28	16.0	16.0	5.0	5.0	5.0	12.0	15.0	16.5	23.0	24.0	---
29	18.0	15.5	6.5	3.0	---	11.0	15.5	18.0	23.5	23.0	---
30	17.0	15.0	7.0	4.0	---	13.5	14.0	18.0	23.5	22.5	---
31	16.0	---	7.0	3.5	---	14.0	---	19.0	---	25.0	---
MEAN	18.5	15.5	8.5	4.5	5.5	9.0	14.0	17.0	21.5	23.0	23.5
WTR YR 1986	MEAN	14.0	MAX	26.5	MIN	3.0					

ROANOKE RIVER BASIN

02061500 BIG OTTER RIVER NEAR EVINGTON, VA

LOCATION.--Lat 37°12'30", long 79°18'14", Campbell County, Hydrologic Unit 03010101, on right bank 60 ft upstream from bridge on State Highway 682, 2.0 mi southwest of Evington, and 2.1 mi upstream from Flat Creek.

DRAINAGE AREA.--320 mi².

PERIOD OF RECORD.--October 1936 to current year. Monthly discharge only for some periods, published in WSP 1303.

Prior to October 1965, published as Otter River near Evington.

REVISED RECORDS.--WSP 852: 1937. WSP 892: 1938-39(M). WSP 972: 1937-39. WSP 1032: 1940. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 544.02 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1, 2, 4-8, Dec. 20-27, Jan. 7, 14, 15, 26, 27, Jan. 29 to Feb. 1, and Feb. 14, 15. Records good except those for periods of doubtful gage-height record, Oct. 1, 2, 4-8, and periods with ice effect, Dec. 20-27, Jan. 7, 14, 15, 26, 27, Jan. 29 to Feb. 1, and Feb. 14, 15, which are fair.

Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--50 years, 329 ft³/s, 13.96 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s, Oct. 19, 1937, Aug. 19, 1939, gage height, 23.1 ft, from rating curve extended above 7,000 ft³/s on basis of unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River basin; minimum, 7.5 ft³/s, Sept. 14, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0300	*27,100	*a22.69	No other peak equal to or greater than base discharge.			

a From high-water mark in gage house.

Minimum daily discharge, 44 ft³/s, Aug. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	132	939	278	240	353	222	143	127	82	54	57
2	94	728	660	269	242	338	221	142	121	121	50	58
3	212	2150	510	238	248	331	223	137	111	138	54	68
4	160	7860	457	241	333	310	211	136	108	98	53	248
5	130	12400	427	231	304	297	213	138	108	85	53	474
6	110	1810	403	220	270	291	211	137	106	79	51	376
7	100	1030	377	200	436	283	226	136	101	74	81	229
8	98	716	358	237	382	260	210	135	106	65	91	200
9	96	573	344	267	329	262	199	128	108	65	81	180
10	96	500	321	314	307	264	190	129	94	63	71	158
11	97	450	312	326	476	272	190	126	95	62	61	138
12	95	411	309	294	454	261	188	121	234	71	55	122
13	93	385	367	227	361	257	184	220	118	77	53	109
14	96	364	381	210	350	342	183	477	90	73	52	97
15	97	350	317	230	330	930	195	233	84	69	52	88
16	91	328	315	281	345	586	408	190	81	64	49	80
17	89	339	307	304	374	461	286	166	79	61	47	74
18	91	315	296	209	527	403	253	157	75	59	44	70
19	92	304	278	246	525	379	228	156	72	56	46	66
20	94	297	270	313	458	360	218	215	74	54	77	65
21	117	326	265	250	410	319	222	244	77	50	230	66
22	197	624	260	230	388	297	212	194	74	404	212	67
23	182	636	255	223	477	288	184	168	73	177	183	65
24	146	443	253	212	410	281	176	157	75	126	149	63
25	127	388	251	215	392	263	170	150	77	99	119	62
26	115	360	248	200	362	257	169	155	73	170	97	60
27	109	349	290	190	381	255	168	162	74	137	82	58
28	105	336	329	183	383	245	159	209	74	83	72	55
29	102	361	353	200	---	238	155	167	73	67	69	53
30	100	727	360	220	---	231	145	147	78	59	66	53
31	100	---	326	240	---	226	---	135	---	57	61	---
TOTAL	3505	35992	11138	7498	10494	10140	6219	5310	2840	2945	2515	3559
MEAN	113	1200	359	242	375	327	207	171	94.7	95.0	81.1	119
MAX	212	12400	939	326	527	930	408	477	234	404	230	474
MIN	74	132	248	183	240	226	145	121	72	50	44	53
CFSM	.35	3.75	1.12	.76	1.17	1.02	.65	.53	.30	.30	.25	.37
IN.	.41	4.18	1.29	.87	1.22	1.18	.72	.62	.33	.34	.29	.41
CAL YR 1985	TOTAL	125661	MEAN	344	MAX	12400	MIN	74	CFSM	1.07	IN.	14.61
WTR YR 1986	TOTAL	102155	MEAN	280	MAX	12400	MIN	44	CFSM	.87	IN.	11.88

02062500 ROANOKE (STAUNTON) RIVER AT BROOKNEAL, VA

LOCATION.--Lat 37°02'28", long 78°57'02", Campbell County, Hydrologic Unit 03010102, on left bank 1,600 ft upstream from bridge on U.S. Highway 501 at Brookneal, 2.9 mi upstream from Falling River, and at mile 255.9.

DRAINAGE AREA.--2,415 mi².

PERIOD OF RECORD.--April 1923 to current year.

REVISED RECORDS.--WSP 892: 1928(M). WSP 972: 1928-34. WSP 1303: 1924-27(M), 1929(M), 1941(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 351.96 ft above National Geodetic Vertical Datum of 1929. Apr. 30, 1923, to Aug. 29, 1929, nonrecording gage, Aug. 30, 1929, to Aug. 15, 1940, water-stage recorder, and Aug. 16 to Oct. 1, 1940, nonrecording gage at site 1,800 ft downstream at same datum. Oct. 2, 1940, to Sept. 30, 1941, nonrecording gage at site 1,600 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1962 by Leesville Lake (station 02059400) 40.1 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 58.1 mi upstream. Gage-height and U.S. Army Corps of Engineers satellite telemeters at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--63 years, 2,376 ft³/s, 13.36 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s, Aug. 15, 1940, gage height, 46.5 ft, at present site, from gage-height relation curve, from rating curve extended above 55,000 ft³/s on basis of slope-area measurement by Geological Survey, unit hydrograph and flood-routing studies by U.S. Army Corps of Engineers, and records for other stations in Roanoke River basin; minimum daily, 140 ft³/s, July 25, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56,100 ft³/s, Nov. 5, gage height, 33.77 ft; minimum, 200 ft³/s, July 21; minimum daily, 239 ft³/s, Aug. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	983	1110	5690	2010	899	2340	1800	1300	465	1050	841	375
2	993	3360	5210	1160	722	829	1230	1280	550	1070	766	351
3	1260	10500	4530	2040	946	962	1150	1300	878	1090	326	895
4	1400	28400	4130	1430	1650	1740	1090	1300	986	1180	314	956
5	1010	48200	3820	830	2730	1950	1050	1290	973	347	878	1270
6	439	44400	2790	992	2710	2110	576	1310	972	241	880	2320
7	562	34000	2460	1510	4400	2010	707	1290	1500	241	981	775
8	1040	20700	1140	1500	4340	1700	1090	1170	423	850	1080	531
9	999	10800	1390	1400	1020	643	1150	1140	374	831	848	1060
10	920	6230	2440	1490	1200	817	1100	1130	929	829	346	1040
11	932	3350	2690	1390	2750	1660	944	1140	1050	855	239	928
12	1140	3340	3470	772	3650	1760	986	1140	938	1180	889	979
13	393	3400	3530	1140	2950	1870	1060	1270	1050	463	909	954
14	374	2540	2650	1450	2560	1950	1120	2070	1090	305	915	357
15	995	2210	1190	1470	2430	2610	1430	1770	387	881	964	326
16	958	2170	1460	1370	935	2340	1520	1400	414	827	756	915
17	954	900	2660	1460	1250	4240	2190	1300	901	840	327	901
18	1010	1230	2570	1410	2240	3740	1420	1240	869	963	243	889
19	1050	2870	2670	727	4010	2700	1380	1250	900	844	864	890
20	380	3190	2320	1030	3790	3390	1330	1300	855	319	1010	985
21	390	4250	1500	1590	3670	3310	1390	1390	1230	257	1330	349
22	1200	11000	927	1420	3170	2250	1400	1350	351	856	1330	282
23	1290	2830	1300	1380	1080	716	1300	1230	269	1480	969	918
24	1200	1680	2910	1430	1610	958	1230	1190	932	1140	451	901
25	1150	1720	2500	1360	3510	2120	1340	1180	894	1010	343	903
26	1070	2640	1190	695	2630	2070	1370	1180	882	887	869	903
27	416	2670	2260	917	2500	2050	1360	1220	888	389	893	840
28	371	3380	1550	2350	3520	2040	1370	1220	874	413	962	330
29	1050	1620	897	4190	---	1820	1350	1180	327	934	911	272
30	1040	4140	1130	1710	---	640	1330	1060	289	894	884	883
31	1030	---	2260	928	---	843	---	1330	---	868	338	---
TOTAL	27999	268830	77234	44551	68872	60178	37763	39920	23440	24334	23656	24278
MEAN	903	8961	2491	1437	2460	1941	1259	1288	781	785	763	809
MAX	1400	48200	5690	4190	4400	4240	2190	2070	1500	1480	1330	2320
MIN	371	900	897	695	722	640	576	1060	269	241	239	272
(*)	-57	+316	-103	+49	-61	+125	-96	-42	-291	-356	+172	+154
MEAN†	846	9277	2388	1486	2399	2066	1163	1246	490	429	935	963
CFSM†	.35	3.84	.99	.62	.99	.86	.48	.52	.20	.18	.39	.40
IN.†	.40	4.29	1.14	.71	1.03	.99	.54	.59	.23	.20	.45	.45
CAL YR 1985	TOTAL	878902	MEAN	2408	MAX	48200	MIN	329	MEAN†	2418	CFSM†	1.00
WTR YR 1986	TOTAL	721055	MEAN	1975	MAX	48200	MIN	239	MEAN†	1959	CFSM†	.81
											IN.†	13.59
											IN.†	11.01

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.

† Adjusted for change in contents.

02064000 FALLING RIVER NEAR NARUNA, VA

LOCATION.--Lat 37°07'36", long 78°57'36", Campbell County, Hydrologic Unit 03010102, on left bank at upstream side of bridge on State Highway 643, 2.7 mi northeast of Naruna, and 3.2 mi upstream from Little Falling River.

DRAINAGE AREA.--173 mi².

PERIOD OF RECORD.--July 1929 to January 1935, September 1941 to current year.

REVISED RECORDS.--WSP 1333: 1930, 1931-34(M), 1935. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 412.32 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 15, 1935, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 2 to Jan. 10, Jan. 28-31, and Feb. 15. Records good except those for period of no gage-height record, Dec. 2 to Jan. 8, and periods with ice effect, Jan. 9, 10, 28-31, and Feb. 15, which are fair. Small diurnal fluctuation at times during low flow, cause unknown. Prior to 1958, diurnal fluctuation caused by gristmill at Spring Mills. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--50 years (water years 1930-34, 1942-86), 148 ft³/s, 11.62 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,600 ft³/s, June 22, 1972, gage height, 29.21 ft, from rating curve extended above 7,100 ft³/s on basis of slope-area measurement of peak flow; minimum, 3.0 ft³/s, Oct. 9, 1932, gage height, 2.18 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 26.5 ft, from floodmarks, discharge, 22,000 ft³/s, by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	0445	*9,160	*19.17	No other peak equal to or greater than base discharge.			

Minimum discharge, 15 ft³/s, Aug. 2, gage height, 2.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	303	519	146	106	166	93	68	56	41	16	28
2	45	1330	380	130	114	154	93	64	52	52	16	34
3	170	2920	250	120	119	147	97	61	50	54	32	48
4	119	6430	210	116	171	141	94	62	49	42	36	111
5	83	2160	180	112	151	135	95	63	51	37	27	85
6	71	621	160	108	137	133	95	61	50	34	83	66
7	66	367	150	104	276	127	98	61	50	31	146	46
8	65	268	145	100	208	117	95	61	50	28	42	42
9	64	207	140	98	169	118	91	59	49	28	27	44
10	63	167	135	105	151	119	86	59	47	27	23	38
11	63	154	130	107	279	123	87	58	47	50	22	35
12	62	146	140	106	237	118	87	56	63	69	25	35
13	63	138	190	102	178	118	84	124	56	51	28	32
14	64	131	230	96	150	184	83	269	47	36	27	30
15	63	124	165	97	140	309	84	147	45	31	27	29
16	60	119	150	99	160	237	102	101	45	30	25	29
17	60	127	140	101	207	170	98	85	44	31	23	28
18	60	119	135	110	361	148	96	73	41	43	26	27
19	63	115	125	167	284	145	90	72	40	33	44	29
20	63	115	122	118	241	140	89	81	39	26	117	31
21	79	200	120	101	202	124	101	86	40	24	126	32
22	147	853	115	97	191	115	95	74	40	22	63	31
23	132	470	110	95	279	113	83	65	39	33	47	31
24	93	273	106	92	213	111	81	62	40	34	37	30
25	81	214	104	96	190	106	81	61	38	29	30	29
26	74	187	108	123	170	105	80	63	37	28	27	29
27	69	174	106	137	178	105	78	66	38	31	27	26
28	67	166	102	90	183	102	75	72	38	28	36	26
29	65	172	105	97	---	100	73	67	37	23	40	28
30	65	410	110	100	---	99	69	62	40	20	31	28
31	65	---	120	105	---	95	---	58	---	17	26	---
TOTAL	2346	19180	5002	3375	5445	4224	2653	2421	1358	1063	1302	1137
MEAN	75.7	639	161	109	194	136	88.4	78.1	45.3	34.3	42.0	37.9
MAX	170	6430	519	167	361	309	102	269	63	69	146	111
MIN	42	115	102	90	106	95	69	56	37	17	16	26
CFSM	.44	3.69	.93	.63	1.12	.79	.51	.45	.26	.20	.24	.22
IN.	.50	4.12	1.08	.73	1.17	.91	.57	.52	.29	.23	.28	.24
CAL YR 1985	TOTAL	65821	MEAN	180	MAX	6430	MIN	34	CFSM	1.04	IN.	14.15
WTR YR 1986	TOTAL	49506	MEAN	136	MAX	6430	MIN	16	CFSM	.79	IN.	10.65

02065500 CUB CREEK AT PHENIX, VA

LOCATION.--Lat 37°04'45", long 78°45'50", Charlotte County, Hydrologic Unit 03010102, on right bank 10 ft upstream from bridge on State Highway 40, 0.9 mi west of Phenix, 1.9 mi downstream from Rough Creek, and 6.4 mi upstream from Louse Creek.

DRAINAGE AREA.--98.0 mi².

PERIOD OF RECORD.--August 1946 to current year.

REVISED RECORDS.--WSP 1333: 1947(M), 1948, 1949(M). WSP 2104: Drainage area. WDR VA-76-1: 1975.

GAGE.--Water-stage recorder. Datum of gage is 370.19 ft above National Geodetic Vertical Datum of 1929. Prior to July 14, 1950, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 21-25, 27-29, Jan. 9-11, 15-17, 29-31, and Feb. 15, 16. Records good except those for periods with ice effect, Dec. 21-25, 27-29, Jan. 9-11, 15-17, 29-31, and Feb. 15, 16, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--40 years, 97.4 ft³/s, 13.50 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,380 ft³/s, June 22, 1972, gage height, 20.37 ft, from floodmark in gage house, from rating curve extended above 2,700 ft³/s; minimum, 2.6 ft³/s, Oct. 6, 1970, gage height, 0.74 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 17.5 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	1500	2,020	9.60	Nov. 5	1200	3,050	11.25
Nov. 4	1330	*4,240	*12.74				

Minimum discharge, 16 ft³/s, Aug. 1, 2, gage height, 1.09 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

WY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	102	358	101	89	112	75	47	36	28	17	29
2	29	1210	261	88	96	103	74	45	35	29	17	31
3	72	1510	166	83	97	99	73	42	46	29	17	34
4	106	3010	132	82	128	96	71	42	36	26	24	67
5	52	2400	121	80	121	92	72	43	35	23	21	59
6	40	817	115	74	106	89	72	43	34	22	21	59
7	35	299	107	74	212	87	76	43	33	21	174	40
8	33	169	102	67	197	81	72	45	32	21	70	35
9	33	133	99	68	134	80	69	46	30	20	32	37
10	32	116	95	70	116	82	64	42	29	19	27	32
11	33	107	92	71	162	84	64	41	29	61	25	30
12	33	101	94	72	205	81	63	39	29	46	33	30
13	33	97	123	73	134	82	62	74	31	72	40	29
14	34	94	159	68	112	136	61	158	28	33	36	27
15	34	90	117	67	95	297	63	142	27	25	30	26
16	32	85	103	65	115	321	78	87	27	24	28	25
17	32	90	98	70	136	177	76	67	26	23	26	25
18	32	86	94	73	181	134	70	56	25	23	31	25
19	33	83	87	81	166	125	64	53	24	22	91	25
20	34	81	83	92	164	130	61	66	24	25	382	27
21	44	170	80	76	141	109	71	99	24	22	352	26
22	97	386	79	71	127	98	79	66	24	21	145	26
23	105	543	77	69	163	93	63	52	23	21	78	26
24	66	258	76	66	145	91	58	46	23	24	49	26
25	51	156	74	68	125	86	57	44	23	22	37	26
26	45	130	73	126	111	85	57	46	22	21	32	26
27	41	120	72	154	117	85	56	46	22	21	30	25
28	39	112	70	113	124	82	54	49	22	21	44	25
29	38	117	72	95	---	79	52	47	22	20	43	25
30	38	207	74	85	---	78	49	41	22	18	33	25
31	38	---	77	80	---	77	---	39	---	17	29	---
TOTAL	1392	12879	3430	2522	3819	3451	1976	1796	843	820	2014	948
MEAN	44.9	429	111	81.4	136	111	65.9	57.9	28.1	26.5	65.0	31.6
MAX	106	3010	358	154	212	321	79	158	46	72	382	67
MIN	28	81	70	65	89	77	49	39	22	17	17	25
CFSM	.46	4.38	1.13	.83	1.39	1.13	.67	.59	.29	.27	.66	.32
IN.	.53	4.89	1.30	.96	1.45	1.31	.75	.68	.32	.31	.76	.36
CAL YR 1985	TOTAL	42973	MEAN	118	MAX	3790	MIN	19	CFSM	1.20	IN.	16.31
WTR YR 1986	TOTAL	35890	MEAN	98.3	MAX	3010	MIN	17	CFSM	1.00	IN.	13.62

ROANOKE RIVER BASIN

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA

LOCATION.--Lat 36°54'54", long 78°44'28", Halifax County, Hydrologic Unit 03010102, on right bank 6 ft (revised) downstream from bridge on State Highway 746, 2.8 mi northwest of Randolph, 3.6 mi upstream from Roanoke Creek, and at mile 227.3.

DRAINAGE AREA.--2,977 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1900 to September 1906, October 1927 to September 1930, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1303. Prior to October 1902, published as Staunton River at Randolph. Gage heights collected since 1905 at this site or at former site are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1203: 1928-30. WSP 1303: 1901-6. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 307.59 ft above National Geodetic Vertical Datum of 1929. Aug. 27, 1900, to Oct. 13, 1902, nonrecording gage at site 3.2 mi downstream at datum about 5.9 ft lower. Oct. 14, 1902, to Aug. 11, 1906, and Oct. 1, 1927, to Mar. 31, 1930, nonrecording gage at site of original gage at datum 3.93 ft lower than present datum.

REMARKS.--Estimated daily discharges: July 15-21, 27-29, and Aug. 3, 4. Records good except those for periods of doubtful gage-height record, July 15-21, 27-29, and Aug. 3, 4, which are fair. Flow regulated since 1962 by Leesville Lake (station 02059400) 68.7 mi upstream and since 1963 by Smith Mountain Lake (station 02057400) 86.7 mi upstream. Gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

AVERAGE DISCHARGE.--45 years, 3,039 ft³/s, 13.86 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 97,000 ft³/s, Dec. 31, 1901, gage height, 35.0 ft, from graph based on gage readings, site and datum then in use; minimum daily, 179 ft³/s, Sept. 8, 1965, July 7, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 41.6 ft, present site and datum, discharge, 150,000 ft³/s, from information by U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 51,200 ft³/s, Nov. 6, gage height, 29.58 ft; minimum daily, 392 ft³/s, Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	830	1470	7810	2910	1410	3780	2060	1820	1140	775	1190	469
2	1310	3900	7290	1940	1350	2060	2220	1790	684	1460	1140	549
3	1450	10100	6190	2170	1220	1380	1830	1770	1150	1510	853	679
4	2220	23700	5640	2400	2000	1950	1610	1790	1310	1620	392	1410
5	1670	36000	5040	1490	3180	2660	1720	1780	1370	1150	594	1620
6	1120	48400	4110	1180	3580	2820	1190	1790	1340	555	1110	2930
7	638	46100	3750	1760	4360	3080	960	1820	1920	412	1380	1910
8	1160	36200	2270	1920	6850	2510	1540	1760	1160	483	1730	962
9	1330	22300	1700	1830	2450	1730	1680	1610	615	1150	1300	1080
10	1240	12000	2780	1810	1610	1090	1660	1560	867	1140	963	1470
11	1240	5850	3350	1970	2920	1850	1430	1580	1360	1150	445	1430
12	1420	4960	4260	1430	5040	2460	1440	1600	1360	1480	875	1230
13	1110	4990	4480	1130	4090	2510	1380	1650	1410	1440	1350	1390
14	566	4180	4190	1940	3600	3130	1530	2610	1430	820	1290	968
15	866	3740	2480	1840	3580	3930	1740	3300	1110	430	1300	479
16	1330	3590	1680	1870	2170	3910	2070	2330	556	1050	1150	760
17	1220	2380	3010	1810	1610	5150	2770	2000	827	1170	896	1200
18	1340	1820	3300	2040	2670	5210	2340	1850	1210	1230	440	1180
19	1410	3490	3460	1450	4870	3960	1980	1790	1250	1260	530	1150
20	999	4430	3050	1210	5000	4400	1930	1900	1170	979	1560	1340
21	577	6530	2610	1910	4770	4420	1910	2110	1470	431	2480	920
22	1210	12800	1530	2070	4590	3540	2040	2060	1120	506	2360	461
23	1900	10700	1330	1860	2360	1950	1960	1880	498	1610	1690	735
24	1810	4480	2990	1850	2000	1230	1780	1730	694	1720	1200	1210
25	1630	2920	3600	1990	4130	2380	1780	1700	1210	1440	624	1210
26	1500	3760	2030	1480	3760	2910	1900	1680	1200	1270	673	1180
27	1080	3750	2330	1340	3260	2910	1920	1720	1190	940	1190	1090
28	623	4860	2560	1950	4430	2890	1910	1750	1190	419	1360	917
29	972	2640	1540	5140	---	2810	1900	1780	970	577	1270	431
30	1420	4910	1230	2560	---	1790	1860	1840	465	1250	1230	682
31	1390	---	2250	1900	---	1070	---	1770	---	1220	1010	---
TOTAL	38581	336950	103840	60150	92860	87470	54040	58120	33246	32647	35575	33042
MEAN	1245	11230	3350	1940	3316	2822	1801	1875	1108	1053	1148	1101
MAX	2220	48400	7810	5140	6850	5210	2770	3300	1920	1720	2480	2930
MIN	566	1470	1230	1130	1220	1070	960	1560	465	412	392	431
(*)	-57	+316	-103	+49	-61	+125	-96	-42	-291	-356	+172	+154
MEAN†	1188	11546	3247	1989	3255	2947	1705	1833	817	697	1320	1255
CFSM†	.40	3.88	1.09	.67	1.09	.99	.57	.62	.27	.23	.44	.42
IN.†	.46	4.33	1.26	.77	1.14	1.14	.64	.71	.31	.27	.51	.47

CAL YR 1985 TOTAL 1183893 MEAN 3244 MAX 48400 MIN 534 MEAN† 3254 CFSM† 1.09 IN.† 14.84
WTR YR 1986 TOTAL 966521 MEAN 2648 MAX 48400 MIN 392 MEAN† 2632 CFSM† .88 IN.† 12.00

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; provided by Appalachian Power Company.

† Adjusted for change in contents.

ROANOKE RIVER BASIN

287

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1951 to June 1986 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1950 to September 1956, April 1968 to September 1982.

WATER TEMPERATURE: October 1950 to September 1956, April 1968 to September 1982.

SUSPENDED-SEDIMENT DISCHARGE: January 1954 to September 1981.

WATER QUALITY DATA, OCTOBER 1985 TO JUNE 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
DEC 16...	1330	1660	104	109	7.10	7.90	5.0	754	40	11.9
FEB 03...	1515	1220	95	96	7.20	7.50	6.0	754	20	11.8
MAR 17...	1430	6470	84	89	7.20	7.70	12.0	755	140	10.0
MAY 05...	1400	1790	143	143	7.50	8.10	17.5	752	5	8.9
JUN 16...	1615	515	149	149	7.50	7.90	28.5	750	10	6.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
DEC 16...	94	41	7	10	4.0	5.0	1.8	34	9.8
FEB 03...	96	35	5	8.7	3.3	4.7	1.7	30	6.8
MAR 17...	94	30	8	7.5	2.8	3.5	2.1	22	9.4
MAY 05...	94	50	1	12	4.8	5.8	2.1	49	9.9
JUN 16...	91	53	1	13	5.0	6.2	2.2	52	10

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
DEC 16...	4.8	<0.10	13	68	69	<0.010	0.270	<0.010	230
FEB 03...	4.3	0.10	13	50	61	<0.010	0.270	<0.010	160
MAR 17...	4.3	0.10	12	59	55	<0.010	0.540	0.010	300
MAY 05...	6.2	<0.10	8.0	81	78	<0.010	0.300	<0.010	62
JUN 16...	6.8	0.10	9.4	91	84	0.010	0.350	0.010	75

ROANOKE RIVER BASIN

02067800; 02067820 TALBOTT AND TOWNES RESERVOIRS NEAR KIBLER, VA

LOCATION.--Talbot Dam: Lat 36°40'39", long 80°23'52", Patrick County, Hydrologic Unit 03010103, on Dan River 4.5 mi northeast of Kibler. Townes Dam: Lat 36°41'10", long 80°25'50", Patrick County, Hydrologic Unit 03010103, on Dan River about 4 mi north of Kibler.

DRAINAGE AREA.--Talbot Dam, 20.2 mi²; Townes Dam, 32.9 mi².

PERIOD OF RECORD.--February 1939 to December 1945, January 1948 to September 1960 (published in WSP 1723), and October 1960 to current year.

REMARKS.--The two reservoirs are operated as a unit for storage of water for Pinnacles hydroelectric plant. Total capacity of Talbot Reservoir, 8,035 acre-ft, and Townes Reservoir, 1,377 acre-ft. Storage began in Talbot Reservoir on Feb. 13, 1939, and in Townes Reservoir several months earlier.

COOPERATION.--Records were provided by the city of Danville.

COMBINED MONTHEND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	6,990	-
Oct. 31.....	7,050	+60
Nov. 30.....	7,820	+770
Dec. 31.....	7,390	-430
CAL YR 1985.....	-	+1,300
Jan. 31.....	6,930	-460
Feb. 28.....	7,200	+270
Mar. 31.....	7,230	+30
Apr. 30.....	6,810	-420
May 31.....	6,790	-20
June 30.....	6,390	-400
July 31.....	6,590	+200
Aug. 31.....	7,440	+850
Sept. 30.....	7,980	+540
WTR YR 1986.....	-	+990

02068500 DAN RIVER NEAR FRANCISCO, NC

LOCATION.--Lat 36°30'53", long 80°18'11", Stokes County, Hydrologic Unit 03010103, on left bank 200 ft upstream from bridge on State Highway 704, 700 ft downstream from remains of Georges Mill, 0.2 mi downstream from Elk Creek, 3 mi east of Francisco, and 7.9 mi downstream from Little Dan River.

DRAINAGE AREA.--129 mi².

PERIOD OF RECORD.--August 1924 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1303: 1938-50 (monthly runoff). WSP 1433: 1925-26, 1928-29, 1931, 1942, 1948. WDR NC-80-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 831.99 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 15, 1929, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Since 1938, considerable diurnal fluctuation and regulation by Talbott Reservoir (station 02067800) and Townes Reservoir (station 02067820) and Pinnacles hydroelectric plant in Virginia, 28 mi upstream from station. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--62 years, 190 ft³/s, 20.00 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,200 ft³/s, Aug. 17, 1985; gage height, 19.50 ft, from rating curve extended above 8,400 ft³/s on basis of slope-area measurement at gage height 18.11 ft; minimum, 7.1 ft³/s, Sept. 8, 1932, gage height, 0.43 ft; minimum daily, 27 ft³/s, Aug. 24, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1916 reached a stage of about 15 ft, from information by local residents, discharge, 16,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1530	3,430	5.96	Aug. 23	2330	*3,580	*6.10

Minimum discharge, 39 ft³/s, Aug. 2, 3; minimum gage height, 1.00 ft, July 19, 20, 21; minimum daily discharge, 39 ft³/s, Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	146	296	158	137	144	139	111	96	55	41	93
2	117	258	481	174	133	141	139	110	93	65	39	358
3	369	281	275	212	134	140	140	109	89	76	89	582
4	186	1410	236	337	136	139	137	108	87	60	82	375
5	163	968	204	143	131	137	137	108	90	55	52	280
6	149	499	248	130	132	135	136	103	89	53	53	226
7	118	349	215	130	181	133	139	97	82	52	90	171
8	115	274	168	123	152	129	134	93	87	50	187	156
9	103	253	180	e130	143	130	135	93	88	48	76	144
10	87	244	212	e160	140	131	127	94	90	46	64	131
11	107	237	159	e140	160	137	128	93	95	48	64	125
12	90	233	144	e130	148	130	128	93	100	63	90	122
13	91	230	182	126	137	142	126	113	85	62	71	114
14	111	227	257	121	138	252	126	128	80	49	65	109
15	140	224	226	e126	147	454	126	110	84	46	63	106
16	116	211	161	e128	139	267	145	107	110	46	59	105
17	87	211	135	122	146	258	131	117	94	47	57	103
18	87	208	168	125	205	215	128	105	82	44	65	100
19	88	209	214	183	198	192	124	104	79	42	77	89
20	88	209	160	216	212	201	124	129	77	41	88	74
21	120	225	169	154	184	205	143	157	74	40	93	75
22	182	370	e180	145	171	152	134	114	73	62	118	73
23	130	165	184	140	163	149	123	104	73	76	463	72
24	124	121	161	136	156	147	122	103	76	56	681	74
25	121	112	157	134	154	144	120	101	73	52	125	71
26	118	104	135	140	148	144	127	101	70	52	92	70
27	116	222	160	135	155	146	125	119	71	76	80	68
28	116	264	186	112	152	143	120	145	64	95	76	66
29	91	273	170	e170	---	142	117	113	56	53	78	67
30	92	299	e170	e170	---	141	113	107	56	45	69	69
31	118	---	e170	152	---	142	---	104	---	43	69	---
TOTAL	3821	9036	6163	4702	4332	5262	3893	3393	2463	1698	3416	4268
MEAN	123	301	199	152	155	170	130	109	82.1	54.8	110	142
MAX	369	1410	481	337	212	454	145	157	110	95	681	582
MIN	81	104	135	112	131	129	113	93	56	40	39	66
(*)	+1	+13	-7	-8	+5	+1	-7	0	-7	+3	+14	+9

CAL YR 1985	TOTAL 20640	MEAN 191	MAX 1410	MIN 80	MEAN+ 193	CFSM# 1.50	IN.+ 20.31
WTR YR 1986	TOTAL 52447	MEAN 144	MAX 1410	MIN 39	MEAN+ 145	CFSM# 1.12	IN.+ 15.26

e Estimated.

* Change in contents, equivalent in cubic feet per second, in Talbott and Townes Reservoirs; provided by city of Danville, Va.

+ Adjusted for change in contents.

02069700 SOUTH MAYO RIVER NEAR NETTLERIDGE, VA

LOCATION.--Lat 36°34'15", long 80°07'47", Patrick County, Hydrologic Unit 03010103, on right bank 60 ft downstream from bridge on State Highway 700, 1.2 mi southeast of Nettleridge, 1.4 mi downstream from Russell Creek, and 3.6 mi upstream from Spoon Creek.

DRAINAGE AREA.--84.6 mi².

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-74-1: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 871.60 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 9, 1964, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Estimated daily discharges: Dec. 21-23, 27, 28, Jan. 27-30, and Feb. 14-16. Records good except those for periods with ice effect, Dec. 21-23, 27, 28, Jan. 27-30, and Feb. 14-16, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--24 years, 124 ft³/s, 19.90 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft³/s, Sept. 22, 1979, gage height, 22.00 ft, from rating curve extended above 2,900 ft³/s on basis of contracted-opening measurements at gage heights 18.32 ft and 22.00 ft; minimum, 20 ft³/s, Aug. 29, 30, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 3	0730	1,530	7.60	Nov. 4	1600	*9,170	*16.18

Minimum discharge, 31 ft³/s, July 21, gage height, 2.94 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	160	226	112	91	105	95	67	57	40	44	71
2	107	451	201	106	91	102	94	66	55	46	42	166
3	592	427	176	106	92	101	94	64	52	48	78	486
4	148	2910	163	105	95	99	92	64	51	41	67	342
5	103	1250	156	103	92	97	91	64	52	39	52	244
6	88	592	150	100	93	96	91	64	51	38	48	180
7	82	366	142	100	177	94	93	64	49	36	100	132
8	78	270	138	95	129	91	90	63	50	35	171	113
9	75	222	134	102	114	91	91	62	49	34	64	104
10	73	198	130	103	108	92	87	62	49	36	55	91
11	70	181	127	97	127	94	86	61	54	56	56	84
12	69	167	130	95	116	91	85	60	52	55	73	79
13	70	158	182	95	108	97	83	79	48	44	58	72
14	69	150	180	92	100	168	82	96	44	37	56	67
15	67	143	150	92	95	227	83	78	43	35	53	64
16	66	137	142	91	100	165	89	70	50	41	49	63
17	64	135	136	91	110	142	83	70	48	42	47	60
18	64	129	132	92	139	130	82	70	42	36	59	58
19	64	125	125	128	134	160	79	66	40	34	54	59
20	65	122	123	137	140	147	78	80	40	32	151	58
21	148	140	122	109	128	126	88	74	40	34	134	57
22	160	323	121	103	121	117	84	66	39	48	183	56
23	98	242	120	99	117	113	78	63	39	241	150	56
24	87	185	121	95	113	110	76	62	39	61	415	55
25	81	163	118	94	112	106	74	61	39	50	116	53
26	76	152	111	98	107	105	76	62	38	46	83	52
27	73	145	110	90	113	105	78	75	39	251	71	51
28	72	149	108	76	114	101	73	87	38	135	69	50
29	68	159	110	84	---	99	71	69	37	65	65	51
30	68	211	109	92	---	98	68	64	39	53	58	53
31	87	---	107	98	---	96	---	60	---	46	58	---
TOTAL	3086	10162	4300	3080	3176	3565	2514	2113	1363	1835	2779	3127
MEAN	99.5	339	139	99.4	113	115	83.8	68.2	45.4	59.2	89.6	104
MAX	592	2910	226	137	177	227	95	96	57	251	415	486
MIN	54	122	107	76	91	91	68	60	37	32	42	50
CFSM	1.18	4.01	1.64	1.17	1.34	1.36	.99	.81	.54	.70	1.06	1.23
IN.	1.36	4.47	1.89	1.35	1.40	1.57	1.11	.93	.60	.81	1.22	1.37
CAL YR 1985	TOTAL	49937	MEAN	137	MAX	6580	MIN	39	CFSM	1.62	IN.	21.96
WTR YR 1986	TOTAL	41100	MEAN	113	MAX	2910	MIN	32	CFSM	1.34	IN.	18.07

02070000 NORTH MAYO RIVER NEAR SPENCER, VA

LOCATION.--Lat 36°34'05", long 79°59'15", Henry County, Hydrologic Unit 03010103, on left bank 800 ft downstream from bridge on State Highway 629 at Moores Mill, 2.1 mi downstream from Horse Pasture Creek, and 3.8 mi south-east of Spencer.

DRAINAGE AREA.--108 mi².

PERIOD OF RECORD.--October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1303: 1929-32(M), 1934(M).

GAGE.--Water-stage recorder. Datum of gage is 730.94 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Jan. 23, 1936, nonrecording gage at site 800 ft upstream at datum 1.50 ft higher. July 25 to Sept. 27, 1936, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Dec. 21-23, 27, 28, Jan. 27-30, and Feb. 14-16. Records good except those for periods with ice effect, Dec. 21-23, 27, 28, Jan. 27-30, and Feb. 14-16, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--58 years, 126 ft³/s, 15.84 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft³/s, Oct. 9, 1947, gage height, 15.80 ft, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement at gage height 13.41 ft and velocity-area study; minimum, 14 ft³/s, Aug. 11, 1956; minimum gage height, 1.08 ft, Oct. 8, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0100	*9,910	*11.95	No other peak equal to or greater than base discharge.			

Minimum discharge, 31 ft³/s, July 21, gage height, 1.26 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	208	278	111	96	112	97	73	76	48	39	74
2	121	680	214	106	96	109	96	71	70	55	37	123
3	528	553	173	107	99	108	99	69	65	56	46	217
4	186	2020	155	106	103	106	95	68	63	46	64	259
5	113	3380	148	105	98	104	95	69	64	43	54	175
6	91	461	140	101	101	103	95	69	62	41	46	157
7	82	282	133	103	267	100	96	69	60	38	76	110
8	77	226	130	98	161	97	93	67	69	36	79	96
9	75	193	127	123	130	98	92	66	66	34	55	95
10	73	175	124	128	122	99	88	68	62	39	48	82
11	71	161	122	101	145	103	88	65	64	79	56	76
12	70	150	124	99	134	97	88	64	60	90	82	72
13	72	142	181	99	120	109	87	80	58	53	64	67
14	70	135	205	96	110	198	87	123	54	43	56	63
15	69	130	149	96	102	300	87	92	53	40	54	61
16	67	127	138	95	110	177	89	80	55	44	49	59
17	65	127	131	96	124	142	87	76	54	47	46	56
18	65	121	127	98	146	128	85	74	50	40	51	56
19	66	119	120	115	141	170	84	73	49	36	55	58
20	66	117	120	126	142	165	84	87	48	33	416	58
21	204	153	118	105	130	129	94	77	46	32	252	56
22	282	524	115	100	125	119	87	70	45	42	332	54
23	140	332	110	99	121	115	80	67	45	169	129	55
24	110	209	120	95	115	112	80	68	44	67	136	65
25	98	174	116	97	115	108	80	67	43	52	92	57
26	88	156	114	101	111	107	83	69	41	49	76	54
27	84	147	112	94	120	106	81	79	42	61	69	52
28	82	145	110	88	123	103	78	108	40	72	96	51
29	78	152	109	90	---	100	77	154	39	52	82	52
30	77	246	107	94	---	99	73	153	71	44	67	54
31	107	---	106	97	---	98	---	92	---	40	63	---
TOTAL	3432	11745	4276	3169	3507	3821	2625	2507	1658	1621	2867	2564
MEAN	111	392	138	102	125	123	87.5	80.9	55.3	52.3	92.5	85.5
MAX	528	3380	278	128	267	300	99	154	76	169	416	259
MIN	55	117	106	88	96	97	73	64	39	32	37	51
CFSM	1.03	3.63	1.28	.94	1.16	1.14	.81	.75	.51	.48	.86	.79
IN.	1.18	4.05	1.47	1.09	1.21	1.32	.90	.86	.57	.56	.99	.88
CAL YR 1985	TOTAL	55126	MEAN	151	MAX	7460	MIN	30	CFSM	1.40	IN.	18.99
WTR YR 1986	TOTAL	43792	MEAN	120	MAX	3380	MIN	32	CFSM	1.11	IN.	15.08

ROANOKE RIVER BASIN

02071900 PHILPOTT LAKE NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'52", long 80°01'40", Henry County, Hydrologic Unit 03010103, at Philpott Dam on Smith River, 1.5 mi west of Philpott, 12.0 mi upstream from Reed Creek, and at mile 44.3.

DRAINAGE AREA.--216 mi².

PERIOD OF RECORD.--August 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete dam. Spillway, with crest at elevation 985 ft, is ungated and 120 ft long. Storage began August 1950 during construction; initial filling started in December 1951; water in reservoir first reached rule-curve elevation in July 1953. Total capacity at maximum flood-control pool elevation, 998 ft, is 247,400 acre-ft of which 47,000 acre-ft is upstream from the spillway crest; 34,200 acre-ft is controlled flood storage between elevations 974 ft, maximum power pool, and 985 ft; 57,800 acre-ft is available for power between elevations 951 ft, minimum power pool, and 974 ft; and 108,400 acre-ft is inactive and dead storage below elevation 951 ft. Usable capacity is 92,000 acre-ft between elevations 951 ft and 985 ft. Figures given herein represent total contents. Reservoir is used for flood control, hydro-electric power, low-water regulation for pollution abatement and industrial water supply, and recreation.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 191,700 acre-ft, June 22, 1972, elevation, 983.06 ft; minimum (after first filling to rule curve), 64,540 acre-ft, Sept. 26, 1956, elevation, 927.59 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 190,620 acre-ft, Nov. 5, elevation, 982.01 ft; minimum, 138,400 acre-ft, Sept. 30, elevation, 963.81 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	971.22	158,250	-
Oct. 31.....	971.50	159,040	+790
Nov. 30.....	974.08	166,420	+7,380
Dec. 31.....	971.95	160,300	-6,120
CAL YR 1985.....	-	-	+2,950
Jan. 31.....	971.09	157,880	-2,420
Feb. 28.....	971.87	160,080	+2,200
Mar. 31.....	972.49	161,840	+1,760
Apr. 30.....	972.75	162,580	+740
May 31.....	973.05	163,440	+860
June 30.....	971.04	157,740	-5,700
July 31.....	967.15	147,100	-10,640
Aug. 31.....	965.05	141,580	-5,520
Sept. 30.....	963.81	138,400	-3,180
WTR YR 1986.....	-	-	-19,850

ROANOKE RIVER BASIN

293

02072000 SMITH RIVER NEAR PHILPOTT, VA

LOCATION.--Lat 36°46'50", long 80°01'30", Franklin County, Hydrologic Unit 03010103, on left bank 900 ft downstream from Philpott Dam, 3.1 mi west of Philpott, 11.6 mi upstream from Reed Creek, and at mile 44.1.

DRAINAGE AREA.--216 mi².

PERIOD OF RECORD.--August 1946 to current year.

REVISED RECORDS.--WSP 1553: 1953(M), 1955-56(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 804.27 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Oct. 8, 1952, at site 1.9 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 15, 16, Jan. 7, and Aug. 29. Records good except those for periods of doubtful or no gage-height record, Dec. 15, 16, Jan. 7, and Aug. 29, which are fair. Since August 1950, flow regulated by Philpott Lake (station 02071900) 0.2 mi upstream. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--40 years, 276 ft³/s, 17.35 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s, June 29, 1949, gage height, 20.3 ft, site and datum then in use, from rating curve extended above 9,700 ft³/s on basis of slope-area measurements at gage heights 18.2 ft and 20.3 ft; minimum observed, 2.3 ft³/s, Dec. 16, 1985 (result of repairs at dam), but may have been less during periods of estimated record; minimum daily, 20 ft³/s, Mar. 24, 1984, caused by turbines being shut down for repair at Philpott Dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,840 ft³/s, Nov. 8, gage height, 8.37 ft; minimum observed, 2.3 ft³/s, Dec. 16 (result of repairs at dam), but may have been less during periods of estimated record; minimum daily, 42 ft³/s, Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	183	225	44	339	45	45	194	193	45	292	348	147		
2	183	48	639	334	45	44	193	193	240	291	166	151		
3	185	46	918	341	340	189	192	44	240	291	49	146		
4	182	271	934	44	331	192	192	44	240	291	464	147		
5	42	1500	936	45	332	191	46	186	241	45	468	145		
6	42	4050	928	335	332	193	46	202	246	45	467	46		
7	176	4550	46	338	329	193	192	189	44	293	468	46		
8	186	4310	45	341	45	44	192	190	44	294	461	248		
9	180	1760	589	340	45	44	192	188	239	296	49	247		
10	178	44	580	339	339	192	192	44	242	297	47	250		
11	191	458	584	46	329	192	194	46	239	297	463	252		
12	44	432	572	45	337	189	46	191	240	47	462	251		
13	45	425	589	341	335	192	46	192	242	47	468	46		
14	199	435	43	346	336	193	193	191	44	298	471	46		
15	195	412	43	342	44	44	193	190	44	298	472	463		
16	190	46	390	345	44	44	192	189	245	299	48	469		
17	203	45	394	344	328	192	192	47	241	298	49	468		
18	198	501	384	45	334	631	192	45	236	298	149	467		
19	44	433	391	46	335	621	46	189	245	47	148	469		
20	45	422	380	341	331	632	46	200	242	47	147	46		
21	46	688	44	343	335	632	192	191	44	296	147	46		
22	200	431	43	340	44	44	192	193	44	299	146	467		
23	198	44	346	341	44	44	191	194	240	299	47	469		
24	224	44	342	341	191	390	192	45	240	299	47	473		
25	438	436	340	45	193	385	193	45	240	301	145	480		
26	43	742	335	45	191	385	45	192	239	47	146	477		
27	43	735	344	341	191	385	46	193	239	47	147	46		
28	201	742	44	342	193	389	193	192	45	455	147	46		
29	258	732	44	340	---	44	193	191	45	457	142	195		
30	244	44	343	340	---	45	192	192	293	443	46	192		
31	243	---	346	340	---	192	---	45	---	467	45	---		
TOTAL	5029	25051	12000	8195	6318	7192	4600	4626	5508	7821	7069	7441		
MEAN	162	835	387	264	226	232	153	149	184	252	228	248		
MAX	438	4550	936	346	340	632	194	202	293	467	472	480		
MIN	42	44	43	44	44	44	45	44	44	45	45	46		
(*)	+13	+124	-100	-39	+40	+29	+12	+14	-96	-173	-90	-53		
MEAN‡	175	959	287	225	266	261	165	163	88	79	138	195		
CFSM‡	.81	4.44	1.33	1.04	1.23	1.21	.76	.75	.41	.37	.64	.90		
IN.‡	.93	4.95	1.53	1.20	1.28	1.39	.85	.87	.45	.42	.74	1.01		
CAL YR 1985	TOTAL	105539	MEAN	289	MAX	4550	MIN	42	MEAN‡	293	CFSM‡	1.36	IN.‡	18.42
WTR YR 1986	TOTAL	100850	MEAN	276	MAX	4550	MIN	42	MEAN‡	249	CFSM‡	1.15	IN.‡	15.65

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

02072500 SMITH RIVER AT BASSETT, VA

LOCATION.--Lat 36°46'12", long 80°00'04", Henry County, Hydrologic Unit 03010103, on left bank 25 ft upstream from bridge on State Highway 666 at north edge of North Bassett, 1.0 mi northwest of Bassett, 3.0 mi downstream from Town Creek, 5.6 mi upstream from Reed Creek, 6.2 mi downstream from Philpott Dam, and at mile 38.1.

DRAINAGE AREA.--259 mi².

