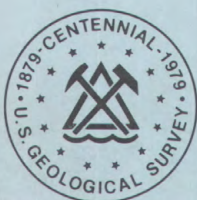
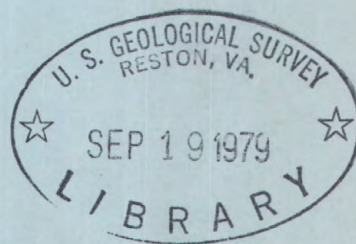


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Water Resources Data for Virginia



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT VA-78-1
WATER YEAR 1978

Prepared in cooperation with the State of Virginia
and with other agencies

CALENDAR FOR WATER YEAR 1978

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Water Resources Data for Virginia

U.S.GEOLOGICAL SURVEY WATER-DATA REPORT VA-78-1

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UNITED STATES DEPARTMENT OF THE INTERIOR

CECIL D. ANDRUS, Secretary

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1979

PREFACE

This report was prepared by personnel of the Virginia district of the Water Resources Division of the U.S. Geological Survey under the supervision of W. E. Forrest, District Chief, and J. E. Biesecker, Regional Hydrologist, Northeastern Region. It was done in cooperation with the State of Virginia and with other agencies.

This report is one of a series issued by State. General direction for the series is by J. S. Cragwall, Jr., Chief Hydrologist, U.S. Geological Survey, and Philip Cohen, Assistant Chief Hydrologist for Scientific Publications and Data Management.

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WATER RESOURCES DATA FOR VIRGINIA, 1978

INTRODUCTION

Water resources data for the 1978 water year for Virginia consist of 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 197 gaging stations; stage only at 1 gaging station; stage and contents at 9 lakes and reservoirs; water quality at 44 gaging stations; and water levels at 63 observation wells. Also included are data for 69 crest-stage partial-record stations. Locations of these sites are shown on figures 3 and 4. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Virginia.

Records of discharge or stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States or may be purchased from the Branch of Distribution, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202.

For water years 1961 through 1974, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1974 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1975 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report VA-78-1." For archiving and general distribution, the reports for water years 1971-74 are also 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 district chief at the address given on the back of the title page or by telephone (804) 782-2427.

NOTICE

During water year 1978, revisions were made in the terminology used to define 143 of the water-quality parameter codes that have been used by the Geological Survey in its publication of water-quality data and in its WATSTORE data system. These revisions were made to achieve consistency in terminology and to conform to a joint USGS-EPA agreement on terminology. They do not represent a change in the way the codes have been used in the past or in the association of specific code numbers with identified analytical procedures.

Use of the new terminology began with data for the 1978 water year, and therefore, it first appears in this publication. Definitions on which the terminology is based are included in the "Definitions" section of this report, and a table showing both old and new terminology is attached as an appendix to the report.

COOPERATION

The U.S. Geological Survey and organizations of the State of Virginia have had cooperative agreements for the systematic collection of streamflow records since 1925, for ground-water levels from 1931 to 1957 and since 1967, and for water-quality records from 1944 to 1957 and since 1967. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Virginia State Water Control Board, Robert V. Davis, executive secretary.
Virginia Department of Highways and Transportation, John E. Harwood, commissioner,
succeeded by Harold C. King.
City of Alexandria, Douglas Harman, city manager.
City of Newport News, Walter S. Grant, Jr., director, Department of Public Utilities.
City of Roanoke, Byron E. Haner, city manager, succeeded by H. B. Ewert.
City of Staunton, R. Gene McCombs, city manager.
Southeastern Public Service Authority, Durwood S. Curling, executive director.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 65 gaging stations and 2 water-quality stations published in this report.

Under a cooperative agreement covering the Tennessee River basin, the Tennessee Valley Authority furnished financial assistance for the operation of 8 gaging stations, the records for which are published herein.

Assistance was also furnished by the Water Quality Office, Environmental Protection Agency.

The Appalachian Power Company and the City of Radford aided in collecting records.

Organizations that supplied data are acknowledged in station descriptions.

HYDROLOGIC CONDITIONS

Streamflow was below normal in the central and northern parts and normal in the remainder of the State at the beginning of the water year. Flows were above normal throughout the State from November through January falling to normal for February and returning to above normal for the period March through May. Flows were normal throughout the State for the remainder of the water year except in the northern part where flows were above normal. Monthly and annual discharges are compared with medians at four representative gaging stations (see figure 2).

Peak flows, in general, occurred on most streams in the central part of the State during January and their magnitude was that of a flood having a recurrence interval of 10 years.

Ground-water levels were above average for most of the year in northern and western Virginia and the extreme western part of the Coastal Plain. In the Central Piedmont, ground-water levels were below average from February 1977 through April 1978 and above average from May through October. In the heavily pumped area of southeastern Virginia, ground-water levels declined about 1 foot to about 185.4 feet below land surface.

RECORDS COLLECTED BY THE STATE OF VIRGINIA

In addition to data collected by the U.S. Geological Survey, there are included herein records for 89 gaging stations and 19 index wells operated by the Virginia State Water Control Board. These records are published as furnished and are acknowledged in the "COOPERATION" paragraph of each individual station. The State Water Control Board is under the direction of Robert V. Davis, executive secretary. Published material for the gaging-station records and the ground-water wells is supplied, respectively, through the Bureau of Surveillance and Field Studies, Raymond E. Bowles, director, and the Bureau of Water Control Management, Dale F. Jones, director.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also the table for converting inch-pound units to International System of units (SI) 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 the primary energy donor in cellular life process. 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, 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 the organisms which produce colonies within 24 hours when incubated at 35°C ± 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 intestines 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 which produce blue colonies within 24 hours when incubated at 44.5°C ± 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 intestines 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 ± 1.0°C on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the unconsolidated material 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 micro-organisms, 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/m³), and periphyton and benthic organisms in grams per square meter (g/m²).

Dry mass refers to the mass of residue present after drying in an oven at 60°C for zooplankton and 105°C for 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).

Cfs-day is the volume of water represented by 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 2,447 cubic meters.

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 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 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 (CFSM) 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 (FT³/S, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

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 is that material in a representative water sample which passes through a 0.45 μ m 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.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = - \sum_{i=1}^s \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

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 river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution areas, within the area unless otherwise noted.

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 attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate (CaCO₃).

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 8-digit number.

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 substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per gram (μ g/g) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, μ g/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 represent 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 sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) 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.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

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 meters (m^2), acres, or hectares. 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 milliliters (mL) or liters (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.

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 suspended sediment or bed material 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 recommendations 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 growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

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} radioactive 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/mL of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algal mats or floating "moss" in lakes. Their concentrations are expressed as number of 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.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

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.

Recoverable from bottom material refers to 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 only 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.

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.

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).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is the quantity of suspended sediment passing a section in a specified period.

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 weight or volume, that passes a section during a given time.

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

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks 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 micromhos 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 micromhos). 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 lived.

Natural substrates refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lived.

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 multi-plate 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 planimeted. All areas shown are those for the stage when the planimeted map was made.

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

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 would be 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.....Hexagenia
Species.....Hexagenia limbata

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 in milligrams per liter by 0.00136.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total refers to 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 determines all of the constituent in the sample.)

Total in bottom material refers to the total amount of a given constituent in a representative sample of bottom material. 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 judge when the results should be reported as "total in bottom material."

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

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 would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual basic-data reports.

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 references to previously published reports.

DOWNSTREAM ORDER AND STATION NUMBER

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 main-stream station are listed before that station. A station on a tributary that enters between two main-stream 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 on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indentation in a list of stations in the front of the report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. 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 8-digit number for each station such as 03041000, which appears just to the left of the station name, includes the 2-digit part number "03" plus the 6-digit downstream order number "041000".

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote

degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 1 below.

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 State Water Control Board.

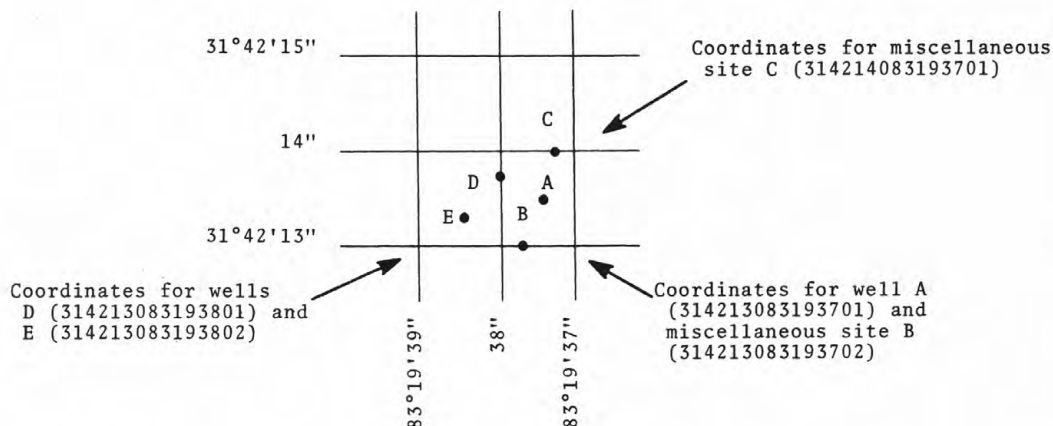


Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude)

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

National stream-quality accounting network (NASQAN) is a data collection network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated into the network design. Areal configuration of the network is based on river-basin accounting units (identified by 8-digit hydrologic-unit numbers) designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of streamflow and water-quality conditions nationwide on a year-by-year basis and (2) to detect and assess long-term changes in streamflow and stream quality.

Pesticide program is a network of regularly sampled water-quality stations where samples are collected to determine the concentration and distribution of pesticides in streams where potential contamination could result from the application of the commonly used insecticides and herbicides. Operation of the network is a Federal interagency activity.

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 STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables; then the monthly and yearly mean discharge are computed from the daily figures. 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 computed by the shifting-control method, in which correction factors based on individual discharge measurements and notes by hydrologists and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

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.

At some northern stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of gage-height record and occasional winter discharge measurements. Consideration is given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

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 on the basis of recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, prior and subsequent records, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD."

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published

along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revisions, the fact is brought out by notations 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 revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

The type of gage currently in use, the datum of the present gage referred to National Geodetic Vertical Datum, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in "DEFINITION OF TERMS" on page 5.

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS." For reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir is given under "REMARKS."

Those records which have been computed and furnished by the Virginia State Water Control Board are identified under "COOPERATION."

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified. For some stations peak discharges are listed with "EXTREMES FOR THE CURRENT YEAR"; if they are, all independent peaks, including the maximum for the year, above the selected base with the time of occurrence and corresponding gage heights are published in tabular format. The base discharge, which is given in the table heading, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030, 1:30 p.m. is 1330. The minimums for these stations are published in a separate paragraph following the table of peaks.

Skeleton rating tables are published, immediately following "EXTREMES FOR THE CURRENT YEAR," for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

The daily table for stream-gaging stations gives the 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 may be 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, if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches. In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Footnotes to the table of daily discharges are introduced by the word "NOTE." Footnotes are used to indicate periods for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis but is not published for reservoirs for which only monthly data are given.

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 discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage 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. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are also given in special tables following the tables of partial-record stations.

Accuracy of field data and computed results

The accuracy of streamflow data 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 observations of stage, measurements of discharge, and interpretations of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good", within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 ft³/s; to tenths between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures above 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures listed for partial-record stations.

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 data available

Information of a more detailed nature than that published for most of the gaging stations, such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the offices whose addresses are given on the back of the title page of this report. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Records of discharge collected by agencies other than the Geological Survey

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of records of discharge collected by other agencies but not published by the Geological Survey. Information on records available at specific sites can be obtained upon request.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface-water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations.

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis (specific conductance, pH, dissolved oxygen, water temperature, sediment discharge, etc.); extremes for the period of daily record; extremes for the current year; and general remarks.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water analysis

Most methods for collecting and analyzing water samples are described in the U.S. Geological Survey Techniques of Water-Resources Investigations listed on a following page.

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.

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 district office.

Water temperatures

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at 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 diel 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.

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 loads 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 in predicting long-term sediment-discharge characteristics of the stream.

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

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figure 1.

Measurements are made in many types of wells under varying conditions of access and at different temperatures, hence, neither the method of measurement nor the equipment can be standardized. At each observation well, however, the equipment and techniques used are those that will insure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either National Geodetic Vertical Datum of 1929 (NGVD) or land-surface datum (lsd). National Geodetic Vertical Datum of 1929 is the datum plane on which the national network of precise levels is based; land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above National Geodetic Vertical Datum of 1929 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 at 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 in 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 only to a tenth of a foot or a larger unit.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

Thirty-four manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing 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) is on 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, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202 (authorized agent of the Superintendent of Documents, Government Printing Office. Prices are effective October 1978 but are subject to change.

NOTE: When ordering 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. \$1.60.
- 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. \$0.85
- 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. \$1.90.
- 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. \$1.75.
- 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. \$1.00.
- 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. \$0.35.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages. \$0.40.
- 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. \$1.00.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages. \$0.35.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages. \$1.00.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages. \$1.40.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages. \$1.25.
- 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. \$1.20.
- 3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson Jr.: USGS--TWRI Book 3, Chapter A12. 1968. 31 pages. \$0.35. Not currently available.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages. \$0.70.
- 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. \$2.50.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages. \$2.50.
- 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. \$2.50.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages. \$2.10.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4 Chapter A1. 1968. 39 pages. \$1.60.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages. \$1.20.
- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages. \$0.65.

- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages. \$0.75.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages. \$0.65.
- 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. \$1.10.
- 5-A1. *Methods for collection and analysis of water samples for dissolved minerals and gases*, by Eugene Brown, M. W. Skougstad, and M. J. Fishman: USGS--TWRI Book 5, Chapter A1. 1970. 160 pages. \$2.40.
- 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. \$0.80.
- 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. \$0.90.
- 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. \$20.00.
- 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. \$16.00.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages. \$2.10.
- 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. \$2.30.
- 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. \$0.70.
- 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. \$1.10.

*These publications are available ONLY from Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. They are in looseleaf format and are subscription items. Additional supplements will be issued to subscribers at no extra cost. Checks should be made payable to Superintendent of Documents. Requester should emphasize to Superintendent of Documents that this is a subscription item.