PERIOD OF RECORD.--April 1939 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 753.09 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--No estimated daily discharges. Records good. Since August 1950, flow regulated by Philpott Lake (station 02071900) 6.2 mi upstream. Diversion upstream from station by Henry County Public Service Authority has averaged less than 1.0 ft³/s. Gage-height and U.S. Army Corps of Engineers satellite telemeters at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--47 years, 329 ft³/s, 17.25 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft³/s, Aug. 14, 1940, gage height, 18.28 ft; minimum, 19 ft³/s, July 19, 1956; minimum daily, 44 ft³/s, Aug. 23, 1964; minimum gage height, 1.06 ft, Sept. 18, 26, 1953.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 19, 1937, reached a stage of about 22.9 ft, from information by local residents, discharge, 38,000 ft³/s, from rating curve extended above 23,000 ft³/s on basis of backwater studies and records for station at Martinsville.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,060 ft³/s, Nov. 8, gage height, 7.98 ft; minimum, 42 ft³/s, Aug. 29, gage height, 1.41 ft; minimum daily, 56 ft³/s, July 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	207	287	170	404	80	78	234	227	67	326	282	177		
2	231	239	777	395	77	77	234	227	263	340	295	200		
3	381	289	1070	401	390	233	235	72	274	331	73	229		
4	233	1230	1080	82	395	236	234	69	274	328	502	239		
5	71	1630	1080	79	394	234	76	211	275	68	510	222		
6	67	4260	1070	385	399	235	76	238	279	57	498	105		
7	204	4840	101	387	448	234	231	225	76	314	529	77		
8	217	4620	90	389	100	73	230	223	64	323	506	285		
9	210	2140	670	387	88	75	231	223	264	325	69	295		
10	204	227	680	391	405	232	231	77	277	341	59	288		
11	225	534	680	82	409	232	223	67	269	344	500	286		
12	69	496	668	78	410	229	73	214	293	77	513	285		
13	67	490	709	389	400	244	73	238	280	62	515	71		
14	228	488	101	398	402	307	226	240	71	322	519	62		
15	223	515	87	391	88	170	233	232	62	331	522	502		
16	220	111	437	394	82	109	234	224	267	332	71	551		
17	235	82	465	394	389	253	230	82	277	328	61	514		
18	226	545	451	80	406	722	230	71	203	327	174	499		
19	69	502	463	89	405	718	78	194	339	66	180	514		
20	81	484	456	397	404	723	73	259	273	56	335	69		
21	98	796	92	396	397	724	228	230	69	316	251	61		
22	272	648	80	390	86	91	231	229	58	329	191	485		
23	244	164	410	391	82	80	229	231	262	338	71	514		
24	271	106	407	390	238	453	231	76	274	332	84	512		
25	495	479	402	81	240	450	228	67	274	333	171	522		
26	71	885	392	80	237	448	81	219	267	77	172	511		
27	70	849	413	388	239	443	72	234	267	71	184	96		
28	232	884	84	387	239	445	225	232	67	494	199	59		
29	294	857	79	389	---	79	226	231	57	499	95	212		
30	281	214	399	391	---	77	226	231	314	469	143	222		
31	293	---	404	389	---	233	---	79	---	523	63	---		
TOTAL	6289	29891	14467	9664	7929	8937	5662	5672	6356	8779	8337	8664		
MEAN	203	996	467	312	283	288	189	183	212	283	269	289		
MAX	495	4840	1080	404	448	724	235	259	339	523	529	551		
MIN	67	82	79	78	77	73	72	67	57	56	59	59		
(*)	+13	+124	-100	-39	+40	+29	+12	+14	-96	-173	-90	-53		
MEAN‡	216	1120	367	273	323	317	201	197	116	110	179	236		
CFSM‡	.83	4.32	1.42	1.05	1.25	1.22	.78	.76	.45	.42	.69	.91		
IN.‡	.96	4.83	1.63	1.22	1.30	1.41	.87	.88	.50	.49	.80	1.02		
CAL YR 1985	TOTAL	130681	MEAN	358	MAX	4840	MIN	58	MEAN‡	362	CFSM‡	1.40	IN.‡	18.98
WTR YR 1986	TOTAL	120647	MEAN	331	MAX	4840	MIN	56	MEAN‡	304	CFSM‡	1.17	IN.‡	15.94

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

ROANOKE RIVER BASIN

295

02073000 SMITH RIVER AT MARTINSVILLE, VA

LOCATION.--Lat 36°39'40", long 79°52'51", Henry County, Hydrologic Unit 03010103, on right bank at south edge of Martinsville, 800 ft downstream from bridge on U.S. Highways 58 and 220, and 5.0 mi downstream from Beaver Creek.

DRAINAGE AREA.--380 mi².

PERIOD OF RECORD.--August 1929 to current year.

REVISED RECORDS.--WSP 1032: 1933-35(M), 1936-39, 1940-41(P). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 657.22 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since August 1950 by Philpott Lake (station 02071900) 19.6 mi upstream from station. Some additional regulation by powerplant 1,000 ft upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--57 years, 455 ft³/s, 16.26 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft³/s, Oct. 19, 1937, gage height, 21.50 ft, from rating curve extended above 17,000 ft³/s on basis of computations of flow over dam at gage heights 16.76 ft and 21.50 ft; minimum, 3.8 ft³/s, Mar. 19, 1955; minimum daily, 19 ft³/s, Oct. 6, 1935; minimum gage height, 0.69 ft, Sept. 8, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,880 ft³/s, Nov. 4, gage height, 8.09 ft; minimum, 12 ft³/s, Dec. 8, gage height, 0.95 ft; minimum daily, 59 ft³/s, July 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	249	480	486	494	311	110	492	313	132	398	533	183		
2	422	1190	978	542	168	168	470	305	251	507	361	422		
3	1150	862	1330	542	474	384	454	280	353	409	147	451		
4	357	2800	1380	266	430	341	462	121	351	316	436	418		
5	180	1920	1370	181	507	340	194	223	355	362	615	365		
6	141	4090	1350	459	529	343	254	286	348	59	651	261		
7	203	4510	432	500	832	365	475	292	275	240	645	169		
8	279	4450	229	480	305	109	471	277	137	379	637	287		
9	289	2810	684	482	220	156	431	293	248	376	345	386		
10	272	228	875	524	512	373	427	270	344	400	77	366		
11	270	483	861	217	574	331	458	110	346	487	436	369		
12	207	680	861	171	571	328	204	214	307	385	661	366		
13	134	624	995	436	529	462	226	355	398	118	662	250		
14	199	642	493	519	456	720	346	436	265	262	647	117		
15	294	610	211	494	332	631	439	332	111	386	642	414		
16	285	380	503	482	202	430	449	320	237	388	361	643		
17	275	178	604	497	402	544	435	249	339	386	72	656		
18	302	476	590	259	567	849	385	146	322	380	212	641		
19	225	641	589	233	634	1170	392	227	341	249	255	645		
20	256	624	561	490	492	1140	222	345	336	66	1220	372		
21	446	1080	317	516	533	1110	327	337	254	253	867	96		
22	447	1490	183	498	302	562	326	309	60	368	436	360		
23	371	658	437	452	198	281	321	300	226	427	212	651		
24	425	318	568	500	360	666	321	252	331	396	191	649		
25	625	532	534	306	391	745	279	119	329	386	233	666		
26	161	1030	509	186	344	736	305	157	324	295	238	645		
27	145	1070	520	478	396	735	147	437	324	158	228	442		
28	209	1150	284	477	409	731	204	363	246	424	499	85		
29	466	1130	183	501	---	318	313	342	91	606	234	235		
30	375	844	435	406	---	252	308	333	203	516	211	241		
31	445	---	515	507	---	453	---	260	---	663	131	---		
TOTAL	10104	37980	19867	13095	11980	15883	10537	8603	8184	11045	13095	11851		
MEAN	326	1266	641	422	428	512	351	278	273	356	422	395		
MAX	1150	4510	1380	542	832	1170	492	437	398	663	1220	666		
MIN	134	178	183	171	168	109	147	110	60	59	72	85		
(*)	+13	+124	-100	-39	+40	+29	+12	+14	-96	-173	-90	-53		
MEAN†	339	1390	541	383	468	541	363	292	177	183	332	342		
CFSM†	.89	3.66	1.42	1.01	1.23	1.42	.96	.77	.47	.48	.87	.90		
IN.†	1.03	4.08	1.64	1.16	1.28	1.64	1.07	.89	.52	.56	1.01	1.00		
CAL YR 1985	TOTAL	194640	MEAN	533	MAX	9760	MIN	80	MEAN†	537	CFSM†	1.41	IN.†	19.19
WTR YR 1986	TOTAL	172224	MEAN	472	MAX	4510	MIN	59	MEAN†	445	CFSM†	1.17	IN.†	15.90

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

ROANOKE RIVER BASIN

02074000 SMITH RIVER AT EDEN, NC

LOCATION.--Lat 36°31'31", long 79°45'57", Rockingham County, Hydrologic Unit 03010103, on right bank at Eden, 0.3 mi downstream from bridge on State Highway 14, 0.8 mi upstream from bridge on Secondary Road 1714, 1.2 mi south of Virginia-North Carolina State line, 1.3 mi downstream from Stuart Creek, and 3.9 mi upstream from mouth.

DRAINAGE AREA.--538 mi².

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1970, published as "at Spray".

REVISED RECORDS.--WSP 1433: 1946.

GAGE.--Water-stage recorder. Datum of gage is 539.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since August 1950 by Philpott Lake (station 02071900) 40 mi upstream, usable capacity, 6,325,000 ft³. Additional regulation by hydroelectric plant at Martinsville, VA, 18 mi upstream. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--47 years, 619 ft³/s, 15.62 in/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft³/s, Aug. 15, 1940, gage height, 19.28 ft, from rating curve extended above 12,000 ft³/s on basis of computation of peak flow over dam 1.5 mi downstream; minimum, 38 ft³/s, Aug. 7, 1967; minimum daily, 46 ft³/s, Aug. 14, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,920 ft³/s, Nov. 4, gage height, 9.41 ft; minimum, 63 ft³/s, July 21, gage height, 1.34 ft; minimum daily, 83 ft³/s, July 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	283	588	1050	598	527	408	484	361	157	405	577	192		
2	538	1510	973	585	190	215	432	353	246	436	560	410		
3	1510	1060	1370	591	385	419	443	384	380	477	110	433		
4	634	2560	1450	481	616	435	436	136	383	344	213	532		
5	392	3050	1420	264	569	429	306	243	391	474	580	439		
6	241	4340	1400	311	595	434	261	336	388	107	595	434		
7	221	5160	1020	573	1170	433	378	363	442	122	635	194		
8	390	5110	318	578	675	356	431	347	166	369	615	250		
9	333	3740	544	528	378	186	432	345	248	370	646	413		
10	335	676	933	585	489	372	410	381	378	375	93	396		
11	267	471	929	488	736	425	411	134	389	515	152	384		
12	325	779	927	215	716	418	375	233	410	582	679	380		
13	203	723	1110	336	658	463	179	399	396	131	693	418		
14	197	716	869	540	574	667	306	602	423	173	633	104		
15	337	716	317	569	588	1040	393	451	115	384	626	176		
16	333	571	462	539	321	465	408	402	199	388	652	595		
17	323	287	699	553	365	570	400	419	358	389	110	600		
18	338	392	713	510	742	545	395	177	357	382	166	596		
19	338	772	673	273	704	1160	398	286	337	419	273	595		
20	196	705	677	432	701	1170	173	412	358	83	1070	645		
21	698	983	549	602	648	1070	335	426	390	111	1070	115		
22	636	2420	273	534	584	939	398	380	112	376	975	171		
23	538	1510	403	521	278	253	380	374	138	377	441	594		
24	467	581	619	609	436	466	376	396	346	394	226	607		
25	609	634	608	460	471	682	378	147	344	382	285	609		
26	514	981	556	265	457	675	414	213	335	466	287	611		
27	227	1170	571	379	504	674	176	440	335	183	270	651		
28	218	1210	524	547	515	666	272	434	371	228	497	99		
29	453	1270	247	576	---	583	363	434	115	599	358	157		
30	429	1220	366	585	---	201	354	395	191	581	302	286		
31	511	---	574	578	---	335	---	437	---	542	138	---		
TOTAL	13034	45905	23144	15205	15592	17154	10897	10840	9198	11164	14527	12086		
MEAN	420	1530	747	490	557	553	363	350	307	360	469	403		
MAX	1510	5160	1450	609	1170	1170	484	602	442	599	1070	651		
MIN	196	287	247	215	190	186	173	134	112	83	93	99		
(*)	+13	+123	-99	-39	+39	+29	+12	+14	-95	-172	-89	-53		
CAL YR 1985	TOTAL 244035		MEAN 669		MAX 15300		MIN 108		MEAN† 673		CFSM† 1.23		IN.† 16.97	
WTR YR 1986	TOTAL 198746		MEAN 545		MAX 5160		MIN 83		MEAN† 518		CFSM† 0.96		IN.† 13.03	

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U. S. Army Corps of Engineers.

† Adjusted for change in contents.

ROANOKE RIVER BASIN

297

02074500 SANDY RIVER NEAR DANVILLE, VA

LOCATION.--Lat 36°37'10", long 79°30'16", Pittsylvania County, Hydrologic Unit 03010103, on right bank 200 ft downstream from Hickory Forest Creek, 400 ft upstream from bridge on State Highway 863 between Callahans Store and Mount Cross, 5.5 mi northwest of western city limits of Danville, and 5.8 mi upstream from mouth.

DRAINAGE AREA.--112 mi².

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 972: 1930-41. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 460.38 ft above National Geodetic Vertical Datum of 1929. Prior to June 26, 1942, at site 1,200 ft downstream at datum 5.57 ft lower.

REMARKS.--Estimated daily discharges: Dec. 21-25, 27-30, Jan. 28-30, and Feb. 14-16. Records good except those for periods with ice effect, Dec. 21-25, 27-30, Jan. 28-30, and Feb. 14-16, which are fair. Diurnal fluctuation at low flow caused by small mill upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--57 years, 106 ft³/s, 12.85 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft³/s, Aug. 14, 1940, gage height, 14.8 ft, present datum, from floodmarks, from rating curve extended above 11,000 ft³/s; minimum, 3 ft³/s, Sept. 29, 1930, gage height, 0.40 ft, site and datum then in use; minimum daily, 8 ft³/s, Aug. 29, 31, Sept. 1, 2, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1530	*5,870	*7.54	No other peak equal to or greater than base discharge.			

Minimum discharge, 14 ft³/s, July 22, 23, gage height, 0.92 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	60	255	75	66	82	72	49	43	34	18	35
2	51	74	185	70	67	78	69	47	41	41	17	43
3	121	147	135	71	68	77	72	45	39	36	18	46
4	93	2090	115	70	69	75	69	45	38	30	24	61
5	60	893	107	68	68	73	68	46	39	27	19	47
6	49	253	100	66	69	72	67	46	38	25	17	45
7	45	162	92	66	178	70	69	45	39	24	22	37
8	44	127	89	62	118	67	68	44	46	22	26	37
9	44	110	87	67	94	68	69	43	42	21	22	39
10	43	100	84	74	87	68	63	43	38	22	18	35
11	42	94	83	66	102	70	62	42	38	33	19	34
12	42	89	83	64	92	67	61	41	39	37	43	34
13	44	87	119	65	81	70	61	63	39	33	47	31
14	44	84	134	63	73	112	60	96	35	25	37	29
15	42	81	101	62	69	193	62	71	35	23	31	29
16	41	79	92	65	75	128	73	59	35	24	28	28
17	40	81	88	63	82	101	64	54	33	24	26	27
18	41	77	85	64	89	89	61	51	31	21	30	27
19	41	76	79	77	89	119	59	52	30	18	48	29
20	42	76	79	77	86	137	58	68	29	16	99	30
21	64	132	77	66	83	101	66	62	28	15	144	30
22	86	821	74	64	80	89	66	54	27	15	75	28
23	61	464	72	63	80	85	57	49	27	15	50	29
24	54	193	70	62	77	82	56	47	28	17	57	29
25	51	142	68	63	78	79	56	45	26	17	40	33
26	48	121	66	69	74	78	60	47	25	29	34	29
27	45	110	70	70	90	77	58	50	26	62	33	27
28	46	102	72	56	95	73	55	58	25	32	56	33
29	44	105	73	62	---	72	53	74	29	26	42	34
30	44	225	76	66	---	71	49	53	34	22	34	31
31	49	---	89	68	---	71	---	47	---	19	32	---
TOTAL	1597	7255	2999	2064	2379	2694	1883	1636	1022	805	1206	1026
MEAN	51.5	242	96.7	66.6	85.0	86.9	62.8	52.8	34.1	26.0	38.9	34.2
MAX	121	2090	255	77	178	193	73	96	46	62	144	61
MIN	36	60	66	56	66	67	49	41	25	15	17	27
CFSM	.46	2.16	.86	.59	.76	.78	.56	.47	.30	.23	.35	.31
IN.	.53	2.41	1.00	.69	.79	.89	.63	.54	.34	.27	.40	.34
CAL YR 1985	TOTAL	40886	MEAN	112	MAX	6780	MIN	21	CFSM	1.00	IN.	13.58
WTR YR 1986	TOTAL	26566	MEAN	72.8	MAX	2090	MIN	15	CFSM	.65	IN.	8.82

02075000 DAN RIVER AT DANVILLE, VA

LOCATION.--Lat 36°35'15", long 79°22'55", Danville City, Hydrologic Unit 03010104, on left bank 50 ft downstream from Southern Railway bridge, 1,000 ft upstream from Fall Creek, and at mile 62.7.

DRAINAGE AREA.--2,050 mi², approximately.

PERIOD OF RECORD.--August 1934 to current year. Gage-height records collected in this vicinity 1890-1934, at same site 1934-49, and at Main Street bridge, 0.25 mi upstream 1949-68, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 972: 1936.

GAGE.--Water-stage recorder. Datum of gage is 379.29 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by mills upstream. Since August 1950, flow regulated by Philpott Lake (station 02071900) 74.7 mi upstream. Gage-height and U.S. Army Corps of Engineers satellite telemeters at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--52 years, 2,294 ft³/s, 15.20 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,000 ft³/s, Aug. 15, 1940, gage height, 20.96 ft; maximum gage height, 21.34 ft, June 22, 1972, backwater from debris; minimum discharge, 11 ft³/s, Sept. 5, 1966, gage height, 1.18 ft; minimum daily, 110 ft³/s, Sept. 5, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22,900 ft³/s, Nov. 6, gage height, 11.86 ft; minimum, 161 ft³/s, July 21, 22, Aug. 5, 7; minimum daily, 277 ft³/s, July 21; minimum gage height, 1.47 ft, June 24, July 21, 22, Aug. 5, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	646	1100	7290	1760	1570	1910	1330	1050	1050	565	790	540
2	779	1900	4960	1810	1560	1670	1400	1040	789	807	672	619
3	1820	3930	4110	1750	1330	1500	1410	998	829	945	725	1020
4	4090	8230	3610	1750	1400	1560	1350	959	883	908	389	2300
5	2380	16000	3180	1640	1550	1560	1350	791	879	751	668	2740
6	1400	18300	2880	1530	1570	1530	1100	898	878	733	869	1720
7	1040	8200	2710	1480	1930	1510	1220	970	890	365	871	1390
8	936	7370	2100	1590	3170	1490	1310	987	1010	445	872	1050
9	940	6570	1790	1540	2360	1340	1330	963	682	615	1040	956
10	925	3850	1820	1470	1860	1250	1250	949	725	623	874	1030
11	901	1980	2060	1620	1990	1370	1240	917	830	681	473	951
12	845	2110	2160	1540	2230	1430	1220	759	857	862	1090	893
13	836	2170	2270	1320	2150	1450	1060	958	922	780	1530	921
14	770	2070	2810	1390	1920	1570	1020	1300	846	458	1250	770
15	748	1950	2810	1510	1820	2510	1130	1430	797	497	1050	573
16	879	1860	2120	1530	1740	3560	1280	1250	663	618	968	630
17	897	1580	2130	1520	1590	2840	1270	1130	617	601	831	925
18	833	1420	2130	1540	1710	2420	1240	1140	764	596	480	910
19	813	1670	2020	1530	2060	2280	1210	952	740	595	678	892
20	821	1720	1980	1470	2230	4220	1170	1110	690	554	1200	909
21	1010	2080	1960	1670	2220	3780	1020	1210	693	277	2650	966
22	1440	6240	1690	1780	2140	2980	1210	1190	687	288	2020	537
23	1550	9980	1470	1700	1930	2510	1240	1090	497	625	1520	528
24	1250	4300	1740	1610	1670	1850	1170	996	424	765	1040	872
25	1160	2980	1920	1590	1690	1730	1140	954	646	772	2420	871
26	1210	2600	1800	1540	1680	1780	1160	791	635	772	1190	892
27	869	2690	1610	1420	1700	1760	1160	886	625	812	854	869
28	786	2480	1630	1400	1920	1730	1010	1140	613	600	793	786
29	771	2470	1640	1410	---	1690	1050	1230	637	948	977	450
30	1030	3360	1430	1380	---	1600	1080	1280	480	904	806	521
31	927	---	1510	1500	---	1330	---	1220	---	740	680	---
TOTAL	35302	133160	75340	48290	52690	61710	36130	32538	22278	20502	32270	29031
MEAN	1139	4439	2430	1558	1882	1991	1204	1050	743	661	1041	968
MAX	4090	18300	7290	1810	3170	4220	1410	1430	1050	948	2650	2740
MIN	646	1100	1430	1320	1330	1250	1010	759	424	277	389	450
(*)	+13	+124	-100	-39	+40	+29	+12	+14	-96	-173	-90	-53
MEAN†	1152	4563	2330	1519	1922	2020	1216	1064	647	488	951	915
CFSM†	.56	2.23	1.14	.74	.94	.99	.59	.52	.32	.24	.46	.45
IN.†	.65	2.48	1.31	.85	.98	1.14	.66	.60	.35	.27	.53	.50

CAL YR 1985 TOTAL 721735 MEAN 1977 MAX 31500 MIN 426 MEAN† 1973 CFSM† .96 IN.† 13.07
WTR YR 1986 TOTAL 579241 MEAN 1587 MAX 18300 MIN 277 MEAN† 1560 CFSM† .76 IN.† 10.33

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

ROANOKE RIVER BASIN

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02075500 DAN RIVER AT PACES, VA
(National stream-quality accounting network station)

LOCATION.--Lat 36°38'32", long 79°05'23", Halifax County, Hydrologic Unit 03010104, on right bank 100 ft upstream from bridge on State Highway 658, 0.5 mi southeast of Paces, 0.5 mi upstream from Big Toby Creek, 2.7 mi upstream from Birch Creek, and at mile 36.0.

DRAINAGE AREA.--2,550 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 322.48 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation by mills 23 mi upstream at Danville. Since August 1950, flow regulated by Philpott Lake (station 02071900) 101.4 mi upstream. Gage-height and U.S. Army Corps of Engineers satellite telemeters at station.

AVERAGE DISCHARGE.--35 years (water years 1952-86), 2,684 ft³/s, 14.29 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 64,800 ft³/s, June 23, 1972, gage height, 33.15 ft, from rating curve extended above 32,000 ft³/s; minimum, 193 ft³/s, Sept. 4, 1956, gage height, 1.71 ft; minimum daily, 244 ft³/s, Sept. 4, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 32.3 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,100 ft³/s, Nov. 6, gage height, 21.12 ft; minimum, 292 ft³/s, July 23, gage height, 1.88 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	695	1100	9770	1890	1790	2360	1470	1160	1390	556	861	812
2	753	1520	8760	1970	1800	2060	1610	1120	1040	855	921	660
3	1230	3700	5500	1910	1460	1740	1570	1100	869	1130	778	867
4	3840	6560	4590	1880	1510	1800	1560	1070	995	1190	706	1800
5	3220	16100	3980	1870	1790	1830	1530	924	982	1020	527	3610
6	1780	19700	3590	1650	1780	1760	1470	826	987	906	840	2360
7	1230	14600	3340	1550	2450	1720	1320	969	989	733	1130	1910
8	1020	7700	2880	1730	4420	1660	1380	1050	1190	431	878	1450
9	1030	6900	2140	1640	3170	1580	1530	1040	960	579	1040	1250
10	1000	5190	2150	1580	2350	1370	1480	1020	776	711	1320	1260
11	973	2670	2500	1720	2360	1480	1390	1010	880	796	780	1220
12	909	2280	2530	1740	2900	1600	1360	892	959	881	1110	1130
13	915	2480	2780	1430	2680	1600	1300	821	1100	1130	2280	1140
14	826	2360	3900	1450	2350	1920	1130	1300	1020	740	1900	1020
15	798	2280	3900	1640	2170	4590	1160	1400	1010	564	1530	845
16	853	2230	2640	1620	2150	5230	1360	1420	828	660	1300	665
17	975	2110	2430	1650	1900	3550	1400	1330	710	739	1210	968
18	944	1790	2480	1670	1880	2850	1370	1310	754	719	816	1100
19	891	1800	2330	1710	2310	2930	1340	1140	863	719	653	1080
20	868	2160	2210	1600	2520	5780	1320	1270	783	721	1670	1080
21	852	3010	2220	1870	2530	5440	1180	1840	772	578	4070	1200
22	1300	8140	2000	2010	2450	3780	1200	1590	748	395	3260	850
23	1380	14100	1660	1800	2270	3070	1390	1370	700	419	2410	584
24	1660	8030	1820	1720	1900	2170	1310	1230	461	757	1660	894
25	1330	4200	2150	1730	1920	2060	1250	1150	603	1000	2250	1070
26	1270	3280	1990	1790	1930	2140	1250	1010	713	868	2010	1080
27	1330	3200	1770	1610	1980	2070	1300	915	693	1210	1240	1070
28	909	3110	1710	1520	2440	2010	1160	1180	684	901	1040	1090
29	864	3150	1890	1600	---	1940	1120	1320	670	754	1140	785
30	945	4870	1550	1520	---	1840	1170	1520	663	1210	1110	518
31	1140	---	1560	1730	---	1440	---	1410	---	1050	962	---
TOTAL	37730	160320	94720	52800	63160	77370	40380	36707	25792	24922	43402	35368
MEAN	1217	5344	3055	1703	2256	2496	1346	1184	860	804	1400	1179
MAX	3840	19700	9770	2010	4420	5780	1610	1840	1390	1210	4070	3610
MIN	695	1100	1550	1430	1460	1370	1120	821	461	395	527	518
(*)	+13	+124	-100	-39	+40	+29	+12	+14	-96	-173	-90	-53
MEAN†	1230	5468	2955	1664	2296	2525	1358	1198	764	631	1310	1126
CFSM†	.48	2.14	1.16	.65	.90	.99	.53	.47	.30	.25	.51	.44
IN.†	.56	2.39	1.34	.75	.94	1.14	.59	.54	.33	.29	.59	.49

CAL YR 1985 TOTAL 880763 MEAN 2413 MAX 26600 MIN 457 MEAN† 2409 CFSM† .94 IN.† 12.87
WTR YR 1986 TOTAL 692671 MEAN 1898 MAX 19700 MIN 395 MEAN† 1870 CFSM† .73 IN.† 9.95

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1954 to September 1956.

WATER TEMPERATURE: January 1954 to September 1956.

SUSPENDED-SEDIMENT DISCHARGE: January 1954 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV 18...	1030	1790	129	129	7.20	7.10	15.0	756	10	9.3	93	150
JAN 30...	1300	1460	238	221	7.10	7.30	2.5	753	5.0	13.7	102	15
FEB 12...	1400	2810	120	135	7.00	7.60	5.5	760	21	12.2	97	--
APR 02...	0900	1590	120	114	7.20	7.60	17.0	758	12	9.0	94	6
JUN 04...	1130	995	197	195	6.90	7.50	24.0	750	7.5	6.5	79	160
AUG 20...	0930	1230	185	186	7.00	7.50	23.0	762	44	6.6	77	--

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	ALKA- LINITY WH WAT TOTAL FIELD MG/L AS CACO3	ALKA- LINITY, CARBON- ATE IT-FLD (MG/L - CACO3)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 18...	170	25	0	6.2	2.3	15	2.2	26	27	27	32	10
JAN 30...	13	28	0	7.1	2.6	33	2.0	33	32	32	38	14
FEB 12...	55	26	0	6.1	2.5	15	1.8	26	32	29	36	11
APR 02...	--	23	0	5.7	2.2	11	1.8	27	26	26	32	9.8
JUN 04...	140	24	0	6.1	2.2	26	2.0	31	29	31	37	17
AUG 20...	K2100	24	0	5.8	2.3	26	3.0	29	26	25	31	14

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
NOV 18...	16	<0.10	15	91	85	0.010	0.370	0.070	0.070	0.40	0.120	0.070
JAN 30...	37	0.10	16	127	130	0.010	0.390	0.120	0.120	0.60	0.150	0.120
FEB 12...	14	0.10	16	89	85	<0.010	0.450	0.100	0.080	0.50	0.090	0.060
APR 02...	11	0.10	12	76	69	<0.010	0.310	0.030	0.050	0.40	0.090	0.060
JUN 04...	26	0.20	15	118	110	0.020	0.810	0.100	0.090	0.60	0.210	0.140
AUG 20...	24	0.10	14	115	110	0.020	0.710	0.080	0.120	0.70	0.240	0.170

ROANOKE RIVER BASIN

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02075500 DAN RIVER AT PACES, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
NOV 18...	0.050	30	<1	23	<0.5	<1	<1	<3	2	200	3	11
JAN 30...	0.110	--	--	--	--	--	--	--	--	--	--	--
FEB 12...	0.040	120	<1	28	<0.5	<1	<1	<3	3	230	<1	<4
APR 02...	0.040	--	--	--	--	--	--	--	--	--	--	--
JUN 04...	0.130	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	0.190	90	1	21	<0.5	<1	3	<3	4	140	<5	<4

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDE (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 18...	12	<0.1	<10	<1	<1	<1	46	<6	5	--	21	92
JAN 30...	--	--	--	--	--	--	--	--	--	--	9	81
FEB 12...	11	0.1	<10	<1	<1	<1	56	<6	12	--	33	83
APR 02...	--	--	--	--	--	--	--	--	--	3.0	28	81
JUN 04...	--	--	--	--	--	--	--	--	--	--	14	78
AUG 20...	13	0.1	<10	3	<1	<1	51	<6	16	--	33	83

02076500 GEORGES CREEK NEAR GRETN, VA

LOCATION.--Lat 36°56'11", long 79°18'42", Pittsylvania County, Hydrologic Unit 03010105, on left bank 15 ft downstream from bridge on State Highway 40, 2.8 mi southeast of Gretna, and 5.8 mi upstream from Whitethorn Creek.

DRAINAGE AREA.--9.24 mi².

PERIOD OF RECORD.--September 1949 to current year.

REVISED RECORDS.--WSP 1703: 1950-52. WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 629.54 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 21-30, Jan. 26 to Feb. 1, Feb. 14, 15, and Apr. 22. Records good except those for periods with ice effect, Dec. 21-30, Jan. 26 to Feb. 1, and Feb. 14, 15, and period of doubtful gage-height record, Apr. 22, which are fair. Occasional regulation at low flow from unknown source. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--37 years, 9.59 ft³/s, 14.09 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,480 ft³/s, Sept. 22, 1979, gage height, 8.50 ft, from rating curve extended above 640 ft³/s on basis of slope-area measurements at gage heights 4.93 ft and 6.22 ft and contracted-opening measurements at gage heights 7.75 ft and 8.50 ft; minimum daily, 1.0 ft³/s, Mar. 12, Apr. 5, 1956, July 28, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 3	1900	261	3.47	Nov. 4	1900	*1,160	*7.33

Minimum discharge, 1.7 ft³/s, July 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	13	18	9.6	7.6	8.4	7.7	5.9	4.5	3.0	2.4	3.5
2	6.1	25	16	8.7	8.2	8.2	7.9	5.8	4.5	4.1	2.6	4.6
3	17	109	13	8.5	8.1	8.3	7.8	5.3	4.5	4.0	4.3	7.0
4	7.3	302	12	8.6	9.1	8.5	7.6	5.5	4.3	3.2	3.9	5.2
5	5.8	70	11	8.4	8.9	8.3	7.4	5.5	4.5	2.9	3.7	7.0
6	5.2	22	11	8.2	9.0	8.2	8.1	6.0	4.4	2.7	3.4	6.3
7	5.3	17	9.7	8.1	15	8.1	9.0	6.4	4.3	2.7	5.0	4.2
8	5.1	13	9.6	7.4	10	7.7	8.0	5.9	7.8	2.6	3.9	4.8
9	5.0	11	9.6	7.1	9.5	7.6	7.5	5.7	5.6	3.2	3.1	4.6
10	5.0	11	9.4	7.6	9.2	7.8	7.4	5.6	5.0	5.2	3.0	4.1
11	4.9	11	9.3	7.9	12	8.6	7.3	5.4	4.8	5.1	3.3	4.1
12	4.7	9.4	9.2	7.9	9.8	8.1	7.1	5.5	4.5	9.0	4.8	3.9
13	5.3	9.1	13	8.0	9.0	8.2	7.1	13	4.2	6.6	3.9	3.2
14	5.8	9.1	12	8.0	8.2	13	7.1	16	3.9	4.1	3.9	3.0
15	5.4	9.0	9.9	7.8	8.6	13	7.2	9.5	3.9	3.9	3.8	3.2
16	5.2	8.8	9.6	7.6	9.3	12	7.7	7.6	3.9	3.6	3.6	3.3
17	5.2	9.1	9.5	7.8	10	9.8	7.1	6.7	3.9	3.7	3.2	3.2
18	5.6	9.0	9.2	7.9	11	9.4	7.0	6.4	3.6	3.4	4.3	3.0
19	5.7	9.1	8.6	11	10	11	6.7	6.7	3.3	3.0	4.1	3.1
20	6.3	9.3	8.5	9.0	9.2	10	6.9	7.2	3.3	2.9	9.7	3.1
21	10	19	8.0	8.5	9.0	9.2	7.5	6.8	3.5	2.9	8.3	4.2
22	11	46	7.8	8.3	9.0	8.7	6.6	6.1	3.2	3.6	4.4	3.5
23	9.2	22	7.5	8.2	9.5	8.5	6.8	5.6	3.4	3.5	3.6	3.7
24	8.3	15	7.4	7.9	9.1	8.5	6.9	5.2	3.8	3.1	3.7	3.4
25	7.4	13	7.2	7.6	9.4	8.5	6.5	5.2	3.4	2.8	3.2	3.4
26	6.9	11	7.0	7.2	8.9	8.5	7.0	5.2	3.0	3.0	3.1	3.1
27	6.9	11	7.1	7.0	9.0	8.5	6.9	6.2	3.0	3.0	3.0	2.8
28	6.9	11	7.2	6.8	9.1	7.9	6.6	6.8	2.9	3.2	3.7	3.0
29	6.9	11	7.4	6.9	---	7.9	6.5	6.0	2.9	2.9	3.4	3.5
30	7.1	23	7.6	7.0	---	8.0	6.2	5.3	3.0	2.7	2.9	3.9
31	6.9	---	8.3	7.4	---	7.9	---	4.8	---	2.2	2.9	---
TOTAL	208.2	867.9	300.6	247.9	264.7	276.3	217.1	204.8	120.8	111.8	122.1	118.9
MEAN	6.72	28.9	9.70	8.00	9.45	8.91	7.24	6.61	4.03	3.61	3.94	3.96
MAX	17	302	18	11	15	13	9.0	16	7.8	9.0	9.7	7.0
MIN	4.7	8.8	7.0	6.8	7.6	7.6	6.2	4.8	2.9	2.2	2.4	2.8
CFSM	.73	3.13	1.05	.87	1.02	.96	.78	.72	.44	.39	.43	.43
IN.	.84	3.49	1.21	1.00	1.07	1.11	.87	.82	.49	.45	.49	.48
CAL YR 1985	TOTAL	4135.1	MEAN	11.3	MAX	461	MIN	2.6	CFSM	1.22	IN.	16.65
WTR YR 1986	TOTAL	3061.1	MEAN	8.39	MAX	302	MIN	2.2	CFSM	.91	IN.	12.32

02077000 BANISTER RIVER AT HALIFAX, VA

LOCATION.--Lat 36°46'35", long 78°54'58", Halifax County, Hydrologic Unit 03010105, on left bank 10 ft downstream from bridge on State Highway 360, 1,700 ft downstream from Terrible Creek, 1 mi northeast of Halifax, and 10 mi upstream from mouth.

DRAINAGE AREA.--547 mi².

PERIOD OF RECORD.--September 1904 to December 1905, October 1928 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 892: 1929-30, 1932-35. WSP 972: 1938(M), 1940. WSP 1112: 1943(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 318.54 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Sept. 28, 1904, to Dec. 31, 1905, nonrecording gage at site 400 ft upstream at different datum. Dec. 9, 1928, to Sept. 20, 1950, water-stage recorder at site 400 ft upstream at present datum.

REMARKS.--Estimated daily discharges: June 19-23, 26-29, July 6-13, July 16 to Aug. 19, Aug. 27, Aug. 31 to Sept. 2, and Sept. 14-25, 28-30. Records good except those for periods of doubtful gage-height record, June 19-23, 26-29, July 6-13, July 16 to Aug. 19, Aug. 27, Aug. 31 to Sept. 2, and Sept. 14-25, 28-30, which are poor. Low and medium flow regulated at times during year by a lake 0.5 mi upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--59 years, 505 ft³/s, 12.54 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s, Sept. 20, 1944, gage height, 40.8 ft, from flood-marks, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement of peak flow and velocity-area study; minimum, 6.0 ft³/s many days in August and September 1932.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,320 ft³/s, Nov. 6, gage height, 19.76 ft; minimum daily, 48 ft³/s, Aug. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	184	1590	345	333	388	276	180	168	110	50	80
2	120	373	1360	334	325	345	270	171	155	113	48	81
3	150	630	920	316	329	330	266	160	142	121	60	94
4	296	2570	659	310	332	321	271	156	133	119	70	114
5	286	4010	546	306	332	312	267	156	130	108	65	148
6	218	6480	501	292	318	308	265	156	129	91	62	188
7	180	5120	453	285	477	301	271	158	128	83	67	173
8	161	1200	415	274	725	282	264	161	125	76	64	141
9	154	756	405	230	533	276	255	153	130	67	60	124
10	151	620	391	269	432	279	236	147	144	68	58	119
11	149	545	370	301	481	288	233	145	134	70	57	111
12	147	490	365	280	616	284	228	142	128	80	60	103
13	147	426	408	282	483	292	226	170	125	97	66	94
14	150	376	625	270	395	388	225	294	117	103	62	86
15	158	352	658	257	386	746	227	393	110	99	60	82
16	157	272	497	246	400	841	246	304	109	95	59	80
17	144	211	440	276	421	607	251	239	105	83	64	76
18	141	306	410	272	444	464	240	207	97	75	74	73
19	141	298	380	289	445	447	231	196	90	68	84	76
20	143	293	357	320	417	512	224	252	87	62	120	80
21	168	761	215	317	386	488	225	331	86	58	349	84
22	235	2390	249	290	368	400	233	263	85	54	339	80
23	287	2880	349	270	367	360	226	212	84	51	203	77
24	251	1910	370	259	364	345	211	189	103	62	144	81
25	214	972	349	259	351	326	203	179	105	58	113	84
26	192	673	305	326	343	315	207	177	89	56	98	94
27	180	569	268	375	350	311	208	179	84	88	86	103
28	172	509	311	282	389	300	205	196	80	80	92	87
29	166	479	313	227	---	291	200	201	78	70	98	81
30	164	781	292	264	---	285	187	189	110	62	93	78
31	164	---	284	310	---	281	---	179	---	55	86	---
TOTAL	5498	37436	15055	8933	11542	11713	7077	6235	3390	2482	3011	2972
MEAN	177	1248	486	288	412	378	236	201	113	80.1	97.1	99.1
MAX	296	6480	1590	375	725	841	276	393	168	121	349	188
MIN	112	184	215	227	318	276	187	142	78	51	48	73
CFSM	.32	2.28	.89	.53	.75	.69	.43	.37	.21	.15	.18	.18
IN.	.37	2.55	1.02	.61	.78	.80	.48	.42	.23	.17	.20	.20
CAL YR 1985	TOTAL	173680	MEAN	476	MAX	6480	MIN	87	CFSM	.87	IN.	11.81
WTR YR 1986	TOTAL	115344	MEAN	316	MAX	6480	MIN	48	CFSM	.58	IN.	7.84

ROANOKE RIVER BASIN

02077500 HYCO RIVER NEAR DENNISTON, VA

LOCATION.--Lat 36°35'16", long 78°53'56", Halifax County, Hydrologic Unit 03010104, on left bank 60 ft upstream from bridge on U.S. Highway 501, 0.8 mi upstream from Mayo Creek, 2.5 mi northeast of Denniston, and 7.3 mi south of South Boston.

DRAINAGE AREA.--289 mi².

PERIOD OF RECORD.--October 1928 to September 1934, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 1383: Drainage area, 1930. WSP 1503: 1930(M). WDR VA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 315.24 ft above National Geodetic Vertical Datum of 1929. July 10, 1929, to Mar. 14, 1934, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Small diurnal fluctuation at low flow in some years caused by mill upstream from station. Since 1964, flow regulated by Hyco Lake 15.7 mi upstream, capacity 75,480 acre-ft, and since Apr. 26, 1974, by Roxboro Steam-Electric Generating Plant afterbay Reservoir, capacity 12,000 acre-ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--42 years, 252 ft³/s, 11.84 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s, July 15, 1975, gage height, 24.27 ft, from rating curve extended above 8,200 ft³/s; minimum, 0.004 ft³/s, Sept. 14, 1932, gage height, 3.58 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1928 and September 1945 reached stages of 26.4 ft and 25.6 ft, respectively, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,790 ft³/s, Nov. 24, gage height, 16.11 ft; minimum, 14 ft³/s, June 22-24, July 21, Aug. 11, Sept. 22-23; minimum gage height, 4.34 ft, July 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	26	1730	93	76	130	138	27	18	15	17	17
2	42	34	2190	92	80	158	139	26	17	19	16	17
3	83	70	1780	94	85	218	137	25	19	22	37	21
4	112	860	530	95	85	270	135	23	19	17	30	22
5	60	1010	450	88	87	229	134	22	20	16	20	22
6	42	513	403	86	93	212	129	21	20	15	18	21
7	36	435	223	81	198	199	141	21	18	15	19	19
8	35	392	216	75	287	166	138	20	17	15	18	17
9	35	308	209	69	256	161	134	20	17	16	17	18
10	31	158	176	70	244	160	129	22	18	17	15	18
11	26	143	104	69	362	167	106	21	18	27	14	18
12	23	134	134	65	376	161	38	20	18	23	26	18
13	21	123	225	66	319	172	34	24	20	17	51	18
14	19	115	368	68	283	491	31	38	21	15	38	17
15	19	103	381	65	261	664	33	28	16	15	21	16
16	23	88	362	63	238	488	36	27	15	18	17	16
17	25	75	328	63	223	484	36	26	16	17	15	17
18	21	67	357	63	222	432	33	22	17	17	18	17
19	20	67	278	62	225	415	31	22	17	17	21	18
20	20	67	233	69	230	453	30	36	17	16	112	17
21	21	436	190	73	227	385	31	76	16	15	314	16
22	56	1640	80	70	220	327	42	41	14	32	175	15
23	46	2420	84	69	215	291	34	28	14	21	64	16
24	31	2710	96	65	210	260	31	25	15	21	33	19
25	27	2090	102	63	182	233	31	21	16	18	23	20
26	24	504	100	92	68	211	30	20	15	17	21	21
27	22	314	92	143	86	200	30	21	15	52	21	17
28	20	287	88	219	200	190	29	23	17	31	24	16
29	20	285	82	76	---	152	29	23	18	18	35	15
30	21	890	80	72	---	146	28	22	17	17	22	15
31	22	---	83	76	---	141	---	21	---	16	18	---
TOTAL	1035	16364	11754	2514	5638	8366	2077	812	515	607	1290	534
MEAN	33.4	545	379	81.1	201	270	69.2	26.2	17.2	19.6	41.6	17.8
MAX	112	2710	2190	219	376	664	141	76	21	52	314	22
MIN	19	26	80	62	68	130	28	20	14	15	14	15
CFSM	.12	1.89	1.31	.28	.70	.93	.24	.09	.06	.07	.14	.06
IN.	.13	2.11	1.51	.32	.73	1.08	.27	.10	.07	.08	.17	.07
CAL YR 1985	TOTAL	75330	MEAN	206	MAX	2710	MIN	14	CFSM	.71	IN.	9.70
WTR YR 1986	TOTAL	51506	MEAN	141	MAX	2710	MIN	14	CFSM	.49	IN.	6.63

ROANOKE RIVER BASIN

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02079490 JOHN H. KERR RESERVOIR NEAR BOYDTON, VA

LOCATION.--Lat 36°35'56", long 78°18'06", Mecklenburg County, Hydrologic Unit 03010102, at John H. Kerr Dam on Roanoke River, 2.7 mi upstream from Allen Creek, 6.7 mi southeast of Boydton, 18 mi upstream from the Virginia-North Carolina State line, and at mile 178.7.

DRAINAGE AREA.--7,780 mi², approximately.

PERIOD OF RECORD.--July 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by concrete dam with earth embankments. Spillway, with crest at elevation 288.0 ft, is equipped with 22 radial gates 32 ft high by 42 ft wide. Storage began in September 1950 during construction; initial filling started June 30, 1952; water in reservoir first reached rule-curve elevation in March 1953. Total capacity at top of gates, elevation, 320 ft, is 2,770,000 acre-ft of which 1,281,400 acre-ft is controlled flood storage between elevations 300 ft, top of power pool, and 320 ft; 316,900 acre-ft is available for power between elevations 293.0 ft, bottom of power pool, and 300 ft; 1,171,700 acre-ft is inactive and dead storage below elevation 293.0 ft. Figures given herein represent total contents. Reservoir is used for flood control, hydroelectric power, low-water regulation for navigation and pollution abatement, release of water for downstream fish spawning, and recreation.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,656,300 acre-ft, Apr. 3, 1975, elevation, 318.85 ft; minimum (after first filling to rule curve), 724,700 acre-ft, Feb. 3, 1956, elevation, 280.23 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,978,040 acre-ft, Nov. 11, elevation, 308.90 ft; minimum, 1,258,540 acre-ft, Aug. 6, elevation, 295.06 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	298.09	1,396,000	-
Oct. 31.....	297.63	1,374,460	-21,540
Nov. 30.....	304.68	1,734,800	+360,340
Dec. 31.....	297.16	1,352,560	-382,240
CAL YR 1985.....	-	-	+87,860
Jan. 31.....	296.12	1,305,320	-47,240
Feb. 28.....	297.66	1,375,860	+70,540
Mar. 31.....	301.02	1,540,130	+164,270
Apr. 30.....	300.52	1,514,860	-25,270
May 31.....	298.65	1,422,770	-92,090
June 30.....	297.10	1,349,760	-73,010
July 31.....	295.60	1,282,300	-67,460
Aug. 31.....	297.22	1,355,350	+73,050
Sept. 30.....	295.38	1,272,620	-82,730
WTR YR 1986.....	-	-	-123,380

02079640 ALLEN CREEK NEAR BOYDTON, VA

LOCATION.--Lat 36°40'46", long 78°19'37", Mecklenburg County, Hydrologic Unit 03010106, on left bank at upstream side of bridge on U.S. Highway 58, 0.8 mi upstream from Coleman Creek, 2.3 mi downstream from Layton Creek, 3.7 mi east of Boydton, and 11.8 mi southwest of South Hill.

DRAINAGE AREA.--53.4 mi².

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 216.50 ft above National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Highways and Transportation).