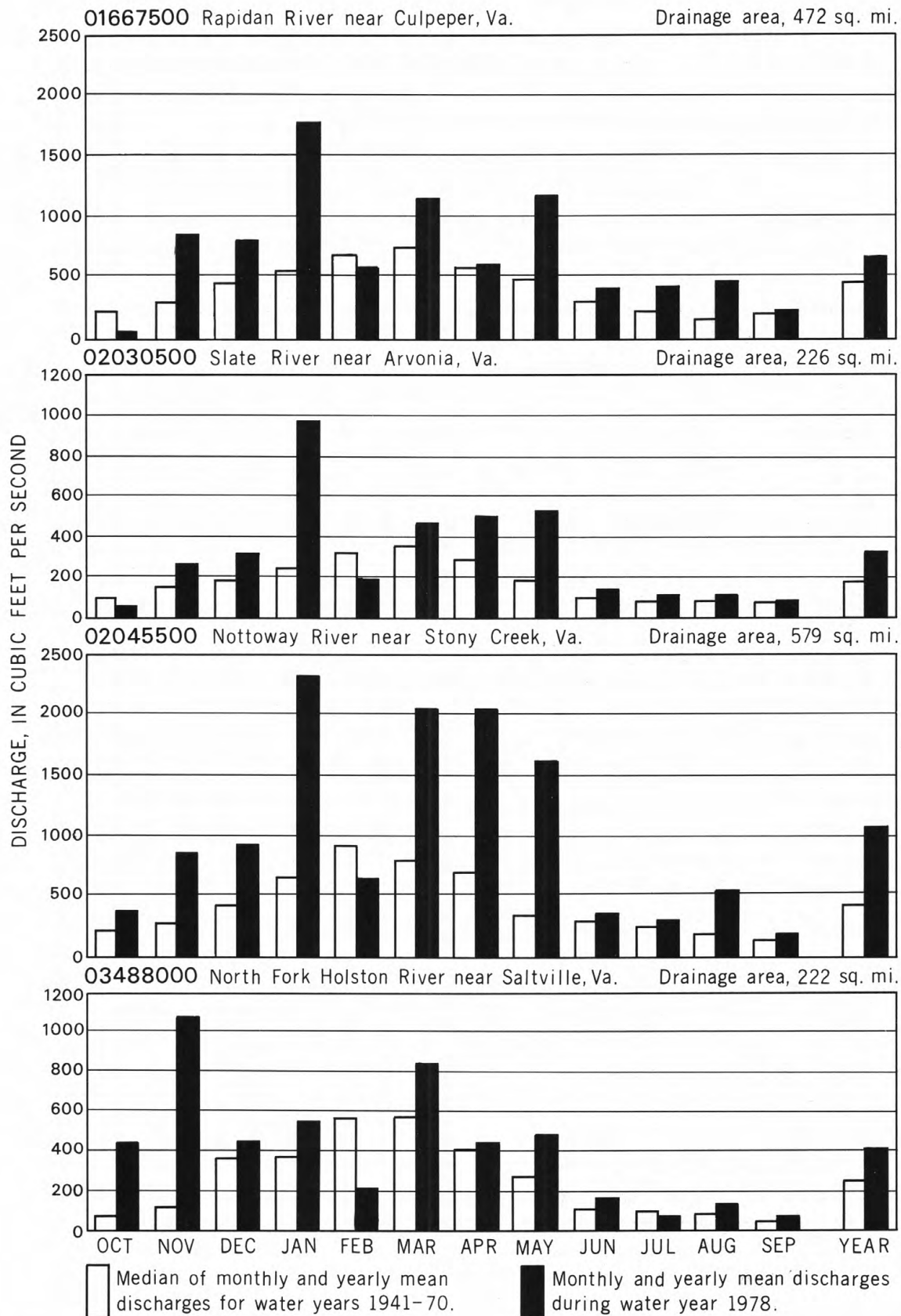


FIGURE 2. Discharge during 1978 water year compared with median discharge for period 1941-70 for four representative gaging stations

WATER RESOURCES DATA FOR VIRGINIA, 1978

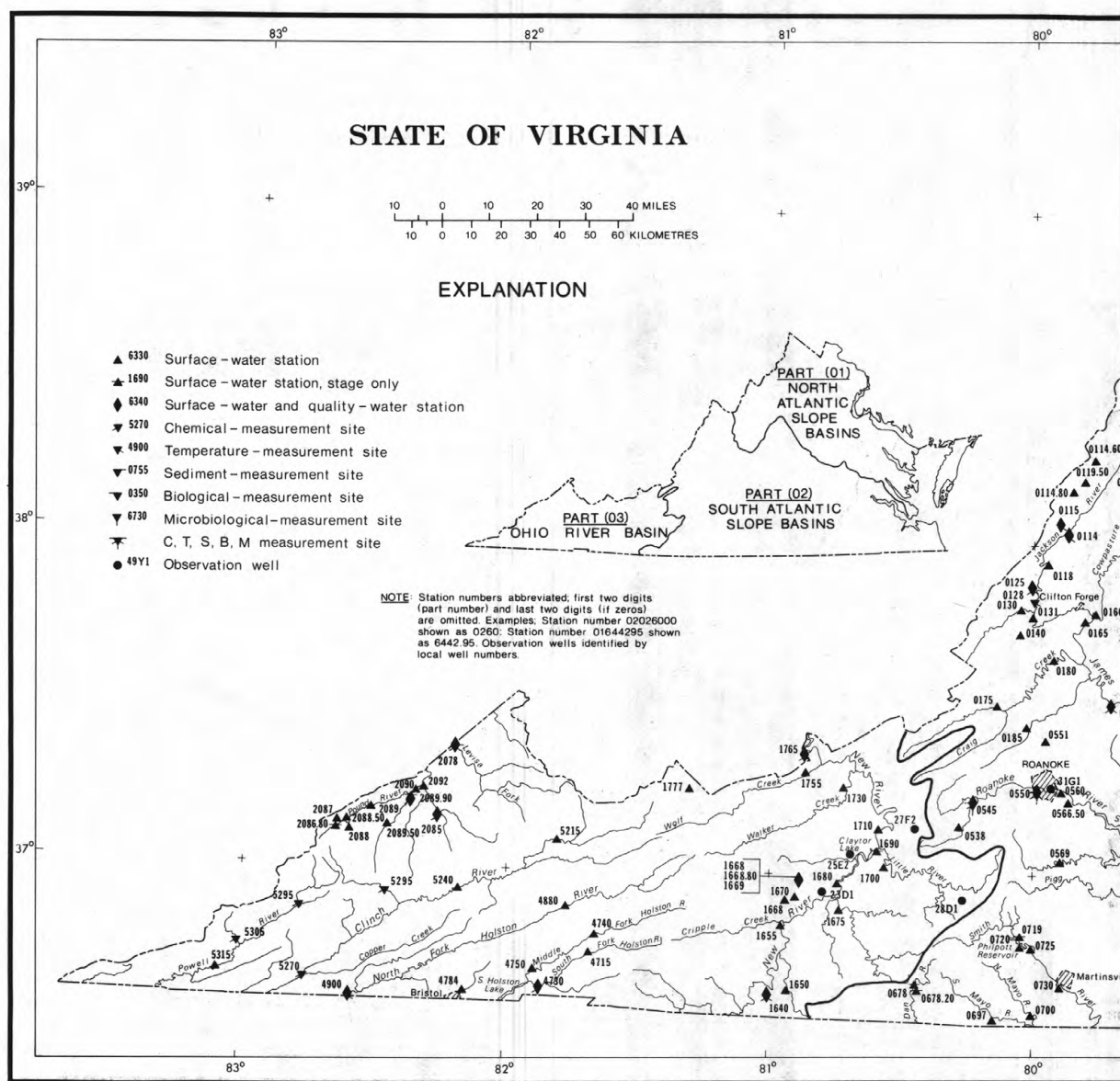
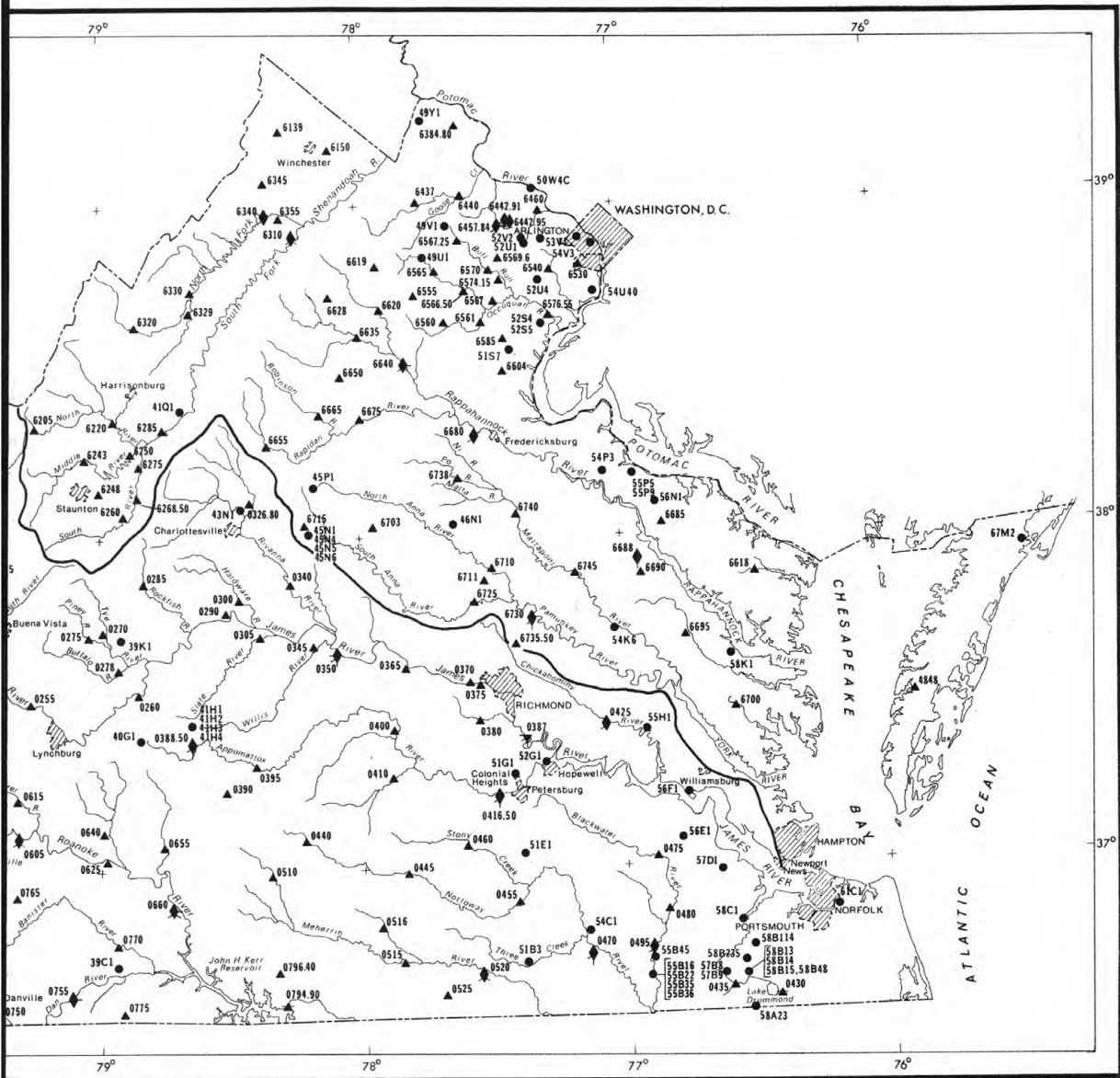


FIGURE 3. Map of Virginia showing location of data-collection stations.



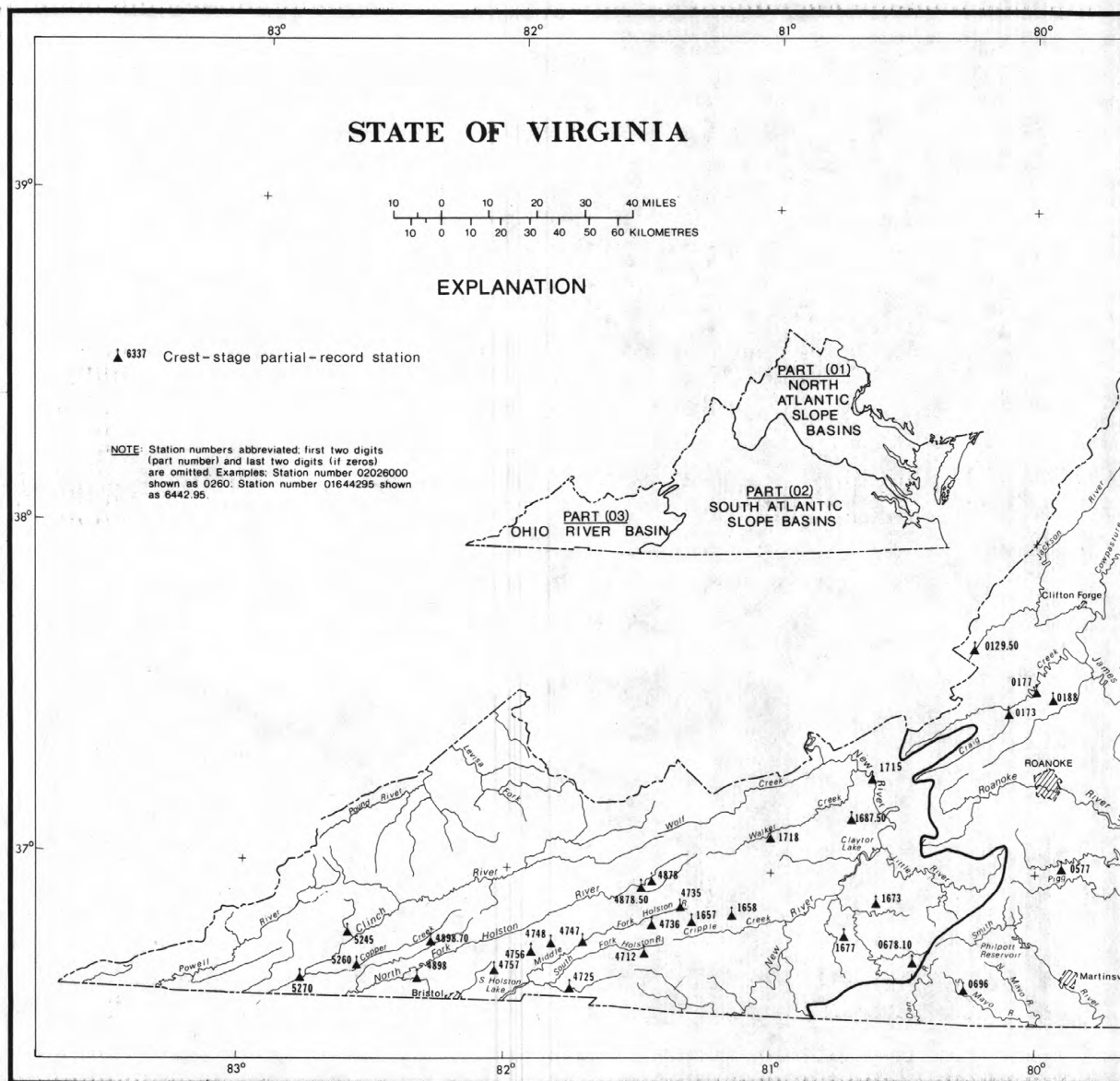
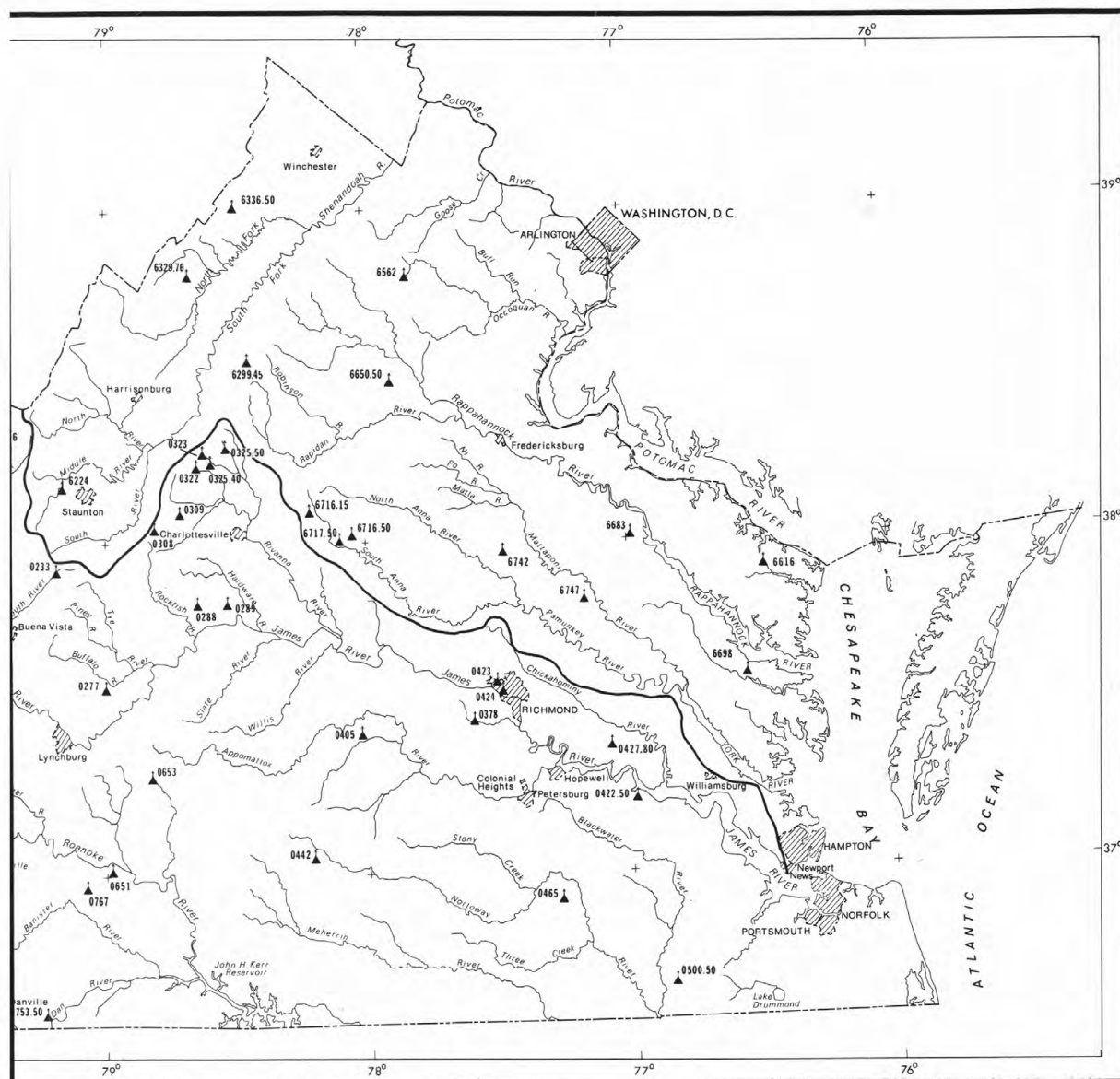