REMARKS.--Estimated daily discharges: Dec. 21-25, 27-29, and Jan. 9-11, 15, 16, 30, 31. Records good except those for periods with ice effect, Dec. 21-25, 27-29, and Jan. 9-11, 15, 16, 30, 31, which are fair. Several measurements of water temperature were made during the year.

COOPERATION.--Records were provided by the Virginia Water Control Board.

AVERAGE DISCHARGE.--25 years, 44.2 ft³/s, 11.24 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,620 ft³/s, Oct. 23, 1971, gage height, 21.80 ft, from rating curve extended above 3,100 ft³/s; no flow many days in August, September, and October 1968, September and October 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1000	*1,970	*16.19	Nov. 30	2000	1,190	13.59
Nov. 5	0100	1,510	14.75	Mar. 14	1030	1,190	13.59
Nov. 22	0900	1,020	12.71	Aug. 20	2000	1,140	13.35

Minimum discharge, 0.34 ft³/s, Aug. 2, 3, gage height, 1.17 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	53	360	18	37	64	22	9.2	6.1	2.6	.49	3.0
2	3.9	247	131	17	41	45	21	9.3	6.2	3.1	.37	2.7
3	41	127	67	17	38	38	20	8.0	10	3.2	2.5	3.5
4	35	1380	44	17	41	33	20	7.5	8.2	2.9	1.9	4.3
5	6.5	516	37	16	39	29	19	7.6	6.2	2.6	.90	3.6
6	4.0	79	32	15	32	26	18	7.6	5.9	2.5	.72	3.0
7	2.8	40	27	14	133	24	23	7.4	5.6	2.1	.72	3.8
8	2.3	27	25	12	88	21	20	8.2	5.1	2.1	.40	2.6
9	2.0	21	23	11	50	20	19	7.3	4.7	2.0	.60	3.2
10	2.0	18	21	12	39	21	17	6.7	4.4	2.3	.40	3.0
11	2.0	17	20	13	224	21	16	6.5	4.0	7.6	.51	2.4
12	2.0	16	20	13	165	19	17	6.6	4.9	4.7	1.3	2.2
13	2.1	14	140	14	74	25	15	7.9	7.8	3.2	3.0	2.0
14	2.1	13	115	13	47	787	15	10	4.8	2.6	1.8	1.8
15	2.2	12	48	12	48	395	15	8.8	4.0	2.1	1.2	1.6
16	2.2	11	36	11	61	296	19	8.1	3.9	1.9	.96	1.4
17	2.4	10	31	12	54	161	19	7.4	3.7	1.9	1.9	1.4
18	2.8	10	26	13	46	94	18	6.6	3.6	2.0	22	1.3
19	2.7	9.8	22	18	45	108	16	5.9	3.3	1.9	12	1.2
20	2.9	9.9	21	27	159	216	16	13	3.5	1.6	569	1.3
21	3.7	218	20	18	73	182	17	63	3.2	1.2	163	1.4
22	14	783	19	14	49	91	19	18	3.0	.98	26	1.5
23	15	222	18	14	50	61	15	12	3.0	16	11	1.4
24	8.1	79	18	12	43	49	14	9.7	11	13	6.5	1.3
25	5.2	48	17	14	35	40	14	8.5	5.7	2.1	4.7	1.5
26	4.0	36	16	266	29	35	13	8.5	3.5	1.1	3.6	1.8
27	3.5	30	16	262	58	33	13	8.3	3.0	.96	3.2	1.2
28	3.1	26	15	92	147	29	12	8.7	3.4	.93	14	.75
29	2.9	24	16	57	---	26	11	8.4	2.8	.83	12	.96
30	2.9	433	18	34	---	25	9.6	7.5	2.7	.72	6.1	1.0
31	3.0	---	21	30	---	24	---	6.5	---	.62	3.9	---
TOTAL	191.9	4529.7	1440	1108	1945	3038	502.6	318.7	147.2	93.34	876.67	62.11
MEAN	6.19	151	46.5	35.7	69.5	98.0	16.8	10.3	4.91	3.01	28.3	2.07
MAX	41	1380	360	266	224	787	23	63	11	16	569	4.3
MIN	2.0	9.8	15	11	29	19	9.6	5.9	2.7	.62	.37	.75
CFSM	.12	2.83	.87	.67	1.30	1.84	.31	.19	.09	.06	.53	.04
IN.	.13	3.16	1.00	.77	1.35	2.12	.35	.22	.10	.07	.61	.04
CAL YR 1985	TOTAL	14855.9	MEAN	40.7	MAX	1380	MIN	1.6	CFSM	.76	IN.	10.35
WTR YR 1986	TOTAL	14253.22	MEAN	39.0	MAX	1380	MIN	.37	CFSM	.73	IN.	9.93

KANAWHA RIVER BASIN

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC

LOCATION.--Lat 36°23'35", long 81°24'26", Ashe County, Hydrologic Unit 05050001, on right bank 600 ft upstream from bridge on State Highways 16 and 88, 0.2 mi downstream from Bear Creek, and 4 mi southeast of Jefferson.

DRAINAGE AREA.--205 mi².

PERIOD OF RECORD.--October 1924 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1275: 1925-26(M), 1928-30(M), 1931-32, 1933-35(M), 1941-42(m), 1944(m). WDR NC-81-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,657.04 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 14, 1934, nonrecording gage on bridge 400 ft downstream at same datum. Oct. 14, 1934, to Mar. 25, 1935, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Dec. 19-22, Jan. 5-18, Jan. 28 to Feb. 1, and Feb. 13, 14. Records good except those for periods with ice effect, Dec. 19-22, Jan. 5-18, Jan. 28 to Feb. 1, and Feb. 13, 14, which are fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--62 years, 428 ft³/s, 28.35 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,800 ft³/s, Aug. 14, 1940, gage height, 22.50 ft, from rating curve extended above 5,100 ft³/s on basis of slope-area measurement of peak flow; minimum, 52 ft³/s, Dec. 24, 1943, result of freezeup; minimum daily, 65 ft³/s, Sept. 9, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 15, 1916, reached a stage of 18.0 ft, from floodmarks witnessed by local resident, discharge, 35,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	0530	2,790	5.50	Nov. 4	2300	*3,110	*5.77

Minimum discharge, 119 ft³/s, July 21, 22, gage height, 1.66 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	158	1440	948	321	280	307	266	194	279	150	137	219	
2	197	2560	644	324	307	290	262	192	262	195	133	730	
3	293	1420	528	303	293	293	260	186	246	233	142	752	
4	312	2020	470	277	301	285	258	182	237	188	144	641	
5	239	2340	441	250	285	275	261	182	234	158	166	742	
6	186	1250	424	210	296	269	252	182	235	149	154	458	
7	172	933	394	200	494	264	250	181	248	144	181	317	
8	168	741	375	170	402	245	248	187	270	140	163	259	
9	166	615	362	180	336	252	268	209	244	137	158	233	
10	165	536	347	190	317	257	256	196	224	187	141	217	
11	163	482	337	200	341	263	246	195	220	243	159	204	
12	159	441	343	210	320	254	239	207	209	193	188	197	
13	160	418	418	220	270	293	235	216	197	166	201	187	
14	162	394	478	190	230	642	235	213	187	174	165	177	
15	160	368	382	180	308	946	235	218	184	169	159	168	
16	157	353	350	170	326	604	235	211	182	148	156	164	
17	155	348	338	190	315	467	234	255	176	141	166	160	
18	154	334	326	240	622	407	232	273	172	135	186	158	
19	155	318	270	475	602	419	227	331	170	129	211	159	
20	155	311	250	660	649	453	222	648	167	126	221	161	
21	161	331	240	370	495	376	241	491	164	123	276	158	
22	176	919	220	337	427	346	248	318	157	124	293	152	
23	181	832	381	320	387	332	228	271	154	191	240	148	
24	171	560	374	298	357	323	215	297	158	232	287	145	
25	166	477	305	281	344	310	212	285	176	171	202	141	
26	160	434	196	288	324	303	211	275	173	232	170	138	
27	151	413	247	271	328	300	208	524	157	191	162	136	
28	149	418	401	150	347	292	206	734	151	178	199	134	
29	147	422	368	160	---	281	201	436	145	186	285	136	
30	160	748	346	190	---	277	196	351	149	149	195	138	
31	427	---	345	250	---	271	---	307	---	145	171	---	
TOTAL	5685	23176	11848	8075	10303	10896	7087	8947	5927	5227	5811	7729	
MEAN	183	773	382	260	368	351	236	289	198	169	187	258	
MAX	427	2560	948	660	649	946	268	734	279	243	293	752	
MIN	147	311	196	150	230	245	196	181	145	123	133	134	
CFSM	.89	3.77	1.86	1.27	1.80	1.71	1.15	1.41	.97	.82	.91	1.26	
IN.	1.03	4.21	2.15	1.47	1.87	1.98	1.29	1.62	1.08	.95	1.05	1.40	
CAL YR 1985	TOTAL	123823		MEAN	339	MAX	2560	MIN	132	CFSM	1.65	IN.	22.47
WTR YR 1986	TOTAL	110711		MEAN	303	MAX	2560	MIN	123	CFSM	1.48	IN.	20.09

KANAWHA RIVER BASIN

03164000 NEW RIVER NEAR GALAX, VA

LOCATION.--Lat 36°38'50", long 80°58'45", Grayson County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 94, 500 ft downstream from Meadow Creek, 1.2 mi southwest of Old Town, 3.1 mi southwest of Galax, and 3.6 mi downstream from Elk Creek.

DRAINAGE AREA.--1,131 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1929 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 758: Drainage area, 1933(M). WSP 893: 1930(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 2,208.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 19 to Jan. 19, Jan. 27 to Feb. 2, and Feb. 15. Records good except those for periods with ice effect, Dec. 19 to Jan. 19, Jan. 27 to Feb. 2, and Feb. 15, which are fair. Appalachian Power Company gage-height transmitter at station, recorder at Roanoke. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station.

AVERAGE DISCHARGE.--57 years, 1,893 ft³/s, 22.73 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s, Aug. 14, 1940, gage height, 25.7 ft, from flood-mark, from rating curve extended above 32,000 ft³/s on basis of computation of peak flow over dam at Fries 6 mi downstream and slope-area measurement of peak flow; minimum, 193 ft³/s, Jan. 9, 1956, gage height, 0.52 ft, result of freezeup; minimum daily, 265 ft³/s, Sept. 19, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 2	1330	9,300	4.00	Nov. 5	0730	*14,800	*5.30

Minimum discharge, 321 ft³/s, July 22, gage height, 0.66 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	495	2280	5550	1200	1400	1730	1180	822	1680	543	386	718
2	550	7520	4280	1300	1500	1620	1140	806	1500	998	383	2430
3	964	6840	3200	1400	1660	1580	1130	779	1360	1450	369	3160
4	1350	9060	2620	1300	2240	1530	1110	762	1260	1130	418	2810
5	1200	13700	2310	1200	2270	1460	1120	763	1230	743	483	3120
6	830	7700	2140	950	2190	1380	1100	764	1260	633	834	3100
7	658	5360	1960	1000	2500	1330	1110	763	1240	567	778	1950
8	592	4110	1800	850	2480	1230	1100	757	1380	528	748	1390
9	566	3230	1710	900	2100	1200	1090	747	1410	494	550	1120
10	556	2660	1620	950	1840	1230	1080	777	1310	485	456	962
11	550	2300	1550	1000	1940	1300	1070	767	1180	553	461	850
12	539	2040	1530	1000	1980	1310	1020	791	1140	849	650	767
13	541	1870	1850	1100	1620	1400	985	1050	1050	701	589	698
14	540	1740	2210	920	1420	2250	982	1180	999	592	588	649
15	539	1610	1940	900	1300	5070	1000	1240	984	632	550	597
16	540	1510	1750	850	1580	4130	1020	1140	1150	589	488	559
17	523	1440	1660	900	1760	3000	992	1180	1120	541	483	523
18	523	1400	1580	1000	2180	2410	984	1560	959	478	555	509
19	516	1320	1300	1200	3000	2170	974	1680	899	429	1010	494
20	521	1270	1200	2480	4190	2200	952	3770	845	402	1080	503
21	634	1320	1100	2030	3620	1950	1040	3990	789	382	1330	497
22	1150	2810	1000	1560	2840	1720	1110	2520	751	381	1090	475
23	1090	4230	1800	1510	2440	1590	1030	1870	695	491	2180	454
24	820	2990	1700	1470	2120	1520	956	1970	683	532	1260	463
25	794	2370	1500	1380	1940	1460	915	2620	682	656	821	554
26	710	2110	950	1380	1770	1430	988	2220	727	644	664	544
27	653	1950	1000	1200	1730	1410	1010	2340	641	681	542	454
28	619	2030	1200	700	1890	1370	929	3800	593	649	564	428
29	600	2660	1500	800	---	1310	890	3190	553	549	792	415
30	593	4150	1400	900	---	1250	869	2380	518	477	753	406
31	804	---	1300	1300	---	1220	---	1970	---	444	630	---
TOTAL	21560	105580	58210	36630	59500	55760	30876	50968	30588	19223	22485	31599
MEAN	695	3519	1878	1182	2125	1799	1029	1644	1020	620	725	1053
MAX	1350	13700	5550	2480	4190	5070	1180	3990	1680	1450	2180	3160
MIN	495	1270	950	700	1300	1200	869	747	518	381	369	406
CFSM	.61	3.11	1.66	1.05	1.88	1.59	.91	1.45	.90	.55	.64	.93
IN.	.71	3.47	1.91	1.20	1.96	1.83	1.02	1.68	1.01	.63	.74	1.04
CAL YR 1985	TOTAL	549425	MEAN	1505	MAX	13700	MIN	484	CFSM	1.33	IN.	18.07
WTR YR 1986	TOTAL	522979	MEAN	1433	MAX	13700	MIN	369	CFSM	1.27	IN.	17.20

KANAWHA RIVER BASIN

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03164000 NEW RIVER NEAR GALAX, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1931, 1950, 1952, 1968 to May 1986 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to September 1983.

WATER TEMPERATURE: October to December 1949, April 1968 to September 1983.

WATER QUALITY DATA, OCTOBER 1985 TO MAY 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
OCT 09...	1030	569	56	55	7.10	6.90	14.0	716	10	9.3
DEC 06...	1150	2130	45	52	7.00	7.50	5.0	705	7	11.6
JAN 14...	1030	920	56	55	7.10	7.40	0.0	700	5	13.8
FEB 11...	1100	1920	45	53	7.20	7.70	5.0	694	7	11.6
APR 14...	1100	979	50	49	6.70	7.50	13.0	700	7	10.9
MAY 28...	1130	3910	48	49	7.30	6.90	17.0	706	10	8.7

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 09...	96	17	0	4.1	1.6	3.1	1.7	19	1.4
DEC 06...	98	16	6	4.0	1.4	4.0	1.0	10	5.5
JAN 14...	103	14	2	3.6	1.3	3.5	1.3	12	7.7
FEB 11...	100	13	3	3.3	1.2	2.8	1.3	10	3.9
APR 14...	113	14	0	3.6	1.3	3.1	1.1	16	3.5
MAY 28...	97	14	1	3.5	1.3	2.7	1.5	13	4.8

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 09...	3.7	<0.10	7.6	44	35	<0.010	<0.100	<0.010	95
DEC 06...	4.8	<0.10	10	35	37	<0.010	0.700	0.010	77
JAN 14...	4.2	<0.10	11	34	40	<0.010	0.680	0.020	51
FEB 11...	3.6	<0.10	9.1	42	31	0.020	0.710	<0.010	46
APR 14...	3.0	<0.10	7.8	27	33	0.010	0.300	<0.010	90
MAY 28...	2.7	<0.10	9.2	39	34	<0.010	0.590	0.030	93

03165000 CHESTNUT CREEK AT GALAX, VA

LOCATION.--Lat 36°38'45", long 80°55'10", Galax City, Hydrologic Unit 05050001, on right bank 200 ft upstream from bridge on State Highway 89 and 1.7 mi downstream from Wards Mill Branch.

DRAINAGE AREA.--39.4 mi².

PERIOD OF RECORD.--September 1944 to current year.

REVISED RECORDS.--WSP 1385: 1953.

GAGE.--Water-stage recorder. Concrete control since Aug. 30, 1979. Datum of gage is 2,344.17 ft above National Geodetic Vertical Datum of 1929. Prior to June 25, 1948, nonrecording gage, and June 25, 1948, to May 28, 1953, water-stage recorder, at site 200 ft upstream at datum 0.86 ft higher.

REMARKS.--Estimated daily discharges: Dec. 19-22, 26, 27, 29-31, Jan. 6-17, 28-30, and Feb. 13, 14. Records good except those for periods with ice effect, Dec. 19-22, 26, 27, 29-31, Jan. 6-17, 28-30, and Feb. 13, 14, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--42 years, 66.9 ft³/s, 23.06 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,980 ft³/s, Oct. 17, 1947, gage height, 14.4 ft, from flood-mark, site and datum then in use, from rating curve extended above 2,200 ft³/s on basis of two slope-area and one contracted-opening measurements at gage heights 9.5 ft, 14.4 ft, and 17.4 ft, respectively, site and datum then in use; minimum, 12 ft³/s, part or all of each day Aug. 25-30, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 14, 1940, reached a stage of 17.4 ft, at site and datum used 1944-53, discharge, 11,000 ft³/s, by contracted-opening measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 850 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	1100	*1,840	*5.32	No other peak equal to or greater than base discharge.			

Minimum discharge, 15 ft³/s, July 20, 21, 31, gage height, 1.21 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	124	107	46	46	45	43	32	41	22	16	64
2	50	333	89	45	47	44	43	31	38	31	18	116
3	85	235	72	45	49	45	42	30	35	30	19	96
4	43	816	67	44	49	44	42	30	34	24	23	56
5	34	284	65	43	47	42	42	30	34	23	20	57
6	30	131	62	33	51	42	42	30	34	22	25	51
7	29	97	58	32	117	41	43	30	42	21	23	37
8	29	81	57	23	64	39	41	29	43	20	26	34
9	29	71	55	25	56	41	41	29	36	20	20	31
10	29	66	53	27	54	42	40	29	34	20	20	29
11	28	62	53	29	66	43	39	28	35	22	30	28
12	28	59	54	30	52	39	38	30	31	21	44	27
13	30	58	90	33	45	63	38	37	29	20	26	25
14	29	55	64	29	35	248	38	34	29	20	25	24
15	28	53	55	27	52	175	40	33	29	19	23	24
16	28	52	54	25	57	90	41	38	29	22	21	23
17	27	52	53	35	57	71	39	65	28	20	20	22
18	28	50	51	41	78	63	39	52	26	18	35	22
19	28	50	45	103	71	68	38	68	26	17	33	23
20	28	48	40	69	86	61	38	142	25	16	44	23
21	57	64	35	51	65	54	51	69	25	16	75	22
22	60	149	33	49	59	52	40	49	24	20	50	21
23	38	82	54	46	55	51	37	45	24	18	54	21
24	39	66	51	44	52	49	36	51	25	19	37	24
25	37	60	47	44	50	48	35	45	24	20	28	23
26	32	58	32	48	48	48	44	45	23	20	26	21
27	30	68	35	42	50	51	39	85	23	29	25	21
28	30	84	49	21	49	46	36	67	22	20	32	20
29	29	80	45	25	---	45	34	52	22	18	28	20
30	30	149	38	35	---	44	32	46	22	17	24	21
31	139	---	40	45	---	44	---	48	---	16	25	---
TOTAL	1188	3637	1703	1234	1607	1878	1191	1429	892	641	915	1026
MEAN	38.3	121	54.9	39.8	57.4	60.6	39.7	46.1	29.7	20.7	29.5	34.2
MAX	139	816	107	103	117	248	51	142	43	31	75	116
MIN	27	48	32	21	35	39	32	28	22	16	16	20
CFSM	.97	3.07	1.39	1.01	1.46	1.54	1.01	1.17	.75	.53	.75	.87
IN.	1.12	3.43	1.61	1.17	1.52	1.77	1.12	1.35	.84	.61	.86	.97
CAL YR 1985	TOTAL	20917	MEAN	57.3	MAX	1020	MIN	22	CFSM	1.45	IN.	19.75
WTR YR 1986	TOTAL	17341	MEAN	47.5	MAX	816	MIN	16	CFSM	1.21	IN.	16.37

KANAWHA RIVER BASIN

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03166800 GLADE CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°55'51", long 80°54'02", Wythe County, Hydrologic Unit 05050001, on left bank 30 ft downstream from bridge on State Highway 629, 1.0 mi southwest of Grahams Forge, and at mile 0.4.

DRAINAGE AREA.--7.15 mi².

PERIOD OF RECORD.--May 1976 to current year.

GAGE.--Water-stage recorder. Concrete control since June 1, 1979. Elevation of gage is 1,972 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Dec. 12 to Jan. 12, Jan. 16, 17, 22-24, 28-30, Feb. 13-15, Mar. 30 to Apr. 5, and Apr. 16-19. Records fair except those for periods of doubtful or no gage-height record, Dec. 12 to Jan. 9, Mar. 30 to Apr. 5, and Apr. 16-19, and periods with ice effect, Jan. 10-12, 16, 17, 22-24, 28-30, and Feb. 13-15, which are poor. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--10 years, 1.08 ft³/s, 2.05 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,350 ft³/s, July 5, 1984, gage height, 5.37 ft, from rating curve extended above 30 ft³/s on basis of slope-area measurement at gage height 5.11 ft; minimum, 0.02 ft³/s, Sept. 14, 1981, and as result of temporary pumpage, Sept. 11, 1985; minimum gage height, 1.36 ft, Sept. 7, 1976, Sept. 11, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 14	1900	*14	*2.16	No peak equal to or greater than base discharge.			

Minimum daily discharge, 0.03 ft³/s, Aug. 15-17, 25, 26, 29-31, Sept. 24, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.13	2.7	.21	.18	.47	.29	.13	.27	.12	.10	.51
2	.20	.25	1.5	.20	.28	.44	.28	.15	.23	.22	.15	.22
3	.22	.35	1.0	.20	.41	.44	.27	.18	.21	.14	.10	.22
4	.19	5.2	.76	.19	.42	.41	.26	.20	.20	.22	.09	.10
5	.12	2.7	.66	.19	.41	.38	.25	.20	.18	.23	.10	.10
6	.12	.87	.56	.18	.64	.35	.24	.17	.18	.21	.36	.09
7	.11	.55	.48	.15	2.6	.30	.23	.16	.21	.15	.12	.07
8	.10	.38	.42	.10	1.2	.27	.23	.21	.20	.10	.08	.06
9	.16	.30	.38	.08	.86	.29	.24	.16	.17	.10	.04	.06
10	.15	.26	.34	.07	.72	.24	.22	.15	.15	.11	.05	.06
11	.15	.23	.32	.14	1.5	.24	.20	.13	.15	.10	.06	.06
12	.15	.21	.28	.20	.85	.24	.18	.12	.13	.10	.05	.07
13	.20	.21	.35	.15	.50	.37	.16	.35	.10	.10	.06	.06
14	.18	.20	.50	.12	.35	4.1	.15	.20	.08	.09	.05	.05
15	.17	.18	.40	.10	.28	4.3	.18	.14	.50	.07	.03	.04
16	.12	.18	.30	.09	.59	2.1	.17	.24	.28	.08	.03	.04
17	.12	.18	.28	.08	.84	1.4	.16	.19	.20	.08	.03	.04
18	.14	.16	.26	.10	1.3	1.1	.16	.39	.17	.08	.06	.04
19	.15	.15	.23	.35	2.0	.93	.17	1.0	.14	.08	.06	.04
20	.15	.15	.22	.19	2.4	.78	.18	3.5	.16	.08	.04	.04
21	.28	.17	.20	.15	1.4	.66	.22	.91	.14	.07	.11	.04
22	.21	.81	.17	.13	1.1	.59	.19	.55	.12	.14	.08	.04
23	.13	.53	.30	.11	1.0	.52	.17	.43	.14	.14	.04	.04
24	.15	.38	.27	.10	.85	.46	.15	.36	.16	.11	.04	.03
25	.12	.33	.25	.15	.69	.44	.15	.36	.14	.18	.03	.04
26	.12	.30	.16	.15	.64	.41	.30	.36	.12	.15	.03	.04
27	.12	.34	.18	.14	.66	.39	.19	.75	.12	.12	.04	.04
28	.11	1.2	.25	.06	.58	.35	.16	.60	.12	.11	.04	.04
29	.10	2.2	.22	.09	---	.32	.16	.46	.11	.15	.03	.04
30	.10	4.9	.17	.12	---	.31	.15	.40	.12	.13	.03	.03
31	.12	---	.19	.15	---	.30	---	.32	---	.10	.03	---
TOTAL	4.58	24.00	14.30	4.44	25.25	23.90	6.06	13.47	5.20	3.86	2.16	2.35
MEAN	.15	.80	.46	.14	.90	.77	.20	.43	.17	.12	.07	.08
MAX	.28	5.2	2.7	.35	2.6	4.3	.30	3.5	.50	.23	.36	.51
MIN	.10	.13	.16	.06	.18	.24	.15	.12	.08	.07	.03	.03
CFSM	.02	.11	.06	.02	.13	.11	.03	.06	.02	.02	.01	.01
IN.	.02	.12	.07	.02	.13	.12	.03	.07	.03	.02	.01	.01
CAL YR 1985	TOTAL	220.10	MEAN	.60	MAX	35	MIN	.10	CFSM	.08	IN.	1.15
WTR YR 1986	TOTAL	129.57	MEAN	.35	MAX	5.2	MIN	.03	CFSM	.05	IN.	.67

03167000 REED CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°56'22", long 80°53'13", Wythe County, Hydrologic Unit 05050001, on left bank 20 ft downstream from bridge on State Highway 619 at Grahams Forge, 2.2 mi downstream from Glade Creek, and at mile 7.3.

DRAINAGE AREA.--247 mi².

PERIOD OF RECORD.--July 1908 to September 1916, January 1927 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1235: 1912-13, 1915-16. WSP 1275: 1911, 1927-28(M), 1930-34(M). WSP 1705: 1913(M), 1916(M), 1957 calendar year runoff. WSP 1725: 1915 calendar year runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,924.65 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1916, nonrecording gage at same site at datum 0.68 ft lower. Feb. 3, 1927, to Oct. 28, 1934, and June 11, 1974, to July 22, 1975, nonrecording gage, at present site and datum.

REMARKS.--Estimated daily discharges: Jan. 7-9, 13-17, 28-30, and Feb. 14, 15. Records good except those for periods with ice effect, Jan. 7-9, 13-17, 28-30, and Feb. 14, 15, which are fair. Occasional diurnal fluctuation at low flow caused by mills upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--67 years, 267 ft³/s, 14.68 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s, July 16, 1916, gage height, 11.4 ft, present datum, from floodmarks, from rating curve extended above 7,600 ft³/s on basis of velocity-area study and slope-area measurement at gage heights 11.4 ft and 10.01 ft, respectively; minimum observed, about 5 ft³/s, Dec. 22, 1909, gage height, 0.49 ft, present datum, result of freezeup; minimum daily, 22 ft³/s, Jan. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2230	*2,620	*4.29	No other peak equal to or greater than base discharge.			

Minimum discharge, 44 ft³/s, Sept. 30, gage height, 1.30 ft; minimum daily, 60 ft³/s, Aug. 1, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	87	1420	151	160	318	194	144	269	90	60	127
2	78	140	848	144	165	295	190	138	232	114	64	304
3	104	177	586	139	338	288	185	131	204	125	61	238
4	121	832	449	140	778	277	181	124	184	104	60	199
5	94	1720	380	137	595	261	177	123	172	92	91	221
6	79	737	340	130	482	247	173	120	165	87	72	271
7	74	463	299	100	770	238	172	117	175	84	71	170
8	72	334	268	75	748	224	168	130	163	83	82	131
9	71	260	249	65	535	215	166	134	159	81	74	111
10	70	220	232	133	427	210	160	123	153	84	67	97
11	69	197	217	123	522	208	153	118	141	90	66	90
12	69	180	214	119	567	202	150	116	132	91	72	84
13	69	168	258	100	469	207	145	195	124	85	71	80
14	69	157	352	90	300	415	144	1250	118	83	70	77
15	67	146	356	85	220	1750	143	560	118	83	68	75
16	68	139	317	80	324	943	139	349	151	79	66	72
17	68	141	287	100	336	635	139	351	118	79	67	70
18	72	140	260	112	570	494	139	794	108	74	93	68
19	63	130	228	132	1020	434	135	733	103	73	100	68
20	65	123	216	218	1360	400	130	1890	100	69	90	68
21	79	122	208	219	953	342	138	1620	98	68	107	68
22	122	254	190	200	705	305	142	769	95	72	103	67
23	122	510	214	207	591	285	137	502	94	76	82	65
24	101	386	194	202	496	270	130	387	99	67	77	67
25	94	297	186	191	450	253	125	329	109	71	79	69
26	86	253	141	193	397	240	148	306	100	81	77	69
27	80	252	171	183	380	232	178	344	92	70	71	65
28	77	624	171	65	366	225	178	595	88	66	83	66
29	75	938	153	90	---	214	169	513	89	68	82	66
30	72	1410	145	150	---	207	152	392	90	63	76	66
31	75	---	143	167	---	200	---	324	---	61	70	---
TOTAL	2493	11537	9692	4240	15024	11034	4680	13721	4043	2513	2372	3289
MEAN	80.4	385	313	137	537	356	156	443	135	81.1	76.5	110
MAX	122	1720	1420	219	1360	1750	194	1890	269	125	107	304
MIN	63	87	141	65	160	200	125	116	88	61	60	65
CFSM	.33	1.56	1.27	.55	2.17	1.44	.63	1.79	.55	.33	.31	.45
IN.	.38	1.74	1.46	.64	2.26	1.66	.70	2.07	.61	.38	.36	.50
CAL YR 1985	TOTAL	79881	MEAN	219	MAX	1890	MIN	62	CFSM	.89	IN.	12.03
WTR YR 1986	TOTAL	84638	MEAN	232	MAX	1890	MIN	60	CFSM	.94	IN.	12.75

03167500 BIG REED ISLAND CREEK NEAR ALLISONIA, VA

LOCATION.--Lat 36°53'20", long 80°43'40", Pulaski County, Hydrologic Unit 05050001, on left bank 700 ft downstream from bridge on State Highway 693, 3.5 mi southeast of Allisonia, 4 mi upstream from Little Reed Island Creek, and at mile 4.5.

DRAINAGE AREA.--278 mi².

PERIOD OF RECORD.--August 1908 to September 1916, April 1939 to current year.

REVISED RECORDS.--WSP 1033: 1939(P), 1940, 1941-43(P). WSP 1305: 1912(M). WSP 1625: 1940, 1945(M), 1947, 1951, 1952(M).

GAGE.--Water-stage recorder. Datum of gage is 1,902.74 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1916, nonrecording gage at site 4 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 10 to Jan. 19, Jan. 28 to Feb. 3, and Feb. 14. Records good except those for period of doubtful or no gage-height record, Dec. 10 to Jan. 7, and periods with ice effect, Jan. 8-19, Jan. 28 to Feb. 3, and Feb. 14, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--55 years, 398 ft³/s, 19.44 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s, Sept. 30, 1959, gage height, 12.54 ft, from rating curve extended above 6,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 57 ft³/s, Jan. 28, 1986, gage height, 1.58 ft, result of freezeup; minimum daily, 75 ft³/s, Jan. 5, 1981, Jan. 28, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 4	2230	*6,730	*8.14	No other peak equal to or greater than base discharge.			

Minimum discharge, 57 ft³/s, Jan. 28, gage height, 1.58 ft, result of freezeup; minimum daily, 75 ft³/s, Jan. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	206	812	210	250	274	263	208	229	128	98	190
2	200	393	588	240	270	269	259	200	206	175	97	937
3	586	491	462	260	300	274	260	189	192	177	108	819
4	395	2810	400	250	374	265	255	186	182	137	129	549
5	220	3890	380	230	326	256	258	188	181	119	114	478
6	178	965	366	180	304	248	254	187	181	110	106	550
7	165	600	338	150	632	241	255	188	180	107	134	309
8	159	456	322	120	502	214	250	188	194	101	212	230
9	158	395	313	150	392	238	260	184	185	97	156	209
10	157	360	300	170	342	236	246	182	169	95	116	183
11	155	335	290	190	398	255	237	176	170	99	113	169
12	153	314	300	200	374	238	231	173	167	105	146	165
13	155	305	330	170	278	290	225	276	155	122	145	156
14	156	291	520	150	220	966	226	339	144	102	127	144
15	154	280	430	140	315	1910	243	249	140	95	121	137
16	152	271	350	130	373	802	370	219	290	98	114	131
17	149	270	340	150	361	568	281	240	215	108	106	129
18	146	262	330	200	518	473	254	300	159	94	169	123
19	149	257	300	300	532	458	238	261	143	87	254	125
20	153	252	220	743	594	463	231	1140	137	82	205	130
21	299	278	200	372	475	387	305	624	130	78	242	129
22	488	854	190	309	409	351	310	396	125	103	234	124
23	289	732	300	285	385	336	246	305	122	358	176	121
24	219	492	320	256	340	324	231	270	124	130	297	121
25	199	404	280	250	325	308	224	261	129	125	202	125
26	182	343	180	266	299	300	290	294	118	217	141	117
27	171	326	200	242	303	306	297	398	115	452	125	111
28	168	416	300	75	304	292	248	545	113	186	127	109
29	164	444	260	140	---	279	233	363	107	139	151	109
30	159	731	240	170	---	273	215	289	105	125	129	110
31	162	---	230	230	---	268	---	266	---	107	120	---
TOTAL	6375	18423	10391	6928	10495	12362	7695	9284	4807	4258	4714	7039
MEAN	206	614	335	223	375	399	257	299	160	137	152	235
MAX	586	3890	812	743	632	1910	370	1140	290	452	297	937
MIN	135	206	180	75	220	214	215	173	105	78	97	109
CFSM	.74	2.21	1.21	.80	1.35	1.44	.92	1.08	.58	.49	.55	.85
IN.	.85	2.47	1.39	.93	1.40	1.65	1.03	1.24	.64	.57	.63	.94
CAL YR 1985	TOTAL	109559	MEAN	300	MAX	3890	MIN	108	CFSM	1.08	IN.	14.66
WTR YR 1986	TOTAL	102771	MEAN	282	MAX	3890	MIN	75	CFSM	1.01	IN.	13.75

KANAWHA RIVER BASIN

03168000 NEW RIVER AT ALLISONIA, VA

LOCATION.--Lat 36°56'15", long 80°44'45", Pulaski County, Hydrologic Unit 05050001, on left bank on State Highway 653, 0.2 mi downstream from Big Reed Island Creek, and 0.5 mi upstream from Allisonia.

DRAINAGE AREA.--2,202 mi².

PERIOD OF RECORD.--September 1929 to current year.

REVISED RECORDS.--WSP 783: Drainage area. WSP 823: 1936. WSP 1305: 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 1,848.36 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Large diurnal fluctuation and some regulation by powerplant 25 mi upstream from station. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--57 years, 3,192 ft³/s, 19.69 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 185,000 ft³/s, Aug. 14, 1940, gage height, 23.42 ft, from rating curve extended above 52,000 ft³/s on basis of flood records for other stations on New River; minimum, 412 ft³/s, Sept. 7, 1930, gage height, 0.47 ft; minimum daily, 453 ft³/s, Sept. 6, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 17,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0130	*32,100	*7.82	No other peak equal to or greater than base discharge.			

Minimum discharge, 422 ft³/s, July 21, gage height, 0.65 ft; minimum daily, 604 ft³/s, July 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	841	1840	9900	1940	2340	2700	1950	1370	2560	962	614	1530
2	1030	6800	7870	1910	2300	2530	2100	1420	2630	1600	616	3260
3	1950	10200	5480	2140	2640	2570	1990	1170	2090	1550	693	4740
4	2090	15300	4350	2000	3170	2380	1790	1350	1900	1700	785	4120
5	1610	26500	3720	1910	3700	2310	1770	1440	1870	1400	910	3500
6	1500	13000	3380	1590	3280	2230	1840	1260	1740	1100	867	4840
7	1510	7700	3070	1660	4420	2180	2050	1190	1540	947	1260	3240
8	1070	5720	2810	1370	4590	1940	1820	1460	1850	968	1260	2300
9	816	4590	2650	1440	3830	1920	1880	1260	2060	916	1140	1910
10	1040	3880	2550	1670	3410	2050	1780	1190	1930	885	900	1660
11	1030	3510	2470	1670	3300	2070	1730	1310	1750	986	779	1430
12	1020	2910	2470	1670	3300	2080	1540	1300	1380	804	996	1450
13	1070	2690	2810	1760	2770	2030	1670	1740	1430	1160	1120	1040
14	1030	2680	3170	1440	2520	4080	1810	2750	1260	1010	981	1180
15	1030	2310	3170	1500	2190	10900	1650	2220	1320	958	963	1240
16	950	2040	3070	1380	2620	8670	1810	1990	1540	1000	914	882
17	1080	2100	2770	1530	2880	6000	1750	1800	1520	1000	820	1180
18	967	2150	2330	1780	3630	4140	1610	2600	1660	890	990	919
19	1020	2070	2130	2030	4650	3910	1380	3010	1060	694	1540	1120
20	924	1900	1920	3300	6580	3660	1580	7530	1100	751	1520	873
21	1480	2020	1990	3180	6710	3470	1900	8590	1100	604	1950	893
22	1780	3860	1690	2460	4930	2900	1760	5610	1090	720	1880	993
23	1880	6150	1980	2260	4110	2750	1750	3340	1040	1160	1720	1080
24	1480	5030	2500	2190	3600	2660	1570	2740	1070	878	2640	983
25	1290	3870	2420	2040	3390	2530	1520	3550	1180	1000	1720	906
26	1240	3260	1450	2050	3100	2560	1430	3370	1010	1150	1370	994
27	1090	2940	1560	2010	2900	2390	1740	3650	985	1250	1110	929
28	1240	3510	1780	1200	2830	2040	1820	4720	972	1220	995	819
29	1150	4080	2100	1310	---	2160	1590	4900	908	1100	997	1140
30	1180	6710	2070	1510	---	2120	1530	4040	1030	939	1290	734
31	1110	---	2030	2290	---	2160	---	2750	---	779	1110	---
TOTAL	38498	161320	93660	58190	99690	98090	52110	86620	44575	32081	36450	51885
MEAN	1242	5377	3021	1877	3560	3164	1737	2794	1486	1035	1176	1730
MAX	2090	26500	9900	3300	6710	10900	2100	8590	2630	1700	2640	4840
MIN	816	1840	1450	1200	2190	1920	1380	1170	908	604	614	734
CFSM	.56	2.44	1.37	.85	1.62	1.44	.79	1.27	.67	.47	.53	.79
IN.	.65	2.73	1.58	.98	1.68	1.66	.88	1.46	.75	.54	.62	.88
CAL YR 1985	TOTAL	869123	MEAN	2381	MAX	26500	MIN	673	CFSM	1.08	IN.	14.68
WTR YR 1986	TOTAL	853169	MEAN	2337	MAX	26500	MIN	604	CFSM	1.06	IN.	14.41

KANAWHA RIVER BASIN

315

03169000 CLAYTOR RESERVOIR NEAR RADFORD, VA

LOCATION.--Lat 37°04'28", long 80°35'05", Pulaski County, Hydrologic Unit 05050001, at Claytor Dam on New River, 0.5 mi upstream from Little River, and 5.5 mi upstream from Radford.

DRAINAGE AREA.--2,382 mi².

PERIOD OF RECORD.--May 1939 to current year (monthly figures only).

REVISED RECORDS.--WSP 2108: 1961-65 monthend contents and change in contents.

GAGE.--Water-stage recorder. Datum of gage is approximately National Geodetic Vertical Datum of 1929 (levels by Appalachian Power Company). Prior to Sept. 11, 1943, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by gravity overflow concrete dam. Spillway with crest at elevation 1,818.5 ft is equipped with 9 lift gates 30 ft high by 50 ft wide. Dam completed and storage began May 22, 1939; water in reservoir reached minimum pool elevation in January 1940. Total level-pool capacity at elevation 1,847.0 ft, 1.5 ft below top of gates, is 230,100 acre-ft of which about 100,000 acre-ft is controlled storage above minimum pool elevation of 1,820.0 ft. Reservoir is used for hydroelectric power and recreation. U.S. Army Corps of Engineers satellite elevation telemeter at station.

COOPERATION.--Records were provided by the Appalachian Power Company.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,845.78	224,600	-
Oct. 31.....	1,844.53	219,200	-5,400
Nov. 30.....	1,843.72	215,700	-3,500
Dec. 31.....	1,844.51	219,100	+3,400
CAL YR 1985.....	-	-	-2,600
Jan. 31.....	1,845.30	222,500	+3,400
Feb. 28.....	1,843.92	216,600	-5,900
Mar. 31.....	1,844.91	220,800	+4,200
Apr. 30.....	1,845.18	222,000	+1,200
May 31.....	1,844.75	220,200	-1,800
June 30.....	1,845.37	222,800	+2,600
July 31.....	1,845.73	224,400	+1,600
Aug. 31.....	1,845.12	221,700	-2,700
Sept. 30.....	1,843.93	216,600	-5,100
WTR YR 1986.....	-	-	-8,000

KANAWHA RIVER BASIN

03170000 LITTLE RIVER AT GRAYSONTON, VA

LOCATION.--Lat 37°02'15", long 80°33'25", Pulaski County, Hydrologic Unit 05050001, on left bank at upstream side of bridge on State Highway 693 at Snowville, 0.5 mi southeast of Grayson, 7 mi south of Radford, and at mile 8.6.

DRAINAGE AREA.--300 mi².

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 823: 1929-36. WSP 1143: 1945. WSP 1305: 1929(M). WSP 1555: Drainage area (at site used 1928-41). WSP 1625: 1951(M). WSP 1725: 1936(M).

GAGE.--Water-stage recorder. Datum of gage is 1,816.04 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 20, 1931, nonrecording gage at bridge 1.0 mi downstream at datum 17.99 ft lower. Nov. 20, 1931, to Nov. 12, 1941, water-stage recorder 1.2 mi downstream at datum 20.58 ft lower.

REMARKS.--Estimated daily discharges: Dec. 21, 22, Jan. 7-17, 28, and Feb. 14. Records good except those for periods with ice effect, Dec. 21, 22, Jan. 7-17, 28, and Feb. 14, which are fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--58 years, 361 ft³/s, 16.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s, June 21, 1972, gage height, 13.40 ft, from rating curve extended above 16,000 ft³/s on basis of slope-area measurements at gage heights 12.76 ft and 13.40 ft; minimum, 21 ft³/s, Feb. 22, 1942, result of freezeup; minimum daily, 50 ft³/s, Sept. 21, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0045	*18,200	*11.67	No other peak equal to or greater than base discharge.			

Minimum discharge, 67 ft³/s, Aug. 1-3, gage height, 0.65 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	443	1010	308	298	311	272	204	239	101	68	168
2	139	1030	653	275	337	294	269	200	217	143	67	481
3	394	818	507	301	368	298	265	189	201	172	69	524
4	380	4760	438	290	461	300	259	185	188	139	78	523
5	203	8020	417	272	413	291	261	187	186	115	90	367
6	160	1320	409	229	368	283	264	187	187	105	73	508
7	143	799	381	150	550	274	260	188	191	98	89	341
8	137	610	359	110	565	245	253	196	184	90	104	243
9	135	512	345	160	455	256	250	193	192	94	110	219
10	135	460	332	190	385	266	246	187	182	166	87	201
11	134	428	322	210	426	275	241	186	176	252	102	187
12	132	401	324	230	424	271	235	178	176	170	117	179
13	133	381	388	190	322	287	229	224	166	118	111	172
14	138	364	465	160	200	769	228	290	152	104	108	157
15	136	347	367	150	313	1760	240	253	149	91	103	149
16	131	335	339	140	375	811	343	224	216	90	98	143
17	128	336	332	170	432	582	296	213	172	108	88	138
18	126	329	320	263	534	484	258	499	149	88	173	133
19	127	313	244	301	548	446	245	398	139	80	292	135
20	129	307	243	529	500	430	234	865	134	74	217	140
21	146	313	220	344	444	377	267	727	130	71	666	146
22	313	725	200	299	420	348	284	452	126	70	426	145
23	272	714	353	286	432	340	243	339	124	79	244	136
24	193	502	368	265	381	328	228	293	125	99	366	133
25	176	430	325	256	363	313	223	276	132	91	299	130
26	163	392	193	272	338	304	236	279	123	92	183	127
27	150	377	230	260	338	305	272	325	115	146	153	123
28	144	374	339	110	340	296	241	392	113	165	146	120
29	141	443	289	147	---	285	223	345	108	103	150	118
30	137	884	259	282	---	280	213	293	103	83	142	118
31	141	---	262	289	---	276	---	265	---	73	123	---
TOTAL	5230	27467	11233	7438	11330	12385	7578	9232	4795	3470	5142	6404
MEAN	169	916	362	240	405	400	253	298	160	112	166	213
MAX	394	8020	1010	529	565	1760	343	865	239	252	666	524
MIN	114	307	193	110	200	245	213	178	103	70	67	118
CFSM	.56	3.05	1.21	.80	1.35	1.33	.84	.99	.53	.37	.55	.71
IN.	.65	3.41	1.39	.92	1.40	1.54	.94	1.14	.59	.43	.64	.79
CAL YR 1985	TOTAL	109436	MEAN	300	MAX	8020	MIN	86	CFSM	1.00	IN.	13.57
WTR YR 1986	TOTAL	111704	MEAN	306	MAX	8020	MIN	67	CFSM	1.02	IN.	13.85

KANAWHA RIVER BASIN

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03171000 NEW RIVER AT RADFORD, VA

LOCATION.--Lat 37°08'30", long 80°34'10", Pulaski County, Hydrologic Unit 05050001, on left bank 2,000 ft downstream from bridge on U.S. Highway 11 at Radford, 5 mi downstream from Little River, and 5.5 mi downstream from Claytor Dam.

DRAINAGE AREA.--2,748 mi².

PERIOD OF RECORD.--October 1907 to September 1915, August 1939 to current year. Records for August 1898 to September 1907, published in WSP 27, 36, 48, 65, 83, 98, 128, 169, 205, 243, and 536, are unreliable and should not be used. Gage-height records collected at same site since 1895 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 873: Drainage area. WSP 953: 1940-41. WSP 1305: 1908-12. See also PERIOD OF RECORD. GAGE.--Water-stage recorder. Datum of gage is 1,712.16 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 30, 1939, nonrecording gage at highway bridge 2,000 ft upstream at datum 0.85 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1939 by Claytor Reservoir (station 03169000). Some additional regulation at low flow by dam and powerplant on Little River. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--55 years, 3,845 ft³/s, 19.00 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 218,000 ft³/s, Aug. 14, 1940, gage height, 35.96 ft, from rating curve extended above 76,000 ft³/s on basis of records for other stations on New River and flow over Claytor Dam, computed by Appalachian Power Company; minimum, 165 ft³/s, Aug. 25, 27, 1944, gage height, 1.08 ft; minimum daily, 550 ft³/s, Aug. 22, 1911.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 16, 1916, reached a stage of 35.7 ft, discharge, 200,000 ft³/s, at site and datum used by Geological Survey 1907-15, from reports of the National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 46,800 ft³/s, Nov. 5, gage height, 13.60 ft; minimum, 682 ft³/s, Sept. 15, gage height, 1.71 ft; minimum daily, 844 ft³/s, July 1, Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1170	5800	11800	1350	1360	1280	2920	2460	1600	844	940	1340
2	1480	9460	7350	2970	3330	1260	2270	1700	3190	1730	881	7550
3	3150	7390	6560	2600	4080	4120	2490	1050	3000	2700	880	6220
4	4440	15700	6030	1150	4770	4160	2590	1090	3260	1110	922	4620
5	1360	35800	5210	1730	4760	3840	1170	1450	2430	1040	977	4780
6	1120	14600	5320	3300	6160	3620	1120	1980	2490	873	946	1460
7	1570	12200	1440	1520	9040	3510	2650	1560	1060	1400	2030	2750
8	1480	7900	1400	1450	2150	1140	3070	1600	1010	1040	1570	3410
9	1070	6780	3930	1610	2760	1230	3100	2430	2530	1240	999	2360
10	1130	2220	3920	2140	5910	2190	3110	1110	2900	1900	911	2370
11	1050	6210	5470	1650	5070	3020	1940	999	2970	1990	1110	2000
12	1060	5600	3930	1970	4870	3210	1040	1770	2850	1070	1010	1610
13	967	3370	4250	2790	4370	3480	1190	2500	1830	956	974	1030
14	1310	3470	1540	2300	4720	7080	2330	3690	1050	1500	1550	956
15	1220	2470	2430	2320	1300	12300	2690	3820	1050	1390	1430	1420
16	1250	1340	4710	2190	1360	10200	2840	3290	2250	1460	911	1630
17	1280	1330	4040	2770	6610	6700	2880	1110	2180	1080	914	1420
18	1610	3220	3640	1170	6720	7500	2170	2220	2000	933	1110	1240
19	1070	3640	3940	2020	5380	5570	1130	4810	1940	905	1870	844
20	1090	3430	2750	5930	8410	5610	1180	8480	2360	1010	2230	979
21	2900	6910	1210	4590	8870	5160	2310	11900	1050	853	2800	967
22	2680	5580	1120	3680	6020	1350	2810	9030	968	899	2680	1170
23	2330	2560	2770	2910	2000	1550	2550	5420	1010	962	2540	1090
24	2170	3240	2340	2810	4910	3940	2800	2870	1030	951	1670	1190
25	2240	5570	1860	1290	4110	3970	2200	2450	1030	1300	3010	1100
26	1160	5230	4250	1130	4170	4010	1160	5630	1010	986	2460	1130
27	1130	6620	2900	3640	5500	4220	1190	3990	1020	1260	1740	932
28	1650	3630	1270	3510	4280	3950	2850	5480	949	2100	1570	948
29	2440	6210	1190	1980	---	1150	2760	5950	916	1380	968	2800
30	2110	8020	3700	1170	---	1270	2340	5480	1000	1380	906	2980
31	1420	---	3510	1570	---	3440	---	2480	---	895	893	---
TOTAL	52107	205500	115780	73210	132990	125030	66850	109799	53933	39137	45402	64296
MEAN	1681	6850	3735	2362	4750	4033	2228	3542	1798	1262	1465	2143
MAX	4440	35800	11800	5930	9040	12300	3110	11900	3260	2700	3010	7550
MIN	967	1330	1120	1130	1300	1140	1040	999	916	844	880	844
(*)	-88	-59	+55	+55	-106	+68	+20	-29	+44	+26	-44	-86
MEAN†	1593	6791	3790	2417	4644	4101	2248	3513	1842	1288	1421	2057
CFSM†	.58	2.47	1.38	.88	1.69	1.49	.82	1.28	.67	.47	.52	.75
IN.†	.67	2.76	1.59	1.01	1.76	1.72	.91	1.47	.75	.54	.60	.84

CAL YR 1985 TOTAL 1092183 MEAN 2992 MAX 35800 MIN 917 MEAN† 2988 CFSM† 1.09 IN.† 14.77
WTR YR 1986 TOTAL 1084034 MEAN 2970 MAX 35800 MIN 844 MEAN† 2959 CFSM† 1.08 IN.† 14.62

* Change in contents, equivalent in cubic feet per second, in Claytor Reservoir; provided by Appalachian Power Company.

† Adjusted for change in contents.

KANAWHA RIVER BASIN

03173000 WALKER CREEK AT BANE, VA

LOCATION.--Lat 37°16'05", long 80°42'35", Giles County, Hydrologic Unit 05050002, on left bank at Bane, 0.2 mi downstream from bridge on State Highway 100, 0.2 mi downstream from Sugar Run, and at mile 7.9.

DRAINAGE AREA.--305 mi².

PERIOD OF RECORD.--March 1938 to current year.

REVISED RECORDS.--WSP 1143: 1939(M), 1940, 1944, 1946. WSP 1305: 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,665.92 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 7-9, 13-17, 28-30, and Feb. 14, 15. Records good except those for periods with ice effect, Jan. 7-9, 13-17, 28-30, and Feb. 14, 15, which are fair. U.S. Army Corps of Engineers satellite gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--48 years, 323 ft³/s, 14.38 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft³/s, Apr. 5, 1977, gage height, 16.69 ft, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement at gage height 16.50 ft; minimum, 15 ft³/s, Dec. 21, 1958, gage height, 2.42 ft, result of freezeup; minimum daily, 24 ft³/s, Sept. 27, 28, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1878 reached a stage of about 23.5 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 15	0730	4,400	9.43	May 21	0700	*4,580	*9.56

Minimum discharge, 40 ft³/s, Oct. 1, 13, 15, Aug. 5, gage height, 2.83 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	49	1560	122	143	299	172	122	295	69	44	64
2	46	56	926	106	155	268	164	118	246	86	43	191
3	54	92	621	116	327	260	158	113	206	126	42	316
4	70	502	463	109	818	251	154	107	174	101	41	242
5	63	1800	381	106	749	237	151	103	153	79	41	178
6	51	755	329	93	576	224	148	102	147	69	42	150
7	46	438	284	70	856	217	146	100	336	64	48	128
8	44	308	244	60	932	200	141	115	355	60	53	100
9	43	236	220	45	683	192	134	159	267	58	55	84
10	42	194	199	93	536	187	133	146	201	66	49	75
11	42	166	182	94	548	188	131	133	174	175	47	68
12	41	146	173	86	559	184	124	125	155	129	48	66
13	41	132	191	75	457	184	120	155	132	90	51	62
14	42	122	309	68	300	441	117	817	119	79	53	61
15	41	114	336	64	200	3230	114	623	109	83	49	58
16	42	106	314	60	333	1470	112	454	105	71	55	54
17	43	101	285	70	342	904	110	367	108	65	47	51
18	45	97	256	86	522	664	111	500	95	60	55	48
19	44	93	210	100	928	557	108	522	87	57	102	50
20	43	89	190	167	1520	488	103	1770	82	55	101	50
21	48	86	189	194	1040	406	105	2850	78	52	84	51
22	59	116	139	189	735	349	109	1210	75	53	77	49
23	69	241	203	175	602	313	105	764	70	62	69	47
24	73	214	174	160	503	289	100	558	68	63	66	47
25	64	186	157	153	453	262	96	449	73	62	57	47
26	58	168	106	161	401	240	101	387	72	63	61	46
27	55	163	123	161	377	228	131	362	68	56	55	46
28	52	233	145	55	348	219	132	520	63	52	55	48
29	49	484	122	70	---	203	126	494	61	49	50	45
30	47	1440	111	100	---	191	129	439	60	46	53	45
31	46	---	115	148	---	183	---	372	---	45	52	---
TOTAL	1544	8927	9257	3356	15943	13528	3785	15056	4234	2245	1745	2567
MEAN	49.8	298	299	108	569	436	126	486	141	72.4	56.3	85.6
MAX	73	1800	1560	194	1520	3230	172	2850	355	175	102	316
MIN	41	49	106	45	143	183	96	100	60	45	41	45
CFSM	.16	.98	.98	.35	1.87	1.43	.41	1.59	.46	.24	.18	.28
IN.	.19	1.09	1.13	.41	1.94	1.65	.46	1.84	.52	.27	.21	.31
CAL YR 1985	TOTAL	78322	MEAN	215	MAX	2620	MIN	40	CFSM	.70	IN.	9.55
WTR YR 1986	TOTAL	82187	MEAN	225	MAX	3230	MIN	41	CFSM	.74	IN.	10.02

03175500 WOLF CREEK NEAR NARROWS, VA

LOCATION.--Lat 37°18'20", long 80°51'00", Giles County, Hydrologic Unit 05050002, on right bank at downstream side of bridge on State Highway 724, 2.8 mi southwest of Narrows, and at mile 3.5.

DRAINAGE AREA.--223 mi².

PERIOD OF RECORD.--July 1908 to September 1916, March 1938 to current year.

REVISED RECORDS.--WSP 973: 1940-41(M). WSP 1235: 1912-13, 1915-16. WSP 1505: 1940, monthly and yearly runoff. WSP 1725: 1913(M), 1915-16(M), 1941 calendar year runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,583.83 ft above National Geodetic Vertical Datum of 1929. July 22, 1908, to Sept. 30, 1916, and Mar. 31 to Nov. 7, 1938, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Jan. 7, 8, 13-17, 28-30, Feb. 14, 15, and July 5-9. Records good except those for periods with ice effect, Jan. 7, 8, 13-17, 28-30, and Feb. 14, 15, and period of doubtful or no gage-height record, July 5-9, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--56 years, 298 ft³/s, 18.15 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft³/s, Jan. 29, 1957, gage height, 12.55 ft, from floodmark in gage well, 13.8 ft, from floodmark at downstream side of bridge, from rating curve extended above 5,700 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 8.8 ft³/s, Dec. 25, 1953, result of freezeup; minimum daily, 16 ft³/s, Sept. 17, 18, 26-28, 1964; minimum gage height, 2.19 ft, Dec. 24, 1943.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 30	1700	2,340	6.81	Mar. 15	0330	*3,530	*7.90

Minimum discharge, 28 ft³/s, part of each day Aug. 4-6, gage height, 2.47 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	40	1600	117	168	318	158	156	277	84	34	79
2	43	55	1000	109	239	287	153	147	239	163	33	225
3	50	92	687	118	723	280	147	135	207	214	31	319
4	49	561	523	114	1410	266	141	126	181	133	29	257
5	45	1360	428	112	1060	248	136	119	171	90	30	229
6	40	846	373	84	808	237	133	115	165	80	29	292
7	40	643	310	70	1030	228	137	113	242	70	40	221
8	38	440	266	50	978	192	136	164	220	60	56	166
9	36	312	237	67	752	208	128	247	221	54	44	136
10	35	242	214	97	608	203	131	218	200	69	38	116
11	34	200	196	96	541	229	122	195	182	117	36	101
12	35	171	195	87	456	247	117	181	162	113	43	93
13	34	151	217	70	384	252	112	555	142	92	46	99
14	35	137	281	60	300	704	109	1620	130	91	42	86
15	35	124	300	55	200	2710	107	993	122	74	36	74
16	38	115	289	65	300	1370	105	687	114	65	33	66
17	44	109	265	75	340	923	110	555	107	59	70	61
18	42	104	239	85	782	705	112	571	101	54	147	58
19	39	97	187	112	1090	592	107	850	97	49	183	65
20	38	91	185	285	1720	507	103	1640	91	45	127	69
21	41	87	174	239	1160	416	109	1280	87	44	118	63
22	56	105	132	244	851	352	123	862	83	44	99	58
23	60	174	187	265	695	311	130	643	82	66	81	54
24	57	176	167	259	575	278	126	509	79	56	72	52
25	51	164	150	242	509	246	123	420	91	59	75	56
26	46	153	102	240	436	226	140	367	94	61	70	55
27	43	172	114	218	412	222	183	349	79	48	62	51
28	41	406	136	55	375	209	174	414	72	44	101	51
29	39	1020	117	70	---	190	183	439	70	40	103	50
30	37	1900	105	100	---	177	168	378	71	37	83	47
31	37	---	107	168	---	167	---	327	---	35	69	---
TOTAL	1292	10247	9483	4028	18902	13500	3963	15375	4179	2310	2060	3349
MEAN	41.7	342	306	130	675	435	132	496	139	74.5	66.5	112
MAX	60	1900	1600	285	1720	2710	183	1640	277	214	183	319
MIN	34	40	102	50	168	167	103	113	70	35	29	47
CFSM	.19	1.53	1.37	.58	3.03	1.95	.59	2.22	.62	.33	.30	.50
IN.	.22	1.71	1.58	.67	3.15	2.25	.66	2.56	.70	.39	.34	.56
CAL YR 1985	TOTAL	88705	MEAN	243	MAX	2530	MIN	34	CFSM	1.09	IN.	14.80
WTR YR 1986	TOTAL	88688	MEAN	243	MAX	2710	MIN	29	CFSM	1.09	IN.	14.79

KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA
(National stream-quality accounting network station)

LOCATION.--Lat 37°22'22", long 80°51'39", Giles County, Hydrologic Unit 05050002, on right bank 90 ft (revised) upstream from bridge on U.S. Highway 460 at Glen Lyn, 0.3 mi upstream from East River, and 6.3 mi downstream from Wolf Creek.

DRAINAGE AREA.--3,768 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1927 to current year.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1305: 1928(M), 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 1,490.24 ft above National Geodetic Vertical Datum of 1929. Aug. 11, 1927, to Oct. 16, 1934, on left bank just upstream from highway bridge at same datum, and Oct. 17, 1934, to June 16, 1939, on left bank 200 ft upstream from highway bridge at same datum.

REMARKS.--Estimated daily discharges: Oct. 1-3, 6-28, Oct. 30 to Nov. 1, and Jan. 26, 27. Records fair except those for periods of doubtful or no gage-height record, Oct. 1-3, 6-28, Oct. 30 to Nov. 1, and Jan. 26, 27, which are poor. Flow regulated since 1939 by Claytor Reservoir (station 03169000) 55 mi upstream from station. U.S. Army Corps of Engineers satellite gage-height telemeter at station.

AVERAGE DISCHARGE.--59 years, 4,979 ft³/s, 17.94 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 226,000 ft³/s, Aug. 14, 1940, gage height, 27.50 ft, from rating curve extended above 89,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 717 ft³/s, Jan. 5, 1981, result of freezeup; minimum daily, 820 ft³/s, Sept. 8, 1930; minimum gage height, 2.10 ft, Sept. 8, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 53,600 ft³/s, Nov. 5, gage height, 12.55 ft; minimum daily, 955 ft³/s, July 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	1250	1900	15700	4770	1730	4930	3980	2710	3070	1160	1220	1290		
2	1350	8540	12400	2000	1740	1530	3300	2770	2270	1190	1170	4280		
3	2000	6820	9190	3860	4250	1520	2760	2210	3760	1960	1140	10100		
4	3170	11600	8250	3440	7900	4610	2820	1460	3580	2850	1040	8670		
5	4620	40000	7340	1660	7740	4580	3020	1450	3760	1330	1100	6700		
6	1450	22000	6560	2100	6850	4250	1730	1850	2820	1180	1300	6970		
7	1350	13800	6540	3710	11800	3920	1610	2230	3280	1010	1350	2290		
8	1650	9830	2230	1660	8920	3750	2980	2060	1900	1460	2240	3560		
9	1550	7530	2350	1440	4010	1340	3480	2230	1750	1230	1840	4180		
10	1200	6910	4460	1690	5060	1210	3540	2980	2970	1440	1450	2900		
11	1250	2540	4760	2260	7060	2350	3570	1670	3270	2400	1160	2800		
12	1200	6230	6300	1690	6570	3110	2290	1570	3380	2220	1210	2450		
13	1250	5900	4820	1990	6000	3500	1470	2470	3160	1360	1180	2010		
14	1200	3390	5350	2650	5590	6480	1480	6030	2110	1190	1270	1440		
15	1400	3710	2390	2240	5810	21200	2630	6160	1310	1550	1770	1370		
16	1350	2710	3530	2220	2000	17900	2980	5790	1270	1450	1700	1680		
17	1400	1580	5460	2120	2070	10800	3210	4980	2310	1510	1310	1810		
18	1550	1440	4850	2780	9100	10000	3290	2580	2270	1110	1310	1550		
19	1700	3260	4290	1340	8220	9200	2590	4630	2100	1000	1610	1490		
20	1300	3650	4620	2960	10500	7670	1530	11500	2000	955	2280	1130		
21	1450	3790	3350	5860	11100	7390	1590	19100	2460	1010	2770	1180		
22	3000	8520	1460	5030	9770	6570	2740	14500	1220	998	3390	1170		
23	2800	4580	1490	4090	7520	2350	3100	10200	1110	1120	3130	1300		
24	2600	3150	3310	3220	2850	2420	2930	6480	1130	1150	3150	1260		
25	2400	3870	2810	3140	6320	4970	3140	4470	1120	1130	2040	1320		
26	2500	5630	2210	1700	5320	4850	2710	4260	1090	1330	3290	1250		
27	1450	6060	4510	1600	5090	4860	1620	6250	1050	1410	2820	1290		
28	1400	7040	3430	3450	6310	5210	1670	5870	1060	1440	2150	1260		
29	1360	6260	1460	3800	---	4680	3290	7130	982	2030	1880	1100		
30	2500	12800	1320	2270	---	1860	3150	7730	1030	1500	1330	2860		
31	2250	---	4420	1320	---	1690	---	6910	---	1430	1240	---		
TOTAL	56900	225040	151160	84060	177200	170700	80200	162230	64592	44103	55840	82660		
MEAN	1835	7501	4876	2712	6329	5506	2673	5233	2153	1423	1801	2755		
MAX	4620	40000	15700	5860	11800	21200	3980	19100	3760	2850	3390	10100		
MIN	1200	1440	1320	1320	1730	1210	1470	1450	982	955	1040	1100		
(*)	-88	-59	+55	+55	-106	+68	+20	-29	+44	+26	-44	-86		
MEAN†	1747	7442	4931	2767	6223	5574	2693	5204	2197	1449	1757	2669		
CFSM†	.46	1.98	1.31	.73	1.65	1.48	.71	1.38	.58	.38	.47	.71		
IN.‡	.53	2.20	1.51	.85	1.72	1.71	.80	1.59	.65	.44	.54	.79		
CAL YR 1985	TOTAL	1403320	MEAN	3845	MAX	40000	MIN	1100	MEAN†	3841	CFSM†	1.02	IN.‡	13.84
WTR YR 1986	TOTAL	1354685	MEAN	3711	MAX	40000	MIN	955	MEAN†	3700	CFSM†	.98	IN.‡	13.33

* Change in contents, equivalent in cubic feet per second, in Claytor Reservoir; provided by Appalachian Power Company.

† Adjusted for change in contents.

KANAWHA RIVER BASIN

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03176500 NEW RIVER AT GLEN LYN, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1931, 1950, 1952, 1955-56, 1965 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to current year.

WATER TEMPERATURE: October 1964 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 350 microsiemens, Nov. 6, 1968; minimum, 70 microsiemens, Mar. 26, 27, 1979.

WATER TEMPERATURE: Maximum, 30.5°C, June 24, 1983; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 280 microsiemens, Dec. 10; minimum daily, 107 microsiemens, Dec. 1.

WATER TEMPERATURE: Maximum daily, 29.0°C, July 22; minimum, 2.0°C, Dec. 26, Jan. 11, 28.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DEC 18...	1000	6980	130	139	7.40	8.00	4.0	727	2.4	11.8	94	180
JAN 22...	1015	6320	120	133	7.30	7.60	2.0	723	1.6	13.4	102	K8
MAR 25...	1025	7270	180	187	8.20	8.40	10.5	737	1.7	11.2	104	8
MAY 06...	0930	2390	180	190	7.80	8.30	16.0	725	1.1	8.7	93	--
JUL 29...	1015	2050	195	197	8.20	8.40	26.5	722	1.0	7.4	97	92
SEP 02...	1015	1940	200	206	7.80	8.10	20.0	728	2.5	8.0	92	530

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS NONCAR- BONATE (MG/L AS CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY LAB (MG/L AS CAC03)	ALKA- LITY WH WAT TOTAL FIELD MG/L AS CAC03	ALKA- LITY, CARBON- ATE IT-FLD (MG/L - CAC03)	BICAR- BONATE IT-FLD (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
DEC 18...	23	56	4	14	5.1	3.6	1.9	42	50	52	63	11
JAN 22...	K20	56	4	14	5.2	3.6	1.3	43	50	52	63	12
MAR 25...	13	79	21	20	7.1	3.9	1.4	62	58	58	70	14
MAY 06...	K7	80	27	19	7.8	3.8	1.3	62	52	53	64	17
JUL 29...	530	82	19	20	7.9	4.9	1.7	65	64	63	77	23
SEP 02...	420	90	25	22	8.4	5.0	2.0	66	65	65	79	23

KANAWHA RIVER BASIN

03176500 NEW RIVER AT GLEN LYN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
DEC 18...	4.6	<0.10	8.3	69	80	<0.010	1.10	0.030	0.030	0.40	0.060	0.060
JAN 22...	4.4	0.10	8.4	69	80	0.020	0.890	0.030	0.030	0.40	0.040	0.020
MAR 25...	5.7	0.10	3.9	103	91	0.020	1.50	0.020	0.010	<0.20	0.040	0.030
MAY 06...	5.4	<0.10	4.2	105	90	0.010	0.840	0.060	0.050	0.40	0.070	0.060
JUL 29...	5.1	<0.10	6.7	117	110	0.020	1.10	0.040	0.060	0.40	0.070	0.040
SEP 02...	5.9	0.10	6.1	134	110	0.010	1.30	0.010	0.020	0.30	0.090	0.070

DATE	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM DIS- SOLVED (UG/L AS LI)
DEC 18...	0.050	20	<1	30	<0.5	<1	<1	<3	4	100	2	<4
JAN 22...	0.020	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	0.020	20	<1	25	<0.5	2	<1	<3	3	18	<1	<4
MAY 06...	0.050	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	0.050	--	--	--	--	--	--	--	--	--	--	--
SEP 02...	0.010	<10	1	33	<0.5	2	<1	<3	3	20	<5	6

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 18...	14	0.1	<10	16	<1	<1	56	<6	11	12	72
JAN 22...	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	10	<0.1	<10	2	<1	<1	87	<6	8	7	78
MAY 06...	--	--	--	--	--	--	--	--	--	5	71
JUL 29...	--	--	--	--	--	--	--	--	--	14	69
SEP 02...	7	<0.1	<10	1	<1	<1	98	<6	9	16	63

KANAWHA RIVER BASIN

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03176500 NEW RIVER AT GLEN LYN, VA--Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEG. C, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	173	107	145	165	121	170	159	138	195	185	198
2	203	172	109	145	180	160	159	156	150	200	205	205
3	220	130	121	141	185	165	160	159	156	200	210	148
4	195	127	130	165	135	200	175	165	140	175	---	145
5	185	115	130	165	125	150	185	181	140	178	205	160
6	148	117	139	179	130	150	175	181	142	180	210	160
7	163	117	145	185	140	145	180	170	160	180	210	168
8	167	118	150	170	125	150	172	170	160	190	205	185
9	203	117	160	175	135	165	160	170	---	185	200	170
10	209	128	280	180	141	170	160	169	168	188	210	175
11	200	130	140	190	140	185	160	170	175	188	200	195
12	203	122	135	205	142	179	168	175	160	185	215	200
13	210	---	139	170	155	145	170	160	160	175	210	195
14	218	124	140	170	140	115	181	125	158	188	218	200
15	224	140	155	165	150	125	181	119	155	200	225	215
16	217	136	155	160	155	130	175	121	170	200	223	215
17	221	157	160	161	160	145	---	---	178	190	218	223
18	216	161	139	180	190	141	158	118	160	193	203	200
19	216	179	139	180	139	140	175	130	160	200	210	195
20	218	137	140	175	140	140	165	119	160	200	228	190
21	222	117	145	140	124	141	190	120	160	200	205	198
22	210	115	165	130	122	160	198	120	---	200	197	198
23	175	115	175	135	125	170	178	122	180	205	185	200
24	177	145	181	140	141	190	160	140	178	205	183	208
25	179	147	175	141	161	155	160	140	180	200	170	210
26	177	119	179	159	139	155	170	155	184	218	165	200
27	176	116	---	160	150	155	170	140	180	215	180	200
28	198	114	140	165	150	150	181	138	188	205	180	---
29	182	127	170	170	---	162	182	142	198	200	175	200
30	222	120	165	145	---	165	163	120	200	190	190	190
31	197	---	181	165	---	179	---	138	---	200	200	---
MEAN	199	132	153	163	146	155	172	146	166	194	201	191
WTR YR 1986	MEAN	168		MAX	280	MIN	107					

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	15.0	12.0	4.0	4.0	5.0	15.0	26.0	20.0	26.0	28.0	21.0
2	20.0	16.0	12.5	4.5	4.5	5.0	15.0	25.0	22.0	25.0	26.0	20.0
3	20.0	16.0	8.0	5.0	8.0	5.0	14.0	23.0	21.0	24.5	26.5	22.0
4	19.5	14.0	9.0	5.0	8.0	5.0	16.0	19.0	21.0	24.0	---	21.0
5	21.0	15.0	10.0	5.0	8.0	6.0	15.0	23.0	23.0	24.5	27.0	21.0
6	18.0	14.0	9.0	5.0	7.0	7.0	16.0	25.0	23.0	26.0	26.0	21.0
7	16.0	13.0	9.0	6.0	7.0	6.0	15.0	26.5	23.5	27.0	25.0	21.0
8	17.0	13.0	8.0	4.0	6.0	3.0	16.0	27.0	24.0	27.0	25.0	21.0
9	19.0	13.0	9.0	4.0	7.0	4.0	14.0	27.0	---	26.0	26.0	20.0
10	19.0	13.0	9.0	5.0	7.0	7.0	11.0	26.0	23.0	26.0	24.0	---
11	20.0	14.0	9.0	2.0	6.0	10.0	10.0	26.5	23.0	25.0	25.0	23.0
12	21.0	14.5	10.0	3.0	4.0	11.0	12.0	26.0	23.0	25.0	24.0	23.0
13	20.0	---	11.0	5.0	3.0	9.5	13.0	26.0	24.0	25.0	---	22.0
14	21.0	15.0	9.0	5.0	3.0	10.0	13.0	23.0	23.0	25.0	24.0	21.0
15	21.0	15.0	5.0	6.0	3.0	9.0	15.0	23.0	---	27.0	24.5	21.0
16	21.0	14.0	5.0	5.0	3.5	8.5	14.0	24.0	---	27.0	25.0	22.0
17	19.0	15.0	5.0	5.0	5.0	8.0	---	---	25.0	27.0	26.5	21.0
18	18.0	14.0	5.0	6.0	6.0	9.0	20.0	18.0	24.5	27.0	26.0	20.0
19	19.0	15.0	4.5	6.5	6.0	10.0	20.0	19.0	24.0	28.0	25.0	21.0
20	20.0	15.0	5.0	7.0	7.0	11.0	20.0	17.0	24.0	28.5	24.0	21.0
21	19.0	14.5	4.5	4.0	8.0	8.0	21.0	15.5	23.5	28.0	23.0	22.0
22	---	13.0	3.0	6.0	7.0	7.0	20.0	16.0	---	29.0	24.0	22.0
23	18.0	12.0	4.0	7.0	6.0	6.0	18.0	16.5	24.0	28.0	25.0	22.0
24	19.0	11.0	4.0	---	6.0	9.0	19.0	17.0	26.0	28.0	22.5	24.0
25	19.0	11.0	4.0	6.0	5.0	10.0	20.0	18.0	24.0	28.0	23.0	24.5
26	---	13.0	2.0	7.0	4.0	10.0	23.5	18.0	24.0	28.0	24.0	25.0
27	17.5	14.0	---	3.0	4.0	11.0	25.0	17.0	25.0	27.0	25.0	25.0
28	17.0	14.0	4.0	2.0	4.0	12.0	27.0	18.0	25.0	27.0	24.0	---
29	16.0	15.0	4.0	3.0	---	12.0	---	19.0	26.0	27.0	25.0	25.0
30	15.0	13.0	3.0	2.5	---	12.0	---	21.0	26.0	27.0	21.0	25.0
31	15.0	---	3.0	7.0	---	13.0	---	20.0	---	27.0	21.0	---
MEAN	19.0	14.0	6.5	5.0	5.5	8.5	17.0	21.5	23.5	26.5	24.5	22.0
WTR YR 1986	MEAN	16.0		MAX	29.0	MIN	2.0					

03177710 BLUESTONE RIVER AT FALLS MILLS, VA

LOCATION.--Lat 37°16'17", long 81°18'18", Tazewell County, Hydrologic Unit 05050002, on right bank at upstream side of bridge on State Highway 717, 0.3 mi upstream from Brush Fork, and 0.4 mi southeast of Falls Mills.

DRAINAGE AREA.--44.2 mi².

PERIOD OF RECORD.--October 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,310.41 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 22, 26, 27, Jan. 7-10, 13-17, 28-30, and Feb. 14, 15. Records good except those for periods with ice effect, Dec. 22, 26, 27, Jan. 7-10, 13-17, 28-30, and Feb. 14, 15, which are fair. Some diurnal fluctuation caused by discharge from sewage treatment plant 2.3 mi upstream. About 65 percent of water discharged from the treatment plant was diverted from another drainage basin for municipal supply. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 57.6 ft³/s, 17.70 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s, May 7, 1984, gage height, 8.37 ft, from rating curve extended above 670 ft³/s; minimum, 1.0 ft³/s, Jan. 18, 1981, gage height, 0.92 ft, result of freezeup; minimum daily, 3.9 ft³/s, Jan. 19, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 15	0045	*525	*4.81	May 13	1730	468	4.41

Minimum discharge, 8.0 ft³/s, Oct. 15, gage height, 1.03 ft; minimum daily, 11 ft³/s, Oct. 18-20, 28-31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	12	206	27	44	66	36	29	32	71	16	58
2	27	18	140	24	123	64	36	28	28	92	17	67
3	18	14	98	26	224	61	34	24	26	45	17	53
4	17	202	75	24	255	58	33	23	24	34	16	38
5	20	200	70	22	181	54	32	23	25	29	23	37
6	18	137	70	20	138	54	31	23	27	26	18	30
7	15	97	58	15	314	51	33	21	37	25	16	25
8	13	67	51	13	205	47	29	78	30	25	15	23
9	12	50	46	12	149	46	31	54	23	32	14	21
10	12	42	43	19	116	46	31	43	23	54	13	19
11	12	36	41	22	102	53	29	38	22	52	19	18
12	13	31	46	18	80	50	29	45	18	33	19	26
13	12	27	52	15	69	56	27	297	16	47	16	21
14	12	24	58	14	54	214	26	285	15	49	14	19
15	20	23	52	13	40	364	26	197	14	32	13	18
16	17	20	49	12	67	217	28	127	14	27	13	17
17	12	19	45	14	127	166	30	94	14	23	20	16
18	11	18	42	17	226	129	28	79	14	21	33	16
19	11	17	37	43	251	109	26	120	13	19	24	44
20	11	16	37	42	308	91	25	196	13	18	23	26
21	21	16	33	37	210	79	30	128	13	20	22	25
22	21	37	28	46	162	69	30	96	12	19	18	20
23	15	29	31	51	127	63	27	76	12	26	23	20
24	13	24	30	45	107	58	25	64	17	26	25	22
25	12	22	28	41	94	54	24	58	15	30	18	19
26	12	23	22	45	83	51	42	51	12	23	16	17
27	12	43	25	42	86	54	37	56	13	20	67	18
28	11	116	26	13	74	47	36	50	12	19	92	19
29	11	252	24	16	---	45	35	45	12	18	40	17
30	11	301	24	22	---	42	30	40	17	17	27	16
31	11	---	24	31	---	39	---	36	---	16	21	---
TOTAL	448	1933	1611	801	4016	2597	916	2524	563	988	728	785
MEAN	14.5	64.4	52.0	25.8	143	83.8	30.5	81.4	18.8	31.9	23.5	26.2
MAX	27	301	206	51	314	364	42	297	37	92	92	67
MIN	11	12	22	12	40	39	24	21	12	16	13	16
(*)	3.50	4.22	4.40	3.93	4.45	4.70	3.98	4.48	3.64	3.96	3.60	3.86
CAL YR 1985	TOTAL	18521.2		MEAN	50.7	MAX	498	MIN	9.2	(*)	4.20	
WTR YR 1986	TOTAL	17910		MEAN	49.1	MAX	364	MIN	11	(*)	4.06	

* Discharge from sewage treatment plant, equivalent in cubic feet per second; provided by the Sanitary Board of Bluefield.

BIG SANDY RIVER BASIN

325

03207500 LEVISA FORK NEAR GRUNDY, VA

LOCATION.--Lat 37°17'52", long 82°07'34", Buchanan County, Hydrologic Unit 05070202, on right bank 200 ft upstream from Six and Twenty Mile Creek, 2.4 mi northwest of Grundy, 2.5 mi downstream from Slate Creek, and 3.0 mi upstream from Poplar Creek.

DRAINAGE AREA.--235 mi², includes that of Six and Twenty Mile Creek.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1941 to September 1974, October 1985 to September 1986. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1305: 1947(M), 1949(M). WSP 1505: 1944-46(M), 1950(M), 1953(M), 1955(P), 1956(M).

GAGE.--Water-stage recorder. Datum of gage is 984.47 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 20, 1949, nonrecording gage at bridge 1,000 ft downstream at datum 1.70 ft higher. Aug. 20, 1949, to July 28, 1958, water-stage recorder at site 1,050 ft downstream at datum 1.70 ft higher, July 29, 1958, to Aug. 1, 1961, at site 1,020 ft downstream at datum 0.30 ft lower, and Aug. 2, 1961, to Sept. 30, 1974, at present site at datum 4.00 ft higher.

REMARKS.--Estimated daily discharges: Oct. 1-22, Jan. 8-15, 27-31, Feb. 4-19, Feb. 25 to Mar. 4, and May 17 to June 5. Records good except those for periods of doubtful or no gage-height record, Oct. 1-22, Feb. 4-19, Feb. 25 to Mar. 4, and May 17 to June 5, and periods with ice effect, Jan. 8-15, 27-31, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--34 years, 285 ft³/s, 16.47 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,200 ft³/s, Jan. 29, 1957, gage height, 19.06 ft, site and datum then in use, from rating curve extended above 4,400 ft³/s on basis of slope-area and contracted-opening measurements of peak flow; minimum observed, 0.2 ft³/s, July 30, 1944; minimum gage height, 0.17 ft, Sept. 27-29, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of 16.0 ft, site and datum in use prior to July 29, 1958, discharge, 21,800 ft³/s, from information by local residents. Flood of Apr. 4, 1977, reached a stage of 28.87 ft, present datum, discharge, 52,000 ft³/s. Flood of May 7, 1984, reached a stage of 23.40 ft, present datum, discharge, 32,800 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 13	1915	*5,550	*11.08	No other peak equal to or greater than base discharge.			

Minimum daily discharge, 12 ft³/s, Oct. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	15	848	119	244	450	144	104	180	40	29	42
2	22	89	622	103	700	410	137	100	160	162	28	64
3	24	85	432	120	1360	380	132	91	140	113	27	57
4	24	385	327	121	1800	350	126	84	120	57	25	128
5	25	663	277	125	900	329	125	80	106	45	23	117
6	22	472	264	109	650	280	131	78	97	39	23	71
7	18	286	217	115	1700	263	166	79	136	35	22	49
8	15	166	194	54	1100	224	141	281	225	33	22	38
9	14	110	173	60	700	223	137	237	196	33	21	31
10	13	87	151	70	500	216	136	179	135	119	23	28
11	13	72	142	78	400	249	134	147	121	413	73	26
12	12	59	194	85	330	246	131	580	116	336	73	65
13	13	50	252	80	270	297	124	3530	93	233	36	51
14	14	48	353	66	260	543	113	2360	78	322	29	34
15	17	44	371	70	250	1860	114	985	69	150	24	27
16	16	45	323	63	240	1250	122	687	61	104	23	25
17	15	60	271	73	1000	824	128	769	57	77	24	24
18	14	48	226	76	2700	600	118	650	52	60	23	22
19	14	40	157	130	1570	502	103	400	48	55	32	36
20	13	39	165	220	1980	402	99	550	46	50	28	60
21	45	38	152	198	1130	325	136	450	45	189	22	51
22	44	176	107	272	858	281	134	400	43	83	22	34
23	29	296	158	372	915	258	125	320	39	57	27	35
24	22	202	131	353	794	236	116	280	44	49	119	156
25	20	138	121	311	700	214	115	250	52	46	58	80
26	18	116	62	324	600	200	121	220	39	43	32	52
27	17	510	107	230	550	202	140	230	38	75	26	145
28	16	1180	107	160	500	182	129	240	38	43	87	123
29	14	2010	90	210	---	168	122	280	43	38	71	84
30	15	1030	72	200	---	158	110	230	44	34	40	58
31	14	---	92	170	---	150	---	200	---	29	31	---
TOTAL	585	8559	7158	4737	24701	12272	3809	15071	2661	3162	1143	1813
MEAN	18.9	285	231	153	882	396	127	486	88.7	102	36.9	60.4
MAX	45	2010	848	372	2700	1860	166	3530	225	413	119	156
MIN	12	15	62	54	240	150	99	78	38	29	21	22

WTR YR 1986 TOTAL 85671 MEAN 235 MAX 3530 MIN 12

BIG SANDY RIVER BASIN

03207500 LEVISA FORK NEAR GRUNDY, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1985 to September 1986 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATION: Maximum daily mean, 1,220 mg/L, May 13; minimum daily mean, 1 mg/L, Mar. 23-25, June 26, 27.

SEDIMENT LOAD: Maximum daily, 11,800 tons, May 13; minimum daily, 0.10 ton, June 27.

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16	.56	8	.32	90	206	12	3.9	48	32	8	9.7
2	12	.71	80	19	33	55	10	2.8	120	227	6	6.6
3	16	1.0	120	28	17	20	10	3.2	453	1930	6	6.2
4	12	.78	979	1270	11	9.7	9	2.9	370	1800	5	4.7
5	12	.81	351	660	10	7.5	8	2.7	53	129	17	15
6	11	.65	65	83	7	5.0	6	1.8	177	311	8	6.0
7	10	.49	26	20	6	3.5	3	.93	779	3580	6	4.3
8	9	.36	12	5.4	6	3.1	2	.29	255	757	8	4.8
9	9	.34	9	2.7	3	1.4	3	.49	135	255	7	4.2
10	9	.32	8	1.9	3	1.2	3	.57	62	84	4	2.3
11	9	.32	8	1.6	6	2.3	4	.84	48	52	6	4.0
12	9	.29	8	1.2	10	5.2	5	1.1	19	17	9	6.0
13	9	.32	7	.94	12	8.2	24	5.2	34	25	100	80
14	11	.42	7	.91	6	5.7	15	2.7	35	25	170	302
15	10	.46	5	.59	8	8.0	7	1.3	16	11	338	1730
16	9	.39	7	.85	10	8.7	6	1.0	60	39	137	462
17	7	.28	9	1.5	18	13	20	3.9	864	2330	49	109
18	11	.42	8	1.0	33	20	27	5.5	870	6340	14	23
19	10	.38	6	.65	14	5.9	26	9.1	670	2840	5	6.8
20	16	.56	5	.53	5	2.2	27	16	585	3130	2	2.2
21	32	3.9	4	.41	5	2.1	13	6.9	140	427	3	2.6
22	21	2.5	45	25	9	2.6	18	13	50	116	3	2.3
23	13	1.0	14	11	6	2.6	29	29	45	111	1	.70
24	14	.83	8	4.4	5	1.8	10	9.5	33	71	1	.64
25	11	.59	7	2.6	6	2.0	6	5.0	28	53	1	.58
26	12	.58	6	1.9	5	.84	6	5.2	14	23	2	1.1
27	9	.41	564	960	7	2.0	5	3.1	15	22	3	1.6
28	8	.35	1020	4030	6	1.7	6	2.6	7	9.5	4	2.0
29	9	.34	652	3540	5	1.2	10	5.7	---	---	5	2.3
30	8	.32	150	417	10	1.9	10	5.4	---	---	3	1.3
31	7	.26	---	---	13	3.2	7	3.2	---	---	3	1.2
TOTAL	---	20.94	---	11092.40	---	413.54	---	154.82	---	24746.5	---	2805.12

BIG SANDY RIVER BASIN

03207800 LEVISA FORK AT BIG ROCK, VA

LOCATION.--Lat 37°21'13", long 82°11'45", Buchanan County, Hydrologic Unit 05070202, on left bank at Big Rock, 2,000 ft downstream from Rocklick Creek, and 2,500 ft downstream from bridge on State Highway 645.

DRAINAGE AREA.--297 mi².

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 866.37 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 8-15, 27-31, and Sept. 20-30. Records good. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--19 years, 372 ft³/s, 17.01 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,000 ft³/s, Apr. 4, 1977, gage height, 27.38 ft, from rating curve extended above 7,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 5.0 ft³/s, Oct. 1, 13, 14, 17, 18, 19, 20, 1969; minimum gage height, 3.17 ft, Sept. 25, 26, 1984, Oct. 12, 1985.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 23.0 ft, information from local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 13	1900	*5,040	*9.18	No other peak equal to or greater than base discharge.			

Minimum discharge, 18 ft³/s, Oct. 1, 12, 20; minimum gage height, 3.17 ft, Oct. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	23	874	138	256	535	187	125	220	78	44	76
2	35	91	656	120	682	492	177	122	193	205	42	108
3	38	107	464	136	1340	461	169	115	173	170	42	93
4	38	409	353	138	1840	410	161	108	152	90	38	169
5	38	740	305	140	1090	368	153	105	139	69	34	182
6	39	534	290	121	764	357	157	104	133	60	34	109
7	31	312	242	131	1930	336	207	102	170	53	32	77
8	24	188	222	65	1260	286	179	301	287	50	32	60
9	21	130	202	70	792	282	171	276	265	60	30	48
10	20	104	181	80	594	271	165	207	191	166	31	43
11	20	89	170	90	497	307	158	171	161	485	114	38
12	19	76	210	100	387	304	151	560	158	450	115	82
13	21	67	275	90	327	350	145	3340	130	285	60	82
14	22	63	384	80	306	605	136	2400	115	410	45	53
15	26	59	393	85	305	2000	134	1080	104	209	37	43
16	25	60	344	80	296	1510	146	765	96	139	33	38
17	24	86	293	86	1390	1000	152	879	87	110	39	33
18	22	72	245	87	2960	734	141	782	82	89	40	26
19	20	62	184	128	1870	618	125	539	75	78	45	56
20	20	59	189	222	2130	502	122	656	73	75	43	80
21	69	57	175	196	1400	409	165	590	71	263	33	70
22	68	213	130	266	1090	354	162	482	67	126	32	48
23	48	335	182	373	1210	324	148	400	64	87	35	50
24	36	228	156	356	1040	298	139	344	64	74	175	220
25	31	164	145	319	814	267	136	309	77	71	91	100
26	27	140	91	340	667	253	140	274	62	72	52	75
27	27	600	132	300	665	257	164	290	58	138	41	200
28	25	1390	131	190	595	236	149	299	60	79	92	180
29	22	2230	110	250	---	215	142	351	59	63	106	120
30	22	1080	93	240	---	204	129	292	69	55	61	80
31	22	---	111	200	---	195	---	254	---	48	45	---
TOTAL	921	9768	7932	5217	28497	14740	4610	16622	3655	4407	1693	2639
MEAN	29.7	326	256	168	1018	475	154	536	122	142	54.6	88.0
MAX	69	2230	874	373	2960	2000	207	3340	287	485	175	220
MIN	19	23	91	65	256	195	122	102	58	48	30	26
CFSM	.10	1.10	.86	.57	3.43	1.60	.52	1.80	.41	.48	.18	.30
IN.	.12	1.22	.99	.65	3.57	1.85	.58	2.08	.46	.55	.21	.33
CAL YR 1985	TOTAL	89810	MEAN	246	MAX	4150	MIN	19	CFSM	.83	IN.	11.25
WTR YR 1986	TOTAL	100701	MEAN	276	MAX	3340	MIN	19	CFSM	.93	IN.	12.61

BIG SANDY RIVER BASIN

329

03208000 LEVISA FORK BELOW FISHTRAP DAM, NEAR MILLARD, KY

LOCATION.--Lat 37°25'33", long 82°24'45", Pike County, Hydrologic Unit 05070202, on right bank, 0.4 mi downstream from Fishtrap Dam, 1.1 mi upstream from Lower Pompey Branch, 1.9 mi northeast of Millard, 2.4 mi upstream from confluence with Russell Fork, and at mile 129.6.

DRAINAGE AREA.--392 mi².

PERIOD OF RECORD.--February 1938 to current year. Prior to April 1968, published as "Levisa Fork at Fishtrap."

REVISED RECORDS.--WSP 953. Drainage area. WSP 1335: 1938(M), 1939, 1940(M), 1942-43, 1944-45(M), 1946, 1948.

GAGE.--Water-stage recorder. Datum of gage is 600.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Apr. 19, 1968, nonrecording gage at site 3.7 mi upstream at different datum. Apr. 19, 1968, to June 18, 1973, water-stage recorder at site 1.0 mi downstream at datum 59.96 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Fishtrap Lake beginning October 1968. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--48 years, 474 ft³/s, 16.42 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft³/s, Jan. 29, 1957, gage height, 33.9 ft, from floodmark, site and datum then in use, from rating curve extended above 15,000 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 107.55 ft, Apr. 5, 1977, from floodmark, backwater from Russell Fork; no flow Apr. 5, 1977, all gates on Fishtrap Dam closed; minimum observed discharge prior to Fishtrap Lake, 0.1 ft³/s, Nov. 8, 9, 1939, site then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,170 ft³/s, Feb. 20, gage height, 79.48 ft; minimum daily, 29 ft³/s, Aug 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	160	227	919	98	481	755	104	66	210	71	69	169
2	160	223	3420	164	733	721	69	55	210	76	43	236
3	161	348	3490	298	1400	690	71	62	201	246	44	147
4	162	608	1550	246	2330	610	72	65	216	234	46	122
5	240	1280	761	193	2170	614	73	62	215	140	47	223
6	288	1340	588	208	1470	437	84	58	213	119	47	185
7	287	913	505	186	1940	507	82	64	116	71	51	106
8	285	589	485	151	2010	468	82	65	248	70	53	105
9	284	372	446	96	1420	396	84	64	474	71	48	73
10	282	263	362	78	1050	395	86	64	318	76	43	62
11	282	303	310	186	895	446	86	64	159	497	43	64
12	212	342	335	162	687	429	86	63	156	629	43	70
13	157	352	455	220	543	465	84	66	155	448	43	70
14	157	374	617	146	456	642	78	651	155	481	43	70
15	157	373	729	146	464	1780	62	1360	155	223	43	274
16	157	263	683	146	467	2370	58	623	126	158	43	337
17	158	208	533	134	396	1620	59	641	93	147	45	285
18	157	256	465	135	1950	1100	60	954	122	46	45	285
19	157	284	306	170	3870	956	61	730	123	44	44	285
20	203	264	248	168	3930	784	60	774	93	44	44	285
21	397	268	233	323	3140	666	61	785	65	43	44	284
22	397	444	211	365	1880	527	58	695	65	43	44	280
23	254	563	300	508	1700	452	64	577	65	69	43	282
24	251	627	291	631	1560	508	65	447	65	82	44	472
25	251	623	288	548	1230	423	65	312	65	95	43	558
26	248	498	143	548	990	331	65	420	70	110	40	358
27	205	1050	113	592	994	328	65	418	71	116	29	272
28	153	1510	245	299	927	333	66	397	71	116	120	378
29	178	101	252	328	---	331	71	415	71	116	123	459
30	235	88	139	455	---	330	73	417	70	115	84	313
31	229	---	120	435	---	239	---	345	---	117	83	---
TOTAL	6904	14954	19542	8363	41083	20653	2154	11779	4436	4913	1624	7109
MEAN	223	498	630	270	1467	666	71.8	380	148	158	52.4	237
MAX	397	1510	3490	631	3930	2370	104	1360	474	629	123	558
MIN	153	88	113	78	396	239	58	55	65	43	29	62
CAL YR 1985	TOTAL	136935		MEAN	375	MAX	4100	MIN	45			
WTR YR 1986	TOTAL	143514		MEAN	393	MAX	3930	MIN	29			

BIG SANDY RIVER BASIN

03208500 RUSSELL FORK AT HAYSI, VA

LOCATION.--Lat 37°12'25", long 82°17'45", Dickenson County, Hydrologic Unit 05070202, on right bank 180 ft downstream from bridge on State Highway 63, at Haysi, and 700 ft downstream from McClure River.