FIGURE 4. Map of Virginia showing location of crest-stage partial-record stations.



GAGING-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 (8 m) upstream from bridge on State Highway 606, 1.9 mi (3.1 km) northwest of Nassawadox, and 2.1 mi (3.4 km) upstream from mouth.

DRAINAGE AREA.--1.72 mi² (4.45 km²).

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

GAGE.--Water-stage recorder and wooden control. Datum of gage is 11.67 ft (3.557 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--14 years (water years 1965-78), 1.20 ft³/s (0.034 m³/s), 9.47 in/yr (241 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60 ft³/s (1.70 m³/s) July 10, 1970, gage height, 4.81 ft (1.466 m); no flow at times in 1964 and 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20 ft³/s (0.57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 10	2000	*31 0.88	3.63 1.106	Apr. 27	0400	27 0.76	3.40 1.036
Mar. 27	0730	20 .57	3.03 .924	May 9	0930	26 .74	3.33 1.015

Minimum discharge, 0.05 ft³/s (0.001 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.15	.21	2.2	2.6	1.2	2.8	3.4	1.7	.48	.79	.70
2	.06	.15	.19	2.1	2.4	1.2	2.3	2.7	1.3	.62	.70	.48
3	.06	.17	.19	2.0	2.4	2.3	2.1	2.3	3.5	.70	.62	.43
4	.06	.19	.19	1.7	2.3	2.6	2.2	4.7	4.5	.55	.48	.38
5	.06	.19	.21	1.7	2.2	2.2	2.2	9.6	2.4	.55	.48	.38
6	.06	.96	.17	2.0	2.3	1.7	2.2	5.5	1.7	.55	.43	.33
7	.06	.51	.15	2.3	2.2	1.6	2.1	4.2	1.6	.48	.43	.33
8	.06	.17	.15	2.2	2.2	3.1	1.6	6.4	1.7	.48	.43	.33
9	.07	.15	.17	4.1	2.2	6.0	1.4	22	2.2	.48	.38	.33
10	.06	.15	.19	3.1	2.2	18	1.4	15	1.6	.43	.33	.33
11	.06	.11	.17	2.4	2.1	16	1.4	7.3	1.3	.70	.33	.33
12	.06	.11	.15	2.3	2.1	7.3	1.4	4.7	1.2	.43	.33	.33
13	.07	.11	.15	4.5	2.2	5.2	1.4	3.7	1.1	.38	.33	.38
14	.13	.13	.25	8.2	2.7	4.5	1.3	7.4	1.1	.48	.33	.33
15	.07	.11	.31	4.4	2.6	4.1	1.2	8.6	.99	.48	.29	.33
16	.07	.14	.21	3.3	2.3	3.7	1.1	5.5	.89	2.3	.21	.33
17	.07	.15	.19	5.8	3.0	3.3	1.1	4.2	.89	1.3	.21	.33
18	.07	.19	5.8	7.7	3.0	2.6	1.1	3.3	.89	.70	.17	.33
19	.09	.19	6.9	5.1	2.7	2.4	2.7	4.1	.70	.55	.17	.29
20	.10	.17	3.6	16	2.4	2.2	2.4	3.1	.70	.48	.17	.29
21	.09	.15	4.8	8.9	2.1	2.1	2.1	2.6	.70	.48	.29	.29
22	.09	.15	3.8	5.8	1.9	1.9	1.7	2.2	1.2	.43	.33	2.5
23	.09	.17	2.9	4.7	1.8	1.8	1.6	1.9	.89	.43	.33	2.2
24	.09	.19	2.6	4.2	1.8	1.8	1.4	3.9	.79	.38	.29	.55
25	.11	.19	2.6	4.7	1.7	1.8	1.4	5.8	.70	1.9	.29	.48
26	.19	.23	2.3	8.3	1.4	4.5	5.6	3.4	.55	1.3	.29	.43
27	.17	.21	2.2	5.2	1.3	14	20	2.7	.62	.79	.29	.43
28	.19	.23	2.1	4.2	1.3	6.5	8.9	2.4	.55	.70	.29	.38
29	.21	.27	2.1	3.6	---	4.7	5.8	2.4	.48	.62	.38	.38
30	.17	.21	2.1	3.0	---	3.7	4.4	2.1	.55	.48	.55	.38
31	.15	---	2.3	2.8	---	3.1	---	1.9	---	.70	.48	---
TOTAL	2.95	6.20	49.35	138.5	61.4	137.1	88.3	159.0	38.99	21.33	11.42	15.31
MEAN	.095	.21	1.59	4.47	2.19	4.42	2.94	5.13	1.30	.69	.37	.51
MAX	.21	.96	6.9	16	3.0	18	20	22	4.5	2.3	.79	2.5
MIN	.06	.11	.15	1.7	1.3	1.2	1.1	1.9	.48	.38	.17	.29
CFSM	.06	.12	.92	2.60	1.27	2.57	1.71	2.98	.76	.40	.22	.30
IN.	.06	.13	1.07	2.99	1.33	2.96	1.91	3.44	.84	.46	.25	.33

CAL YR 1977 TOTAL 200.69 MEAN .55 MAX 6.9 MIN .05 CFSM .32 IN 4.34
WTR YR 1978 TOTAL 729.85 MEAN 2.00 MAX 22 MIN .06 CFSM 1.16 IN 15.78

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 (5 m) upstream from bridge on State Highway 614, 0.8 mi (1.3 km) upstream from Gap Run, and 1.3 mi (2.1 km) southeast of Hayfield.

DRAINAGE AREA.--15.0 mi² (38.8 km²).

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

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 668.60 ft (203.789 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for January and February, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--18 years, 14.2 ft³/s (0.402 m³/s), 12.86 in/yr (327 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft³/s (78.2 m³/s) June 22, 1972, gage height, 8.85 ft (2.697 m), from rating curve extended above 870 ft³/s (25 m³/s); no flow for part of Sept. 14, 1968, cause unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0030	830 23.5	5.27 1.606	May 16	0830	438 12.4	3.74 1.140
Jan. 26	---	Unknown	Unknown	July 3	1130	700 19.8	4.81 1.466
Mar. 14	1730	450 12.7	3.80 1.158	July 31	2200	860 24.4	5.43 1.655
May 13	2230	462 13.1	3.84 1.170	Aug. 6	1830	*2680 75.9	8.55 2.606

Minimum discharge, 0.80 ft³/s (0.023 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.90	2.0	130	7.6	21	9.4	33	8.7	6.3	1.9	129	7.8
2	1.4	3.6	60	6.7	19	8.7	26	8.0	5.9	8.7	39	5.6
3	.95	10	41	6.3	16	8.0	23	7.6	6.7	293	55	4.5
4	.90	24	29	6.7	15	7.6	22	9.4	6.7	99	123	3.4
5	.85	41	29	5.9	13	6.7	21	17	5.1	45	96	2.7
6	1.0	50	29	4.6	12	6.7	18	15	4.6	25	552	2.3
7	.95	190	19	3.8	11	5.9	17	12	4.6	16	256	2.1
8	.95	233	14	6.6	10	5.5	15	13	5.1	37	80	2.1
9	1.5	68	14	92	9.6	5.5	14	24	5.9	32	42	1.9
10	1.3	77	11	42	9.2	5.9	13	20	4.2	16	30	1.9
11	1.0	70	9.4	30	8.5	13	13	17	3.6	10	42	1.9
12	1.0	38	7.6	22	8.0	43	12	14	6.3	6.7	46	4.2
13	1.0	25	7.2	18	7.5	114	11	107	17	5.5	29	3.8
14	1.0	18	8.7	10	7.2	264	9.4	190	5.9	10	22	2.7
15	1.3	14	14	13	6.7	229	8.7	95	3.6	6.7	17	2.3
16	3.8	10	10	11	6.3	122	8.0	322	2.8	76	14	2.3
17	3.2	7.6	8.7	10	6.1	91	7.6	157	2.6	43	12	2.7
18	1.6	5.9	52	9.2	5.9	68	8.7	95	2.6	21	9.6	2.1
19	1.5	4.2	70	8.5	5.9	78	16	72	2.1	12	8.2	4.5
20	1.4	3.6	47	7.8	5.9	75	18	49	1.9	6.7	7.4	3.4
21	1.3	3.3	54	7.2	5.5	62	17	38	3.6	5.1	6.4	2.7
22	1.3	4.2	45	6.7	5.1	49	15	29	5.1	4.2	6.0	2.3
23	1.3	68	34	6.3	5.5	41	13	25	2.8	3.6	5.6	2.1
24	1.3	38	28	6.0	5.9	34	12	28	2.1	3.1	5.3	1.9
25	1.3	30	25	57	6.7	30	12	26	1.9	3.1	6.9	1.8
26	14	43	17	289	8.7	186	14	17	1.6	2.8	6.0	1.8
27	16	28	17	107	7.6	160	14	14	7.2	8.2	7.4	1.8
28	7.3	22	15	59	8.0	99	12	13	7.6	8.7	7.4	1.6
29	4.1	30	12	43	---	62	10	10	3.1	3.8	5.6	1.6
30	2.7	52	12	34	---	45	9.4	8.7	2.4	4.2	5.3	1.6
31	2.0	---	8.7	27	---	38	---	8.0	---	132	8.7	---
TOTAL	80.10	1213.4	878.3	963.9	256.8	1972.9	442.8	1469.4	140.9	950.0	1679.8	83.4
MEAN	2.58	40.4	28.3	31.1	9.17	63.6	14.8	47.4	4.70	30.6	54.2	2.78
MAX	16	233	130	289	21	264	33	322	17	293	552	7.8
MIN	.85	2.0	7.2	3.8	5.1	5.5	7.6	7.6	1.6	1.9	5.3	1.6
CFSM	.17	2.69	1.89	2.07	.61	4.24	.99	3.16	.31	2.04	3.61	.19
IN.	.20	3.01	2.18	2.39	.64	4.89	1.10	3.64	.35	2.36	4.17	.21

CAL YR 1977 TOTAL 4101.39 MEAN 11.2 MAX 386 MIN .47 CFSM .75 IN 10.17
WTR YR 1978 TOTAL 10131.70 MEAN 27.8 MAX 552 MIN .85 CFSM 1.85 IN 25.12

01615000 OPEQUON CREEK NEAR BERRYVILLE, VA

LOCATION.--Lat 39°10'40", long 78°04'20", Frederick County, Hydrologic Unit 02070007, on left bank between the bridges on State Highway 7, 0.2 mi (0.3 km) upstream from Abrams Creek, and 5.0 mi (8.0 km) west of Berryville.

DRAINAGE AREA.--57.4 mi² (148.7 km²).

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

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

GAGE.--Water-stage recorder. Datum of gage is 503.24 ft (153.388 m) National Geodetic Vertical Datum of 1929.

Prior to July 26, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good. Diurnal fluctuation at low flow caused by mills above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--35 years, 40.9 ft³/s (1.158 m³/s), 9.68 in/yr (246 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s (300 m³/s) Nov. 13, 1970, gage height, 12.82 ft (3.908 m), from rating curve extended above 4,800 ft³/s (140 m³/s); minimum daily, 0.20 ft³/s (0.006 m³/s) Sept. 12, 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 18.4 ft (5.61 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 850 ft³/s (24 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0330	1030 29.2	5.75 1.753	Mar. 26	1730	1660 47.0	7.03 2.143
Dec. 1	0600	995 28.2	5.67 1.728	May 16	0930	1480 41.9	6.61 2.015
Jan. 9	0600	1320 37.4	6.54 1.993	July 3	1230	1990 56.4	7.62 2.323
Jan. 26	1100	1180 33.4	6.16 1.878	July 31	2300	908 25.7	5.25 1.600
Mar. 13	2200	872 24.7	5.35 1.631	Aug. 7	0700	*3300 93.5	9.17 2.795
Mar. 14	2000	2490 70.5	8.30 2.530				

Minimum daily discharge, 3.7 ft³/s (0.10 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.0	10	518	25	53	32	64	17	23	11	308	37
2	4.2	11	130	25	46	26	54	16	18	27	70	25
3	4.5	16	75	21	38	25	50	16	18	951	40	22
4	4.0	41	57	20	32	23	48	18	18	241	62	21
5	3.7	41	51	20	33	20	48	34	16	89	39	19
6	4.0	55	59	20	27	19	43	30	14	49	142	18
7	4.2	197	40	20	22	17	42	24	14	34	1290	16
8	4.2	503	30	25	27	17	37	24	14	82	138	16
9	5.6	98	29	689	26	17	33	32	14	100	73	15
10	8.6	85	25	92	24	18	31	31	12	45	53	14
11	5.6	191	21	60	24	37	30	31	11	33	66	14
12	4.5	67	21	47	23	187	29	23	16	27	92	23
13	4.5	45	20	38	23	484	28	77	82	24	50	36
14	4.5	34	21	39	23	1230	26	352	24	22	41	21
15	5.6	28	26	38	22	879	25	157	16	34	36	17
16	11	25	23	32	21	283	24	947	14	26	33	17
17	29	23	21	29	19	205	24	323	13	31	31	17
18	15	23	296	32	19	161	25	149	12	21	28	16
19	10	20	285	24	19	164	38	108	12	18	27	15
20	8.2	19	135	22	19	138	38	77	11	16	25	16
21	6.5	18	216	20	18	107	33	58	49	15	24	14
22	6.1	18	146	19	17	86	30	46	61	14	23	13
23	6.1	124	80	18	17	67	26	40	19	13	22	12
24	6.1	91	64	18	17	58	25	40	14	12	21	12
25	6.5	56	60	145	20	54	24	43	12	14	21	12
26	11	81	45	790	42	837	25	35	12	14	26	12
27	42	52	33	325	45	511	25	30	32	30	23	11
28	29	40	29	154	41	189	21	27	27	72	24	12
29	17	81	29	107	---	114	19	25	17	18	21	10
30	12	163	26	74	---	82	18	24	12	15	21	10
31	10	---	26	61	---	70	---	37	---	188	61	---
TOTAL	297.2	2256	2637	3049	757	6157	983	2891	627	2286	2931	513
MEAN	9.59	75.2	85.1	98.4	27.0	199	32.8	93.3	20.9	73.7	94.5	17.1
MAX	42	503	518	790	53	1230	64	947	82	951	1290	37
MIN	3.7	10	20	18	17	17	18	16	11	11	21	10
CFSM	.17	1.31	1.48	1.71	.47	3.47	.57	1.63	.36	1.28	1.65	.30
IN.	.19	1.46	1.71	1.98	.49	3.99	.64	1.87	.41	1.48	1.90	.33

CAL YR 1977 TOTAL 10598.5 MEAN 29.0 MAX 990 MIN 2.9 CFSM .51 IN 6.87
WTR YR 1978 TOTAL 25384.2 MEAN 69.5 MAX 1290 MIN 3.7 CFSM 1.21 IN 16.45

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 (175 m) upstream from highway bridge, 2.8 mi (4.5 km) upstream from city of Staunton dam, 3.8 mi (6.1 km) upstream from Broad Run, 5.0 mi (8.0 km) west of Stokesville, and 7.8 mi (12.6 km) upstream from Skidmore Fork.

DRAINAGE AREA.--17.2 mi² (44.5 km²).

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 (626.233 m) National Geodetic Vertical Datum of 1929. Prior to June 10, 1958, at site 575 ft (175 m) downstream at datum 6.0 ft (1.83 m) lower.

REMARKS.--Records fair except those for period of doubtful gage-height record, Jan. 26 to June 20, which are poor. Several observations 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, 25.8 ft³/s (0.731 m³/s), 20.37 in/yr (517 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,100 ft³/s (314 m³/s) June 17, 1949, gage height, 10.9 ft (3.32 m), from floodmarks, site and datum then in use, from rating curve extended above 900 ft³/s (25 m³/s) on basis of computation of peak flow over dam; minimum, 0.10 ft³/s (0.003 m³/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 (2.56 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.7 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0145	344 9.74	3.71 1.131	Mar. 27	---	Unknown	Unknown
Jan. 26	0600	*1230 34.8	5.36 1.634	Apr. 27	---	Unknown	Unknown
Mar. 15	---	Unknown	Unknown	May 14	---	Unknown	Unknown
Mar. 22	---	Unknown	Unknown				

Minimum discharge, 0.81 ft³/s (0.023 m³/s) Sept. 29-30, gage height, 1.66 ft (0.506 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	10	150	30	50	22	60	65	14	3.1	5.3	5.5
2	1.4	10	120	29	38	25	50	57	13	3.3	4.9	4.5
3	1.3	27	89	25	35	22	45	50	12	6.3	4.5	3.9
4	1.2	73	70	23	34	20	41	47	12	6.9	13	3.3
5	1.2	186	60	21	33	19	37	55	10	5.6	39	2.9
6	1.2	258	57	20	32	18	35	48	9.0	4.8	26	2.7
7	1.2	283	52	20	29	18	34	46	8.0	4.2	21	2.5
8	1.1	162	46	23	28	19	33	51	7.2	3.8	19	2.3
9	1.7	93	42	133	27	18	30	55	6.4	3.6	16	2.1
10	2.1	71	37	101	26	20	29	58	5.4	3.9	13	1.9
11	2.8	55	32	78	25	23	27	53	4.8	6.1	11	1.8
12	2.8	42	29	61	24	27	26	50	4.5	5.2	9.6	1.7
13	2.6	34	27	52	24	45	25	150	4.6	4.5	9.3	1.6
14	2.4	29	29	45	23	175	24	335	4.1	5.3	11	1.4
15	2.0	25	34	37	26	470	23	225	3.6	6.2	11	1.4
16	2.0	22	34	31	23	370	22	180	3.4	5.9	10	1.4
17	2.0	20	36	29	24	250	22	150	3.2	5.5	8.5	1.3
18	2.1	18	63	28	30	200	24	90	3.1	5.1	7.5	1.3
19	2.2	16	87	25	26	140	25	66	3.0	4.6	6.5	1.2
20	2.1	14	81	23	24	130	24	50	5.0	4.1	5.7	1.1
21	2.0	13	72	22	22	150	23	44	5.1	3.8	5.2	1.1
22	1.8	14	60	20	21	175	22	38	4.9	5.2	4.8	1.0
23	1.7	23	50	19	20	155	21	33	4.3	5.3	4.3	1.0
24	1.6	32	45	22	21	138	20	29	4.1	4.8	3.8	1.0
25	1.5	34	47	88	24	125	20	24	3.8	5.2	3.3	1.0
26	12	34	49	670	27	300	60	21	3.7	5.2	3.1	.98
27	36	30	49	350	25	550	175	19	5.1	4.6	3.0	.90
28	27	27	45	160	26	350	115	17	4.7	4.2	3.0	.90
29	20	25	41	110	---	190	88	16	4.0	3.8	2.9	.87
30	16	32	37	80	---	100	78	20	3.5	4.0	2.6	.81
31	13	---	33	60	---	73	---	17	---	4.8	6.7	---
TOTAL	169.3	1712	1703	2435	767	4337	1258	2159	179.5	148.9	294.5	55.36
MEAN	5.46	57.1	54.9	78.5	27.4	140	41.9	69.6	5.98	4.80	9.50	1.85
MAX	36	283	150	670	50	550	175	335	14	6.9	39	5.5
MIN	1.1	10	27	19	20	18	20	16	3.0	3.1	2.6	.81
CFSM	.32	3.32	3.19	4.56	1.59	8.14	2.44	4.05	.35	.28	.55	.11
IN.	.37	3.70	3.68	5.27	1.66	9.38	2.72	4.67	.39	.32	.64	.12

CAL YR 1977 TOTAL 7254.03 MEAN 19.9 MAX 420 MIN .25 CFSM 1.16 IN 15.69
WTR YR 1978 TOTAL 15218.56 MEAN 41.7 MAX 670 MIN .81 CFSM 2.42 IN 32.91

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 (1.3 km) downstream from Pleasant Run, 2.8 mi (4.5 km) northeast of Burkettown, and 8.5 mi (13.7 km) upstream from Middle River.

DRAINAGE AREA.--379 mi² (982 km²).

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 (336.344 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 12, 1938, nonrecording gage at site 3.0 mi (4.8 km) downstream at different datum.

REMARKS.--Records good except those for period of no gage-height record, Mar. 16 to Apr. 17, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--50 years, 362 ft³/s (10.25 m³/s), 12.97 in/yr (329 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,600 ft³/s (1,770 m³/s) June 18, 1949, gage height, 36.3 ft (11.06 m), from floodmarks, from rating curve extended above 16,000 ft³/s (450 m³/s) on basis of slope-area measurements at gage heights 32.4 ft (9.88 m) and 36.3 ft (11.06 m), and contracted-opening measurement at gage height 36.3 ft (11.06 m); minimum, 16 ft³/s (0.45 m³/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 above base of 2,500 ft³/s (71 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0200	4770 135	9.14 2.786	Mar. 27	Unknown	5600 159	9.74 2.969
Jan. 26	1000	*10900 309	14.89 4.538	May 14	1200	3220 91.2	6.88 2.097
Mar. 14	2000	7900 224	12.26 3.737	Aug. 10	2330	7330 208	11.66 3.554
Mar. 15	1830	5170 146	9.24 2.816	Aug. 14	0200	6190 175	10.41 3.173

Minimum discharge, 48 ft³/s (1.36 m³/s) Oct. 5, 7, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	95	1650	330	695	289	840	647	270	146	242	220
2	66	97	1730	304	602	267	740	560	245	143	190	196
3	56	104	1220	278	498	274	550	482	238	227	174	187
4	54	186	925	245	429	256	500	457	245	319	358	184
5	52	788	720	234	417	231	470	486	217	293	580	171
6	56	2680	670	227	393	234	430	453	200	245	745	165
7	52	4010	580	227	354	231	400	445	193	207	1240	159
8	56	4140	539	224	323	231	390	469	193	193	825	154
9	77	2200	482	1230	315	240	360	498	181	560	602	148
10	64	1470	433	1370	311	294	350	518	165	429	931	143
11	60	1090	377	1010	296	444	330	490	162	354	1540	140
12	56	745	338	745	280	635	310	461	157	274	977	135
13	54	580	323	602	282	996	295	620	151	227	1760	130
14	54	461	319	560	274	3570	285	2970	143	210	3130	130
15	56	393	319	461	259	4490	275	2450	140	200	1280	128
16	70	354	304	381	259	2880	265	2120	135	203	825	125
17	73	311	300	354	252	2120	256	1880	133	174	602	123
18	58	274	542	327	252	1180	263	1520	133	157	490	121
19	58	245	845	300	252	1000	282	1160	135	143	413	118
20	60	220	925	285	241	960	285	855	151	135	358	116
21	56	207	820	274	235	915	270	670	279	125	311	113
22	56	213	720	234	226	810	252	560	398	123	278	121
23	58	274	602	217	224	700	241	486	267	128	259	143
24	58	346	539	213	234	680	231	453	213	178	241	118
25	54	373	518	655	252	720	224	401	190	415	224	113
26	97	393	498	7570	293	3000	376	354	168	271	224	109
27	111	373	478	4830	289	3500	1320	318	238	200	224	106
28	123	354	445	2980	289	2600	1200	296	193	174	217	102
29	123	346	409	1810	---	1800	950	270	174	157	196	100
30	111	381	377	1320	---	1300	798	259	154	157	190	97
31	102	---	350	950	---	1000	---	289	---	174	384	---
TOTAL	2139	23703	19297	30747	9026	37847	13738	23897	5861	6941	20010	4115
MEAN	69.0	790	622	992	322	1221	458	771	195	224	645	137
MAX	123	4140	1730	7570	695	4490	1320	2970	398	560	3130	220
MIN	52	95	300	213	224	231	224	259	133	123	174	97
CFSM	.18	2.08	1.64	2.62	.85	3.22	1.21	2.03	.52	.59	1.70	.36
IN.	.21	2.33	1.89	3.02	.89	3.71	1.35	2.35	.58	.68	1.96	.40

CAL YR 1977 TOTAL 99371 MEAN 272 MAX 4140 MIN 35 CFSM .72 IN 9.75
WTR YR 1978 TOTAL 197321 MEAN 541 MAX 7570 MIN 52 CFSM 1.43 IN 19.37

POTOMAC RIVER BASIN

27

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 (4.3 km) downstream from Moffett Creek, and 3.2 mi (5.1 km) north-west of Verona.

DRAINAGE AREA.--178 mi² (461 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 1,260.78 ft (384.286 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Diurnal fluctuation at low flow caused by mill above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--11 years, 178 ft³/s (5.041 m³/s), 13.58 in/yr (345 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,440 ft³/s (211 m³/s) Mar. 19, 1975; maximum gage height, 13.79 ft (4.203 m) May 30, 1971; minimum discharge, 3.7 ft³/s (0.10 m³/s) Jan. 30, 1977, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft³/s (40 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 5	2030	1730	49.0	6.02	1.835	Mar. 14	2030	5740	163	11.40	3.475
Nov. 7	0100	2120	60.0	6.71	2.045	Mar. 26	1600	2770	78.4	7.66	2.335
Jan. 26	0830	*6630	188	12.27	3.740	May 14	0400	1470	41.6	5.50	1.676
Mar. 13	0030	1420	40.2	5.35	1.631	Aug. 13	2030	1420	40.2	5.37	1.637

Minimum discharge, 31 ft³/s (0.88 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	64	880	160	281	173	404	265	146	73	74	49
2	45	64	576	146	265	154	344	237	133	79	64	47
3	40	76	374	128	234	150	306	217	130	97	57	46
4	38	356	289	118	200	141	283	217	133	103	53	45
5	37	890	257	113	190	128	265	239	120	93	146	44
6	37	1260	270	110	175	125	247	224	116	80	108	42
7	36	1650	234	113	160	120	239	217	110	75	108	41
8	38	823	208	116	152	121	220	257	110	74	94	40
9	49	480	192	814	152	120	203	350	107	128	82	38
10	55	341	166	496	145	195	197	332	100	91	80	36
11	51	268	152	344	140	396	190	281	97	83	70	40
12	45	220	137	273	137	694	184	250	91	74	82	37
13	42	186	128	228	132	995	175	334	93	69	239	37
14	42	160	132	215	132	2610	162	1160	87	73	314	40
15	42	142	227	195	128	2670	156	675	83	73	148	39
16	48	126	206	162	128	1320	154	576	83	86	108	38
17	51	120	201	158	123	760	150	544	80	82	90	36
18	46	107	419	145	133	544	148	449	78	70	78	35
19	43	96	560	128	135	480	158	359	76	65	71	35
20	42	87	449	118	133	496	160	306	146	64	66	34
21	40	84	359	118	133	464	148	268	125	60	62	34
22	38	91	306	110	128	464	141	239	116	111	57	37
23	38	260	255	102	118	389	133	220	97	96	55	43
24	39	300	234	108	114	335	130	210	87	80	51	38
25	37	255	265	621	128	335	128	195	83	74	69	39
26	79	222	276	4290	210	1670	349	177	83	78	47	35
27	208	181	250	1370	197	1650	955	162	104	69	55	33
28	126	156	222	684	181	1360	496	156	91	62	96	33
29	91	152	199	480	---	800	368	150	80	57	65	34
30	76	177	181	374	---	592	306	173	76	60	52	32
31	67	---	173	326	---	480	---	168	---	70	51	---
TOTAL	1708	9394	8777	12863	4484	20931	7499	9607	3061	2449	2792	1157
MEAN	55.1	313	283	415	160	675	250	310	102	79.0	90.1	38.6
MAX	208	1650	880	4290	281	2670	955	1160	146	128	314	49
MIN	36	64	128	102	114	120	128	150	76	57	47	32
CFSM	.31	1.76	1.59	2.33	.90	3.79	1.40	1.74	.57	.44	.51	.22
IN.	.36	1.96	1.83	2.69	.94	4.37	1.57	2.01	.64	.51	.58	.24
CAL YR 1977	TOTAL	42593	MEAN 117	MAX 1720	MIN 28	CFSM .66	IN 8.90					
WTR YR 1978	TOTAL	84722	MEAN 232	MAX 4290	MIN 32	CFSM 1.30	IN 17.71					

POTOMAC RIVER BASIN

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 (3.5 km) northwest of Fishersville, and 5.6 mi (9.0 km) upstream from mouth.

DRAINAGE AREA.--70.1 mi² (181.6 km²).

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

GAGE.--Water-stage recorder. Altitude of gage is 1,230 ft (375 m), from topographic map.