DRAINAGE AREA.--286 mi².

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305.

REVISED RECORDS.--WSP 1003: 1926-43. WSP 1385: 1928(M), 1929, 1933(M), 1935(M), 1937-38(M).

GAGE.--Water-stage recorder. Datum of gage is 1,237.61 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 21, 1939, nonrecording gage at highway bridge 180 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 25, 26, Dec. 8-12, Jan. 7-17, 27-31, July 31 to Aug. 7, and Aug. 15-17, 21-23. Records good except those for periods of doubtful or no gage-height record, Nov. 25, 26, Dec. 8-12, July 31 to Aug. 7, and Aug. 15-17, 21-23, and periods with ice effect, Jan. 7-17, 27-31, which are fair. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years, 328 ft³/s, 15.57 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,000 ft³/s, Apr. 4, 1977, gage height, 28.24 ft, from rating curve extended above 32,000 ft³/s on basis of slope-area measurement of peak flow; minimum observed, 0.2 ft³/s, June 27, 28, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 18	0630	*5,670	*7.52	No other peak equal to or greater than base discharge.			

Minimum discharge, 13 ft³/s, Aug. 10, gage height, 1.71 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	20	762	94	173	451	152	74	195	39	19	48
2	25	39	538	101	516	412	147	73	161	280	18	96
3	31	63	354	86	1050	373	142	66	137	147	18	68
4	27	189	254	87	1550	318	132	62	116	76	16	334
5	26	462	208	85	902	275	126	61	105	51	15	200
6	27	293	188	101	647	259	124	62	100	41	15	89
7	25	186	148	65	1640	236	137	63	111	34	14	54
8	20	123	130	40	1060	194	127	92	308	30	14	40
9	18	84	120	45	645	188	124	82	345	30	15	32
10	16	65	110	50	463	181	119	66	198	86	14	28
11	15	55	100	54	379	197	113	63	155	163	40	23
12	15	48	120	56	278	185	110	130	130	184	73	56
13	16	42	144	60	225	223	107	1320	109	101	40	80
14	17	41	181	50	199	551	102	1300	91	86	26	41
15	19	38	184	55	241	1920	99	544	80	59	18	31
16	22	39	183	45	211	1340	103	325	71	47	15	27
17	32	52	165	50	1630	852	105	532	63	47	17	23
18	22	46	145	58	4310	600	100	620	58	39	33	21
19	19	39	132	74	2190	503	88	349	51	33	113	25
20	18	37	142	132	2120	389	85	404	49	30	59	36
21	25	35	141	136	1140	305	113	412	46	48	35	37
22	35	133	185	153	850	261	115	302	42	32	25	36
23	30	230	138	222	867	243	101	237	40	26	28	33
24	25	150	135	226	762	223	89	223	39	24	96	106
25	23	100	123	209	601	201	86	229	40	41	56	75
26	21	70	123	210	489	189	86	247	35	50	31	51
27	20	288	140	160	511	196	87	270	32	86	25	376
28	21	919	110	120	489	181	83	345	31	66	55	160
29	19	1750	108	160	---	166	81	430	44	39	56	100
30	19	922	123	150	---	159	76	314	44	33	34	64
31	19	---	108	120	---	158	---	246	---	25	25	---
TOTAL	683	6558	5742	3254	26138	11929	3259	9543	3026	2073	1058	2390
MEAN	22.0	219	185	105	934	385	109	308	101	66.9	34.1	79.7
MAX	35	1750	762	226	4310	1920	152	1320	345	280	113	376
MIN	15	20	100	40	173	158	76	61	31	24	14	21
CFSM	.08	.77	.65	.37	3.27	1.35	.38	1.08	.35	.23	.12	.28
IN.	.09	.85	.75	.42	3.40	1.55	.42	1.24	.39	.27	.14	.31
CAL YR 1985	TOTAL	74981	MEAN	205	MAX	4690	MIN	15	CFSM	.72	IN.	9.75
WTR YR 1986	TOTAL	75653	MEAN	207	MAX	4310	MIN	14	CFSM	.72	IN.	9.84

BIG SANDY RIVER BASIN

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03208680 NORTH FORK POUND RIVER LAKE AT POUND, VA

LOCATION.--Lat 37°07'27", long 82°37'52", Wise County, Hydrologic Unit 05070202, in control tower of North Fork Pound Dam at Pound, 1,200 ft upstream from Stacy Branch, and 1.2 mi upstream from South Fork Pound River.

DRAINAGE AREA.--17.2 mi².

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Aug. 29, 1966, nonrecording gage at same site and datum.

REMARKS.--Lake is formed by rockfill dam. Spillway with crest at elevation 1,644.0 ft is in a saddle 350 ft southeast of dam. Except during major floods, all discharge will be through a diversion tunnel, the invert of the entrance of which is at elevation 1,556.5 ft. Storage began in September 1964 during construction with peak discharge affected thereafter; initial filling for regular operation started July 13, 1966. Total capacity at elevation 1,644.0 ft, top of spillway, is 11,290 acre-ft of which 8,110 acre-ft is flood-control storage for summer operations between elevations 1,611.0 ft, top of summer conservation pool, and 1,644.0 ft; an additional 1,290 acre-ft is available for flood control during the period December to March between elevations 1,601.0 ft, top of winter conservation pool, and 1,611.0 ft; contents at established minimum pool, 1,601.0 ft, is 1,900 acre-ft; dead storage is 7 acre-ft below elevation 1,556.5 ft. Figures given herein represent total contents. Lake is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite elevation telemeter at station.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,920 acre-ft, Apr. 8, 1977, elevation, 1,629.41 ft; minimum (after initial filling for regular operation), 1,660 acre-ft, Jan. 23, 1969, elevation, 1,598.62 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,350 acre-ft, June 14, elevation, 1,612.03 ft; minimum, 1,980 acre-ft, Mar. 5, elevation, 1,601.75 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,609.03	2,891	-
Oct. 31.....	1,607.16	2,631	-260
Nov. 30.....	1,609.80	3,003	+372
Dec. 31.....	1,601.91	1,992	-1,011
CAL YR 1985.....	-	-	-148
Jan. 31.....	1,602.00	2,002	+10
Feb. 28.....	1,602.25	2,030	+28
Mar. 31.....	1,602.15	2,019	-11
Apr. 30.....	1,604.81	2,330	+311
May 31.....	1,610.92	3,172	+842
June 30.....	1,611.69	3,292	+120
July 31.....	1,611.18	3,212	-80
Aug. 31.....	1,610.23	3,067	-145
Sept. 30.....	1,609.85	3,011	-56
WTR YR 1986.....	-	-	+120

03208700 NORTH FORK POUND RIVER AT POUND, VA

LOCATION.--Lat 37°07'32", long 82°37'36", Wise County, Hydrologic Unit 05070202, on right bank at Pound, 700 ft downstream from Stacy Branch, 1,600 ft downstream from North Fork Pound River Dam, and 0.9 mi upstream from confluence with South Fork.

DRAINAGE AREA.--18.5 mi².

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,500.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1965, on left bank at datum 44.88 ft higher.

REMARKS.--Estimated daily discharges: Oct. 22 to Nov. 4. Records good except for period of doubtful gage-height record, Oct. 22 to Nov. 4, which is fair. Flow regulated since August 1966 by North Fork Pound River Lake (station 03208680). U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--25 years, 28.1 ft³/s, 20.63 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,480 ft³/s, Mar. 12, 1963, gage height, 61.58 ft, present datum, from rating curve extended above 650 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.02 ft³/s, Sept. 16, 1964, Aug. 11, 12, Oct. 28, Nov. 10, 1969; minimum daily, 0.04 ft³/s, Sept. 15, 1964, Aug. 11, 1969; minimum gage height, 47.66 ft, Sept. 16, 1964, present datum. Maximum discharge since construction of North Fork Pound River Dam in 1966, 1,230 ft³/s, Sept. 14, 1982, gage height, 55.79 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 63.9 ft, present datum, from U.S. Army Corps of Engineers floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 314 ft³/s, Feb. 20, gage height, 51.31 ft; minimum, 0.34 ft³/s, Sept. 9, gage height, 48.02 ft; minimum daily, 2.6 ft³/s, Sept. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	11	99	8.7	20	33	6.4	3.8	4.2	3.8	3.6	4.1
2	4.2	9.0	249	8.8	25	33	3.6	3.8	3.8	4.3	3.6	4.2
3	4.2	9.0	197	9.1	113	52	3.5	3.8	3.5	3.8	3.6	3.9
4	4.2	15	101	8.8	170	54	3.9	3.7	3.6	3.6	3.4	4.2
5	4.4	50	26	8.7	146	33	4.6	3.6	3.7	3.6	3.4	3.2
6	4.3	95	17	11	97	22	4.6	3.6	3.7	3.5	3.5	3.3
7	4.2	101	16	12	122	21	4.7	3.6	3.6	3.4	3.8	3.2
8	4.2	72	16	12	112	21	4.6	3.8	7.7	3.5	3.9	2.6
9	4.2	33	11	12	48	21	4.6	3.6	7.2	3.9	4.0	2.9
10	4.2	33	7.3	12	48	21	4.7	3.6	5.2	4.3	4.0	3.0
11	4.2	25	7.3	12	44	23	4.6	3.8	4.6	4.7	4.2	3.0
12	4.4	14	7.4	11	21	41	4.6	4.0	4.2	4.4	3.8	3.2
13	4.5	14	9.1	11	14	40	4.5	5.2	3.9	4.0	3.8	3.2
14	4.8	13	11	11	14	28	4.2	5.2	3.7	3.7	3.7	3.1
15	4.9	12	11	11	14	32	3.6	4.5	3.6	3.8	3.6	3.2
16	4.9	12	25	11	14	59	3.6	4.2	3.5	3.6	3.6	3.2
17	4.9	12	39	8.9	104	146	3.6	4.1	3.4	3.6	3.8	3.2
18	4.8	12	39	5.9	181	79	3.5	4.2	3.4	3.6	3.8	3.3
19	4.5	16	21	6.0	213	50	3.4	6.3	3.6	3.6	4.4	3.3
20	4.4	17	11	6.2	220	32	3.5	16	3.8	3.6	3.8	3.2
21	6.9	17	8.3	6.1	205	22	4.3	8.4	3.8	3.6	3.6	3.2
22	6.0	20	8.3	6.6	160	12	4.6	5.9	3.7	3.6	3.5	3.1
23	6.0	20	8.3	12	100	12	3.9	5.0	3.8	3.6	3.6	3.4
24	6.0	19	8.3	35	76	12	3.5	4.7	3.8	3.6	3.6	3.6
25	5.4	23	8.3	20	62	12	3.4	4.3	3.7	3.6	3.6	3.4
26	5.0	25	8.3	20	28	12	3.3	4.1	3.6	3.6	3.6	3.2
27	5.0	47	8.1	20	48	12	3.2	6.0	3.6	3.6	3.6	3.6
28	6.0	92	8.0	19	67	12	3.2	9.7	3.6	3.6	3.7	3.3
29	8.0	95	8.0	19	---	12	3.2	8.2	3.8	3.6	3.7	3.1
30	11	9.8	8.0	19	---	12	3.7	6.1	3.6	3.5	3.6	3.1
31	13	---	8.1	19	---	12	---	4.9	---	3.6	3.6	---
TOTAL	166.9	942.8	1010.1	392.8	2486	983	120.6	161.7	120.9	115.8	115.0	99.5
MEAN	5.38	31.4	32.6	12.7	88.8	31.7	4.02	5.22	4.03	3.74	3.71	3.32
MAX	13	101	249	35	220	146	6.4	16	7.7	4.7	4.4	4.2
MIN	4.2	9.0	7.3	5.9	14	12	3.2	3.6	3.4	3.4	3.4	2.6
(*)	-4	+6	-16	.00	+1	.00	+5	+14	+2	-1	-2	-1
MEAN†	1.38	37.4	16.6	12.7	89.8	31.7	9.02	19.2	6.03	2.74	1.71	2.32
CFSM†	.07	2.02	.90	.69	4.85	1.71	.49	1.04	.33	.15	.09	.13
IN.†	.09	2.26	1.03	.79	5.06	1.98	.54	1.20	.36	.17	.11	.14
CAL YR 1985	TOTAL	6944.3	MEAN	19.0	MAX	249	MIN	3.8	MEAN†	19.0	CFSM†	1.03
WTR YR 1986	TOTAL	6715.1	MEAN	18.4	MAX	249	MIN	2.6	MEAN†	18.4	CFSM†	.99
											IN.†	13.96
												13.50

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake; provided by U.S. Army Corps of Engineers.

† Adjusted for change in contents.

03208950 CRANES NEST RIVER NEAR CLINTWOOD, VA

LOCATION.--Lat 37°07'26", long 82°26'20", Dickenson County, Hydrologic Unit 05070202, on left bank on State Highway 649, 500 ft downstream from Clinchfield Railway bridge, 1,000 ft downstream from Rush Creek, and 2.1 mi southeast of Clintwood.

DRAINAGE AREA.--66.5 mi².

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR VA-77-1: 1967(M).

GAGE.--Water-stage recorder. Datum of gage is 1,440.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 7-17, 27-30. Records good except those for periods with ice effect, Jan. 7-17, 27-30, which are fair. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--23 years, 79.1 ft³/s, 16.15 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s, Apr. 4, 1977, gage height, 26.09 ft, from flood-mark, from rating curve extended above 3,100 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.48 ft³/s, Sept. 28, 1964, gage height, 0.91 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 20.0 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 18	0515	*1,420	*8.06	No other peak equal to or greater than base discharge.			

Minimum discharge, 3.6 ft³/s, Aug. 5, 6, gage height, 1.18 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	8.8	132	29	45	132	38	21	33	13	9.1	18
2	16	32	108	24	107	112	37	19	27	31	5.6	21
3	13	16	73	25	200	100	37	15	25	19	4.8	15
4	12	28	58	21	240	84	34	14	23	13	4.4	22
5	11	95	51	19	168	74	33	14	18	8.3	3.9	28
6	8.3	58	46	17	160	71	32	15	19	7.3	7.2	15
7	6.9	36	36	14	423	65	36	18	22	6.8	5.1	11
8	9.1	25	32	9.0	194	57	32	19	85	6.2	4.5	8.9
9	8.0	17	29	10	126	55	30	15	50	8.2	6.9	8.0
10	5.5	14	27	12	93	51	30	16	33	31	4.9	7.3
11	8.3	12	28	13	80	58	28	14	26	42	38	10
12	6.3	11	34	14	65	55	27	44	20	25	23	44
13	5.4	13	41	13	53	76	27	56	18	16	10	29
14	6.2	10	47	12	64	180	26	55	18	17	7.9	17
15	6.3	12	41	13	149	364	25	39	17	12	6.3	14
16	9.6	9.7	39	10	94	243	26	40	16	14	5.7	13
17	12	15	37	12	519	170	26	58	14	11	5.8	8.6
18	11	12	35	18	918	129	25	44	10	8.3	11	6.9
19	11	10	31	25	400	114	23	38	9.1	10	59	9.3
20	8.8	11	47	32	343	91	23	42	9.0	7.0	48	8.9
21	8.4	9.4	33	21	222	76	35	36	12	6.0	22	10
22	20	56	20	36	188	66	30	29	8.1	5.4	15	7.1
23	14	55	28	47	186	63	23	25	7.3	4.9	15	6.5
24	13	33	28	40	163	58	21	34	7.8	4.6	15	21
25	10	24	27	37	136	51	23	37	7.6	9.6	13	14
26	7.8	23	20	37	116	50	25	35	6.4	8.6	11	9.0
27	7.2	70	26	33	147	51	24	91	6.1	25	11	8.4
28	6.8	220	21	27	150	47	23	100	8.1	14	15	9.3
29	6.6	325	19	32	---	44	23	79	24	8.7	11	7.6
30	10	175	15	30	---	43	21	57	14	12	7.4	6.2
31	12	---	22	32	---	40	---	44	---	9.9	6.2	---
TOTAL	295.6	1435.9	1231	714.0	5749	2870	843	1163	593.5	414.8	412.7	414.0
MEAN	9.54	47.9	39.7	23.0	205	92.6	28.1	37.5	19.8	13.4	13.3	13.8
MAX	20	325	132	47	918	364	38	100	85	42	59	44
MIN	5.1	8.8	15	9.0	45	40	21	14	6.1	4.6	3.9	6.2
CFSM	.14	.72	.60	.35	3.08	1.39	.42	.56	.30	.20	.20	.21
IN.	.17	.80	.69	.40	3.22	1.61	.47	.65	.33	.23	.23	.23
CAL YR 1985	TOTAL	17239.9	MEAN	47.2	MAX	924	MIN	5.1	CFSM	.71	IN.	9.64
WTR YR 1986	TOTAL	16136.5	MEAN	44.2	MAX	918	MIN	3.9	CFSM	.66	IN.	9.03

BIG SANDY RIVER BASIN

03208990 JOHN W. FLANNAGAN RESERVOIR NEAR HAYSI, VA

LOCATION.--Lat 37°14'00", long 82°20'56", Dickenson County, Hydrologic Unit 05070202, in control tower of John W. Flannagan Dam on Pound River, 1.3 mi upstream from Blacklog Branch, and 3.7 mi northwest of Haysi.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Mar. 31, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by rockfill dam. Spillway with crest at elevation 1,410.0 ft is in a saddle 0.3 mi upstream from dam and is equipped with 6 radial gates 36 ft high by 42 ft wide. Except during major floods, all discharge will be through a diversion tunnel, the invert of the entrance of which is at elevation 1,230.0 ft. Storage began in September 1961 during construction with peak discharge affected thereafter; initial filling for regular operations started in March 1965. Total capacity at elevation 1,446.0 ft, top of gates, is 145,700 acre-ft of which 78,600 acre-ft is controlled flood storage for summer operations between elevations 1,396.0 ft, top of summer conservation pool, and 1,446.0 ft; an additional 16,500 acre-ft is available for flood control during the period December to March between elevations 1,380.0 ft, top of winter conservation pool, and 1,396.0 ft; contents at established minimum pool, 1,314.0 ft, is 12,000 acre-ft; dead storage is 300 acre-ft below elevation 1,230.0 ft. Figures given herein represent total contents. Reservoir is used for flood control, low-water augmentation for water-quality control, and recreation. U.S. Army Corps of Engineers satellite elevation telemeter at station.

COOPERATION.--Records were provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 116,500 acre-ft, Apr. 7, 1977, elevation, 1,430.80 ft; minimum (after initial filling for regular operation), 11,800 acre-ft, Apr. 1, 1965, elevation, 1,313.42 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 64,300 acre-ft, Oct. 1, elevation, 1,393.53 ft; minimum, 50,900 acre-ft, Dec. 5, elevation, 1,380.34 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,393.56	64,300	-
Oct. 31.....	1,388.06	58,500	-5,800
Nov. 30.....	1,388.35	58,800	+300
Dec. 31.....	1,380.64	51,200	-7,600
CAL YR 1985.....	-	-	+22,400
Jan. 31.....	1,380.54	51,100	-100
Feb. 28.....	1,380.88	51,400	+300
Mar. 31.....	1,380.92	51,400	0
Apr. 30.....	1,383.01	53,400	+2,000
May 31.....	1,390.39	60,900	+7,500
June 30.....	1,392.16	62,800	+1,900
July 31.....	1,391.93	62,600	-200
Aug. 31.....	1,388.09	58,500	-4,100
Sept. 30.....	1,387.80	58,200	-300
WTR YR 1986.....	-	-	-6,100

03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA

LOCATION.--Lat 37°14'13", long 82°20'36", Dickenson County, Hydrologic Unit 05070202, on right bank 1,100 ft upstream from Blacklog Branch, 1,700 ft downstream from John W. Flannagan Dam, 1.4 mi upstream from mouth, and 3.4 mi northwest of Haysi.

DRAINAGE AREA.--221 mi².

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305. Prior to October 1963, published as Pound River near Haysi.

REVISED RECORDS.--WSP 953: 1940-41. WSP 1003: 1942, 1943(P). WSP 1275: 1927-30, 1931(M), 1932-39.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above National Geodetic Vertical Datum of 1929 (U.S. Army Corps of Engineers bench mark). Prior to Dec. 20, 1939, nonrecording gage at site 3.8 mi upstream at different datum. Dec. 20, 1939, to Sept. 30, 1963, water-stage recorder at site 4.6 mi upstream at datum 79.91 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since March 1965 by John W. Flannagan Reservoir (station 03208990) 1,700 ft upstream and since August 1966 by North Fork Pound River Lake (station 03208680) 33 mi upstream. U.S. Army Corps of Engineers satellite precipitation and gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--60 years, 274 ft³/s, 16.84 in/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,000 ft³/s, Mar. 23, 1929, gage height, 16.5 ft, from floodmarks, site and datum then in use; minimum, less than 0.1 ft³/s on several days in September 1932. Maximum discharge since construction of John W. Flannagan Dam in 1965, 4,540 ft³/s, Apr. 8, 1977, gage height, 8.20 ft; minimum, 1.2 ft³/s, Feb. 16, 1968, Aug. 26, 1986; minimum daily, 2.3 ft³/s, June 26-29, 1965; minimum gage height, 1.42 ft, Feb. 16, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,460 ft³/s, Feb. 19, gage height, 7.28 ft; minimum, 1.2 ft³/s, Aug. 26, gage height, 1.63 ft; minimum daily, 23 ft³/s, Aug. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	46	153	897	72	115	509	79	56	56	83	111	46		
2	46	155	2440	149	113	509	61	56	56	84	104	45		
3	45	155	1680	146	486	357	61	56	55	85	104	46		
4	44	247	598	90	1220	286	62	56	55	85	104	47		
5	250	487	329	90	1420	286	62	56	56	85	126	46		
6	297	612	142	77	1110	383	61	56	58	85	137	46		
7	51	607	100	63	988	216	61	56	58	85	129	46		
8	51	447	100	63	920	119	61	56	58	93	129	66		
9	51	228	100	63	920	119	61	56	58	102	129	88		
10	52	207	100	63	522	268	62	56	58	76	129	91		
11	52	194	162	63	311	341	62	56	58	56	117	87		
12	275	197	168	63	278	231	61	56	58	54	76	92		
13	273	197	105	63	212	262	61	56	58	55	85	103		
14	59	197	67	63	184	333	60	56	58	54	111	104		
15	59	177	67	63	153	270	58	56	58	54	123	66		
16	59	143	213	63	153	271	57	56	60	54	131	45		
17	60	143	282	63	153	951	56	56	60	53	129	45		
18	61	169	233	63	1200	1300	56	56	57	64	83	46		
19	61	202	141	63	3050	1050	55	56	56	76	54	46		
20	61	203	89	63	3360	586	54	56	56	76	56	48		
21	108	201	70	120	2250	291	54	56	56	83	76	48		
22	185	280	70	148	829	203	54	56	56	67	100	49		
23	206	316	91	148	829	205	54	56	69	46	111	50		
24	163	315	104	150	823	206	55	56	75	46	110	50		
25	148	360	106	150	823	206	56	56	74	46	68	50		
26	148	385	88	153	485	147	56	56	79	44	23	47		
27	148	460	67	227	408	119	56	56	83	48	57	52		
28	150	390	68	228	616	120	55	56	83	45	62	50		
29	150	56	68	142	---	122	56	56	83	43	44	50		
30	151	57	68	115	---	122	56	56	83	45	45	50		
31	153	---	70	115	---	122	---	56	---	88	46	---		
TOTAL	3663	7940	8883	3202	23931	10510	1763	1736	1888	2060	2909	1745		
MEAN	118	265	287	103	855	339	58.8	56.0	62.9	66.5	93.8	58.2		
MAX	297	612	2440	228	3360	1300	79	56	83	102	137	104		
MIN	44	56	67	63	113	119	54	56	55	43	23	45		
(*)	-98	+11	-140	-2	+6	.00	+39	+136	+34	-4	-69	-6		
MEAN‡	20.2	276	147	101	861	339	97.8	192	96.9	62.5	24.8	52.2		
CFSM‡	.09	1.25	.67	.46	3.90	1.53	.44	.87	.44	.28	.11	.24		
IN.‡	.11	1.39	.76	.53	4.06	1.77	.49	1.00	.49	.33	.13	.26		
CAL YR 1985	TOTAL	57214.4	MEAN	157	MAX	2440	MIN	9.4	MEAN‡	188	CFSM‡	.85	IN.‡	11.54
WTR YR 1986	TOTAL	70230	MEAN	192	MAX	3360	MIN	23	MEAN‡	184	CFSM‡	.83	IN.‡	11.33

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake and John W. Flannagan Reservoir; provided by U.S. Army Corps of Engineers.

‡ Adjusted for change in contents.

03471500 SOUTH FORK HOLSTON RIVER AT RIVERSIDE, NEAR CHILHOWIE, VA

LOCATION.--Lat 36°45'37", long 81°37'53", Smyth County, Hydrologic Unit 06010102, on right bank 400 ft upstream from highway bridge at Riverside, 900 ft upstream from Spring Branch, 3.2 mi downstream from Redstone Branch, 4.0 mi southeast of Chilhowie, and at mile 97.2.

DRAINAGE AREA.--76.1 mi².

PERIOD OF RECORD.--October 1920 to December 1931, July 1942 to current year. Monthly discharge only for some periods, published in WSP 1306. Prior to October 1924, published as "near Chilhowie." June 1907 to December 1909, at site 4.5 mi downstream also published as "near Chilhowie"; records not equivalent.

REVISED RECORDS.--WSP 1033: 1943-44(m). WSP 1306: Drainage area, 1921-31(M).

GAGE.--Water-stage recorder. Datum of gage is 2,106.77 ft above National Geodetic Vertical Datum of 1929. Nov. 1, 1920, to Nov. 14, 1931, nonrecording gage at site 400 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 26, 30, and Jan. 6-12, 14, 15, 28-31. Records good except those for periods with ice effect, Dec. 26, 30, and Jan. 6-12, 14, 15, 28-31, which are fair. Prior to August 1951, diurnal fluctuation at low flow caused by mill 500 ft upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--55 years, 112 ft³/s, 19.99 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,600 ft³/s, Nov. 6, 1977, gage height, 10.20 ft, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum recorded, 2 ft³/s, Aug. 26, Oct. 15, 1943, Aug. 9, 11, 1944, Oct. 19, 1945, but may have been less in 1925 and 1926 before installation of water-stage recorder; minimum daily, 8 ft³/s, July 19, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0330	999	4.06	Mar. 15	0300	*1,020	*4.09

Minimum discharge, 21 ft³/s, Oct. 1, gage height, 1.20 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	50	404	49	61	170	70	45	105	32	24	46
2	28	108	292	46	77	155	68	44	92	97	23	86
3	30	92	201	46	263	143	65	43	82	81	23	82
4	29	361	154	46	420	128	63	42	74	50	23	89
5	28	781	129	45	354	116	61	41	69	42	26	229
6	26	430	113	38	287	109	61	41	65	38	31	184
7	24	307	97	31	287	103	61	40	64	35	33	116
8	23	199	86	27	265	91	58	40	65	34	37	88
9	23	141	78	32	218	89	57	40	64	33	31	70
10	23	111	72	40	182	88	56	38	59	38	28	58
11	23	91	68	35	177	91	54	38	58	46	29	52
12	23	79	70	37	151	90	52	47	52	45	33	49
13	23	71	79	40	133	103	51	86	48	38	29	44
14	23	65	100	30	126	276	50	202	45	44	26	40
15	25	60	108	32	122	807	49	153	44	41	25	38
16	26	57	103	38	111	449	49	168	158	45	24	36
17	24	56	94	37	133	306	50	180	80	37	28	35
18	23	52	86	38	299	228	49	176	60	34	50	33
19	23	49	73	54	377	199	46	278	51	32	52	35
20	23	47	72	84	478	167	45	356	45	33	42	34
21	37	46	67	79	383	144	50	318	43	35	41	33
22	50	61	63	79	294	128	49	226	40	33	34	31
23	33	74	65	95	238	118	46	176	38	32	49	30
24	31	77	62	97	203	109	45	207	49	29	45	53
25	30	72	60	92	182	100	44	211	43	29	37	42
26	29	68	45	90	164	93	46	189	37	28	33	36
27	27	72	54	81	185	91	46	179	36	27	30	37
28	27	87	51	60	188	86	45	184	35	29	32	35
29	27	286	49	37	---	80	48	172	35	26	31	34
30	26	378	40	40	---	76	45	145	34	26	28	48
31	26	---	47	50	---	73	---	123	---	25	27	---
TOTAL	835	4428	3082	1625	6358	5006	1579	4228	1770	1194	1004	1823
MEAN	26.9	148	99.4	52.4	227	161	52.6	136	59.0	38.5	32.4	60.8
MAX	50	781	404	97	478	807	70	356	158	97	52	229
MIN	22	46	40	27	61	73	44	38	34	25	23	30
CFSM	.35	1.94	1.31	.69	2.98	2.12	.69	1.79	.78	.51	.43	.80
IN.	.41	2.16	1.51	.79	3.11	2.45	.77	2.07	.87	.58	.49	.89
CAL YR 1985	TOTAL	32189	MEAN	88.2	MAX	781	MIN	22	CFSM	1.16	IN.	15.73
WTR YR 1986	TOTAL	32932	MEAN	90.2	MAX	807	MIN	22	CFSM	1.19	IN.	16.10

03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA

LOCATION.--Lat 36°39'06", long 81°50'39", Washington County, Hydrologic Unit 06010102, on right bank 500 ft upstream from bridge on U.S. Highway 58, 0.7 mi downstream from Laurel Creek, 3.2 mi northwest of Damascus, 4.9 mi upstream from Middle Fork, and at mile 77.2.

DRAINAGE AREA.--301 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306. Published as "at Vestal" prior to October 1978.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1932-33(M).

GAGE.--Water-stage recorder. Datum of gage is 1,792.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 30, Jan. 6-15, 28-31, Feb. 12-14, and June 24 to July 14. Records good except those for periods with ice effect, Dec. 30 and Jan. 6-15, 28-31, and periods of no gage-height record, Feb. 12-14 and June 24 to July 14, which are fair. Some diurnal fluctuation caused by powerplant upstream from station. Tennessee Valley Authority gage-height radio transmitter at station, receiver and recorder at Kingsport, TN.

AVERAGE DISCHARGE.--55 years, 477 ft³/s, 21.52 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s, Apr. 5, 1977, gage height, 17.11 ft, from rating curve extended above 10,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 30 ft³/s, Oct. 14, 1941, Dec. 24, 1943, gage height, 2.16 ft; minimum daily, 40 ft³/s, Dec. 27, 1983.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 5	0030	3,450	7.64	Mar. 15	0430	*3,480	*7.67

Minimum discharge, 80 ft³/s, Aug. 3, 4, gage height, 2.24 ft; minimum daily, 83 ft³/s, Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	162	1630	248	303	745	304	212	475	140	86	247
2	135	426	1140	217	429	659	295	207	410	450	84	356
3	138	338	934	224	1400	604	285	199	371	350	84	339
4	130	1070	716	226	2010	546	276	193	326	220	83	439
5	120	2410	584	225	1640	499	264	189	305	190	110	917
6	113	1520	505	180	1420	471	265	186	296	170	108	598
7	108	1160	422	150	1210	440	279	183	340	150	118	404
8	103	837	380	130	991	392	260	184	389	145	128	320
9	101	623	348	150	817	388	267	177	421	140	112	268
10	102	503	319	220	636	398	256	169	413	170	99	225
11	101	426	301	170	554	447	244	166	427	210	105	196
12	101	378	342	180	500	447	233	209	318	200	131	185
13	100	341	386	160	530	496	225	319	274	170	107	173
14	102	312	469	140	510	1080	221	488	247	380	93	154
15	103	286	463	160	499	2900	216	423	227	203	88	142
16	109	271	436	172	452	1630	219	399	283	183	88	138
17	105	292	404	175	578	1110	220	616	254	161	98	135
18	101	255	369	178	1240	859	217	598	216	143	190	125
19	100	236	319	282	1480	793	205	998	194	131	237	128
20	100	228	314	365	1840	678	201	1250	180	123	145	131
21	216	244	291	324	1400	595	241	1010	170	126	138	125
22	273	469	270	365	1070	536	241	740	160	120	119	120
23	166	508	300	514	903	499	217	621	156	121	229	113
24	142	463	280	503	776	463	207	1530	220	109	182	261
25	131	409	261	453	704	425	204	1320	190	105	146	209
26	123	380	211	435	633	401	204	1090	170	101	121	156
27	119	412	253	379	812	398	214	921	160	97	119	146
28	116	757	233	250	860	371	202	817	150	111	248	158
29	113	1680	212	180	---	346	248	717	150	100	176	137
30	113	2110	180	200	---	330	217	612	145	94	127	140
31	112	---	211	240	---	318	---	553	---	89	112	---
TOTAL	3795	19506	13483	7795	26197	20264	7147	17296	8037	5202	4011	7185
MEAN	122	650	435	251	936	654	238	558	268	168	129	240
MAX	273	2410	1630	514	2010	2900	304	1530	475	450	248	917
MIN	99	162	180	130	303	318	201	166	145	89	83	113
CFSM	.41	2.16	1.45	.83	3.11	2.17	.79	1.85	.89	.56	.43	.80
IN.	.47	2.41	1.67	.96	3.24	2.50	.88	2.14	.99	.64	.50	.89
CAL YR 1985	TOTAL	146446	MEAN	401	MAX	3300	MIN	99	CFSM	1.33	IN.	18.10
WTR YR 1986	TOTAL	139918	MEAN	383	MAX	2900	MIN	83	CFSM	1.27	IN.	17.29

TENNESSEE RIVER BASIN

03473000 SOUTH FORK HOLSTON RIVER NEAR DAMASCUS, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1952, 1968 to August 1986 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1949 to September 1950, October 1967 to September 1973.

WATER QUALITY DATA, OCTOBER 1985 TO MAY 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	PH LAB (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)
OCT 08...	1050	105	190	188	8.00	7.50	11.5	725	5	10.8
DEC 03...	0830	980	100	102	7.40	7.90	4.0	725	5	12.1
JAN 10...	1000	220	135	--	7.90	8.60	0.0	718	5	13.9
FEB 14...	0935	488	120	133	7.20	8.00	1.0	710	7	13.1
APR 11...	0815	247	175	174	7.40	7.90	8.0	706	7	10.4
MAY 15...	1015	431	100	99	8.10	7.50	16.0	719	5	8.9

DATE	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CACO3)	HARD- NESS NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 08...	104	87	2	22	7.9	3.2	1.7	85	7.2
DEC 03...	97	39	6	10	3.3	4.0	1.3	33	5.8
JAN 10...	101	--	--	--	--	--	1.6	--	9.4
FEB 14...	99	54	7	14	4.7	3.2	1.2	47	7.6
APR 11...	95	70	5	18	6.1	5.3	3.0	65	11
MAY 15...	96	39	1	9.9	3.5	2.5	1.5	38	5.3

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 08...	2.6	<0.10	6.3	109	100	<0.010	0.270	<0.010	18
DEC 03...	4.8	<0.10	6.4	51	55	<0.010	0.570	0.010	21
JAN 10...	2.5	<0.10	--	68	--	<0.010	0.600	0.040	--
FEB 14...	3.6	<0.10	5.7	68	68	<0.010	0.740	<0.010	13
APR 11...	4.3	<0.10	5.9	91	94	<0.010	0.610	0.490	22
MAY 15...	2.8	<0.10	6.3	57	55	<0.010	0.390	<0.010	<3

03475000 MIDDLE FORK HOLSTON RIVER NEAR MEADOWVIEW, VA

LOCATION.--Lat 36°42'47", long 81°49'08", Washington County, Hydrologic Unit 06010102, on left bank 48 ft downstream from bridge on State Highway 803, 0.9 mi upstream from Cedar Creek, 4.1 mi southeast of Meadowview, and at mile 13.2.

DRAINAGE AREA.--211 mi².

PERIOD OF RECORD.--October 1931 to September 1953, May 1976 to current year. Monthly discharge only for October 1931, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1276: 1932-34.

GAGE.--Water-stage recorder. Datum of gage is 1,820.22 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 22, 25, 26, 29-31, and Jan. 6-15, 29-31. Records good except those for periods with ice effect, Dec. 22, 25, 26, 29-31, and Jan. 6-15, 29-31, which are fair. Prior to 1954, flow regulated by powerplant 0.9 mi upstream from station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--32 years, 240 ft³/s, 15.45 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s, Nov. 7, 1977, gage height, 13.41 ft; minimum, 6 ft³/s, Nov. 10, 1933, Dec. 4, 1936, Jan. 21, 22, Feb. 1, 1940, Jan. 8, 1942, Oct. 15, 16, 31, 1943; minimum daily, 7 ft³/s, Nov. 19, 1950.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of 11.8 ft, from floodmark, discharge, 10,000 ft³/s, and flood of Dec. 10, 1972, reached a stage of 11.0 ft, from floodmark, discharge, 8,540 ft³/s, from information by Tennessee Valley Authority. Flood of Mar. 30, 1975, reached a stage of 10.37 ft, discharge, 7,410 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 15	0700	*1,990	*5.63	No peak equal to or greater than base discharge.			

Minimum discharge, 48 ft³/s, Oct. 1, gage height, 1.89 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	61	1000	119	134	387	159	110	250	89	67	121
2	60	108	575	118	172	358	155	105	221	134	66	298
3	76	119	392	116	528	335	150	99	198	147	64	223
4	74	273	301	120	944	309	144	94	179	107	63	198
5	63	826	255	119	687	285	140	92	170	95	64	335
6	57	441	233	90	650	268	136	90	164	89	63	248
7	54	309	207	80	659	257	138	88	170	85	68	174
8	52	224	187	70	580	236	138	89	167	84	73	142
9	52	173	174	75	456	226	134	88	172	82	70	127
10	52	145	162	100	378	216	129	83	187	107	65	111
11	52	129	154	85	397	214	123	79	198	124	69	101
12	52	119	167	95	388	207	118	92	156	108	83	97
13	52	111	201	90	348	228	117	365	140	95	71	96
14	52	104	290	75	315	482	115	952	131	99	66	88
15	52	99	286	80	304	1550	111	431	124	92	64	83
16	54	95	250	95	270	790	111	340	118	126	61	79
17	55	108	224	94	333	539	112	1100	114	97	67	76
18	51	109	202	95	897	423	112	565	109	88	109	74
19	50	100	178	115	1100	388	107	873	106	83	160	79
20	51	95	167	209	1430	348	104	1530	103	78	106	80
21	91	93	161	194	872	295	110	731	100	78	113	76
22	143	131	140	187	634	264	111	450	96	80	89	72
23	97	226	149	196	554	246	106	342	94	87	83	71
24	76	191	148	187	480	229	102	356	146	81	97	125
25	70	156	130	177	442	215	101	337	128	104	91	137
26	64	138	100	177	393	203	101	341	104	87	78	100
27	60	165	149	169	420	198	149	327	96	79	73	90
28	58	609	127	123	429	188	132	465	93	75	85	94
29	56	735	120	90	---	178	127	420	94	73	96	88
30	55	1180	110	100	---	170	117	345	93	70	78	81
31	56	---	100	120	---	165	---	293	---	68	72	---
TOTAL	1937	7372	7039	3760	15194	10397	3709	11672	4221	2891	2474	3764
MEAN	62.5	246	227	121	543	335	124	377	141	93.3	79.8	125
MAX	143	1180	1000	209	1430	1550	159	1530	250	147	160	335
MIN	50	61	100	70	134	165	101	79	93	68	61	71
CFSM	.30	1.17	1.08	.57	2.57	1.59	.59	1.79	.67	.44	.38	.59
IN.	.34	1.30	1.24	.66	2.68	1.83	.65	2.06	.74	.51	.44	.66
CAL YR 1985	TOTAL	68109	MEAN	187	MAX	2450	MIN	49	CFSM	.89	IN.	12.01
WTR YR 1986	TOTAL	74430	MEAN	204	MAX	1550	MIN	50	CFSM	.97	IN.	13.12

TENNESSEE RIVER BASIN

03478400 BEAVER CREEK AT BRISTOL, VA

LOCATION.--Lat 36°37'54", long 82°08'02", Bristol City, Hydrologic Unit 06010102, on right bank 50 ft upstream from bridge on State Highway 1405, 75 ft downstream from Goose Creek, 0.9 mi downstream from Clear Creek, 3.7 mi northeast of Bristol, VA post office, and at mile 20.6.

DRAINAGE AREA.--27.7 mi².

PERIOD OF RECORD.--July 1957 to current year. Published as "near Bristol" prior to October 1974.

GAGE.--Water-stage recorder. Datum of gage is 1,780.98 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diurnal fluctuation at low flow caused by withdrawal of water, which is returned to stream 600 ft upstream from station, for car-washing operation. Since September 1965, some regulation at high flow by flood-control reservoirs, capacity, 7,600 acre-ft. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--29 years, 35.0 ft³/s, 17.16 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,600 ft³/s, Oct. 2, 1977, gage height, 9.94 ft, from rating curve extended above 390 ft³/s on basis of slope-area measurement of peak flow; minimum, 3.4 ft³/s, Dec. 30, 1963; minimum daily, 7.4 ft³/s, Sept. 28, 29, Oct. 5, 15, 18, 19, 23, 24, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1936 reached a stage of about 12 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 199 ft³/s, Nov. 30, gage height, 4.74 ft; minimum daily, 10 ft³/s, Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	14	100	19	23	57	37	22	29	15	11	28
2	12	22	73	19	29	54	36	21	28	20	11	23
3	12	16	59	19	44	52	35	20	26	17	11	20
4	12	47	52	18	46	50	34	20	25	15	10	28
5	12	41	48	17	52	48	34	20	25	14	11	24
6	11	27	44	17	53	46	34	20	24	14	11	19
7	11	22	40	17	58	45	32	20	23	14	11	17
8	11	18	39	17	50	42	31	20	23	14	12	16
9	11	16	36	17	46	41	31	20	23	15	12	15
10	11	15	34	16	45	40	30	19	23	21	11	14
11	12	14	34	16	50	40	29	20	23	19	19	14
12	11	13	34	16	45	39	29	21	22	17	17	15
13	11	13	34	16	42	46	28	25	21	15	14	14
14	12	13	32	16	43	55	27	21	20	15	13	13
15	12	12	30	16	42	66	27	20	19	14	13	13
16	12	13	29	16	40	58	27	24	19	15	14	14
17	11	17	28	16	54	52	27	27	19	14	18	13
18	11	13	27	16	95	50	27	21	18	13	16	13
19	11	13	25	25	111	53	26	32	19	13	14	13
20	11	13	25	24	106	49	25	34	16	12	16	16
21	26	14	24	21	84	46	26	25	17	12	15	17
22	17	22	23	22	78	45	25	23	16	12	13	12
23	14	18	23	22	71	44	25	33	17	12	13	11
24	13	16	23	22	67	43	24	55	19	12	14	25
25	13	15	23	22	62	42	23	40	17	12	13	17
26	12	15	22	24	58	41	23	35	16	12	12	14
27	12	30	21	23	67	41	23	36	16	12	15	13
28	12	58	20	20	61	39	22	36	16	12	17	17
29	12	78	20	22	---	39	22	33	16	12	13	19
30	12	165	19	22	---	38	22	31	16	11	13	17
31	12	---	20	21	---	37	---	30	---	11	12	---
TOTAL	383	803	1061	594	1622	1438	841	824	611	436	415	504
MEAN	12.4	26.8	34.2	19.2	57.9	46.4	28.0	26.6	20.4	14.1	13.4	16.8
MAX	26	165	100	25	111	66	37	55	29	21	19	28
MIN	11	12	19	16	23	37	22	19	16	11	10	11
CFSM	.45	.97	1.23	.69	2.09	1.68	1.01	.96	.74	.51	.48	.61
IN.	.51	1.08	1.42	.80	2.18	1.93	1.13	1.11	.82	.59	.56	.68
CAL YR 1985	TOTAL	8122	MEAN	22.3	MAX	165	MIN	10	CFSM	.81	IN.	10.91
WTR YR 1986	TOTAL	9532	MEAN	26.1	MAX	165	MIN	10	CFSM	.94	IN.	12.80

03488000 NORTH FORK HOLSTON RIVER NEAR SALTVILLE, VA

LOCATION.--Lat 36°53'48", long 81°44'47", Smyth County, Hydrologic Unit 06010101, on right bank 0.5 mi upstream from Cedar Branch bridge, 1.5 mi northeast of Saltville, 7.8 mi downstream from Laurel Creek, and at mile 85.0.

DRAINAGE AREA.--222 mi².

PERIOD OF RECORD.--June 1907 to December 1908 (published as "at Saltville"), October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 758: Drainage area. WSP 1113: 1944-47. WSP 1306: 1907(M), 1921-22(M), 1924-30(M), 1932-34(M), drainage area at site used 1907-8. WSP 1726: 1947, monthly and yearly runoff.

GAGE.--Water-stage recorder. Datum of gage is 1,703.53 ft above National Geodetic Vertical Datum of 1929. June 11, 1907, to Nov. 12, 1908, nonrecording gage on highway bridge 2.1 mi downstream at different datum. Nov. 2, 1920, to May 23, 1934, nonrecording gage on highway bridge 0.5 mi downstream at datum 7.74 ft lower.

REMARKS.--Estimated daily discharges: Dec. 30, 31, Jan. 7-15, Jan. 29 to Feb. 3, and Feb. 9-17, 22-27. Records good except those for periods with ice effect, Dec. 30, 31 and Jan. 7-15, 29, 30, and periods of doubtful or no gage-height record, Jan. 31 to Feb. 3 and Feb. 9-17, 22-27, which are fair. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--67 years, 300 ft³/s, 18.35 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft³/s, Jan. 29, 1957, gage height, 13.20 ft; maximum gage height, 13.57 ft, Nov. 6, 1977; minimum discharge, 1.0 ft³/s, Oct. 15, 16, 1947, gage height, 0.13 ft, flow retarded by mine cave-in; minimum daily, 2.0 ft³/s, Oct. 15, 1947.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 30	1430	3,470	5.82	May 14	0330	*3,590	*5.93
Mar. 15	0230	3,280	5.64				

Minimum discharge, 26 ft³/s, Oct. 1; minimum gage height, 0.43 ft, Jan. 8, Aug. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	36	1760	108	250	300	156	162	301	60	36	75
2	31	70	906	100	500	279	149	152	257	155	35	209
3	34	92	566	103	1000	273	146	138	219	238	35	217
4	43	242	410	102	1870	257	140	126	190	133	34	177
5	38	914	334	102	1170	238	134	118	174	95	34	246
6	35	615	294	83	922	224	129	113	166	78	33	270
7	33	479	249	70	1040	217	142	109	161	68	45	176
8	30	311	215	60	944	190	134	116	208	62	49	126
9	28	216	196	70	700	188	127	159	255	62	44	103
10	28	161	179	90	500	186	124	140	191	77	39	83
11	27	129	165	75	400	209	118	125	188	93	43	68
12	27	110	170	85	300	209	112	218	157	95	55	65
13	27	96	188	76	270	264	108	1070	137	83	53	81
14	27	88	235	65	240	1010	105	2260	122	75	45	68
15	30	80	248	70	250	2310	103	876	110	75	40	55
16	32	74	239	80	230	1090	102	563	101	67	37	48
17	32	90	222	80	500	721	105	1150	95	62	51	45
18	33	82	202	75	986	536	105	650	88	57	52	40
19	33	71	163	121	1460	469	99	741	82	53	74	41
20	31	66	160	342	1860	395	96	2230	78	49	76	44
21	47	63	157	288	1140	331	104	1170	75	48	72	45
22	79	84	132	272	700	291	130	701	70	48	72	43
23	83	167	172	300	550	266	144	516	68	53	56	40
24	64	168	147	291	450	246	137	441	76	54	62	44
25	53	143	136	268	400	224	130	394	96	72	80	46
26	46	129	101	251	330	208	135	374	82	50	63	42
27	42	327	145	223	380	202	222	370	67	48	50	45
28	39	1060	133	158	342	195	206	501	62	45	51	59
29	36	1830	115	120	---	181	198	508	60	43	69	58
30	35	2780	85	160	---	169	177	435	60	42	61	51
31	35	---	90	200	---	162	---	361	---	37	49	---
TOTAL	1185	10773	8514	4488	19684	12040	4017	16987	3996	2277	1595	2710
MEAN	38.2	359	275	145	703	388	134	548	133	73.5	51.5	90.3
MAX	83	2780	1760	342	1870	2310	222	2260	301	238	80	270
MIN	27	36	85	60	230	162	96	109	60	37	33	40
CFSM	.17	1.62	1.24	.65	3.17	1.75	.60	2.47	.60	.33	.23	.41
IN.	.20	1.81	1.43	.75	3.30	2.02	.67	2.85	.67	.38	.27	.45

CAL YR 1985	TOTAL	84409	MEAN	231	MAX	3160	MIN	24	CFSM	1.04	IN.	14.14
WTR YR 1986	TOTAL	88266	MEAN	242	MAX	2780	MIN	27	CFSM	1.09	IN.	14.79

03521500 CLINCH RIVER AT RICHLANDS, VA

LOCATION.--Lat 37°05'10", long 81°46'52", Tazewell County, Hydrologic Unit 06010205, on right bank 1.0 mi southeast of Richlands, 1.6 mi downstream from Middle Creek, 2.2 mi upstream from Big Creek, and at mile 321.0.