REMARKS.--Records good except those for February, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--11 years, 69.9 ft³/s (1.980 m³/s), 13.54 in/yr (344 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,850 ft³/s (109 m³/s) Oct. 5, 1972, gage height, 12.91 ft (3.935 m), from rating curve extended above 2,400 ft³/s (68 m³/s); minimum, 3.8 ft³/s (0.11 m³/s) Jan. 11, 1977, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	0830	*3020 85.5	10.76 3.280	Mar. 14	1800	2970 84.1	10.73 3.271
Mar. 12	2100	1900 53.8	8.00 2.438	Mar. 26	1300	2180 61.7	8.76 2.670
Mar. 13	0400	1060 30.0	5.55 1.692				

Minimum daily discharge, 12 ft³/s (0.34 m³/s) Oct. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	19	199	64	112	81	148	71	55	34	38	34
2	14	24	111	59	108	69	130	67	52	36	35	27
3	13	62	90	53	100	68	121	64	54	40	28	25
4	12	92	78	49	96	62	115	94	54	40	65	24
5	12	146	91	49	90	59	108	109	48	35	49	23
6	13	171	90	50	82	58	101	77	46	33	39	22
7	13	229	68	52	78	55	98	70	45	31	47	22
8	13	141	61	74	76	57	91	93	47	46	38	21
9	17	93	61	329	72	57	87	92	46	170	33	21
10	17	77	50	100	68	448	84	74	43	51	42	20
11	14	71	46	90	66	462	81	67	41	47	33	21
12	14	56	45	84	64	850	77	64	41	40	47	21
13	13	47	46	78	62	767	75	250	43	39	68	25
14	14	43	57	74	62	1710	71	204	39	39	136	24
15	14	40	72	70	58	836	69	133	38	38	42	22
16	23	38	57	66	57	401	66	145	38	49	36	21
17	23	40	68	64	58	257	63	127	38	40	33	20
18	16	35	175	60	60	198	63	105	36	35	30	20
19	16	31	153	58	61	177	66	94	48	34	29	20
20	15	30	122	54	62	160	64	86	104	33	28	20
21	15	28	118	52	60	145	62	80	47	33	27	20
22	15	72	104	50	58	130	58	75	46	32	26	20
23	15	131	92	54	56	120	55	73	40	30	26	20
24	15	94	88	58	54	108	54	73	38	29	25	20
25	15	77	93	223	116	127	54	67	37	30	25	20
26	50	75	76	1910	146	1030	212	62	37	30	24	20
27	36	58	65	635	107	569	160	61	83	27	25	19
28	27	57	61	293	96	310	97	60	44	27	52	19
29	22	64	59	220	---	224	82	58	38	25	30	18
30	20	70	62	170	---	186	76	66	36	26	27	18
31	19	---	65	134	---	167	---	61	---	29	28	---
TOTAL	548	2211	2623	5376	2185	9948	2688	2822	1402	1228	1211	647
MEAN	17.7	73.7	84.6	173	78.0	321	89.6	91.0	46.7	39.6	39.1	21.6
MAX	50	229	199	1910	146	1710	212	250	104	170	136	34
MIN	12	19	45	49	54	55	54	58	36	25	24	18
CFSM	.25	1.05	1.21	2.47	1.11	4.58	1.28	1.30	.67	.57	.56	.31
IN.	.29	1.17	1.39	2.85	1.16	5.28	1.43	1.50	.74	.65	.64	.34

CAL YR 1977 TOTAL 13283.7 MEAN 36.4 MAX 306 MIN 9.7 CFSM .52 IN 7.05
WTR YR 1978 TOTAL 32889.0 MEAN 90.1 MAX 1910 MIN 12 CFSM 1.29 IN 17.45

01625000 MIDDLE RIVER NEAR GROTTOS, 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 (2.9 km) upstream from mouth, and 2.0 mi (3.2 km) west of Grottoes.

DRAINAGE AREA.--375 mi² (971 km²).

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 (323.548 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good. Small diurnal fluctuation at low flow caused by mills above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--51 years, 305 ft³/s (8.638 m³/s), 11.05 in/yr (281 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s (694 m³/s) Mar. 18, 1936, gage height, 28.57 ft (8.708 m), from floodmarks, from rating curve extended above 15,000 ft³/s (420 m³/s); minimum observed, 22 ft³/s (0.62 m³/s) Sept. 21, Oct. 3, 12, 1930, gage height, 1.90 ft (0.579 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1877, that of Mar. 18, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	1200	2320 65.7	8.94 2.725	Mar. 15	0630	8800 249	16.17 4.929
Jan. 26	2330	*10000 283	17.18 5.236	Mar. 26	2300	4720 134	12.24 3.731
Mar. 13	0430	3190 90.3	10.28 3.133				

Minimum discharge, 59 ft³/s (1.67 m³/s) Oct. 8, gage height, 3.50 ft (1.067 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	111	884	279	600	383	760	411	264	146	166	115
2	73	111	1010	263	500	347	655	366	236	148	169	113
3	73	128	639	241	450	326	582	334	227	169	129	106
4	68	261	490	214	400	312	545	330	238	185	289	103
5	63	614	420	214	360	282	510	471	220	172	480	99
6	63	1510	459	208	320	265	473	385	208	157	255	98
7	64	1990	395	213	300	265	458	343	203	144	229	95
8	61	1420	341	221	290	265	424	371	201	139	209	93
9	72	823	312	1000	280	271	395	479	202	259	173	90
10	93	562	291	870	250	616	375	495	190	230	181	88
11	91	460	254	660	220	1300	363	429	178	189	162	86
12	83	360	248	580	225	1670	348	377	175	158	210	91
13	76	307	234	460	257	2640	331	409	178	144	441	90
14	73	275	231	385	269	4050	317	1550	173	150	569	93
15	72	248	301	325	260	6310	300	1160	162	151	319	93
16	81	227	332	295	263	2500	290	927	161	163	220	90
17	128	208	305	280	258	1510	284	875	161	174	181	87
18	97	195	621	275	280	1090	279	729	156	151	159	85
19	85	182	884	250	297	906	297	605	152	137	145	84
20	78	168	742	230	312	855	305	516	242	130	136	83
21	75	160	639	240	302	804	288	452	376	127	127	83
22	72	174	543	225	297	765	273	402	209	195	123	91
23	70	372	454	215	276	692	259	370	191	180	118	138
24	70	497	404	220	270	602	252	357	167	149	115	96
25	74	419	391	398	295	589	247	338	157	138	112	89
26	108	375	419	5790	565	2660	369	304	154	133	123	89
27	250	320	383	5040	489	3140	1250	280	276	133	107	84
28	239	278	358	1500	433	2130	812	267	211	126	137	83
29	173	267	351	1100	---	1450	569	258	167	117	165	82
30	137	294	306	800	---	1080	468	257	153	118	125	82
31	118	---	290	670	---	887	---	295	---	127	112	---
TOTAL	2949	13316	13931	23661	9318	40963	13078	15142	5988	4839	6186	2799
MEAN	95.1	444	449	763	333	1321	436	488	200	156	200	93.3
MAX	250	1990	1010	5790	600	6310	1250	1550	376	259	569	138
MIN	61	111	231	208	220	265	247	257	152	117	107	82
CFSM	.25	1.18	1.20	2.04	.89	3.52	1.16	1.30	.53	.42	.53	.25
IN.	.29	1.32	1.38	2.35	.92	4.06	1.30	1.50	.59	.48	.61	.28

CAL YR 1977 TOTAL 69301 MEAN 190 MAX 1990 MIN 43 CFSM .51 IN 6.87
WTR YR 1978 TOTAL 152170 MEAN 417 MAX 6310 MIN 61 CFSM 1.11 IN 15.10

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 (20 m) downstream from bridge on State Highway 664, 1.3 mi (2.1 km) southwest of post office at Waynesboro, and 2.4 mi (3.9 km) downstream from Back Creek.

DRAINAGE AREA.--127 mi² (329 km²), of which 41 mi² (106 km²) 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 (395.082 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow from 41 mi² (106 km²) above station slightly regulated by flood-detention reservoirs (sixteen of which were built by Soil Conservation Service between 1954 and 1961). Several observations 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, 137 ft³/s (3.880 m³/s), 14.65 in/yr (372 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft³/s (493 m³/s) Aug. 20, 1969, gage height, 15.27 ft (4.654 m), from rating curve extended above 4,200 ft³/s (120 m³/s) on basis of contracted-opening measurement at gage height 13.95 ft (4.252 m); minimum, 7.0 ft³/s (0.20 m³/s) July 18, 1966; minimum daily, 17 ft³/s (0.48 m³/s) Aug. 8, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 14.3 ft (4.36 m), from floodmarks, discharge, 14,500 ft³/s (411 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	0500	3610 102	8.38 2.554	Mar. 26	2100	1060 30.0	5.51 1.679
Mar. 14	1930	3020 85.5	7.84 2.390	May 13	2100	*3780 107	8.52 2.597

Minimum discharge, 21 ft³/s (0.59 m³/s) Oct. 7-8, 15; minimum gage height, 2.31 ft (0.704 m) Oct. 7-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	27	313	120	328	143	386	261	144	64	48	47
2	28	34	305	113	297	127	333	228	127	64	46	44
3	23	108	249	101	259	128	294	203	125	70	44	42
4	27	182	211	96	214	120	271	250	132	83	49	40
5	27	601	237	93	200	108	250	402	117	72	73	39
6	25	731	290	92	185	106	228	336	107	64	61	39
7	22	771	238	92	165	106	218	286	102	59	88	38
8	22	599	202	106	168	108	199	296	103	67	85	37
9	26	410	186	590	158	107	187	327	103	108	68	37
10	27	357	161	388	148	216	179	309	91	69	61	37
11	25	373	144	295	145	371	172	273	85	63	57	37
12	25	296	131	236	143	479	166	245	81	58	68	38
13	26	244	127	220	138	716	160	945	96	55	62	39
14	33	189	138	212	136	1640	143	1570	87	54	109	38
15	26	144	175	183	129	2050	138	965	78	55	75	38
16	28	126	154	150	126	1090	132	760	75	60	80	37
17	26	131	148	152	124	732	128	618	73	60	65	37
18	24	119	303	156	131	548	130	510	70	54	57	36
19	23	105	309	138	135	478	170	437	67	50	54	35
20	25	97	274	124	135	481	131	367	102	49	51	35
21	29	92	250	135	130	465	121	302	90	48	48	35
22	28	129	218	120	130	475	114	264	102	47	46	35
23	26	256	190	110	117	422	107	237	80	51	45	36
24	25	258	176	110	119	374	104	225	71	47	43	36
25	25	222	174	338	124	359	103	201	67	52	43	36
26	29	211	158	2570	180	743	502	181	69	51	41	35
27	35	173	139	1750	158	917	789	167	142	47	41	35
28	34	158	129	1080	149	836	490	158	101	46	52	35
29	30	152	122	696	---	650	365	149	78	44	45	34
30	28	151	119	540	---	519	302	170	70	44	43	34
31	27	---	124	416	---	442	---	152	---	48	43	---
TOTAL	835	7446	6094	11522	4571	16056	7012	11794	2835	1803	1791	1121
MEAN	26.9	248	197	372	163	518	234	380	94.5	58.2	57.8	37.4
MAX	35	771	313	2570	328	2050	789	1570	144	108	109	47
MIN	22	27	119	92	117	106	103	149	67	44	41	34
CFSM	.21	1.95	1.55	2.93	1.28	4.08	1.84	2.99	.74	.46	.46	.29
IN.	.24	2.18	1.78	3.37	1.34	4.70	2.05	3.45	.83	.53	.52	.33
CAL YR 1977	TOTAL	34422	MEAN	94.3	MAX	771	MIN	22	CFSM	.74	IN	10.08
WTR YR 1978	TOTAL	72880	MEAN	200	MAX	2570	MIN	22	CFSM	1.58	IN	21.35

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LOCATION.--Lat 38°05'19", long 78°52'38", Augusta County, Hydrologic Unit 02070005, on upstream side of Hopeman Parkway Road bridge near center span, 1.1 mi (1.8 km) downstream from Steele Run, and 1.6 mi (2.6 km) southwest of Dooms.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 5,260 ft³/s (149 m³/s) Jan. 26, gage height, 10.86 ft (3.310 m); minimum observed, 44 ft³/s (1.25 m³/s) Oct. 7, 19, 20.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	50	390	146	372	179	430	282	169	86	71	66
2	57	66	354	136	336	156	372	264	153	111	66	61
3	48	127	282	127	300	159	336	230	156	100	61	57
4	50	193	247	124	264	162	318	300	156	111	66	57
5	55	1090	282	120	235	149	282	490	143	97	100	55
6	53	798	336	120	215	133	264	390	133	86	92	53
7	44	1010	280	124	203	133	247	336	127	78	114	53
8	46	756	230	162	195	133	230	354	133	76	108	53
9	61	470	206	790	180	140	213	390	130	149	86	52
10	53	410	186	450	176	318	210	354	120	92	81	54
11	50	430	176	318	170	450	203	318	111	86	76	59
12	52	336	159	264	172	550	193	282	106	81	88	55
13	50	264	159	245	172	1050	186	336	127	76	95	54
14	68	213	162	230	166	2160	172	1900	111	76	127	53
15	55	172	206	220	159	2760	166	1360	106	76	92	55
16	76	156	179	166	153	1530	156	1270	103	86	100	54
17	53	162	169	170	153	966	153	798	97	81	84	52
18	50	146	410	160	159	630	156	630	94	76	76	52
19	46	133	354	150	169	630	206	510	92	71	68	53
20	48	127	318	142	162	630	153	390	127	71	68	48
21	57	120	282	142	159	590	146	354	117	68	66	50
22	55	169	264	135	159	590	143	300	127	66	64	179
23	53	300	213	134	153	510	136	264	106	71	61	48
24	50	290	206	130	146	490	133	264	97	66	59	52
25	53	247	200	318	150	410	127	230	92	71	64	53
26	106	230	180	3720	215	1230	230	213	86	71	61	52
27	57	196	166	2220	193	1310	1400	193	159	66	55	50
28	57	189	159	1360	179	1180	590	186	133	66	71	59
29	50	186	153	882	---	840	390	179	103	66	61	57
30	50	176	146	714	---	630	336	203	97	71	59	55
31	50	---	153	470	---	510	---	179	---	76	57	---
TOTAL	1703	9212	7207	14589	5465	21308	8277	13749	3611	2524	2397	1751
MEAN	54.9	307	232	471	195	687	276	444	120	81.4	77.3	58.4
MAX	106	1090	410	3720	372	2760	1400	1900	169	149	127	179
MIN	44	50	146	120	146	133	127	179	86	66	55	48
CFSM	.37	2.06	1.56	3.16	1.31	4.61	1.85	2.98	.81	.55	.52	.39
IN.	.43	2.30	1.80	3.64	1.36	5.32	2.07	3.43	.90	.63	.60	.44
CAL YR 1977	TOTAL	47595	MEAN 130	MAX	1450	MTN 44	CFSM .87	IN 11.88				
WTR YR 1978	TOTAL	91793	MEAN 251	MAX	3720	MTN 44	CFSM 1.69	IN 22.92				

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 (30 m) downstream from bridge on State Highway 778, 0.3 mi (0.5 km) northwest of Harriston, 0.6 mi (1.0 km) downstream from Paine Run, and 7.2 mi (11.6 km) upstream from confluence with North River.

DRAINAGE AREA.--212 mi² (549 km²).