DRAINAGE AREA.--137 mi².

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 1306: 1946(M), 1948-50(M).

GAGE.--Water-stage recorder. Datum of gage is 1,924.08 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 6, 1950, nonrecording gage at bridge 1.1 mi downstream at datum 6.53 ft lower.

REMARKS.--Estimated daily discharges: Dec. 22, 26, 30, and Jan. 7-15, 29-31. Records good except those for periods with ice effect, Dec. 22, 26, 30, and Jan. 7-15, 29-31, which are fair. Prior to October 1970, diurnal fluctuation at low flow caused by mill 1.7 mi upstream from station. Town of Richlands Office of Emergency Services gage-height telemeter at station. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--41 years, 191 ft³/s, 18.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s, Jan. 29, 1957, gage height, 19.3 ft, from floodmark, from rating curve extended above 4,900 ft³/s on basis of contracted-opening measurement of peak flow; minimum, 3.2 ft³/s, Sept. 8, 1955; minimum daily, 8.8 ft³/s, July 6, Sept. 10, 16, 1964; minimum gage height, 0.45 ft, July 2, 3, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1901, reached a stage of 21.3 ft, present site and datum, from floodmark, discharge, 11,500 ft³/s, from report by Tennessee Valley Authority. Flood of Feb. 18, 1944, reached a stage of 13.7 ft, present site and datum, from floodmark, discharge, 5,500 ft³/s, from report by Tennessee Valley Authority.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 29	0730	*2,000	*6.70	Feb. 20	0430	1,700	6.10
Nov. 30	1430	1,640	5.99	Mar. 15	0630	1,760	6.23
Feb. 4	0300	1,810	6.34	May 13	2030	1,860	6.43

Minimum discharge, 23 ft³/s, part of each day Oct. 1, 11, 13-15, 29-31, gage height, 0.81 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	25	966	93	139	208	101	77	171	46	34	58
2	30	69	541	88	404	196	98	73	146	136	32	107
3	34	52	334	89	1210	190	94	67	129	126	31	106
4	31	261	246	91	1440	178	90	64	114	73	29	99
5	31	636	205	89	749	165	87	61	110	55	28	113
6	32	387	190	81	516	158	84	59	102	47	28	105
7	29	272	159	65	1130	153	100	59	112	43	30	78
8	25	175	142	45	709	137	92	147	128	40	31	66
9	24	123	131	47	462	137	86	155	128	39	29	58
10	24	97	121	65	338	136	85	120	105	49	30	50
11	24	81	114	60	284	156	80	104	102	176	44	44
12	24	73	126	65	228	158	77	168	91	165	58	59
13	24	66	145	58	192	172	74	1100	80	116	41	62
14	24	60	184	52	176	334	72	1250	72	112	32	44
15	29	56	186	55	179	1440	70	659	66	82	29	38
16	43	53	170	60	167	887	73	382	61	70	28	35
17	38	53	153	55	406	560	78	279	58	58	65	31
18	29	49	137	58	1420	395	77	309	55	50	57	30
19	26	46	115	98	1100	322	70	411	51	46	62	44
20	26	44	115	208	1400	259	67	782	49	43	50	42
21	32	42	103	160	785	216	74	525	47	84	44	39
22	44	72	90	185	520	187	89	342	45	80	37	32
23	45	115	109	228	400	171	83	257	43	90	36	29
24	36	91	99	202	327	156	75	211	51	72	67	38
25	33	75	90	178	288	142	72	210	71	71	69	41
26	29	70	75	175	250	134	81	184	50	64	42	33
27	27	211	122	155	259	134	107	182	44	52	40	35
28	26	697	85	123	235	129	94	190	42	45	99	60
29	24	1530	83	90	---	118	89	165	46	43	81	51
30	24	1430	65	100	---	111	82	335	46	40	54	37
31	24	---	78	120	---	106	---	222	---	36	42	---
TOTAL	916	7011	5479	3238	15713	7945	2501	9149	2415	2249	1379	1664
MEAN	29.5	234	177	104	561	256	83.4	295	80.5	72.5	44.5	55.5
MAX	45	1530	966	228	1440	1440	107	1250	171	176	99	113
MIN	24	25	65	45	139	106	67	59	42	36	28	29
CFSM	.22	1.71	1.29	.76	4.09	1.87	.61	2.15	.59	.53	.32	.41
IN.	.25	1.90	1.49	.88	4.27	2.16	.68	2.48	.66	.61	.37	.45
CAL YR 1985	TOTAL	60400	MEAN	165	MAX	2680	MIN	21	CFSM	1.20	IN.	16.40
WTR YR 1986	TOTAL	59659	MEAN	163	MAX	1530	MIN	24	CFSM	1.19	IN.	16.20

03524000 CLINCH RIVER AT CLEVELAND, VA

LOCATION.--Lat 36°56'41", long 82°09'18", Russell County, Hydrologic Unit 06010205, on right bank 500 ft upstream from highway bridge at Cleveland, 0.5 mi downstream from Muddy Hollow, 2.3 mi downstream from Weaver Creek, 4.4 mi downstream from Thompson Creek, and at mile 271.6.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--October 1920 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1306: 1921-23(M), 1926(M), 1929-31(M). WSP 1706: 1927(M).

GAGE.--Water-stage recorder. Datum of gage is 1,500.24 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1931, nonrecording gage on highway bridge 500 ft downstream at datum 1.0 ft lower.

REMARKS.--Estimated daily discharges: Dec. 26, 30, 31, and Jan. 7-15, 29-31. Records good except those for periods with ice effect, Dec. 26, 30, 31, and Jan. 7-15, 29-31, which are fair. Tennessee Valley Authority gage-height Automatic Data Acquisition System at station, called at 6-hour intervals by computer at Knoxville, TN. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--66 years, 708 ft³/s, 18.21 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,500 ft³/s, Apr. 5, 1977, gage height, 26.40 ft; minimum, 35 ft³/s, Sept. 28, 1964; minimum gage height, 0.96 ft, Feb. 10, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 29	1130	*5,500	*9.22	Feb. 18	1530	5,050	8.71

Minimum discharge, 81 ft³/s, Aug. 17, 18, gage height, 1.39 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	94	3910	340	481	913	375	223	577	158	105	117
2	112	154	2300	307	1000	829	358	214	473	154	102	148
3	121	295	1500	311	2600	778	342	203	405	319	97	225
4	121	534	1100	297	4080	728	329	192	352	276	92	251
5	127	2010	889	301	2700	670	314	187	316	196	89	401
6	123	1720	785	284	1920	625	303	182	325	163	85	317
7	119	1230	673	250	3290	598	312	181	426	144	96	246
8	110	814	573	170	2640	538	316	194	426	132	100	194
9	104	553	512	180	1770	499	303	327	688	126	96	163
10	97	414	460	250	1360	488	291	322	467	141	96	142
11	94	337	421	210	1150	531	278	265	377	182	110	126
12	93	289	444	240	954	580	265	312	327	426	148	135
13	92	253	511	220	793	643	254	1170	290	354	148	172
14	92	234	658	190	712	1100	246	2750	257	273	119	152
15	94	214	711	200	699	3570	240	1610	233	239	96	127
16	102	199	658	206	647	3320	238	1070	216	207	86	107
17	135	196	596	212	1240	2150	245	1000	203	179	82	98
18	120	192	532	202	4490	1580	251	810	190	155	94	91
19	110	180	445	261	3900	1310	241	856	184	140	138	92
20	101	169	389	636	4290	1110	228	1890	177	129	150	124
21	107	162	383	665	2990	906	230	1720	167	128	131	116
22	132	233	330	630	2030	772	247	1180	160	172	115	111
23	139	416	371	776	1620	689	264	890	153	211	101	98
24	136	427	368	769	1340	627	251	776	148	199	138	128
25	131	341	345	675	1200	565	233	755	162	176	164	167
26	117	296	280	641	1040	515	227	758	178	165	163	135
27	110	896	464	607	1050	493	239	650	163	160	123	124
28	103	2280	470	463	1050	485	266	725	146	138	118	215
29	98	5000	351	350	---	449	245	696	150	131	173	188
30	97	4980	250	380	---	413	232	624	161	121	170	165
31	94	---	290	440	---	393	---	810	---	112	129	---
TOTAL	3431	25112	21969	11663	53036	28867	8163	23542	8497	5806	3654	4875
MEAN	111	837	709	376	1894	931	272	759	283	187	118	163
MAX	139	5000	3910	776	4490	3570	375	2750	688	426	173	401
MIN	92	94	250	170	481	393	227	181	146	112	82	91
CFSM	.21	1.59	1.34	.71	3.59	1.76	.52	1.44	.54	.35	.22	.31
IN.	.24	1.77	1.55	.82	3.74	2.03	.58	1.66	.60	.41	.26	.34
CAL YR 1985	TOTAL	211936	MEAN	581	MAX	8150	MIN	92	CFSM	1.10	IN.	14.93
WTR YR 1986	TOTAL	198615	MEAN	544	MAX	5000	MIN	82	CFSM	1.03	IN.	13.99

03528000 CLINCH RIVER ABOVE TAZEWEILL, TN

LOCATION.--Lat 36°25'30", long 83°23'54", Claiborne County, Hydrologic Unit 06010205, on right bank 0.4 mi up-stream from Grissom Island, 4.6 mi downstream from Big War Creek, 10 mi east of Tazewell, and at mile 159.8.

DRAINAGE AREA.--1,474 mi².

PERIOD OF RECORD.--October 1918 to current year. Published as "near Lone Mountain" October 1918 to September 1927; as "near Tazewell" August 1927 to December 1936; and as "above Tazewell" July 1935 to current year. Prior to April 1919 monthly discharge only, published in WSP 1306. Gage-height record "near Tazewell" January 1937 to July 1941.

REVISED RECORDS.--WSP 803: Drainage area at site "near Tazewell". WSP 1306: Drainage area at site "near Lone Mountain". WSP 1336: 1928.

GAGE.--Water-stage recorder. Datum of gage is 1,060.7 ft above National Geodetic Vertical Datum of 1929. Apr. 1, 1919, to Sept. 30, 1927, nonrecording gage on railroad bridge 23.3 mi downstream at datum 102.7 ft lower. Aug. 8, 1927, to July 16, 1941, water-stage recorder at site 8.0 mi downstream at datum 47.2 ft lower. Water-stage recorder at present site and datum since July 29, 1935.

REMARKS.--No estimated daily discharges. Records good.

AVERAGE DISCHARGE.--68 years, 2,077 ft³/s, 19.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,100 ft³/s, Apr. 5, 1977, gage height, 29.32 ft, from floodmarks; minimum, 108 ft³/s, Sept. 11, 1925; minimum gage height, at present site and datum, 0.33 ft, Sept. 20, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1862 reached a stage of about 24 ft, present site and datum, from information by local resident; discharge, about 66,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 14,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage Height (ft)	Date	Time	Discharge (ft ³ /s)	Gage Height (ft)
Feb. 19	0530	*17,700	*10.97	No other peak equal to or greater than base discharge.			

Minimum discharge, 178 ft³/s, Aug. 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	241	242	8980	692	1100	2920	1050	547	1870	304	229	315	
2	279	242	7330	729	1220	2610	996	520	1670	330	216	490	
3	300	273	4680	766	2030	2340	955	497	1320	423	203	738	
4	283	390	3200	743	4940	2140	914	475	1090	374	197	722	
5	287	727	2410	751	6900	1950	867	458	939	388	200	1050	
6	277	2010	2000	721	5660	1790	839	444	836	492	198	1100	
7	269	2580	1730	719	4470	1660	861	430	752	404	187	1130	
8	264	1950	1510	645	5730	1540	824	426	911	339	185	786	
9	262	1450	1330	544	5280	1400	803	416	1030	298	211	627	
10	254	1070	1180	585	3720	1290	787	403	975	294	208	518	
11	245	829	1080	581	2950	1270	758	449	1100	437	268	432	
12	242	682	1040	598	2480	1340	727	576	907	450	402	399	
13	242	589	1060	617	2080	1910	700	804	764	457	352	422	
14	242	532	1200	544	1780	3080	678	875	668	696	372	479	
15	242	490	1380	601	1640	4770	654	3140	598	735	325	459	
16	242	468	1510	542	1540	7310	634	2680	542	541	292	407	
17	239	561	1450	555	2690	6800	620	3080	493	486	260	358	
18	237	602	1320	511	11300	4700	613	3220	453	448	327	332	
19	237	570	1180	540	17000	3720	605	2220	423	391	406	290	
20	237	514	1040	600	14100	3270	601	1790	400	337	309	266	
21	261	475	936	729	11000	2760	622	2370	379	297	411	286	
22	312	743	812	1090	7320	2340	621	2760	359	300	595	355	
23	291	1540	789	1090	5610	2050	601	2180	346	272	440	343	
24	283	1680	811	1170	4670	1840	589	2380	333	250	348	346	
25	303	1310	816	1330	3970	1680	583	2840	328	349	294	368	
26	297	1060	617	1310	3420	1530	577	2830	308	349	265	371	
27	278	1040	750	1220	3100	1420	555	3270	292	335	265	379	
28	267	2890	739	969	3030	1340	546	3280	324	298	306	399	
29	256	6890	690	863	---	1260	575	2950	351	316	328	356	
30	250	9440	695	710	---	1190	567	2550	330	311	285	372	
31	242	---	705	952	---	1110	---	2060	---	259	268	---	
TOTAL	8161	43839	54970	24017	140730	76330	21322	52920	21091	11960	9152	14895	
MEAN	263	1461	1773	775	5026	2462	711	1707	703	386	295	497	
MAX	312	9440	8980	1330	17000	7310	1050	3280	1870	735	595	1130	
MIN	237	242	617	511	1100	1110	546	403	292	250	185	266	
CFSM	.18	.99	1.20	.53	3.41	1.67	.48	1.16	.48	.26	.20	.34	
IN.	.21	1.11	1.39	.61	3.55	1.93	.54	1.34	.53	.30	.23	.38	
CAL YR 1985	TOTAL	526473		MEAN	1442	MAX	19700	MIN	237	CFSM	.98	IN.	13.29
WTR YR 1986	TOTAL	479387		MEAN	1313	MAX	17000	MIN	185	CFSM	.89	IN.	12.10

03531500 POWELL RIVER NEAR JONESVILLE, VA

LOCATION.--Lat 36°39'43", long 83°05'42", Lee County, Hydrologic Unit 06010206, on right bank 175 ft downstream from highway bridge, 2 mi southeast of Jonesville, 10 mi upstream from Wallen Creek, and at mile 143.1.

DRAINAGE AREA.--319 mi².

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 823: Drainage area. WSP 1033: 1932-44. WSP 1436: 1946(M), 1948(M).

GAGE.--Water-stage recorder. Datum of gage is 1,259.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 26, 30, Jan. 7-15, 29-31, May 17-21, and Sept. 29, 30. Records good except those for periods with ice effect, Dec. 26, 30, and Jan. 7-15, 29-31, and periods of no gage-height record, May 17-21 and Sept. 29, 30, which are fair. Tennessee Valley Authority gage-height Automatic Data Acquisition System at station, called at 6-hour intervals by computer at Knoxville, TN. Several measurements of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--55 years, 534 ft³/s, 22.73 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s, Apr. 5, 1977, gage height, 44.32 ft, from flood-mark, from rating curve extended above 20,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 17 ft³/s, Sept. 19, 20, 1954, and as result of storage behind temporary dam Oct. 18, 1961; minimum gage height, 0.68 ft, Oct. 18, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges equal to or greater than base discharge of 5,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 18	1300	*8,430	*15.34	No other peak equal to or greater than base discharge.			

Minimum discharge, 33 ft³/s, Aug. 4, 5, 7, gage height, 1.10 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	52	952	222	192	851	250	137	426	76	39	90
2	92	55	836	220	327	746	237	135	361	74	38	228
3	121	64	615	209	940	662	227	128	305	84	37	307
4	96	94	467	210	1800	576	216	120	263	98	34	213
5	86	199	384	200	1320	508	203	116	234	76	35	234
6	75	343	356	178	1230	467	198	114	217	66	36	224
7	70	298	301	120	2100	435	200	114	215	61	34	170
8	62	198	255	75	1580	387	188	113	252	57	35	125
9	58	143	232	80	1030	349	179	111	275	55	35	105
10	54	114	213	110	767	333	173	107	242	288	48	87
11	50	99	198	90	638	364	168	104	275	515	67	75
12	49	87	262	110	509	409	157	171	256	241	225	214
13	47	82	394	100	410	544	155	267	201	160	133	463
14	49	75	484	85	369	877	153	343	171	323	76	201
15	48	72	467	95	350	1560	148	319	151	195	61	135
16	51	73	404	119	373	1520	144	263	135	128	54	110
17	54	104	348	114	1310	1110	144	200	123	99	52	97
18	53	135	303	116	7210	853	145	180	115	84	98	86
19	50	106	246	162	4480	812	139	200	105	75	140	92
20	51	94	218	243	3490	740	129	600	99	67	275	126
21	56	89	217	211	2020	612	158	470	96	63	389	198
22	79	234	176	201	1410	529	192	405	94	66	172	160
23	110	564	206	232	1280	482	165	351	91	61	114	107
24	85	346	197	251	1100	442	146	600	89	57	90	343
25	76	240	182	250	1030	397	138	796	80	51	90	383
26	69	191	130	254	890	362	135	809	75	49	80	213
27	62	246	147	239	921	342	136	1320	72	46	67	141
28	58	617	174	162	972	327	133	1400	92	50	111	116
29	54	2300	161	120	---	301	161	953	102	63	101	180
30	52	1340	120	130	---	278	158	688	88	51	84	150
31	51	---	145	150	---	263	---	520	---	43	69	---
TOTAL	2023	8654	9790	5058	40048	18438	5075	12154	5300	3422	2919	5373
MEAN	65.3	288	316	163	1430	595	169	392	177	110	94.2	179
MAX	121	2300	952	254	7210	1560	250	1400	426	515	389	463
MIN	47	52	120	75	192	263	129	104	72	43	34	75
CFSM	.20	.90	.99	.51	4.48	1.87	.53	1.23	.55	.34	.30	.56
IN.	.24	1.01	1.14	.59	4.67	2.15	.59	1.42	.62	.40	.34	.63
CAL YR 1985	TOTAL	134971	MEAN	370	MAX	3920	MIN	47	CFSM	1.16	IN.	15.74
WTR YR 1986	TOTAL	118254	MEAN	324	MAX	7210	MIN	34	CFSM	1.02	IN.	13.79

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to these events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at low-flow partial-record sites and at miscellaneous sites and for special studies are given in separate tables.

Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1986							
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Dis-charge (ft ³ /s)
POTOMAC RIVER BASIN							
01622400	Buffalo Branch tributary near Christian, Va.	Lat 38°11'55", long 79°13'10", Augusta County, on left upstream wingwall of culvert on State Highway 42, 0.8 mi upstream from mouth, and 1.3 mi north of Christian. Datum of gage is 1,622.53 ft above National Geodetic Vertical Datum of 1929.	0.49	1967-86	11- 4-85	6.96	(*)
01629945	Chub Run near Stanley, Va.	Lat 38°34'31", long 78°27'32", Page County, at culvert on State Highway 689, 2.2 mi east of Stanley, and 3.1 mi upstream from mouth. Datum of gage is 1,023.05 ft above National Geodetic Vertical Datum of 1929.	3.16	1959-69a, 1970-86	11- 4-85	9.66	(*)
01632970	Crooked Run near Mt. Jackson, Va.	Lat 38°45'44", long 78°41'06", Shenandoah County, on right upstream wingwall of culvert on State Highway 263, 0.4 mi upstream from mouth, and 2.3 mi west of Mt. Jackson. Datum of gage is 962.84 ft above National Geodetic Vertical Datum of 1929.	6.49	1972-86	11- 4-85	7.24	1,620
01633650	Pughs Run near Woodstock, Va.	Lat 38°55'48", long 78°32'43", Shenandoah County, on left upstream wingwall of culvert on State Highway 623, 4.0 mi northwest of Woodstock, and 5.4 mi upstream from mouth. Datum of gage is 1,027.27 ft above National Geodetic Vertical Datum of 1929.	3.66	1972-86	11- 4-85	5.08	131
01652500	Fourmile Run at Alexandria, Va.	Lat 38°50'35", long 77°05'09", Arlington County, on left upstream wingwall of bridge on Shirlington Road, at Arlington County-Alexandria City line, 0.1 mi upstream from Interstate Highway 395, and 2.5 mi upstream from mouth. Datum of gage is 28.57 ft above National Geodetic Vertical Datum of 1929.	13.8	1951-69†, 1970-73, 1974-75†, 1976-77b, 1979-82†, 1983-86	7-20-86	8.15	2,930

* Discharge not determined.

† Operated as a continuous-record gaging station.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

b Prior to Sept. 28, 1973, at site 0.4 mi downstream at datum 6.02 ft lower.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued							
Station No.	Station Name	Location	Drainage area (mi. ²)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Dis-charge (ft ³ /s)
POTOMAC RIVER BASIN--Continued							
01653000	Cameron Run at Alexandria, Va.	Lat 38°48'23", long 77°06'36", Alexandria City, on left downstream side of Southern Railway bridge, 800 ft downstream from confluence of Holmes Run and Backlick Run, 0.5 mi east of U.S. Army Quartermaster Dept., and 3.2 mi upstream from mouth. Datum of gage is 31.07 ft above National Geodetic Vertical Datum of 1929.	33.7	1955-80†, 1981-86	8- 2-86	6.04	3,630
01656200	Broad Run near Warrenton, Va.	Lat 38°48'25", long 77°48'47", Fauquier County, on left downstream wingwall of culvert on State Highway 17, 7 mi north of Warrenton, and 8.6 mi upstream from Mill Run.	2.94	1950-78, 1983-86	3-14-86	2.82	(*)
GREAT WICOMICO RIVER BASIN							
01661600	Great Wicomico River near Horse Head, Va.	Lat 37°53'15", long 76°27'00", Northumberland County, on right upstream wingwall of culvert on State Highway 604, 1.5 mi upstream from Bush Mill Stream, and 1.7 mi west of Horse Head.	6.98	1969-86	10-21-85	6.41	1,070
RAPPAHANNOCK RIVER BASIN							
01661900	Carter Run near Marshall, Va.	Lat 38°47'57", long 77°52'09", Fauquier County, on left bank 50 ft upstream from farm road, 1.2 mi downstream from Horner Run, 4.7 mi south of Marshall, 6.7 mi southwest of The Plains, and 9 mi upstream from mouth. Datum of gage is 388.39 ft above National Geodetic Vertical Datum of 1929.	19.5	1976-82†, 1983-86	11- 4-85	4.92	366
01665050	Pony Mountain Branch near Culpeper, Va.	Lat 38°27'04", long 77°57'24", Culpeper County, at culvert on State Highway 3, 0.3 mi upstream from mouth, and 2.7 mi southeast of Culpeper.	.30	1958-69a, 1970-86	7-23-86	2.99	134
01668300	Farmers Hall Creek near Champlain, Va.	Lat 38°00'05", long 76°58'40", Essex County, on left upstream wingwall of culvert on U.S. Highway 17, 1.0 mi upstream from Rouzie Swamp, and 1.2 mi southeast of Champlain. Datum of gage is 42.10 ft above National Geodetic Vertical Datum of 1929.	2.18	1966-86	8-12-86	3.86	40
PIANKATANK RIVER BASIN							
01669800	My Ladys Swamp near Saluda, Va.	Lat 37°34'34", long 76°31'30", Middlesex County, on left upstream wingwall of culvert on State Highway 629, 1.45 mi upstream from mouth, and 4.4 mi southeast of Saluda. Datum of gage is 4.16 ft above National Geodetic Vertical Datum of 1929.	4.81	1969-86	10-21-85	5.01	136

* Discharge not determined.

‡ Operated as a continuous-record gaging station.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Crest-Stage Partial-Record Stations during water year 1968 - continued					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
YORK RIVER BASIN							
01671615	Foster Creek near Ferncliff, Va.	Lat 37°57'35", long 78°11'20", Louisa County, at culvert on U.S. Highway 250, 1.9 mi southeast of Zion Crossroads, 4.6 mi northwest of Ferncliff, and 5.0 mi upstream from mouth. Datum of gage is 424.22 ft above National Geodetic Vertical Datum of 1929.	0.61	1960-68a, 1969-86	11- 4-85	5.71	273
01671650	Waldrop Creek near Louisa, Va.	Lat 38°00'08", long 78°04'22", Louisa County, on left upstream wingwall of culvert on State Highway 632, 2.3 mi upstream from mouth, and 4.2 mi southwest of Louisa. Datum of gage is 361.41 ft above National Geodetic Vertical Datum of 1929.	2.85	1969-86	11- 4-85	9.81	677
01671750	Harris Creek near Trevilians, Va.	Lat 38°01'02", long 78°03'06", Louisa County, on right upstream wingwall of culvert on State Highway 632, 2.7 mi southeast of Trevilians, and 6 mi upstream from mouth.	3.31	1969-86	11- 4-85	8.64	1,030
01674200	Reedy Creek near Dawn, Va.	Lat 37°52'55", long 77°21'35", Caroline County, at bridge on U.S. Highway 301, 3.3 mi north of Dawn, and 11 mi south of Bowling Green.	16.8	1950-69, 1972-86	10-21-85	4.40	153
01674700	Aylett Creek at Aylett, Va.	Lat 37°47'05", long 77°06'23", King William County, on right upstream wingwall of culvert on U.S. Highway 360 at Aylett and 2.8 mi upstream from mouth. Datum of gage is 26.72 ft above National Geodetic Vertical Datum of 1929.	6.17	1969-86	5-20-86	4.47	(*)
JAMES RIVER BASIN							
02012950	Sweet Springs Creek tributary at Sweet Chalybeate, Va.	Lat 37°39'25", long 80°14'10", Alleghany County, on left bank 20 ft upstream from culvert on State Highway 311, 0.1 mi upstream from mouth, and 0.9 mi north of Sweet Chalybeate. Datum of gage is 1,926.94 ft above National Geodetic Vertical Datum of 1929.	.66	1966-75, 1978-86	11- 4-85	8.24	267
02015600	Cowpasture River near Head Waters, Va.	Lat 38°19'30", long 79°26'14", Highland County, on left downstream wingwall of bridge on U.S. Highway 250, 1.2 mi west of Head Waters, and 3 mi upstream from Shaw Fork. Datum of gage is 1,985.65 ft above National Geodetic Vertical Datum of 1929.	11.3	1949-86	11- 4-85	6.45	5,380
02017300	Craig Creek at New Castle, Va.	Lat 37°30'06", long 80°06'18", Craig County, on left upstream pier of old bridge, about 20 ft downstream from new bridge on State Highway 616, 800 ft upstream from Johns Creek, and 0.3 mi southeast of New Castle. Datum of gage is 1,245.69 ft above National Geodetic Vertical Datum of 1929.	112	1967-86	11- 4-85	19.55	24,400

* Discharge not determined.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum discharge at crest-stage partial-record stations during water year 1986--Continued							
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Dis-charge (ft ³ /s)
JAMES RIVER BASIN--Continued							
02017700	Craig Creek tributary near New Castle, Va.	Lat 37°33'21", long 79°59'52", Craig County, on right upstream wingwall of culvert on State Highway 606, 0.4 mi upstream from mouth, and 7.1 mi northeast of New Castle.	2.05	1968-86	11- 4-85	13.45	1,100
02018800	North Fork near Fincastle, Va.	Lat 37°32'07", long 79°56'03", Botetourt County, on left upstream wingwall of culvert on State Highway 606, 3.5 mi upstream from mouth, and 3.9 mi northwest of Fincastle. Datum of gage is 1,248.65 ft above National Geodetic Vertical Datum of 1929.	4.17	1968-86	11- 4-85	10.39	3,470
02020100	Renick Run near Buchanan, Va.	Lat 37°35'27", long 79°38'04", Botetourt County, on left upstream wingwall of culvert on Frontage Road of Interstate Highway 81 between exits 48 and 49, 2.2 mi upstream from mouth, and 4.8 mi northeast of Buchanan. Datum of gage is 1,261.85 ft above National Geodetic Vertical Datum of 1929.	2.06	1967-86	11- 4-85	5.88	472
02021700	Cedar Grove Branch near Rockbridge Baths, Va.	Lat 37°53'00", long 79°23'10", Rockbridge County, on right upstream wingwall of culvert on State Highway 39, 0.1 mi upstream from mouth, and 1.8 mi southeast of Rockbridge Baths. Datum of gage is 1,041.22 ft above National Geodetic Vertical Datum of 1929.	12.3	1967-86	11- 4-85	10.87	830
02023300	South River near Steeles Tavern, Va.	Lat 37°55'50", long 79°09'55", Augusta County, at bridge on State Highway 608, 2.5 mi northeast of Vesuvius, 3 mi east of Steeles Tavern, and 5 mi south of Greenville.	15.7	1951-86	11- 4-85	6.53	2,680
02027700	Buffalo River tributary near Amherst, Va.	Lat 37°33'45", long 78°57'35", Amherst County, on left bank just upstream from culvert on U.S. Highway 60, 0.8 mi upstream from mouth, and 5.2 mi southeast of Amherst. Datum of gage is 583.66 ft above National Geodetic Vertical Datum of 1929.	.46	1966-86	11- 4-85	4.18	55
02030800	Stockton Creek near Afton, Va.	Lat 38°01'48", long 78°48'30", Albemarle County, on left upstream wingwall of culvert on State Highway 6, 1.7 mi east of Afton, and 4.3 mi upstream from Stony Run. Datum of gage is 835.27 ft above National Geodetic Vertical Datum of 1929.	2.80	1967-86	11- 4-85	8.18	(*)
02032200	Doyles River near White Hall, Va.	Lat 38°12'10", long 78°40'17", Albemarle County, on right downstream abutment of bridge on State Highway 810, 5.5 mi upstream from mouth, and 5.9 mi north of White Hall. Datum of gage is 928.08 ft above National Geodetic Vertical Datum of 1929.	6.70	1967-86	11- 4-85	13.06	1,780

* Discharge not determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Crest-Stage Partial-Record Stations during water year 1988--Continued					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
JAMES RIVER BASIN--Continued							
02032300	Muddy Run near Stanardsville, Va.	Lat 38°14'05", long 78°37'02", Albemarle County, on right downstream abutment of bridge on State Highway 810, 0.7 mi upstream from mouth, and 11 mi southwest of Stanardsville. Datum of gage is 756.79 ft above National Geodetic Vertical Datum of 1929.	3.36	1967-86	11- 4-85	7.22	(*)
02032540	Haneytown Creek near Stanardsville, Va.	Lat 38°16'48", long 78°30'50", Greene County, on left downstream wingwall of bridge on State Highway 810, 0.2 mi upstream from mouth, and 4.5 mi west of Stanardsville. Datum of gage is 616.34 ft above National Geodetic Vertical Datum of 1929.	4.45	1967-86	11- 4-85	13.34	854
02032550	Lynch River at Nortonville, Va.	Lat 38°14'16", long 78°32'32", Albemarle County, on right downstream abutment of bridge on State Highway 810, 4 mi upstream from mouth, and 7 mi southwest of Stanardsville. Datum of gage is 591.70 ft above National Geodetic Vertical Datum of 1929.	13.6	1967-86	11- 4-85	15.60	(*)
02032700	Schenks Branch at Charlottesville, Va.	Lat 38°02'32", long 78°28'30", Charlottesville City, on right downstream retaining wall of small road culvert, 25 ft upstream from U.S. Highway 250 bypass culvert, 200 ft southeast of intersection of U.S. Highway 250 bypass and McIntire Road, and 1.2 mi upstream from mouth. Datum of gage is 371.63 ft above National Geodetic Vertical Datum of 1929.	1.34	1950-77, 1979-86	11- 4-85	5.20	(*)
02033300	Moore's Creek near Charlottesville, Va.	Lat 38°00'25", long 78°34'25", Albemarle County, on right downstream wingwall of culvert on access road, 30 ft north of U.S. Highway 29, 2.8 mi upstream from Morey Creek, and 4 mi southwest of Charlottesville.	3.52	1967-77, 1979-86	11- 4-85	14.09	105
02037800	Falling Creek near Midlothian, Va.	Lat 37°27'15", long 77°35'20", Chesterfield County, at bridge on State Highway 653, 2.25 mi upstream from Horners Run, and 4 mi southeast of Midlothian. Datum of gage is 170.06 ft above National Geodetic Vertical Datum of 1929.	18.1	1951-86	11- 4-85	7.76	1,100
02040500	Flat Creek near Amelia, Va.	Lat 37°23'27", long 78°03'45", Amelia County, at bridge on State Highway 681, 0.5 mi downstream from Horsepen Creek, and 6.0 mi northwest of Amelia.	73.0	1946-70, 1972-86	11- 4-85	9.85	2,610
02042250	Bailey Branch tributary at Spring Grove, Va.	Lat 37°10'29", long 76°59'13", Surry County, on right upstream wingwall of culvert on State Highway 10, 1.0 mi northwest of Spring Grove. Datum of gage is 61.39 ft above National Geodetic Vertical Datum of 1929.	.71	1967-86	8-12-86	2.99	27

* Discharge not determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Selected Stations during Water Year 1988					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
JAMES RIVER BASIN--Continued							
02042300	Horsepen Branch at Richmond, Va.	Lat 37°35'45", long 77°30'40", Henrico County, on left downstream retaining wall at culverts on U.S. Highway 250 (Broad Street), at Richmond, and 0.9 mi upstream from mouth.	1.35	1965-86	7-23-86	3.96	795
02042400	Jordans Branch at Richmond, Va.	Lat 37°35'10", long 77°29'55", Henrico County, on left downstream wall of bridge on U.S. Highway 250 (Broad Street), at Richmond, and 2.0 mi upstream from mouth.	2.41	1965-86	7-23-86	8.90	(*)
02042780	West Branch Long Hill Swamp near Lightfoot, Va.	Lat 37°18'50", long 77°46'01", James City County, on left upstream wingwall of culvert on State Highway 612, 1.1 mi upstream from mouth, and 2.0 mi south of Lightfoot.	2.47	1970-76, 1978-86	10-21-85	2.98	49
CHOWAN RIVER BASIN							
02044200	Falls Creek tributary near Victoria, Va.	Lat 37°02'04", long 78°10'26", Lunenburg County, at upstream end of culvert on State Highway 49, 3.6 mi northeast of Victoria.	.34	1962-86	11- 4-85	4.21	64
02050050	Blackwater River tributary near Holland, Va.	Lat 36°38'44", long 76°51'29", Suffolk City, on left upstream wingwall of culvert on State Highway 189, 3.0 mi upstream from mouth, and 4.9 mi southwest of Holland. Datum of gage is 29.25 ft above National Geodetic Vertical Datum of 1929.	2.76	1967-86	10-22-85	4.37	78
ROANOKE RIVER BASIN							
02057700	Powder Mill Creek at Rocky Mount, Va.	Lat 37°00'26", long 79°52'25", Franklin County, on right upstream wingwall of westernmost culvert in the interchange between U.S. Highway 220 bypass and State Highways 40 and 122 at Rocky Mount, 3.5 mi upstream from mouth.	.64	1967-86	11- 4-85	(c)	(*)
02065100	Snake Creek near Brookneal, Va.	Lat 37°00'42", long 78°57'52", Halifax County, on left upstream wingwall of culvert on U.S. Highway 501, 0.5 mi upstream from mouth, and 2.1 mi south of Brookneal.	1.68	1967-86	11- 4-85	7.02	372
02065300	Right Hand Fork near Appomattox, Va.	Lat 37°16'12", long 78°49'14", Appomattox County, on right upstream wingwall of culvert on State Highway 727, 0.5 mi upstream from Maple Spring Branch, and 5.2 mi south of Appomattox.	2.08	1967-86	11- 4-85	5.59	148
02075350	Powells Creek near Turbeville, Va.	Lat 36°34'50", long 79°11'20", Halifax County, at culvert on U.S. Highway 58, 0.8 mi upstream from mouth, 1.1 mi east of Halifax-Pittsylvania County line, and 8.8 mi southwest of Turbeville. Datum of gage is 383.95 ft above National Geodetic Vertical Datum of 1929.	.28	1958-69a, 1970-86	8-12-86	5.17	240

* Discharge not determined.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

c Gage height unknown.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Crest-Stage Partial-Record Stations during Water Year 1988--Continued					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
ROANOKE RIVER BASIN--Continued							
02076000	Dan River at South Boston, Va.	Lat 36°41'37", long 78°54'09", South Boston City, on left bank 100 ft upstream from Norfolk and Western Railroad bridge at South Boston.	2,730	1900-07†, 1923-52†, 1953-62d, 1980-86d	11- 7-85	23.15	(*)
02076200	Bearskin Creek near Chatham, Va.	Lat 36°50'30", long 79°29'05", Pittsylvania County, on left upstream wingwall of culvert on State Highway 57, 4.5 mi west of Chatham, and 6 mi upstream from mouth.	4.06	1967-86	11- 4-85	16.00	(*)
02076700	Blacks Creek near Mt. Airy, Va.	Lat 36°56'40", long 79°09'56", Pittsylvania County, on left upstream wingwall of culvert on State Highway 40, 1.5 mi east of Mt. Airy, and 3.5 mi upstream from mouth.	3.44	1966-86	11- 4-85	5.25	235
KANAWHA RIVER BASIN							
03165700	Cripple Creek at Cedar Springs, Va.	Lat 36°49'31", long 81°16'45", Wythe County, on right downstream wingwall of bridge on State Highway 749, 0.6 mi southeast of Cedar Springs.	11.3	1967-86	11- 5-85	<13.88	<357
03167300	Mira Fork tributary near Dugspur, Va.	Lat 36°50'16", long 80°35'47", Carroll County, on left upstream wingwall of culvert on U.S. Highway 221, 1.3 mi upstream from mouth, and 2.2 mi northeast of Dugspur. Datum of gage is 2,602.96 ft above National Geodetic Vertical Datum of 1929.	.62	1967-86	7-27-86	5.57	159
03167700	Beaverdam Creek at Hillsville, Va.	Lat 36°46'05", long 80°43'33", Carroll County, at bridge on private road to Burlington Industries, 0.2 mi east of Hillsville corporate limits, and 3.0 mi upstream from mouth. Datum of gage is 2,373.04 ft above National Geodetic Vertical Datum of 1929.	4.75	1968-86	11- 4-85	3.55	196
03168750	Thorne Springs Branch near Dublin, Va.	Lat 37°05'30", long 80°44'34", Pulaski County, at pond dam just upstream from U.S. Highway 11, 3.3 mi southwest of Dublin, and 4.3 mi upstream from mouth.	4.77	1957-69a, 1970-86	7-27-86	2.58	219
BIG SANDY RIVER BASIN							
03208040	Russell Fork at Council, Va.	Lat 37°04'41", long 82°03'56", Buchanan County, on left bank 50 ft upstream from bridge on State Highway 80, 750 ft downstream from Ball Creek, 0.6 mi southeast of Council, and 4.7 mi upstream from Hurricane Creek.	10.2	1981-83†, 1984-86	2-18-86	3.18	411

* Discharge not determined.

† Operated as a continuous-record gaging station.

< Less than.

a Records provided by U.S. Department of Agriculture, Soil Conservation Service.

d Operated as a stage-only station.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Crest-Stage Partial-Record Stations during water year 1988--Continued					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
BIG SANDY RIVER BASIN--Continued							
03208100	Russell Fork near Birchleaf, Va.	Lat 37°09'50", long 82°15'20", Dickenson County, on right bank 125 ft upstream from bridge on State Highway 80, 150 ft upstream from Fryingpan Creek, 1.3 mi southeast of Birchleaf, and 3.5 mi southeast of Haysi.	87.4	1981-83†, 1984-86	2-18-86	7.24	2,190
03208800	Pound River above Indian Creek, at Pound, Va.	Lat 37°07'26", long 82°36'29", Wise County, on left bank at Pound, 1,600 ft downstream from confluence of North and South Forks, 0.5 mi upstream from bridge on U.S. Highway 23, and 0.7 mi upstream from Indian Creek. Datum of gage is 1,535.64 ft above National Geodetic Vertical Datum of 1929.	36.7	1966-78†, 1979-86	2-17-86	8.69	934
03208850	Pound River below Bold Camp Creek, at Pound, Va.	Lat 37°07'19", long 82°35'55", Wise County, at Pound, on left bank 1,000 ft upstream from bridge on State Highway 83, 0.3 mi downstream from Bold Camp Creek, and 0.5 mi downstream from Indian Creek. Datum of gage is 1,527.36 ft above National Geodetic Vertical Datum of 1929.	61.2	1966-78†, 1979-86	2-17-86	12.26	1,450
03208900	Pound River near Georges Fork, Va.	Lat 37°09'51", long 82°31'30", Dickenson County, on right bank 50 ft upstream from bridge on State Highway 624, 150 ft upstream from Camp Creek, and 2.6 mi northwest of Georges Fork. Datum of gage is 1,470.39 ft above National Geodetic Vertical Datum of 1929.	82.5	1964-82†, 1983-86	2-17-86	7.28	1,770
03209200	Russell Fork at Bartlick, Va.	Lat 37°14'45", long 82°19'25", Dickenson County, on left bank at Bartlick just upstream from bridge on State Highway 611, 0.2 mi downstream from Pound River, and 1.1 mi upstream from Fall Branch. Datum of gage is 1,165.00 ft above National Geodetic Vertical Datum of 1929.	526	1963-82†, 1983-86	2-19-86	12.99	5,550
03213590	Knox Creek at Kelsa, Va.	Lat 37°27'02", long 82°03'34", Buchanan County, on downstream end of center bridge pier on State Highway 697, 0.3 mi downstream from Pawpaw Creek, 0.8 mi northeast of Kelsa, and 10.0 mi upstream from mouth.	84.3	1980-81†, 1982-86	2-18-86	8.08	2,160
TENNESSEE RIVER BASIN							
03471200	South Fork Holston River at Teas, Va.	Lat 36°46'22", long 81°27'08", Smyth County, at Teas, on right downstream pier of bridge on State Highway 601, and 0.1 mi downstream from Mullins Branch. Datum of gage is 2,496.98 ft above National Geodetic Vertical Datum of 1929.	31.1	1967-86	-	<10.88	260

† Operated as a continuous-record gaging station.
 < Less than.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Each Station during Year 1990					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
TENNESSEE RIVER BASIN--Continued							
03472500	Beaverdam Creek at Damascus, Va.	Lat 36°37'40", long 81°47'28", Washington County, at Damascus, on right bank 350 ft west of State Highway 716, in old plant area of Mobay Chemical Corporation, and 0.6 mi upstream from mouth. Datum of gage is 1,946.66 ft above National Geodetic Vertical Datum of 1929.	56.0	1948-59†, 1960-86	3-15-86	3.36	1,150
03473500	Middle Fork Holston River at Groseclose, Va.	Lat 36°53'19", long 81°20'51", Smyth County, 10 ft downstream from culverts on State Highway 679 at Groseclose, 0.2 mi upstream from Rocky Spring Branch, and 10 mi northeast of Marion. Datum of gage is 2,442.86 ft above National Geodetic Vertical Datum of 1929.	7.39	1948-57†, 1958-86	11-30-85	3.16	80
03474000	Middle Fork Holston River at Seven Mile Ford, Va.	Lat 36°48'26", long 81°37'20", Smyth County, on right bank at downstream side of bridge on U.S. Highway 11 at Seven Mile Ford, 0.3 mi upstream from Meade Creek, 3.3 mi downstream from Walker Creek, and 32.1 mi upstream from mouth. Datum of gage is 1,960.00 ft above National Geodetic Vertical Datum of 1929.	132	1942-81†, 1982-86e	5-17-86	3.14	1,440
03474700	Hutton Creek near Chilhowie, Va.	Lat 36°47'00", long 81°44'05", Washington County, on left downstream wingwall of bridge on U.S. Highway 11, 3.3 mi southwest of Chilhowie, and 1.4 mi upstream from mouth.	8.32	1967-86	-	<10.50	<190
03474800	Hall Creek near Glade Spring, Va.	Lat 36°45'47", long 81°48'15", Washington County, on right downstream wingwall of bridge on U.S. Highway 11, 2.0 mi upstream from Tattle Branch, and 2.5 mi southwest of Glade Spring.	7.90	1967-86	-	<9.60	<200
03475600	Cedar Creek near Meadowview, Va.	Lat 36°44'50", long 81°51'20", Washington County, on left downstream wingwall of culvert on U.S. Highway 11, 1.2 mi south of Meadowview, and 2.5 mi upstream from mouth. Datum of gage is 2,034.66 ft above National Geodetic Vertical Datum of 1929.	3.38	1967-86	3-15-86	5.62	24
03475700	Spring Creek near Abingdon, Va.	Lat 36°40'43", long 82°02'29", Washington County, on right upstream and left downstream wingwall of culvert on U.S. Highway 11, 1.5 mi upstream from Sinking Creek, and 3.8 mi southwest of Abingdon. Datum of gage is 1,977.54 ft above National Geodetic Vertical Datum of 1929.	2.99	1967-86	11-30-85	3.68	98

† Operated as a continuous-record gaging station.

< Less than.

e Records provided by Tennessee Valley Authority since Jan. 1, 1982.

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Selected Stations during Year 1986					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
TENNESSEE RIVER BASIN--Continued							
03487800	Lick Creek near Chatham Hill, Va.	Lat 36°57'44", long 81°28'21", Smyth County, on left bank 270 ft upstream from bridge on State Highway 42, 2.9 mi northeast of Chatham Hill, and 1.6 mi upstream from mouth. Datum of gage is 2,076.97 ft above National Geodetic Vertical Datum of 1929.	25.5	1966-68†, 1969-86	3-15-86	5.51	1,160
03488450	Brumley Creek at Brumley Gap, Va.	Lat 36°47'30", long 82°01'10", Washington County, on left downstream wingwall of bridge on State Highway 611, 0.2 mi upstream from mouth, 0.8 mi southeast of Brumley Gap, and 2.7 mi downstream from Lee Creek. Datum of gage is 1,489.16 ft above National Geodetic Vertical Datum of 1929.	21.1	1979-81†, 1982-86	11-29-85	5.06	743
03489800	Cove Creek near Shelleys, Va.	Lat 36°39'13", long 82°21'16", Scott County, on right downstream wingwall of bridge on U.S. Highways 58 and 421, 1.5 mi northwest of Shelleys. Datum of gage is 1,381.53 ft above National Geodetic Vertical Datum of 1929.	17.3	1951-86	11-30-85	6.02	930
03489870	Big Moccasin Creek at Collinwood, near Hansonville, Va.	Lat 36°44'16", long 82°19'25", Russell County, at Collinwood, on left downstream wingwall of bridge on State Highway 612, and 50 ft downstream from Meade Branch. Datum of gage is 1,796.34 ft above National Geodetic Vertical Datum of 1929.	41.9	1967-68†, 1969-86	3-15-86	2.57	485
03490000	North Fork Holston River near Gate City, Va.	Lat 36°36'31", long 82°34'05", Scott County, on left bank 75 ft upstream from bridge on U.S. Highway 23, 1.6 mi downstream from Big Moccasin Creek, 2.1 mi southeast of Gate City, and 8.8 mi upstream from mouth. Datum of gage is 1,197.56 ft above National Geodetic Vertical Datum of 1929.	672	1931-81†, 1982-86e	11-30-85	10.23	12,400
03524500	Guest River at Coeburn, Va.	Lat 36°55'45', long 82°27'23", Wise County, on right bank 30 ft downstream from bridge on State Highway 72, 1.0 mi southeast of Coeburn, 1.4 mi upstream from Jaybird Branch, 1.8 mi downstream from Pine Camp Creek, and 6.3 mi upstream from mouth. Datum of gage is 1,925.80 ft above National Geodetic Vertical Datum of 1929.	87.3	1949-59†, 1960-78, 1979-81†, 1982-86	2-18-86	7.61	2,020
03524900	Stony Creek at Ka, Va.	Lat 36°48'57", long 82°37'02", Scott County, at Ka, on left bank 300 ft upstream from bridge on State Highway 619, 600 ft downstream from Straight Fork, and 4.2 mi upstream from mouth.	30.9	1980-81†, 1982-86	11-29-85	6.17	3,650

† Operated as a continuous-record gaging station.

e Records provided by Tennessee Valley Authority since Jan. 1, 1982.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1986--Continued

Annual Maximum Discharge at Crest-Stage Partial-Record Stations during water year 1988--Continued							
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Dis-charge (ft ³ /s)
TENNESSEE RIVER BASIN--Continued							
03526000	Copper Creek near Gate City, Va.	Lat 36°40'26", long 82°33'57", Scott County, on right bank 50 ft upstream from bridge on State Highway 619, 0.2 mi upstream from Plank Camp Creek, 1.1 mi downstream from Obeys Creek, and 2.6 mi northeast of Gate City. Datum of gage is 1,301.95 ft above National Geodetic Vertical Datum of 1929.	106	1948-72†, 1973-86	11-29-85	7.62	1,590
03527000	Clinch River at Speers Ferry, Va.	Lat 36°38'55", long 82°45'02", Scott County, on right bank 200 ft downstream from bridge on U.S. Highway 58, 0.5 mi downstream from Copper Creek, 0.8 mi northwest of Speers Ferry, 1.8 mi south of Clinchport, and 211.0 mi upstream from mouth. Datum of gage is 1,196.54 ft above National Geodetic Vertical Datum of 1929.	1,126	1920-76†, 1977-78, 1979-81†, 1982-86	11-29-85	14.64	13,400
03529500	Powell River at Big Stone Gap, Va.	Lat 36°52'08", long 82°46'32", Wise County, on right bank 10 ft upstream from bridge on U.S. Highway 23, at Big Stone Gap, 1.0 mi upstream from South Fork Powell River, 2.5 mi downstream from Pigeon Creek, and 179.2 mi upstream from mouth. Datum of gage is 1,459.07 ft above National Geodetic Vertical Datum of 1929.	112	1945-59†, 1960-77, 1979-81†, 1982-86	2-18-86	6.08	3,700
03530500	North Fork Powell River at Pennington Gap, Va.	Lat 36°46'26", long 83°01'59", Lee County, near right bank on downstream side of bridge on State Highway 621, 0.8 mi north of Pennington Gap, 1.3 mi downstream from Straight Creek, and 4.7 mi upstream from mouth. Datum of gage is 1,363.02 ft above National Geodetic Vertical Datum of 1929.	71.4	1945-51†, 1952-77, 1979-81†, 1982-86	2-18-86	6.31	2,360

† Operated as a continuous-record gaging station.

Special study and miscellaneous sites

Discharge measurements in the following table were made at special study and miscellaneous sites throughout the State. Data for miscellaneous sites provided by the Virginia Water Control Board are noted by an "[a]".

Discharge measurements made at special study and miscellaneous sites during water year 1986						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
NASSAWADOX CREEK BASIN						
Nassawadox Creek [a]	Chesapeake Bay	Lat 37°31'31", long 75°52'37", Northampton County, at culvert on State Highway 606, 2.7 mi upstream from Kelly Cove, and 3.5 mi north of Nassawadox.	b4.2	1968-85	10- 1-85	*0.752
					11-14-85	1.72
					2-20-86	8.09
					6-17-86	*.059
POTOMAC RIVER BASIN						
Accotink Creek	Accotink Bay	Lat 38°43'07", long 77°10'40", Fairfax County, on Elhers Road at Davison Airfield, at Fort Belvoir, and 2.5 mi upstream from mouth.	-	1984-85	3- 5-86	37.1
					7-16-86	3.17
YORK RIVER BASIN						
Unnamed tributary [a]	Goldmine Creek	Lat 38°01'54", long 78°00'04", Louisa County, at bridge on road to Louisa sewage treatment plant, at Louisa.	-	-	8-13-86	.12
JAMES RIVER BASIN						
02042726 Diascund Creek	Chickahominy River	Lat 37°28'52", long 76°58'21", New Kent County, at bridge on State Highway 628, 2.4 mi south of New Kent, and 6.0 mi upstream from Timber Swamp.	9.25	-	10-23-85	20.3
					11-26-85	9.46
					12-12-85	9.15
					2- 4-86	17.1
					3-19-86	8.11
					4-22-86	7.56
					5-21-86	20.7
					6-24-86	1.63
					7-22-86	1.06
02042736 Beaverdam Creek	Diascund Reservoir	Lat 37°28'53", long 76°54'23", New Kent County, at bridge on State Highway 632, 4.0 mi northwest of Barhamsville, and 4.1 mi upstream from mouth.	4.82	-	10-23-85	8.32
					11-26-85	2.97
					12-12-85	3.12
					2- 4-86	13.9
					3-19-86	2.77
					4-22-86	1.21
					5-21-86	16.2
					6-24-86	(c)
					7-22-86	0
02042742 Wahrani Swamp	Diascund Reservoir	Lat 37°27'30", long 76°51'57", New Kent County, at culvert on State Highway 632, 1.3 mi west of Barhamsville, and 1.8 mi upstream from Barnes Swamp.	4.02	-	10-23-85	7.36
					11-26-85	3.73
					12-12-85	3.12
					2- 4-86	10.6
					3-19-86	3.57
					4-22-86	3.08
					5-21-86	7.40
					6-24-86	(c)
					7-22-86	0
CHOWAN RIVER BASIN						
Buckhorn Swamp [a]	Nottoway River	Lat 36°43'17", long 77°09'35", Southampton County, at bridge on State Highway 652, 5.0 mi west of Courtland.	-	1982-85	10- 9-85	2.07
					11-20-85	5.11
					1- 8-86	4.20
					2-26-86	6.62
					4-23-86	6.24
					6-18-86	0

* Base flow.

a Provided by the Virginia Water Control Board.

b Approximately.

c No apparent flow.

Discharge measurements made at special study and miscellaneous sites during water year 1986--Continued

Discharge measurements made at special study and miscellaneous sites during water year 1986--Continued					Measurements	
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
CHOWAN RIVER BASIN--Continued						
Buckhorn Swamp [a]	Nottoway River	Lat 36°45'00", long 77°09'33", Southampton County, at bridge on State Highway 651, 5.4 mi northwest of Courtland.	-	1982-85	10- 9-85	3.33
					11-20-85	6.86
					1- 8-86	7.44
					2-26-86	11.0
Nottoway Swamp [a]	Nottoway River	Lat 36°43'22", long 76°59'43", Southampton County, at bridge on State Highway 611, 2.4 mi northwest of Hunterdale.	-	1982-85	10- 9-85	8.84
					11-20-85	9.49
					1- 8-86	6.68
					2-26-86	11.8
					4-23-86	5.82
	6-18-86	0				
KANAWHA RIVER BASIN						
Chestnut Creek [a]	New River	Lat 36°41'12", long 80°55'02", Carroll County, 0.5 mi downstream from bridge on State Highway 721, 1.8 mi north of Galax.	-	-	10-15-85	34.0
TENNESSEE RIVER BASIN						
Middle Fork Holston River [a]	Holston River	Lat 36°49'42", long 81°31'48", Smyth County, 100 ft upstream from Marion sewage treatment plant, at Marion.	-	-	9-17-86	29.7
Hungry Mother Creek [a]	Middle Fork Holston River	Lat 36°49'34", long 81°32'33", Smyth County, at mouth, 1,500 ft north of U.S. Highway 11, and 1.6 mi southeast of Marion.	-	-	9-17-86	3.02
Middle Fork Holston River [a]	Holston River	Lat 36°49'15", long 81°33'27", Smyth County, 600 ft north of U.S. Highway 11, 1,200 ft upstream from Laurel Springs Creek, and 2.5 mi southeast of Marion.	-	-	9-17-86	37.7
Clinch River [a]	Tennessee River	Lat 37°05'26", long 81°49'58", Tazewell County, 50 ft upstream from Mudlick Creek, 900 ft south of U.S. Highway 460, and 1.8 mi west of Richlands.	-	-	10- 3-85	38.8
Clinch River [a]	Tennessee River	Lat 37°04'50", long 81°51'12", Tazewell County, 100 ft east of State Highway 618, 0.3 mi downstream from Mill Creek, and 3.0 mi southwest of Richlands.	-	-	10- 3-85 10-17-85	44.3 43.4
Guest River [a]	Clinch River	Lat 36°56'30", long 82°35'33", Norton City, at bridge on U.S. Highway 58, at Norton, and 0.3 mi downstream from Bear Creek.	-	-	8-26-86 9-10-86	11.0 10.2
Guest River [a]	Clinch River	Lat 36°56'15", long 82°34'16", Wise County, 2.0 mi west of Tacoma, 2.8 mi downstream from Bear Creek.	-	-	8-26-86 9-10-86	11.9 10.4
Guest River [a]	Clinch River	Lat 36°56'03", long 82°31'58", Wise County, at bridge on State Highway 706, at Tacoma, and 150 ft downstream from Whiteoak Branch.	-	-	8-25-86	14.6

a Provided by the Virginia Water Control Board.

GROUND-WATER-QUALITY RECORDS

REMARK CODES.--The following remark codes may appear with the water-quality data in this section:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

GROUND-WATER LEVELS

ACCOMACK COUNTY

375622075280101. Local number, 67M2.

LOCATION.--Lat 37°56'23", long 75°28'02", Hydrologic Unit 02060010, Wallops Flight Center well B31. Owner: National Aeronautics and Space Administration (formerly U.S. Naval Air Station, Wallops Island).

AQUIFER.--Columbia Group sand of Pleistocene age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in., depth 60 ft, screen depth unknown.

INSTRUMENTATION.--Monthly measurement with chalked tape by NASA personnel.

DATUM.--Elevation of land-surface datum is 35 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.38 ft above land-surface datum. Measuring point reported as 6.09 ft above land-surface datum from 1963 to 1975.

REMARKS.--Records provided by the National Aeronautics and Space Administration.

PERIOD OF RECORD.--May 1963 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.82 ft below land-surface datum, May 9, 1963; lowest measured, 25.22 ft below land-surface datum, Dec. 1, 1981, Aug. 6, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	24.72	JAN 7	24.20	FEB 28	23.12	APR 30	23.70	JUN 30	24.29	AUG 29	24.37
NOV 6	23.37	28	23.97	MAR 31	23.37	MAY 30	24.04	JUL 31	24.58	SEP 30	24.62

375521075223202. Local number, 67M16.

LOCATION.--Lat 37°55'21", long 75°22'32", Hydrologic Unit 02060010, 250 ft southeast of Ridge Road in the town of Chincoteague. Owner: U.S. Geological Survey.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Jetted observation water well, diameter 2 in., depth 14.94 ft, screened 11.50 to 14.50 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 4.22 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 2.91 ft above land-surface datum.

REMARKS.--Water levels affected by tidal fluctuations.

PERIOD OF RECORD.--April to September 1986.

EXTREMES FOR PERIOD APRIL TO SEPTEMBER 1986.--Highest water level recorded, 1.15 ft below land-surface datum, Sept. 6-8, 1986; lowest recorded, 4.52 ft below land-surface datum, Aug. 11, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, APRIL TO SEPTEMBER 1986
LOWEST VALUES

DAY	APR	MAY	JUN	JUL	AUG	SEP
5	1.36	1.78	3.03	3.61	4.42	2.87
10	1.18	1.99	3.31	4.08	4.49	1.21
15	1.40	2.20	3.37	4.17	3.94	1.48
20	1.41	2.43	3.39	4.25	3.42	---
25	1.41	2.55	3.41	4.35	3.16	---
EOM	1.56	2.87	3.91	4.47	2.55	---

PERIOD APRIL TO SEPTEMBER 1986

HIGHEST 1.15 SEP 6-8, 1986
LOWEST 4.52 AUG 11, 1986

375521075225602. Local number, 67M18.

LOCATION.--Lat 37°55'21", long 75°22'56", Hydrologic Unit 02060010, 1,100 ft southeast of Willow Street at the shoreline of the "Fowling Gut" in the town of Chincoteague. Owner: U.S. Geological Survey.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Jetted observation water well, diameter 1.25 in., depth 14.30 ft, screened 11.30 to 14.30 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 3.40 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.40 ft above land-surface datum.

PERIOD OF RECORD.--May to September 1986.

REMARKS.--Water levels affected by tidal fluctuations.

EXTREMES FOR PERIOD MAY TO SEPTEMBER 1986.--Highest water level measured, 0.17 ft below land-surface datum, Aug. 22, 1986; lowest measured, 1.01 ft below land-surface datum, Aug. 3, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MAY TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 21	0.98	MAY 22	0.77	JUN 24	0.88	AUG 3	1.01	AUG 22	0.17	SEP 18	0.83

GROUND-WATER LEVELS

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ACCOMACK COUNTY--Continued

375521075225603. Local number, 67M19.

LOCATION.--Lat 37°55'21", long 75°22'56", Hydrologic Unit 02060010, 1,100 ft southeast of Willow Street 10 ft shoreward from the west bank of "Fowling Gut" in the town of Chincoteague. Owner: U.S. Geological Survey.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Jetted observation water well, diameter 2 in., depth 14.30 ft, screened 11.30 to 14.30 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 3.40 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf, 4.00 ft above land-surface datum.

REMARKS.--Water levels affected by tidal fluctuations.

PERIOD OF RECORD.--April to September 1986.

EXTREMES FOR PERIOD APRIL TO SEPTEMBER 1986.--Highest water level recorded, 1.76 ft below land-surface datum, Sept. 7, 1986; lowest recorded, 3.45 ft below land-surface datum, May 14, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, APRIL TO SEPTEMBER 1986
LOWEST VALUES

DAY	APR	MAY	JUN	JUL	AUG	SEP
5	---	2.93	2.86	2.75	2.73	2.50
10	---	3.26	2.85	2.88	2.72	2.03
15	---	3.38	2.76	2.67	2.44	---
20	2.06	2.68	2.86	2.59	1.94	2.60
25	2.24	2.54	2.68	2.56	1.93	---
EOM	2.51	2.70	2.87	---	2.67	---

PERIOD APRIL TO SEPTEMBER 1986 HIGHEST 1.76 SEP 7, 1986
 LOWEST 3.45 MAY 14, 1986

375522075225701. Local number, 67M20.

LOCATION.--Lat 37°55'22", long 75°22'57", Hydrologic Unit 02060010, 1,000 ft southeast of Willow Street 100 ft from the west bank of "Fowling Gut" in the town of Chincoteague. Owner: U.S. Geological Survey.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Jetted observation water well, diameter 2 in., depth 10.40 ft, screened 7.90 to 9.90 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 2.14 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 3.40 ft above land-surface datum.

REMARKS.--Water levels affected by tidal fluctuations.

PERIOD OF RECORD.--April to September 1986.

EXTREMES FOR PERIOD APRIL TO SEPTEMBER 1986.--Highest water level recorded, 0.34 ft below land-surface datum, Sept. 6, 7, 1986; lowest recorded, 1.81 ft below land-surface datum, June 28, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, APRIL TO SEPTEMBER 1986
LOWEST VALUES

DAY	APR	MAY	JUN	JUL	AUG	SEP
5	---	1.52	1.33	1.64	---	1.16
10	---	1.53	1.37	1.70	---	.36
15	---	1.45	1.39	1.66	---	.38
20	0.92	1.39	---	---	---	1.30
25	.87	1.51	1.50	---	0.64	1.30
EOM	1.22	1.37	1.65	---	.67	1.30

PERIOD APRIL TO SEPTEMBER 1986 HIGHEST 0.34 SEP 6, 7, 1986
 LOWEST 1.81 JUN 28, 1986

375534075230601. Local number, 67M21.

LOCATION.--Lat 37°55'34", long 75°23'06", Hydrologic Unit 02060010, at the Birchwood Motel in the town of Chincoteague. Owner: U.S. Geological Survey.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Jetted observation water well, diameter 2 in., depth 8.60 ft, screened 5.60 to 8.10 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 4.57 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf, 4.20 ft above land-surface datum.

REMARKS.--Water levels affected by tidal fluctuations.

PERIOD OF RECORD.--May to September 1986.

EXTREMES FOR PERIOD MAY TO SEPTEMBER 1986.--Highest water level recorded, 1.00 ft below land-surface datum, Sept. 8, 1986; lowest recorded, 4.10 ft below land-surface datum, Aug. 3, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MAY TO SEPTEMBER 1986
LOWEST VALUES

DAY	MAY	JUN	JUL	AUG	SEP
5	---	3.90	3.95	4.09	2.52
10	---	3.77	4.01	4.06	1.22
15	---	3.82	4.03	3.99	1.88
20	---	3.89	4.04	3.10	2.18
25	3.36	3.97	4.02	2.57	2.47
EOM	3.55	4.03	4.04	2.01	2.78

PERIOD MAY TO SEPTEMBER 1986 HIGHEST 1.00 SEP 8, 1986
 LOWEST 4.10 AUG 3, 1986

ACCOMACK COUNTY--Continued

375554075230102. Local number, 67M23.

LOCATION.--Lat 37°55'54", long 75°23'01", Hydrologic Unit 02060010, at the end of a pier at the U.S. Coast Guard Station in the town of Chincoteague. Owner: U.S. Geological Survey.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Driven observation water well, diameter 1.25 in., depth 4.25 ft, screened 1.40 to 3.90 ft. INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 3.62 ft below National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 10.05 ft above land-surface datum.

REMARKS.--Readings are taken below the measuring point. Water levels affected by tidal fluctuations.

PERIOD OF RECORD.--May to September 1986.

EXTREMES FOR PERIOD MAY TO SEPTEMBER 1986.--Highest water level measured, 4.64 ft above land-surface datum, Aug. 22, 1986; lowest measured, 3.37 ft above land-surface datum, June 23, 1986.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, MAY TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 21	3.75	JUN 23	3.37	AUG 22	4.64	SEP 17	3.43

NOTE.--Well is not flowing; readings given are above land-surface datum (bottom of tidal channel).

375509075222301. Local number, 68M3.

LOCATION.--Lat 37°55'09", long 75°22'23", Hydrologic Unit 02060010, 450 ft northwest of East Side Road in the town of Chincoteague. Owner: U.S. Geological Survey.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Jetted observation water well, diameter 2 in., depth 11.00 ft, screened 8.35 to 10.35 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 3.22 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 3.40 ft above land-surface datum.

REMARKS.--Water levels affected by tidal fluctuations.

PERIOD OF RECORD.--May to September 1986.

EXTREMES FOR PERIOD MAY TO SEPTEMBER 1986.--Highest water level recorded, 0.30 ft above land-surface datum, Sept. 7, 8, 1986; lowest recorded, 3.05 ft below land-surface datum, Aug. 11, 12, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MAY TO SEPTEMBER 1986
LOWEST VALUES

DAY	MAY	JUN	JUL	AUG	SEP
5	---	1.93	2.24	3.00	1.32
10	1.12	1.93	2.69	3.04	a.25
15	1.29	1.93	2.74	2.34	---
20	1.48	1.93	2.72	1.72	.65
25	1.57	---	2.87	1.55	.92
EOM	1.82	2.55	---	.98	---

PERIOD MAY TO SEPTEMBER 1986

HIGHEST a0.30 SEP 7, 8, 1986
LOWEST 3.05 AUG 11, 12, 1986

a Readings above land-surface datum.

ALBEMARLE COUNTY

380333078264801. Local number, 43N1.

LOCATION.--Lat 38°03'33", long 78°26'48", Hydrologic Unit 02080204, at Key West Subdivision, Charlottesville. Owner: Key West Development Corporation.

AQUIFER.--Lynchburg Formation of Precambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 409 ft, cased to 52 ft, open hole 52 to 409 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 345 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.3 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 28. Manual measurements published from June 1974 to April 1981.

PERIOD OF RECORD.--February 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 8.65 ft below land-surface datum, May 3, 1984; lowest recorded, 22.10 ft below land-surface datum, Nov. 30, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	17.62	14.50	13.10	14.69	15.04	14.83	15.10	15.37	16.64	17.70	18.40	18.49
10	17.53	13.57	14.10	14.91	14.90	14.86	15.03	15.70	17.00	17.57	18.39	18.41
15	17.37	14.27	14.31	14.97	14.72	14.76	15.06	15.96	17.13	17.80	18.51	18.41
20	17.30	14.68	14.45	14.92	14.83	14.51	15.10	15.99	17.28	18.04	18.48	18.48
25	16.90	14.56	14.40	15.17	14.90	14.72	15.20	16.23	17.50	18.42	18.41	18.41
EOM	16.76	14.43	14.65	15.09	14.81	14.78	15.20	16.44	17.67	18.37	18.60	18.59

WTR YR 1986 HIGHEST 12.64 DEC 3, 1985 LOWEST 18.60 AUG 31, 1986

GROUND-WATER LEVELS

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APPOMATTOX COUNTY

372133078493701. Local number, 40G1.

LOCATION.--Lat 37°21'33", long 78°49'37", Hydrologic Unit 02080207, in the town of Appomattox. Owner: Town of Appomattox.

AQUIFER.--Metamorphic rock of uncertain age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in., depth 288 ft, cased to 40 ft, open hole 40 to 288 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 860 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 12.

PERIOD OF RECORD.--October 1967 to current year. Unpublished record available in May 1949.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 34.78 ft below land-surface datum, June 13, 1973; lowest recorded, 58.21 ft below land-surface datum, Nov. 17, 18, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	49.73	49.47	49.09	48.38	48.00	47.96	47.50	47.57	47.68	---	---	49.68
10	49.66	49.58	49.00	48.25	48.00	47.90	47.33	47.78	47.74	---	49.10	49.90
15	49.77	49.62	48.93	48.37	48.07	47.80	47.32	47.72	47.90	---	49.20	50.00
20	49.70	49.40	48.76	48.15	48.02	47.87	47.25	47.57	48.00	---	49.39	50.15
25	49.80	49.33	48.40	48.30	48.00	47.86	47.20	47.63	---	---	49.50	50.30
EOM	49.63	49.10	48.31	48.24	48.06	47.50	47.28	47.63	---	---	49.69	50.38

WTR YR 1986 HIGHEST 46.92 APR 21, 1986 LOWEST 50.38 SEP 28-30, 1986

372514078394301. Local number, 41H2.

LOCATION.--Lat 37°25'14", long 78°39'43", Hydrologic Unit 02080207, 1 mi south of intersection of State Highway 636 on the east side of State Highway 640. Owner: U.S. Geological Survey.

AQUIFER.--Candler Formation of Paleozoic age.

WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 68 ft, 1.25 in. 68 to 73 ft, depth 73 ft, screened 68 to 73 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 640 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.

PERIOD OF RECORD.--October 1977 to current year. Unpublished records available March 1971 through September 1977.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.99 ft below land-surface datum, May 20, 1973; lowest measured, 49.41 ft below land-surface datum, Mar. 30, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 23	45.33	MAR 31	44.65	MAY 15	44.37	JUN 23	44.56	AUG 25	46.10		

ARLINGTON COUNTY

385346077073701. Local number, 53V1.

LOCATION.--Lat 38°53'46", long 77°07'37", Hydrologic Unit 02070010, at Langston School, 4854 Lee Highway, Arlington. Owner: Arlington County School Board.

AQUIFER.--Brandywine Formation of Pleistocene age and Bryn Mawr (?) gravel of Pliocene (?) age, overlying the Sykesville Formation of Precambrian age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 24 in., depth 35 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 410 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Inner flange of manhole at land-surface datum.

PERIOD OF RECORD.--October 1931 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.74 ft below land-surface datum, Apr. 20, 1935; lowest measured, 34.81 ft below land-surface datum, Dec. 5, 1931.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 1	27.89	NOV 26	27.66	FEB 28	25.83	APR 30	24.95	AUG 29	27.71		

GROUND-WATER LEVELS

ARLINGTON COUNTY--Continued

385253077042301. Local number, 54V3.

LOCATION.--Lat 38°52'53", long 77°04'23", Hydrologic Unit 02070010, at Arlington National Cemetery. Owner:

NPS National Capitol Parks.

AQUIFER.--Terrace gravels of Holocene age and sand of Early Cretaceous age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 48 in., depth 50 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 205 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of brick and stone casing, 3 ft above land-surface datum.

PERIOD OF RECORD.--January 1958 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 40.34 ft below land-surface datum, June 26, 1978; lowest measured, 44.90 ft below land-surface datum, Mar. 4, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 1	43.57	JAN 30	43.76	FEB 28	43.80	APR 30	43.35	JUL 1	43.71	AUG 29	44.07
26	43.60										

BUCKINGHAM COUNTY

372541078392101. Local number, 41H1.

LOCATION.--Lat 37°25'41", long 78°39'21", Hydrologic Unit 02080207, 0.45 mi southeast of State Highway 636.

Owner: U.S. Geological Survey.

AQUIFER.--Candler Formation of Paleozoic age.

WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 83 ft, diameter 1.25 in. 83 to 88 ft, depth 88 ft, screened 83 to 88 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 660 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.20 ft above land-surface datum.

PERIOD OF RECORD.--October 1977 to current year. Unpublished records available March 1971 through September 1977.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.95 ft below land-surface datum, May 20, 1973; lowest measured, 50.41 ft below land-surface datum, Dec. 8, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 23	46.11	MAR 31	44.83	MAY 15	44.28	JUN 23	44.54	AUG 25	47.09		

372608078404601. Local number, 41H3.

LOCATION.--Lat 37°26'08", long 78°40'46", Hydrologic Unit 02080207, 0.85 mi west of Ranger Headquarters on south side of dirt road off State Highway 636. Owner: U.S. Geological Survey.

AQUIFER.--Candler Formation of Paleozoic age.

WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 49 ft, diameter 1.25 in. 49 to 54 ft, depth 54 ft, screened 49 to 54 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 683.8 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.3 ft above land-surface datum.

REMARKS.--Prior to Oct. 1, 1981, well was reported as being located in Appomattox County.

PERIOD OF RECORD.--October 1977 to current year. Unpublished records available March 1971 through September 1977.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.31 ft below land-surface datum, Apr. 12, 1973; lowest measured, 28.30 ft below land-surface datum, Oct. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 23	20.88	MAR 31	19.32	MAY 15	21.14	JUN 23	23.11	AUG 25	25.93		

GROUND-WATER LEVELS

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BUCKINGHAM COUNTY--Continued

372519078374001. Local number, 41H4.

LOCATION.--Lat 37°25'19", long 78°37'40", Hydrologic Unit 02080207, 0.65 mi northeast of Holiday Creek and 0.85 mi southeast of State Highway 636 on State Highway 614. Owner: U.S. Geological Survey.

AQUIFER.--Candler Formation of Paleozoic age.

WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in. to 72 ft, diameter 1.25 in. 72 to 77 ft, depth 77 ft, screened 72 to 77 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 647 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.4 ft above land-surface datum.

PERIOD OF RECORD.--October 1977 to current year. Unpublished records available March 1971 through September 1977.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.45 ft below land-surface datum, May 1, 1980; lowest measured, 44.29 ft below land-surface datum, Oct. 20, 21, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 23	36.64	MAR 21	37.02	MAR 31	35.21	JUN 23	36.89	AUG 25	40.60		

CITY OF COLONIAL HEIGHTS

371644077244601. Local number, 51G1.

LOCATION.--Lat 37°16'44", long 77°24'46", Hydrologic Unit 02080207, at Matoaka Manor, Colonial Heights. Owner: Dean Whittington.

AQUIFER.--Petersburg granite of Late Paleozoic age.

WELL CHARACTERISTICS.--Drilled water well, diameter 6 in., depth 100 ft, cased to 50 ft, open hole 50 to 100 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 57.30 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1 ft above land-surface datum.

PERIOD OF RECORD.--October 1939 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.73 ft below land-surface datum, Jan. 26, 1978; lowest measured, 19.26 ft below land-surface datum, Dec. 3, 1963.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	15.77	DEC 31	13.50	FEB 28	12.88	APR 30	14.64	JUN 27	15.84	AUG 28	15.14
NOV 25	13.79	JAN 29	14.31	MAR 28	13.72	MAY 29	15.09	JUL 30	16.37	SEP 29	15.85

FAIRFAX COUNTY

384518077163501. Local number, 52U4.

LOCATION.--Lat 38°45'18", long 77°16'35", Hydrologic Unit 02070010, east of intersection of State Highways 641 and 643, Springfield. Owner: Sydenstricker Church.

AQUIFER.--Granite of undetermined age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 24 in., depth 28 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 340 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Hole in cement platform, 0.67 ft above land-surface datum.

PERIOD OF RECORD.--May 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.54 ft below land-surface datum, Apr. 30, 1973; lowest measured, 27.57 ft below land-surface datum, Nov. 30, 1964.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 31	23.39	DEC 27	22.56	FEB 27	21.47	APR 29	20.71	JUN 30	22.74	AUG 28	24.38
NOV 26	23.34	JAN 30	22.12	MAR 27	20.81	MAY 29	21.21	JUL 30	23.98	SEP 29	25.03

GROUND-WATER LEVELS

FAIRFAX COUNTY--Continued

385638077220101. Local number, 52V2.

LOCATION.--Lat 38°56'58", long 77°22'01", Hydrologic Unit 02070008, at U.S. Geological Survey, National Center, Reston. Owner: U.S. Geological Survey.

AQUIFER.--Manassas sandstone of Triassic age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 8 in., depth 205 ft, cased to 35 ft, open hole 35 to 205 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 390 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.

PERIOD OF RECORD.--October 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.47 ft below land-surface datum, Mar. 30, 1984; lowest recorded, 17.78 ft below land-surface datum, Sept. 30, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	17.04	16.24	15.14	15.39	14.32	12.08	12.14	11.53	13.67	15.42	16.98	16.94
10	17.13	16.07	15.25	15.46	13.73	11.85	11.50	12.16	14.05	15.66	16.86	17.06
15	17.16	16.17	15.22	15.54	13.50	11.66	11.71	12.51	14.23	15.99	16.96	17.32
20	17.11	16.09	15.22	15.41	12.85	11.17	10.26	12.71	14.55	16.25	17.00	17.49
25	16.55	15.82	15.35	15.53	12.03	11.59	10.54	13.17	14.92	16.43	16.84	17.64
EOM	16.54	15.66	15.38	14.68	12.11	11.79	11.03	13.26	15.12	16.74	17.02	17.78

WTR YR 1986 HIGHEST 9.99 APR 21, 1986 LOWEST 17.78 SEP 30, 1986

CITY OF FRANKLIN

364047076552401. Local number, 55B22.

LOCATION.--Lat 36°40'47", long 76°55'24", Hydrologic Unit 03010202, at 5th Avenue and Middle Street, Franklin. Owner: City of Franklin.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Jetted observation water well, diameter 4 in., depth 354 ft, screened 335 to 354 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 21.24 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top edge of manhole at land-surface datum.

REMARKS.--Water level affected by local pumpage.

PERIOD OF RECORD.--June 1942 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.50 ft below land-surface datum, June 25, 1942; lowest measured, 192.69 ft below land-surface datum, Aug. 2, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	180.14	FEB 6	179.06	MAR 17	179.67	MAY 2	173.70	JUN 18	179.68	AUG 4	179.97
DEC 10	179.29										

364033076562603. Local number, 55B66.

LOCATION.--Lat 36°40'33", long 76°56'26", Hydrologic Unit 03010202, at P. D. Camp Community College, Franklin. Owner: U.S. Geological Survey.

AQUIFER.--Sands of lower Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 360 ft, screened 350 to 360 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 34 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.58 ft above land-surface datum.

REMARKS.--Water levels affected by local pumpage.

PERIOD OF RECORD.--November 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 175.39 ft below land-surface datum, Dec. 27, 1984; lowest measured, 185.52 ft below land-surface datum, Aug. 2, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	180.34	DEC 10	179.34	FEB 6	179.37	MAR 17	179.91	JUN 18	179.46	AUG 4	179.82

GROUND-WATER LEVELS

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CITY OF FRANKLIN--Continued

364033076562604. Local number, 55B67.

LOCATION.--Lat 36°40'33", long 76°56'26", Hydrologic Unit 03010202, at P. D. Camp Community College, Franklin.

Owner: U.S. Geological Survey.

AQUIFER.--Sands of Paleocene age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 140 ft, screened 130 to 140 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 34 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.15 ft above land-surface datum.

REMARKS.--Water level affected by local pumpage.

PERIOD OF RECORD.--November 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.51 ft below land-surface datum, Mar. 19, 1985; lowest measured, 31.05 ft below land-surface datum, Aug. 4, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	30.16	DEC 10	29.83	FEB 6	29.93	MAR 17	29.96	JUN 18	30.61	AUG 4	31.05

HALIFAX COUNTY

364550078562301. Local number, 39C1.

LOCATION.--Lat 36°45'50", long 78°56'23", Hydrologic Unit 03010105, in the town of Halifax. Owner: Town of Halifax.

AQUIFER.--Granite and gneiss of uncertain age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in., depth 302 ft, cased to 52 ft, open hole 52 to 302 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 380 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.20 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 11.

PERIOD OF RECORD.--October 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 36.28 ft below land-surface datum, June 8, 1980; lowest recorded, 45.09 ft below land-surface datum, Dec. 30, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	39.20	39.26	39.44	39.08	38.98	39.09	39.20	39.20	39.30	39.62	39.84	40.01
10	39.24	39.38	39.36	39.14	38.98	39.20	39.10	39.27	39.42	39.60	39.83	40.12
15	39.22	39.48	39.30	39.05	39.00	39.08	39.19	39.30	39.40	39.68	39.86	40.15
20	39.24	39.49	39.27	38.94	39.08	39.20	39.21	39.20	39.50	39.68	39.92	40.17
25	39.30	39.42	39.16	39.03	38.97	39.25	39.18	39.28	39.56	39.71	40.00	40.21
EOM	39.23	39.41	39.13	39.05	39.00	39.19	39.23	39.24	39.54	39.80	40.04	40.24

WTR YR 1986 HIGHEST 38.90 FEB 27, 1986 LOWEST 40.25 SEP 28, 29, 1986

CITY OF HOPEWELL

371801077164201. Local number, 52G1.

LOCATION.--Lat 37°18'01", long 77°16'42", Hydrologic Unit 02080206, in the city of Hopewell. Owner: Virginia American Water Corporation.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 300 ft, screen depth unknown.

INSTRUMENTATION.--Weekly measurement with chalked tape by observer.

DATUM.--Elevation of land-surface datum is 50.26 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.34 ft above land-surface datum.

PERIOD OF RECORD.--May 1939 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.56 ft below land-surface datum, Sept. 7, 1979; lowest measured, 56.95 ft below land-surface datum, Aug. 14, 1943.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	27.05	DEC 6	34.20	FEB 14	33.26	APR 18	34.64	JUN 20	34.93	AUG 22	34.90
11	34.19	13	34.70	21	32.96	25	34.71	27	35.01	29	34.93
18	35.08	20	34.82	28	33.67	MAY 2	34.67	JUL 4	34.85	SEP 5	34.96
25	30.57	JAN 3	34.96	MAR 7	34.68	9	34.74	11	34.98	12	35.04
NOV 1	34.16	10	35.12	14	34.81	16	34.68	18	35.04	19	35.12
8	33.78	17	35.18	21	34.82	23	34.74	25	35.04	26	35.11
15	31.36	24	35.24	28	34.92	30	34.69	AUG 1	35.04		
22	27.68	31	32.67	APR 4	35.19	JUN 6	34.81	8	35.07		
29	32.16	FEB 7	33.19	11	34.51	13	34.86	15	35.10		

GROUND-WATER LEVELS

ISLE OF WIGHT COUNTY

364059076544901. Local number, 55B16.

LOCATION.--Lat 36°40'59", long 76°54'49", Hydrologic Unit 03010202, at lumberyard well, near Franklin. Owner: Union Camp Corporation.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 305 ft, screened 285 to 305 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.45 ft above land-surface datum. Measuring point changed from top edge of recorder shelf, 3.50 ft above land-surface datum, Nov. 28, 1979.

REMARKS.--Water level affected by local pumpage.

PERIOD OF RECORD.--June 1960 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 99.00 ft below land-surface datum, Dec. 27, 1960; lowest recorded, 197.77 ft below land-surface datum, Sept. 22, 23, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	194.27	189.49	186.99	186.97	187.13	187.66	188.71	182.43	185.71	187.56	187.82	186.26
10	194.33	189.15	187.23	187.03	187.13	187.80	188.11	182.98	186.58	188.82	187.48	187.00
15	196.11	188.14	187.30	187.05	187.63	187.56	187.58	183.11	186.64	187.83	187.14	185.86
20	196.58	187.60	187.33	186.74	187.18	187.58	186.87	184.07	186.99	187.94	187.35	186.20
25	197.41	186.86	187.11	187.17	187.39	187.76	186.23	183.84	187.42	188.00	187.35	185.78
EOM	194.01	186.96	187.04	187.05	187.45	187.70	185.30	184.61	188.57	188.08	187.58	186.79

WTR YR 1986 HIGHEST 180.60 MAY 2, 1986 LOWEST 197.41 OCT 25, 26, 1985

364116076545001. Local number, 55B35.

LOCATION.--Lat 36°41'16", long 76°54'50", Hydrologic Unit 03010202, near Franklin. Owner: Union Camp Corporation.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 623 ft, screened 430 to 435 ft, 475 to 480 ft, 580 to 585 ft, 618 to 623 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 32 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 2.15 ft above land-surface datum. Measuring point changed from top of casing, 2 ft above land-surface datum, Oct. 26, 1979.

REMARKS.--Water level affected by local pumpage. Recorder February 1969 to Nov. 14, 1971; manual measurements Nov. 15, 1971, to Oct. 11, 1982. Recorder reinstalled Oct. 12, 1982, and removed Sept. 30, 1985; manual readings only from October 1985 to June 1986. Readings indicate water entering well about 100 ft below land surface.

PERIOD OF RECORD.--February 1969 to June 1986 (discontinued).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 154.99 ft below land-surface datum, Aug. 23, 1974; lowest measured, 217.08 ft below land-surface datum, Sept. 22, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, OCTOBER 1985 TO JUNE 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	215.95	DEC 4	198.58	JAN 6	198.64	MAR 10	199.32	MAY 2	193.74	JUN 3	198.24
NOV 14	199.59	10	199.70	FEB 6	198.77	APR 10	199.73				

364125076544801. Local number, 55B36.

LOCATION.--Lat 36°41'25", long 76°54'48", Hydrologic Unit 03010202, near Franklin. Owner: Union Camp Corporation.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 860 ft, screened 720 to 725 ft, 800 to 805 ft, 855 to 860 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 37 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 4.56 ft above land-surface datum. Measuring point changed from 4.25 ft above land-surface datum, Oct. 25, 1979; published incorrectly as 4.25 ft in 1980 and 1981.

REMARKS.--Water level affected by local pumpage.

PERIOD OF RECORD.--March 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 156.65 ft below land-surface datum, Dec. 27, 1969; lowest measured, 219.29 ft below land-surface datum, May 18, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	185.65	186.94	184.04	184.03	184.31	184.59	185.77	185.62	183.07	184.89	185.68	186.97
10	186.01	---	184.00	184.05	184.35	184.75	186.19	184.48	183.32	185.11	185.71	186.58
15	186.78	185.16	184.00	184.08	184.40	184.95	186.23	183.64	183.56	185.27	185.73	185.94
20	186.60	184.86	184.01	184.14	184.43	185.32	186.34	183.10	183.81	185.42	185.69	184.88
25	186.89	184.47	184.03	184.21	184.47	185.52	186.33	182.95	184.07	185.53	186.53	183.88
EOM	187.02	184.23	184.02	184.26	184.50	185.62	186.29	182.95	184.63	185.63	187.02	183.28

WTR YR 1986 HIGHEST 182.94 MAY 26-28, 1986 LOWEST 187.05 SEP 2, 3, 1986

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364425076532701. Local number, 55B45.

AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 348 ft, screened 338 to 348 ft.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 37 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.0 ft above land-surface datum. Measuring point changed from top edge of recorder shelf, 2.20 ft above land-surface datum, Apr. 13, 1981.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 33. Water level affected by local pumpage. Recorder removed Sept. 30, 1980; manual measurements thereafter.

PERIOD OF RECORD.--December 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 130.06 ft below land-surface datum, Aug. 15, 1974;
lowest measured, 167.00 ft below land-surface datum, Aug. 12, 1981.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	158.40	JAN 8	160.64	MAR 17	161.21	JUL 22	163.54	AUG 11	163.99	SEP 29	165.98
NOV 19	160.32	FEB 24	161.31	JUN 24	164.03						

371311076463601. Local number, 56Fl.

LOCATION.--Lat 37°13'11", long 76°46'36", Hydrologic Unit 02080206, Colonial Parkway near Jamestown. Owner: U.S. Department of Interior. Colonial National Historical Park.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 346 ft, screened 336 to 346 ft.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top edge of recorder shelf, 3.15 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 18. Recorder removed Sept. 30, 1980; manual measurements thereafter.

PERIOD OF RECORD.--May 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 43.29 ft below land-surface datum, May 8, 1969;
lowest measured, 80.04 ft below land-surface datum, Sept. 30, 1986.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 19	77.87	JAN 7	76.70	FEB 24	75.03	JUL 16	79.21	AUG 12	79.95	SEP 30	80.04

373126076454101. Local number. 56J11.

LOCATION.--Lat 37°31'26", long 76°45'41", Hydrologic Unit 02080105, at West Point Airport. Owner: Chesapeake Corporation.

AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 1,254 ft., screened 1,233 to 1,248 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS and Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.6 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 73 through the 1979 water year; by U.S. Geological Survey thereafter. Recorder removed June 3, 1975; manual measurements thereafter.

PERIOD OF RECORD.--October 1974 to current year. Unpublished records available in March 1962 and June 1972.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 73.08 ft below land-surface datum, Apr. 25, 1975;
lowest measured, 92.70 ft below land-surface datum, Sept. 17, 1986.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	89.85	JAN 9	89.23	MAR 18	90.48	APR 15	91.04	JUL 7	92.47	SEP 17	92.70
NOV 18	89.33	FEB 20	89.11								

GROUND-WATER LEVELS

KING AND QUEEN COUNTY--Continued

373008076425601. Local number, 57J3.
 LOCATION.--Lat 37°30'08", long 76°42'56", Hydrologic Unit 02080107, Gressitt observation well, near West Point.
 Owner: Chesapeake Corporation.
 AQUIFER.--Sand of undifferentiated Cretaceous age.
 WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in. to 200 ft, diameter 4 in. from 200 to 760 ft, depth 760 ft, screened 741 to 756 ft.
 INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS and Virginia Water Control Board personnel.
 DATUM.--Elevation of land-surface datum is 51 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.20 ft above land-surface datum.
 REMARKS.--Records provided by the Virginia Water Control Board as observation well 74 through the 1979 water year; by U.S. Geological Survey thereafter. Recorder removed June 10, 1976; manual measurements thereafter.
 PERIOD OF RECORD.--November 1974 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 109.90 ft below land-surface datum, Jan. 26, 1975; lowest measured, 127.70 ft below land-surface datum, Sept. 17, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	126.03	JAN 8	127.00	FEB 20	126.54	MAR 18	126.50	JUL 7	127.55	SEP 17	127.70
NOV 18	126.45	9	126.77	21	126.35	APR 15	126.65				

KING WILLIAM COUNTY

373226076481201. Local number, 56J2.
 LOCATION.--Lat 37°32'26", long 76°48'12", Hydrologic Unit 02080106, in West Point, 0.1 mi west of State Highway 30. Owner: Chesapeake Corporation.
 AQUIFER.--Sand of undifferentiated Cretaceous age.
 WELL CHARACTERISTICS.--Drilled withdrawal water well, diameter 18 in. to 300 ft, diameter 8 in. from 300 to 600 ft, depth 600 ft, screened 390 to 400 ft, 550 to 570 ft, 580 to 600 ft.
 INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
 DATUM.--Elevation of land-surface datum is 25 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.5 ft above land-surface datum.
 REMARKS.--This well replaces previously published 56J1 which was discontinued April 1982.
 PERIOD OF RECORD.--November 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.48 ft below land-surface datum, Feb. 15, 1983; lowest measured, 168.01 ft below land-surface datum, Oct. 17, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	168.01	JAN 9	166.38	MAR 18	165.90	MAY 13	165.83	JUL 7	163.83	SEP 11	165.68

373206076481201. Local number, 56J18.
 LOCATION.--Lat 37°32'06", long 76°48'12", Hydrologic Unit 02080106, near U.S. Highway 33 at Chesapeake Corporation, northeast corner of 13th and A Streets in brick pump house. Owner: Chesapeake Corporation.
 AQUIFER.--Sand and clay of Cretaceous age.
 WELL CHARACTERISTICS.--Drilled unused water well, diameter 18 in. to 180 ft, diameter 8 in. from 165 to 446 ft, depth 446 ft, screened 210 to 240 ft, 380 to 390 ft, 405 to 445 ft.
 INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.
 DATUM.--Elevation of land-surface datum is 5 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.45 ft above land-surface datum. Measuring point changed from 1.22 ft above land-surface datum, Oct. 3, 1983.
 REMARKS.--Water levels affected by local pumpage.
 PERIOD OF RECORD.--March 1977 to current year.
 EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.86 ft below land-surface datum, Dec. 29, 1978; lowest measured, 173.08 ft below land-surface datum, Feb. 23, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	163.63	JAN 9	162.22	MAR 18	166.05	MAY 13	165.31	JUL 7	164.10	SEP 11	166.37

GROUND-WATER LEVELS

371

LOUDOUN COUNTY

391542077423801. Local number, 49Y1.

LOCATION.--Lat 39°15'42", long 77°42'38", Hydrologic Unit 02070008, near Harpers Ferry. Owner: American Telephone and Telegraph Company.