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 (344.384 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--36 years, 251 ft³/s (7.108 m³/s), 16.08 in/yr (408 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,100 ft³/s (654 m³/s) Oct. 15, 1942, gage height, 17.2 ft (5.24 m), from rating curve extended above 10,000 ft³/s (280 m³/s); minimum, 17 ft³/s (0.48 m³/s) Nov. 14, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in 1870 and 1877 reached a stage of about 18.8 ft (5.73 m), from information by observer in 1925.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 5	2100	1480 41.9	5.56 1.695	Mar. 15	0030	4980 141	8.90 2.713
Nov. 7	2300	2240 63.4	6.60 2.012	Mar. 27	0200	1860 52.7	6.06 1.847
Jan. 9	1030	1210 34.3	5.14 1.567	Apr. 26	2330	2080 58.9	6.42 1.957
Jan. 26	1200	*7800 221	10.38 3.164	May 14	0130	6950 197	10.00 3.048

Minimum discharge, 50 ft³/s (1.42 m³/s) Oct. 4, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	60	460	201	539	259	648	459	249	122	96	100
2	59	80	512	189	490	232	558	403	221	127	86	80
3	55	111	417	172	425	232	499	358	221	142	82	74
4	52	212	353	156	384	218	451	416	224	144	87	73
5	53	830	346	156	346	195	427	670	200	134	122	72
6	56	1190	442	151	323	195	391	576	182	120	114	70
7	54	1650	384	156	298	192	372	495	176	110	137	68
8	51	1380	319	167	280	192	347	503	176	108	139	67
9	57	715	287	934	265	195	322	531	176	188	120	67
10	54	566	256	690	250	372	316	511	162	139	108	67
11	55	690	225	508	245	690	305	455	149	120	100	67
12	54	508	206	370	242	918	294	415	144	110	123	72
13	53	400	198	350	235	1340	277	1340	170	102	136	72
14	60	327	201	330	228	2690	256	3830	160	106	136	70
15	59	245	245	305	218	3750	242	1720	144	102	139	68
16	70	212	232	252	212	2100	232	1440	137	116	130	67
17	66	204	218	245	209	1300	228	1120	132	112	114	67
18	56	192	452	240	221	970	228	880	127	102	102	66
19	55	169	516	225	232	792	274	740	125	96	95	65
20	55	156	464	218	232	820	242	625	160	93	89	65
21	59	149	425	210	228	792	221	523	160	91	86	65
22	59	183	373	192	228	820	207	459	157	95	82	78
23	59	342	323	190	206	715	194	415	147	96	80	80
24	56	388	298	180	215	625	191	391	130	93	79	67
25	57	338	287	394	212	602	185	354	120	91	79	67
26	98	327	262	4690	305	1300	874	322	120	95	79	66
27	74	276	232	2910	291	1650	1540	298	286	87	74	65
28	72	249	212	1860	270	1510	910	284	200	86	78	70
29	63	235	204	1180	---	1120	648	266	149	80	89	70
30	61	232	201	880	---	880	527	270	132	80	76	70
31	59	---	204	690	---	740	---	270	---	89	79	---
TOTAL	1844	12616	9754	19391	7829	28406	12406	21339	5036	3376	3136	2115
MEAN	59.5	421	315	626	280	916	414	688	168	109	101	70.5
MAX	98	1650	516	4690	539	3750	1540	3830	286	188	139	100
MIN	51	60	198	151	206	192	185	266	120	80	74	65
CFSM	.28	1.99	1.49	2.95	1.32	4.32	1.95	3.25	.79	.51	.48	.33
IN.	.32	2.21	1.71	3.40	1.37	4.98	2.18	3.74	.88	.59	.55	.37

CAL YR 1977 TOTAL 58842 MEAN 161 MAX 1650 MIN 51 CFSM .76 IN 10.33
WTR YR 1978 TOTAL 127248 MEAN 349 MAX 4690 MIN 51 CFSM 1.65 IN 22.33

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 (1.9 km) northeast of Lynnwood and 3.3 mi (5.3 km) downstream from confluence of North and South Rivers.

DRAINAGE AREA.--1,084 mi² (2,808 km²).

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 (308.814 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Diurnal fluctuation at low flow prior to 1960 caused by mill at Lynnwood. Several observations 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, 981 ft³/s (27.78 m³/s), 12.29 in/yr (312 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,000 ft³/s (2,270 m³/s) Oct. 15, 1942, gage height, 27.2 ft (8.29 m), from rating curve extended above 22,000 ft³/s (620 m³/s) on basis of computations of flow over dam at gage heights 23.60 ft (7.193 m) and 27.2 ft (8.29 m); minimum, 32 ft³/s (0.91 m³/s) Sept. 20, 1932, gage height, 1.63 ft (0.497 m); minimum daily, 93 ft³/s (2.63 m³/s) Sept. 21, 29, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1870, that of Oct. 15, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,000 ft³/s (200 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0130	9250 262	10.70 3.261	Mar. 26	2000	11600 329	12.11 3.691
Jan. 26	1630	*22700 643	16.74 5.102	May 14	0730	10300 292	11.33 3.453
Mar. 15	0030	18000 510	14.99 4.569	Aug. 11	0400	7280 206	9.39 2.862

Minimum discharge, 187 ft³/s (5.30 m³/s) Oct. 5, gage height, 2.05 ft (0.625 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	208	268	2480	840	2020	993	2790	1690	855	451	452	402
2	215	275	3350	785	1770	942	2340	1460	765	449	519	370
3	215	301	2420	719	1540	874	2010	1280	721	486	393	352
4	201	427	1890	646	1360	865	1820	1240	753	630	455	341
5	193	1570	1570	624	1250	776	1690	1740	688	612	1440	331
6	196	4670	1660	612	1170	721	1550	1550	641	543	1100	326
7	201	7180	1450	615	1030	722	1470	1380	615	483	1570	320
8	194	7450	1250	620	990	724	1350	1400	615	455	1360	316
9	217	3950	1130	2470	960	729	1260	1600	607	893	964	310
10	240	2670	1030	3200	920	1230	1190	1620	566	853	1170	307
11	231	2380	906	2330	860	2730	1150	1490	536	713	3180	299
12	222	1790	807	1870	840	3470	1100	1350	520	562	1300	301
13	211	1380	775	1520	840	5500	1040	1570	530	490	2630	298
14	208	1120	759	1350	816	9950	1000	8260	519	469	3770	296
15	215	931	875	1210	784	14900	958	5620	492	475	2060	295
16	225	824	897	983	765	8470	904	4510	476	477	1400	288
17	286	742	833	966	755	5320	866	4110	471	474	1020	285
18	245	685	1540	946	769	3930	845	3390	467	428	760	279
19	224	625	2340	869	808	3240	921	2790	455	400	619	272
20	214	576	2260	775	826	3070	933	2280	558	379	541	272
21	212	539	2060	810	809	2930	866	1880	859	368	489	269
22	212	561	1770	728	804	2970	825	1580	774	415	456	275
23	209	890	1490	666	759	2820	777	1380	660	403	434	348
24	206	1200	1300	691	729	2450	744	1280	551	382	416	295
25	203	1140	1240	1190	737	2290	724	1190	506	599	396	279
26	245	1100	1230	16000	1110	7110	1310	1060	480	514	395	276
27	395	1000	1140	13500	1170	10200	4130	976	744	423	381	269
28	376	906	1050	6810	1070	7910	3220	923	657	392	393	268
29	339	858	968	4230	---	5410	2400	865	519	368	417	267
30	306	914	931	3210	---	4050	1980	827	477	367	373	266
31	282	---	881	2560	---	3310	---	899	---	386	474	---
TOTAL	7346	48922	44282	74345	28261	120606	44163	63190	18077	15339	31327	9072
MEAN	237	1631	1428	2398	1009	3891	1472	2038	603	495	1011	302
MAX	395	7450	3350	16000	2020	14900	4130	8260	859	893	3770	402
MIN	193	268	759	612	729	721	724	827	455	367	373	266
CFSM	.22	1.51	1.32	2.21	.93	3.59	1.36	1.88	.56	.46	.93	.28
IN.	.25	1.68	1.52	2.55	.97	4.14	1.52	2.17	.62	.53	1.08	.31

CAL YR 1977	TOTAL	237784	MEAN	651	MAX	7450	MIN	155	CFSM	.60	IN	8.16
WTR YR 1978	TOTAL	504930	MEAN	1383	MAX	16000	MIN	193	CFSM	1.28	IN	17.33

POTOMAC RIVER BASIN

01631000 SOUTH FORK SHENANDOAH RIVER AT FRONT ROYAL, VA

LOCATION.--Lat 38°54'50", long 78°12'40", Warren County, Hydrologic Unit 02070005, on left bank 0.7 mi (1.1 km) downstream from bridge on State Highway 619, 1.0 mi (1.6 km) west of Front Royal, and 3.5 mi (5.6 km) upstream from confluence with North Fork.

DRAINAGE AREA.--1,642 mi² (4,253 km²).

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 (143.067 m) National Geodetic Vertical Datum of 1929. June 1899 to July 1906, nonrecording gage at site 1.0 mi (1.6 km) upstream at different datum.

REMARKS.--Records good. Large diurnal fluctuation at low and medium flow caused by powerplants above station prior to 1954; occasional large diurnal fluctuation thereafter. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--55 years, 1,581 ft³/s (44.77 m³/s), 13.08 in/yr (332 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s (3,680 m³/s) Oct. 16, 1942, gage height, 34.8 ft (10.61 m), from floodmark in gage well, from rating curve extended above 92,000 ft³/s (2,600 m³/s) on basis of slope-area measurement of peak flow; minimum, 59 ft³/s (1.67 m³/s) Jan. 30, 1934, gage height, 0.56 ft (0.171 m); minimum daily, 103 ft³/s (2.92 m³/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 above base of 8,500 ft³/s (240 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	1415	24400 691	12.03 3.667	Mar. 27	2030	16500 467	9.66 2.944
Jan. 27	1030	*32000 906	14.13 4.307	May 15	0045	15200 430	9.23 2.813
Mar. 15	1830	25500 722	12.33 3.758				

Minimum discharge, 289 ft³/s (8.18 m³/s) Oct. 7, 8, gage height, 0.99 ft (0.302 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	334	528	1880	1310	4000	1580	4770	2660	1320	859	794	679
2	310	535	3300	1270	3300	1490	4330	2310	1300	784	700	752
3	304	531	4270	1200	2800	1410	3310	2040	1190	935	794	639
4	299	903	3240	1130	2400	1290	2900	1890	1200	1490	773	599
5	302	1240	2650	1020	2100	1260	2670	1950	1120	1200	599	570
6	302	3470	2340	945	1850	1180	2460	2460	1100	1190	1310	542
7	290	8000	2270	968	1770	1130	2300	2340	1040	979	1400	524
8	291	17800	2050	976	1640	1140	2150	2120	990	914	1600	515
9	314	9890	1840	2250	1550	1130	2010	2070	968	827	2380	497
10	315	5650	1630	4380	1500	1130	1870	2190	946	805	2000	479
11	316	4440	1510	4250	1420	1600	1810	2190	881	1360	1700	470
12	330	3790	1400	3120	1380	4000	1730	2040	837	1110	2440	479
13	340	2890	1160	2800	1310	6210	1640	2290	859	914	3450	578
14	317	2290	1190	2360	1330	9890	1550	9410	837	859	2740	466
15	312	1910	1170	2150	1250	20900	1490	12300	816	859	4230	474
16	334	1600	1210	1850	1230	18300	1400	9890	741	805	2570	459
17	379	1360	1270	1700	1200	10100	1380	8650	731	784	1870	476
18	401	1250	1480	1510	1180	6870	1300	6720	710	784	1510	457
19	420	1140	2420	1340	1180	5260	1320	5370	669	741	1250	450
20	424	1050	3340	1170	1220	4520	1380	4410	837	639	1070	438
21	354	1010	3300	1120	1230	4300	1420	3600	1140	609	968	429
22	321	880	3050	1090	1250	4190	1340	2960	1170	580	859	395
23	316	993	2630	1070	1190	4170	1240	2530	1230	542	794	458
24	314	1130	2270	1210	1180	3890	1210	2280	1110	629	700	444
25	315	1600	2020	1630	1160	3480	1160	2070	903	649	720	521
26	384	1740	1890	11800	1250	4570	1210	1910	827	669	690	470
27	544	1540	1800	29000	1550	13500	2780	1710	1520	924	649	434
28	637	1500	1680	14900	1730	13900	5350	1600	1450	763	649	423
29	718	1400	1590	10000	---	10000	4080	1400	1350	599	629	416
30	657	1390	1440	7100	---	7110	3150	1400	968	580	639	404
31	582	---	1360	5300	---	5490	---	1350	---	619	741	---
TOTAL	11776	83450	64650	121919	46150	174990	66710	108110	30760	26001	43218	14937
MEAN	380	2782	2085	3933	1648	5645	2224	3487	1025	839	1394	498
MAX	718	17800	4270	29000	4000	20900	5350	12300	1520	1490	4230	752
MIN	290	528	1160	945	1160	1130	1160	1350	669	542	599	395
CFSM	.23	1.69	1.27	2.40	1.00	3.44	1.35	2.12	.62	.51	.85	.30
IN.	.27	1.89	1.46	2.76	1.05	3.96	1.51	2.45	.70	.59	.98	.34

CAL YR 1977	TOTAL	368935	MEAN	1011	MAX	17800	MIN	230	CFSM	.62	IN	8.36
WTR YR 1978	TOTAL	792671	MEAN	2172	MAX	29000	MIN	290	CFSM	1.32	IN	17.96

POTOMAC RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949, 1953-56, 1968 to current year.

PERIOD OF DAILY RECORD.--

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

WATER TEMPERATURES: October 1952 to September 1956, April 1968 to September 1977.

SUSPENDED-SEDIMENT DISCHARGE: April 1953 to September 1956.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 15...	0820	309	405	19	170	24	44	15	20	4.0	180	31
NOV 15...	0750	1930	195	2	87	19	24	6.5	5.4	2.0	83	16
DEC 15...	0750	1150	245	10	110	25	29	8.3	7.0	1.9	100	19
MAR 15...	1000	20400	223	15	94	15	27	6.5	5.5	2.5	96	16
APR 15...	1100	1460	280	55	120	12	31	10	6.1	1.9	130	15
JUN 15...	1115	816	330	5	150	18	40	12	8.9	2.6	160	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 CONSTITUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 15...	17	.1	2.3	233	230	1.5	6.6	.00	1.5	.44	1.4	10
NOV 15...	6.9	.0	8.4	145	116	1.3	5.8	.00	1.3	.10	.31	10
DEC 15...	7.6	.1	4.7	141	134	1.5	6.6	.00	1.5	.13	.40	10
MAR 15...	8.1	.1	5.3	138	124	1.3	5.8	.00	1.3	.02	.06	0
APR 15...	8.1	.1	.4	154	140	.77	3.4	.00	.77	.00	.00	0
JUN 15...	9.2	.1	4.5	180	179	1.0	4.4	.00	1.0	.12	.37	0

LOCATION.--Lat 38°38'13", long 78°51'11", Rockingham County, Hydrologic Unit 02070006, on right bank at Cootes Store, 300 ft (90 m) upstream from bridge on State Highway 259, and 3.7 mi (6.0 km) upstream from Linville Creek.

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 (320.59 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Nov. 15, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s (1,420 m³/s) Oct. 15, 1942, gage height, 25.3 ft (7.71 m), from floodmark, from rating curve extended above 9,000 ft³/s (250 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 0.20 ft³/s (0.006 m³/s) Aug. 28, 29, Sept. 4, 1957, Sept. 7-10, 1966; minimum gage height, 1.74 ft (0.530 m) Sept. 7-10, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s (99 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
Nov. 7	2145	*13500	382	14.81	4.514	May 13	2400	5750	163	10.04	3.060
Jan. 26	0715	11600	329	13.80	4.206	Aug. 7	0130	5980	169	10.23	3.118
Mar. 14	1930	6120	173	10.35	3.155	Aug. 11	2130	7480	212	11.30	3.444
Mar. 26	1245	5810	165	10.09	3.075						

Minimum daily discharge, 4.2 ft³/s (0.12 m³/s) Oct. 13-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	28	1900	99	170	151	352	215	68	29	163	131
2	7.6	27	983	90	175	136	286	184	59	31	114	86
3	6.2	27	555	76	150	129	236	158	58	135	79	63
4	5.6	45	361	63	135	105	206	158	58	219	218	51
5	5.3	490	311	66	128	76	190	194	49	167	429	42
6	5.3	1200	413	60	138	94	169	185	44	123	770	35
7	5.0	4130	355	59	128	84	155	172	40	93	2560	30
8	5.3	5070	275	61	110	79	138	184	37	104	680	27
9	5.9	1060	230	918	100	76	125	201	36	127	357	25
10	5.0	566	187	550	97	84	115	200	32	79	271	23
11	4.7	456	151	400	90	127	108	189	29	59	1390	21
12	4.4	316	127	250	80	360	101	176	26	45	1510	20
13	4.2	228	118	170	72	934	93	972	26	37	1080	22
14	4.2	179	111	130	68	3180	83	3290	23	45	1090	20
15	4.2	147	109	115	65	3640	76	1290	21	41	897	19
16	6.5	122	96	100	69	1790	70	2020	20	37	1090	18
17	15	104	88	110	72	927	66	1360	19	38	421	20
18	12	89	268	90	78	593	64	786	18	44	249	18
19	12	76	602	85	82	519	77	521	17	40	175	16
20	11	66	512	86	69	677	82	382	33	35	128	15
21	9.5	58	414	90	75	639	77	307	173	31	97	14
22	8.7	56	350	78	73	666	70	244	218	27	78	13
23	8.2	165	281	85	72	487	64	207	109	24	66	21
24	7.7	305	238	90	71	380	61	191	72	23	56	16
25	7.2	293	217	568	69	343	60	165	55	47	49	13
26	25	282	189	7280	160	3200	307	137	47	51	45	11
27	74	239	157	1850	164	4220	562	116	79	39	41	9.8
28	59	203	142	760	160	2380	412	101	49	36	50	8.9
29	46	207	139	500	---	1030	318	88	39	32	38	8.1
30	37	406	124	230	---	619	257	83	34	29	39	7.3
31	32	---	106	195	---	440	---	81	---	41	219	---
TOTAL	451.6	16640	10109	15304	2920	28165	4980	14557	1588	1908	14449	824.1
MEAN	14.6	555	326	494	104	909	166	470	52.9	61.5	466	27.5
MAX	74	5070	1900	7280	175	4220	562	3290	218	219	2560	131
MIN	4.2	27	88	59	65	76	60	81	17	23	38	7.3
CFSM	.07	2.64	1.55	2.35	.50	4.33	.79	2.24	.25	.29	2.22	.13
IN.	.08	2.95	1.79	2.71	.52	4.99	.88	2.58	.28	.34	2.56	.15
CAL YR 1977	TOTAL	53561.59	MEAN	147	MAX	5100	MIN	.61	CFSM	.70	IN	9.49
WTR YR 1978	TOTAL	111895.70	MEAN	307	MAX	7280	MIN	4.2	CFSM	1.46	IN	19.82

01632900 SMITH CREEK NEAR NEW MARKET, VA

LOCATION.--38°41'36", long 78°38'35", Shenandoah County, Hydrologic Unit 02070006, on left bank 25 ft (8 m) upstream from bridge on State Highway 616, 3.6 mi (5.8 km) north of New Market, and 4.4 mi (7.1 km) upstream from mouth.

DRAINAGE AREA.--93.2 mi² (241.4 km²).

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 (268.681 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 2, 1963, on right bank a short distance downstream, at datum 0.71 ft (0.216 m) higher.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--18 years, 70.2 ft³/s (1.988 m³/s), 10.23 in/yr (260 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s (300 m³/s) Oct. 6, 1972, gage height, 16.38 ft (4.993 m), from rating curve extended above 2,300 ft³/s (65 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 6.1 ft³/s (0.17 m³/s) Aug. 3, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 1, 1959, reached a stage of 10.7 ft (3.26 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 650 ft³/s (18 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 8	0600	2940	83.3	10.14	3.091	June 20	0530	830	23.5	5.74	1.750
Jan. 26	1330	2760	78.2	9.86	3.005	June 27	0300	1300	36.8	7.21	2.198
Mar. 14	1900	*3400	96.3	10.62	3.237	Aug. 12	0500	995	28.2	6.27	1.911
Mar. 26	1700	1640	46.4	8.04	2.451	Aug. 13	0230	1160	32.9	6.78	2.067

Minimum discharge, 7.9 ft³/s (0.22 m³/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	19	256	55	138	68	224	74	64	64	100	54
2	9.2	19	140	54	126	62	194	71	59	64	55	42
3	9.7	21	107	51	112	61	172	69	59	320	46	41
4	8.8	22	90	47	103	60	164	74	60	174	50	38
5	8.8	35	84	46	98	55	156	103	54	116	50	36
6	8.4	77	86	46	94	54	142	91	52	91	89	35
7	8.4	116	76	48	86	54	138	80	51	77	120	34
8	9.2	894	69	49	83	54	127	79	52	70	57	33
9	12	173	65	224	78	53	122	82	50	66	91	32
10	12	120	61	110	74	64	115	77	46	61	93	32
11	10	119	58	107	71	119	111	72	44	56	122	32
12	10	97	58	98	70	298	107	68	44	51	435	31
13	10	83	51	76	68	518	100	125	48	48	424	36
14	10	74	50	98	65	1820	95	398	44	59	156	34
15	12	66	54	68	62	1100	91	304	42	61	113	32
16	17	61	51	62	62	518	88	507	42	66	93	32
17	25	58	49	58	61	376	85	334	42	54	79	32
18	16	54	155	65	62	294	83	236	41	46	70	30
19	13	50	138	80	62	245	90	201	41	43	64	28
20	12	48	113	81	60	222	96	163	277	40	60	28
21	11	46	112	76	59	198	85	139	191	39	55	28
22	11	47	101	68	57	180	78	120	95	38	52	39
23	12	63	90	66	53	160	75	110	70	38	50	38
24	12	62	83	68	55	148	73	103	58	67	48	30
25	11	56	80	247	59	148	71	95	53	66	46	28
26	18	57	74	1830	75	863	111	86	128	154	44	26
27	34	52	65	748	74	730	127	78	468	56	44	26
28	28	50	64	376	72	609	91	76	120	47	44	26
29	23	55	60	254	---	387	83	73	84	44	46	26
30	21	64	57	191	---	304	79	71	72	43	41	24
31	19	---	57	162	---	254	---	68	---	100	82	---
TOTAL	430.7	2758	2654	5609	2139	10076	3373	4227	2551	2319	2919	983
MEAN	13.9	91.9	85.6	181	76.4	325	112	136	85.0	74.8	94.2	32.8
MAX	34	894	256	1830	138	1820	224	507	468	320	435	54
MIN	8.4	19	49	46	53	53	71	68	41	38	41	24
CFSM	.15	.99	.92	1.94	.82	3.49	1.20	1.46	.91	.80	1.01	.35
IN.	.17	1.10	1.06	2.24	.85	4.02	1.35	1.69	1.02	.93	1.17	.39

CAL YR 1977 TOTAL 13651.9 MEAN 37.4 MAX 894 MIN 6.7 CFSM .40 IN 5.45
WTR YR 1978 TOTAL 40038.7 MEAN 110 MAX 1830 MIN 8.4 CFSM 1.18 IN 15.98

POTOMAC RIVER BASIN

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 downstream side of bridge on State Highway 698 at Mount Jackson and 0.3 mi (0.5 km) downstream from Mill Creek.

DRAINAGE AREA.--506 mi² (1,311 km²).

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 and crest-stage gage. Datum of gage is 838.55 ft (255.590 m) National Geodetic Vertical Datum of 1929. Prior to July 1, 1976, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period of no gage-height record, Jan. 27 to Feb. 25, which are fair. Some diversion during low flow by irrigation at points above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--35 years, 376 ft³/s (10.65 m³/s), 10.09 in/yr (256 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,500 ft³/s (1,150 m³/s) Oct. 6, 1972, gage height, 18.10 ft (5.517 m), from rating curve extended above 18,000 ft³/s (510 m³/s) on basis of peak runoff for flood in October 1942 for stations at Cootes Store and near Strasburg; minimum observed, 7.0 ft³/s (0.20 m³/s) Sept. 3, 1966, gage height, 1.97 ft (0.600 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of 20.2 ft (6.16 m), from floodmarks, discharge, about 80,000 ft³/s (2,300 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (140 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 8	0400	13400	379	13.94	4.249	May 14	0400	5820	165	9.59	2.923
Jan. 26	1100	*16100	456	14.78	4.505	Aug. 6	2130	5700	161	9.48	2.890
Mar. 14	2130	13200	374	13.77	4.197	Aug. 7	0530	5700	161	9.50	2.896
Mar. 26	1700	8560	242	11.55	3.520	Aug. 12	0100	8880	251	11.85	3.612

Minimum discharge, 26 ft³/s (0.74 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	91	2340	284	660	364	980	446	233	167	404	422
2	36	88	1590	233	540	306	809	395	214	160	306	319
3	36	88	951	210	480	310	705	354	207	575	229	264
4	30	91	705	196	450	284	655	341	210	600	229	233
5	27	147	580	171	400	244	605	432	192	451	630	207
6	28	1280	680	160	360	233	561	418	178	346	1340	187
7	28	2080	630	160	330	244	532	382	167	280	3320	178
8	31	7980	536	181	310	233	488	382	167	240	1160	164
9	38	1780	465	836	300	225	455	413	164	297	872	157
10	43	951	400	1300	290	240	432	408	150	240	705	147
11	38	836	350	860	280	354	413	386	143	199	1260	140
12	36	630	336	660	280	836	390	359	136	167	3660	136
13	34	498	280	560	270	1990	368	487	147	150	2490	136
14	34	404	264	470	270	6430	346	4040	130	160	1630	130
15	36	346	276	430	260	6740	328	2030	121	192	1100	127
16	47	297	248	405	250	3400	314	2730	118	320	1880	121
17	75	264	233	385	240	2030	302	2230	114	196	893	121
18	70	233	498	360	230	1400	293	1400	108	171	630	114
19	57	210	893	325	230	1160	323	1040	105	157	488	105
20	57	192	893	300	225	1300	332	809	365	147	408	102
21	52	178	809	270	225	1200	310	680	400	136	346	102
22	50	167	705	260	225	1200	293	561	432	130	302	114
23	50	236	605	260	225	1010	272	488	293	124	272	153
24	50	469	536	280	230	836	264	455	218	141	248	111
25	48	479	488	761	270	783	252	408	185	316	233	105
26	64	465	441	10900	360	4230	378	364	271	389	222	99
27	140	422	372	6150	380	5640	893	323	952	196	218	94
28	164	372	346	3500	359	4060	731	297	306	160	218	91
29	130	350	341	1600	---	2150	590	272	222	147	244	88
30	111	527	332	1100	---	1440	502	256	192	140	199	86
31	97	---	319	860	---	1160	---	252	---	227	723	---
TOTAL	1771	22151	18442	34427	8929	52032	14116	23838	6840	7321	26859	4553
MEAN	57.1	738	595	1111	319	1678	471	769	228	236	866	152
MAX	164	7980	2340	10900	660	6740	980	4040	952	600	3660	422
MIN	27	88	233	160	225	225	252	252	105	124	199	86
CFSM	.11	1.46	1.18	2.20	.63	3.32	.93	1.52	.45	.47	1.71	.30
IN.	.13	1.63	1.36	2.53	.66	3.83	1.04	1.75	.50	.54	1.97	.33

CAL YR 1977 TOTAL 91996 MEAN 252 MAX 7980 MIN 15 CFSM .50 IN 6.76
WTR YR 1978 TOTAL 221279 MEAN 606 MAX 10900 MIN 27 CFSM 1.20 IN 16.27

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 (2.4 km) southeast of Strasburg, 2.2 mi (3.5 km) upstream from Cedar Creek, and 10 mi (16 km) upstream from confluence with South Fork.

DRAINAGE AREA.--768 mi² (1,989 km²).

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 (150.580 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 21, 1930, nonrecording gage at same site and datum.

REMARKS.--Records good. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--53 years, 576 ft³/s (16.31 m³/s), 10.18 in/yr (259 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft³/s (2,830 m³/s) Oct. 16, 1942, gage height, 31.2 ft (9.51 m), from high-water mark in well, from rating curve extended above 46,000 ft³/s (1,300 m³/s); minimum, 6.0 ft³/s (0.17 m³/s) Feb. 9, 1934, gage height, 1.52 ft (0.463 m); minimum daily, 41 ft³/s (1.16 m³/s) Sept. 26, Oct. 1, 1930.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 8	2015	13700	388	14.72	4.487	May 14	1915	6580	186	9.40	2.865
Jan. 27	0515	*17800	504	17.21	5.246	Aug. 6	2015	7340	208	10.05	3.063
Mar. 15	1200	15200	430	15.65	4.770	Aug. 11	2345	6770	192	9.56	2.914
Mar. 27	0730	10000	283	12.18	3.712						

Minimum discharge, 76 ft³/s (2.15 m³/s) Oct. 7, 15, 16, gage height, 1.81 ft (0.552 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	148	1510	425	1140	590	1650	659	426	295	353	924
2	95	139	3050	404	987	540	1410	594	401	282	600	603
3	89	144	1780	386	958	502	1210	541	375	349	480	468
4	85	141	1240	375	831	484	1080	516	362	720	555	397
5	82	158	965	354	786	455	998	523	359	755	582	353
6	85	196	850	315	672	411	923	599	339	588	2520	320
7	82	1540	946	311	604	395	849	581	320	479	4110	298
8	82	7370	844	315	560	403	800	546	318	405	1710	279
9	89	4780	718	562	520	397	736	553	314	354	1210	264
10	92	1890	641	1830	500	394	690	588	303	369	1190	250
11	90	1300	596	1190	480	415	659	575	283	357	1750	237
12	91	1140	525	978	460	637	633	549	266	301	3540	235
13	90	871	444	869	455	1950	601	577	273	270	2660	255
14	90	690	428	722	445	4540	566	3010	264	265	1870	225
15	87	576	422	670	435	12300	536	3870	246	297	1380	223
16	90	500	419	630	430	6650	510	3750	228	306	2030	214
17	101	447	395	600	422	3770	490	4290	224	373	1170	213
18	114	403	475	550	413	2570	478	2700	223	327	830	215
19	154	360	818	510	418	2020	478	2030	215	268	662	207
20	135	325	1260	475	416	1880	514	1600	207	251	559	193
21	115	301	1180	455	405	1900	522	1250	425	235	484	184
22	103	290	1080	435	410	1760	495	1030	507	221	423	185
23	99	350	956	420	415	1680	463	873	547	211	400	186
24	95	466	821	440	430	1420	441	786	433	203	380	220
25	92	701	738	3000	455	1240	426	740	340	219	350	210
26	111	694	685	7860	490	1950	425	662	296	341	335	184
27	136	675	614	12300	530	8320	562	590	418	658	335	177
28	155	605	546	3770	630	7170	1070	536	976	392	360	165
29	240	556	494	2270	---	3990	881	500	457	293	400	160
30	207	585	485	1650	---	2570	746	467	349	264	446	155
31	168	---	465	1310	---	1970	---	441	---	331	570	---
TOTAL	3443	28341	26390	46381	15697	75273	21842	36526	10694	10979	34244	8199
MEAN	111	945	851	1496	561	2428	728	1178	356	354	1105	273
MAX	240	7370	3050	12300	1140	12300	1650	4290	976	755	4110	924
MIN	82	139	395	311	405	394	425	441	207	203	335	155
CFSM	.15	1.23	1.11	1.95	.73	3.16	.95	1.53	.46	.46	1.44	.36
IN.	.17	1.37	1.28	2.25	.76	3.65	1.06	1.77	.52	.53	1.66	.40

CAL YR 1977 TOTAL 139900 MEAN 383 MAX 7370 MIN 64 CFSM .50 IN 6.78
WTR YR 1978 TOTAL 318009 MEAN 871 MAX 12300 MIN 82 CFSM 1.13 IN 15.40

POTOMAC RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1949, 1952, 1956, 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1955 to September 1956.