AQUIFER.--Bedrock of Precambrian or Cambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6.5 inches. Prior to 1974, diameter reported as 8 inches. Depth 516 ft, cased to 45 ft, open hole 45 to 516 ft.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 1,100 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to 1974, elevation reported as 940 ft above mean sea level. Measuring point: Top of casing, 1 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 22. Recorder removed July 26, 1974; manual measurements thereafter.

PERIOD OF RECORD.--August 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 48.00 ft below land-surface datum, June 22, 1972; lowest measured, 61.70 ft below land-surface datum, Sept. 27, 1983.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	59.75	JAN 8	59.48	FEB 26	55.74	JUN 16	59.65	AUG 13	60.22	SEP 26	60.55

390623077314201. Local number, 50W4C.

LOCATION.--Lat 39°06'23", long 77°31'42", Hydrologic Unit 02070008, east of State Highway 7 on east side of town of Leesburg, under water tower. Owner: Town of Leesburg.

AQUIFER.--Slightly metamorphosed Balls Bluff Formation of Triassic age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 535 ft, cased to 6 ft, open hole 6 to 535 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum. Measuring point was land-surface datum for the following dates: Oct. 8, 1981, Nov. 18, 1981, and Mar. 23, 1982.

PERIOD OF RECORD.--October 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.69 ft below land-surface datum, Apr. 30, 1984; lowest measured, 49.06 ft below land-surface datum, Nov. 27, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 27	49.06	JAN 31	47.57	MAR 28	39.83	MAY 30	38.55	JUL 31	43.41	SEP 30	46.51

LOUISA COUNTY

380217078133701. Local number, 45N1.

LOCATION.--Lat 38°02'17", long 78°13'43", Hydrologic Unit 02080106, near Thelma, 3 mi southwest of Boswells Tavern on Tyler property near State Highway 640. Owner: Tyler.

AQUIFER.--Wissahickon Formation of Late Precambrian (?) age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 56 ft, length of casing unknown.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.95 ft above land-surface datum. Measuring point changed from top edge of recorder shelf, 3.10 ft above land-surface datum, Mar. 14, 1973.

REMARKS.--Records provided by the Virginia Water Control Board.

PERIOD OF RECORD.--July 1952 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 11.97 ft below land-surface datum, Apr. 30, 1973; lowest measured, 35.17 ft below land-surface datum, Dec. 2, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	22.93	21.50	19.23	19.82	21.64	20.89	21.10	22.37	24.05	25.92	26.00	26.59
10	23.23	20.80	18.93	20.15	21.81	20.90	21.21	22.70	24.40	26.17	26.10	26.53
15	23.70	20.23	18.91	20.72	21.50	20.90	21.62	22.90	24.70	26.44	26.30	26.40
20	24.06	20.15	19.06	20.82	21.23	20.87	21.81	23.00	25.00	26.40	26.50	26.42
25	23.73	20.06	19.23	21.27	21.02	20.88	22.00	23.30	25.31	26.30	26.70	26.68
EOM	23.32	20.05	19.51	21.65	21.03	20.80	22.23	23.57	25.60	26.01	26.75	26.83

WTR YR 1986 HIGHEST 18.59 DEC 13, 1985 LOWEST 26.83 SEP 29, 30, 1986

GROUND-WATER LEVELS

LOUISA COUNTY--Continued

380043078111301. Local number, 45N4.

LOCATION.--Lat 38°00'45", long 78°11'14", Hydrologic Unit 02080106, near Thelma, 4 mi southeast of Boswells Tavern, east of U.S. Highway 15. Owner: Virginia Department of Corrections.

AQUIFER.--Metamorphosed sedimentary and volcanic rocks of unknown age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 200 ft, cased to 42 ft, open hole 42 to 200 ft.

INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 415 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.

PERIOD OF RECORD.--February 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.40 ft below land-surface datum, Apr. 28, 1980; lowest measured, 14.43 ft below land-surface datum, Aug. 26, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 26	10.60	JAN 30	11.68	MAR 28	10.74	MAY 28	12.04	JUL 29	12.26	SEP 29	12.86

380131078001001. Local number, 46N1.

LOCATION.--Lat 38°01'31", long 78°00'10", Hydrologic Unit 02080106, in the town of Louisa. Owner: Town of Louisa.

AQUIFER.--Metamorphosed sedimentary and volcanic rocks of unknown age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 132 ft, length of casing unknown.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 455 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.6 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 56. Recorder removed Apr. 30, 1979; manual measurements thereafter.

PERIOD OF RECORD.--March 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 26.27 ft below land-surface datum, May 18, 1973; lowest measured, 34.78 ft below land-surface datum, Dec. 8, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	31.48	JAN 6	29.18	APR 21	29.00	JUL 15	30.98	AUG 4	31.09	SEP 30	31.71
NOV 25	29.82	FEB 18	29.30								

MONTGOMERY COUNTY

370812080261901. Local number, 27F2.

LOCATION.--Lat 37°08'12", long 80°26'19", Hydrologic Unit 05050001, in the town of Christiansburg. Owner: Town of Christiansburg.

AQUIFER.--Beekmantown Formation of Early Ordovician age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in., depth 450 ft, length of casing unknown.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 1,970 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.50 ft below land-surface datum. Prior to 1985, casing was published as being 1.60 ft below land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 19. Lowest recorded water level, 7.39 ft, is a result of the Mexico earthquake of Sept. 19, 1985.

PERIOD OF RECORD.--May 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.50 ft below land-surface datum, Apr. 10-16, 23-25, 1983, and Apr. 10-17, 1984, water flowing over top of casing; lowest recorded, 7.39 ft below land-surface datum, Sept. 19, 1985.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	5.58	3.74	3.33	4.60	3.81	3.73	3.88	4.82	4.32	5.31	5.00	3.49
10	5.88	4.24	3.72	4.82	3.60	3.98	4.00	4.88	4.59	5.31	4.99	3.91
15	6.01	4.56	3.66	4.94	3.52	2.95	4.18	4.50	4.80	5.04	5.10	4.33
20	5.98	4.69	3.93	4.55	3.29	3.21	4.28	3.75	4.93	5.35	4.62	4.39
25	5.87	3.98	4.20	4.80	3.34	3.47	4.52	4.05	5.11	4.69	4.33	4.61
EOM	5.94	3.41	4.50	4.99	3.48	3.58	4.57	3.70	5.23	4.79	4.80	4.89

WTR YR 1986 HIGHEST 2.80 MAR 14, 1986 LOWEST 6.11 OCT 18, 1985

373

374224078555601. Local number, 39K1.

AQUIFER.--Lovingston (or Marshall?) Formation of Precambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 275 ft, length of casing unknown.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 770 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 6. Recorder removed June 26, 1974; manual measurements thereafter.

PERIOD OF RECORD.--October 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 27.08 ft below land-surface datum, June 29, 1973; lowest recorded, 35.66 ft below land-surface datum, Mar. 7, 1969.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	31.83	JAN 10	31.36	APR 23	31.96	JUN 23	32.50	AUG 7	33.01	SEP 23	33.61
NOV 14	31.81	FEB 18	31.69								

372428076561501. Local number, 55H1.

LOCATION.--Lat 37°24'28", long 76°56'15", Hydrologic Unit 02080206, Walkers Dam, near Walkers. Owner: City of Newport News.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in. to 145 ft, diameter 4 in. from 145 to 630 ft, depth 630 ft, screen 252 to 257 ft, 339 to 344 ft, 439 to 444 ft, 615 to 625 ft.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.8 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 17. Recorder removed Apr. 5, 1979; manual measurements thereafter.

PERIOD OF RECORD.--March 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 30.24 ft below land-surface datum, Apr. 10, 1969;
lowest measured, 57.83 ft below land-surface datum, Aug. 11, 1986.

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	56.39	JAN 7	56.28	FEB 25	56.54	JUL 17	57.38	AUG 11	57.83	SEP 22	57.74

365223076122101. Local number, 61Cl.

LOCATION.--Lat 36°52'23", long 76°12'21", Hydrologic Unit 02080108, Moore's Bridge Filter Plant, Norfolk. Owner: City of Norfolk.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 970 ft, screened 900 to 960 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 10.80 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.15 ft above land-surface datum. Measuring point changed from 4.0 ft above land-surface datum, Dec. 15, 1979.

REMARKS.--U.S. Geological Survey test well 1. Water level affected by pumping and recharge operations in nearby wells May 18, 1971, to Nov. 5, 1973. Recorder removed Dec. 15, 1979; manual measurements thereafter.

PERIOD OF RECORD.--January 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.70 ft below land-surface datum, Feb. 17, 1968; lowest measured, 53.68 ft below land-surface datum, Aug. 22, 1986.

[illegible]

GROUND-WATER LEVELS

ORANGE COUNTY

381002078094201. Local number, 45P1.

LOCATION.--Lat 38°10'02", long 78°09'42", Hydrologic Unit 02080106. Gordonsville. Owner: M. L. Johnson.

AQUIFER.--Phyllite of Evington Group of Cambrian or Precambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 98 ft, length of casing unknown.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 480 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.3 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 30.

PERIOD OF RECORD.--February 1965 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 11.83 ft below land-surface datum, Apr. 10, 1973; lowest recorded, 35.90 ft below land-surface datum, Jan. 31, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	29.47	26.00	21.71	23.77	23.68	19.61	19.60	21.52	24.75	27.50	29.84	31.18
10	29.86	25.16	22.27	24.17	21.87	20.05	19.32	22.37	25.38	27.79	30.06	31.41
15	30.24	25.33	22.60	24.75	20.44	20.70	18.89	22.93	25.70	28.27	30.40	31.62
20	30.53	25.20	22.92	24.67	20.20	21.77	20.40	23.22	26.06	28.60	30.70	31.77
25	29.40	24.51	23.14	25.38	19.78	20.75	20.25	23.90	26.57	29.00	30.80	31.90
EOM	29.23	23.40	23.49	24.68	19.64	20.46	20.83	24.20	27.08	29.30	31.10	32.09

WTR YR 1986 HIGHEST 18.60 APR 14, 1986 LOWEST 32.09 SEP 29, 30, 1986

PRINCE WILLIAM COUNTY

384931077420301. Local number, 49U1.

LOCATION.--Lat 38°49'30", long 77°42'08", Hydrologic Unit 02070010, north of State Highway 55 near Thoroughfare Gap, 3.7 mi west of Haymarket. Owner: Virginia Department of Highways and Transportation.

AQUIFER.--Shale and sandstone of Newark Group of Triassic age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 7 in., depth 345 ft, cased to 20 ft, open hole 20 to 345 ft.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 383 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.

REMARKS.--Recorder removed Feb. 9, 1980; manual measurements thereafter.

PERIOD OF RECORD.--June 1969 to current year. Unpublished records available October 1968 to May 1969.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 2.59 ft below land-surface datum, Mar. 19, 1975; lowest recorded, 10.22 ft below land-surface datum, Nov. 8, 9, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	8.07	FEB 5	5.04	MAR 19	3.75	MAY 6	5.59	JUN 18	7.84	AUG 12	8.77

385607077381101. Local number, 49V1.

LOCATION.--Lat 38°56'07", long 77°38'11", Hydrologic Unit 02070010, north of Haymarket at intersection of State Highways 600 and 615. Owner: J. H. Hutchison.

AQUIFER.--Shale and sandstone of Newark Group of Triassic age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 7 in., depth 165 ft, cased to 10 ft, open hole 10 to 165 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 420 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1 ft above land-surface datum. Readings from 1979 to 1981 should be 0.7 ft lower than previously published.

PERIOD OF RECORD.--November 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 6.85 ft below land-surface datum, Oct. 12, 1979; lowest recorded, 12.28 ft below land-surface datum, July 12, 13, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	11.45	9.07	8.28	9.85	8.85	8.59	10.10	10.08	11.36	11.76	11.93	10.21
10	11.63	8.88	8.81	10.11	8.60	8.84	9.88	10.58	11.63	11.84	11.62	10.47
15	11.68	9.27	8.89	10.42	8.64	8.70	10.06	10.68	11.36	11.89	12.00	10.76
20	11.56	9.39	9.17	10.07	8.33	8.66	8.78	10.88	11.38	11.89	11.11	10.91
25	10.17	8.76	9.50	9.88	8.20	9.36	9.08	11.21	11.50	11.55	10.12	10.97
EOM	10.24	8.50	9.73	9.30	8.41	9.71	9.58	10.95	11.60	11.68	10.42	11.27

WTR YR 1986 HIGHEST 7.89 DEC 2, 1985 LOWEST 12.10 JUL 17, 1986

375

383423077245901. Local number, 51S7.

AQUIFER.--Wissahickon Formation of Late Precambrian (?) age.

INSTRUMENTATION.--Digital recorder--60-minute punch.

REMARKS.--Recorder installed Dec. 21, 1982. Manual readings only published prior to 1985 water year. Recorded readings for 1985 water year published in addition to manual readings.

PERIOD OF RECORD.--December 1977 to current year. Unpublished records available September 1973 to November 1975.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.14 ft below land-surface datum, Apr. 20, 1983;

lowest recorded, 11.92 ft below land-surface datum, Sept. 30, 1986.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	6.27	5.63	3.74	3.51	2.44	2.68	3.08	4.36	5.50	7.32	9.48	10.42
10	6.31	4.78	3.24	3.25	2.75	2.81	3.37	4.70	5.82	7.69	9.77	10.62
15	6.40	5.00	3.54	3.42	1.64	3.03	3.42	5.03	6.06	8.06	10.10	10.62
20	6.42	4.49	3.62	3.50	2.12	3.19	3.66	5.30	6.35	8.50	9.82	10.78
25	6.49	4.55	3.83	3.55	2.37	2.77	3.86	5.35	6.69	8.92	9.96	10.89
EOM	6.30	3.36	3.91	3.72	2.41	2.93	4.17	5.55	7.04	9.23	10.22	10.42

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	10.26	6.29	4.10	4.92	3.80	3.20	3.77	4.26	6.41	9.13	10.26	11.22
10	10.28	6.51	4.46	4.95	3.76	3.32	3.79	4.60	6.92	9.54	10.51	11.33
15	10.38	6.66	4.62	5.21	3.72	3.26	3.97	4.84	7.44	9.62	10.77	11.45
20	10.36	6.69	4.66	5.13	3.16	3.28	3.76	5.16	7.98	9.82	10.95	11.62
25	7.77	6.06	4.79	5.27	3.09	3.46	3.83	5.50	8.44	9.69	11.01	11.78
EOM	7.74	4.97	4.83	4.22	3.21	3.61	4.05	5.94	8.84	10.03	11.18	11.92

PULASKI COUNTY

370516080411501. Local number, 25E2.

LOCATION.--Lat 37°05'16", long 80°41'15", Hydrologic Unit 05050001, in the town of Dublin. Owner: Town of Dublin.

AQUIFER.--Conococheague Formation of Late Cambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in., depth 370 ft, length of casing unknown.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 2,170 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, at land-surface datum. Measuring point changed from top of recorder shelf,

2.23 ft above land-surface datum, July 21, 1974.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 59. Recorder removed July 21, 1974; manual measurements thereafter.

PERIOD OF RECORD.--April 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 60.00 ft below land-surface datum, Mar. 18, 1973;
lowest measured, 82.50 ft below land-surface datum, Oct. 5, 1982.

[illegible]

GROUND-WATER LEVELS

CITY OF ROANOKE

371653079552101. Local number, 31G1.

LOCATION.--Lat 37°16'53", long 79°55'21", Hydrologic Unit 03010101, in the city of Roanoke. Owner: Nelson-Roanoke Corporation.

AQUIFER.--Rome Formation of Cambrian age. Prior to 1974, reported as Elbrook formation.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 48 ft, length of casing unknown.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATUM.--Elevation of land-surface datum is 930 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.9 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 8. Recorder removed July 21, 1974; manual measurements thereafter.

PERIOD OF RECORD.--August 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.21 ft below land-surface datum, Nov. 8, 1985; lowest measured, 23.15 ft below land-surface datum, May 23, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 8	14.21	JAN 6	17.50	APR 18	17.81	JUN 17	17.78	AUG 4	18.01	SEP 22	17.76

ROCKBRIDGE COUNTY

373758079271601. Local number, 35K1.

LOCATION.--Lat 37°37'58", long 79°27'16", Hydrologic Unit 02080202, in the town of Glasgow. Owner: Town of Glasgow.

AQUIFER.--Rome Formation of Cambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in., depth 695 ft, cased to 101 ft, open hole from 101 to 695 ft.

INSTRUMENTATION.--Continuous strip-chart recorder.

DATUM.--Elevation of land-surface datum is 745 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board as observation well 63.

PERIOD OF RECORD.--June 1972 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 15.92 ft below land-surface datum, July 8, 1972; lowest recorded, 29.13 ft below land-surface datum, Dec. 13, 14, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	27.47	23.10	21.70	24.00	24.93	24.39	24.09	24.88	25.69	26.68	27.59	27.87
10	27.60	20.58	22.11	24.27	24.78	24.53	24.11	25.10	25.91	26.80	27.70	27.96
15	27.74	21.29	22.49	24.59	24.65	24.23	24.36	25.22	26.07	27.00	27.80	28.09
20	27.83	21.94	22.88	24.63	24.52	23.50	24.43	25.28	26.27	27.12	27.88	28.17
25	27.68	22.20	23.32	24.90	24.30	23.70	24.58	25.34	26.45	27.25	27.82	28.30
EOM	27.77	22.40	23.67	25.07	24.31	23.80	24.73	25.45	26.53	27.40	27.96	28.40

WTR YR 1986 HIGHEST 20.48 NOV 9, 1985 LOWEST 28.40 SEP 29, 30, 1986

ROCKINGHAM COUNTY

382150078424001. Local number, 41Q1.

LOCATION.--Lat 38°21'50", long 78°42'40", Hydrologic Unit 02070005, at Virginia Department of Highways and Transportation garage near McGaheysville. Owner: U.S. Geological Survey.

AQUIFER.--Conococheague Formation of Late Cambrian age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6.25 in., depth 310 ft, cased to 131 ft, open hole 131 to 310 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 1,105 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top edge of recorder shelf, 3.50 ft above land-surface datum.

PERIOD OF RECORD.--August 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 60.38 ft below land-surface datum, Dec. 26, 1972; lowest recorded, 87.18 ft below land-surface datum, Oct. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	72.74	70.29	65.18	66.50	67.64	66.93	66.65	66.93	68.24	70.61	74.30	77.66
10	73.36	70.29	65.38	66.73	67.52	66.98	66.63	67.12	68.53	71.09	74.99	78.04
15	73.99	70.29	65.53	66.98	67.34	66.76	66.77	67.42	68.86	71.64	75.67	78.51
20	74.60	66.10	65.75	67.12	67.24	66.23	66.69	67.62	69.25	72.23	76.28	79.01
25	74.32	65.93	66.03	67.29	67.01	66.36	66.72	67.74	69.72	72.88	76.78	79.60
EOM	74.30	65.78	66.31	67.51	66.93	66.47	66.80	67.97	70.25	73.62	77.43	80.21

WTR YR 1986 HIGHEST 65.05 DEC 2, 1985 LOWEST 80.21 SEP 30, 1986

GROUND-WATER LEVELS

377

SOUTHAMPTON COUNTY

364109077230701. Local number, 51B3.

LOCATION.--Lat 36°41'09", long 77°23'07", Hydrologic Unit 03010201, 150 ft east of the intersection of State Highway 615 and U.S. Highway 58, near Adams Grove. Owner: U.S. Geological Survey.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in., depth 253 ft, screened 165 to 175 ft, open hole from 175 to 253 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 126 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 3.20 ft above land-surface datum.

PERIOD OF RECORD.--July 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 54.21 ft below land-surface datum, Apr. 30, 1978; lowest recorded, 60.03 ft below land-surface datum, Oct. 24, 25, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	57.37	56.56	55.63	55.80	55.63	55.52	55.61	56.10	56.64	57.90	59.16	57.64
10	57.32	56.44	55.68	55.87	55.70	55.68	55.57	56.17	56.85	58.12	59.28	57.64
15	57.25	56.43	55.68	55.89	55.63	55.54	55.64	56.30	57.14	58.33	59.04	57.71
20	57.24	56.40	55.72	55.82	55.55	55.51	55.73	56.43	57.43	58.51	58.74	57.79
25	57.09	55.80	55.72	55.90	55.54	55.49	55.79	56.28	57.60	58.74	58.14	57.88
EOM	56.98	55.74	55.77	55.63	55.53	55.51	55.91	56.41	57.78	59.01	57.82	57.96

WTR YR 1986 HIGHEST 55.47 MAR 27, 28, 1986 LOWEST 59.30 AUG 11, 1986

364706077072301. Local number, 54C1.

LOCATION.--Lat 36°47'06", long 77°07'23", Hydrologic Unit 03010201, in the town of Sebrell. Owner: Norfolk and Western Railway.

AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in., depth 344 ft, screen depth unknown.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 58.4 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, at land-surface datum.

PERIOD OF RECORD.--1907, July 1938, April 1940 to December 1946, September 1948 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.00 ft below land-surface datum, 1907; lowest measured, 97.48 ft below land-surface datum, Oct. 14, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	95.57	FEB 6	95.57	MAR 10	95.50	MAY 2	95.73	JUN 18	96.39	AUG 1	97.11
DEC 16	95.73										

CITY OF SUFFOLK

363834076382301. Local number, 57B8.

LOCATION.--Lat 36°38'27", long 76°38'05", Hydrologic Unit 03010205, 0.3 mi southwest of State Highway 664, 0.8 mi east of U.S. Highway 13, and 6.7 mi southwest of Suffolk. Owner: Soren F. Andresen.

AQUIFER.--Sand of Chesapeake Group.

WELL CHARACTERISTICS.--Drilled flowing water well, diameter 2 in., depth 65 ft, screened 50 to 65 ft.

INSTRUMENTATION.--Bimonthly measurement by USGS personnel using a manometer.

DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: At land-surface datum.

REMARKS.--All water levels from Apr. 13 to Sept. 28, 1978, should be 1.20 ft higher than previously published.

PERIOD OF RECORD.--November 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.51 ft above land-surface datum, Mar. 9, 1979; lowest measured, at land-surface datum, Sept. 26, 1980.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	6.10	FEB 7	6.12	MAR 18	6.00	MAY 1	5.25	JUN 19	2.15	AUG 22	3.60
DEC 17	6.23										

NOTE.--Flowing well, readings given are above land-surface datum.

363810076381001. Local number, 57B9.

AQUIFER.--Sand of Chesapeake Group.

DATUM.--Elevation of land-surface datum is 45 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: At land-surface datum.

PERIOD OF RECORD.--November 1977 to current year.

lowest measured, 0.22 ft below land-surface datum, Sept. 26, 1980.

[illegible]

363928076332901. Local number, 58B13.

AQUIFER.--Sand of Pleistocene age.

INSTRUMENTATION.--Digital recorder--60-minute punch.

PERIOD OF RECORD.--August 1975 to current year.

lowest recorded, 13.44 ft below land-surface datum, Jan. 23-26, 1981.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	11.59	10.14	7.02	7.40	7.84	7.16	8.40	9.23	10.29	11.04	11.44	11.87
10	11.62	9.36	7.31	7.47	8.03	7.48	8.46	9.43	10.45	11.09	11.53	11.93
15	11.63	9.23	7.48	7.78	7.93	7.56	8.61	9.61	10.65	11.14	11.62	11.55
20	11.64	9.26	7.13	7.75	7.21	7.78	8.75	9.40	10.82	11.21	11.68	11.24
25	11.24	8.74	7.66	8.79	6.83	8.02	8.89	9.86	10.92	11.27	11.74	11.67
EOM	10.85	8.50	6.34	8.05	6.85	8.19	9.04	10.09	11.00	11.36	11.81	11.98

364330076345101. Local number, 58B235.

AQUIFER.--Sand of undifferentiated Cretaceous age.

INSTRUMENTATION.--Bimonthly measurement with chalked tape by USGS personnel.

PERIOD OF RECORD.--November 1977 to current year.

lowest measured, 142.30 ft below land-surface datum, July 2, 1981.

[illegible]

GROUND-WATER LEVELS

379

CITY OF SUFFOLK--Continued

364512076343702. Local number, 58C53.

LOCATION.--Lat 36°45'12", long 76°34'37", Hydrologic Unit 02080208, 750 ft northeast of Virginia Department of Highways and Transportation fuel storage area and 2,000 ft east of U.S. Highway 460. Owner: Virginia Water Control Board.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in. to 294 ft, diameter 2 in. from 294 to 881 ft, depth 896 ft, screened 881 to 896 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.40 ft above land-surface datum.

REMARKS.--Water level affected by local pumpage. Water levels for Mar. 5 and 10, 1983, published in WDR VA-83-1 are in error because the float hung in the well. These values should not be used.

PERIOD OF RECORD.--February 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 69.41 ft below land-surface datum, Apr. 24, 1983; lowest recorded, 96.39 ft below land-surface datum, Sept. 11, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	88.22	---	75.23	74.67	74.20	73.95	76.07	74.30	76.78	78.37	93.20	92.42
10	88.31	---	75.25	74.70	74.28	73.99	76.57	80.31	76.04	85.82	93.71	94.72
15	82.31	76.13	75.25	74.70	74.13	73.84	76.99	78.19	75.63	88.74	94.18	95.63
20	---	75.85	74.92	74.40	74.02	73.85	78.17	79.17	75.50	90.57	88.60	95.65
25	---	75.69	74.77	74.57	74.05	74.03	76.42	78.55	84.03	91.75	88.59	95.66
EOM	---	75.43	74.78	74.39	74.02	73.84	76.42	80.71	86.61	92.58	85.83	95.68

WTR YR 1986 HIGHEST 73.33 FEB 25, 1986 LOWEST 96.39 SEP 11, 1986

364512076343705. Local number, 58C56.

LOCATION.--Lat 36°45'12", long 76°34'37", Hydrologic Unit 02080208, 750 ft northeast of Virginia Department of Highways and Transportation fuel storage area and 2,000 ft east of U.S. Highway 460. Owner: Virginia Water Control Board.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in. to 557 ft, depth 567 ft, screened from 557 to 567 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 10 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 3.35 ft above land-surface datum. Measuring point changed from 3.40 ft above land-surface datum July 9, 1985.

REMARKS.--Water level affected by local pumpage. Water levels for Aug. 25 and 31, 1983, published in WDR VA-83-1 are in error because the float hung in the well. These values should not be used.

PERIOD OF RECORD.--February 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 77.24 ft below land-surface datum, Oct. 1, 1984; lowest recorded, 95.82 ft below land-surface datum, Sept. 14, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	84.87	83.22	82.25	81.79	81.38	81.20	81.59	81.60	83.15	86.99	92.67	95.31
10	84.95	83.30	82.37	82.06	81.31	81.23	81.54	82.16	83.54	87.93	93.36	95.71
15	84.66	83.10	82.34	81.86	81.17	81.33	81.47	82.01	84.35	89.27	94.01	95.79
20	84.43	82.85	81.97	81.47	81.14	81.12	81.50	82.16	84.71	90.38	94.28	95.66
25	84.07	82.84	81.89	81.61	81.28	81.26	81.47	82.09	85.98	91.26	94.47	95.44
EOM	83.37	82.42	81.97	81.49	81.36	80.83	81.39	82.43	86.97	92.03	94.90	95.49

WTR YR 1986 HIGHEST 80.43 FEB 23, 1986 LOWEST 95.82 SEP 14, 1986

SURRY COUNTY

370408076460101. Local number, 56El.

LOCATION.--Lat 37°04'08", long 76°40'01", Hydrologic Unit 03010202, on State Highway 617, 3.2 mi southwest of
Bacons Castle. Owner: Buster E. Cox.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 18 in. to 360 ft, 8 in. from 333.5 to 705 ft, depth 705 ft, screened 401 to 411 ft, 431 to 441 ft, 463 to 473 ft, 495 to 505 ft, 540 to 555 ft, 700 to 705 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 93 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top edge of recorder shelf. 3.6 ft above land-surface datum.

PERIOD OF RECORD.--March 1942, April 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 73.52 ft below land-surface datum, Mar. 10, 1942;
lowest recorded, 152.42 ft below land-surface datum, Sept. 29, 30, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	151.52	151.33	151.35	---	---	150.65	150.63	150.44	150.55	151.20	151.56	151.83
10	151.68	151.50	151.40	---	150.95	150.70	150.43	150.52	150.66	151.25	151.65	151.95
15	151.67	151.58	151.34	---	150.85	150.61	150.50	150.45	150.73	151.40	151.49	152.08
20	151.71	151.56	---	---	150.79	150.62	150.46	150.38	150.83	151.45	151.54	152.20
25	151.62	151.45	---	---	150.71	150.74	150.40	150.41	150.99	151.36	151.64	152.27
EOM	151.61	151.39	---	---	150.66	150.62	150.40	150.42	151.05	151.37	151.78	152.42

WTR YR 1986 HIGHEST 150.30 APR 21, MAY 21, 22, 1986 LOWEST 152.42 SEP 29, 30, 1986

WESTMORELAND COUNTY

381110076550501. Local number. 55P5.

LOCATION.--Lat 38°11'10", long 76°55'05", Hydrologic Unit 02070011, behind craft shop at George Washington birthplace. Owner: National Park Service.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in., depth 471 ft, screened 451 to 466 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 24 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of recorder shelf, 3.0 ft above land-surface datum.

PERIOD OF RECORD.--June 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.05 ft below land-surface datum, June 24, 1974;
lowest recorded, 38.11 ft below land-surface datum, Aug. 12, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	35.20	34.15	35.28	35.19	35.48	35.97	35.90	35.80	---	---	37.86	37.52
10	35.40	35.33	35.19	35.61	35.63	36.23	35.76	35.56	---	37.38	38.03	37.76
15	35.26	35.40	35.22	35.64	35.84	35.89	35.60	35.66	---	37.59	37.88	37.65
20	35.45	35.31	35.40	35.40	35.64	36.16	35.23	35.80	---	37.54	37.57	37.65
25	35.25	35.18	35.17	35.39	35.95	36.20	35.61	36.09	---	37.66	37.93	37.53
EOM	35.11	34.82	35.19	35.79	35.89	36.05	35.55	36.03	---	37.78	37.78	37.56

WTR YR 1986 HIGHEST 33.19 NOV 4, 1985 LOWEST 38.11 AUG 12, 1986

381132076551001. Local number, 55P9.

LOCATION.--Lat 38°11'32", long 76°55'10", Hydrologic Unit 02080104, 0.6 mi north of the end of State Highway 204, off State Highway 3 at George Washington Birthplace National Monument. Owner: National Park Service.

AQUIFER.--Sand of Quaternary age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 36 in., depth 22.6 ft.

WELL CHARACTERISTICS.--Dug unused water well, diameter 36 in., depth 22.6 ft.
INSTRUMENTATION.--Bimonthly measurements with chalked tape by USGS personnel.

DATUM.--Elevation of land-surface datum is 17 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of concrete lip on casing, 1.65 ft above land-surface datum.

PERIOD OF RECORD.--July 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.11 ft below land-surface datum, Oct. 11, 1979;
lowest measured, 11.38 ft below land-surface datum, Dec. 1, 1981.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

[illegible]

381

380538076490801. Local number, 56N1.

LOCATION.--Lat 38°05'38", long 76°49'08", Hydrologic Unit 02080104, at Washington and Lee School near Montross.

Owner: Westmoreland County Public Schools.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in. to 189 ft, 2 in. from 189 to 641 ft, depth 641 ft, screened 608 to 628 ft.

INSTRUMENTATION.--Six-week measurement with chalked tape by Virginia Water Control Board personnel.

DATE: 11-1-58. Elevation of land-surface datum is 149 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 1.2 ft above land-surface datum. Top of casing previously reported as 1 ft.

REMARKS:--Records provided by the Virginia Water Control Board as observation well 16. Recorder removed Mar. 31, 1979; manual measurements thereafter.

PERIOD OF RECORD.--August 1967 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 133.47 ft below land-surface datum, Aug. 28, 1967;
lowest measured, 157.20 ft below land-surface datum, Jan. 28, 1980.

DATE		WATER LEVEL	DATE		WATER LEVEL	DATE		WATER LEVEL	DATE		WATER LEVEL
OCT 2	153.51		JAN 9	153.55		FEB 19	153.04		MAR 17	152.98	
NOV 20	153.54								JUL 15	154.99	
									AUG 6	154.88	

371916076375901. Local number, 57G2.

LOCATION.--Lat 37°19'16", long 76°37'59", Hydrologic Unit 02080107, at Building 3101, Camp Peary, Williamsburg.

Owner: Camp Peary Naval Reservation.

AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in. to 352 ft, diameter 8 in. from 352 to 387 ft, depth 387 ft.

INSTRUMENTATION.--Digital recorder--60-minute punch.

DATAUM.--Elevation of land-surface datum is 15 ft above National Geodetic Vertical Datum of 1929, from topographic map. Measuring point: Top of casing, 0.20 ft above land-surface datum. Prior to May 1981, measuring point at land-surface datum.

REMARKS.--Records provided by the Virginia Water Control Board from January 1968 to September 1975.

PERIOD OF RECORD.--January 1968 to September 1975, May 1981 to current year. Unpublished record available January to August 1976.

EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 43.09 ft below land-surface datum, Mar. 7, 1968;
lowest recorded, 88.89 ft below land-surface datum, Sept. 30, 1986.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	87.41	85.32	84.38	83.49	82.24	81.65	81.78	83.00	83.64	86.44	---	---
10	87.62	86.12	84.47	83.70	82.36	82.16	81.90	82.32	84.12	86.72	---	---
15	87.28	85.66	84.34	83.12	82.06	81.54	81.89	82.86	84.66	87.15	---	88.66
20	87.26	85.19	84.00	82.89	81.50	81.71	81.77	83.16	85.48	87.37	---	88.62
25	86.81	84.89	83.52	82.55	81.73	82.01	82.43	83.37	85.70	87.75	---	88.41
EOM	85.95	84.17	83.55	82.73	81.89	81.75	82.48	83.28	85.90	87.80	---	88.89

WTR YR 1986 HIGHEST 80.57 MAR 14, 1986 LOWEST 88.89 SEP 30, 1986

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

CLARKE COUNTY

LOCAL IDENT- I- FIER	STATION	NUMBER	DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
PROSPECT HILL SPRING	01636310		05-16-86	584	6.80	12.0	745	8.5	81
PROSPECT HILL SPRING	01636310		09-04-86	555	7.80	12.5	--	7.9	--
CARTER HALL SPRING	01636315		05-15-86	530	7.10	13.0	748	7.6	74
GIULIANI SPRING	01636320		09-05-86	24	8.20	14.0	--	6.2	--
HORSEPEN SPRING	01636330		05-16-86	622	6.90	12.5	745	8.3	80
MORGAN SPRING	01636340		05-15-86	542	7.00	12.5	748	8.3	79
46W 5	390436078021201		05-15-86	681	6.80	15.0	748	8.7	88
46X 3	390814078011501		05-16-86	582	7.00	15.0	748	--	--
47XS 1	390834077550201		09-04-86	564	8.34	16.0	--	4.4	--
47X 3	390931077553301		05-15-86	802	7.10	14.5	748	--	--

LOCAL IDENT- I- FIER	HARD- NESS (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE IT-FLD AS HCO3)	ALKA- LITY, CARBON- ATE IT-FLD AS CACO3)	ALKA- LITY LAB (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
PROSPECT HILL SPRING	310	110	8.9	2.7	1.8	342	280	281	15
PROSPECT HILL SPRING	310	110	9.3	2.7	1.8	--	--	256	15
CARTER HALL SPRING	270	86	14	3.3	2.0	331	272	253	12
GIULIANI SPRING	7	1.3	0.80	1.5	0.90	--	--	10	1.0
HORSEPEN SPRING	320	120	5.3	5.3	2.4	369	303	259	15
MORGAN SPRING	270	82	17	2.9	3.1	301	247	244	13
46W 5	330	95	23	2.9	14	395	324	320	26
46X 3	280	100	8.4	2.7	1.6	359	294	285	16
47XS 1	290	71	28	6.1	3.1	--	--	246	28
47X 3	420	110	35	8.3	3.7	448	367	387	25

LOCAL IDENT- I- FIER	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)
PROSPECT HILL SPRING	7.3	3.10	0.50	<0.010	0.010	--	--	--	--
PROSPECT HILL SPRING	6.0	3.10	<0.20	<0.010	<0.010	<0.1	<0.001	<0.1	<0.001
CARTER HALL SPRING	8.3	3.20	0.20	0.010	0.010	<0.1	<0.001	<0.1	<0.001
GIULIANI SPRING	1.0	<0.100	<0.20	0.010	0.020	--	--	--	--
HORSEPEN SPRING	13	3.50	0.20	<0.010	<0.010	<0.1	<0.001	<0.1	<0.001
MORGAN SPRING	8.9	6.00	0.30	0.010	<0.010	<0.1	<0.001	<0.1	<0.001
46W 5	4.0	4.70	0.70	0.040	0.040	--	--	--	--
46X 3	6.4	1.90	0.50	0.010	<0.010	--	--	--	--
47XS 1	15	4.50	0.20	0.020	0.020	<0.1	<0.001	<0.1	<0.001
47X 3	13	6.60	0.50	<0.010	<0.010	<0.1	<0.001	<0.1	<0.001

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

CLARKE COUNTY--Continued

LOCAL IDENT- I- FIER	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DICAMBA (MED- IBEN) (BAN- VEL D) TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	DI- SYSTON TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
PROSPECT HILL SPRING	--	--	--	--	--	--	--	--	--
PROSPECT HILL SPRING	<0.001	<0.001	<0.01	<0.01	<0.001	<0.01	<0.001	<0.001	<0.01
CARTER HALL SPRING	<0.001	<0.001	<0.01	<0.01	<0.001	--	<0.001	<0.001	<0.01
GIULIANI SPRING	--	--	--	--	--	--	--	--	--
HORSEPEN SPRING	<0.001	<0.001	<0.01	<0.01	<0.001	--	<0.001	<0.001	<0.01
MORGAN SPRING	<0.001	<0.001	0.01	<0.01	<0.001	--	<0.001	<0.001	<0.01
46W 5	--	--	--	--	--	--	--	--	--
46X 3	--	--	--	--	--	--	--	--	--
47XS 1	<0.001	<0.001	<0.01	<0.01	<0.001	<0.01	<0.001	<0.001	<0.01
47X 3	<0.001	<0.001	<0.01	<0.01	<0.001	--	<0.001	<0.001	<0.01

LOCAL IDENT- I- FIER	HEPTA- CHLOR, TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)
PROSPECT HILL SPRING	--	--	--	--	--	--	--	--	--
PROSPECT HILL SPRING	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01
CARTER HALL SPRING	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01
GIULIANI SPRING	--	--	--	--	--	--	--	--	--
HORSEPEN SPRING	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01
MORGAN SPRING	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01
46W 5	--	--	--	--	--	--	--	--	--
46X 3	--	--	--	--	--	--	--	--	--
47XS 1	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01
47X 3	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01

LOCAL IDENT- I- FIER	PER- THANE TOTAL (UG/L)	PHORATE OTAL (UG/L)	PICLO- RAM (TOR- DON) (AMDON) TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
PROSPECT HILL SPRING	--	--	--	--	--	--	--	--	--
PROSPECT HILL SPRING	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01	<0.01
CARTER HALL SPRING	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01	<0.01
GIULIANI SPRING	--	--	--	--	--	--	--	--	--
HORSEPEN SPRING	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01	<0.01
MORGAN SPRING	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01	<0.01
46W 5	--	--	--	--	--	--	--	--	--
46X 3	--	--	--	--	--	--	--	--	--
47XS 1	<0.1	<0.01	<0.01	<1	<0.01	<0.01	<0.01	<0.01	<0.01
47X 3	<0.1	--	<0.01	<1	<0.01	<0.01	<0.01	<0.01	<0.01

QUALITY OF GROUND WATER
WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

LOCAL IDENT- I- FIER	STATION	NUMBER	GEO- LOGIC UNIT	DATE	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET)	DEPTH OF WELL, TOTAL (FEET)	DEPTH TO TOP OF SAMPLE INTER- VAL (FT)	DEPTH TO BOT- TOM OF SAMPLE INTER- VAL (FT)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD)	SPE- CIFIC CON- DUCT- ANCE (US/CM)
SOUTHAMPTON COUNTY										
52B 8	363916077201001	217PTMC	09-30-85	70.40	316.00	285	295	120	2900	
52B 9	363916077201002	217PTMC	10-01-85	83.40	329.00	298	308	120	2530	
52B 10	363916077201003	217PPSC	10-02-85	72.30	233.00	218	228	120	358	
52B 11	363916077201004	217PPSC	10-02-85	72.40	190.00	160	170	120	428	
52B 12	363916077201005	211CRCSU	10-02-85	71.20	135.00	120	130	120	467	
SUSSEX COUNTY										
53D 6	365530077104002	217PTXN	04-01-86	--	470.00	460	470	90.0	540	
53D 7	365530077104003	217PTXN	04-02-86	--	425.00	415	425	90.0	419	
53D 8	365530077104004	217PPSC	04-01-86	--	280.00	270	280	90.0	417	
53D 9	365530077104005	217PPSC	04-01-86	--	209.00	199	209	90.0	394	
53D 10	365530077104006	211CRCSU	04-01-86	--	145.00	130	140	90.0	417	
53D 12	365530077104008	121CSPKU	04-01-86	--	67.00	47	57	90.0	434	
CITY OF CHESAPEAKE										
59C 35	364621076273501	211CRCSU	06-26-86	--	855.00	710	740	22.0	1100	
59C 35	364621076273501	211CRCSU	06-23-86	--	855.00	600	620	22.0	1330	
CITY OF NEWPORT NEWS										
58F 50	371208076341101	217PTXN	07-16-86	119.58	1236.00	1200	1210	55.0	5300	
58F 51	371208076341102	217PPSC	07-17-86	131.78	851.00	825	835	55.0	3800	
58F 52	371208076341103	211CRCSU	07-17-86	134.84	537.00	527	537	55.0	2200	
CITY OF PORTSMOUTH										
60C 27	364823076181501	211CRCSU	03-26-85	--	908.00	520	530	18.0	4200	
60C 27	364823076181501	211CRCSU	03-28-85	--	908.00	730	780	18.0	2500	
60C 31	364824076181601	211CRCSU	02-19-86	--	908.00	732	908	15.0	2070	

GEOLOGIC UNIT (AQUIFER) :

121CSPKU - UPPER CHESAPEAKE SERIES
 211CRCSU - UPPER CRETACEOUS SERIES
 217PPSC - PATAPSCO FORMATION
 217PTMC - POTOMAC GROUP
 217PTXN - PATUXENT MFORMATION

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

LOCAL IDENT- I- FIER	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY WH WAT TOTAL FIELD MG/L AS CACO3
SOUTHAMPTON COUNTY--Continued									
52B 8	8.20	19.0	<1	83	12	13	430	39	225
52B 9	8.00	20.5	5	130	18	20	500	45	238
52B 10	7.10	16.5	5	31	9.0	2.0	45	11	140
52B 11	7.60	16.5	5	160	55	5.9	13	4.1	175
52B 12	7.30	16.0	<1	190	67	6.5	6.8	2.4	796
SUSSEX COUNTY--Continued									
53D 6	8.20	18.0	10	3	0.72	0.38	98	4.5	172
53D 7	7.40	17.0	5	17	5.5	0.85	73	4.4	165
53D 8	7.40	16.5	5	160	54	5.0	13	3.6	190
53D 9	7.30	16.5	5	140	41	8.5	15	7.0	148
53D 10	7.70	16.0	5	150	48	6.9	17	6.8	204
53D 12	7.90	15.5	5	180	67	3.1	10	1.7	220
CITY OF CHESAPEAKE--Continued									
59C 35	8.40	23.0	--	8	2.1	0.58	260	7.8	--
59C 35	8.60	21.0	--	8	1.9	0.77	310	10	--
CITY OF NEWPORT NEWS--Continued									
58F 50	7.70	23.0	3	170	44	15	1400	22	225
58F 51	7.50	21.5	20	72	19	6.0	920	17	288
58F 52	8.10	20.5	5	23	6.0	2.0	480	14	382
CITY OF PORTSMOUTH--Continued									
60C 27	--	--	--	--	--	--	780	0.3	--
60C 27	--	--	--	25	4.5	3.3	530	30	--
60C 31	7.72	24.0	5	14	3.0	1.6	420	12	--

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

LOCAL IDENT- I- FIER	ALKA- LINIT LAB (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)
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SOUTHAMPTON COUNTY--Continued

52B 8	234	63	550	2.7	11	1320	1300	--	--
52B 9	222	110	720	2.4	10	1650	1600	--	--
52B 10	139	4.7	3.5	0.20	40	204	200	--	--
52B 11	176	13	3.2	0.20	45	243	240	--	--
52B 12	197	12	3.9	0.10	56	283	630	--	--

SUSSEX COUNTY--Continued

53D 6	165	17	45	0.70	29	306	300	<0.100	0.060
53D 7	162	13	12	0.10	34	246	240	<0.100	0.090
53D 8	182	9.8	5.2	<0.10	26	222	230	<0.100	0.150
53D 9	173	12	3.2	<0.10	33	221	210	<0.100	0.170
53D 10	192	6.2	3.1	0.10	32	225	240	<0.100	0.180
53D 12	205	0.3	4.2	<0.10	22	205	240	<0.100	0.070

CITY OF CHESAPEAKE--Continued

59C 35	455	20	79	3.9	17	--	660	--	--
59C 35	538	18	110	4.8	12	--	790	--	--

CITY OF NEWPORT NEWS--Continued

58F 50	227	130	2100	0.70	18	3760	3900	<0.100	0.550
58F 51	291	90	1400	1.2	33	2590	2700	<0.100	0.480
58F 52	387	66	500	2.3	15	1350	1300	<0.100	0.400

CITY OF PORTSMOUTH--Continued

60C 27	677	94	930	2.7	--	--	--	--	--
60C 27	676	62	380	6.3	--	--	--	--	--
60C 31	436	73	350	2.9	13	1110	1100	<0.100	0.500

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

LOCAL IDENT- IFIER	PHOS- PHORUS, TOTAL (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	BORON, DIS- SOLVED (UG/L AS B)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)
SOUTHAMPTON COUNTY--Continued									
52B 8	--	<100	3800	6400	100	220	80	30	1.6
52B 9	--	10000	3200	14000	10000	580	400	90	3.1
52B 10	--	100	50	350	38	40	29	71	0.7
52B 11	--	<100	30	2100	14	80	57	110	2.5
52B 12	--	100	20	280	35	30	26	120	0.7
SUSSEX COUNTY--Continued									
53D 6	0.230	80	330	380	87	10	4	140	<0.1
53D 7	0.080	<10	90	290	240	30	18	310	<0.1
53D 8	0.040	<10	20	1100	760	90	73	420	<0.1
53D 9	0.040	<10	40	580	410	90	71	820	0.9
53D 10	0.030	<10	40	560	290	70	60	190	<0.1
53D 12	0.070	<10	40	4900	42	120	72	440	<0.1
CITY OF CHESAPEAKE--Continued									
59C 35	--	--	--	--	--	--	--	--	--
59C 35	--	--	--	--	--	--	--	--	--
CITY OF NEWPORT NEWS--Continued									
58F 50	0.020	10	1800	3100	1200	140	120	10	1.3
58F 51	0.050	<10	1600	2800	1600	80	60	70	0.8
58F 52	0.110	10	1800	610	160	20	<10	20	0.8
CITY OF PORTSMOUTH--Continued									
60C 27	--	--	--	--	--	--	--	--	--
60C 27	--	--	--	--	400	--	--	--	--
60C 31	0.250	<100	2000	140	57	<10	6	54	<0.1

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1985

OCTOBER

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1986

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