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 07...	1130	84	358	14.0	160	17	41	15	13	2.7	180	19
NOV 09...	0850	4800	150	13.5	66	24	20	3.8	2.7	2.8	51	15
DEC 13...	1010	401	318	1.5	130	16	37	9.3	7.0	1.7	140	20
MAR 02...	0955	559	320	1.5	160	28	44	12	5.5	2.2	160	20
APR 18...	1215	477	347	14.0	170	28	44	14	4.5	1.9	170	17
JUL 27...	1045	618	355	25.0	180	20	44	16	6.1	2.1	190	16
SEP 13...	1100	276	384	23.0	200	41	49	18	9.0	2.4	190	17

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 07...	18	.1	1.0	213	200	.29	1.3	.00	.29	.04	.12	10
NOV 09...	4.1	.0	7.3	102	89	1.7	7.5	.00	1.7	.04	.12	40
DEC 13...	10	.1	5.9	160	170	2.2	9.7	.00	2.2	.05	.15	20
MAR 02...	9.5	.1	1.3	190	183	2.1	9.2	.02	2.1	.01	.03	0
APR 18...	8.5	.1	.4	202	180	1.4	6.1	.03	1.4	.00	.00	0
JUL 27...	11	.1	1.8	215	195	1.0	4.4	.00	1.0	.01	.03	0
SEP 13...	15	.1	.1	197	209	--	--	--	.99	--	--	30

POTOMAC RIVER BASIN

41

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 (0.3 km) upstream from Fawcett Run, 0.3 mi (0.5 km) upstream from bridge on State Highway 628, 1.3 mi (2.1 km) downstream from Froman Run, and 11.4 mi (18.3 km) southwest of Winchester.

DRAINAGE AREA.--103 mi² (267 km²).

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 (197.233 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--41 years, 89.9 ft³/s (2.546 m³/s), 11.85 in/yr (301 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s (623 m³/s) Oct. 15, 1942, gage height, 27.0 ft (8.23 m), from floodmarks, from rating curve extended above 15,000 ft³/s (420 m³/s); minimum, 1.8 ft³/s (0.051 m³/s) Feb. 19, 1941, Dec. 7, 1958, result of freezeups; minimum daily, 2.8 ft³/s (0.079 m³/s) Sept. 7, 1964, Sept. 3, 4, 7, 8, 1966; minimum gage height, 1.04 ft (0.317 m) Feb. 19, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1936, reached a stage of about 25 ft (7.6 m), discharge, about 18,000 ft³/s (510 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0200	3200 90.6	8.55 2.606	May 16	1030	2960 83.8	8.19 2.496
Dec. 1	0430	1220 34.6	5.02 1.530	July 3	1200	1760 49.8	6.08 1.853
Jan. 26	---	Unknown	Unknown	July 16	1700	1320 37.4	5.20 1.585
Mar. 14	1930	3500 99.1	9.07 2.765	July 28	0100	3080 87.2	8.40 2.560
Mar. 26	1400	2600 73.6	7.56 2.304	July 31	2330	1180 33.4	4.92 1.500
Mar. 27	1730	1320 37.4	5.22 1.591	Aug. 6	Unknown	*17800 504	22.14 6.748
May 14	0100	2840 80.6	7.99 2.435				

Minimum discharge, 7.6 ft³/s (0.22 m³/s) Oct. 1, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	18	820	70	143	69	241	58	59	29	429	56
2	10	22	385	60	148	66	197	55	52	44	220	38
3	14	47	256	56	129	62	172	52	55	677	160	31
4	9.6	132	188	55	104	60	158	55	54	358	528	29
5	8.0	214	172	66	106	62	150	97	44	202	337	24
6	8.8	389	188	55	106	63	132	88	40	132	3170	22
7	10	864	134	49	86	62	123	80	38	92	4200	21
8	10	1460	106	50	104	51	104	78	38	138	500	19
9	13	397	101	548	99	52	97	110	38	172	260	17
10	17	346	76	205	92	54	92	101	32	101	170	16
11	13	397	80	120	90	73	85	88	28	76	130	16
12	10	235	72	100	84	226	79	84	29	59	150	16
13	9.6	160	76	90	80	659	74	349	70	49	120	33
14	10	123	69	80	72	1680	69	1380	36	49	80	27
15	9.6	102	82	72	78	1620	63	752	28	58	68	22
16	27	86	66	66	74	865	63	2480	26	452	60	21
17	54	78	62	64	63	565	58	1180	26	367	56	21
18	22	69	180	60	63	437	58	645	24	170	50	19
19	16	60	288	58	63	425	80	497	22	110	47	17
20	14	56	217	55	63	425	84	358	20	82	43	16
21	12	51	226	53	56	373	78	278	50	72	41	16
22	12	50	217	52	50	348	72	211	144	69	39	17
23	12	244	162	51	52	292	66	180	63	52	37	16
24	11	191	136	50	54	241	63	168	44	43	35	17
25	12	150	132	200	60	217	60	145	35	60	35	17
26	41	208	99	1500	78	1160	72	114	30	76	35	16
27	84	160	80	730	74	1140	76	99	39	260	34	15
28	53	129	82	405	78	775	66	88	89	738	34	15
29	34	141	82	292	---	497	62	79	44	170	31	14
30	24	242	80	226	---	351	63	73	34	143	30	12
31	20	---	76	191	---	285	---	66	---	504	89	---
TOTAL	608.6	6821	4990	5729	2349	13255	2857	10088	1331	5604	11198	636
MEAN	19.6	227	161	185	83.9	428	95.2	325	44.4	181	361	21.2
MAX	84	1460	820	1500	148	1680	241	2480	144	738	4200	56
MIN	8.0	18	62	49	50	51	58	52	20	29	30	12
CFSM	.19	2.20	1.56	1.80	.82	4.16	.92	3.16	.43	1.76	3.51	.21
IN.	.22	2.46	1.80	2.07	.85	4.79	1.03	3.64	.48	2.02	4.04	.23

CAL YR 1977 TOTAL 27916.2 MEAN 76.5 MAX 2180 MIN 5.2 CFSM .74 IN 10.08
WTR YR 1978 TOTAL 65466.6 MEAN 179 MAX 4200 MIN 8.0 CFSM 1.74 IN 23.64

POTOMAC RIVER BASIN

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 (107 m) upstream from bridge on State Highway 55, 1.2 mi (1.9 km) south of Buckton railroad station, 1.4 mi (2.3 km) upstream from mouth, and 4.2 mi (6.8 km) west of Riverton.

DRAINAGE AREA.--87.8 mi² (227.4 km²).

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 (160.063 m) National Geodetic Vertical Datum of 1929. October 1905 to July 1906, nonrecording gage at site 1 mi (1.6 km) downstream at different datum. Apr. 4, 1932, to Oct. 7, 1937, nonrecording gage at site 350 ft (107 m) downstream at different datum.

REMARKS.--Records good except those for period of no gage-height record, Jan. 28 to Mar. 13, which are fair. Occasional diurnal fluctuation during low flow caused by State Fish Hatchery 2 mi (3 km) above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--46 years, 67.5 ft³/s (1.912 m³/s), 10.44 in/yr (265 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,000 ft³/s (595 m³/s) Oct. 15, 1942, gage height, 15.5 ft (4.72 m), from high-water mark in well, from rating curve extended above 5,200 ft³/s (150 m³/s); minimum observed, 0.1 ft³/s (0.003 m³/s) Aug. 5, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0930	1040 29.5	6.31 1.923	Mar. 28	0230	1260 35.7	6.47 1.972
Jan. 26	1630	*3500 99.1	9.40 2.865	May 16	1800	1360 38.5	6.62 2.018
Mar. 14	2400	1900 53.8	7.43 2.265	Aug. 7	0930	1100 31.2	6.18 1.884
Mar. 26	2000	1200 34.0	6.35 1.935				

Minimum discharge, 2.2 ft³/s (0.062 m³/s) Oct. 15, gage height, 2.90 ft (0.884 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	9.7	373	43	95	48	200	33	37	19	52	31
2	4.2	10	192	39	83	45	158	31	30	18	38	18
3	4.6	13	120	30	74	42	128	30	27	104	23	13
4	4.4	17	92	24	66	40	112	31	28	124	23	10
5	3.6	35	78	32	62	38	105	59	23	67	16	9.4
6	3.5	102	78	32	58	35	90	57	20	47	34	8.6
7	3.5	166	61	30	55	34	87	50	19	34	630	7.6
8	4.0	484	49	35	64	34	77	50	19	26	108	6.9
9	5.6	127	50	555	62	33	70	56	20	22	66	6.5
10	7.3	94	42	195	60	33	66	54	17	19	238	5.8
11	7.8	127	40	100	54	50	63	47	14	16	143	5.4
12	5.6	78	35	90	50	120	59	42	13	14	232	6.0
13	4.0	55	39	77	48	500	55	97	15	12	94	26
14	3.6	40	33	68	47	1070	51	624	16	15	67	16
15	3.3	32	38	60	46	1230	46	407	13	30	52	11
16	5.5	28	33	55	43	641	43	1160	11	18	42	8.6
17	18	25	30	51	40	407	40	776	10	17	32	9.9
18	15	23	136	47	38	296	39	420	10	16	24	14
19	9.1	20	212	45	37	244	43	407	9.4	12	20	9.7
20	7.1	18	151	42	36	228	50	292	8.3	9.7	17	7.6
21	6.0	17	159	40	34	184	50	208	19	8.3	15	6.7
22	5.6	19	156	38	33	162	42	154	24	7.3	13	6.7
23	5.4	76	116	37	35	131	37	118	16	6.9	12	7.3
24	5.0	84	98	35	37	110	34	103	12	6.9	11	12
25	5.0	60	88	300	43	103	34	90	10	7.1	10	9.4
26	9.3	61	74	2220	52	595	37	73	9.1	8.8	10	7.8
27	49	53	57	860	50	890	50	63	92	13	9.1	7.1
28	29	44	58	280	52	860	42	56	68	11	9.1	6.5
29	18	49	53	200	---	440	37	50	38	7.6	8.8	6.0
30	14	94	58	140	---	308	34	47	25	8.6	11	5.6
31	11	---	50	110	---	240	---	43	---	15	30	---
TOTAL	281.4	2060.7	2849	5910	1454	9191	1979	5728	672.8	740.2	2090.0	306.1
MEAN	9.08	68.7	91.9	191	51.9	296	66.0	185	22.4	23.9	67.4	10.2
MAX	49	484	373	2220	95	1230	200	1160	92	124	630	31
MIN	3.3	9.7	30	24	33	33	34	30	8.3	6.9	8.8	5.4
CFSM	.10	.78	1.05	2.18	.59	3.37	.75	2.11	.26	.27	.77	.12
IN.	.12	.87	1.21	2.50	.62	3.89	.84	2.43	.29	.31	.89	.13

CAL YR 1977 TOTAL 14921.4 MEAN 40.9 MAX 1640 MIN 1.2 CFSM .47 IN 6.32
WTR YR 1978 TOTAL 33262.2 MEAN 91.1 MAX 2220 MIN 3.3 CFSM 1.04 IN 14.09

01636500 SHENANDOAH RIVER AT MILLVILLE, WV

LOCATION.--Lat 39°16'55", long 77°47'22", Jefferson County, Hydrologic Unit 02070007, on left bank 0.4 mi (0.6 km) downstream from Cattail Run, 1.0 mi (1.6 km) upstream from Millville, 5.0 mi (8.0 km) upstream from Harpers Ferry, and at mile 5.0 (8.0 km).

DRAINAGE AREA.--3,040 mi² (7,874 km²).

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 (89.306 m) National Geodetic Vertical Datum of 1929. Apr. 15, 1895, to Mar. 31, 1909, nonrecording gage at site 0.8 mi (1.3 km) downstream at datum 0.32 ft (0.098 m) higher.

REMARKS.--Records good except those for period of no gage-height record, Oct. 9 to Nov. 15, and those for January and February, which are poor. Regulation by hydroelectric plants, particularly that of Potomac Light and Power Co., 0.5 mi (0.8 km) upstream from station. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--63 years (water years 1896-1908, 1929-78), 2,667 ft³/s (75.53 m³/s), 11.91 in/yr (303 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft³/s (6,510 m³/s) Oct. 16, 1942, gage height, 32.4 ft (9.88 m), from floodmarks; minimum, about 59 ft³/s (1.67 m³/s) Oct. 4, 1930, gage height, 0.39 ft (0.119 m); minimum daily, 194 ft³/s (5.49 m³/s) July 24, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1870 reached practically same stage as flood of Mar. 18, 1936, 26.36 ft (8.035 m), discharge, 151,000 ft³/s (4,280 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 15,000 ft³/s (420 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	----	33300 943	12.50 3.810	Mar. 28	0200	29400 833	11.78 3.591
Jan. 27	1945	*48000 1360	15.08 4.596	May 15	1045	24500 694	10.78 3.286
Mar. 16	0300	42300 1200	14.13 4.307	Aug. 7	1615	17800 504	9.18 2.798

Minimum discharge, 387 ft³/s (10.96 m³/s) Oct. 5, 10, gage height, 1.20 ft (0.366 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	645	840	4010	2360	6600	2790	8420	4360	2380	1670	2620	2340
2	600	830	6370	2810	5320	2600	7150	3750	2280	1550	2270	2170
3	531	840	7670	2100	4500	2470	6170	3370	2210	1670	1910	1640
4	544	1300	6080	1900	4100	2350	5470	3100	2110	2890	1880	1450
5	460	1700	4900	1800	3700	2170	5000	3120	2020	3180	2500	1210
6	482	4500	4210	1630	2400	2110	4640	3240	1900	2640	1730	1170
7	500	32000	3760	1690	3100	1960	4310	3770	1880	2260	9210	1050
8	497	30000	3680	1770	2840	1920	3990	3460	1790	1950	9950	1060
9	500	18500	3280	3530	2900	1920	3710	3250	1740	2160	5540	978
10	510	9500	2930	5660	2800	1930	3460	3340	1680	1900	4110	960
11	500	7230	2610	7800	2700	1960	3290	3400	1650	1630	3730	909
12	520	6210	2390	5800	2600	3550	3150	3330	1530	2050	5520	900
13	540	4740	2230	4900	2470	7560	3000	3370	1610	1740	7000	1110
14	510	3750	2010	4880	2350	18700	2840	8760	1650	1570	6170	1030
15	500	3140	2060	3860	2260	30900	2710	21700	1480	1450	6040	972
16	540	2820	1920	3400	2140	36700	2580	19900	1430	1510	5790	907
17	600	2420	2010	2920	2110	21400	2450	20800	1310	1650	4650	907
18	640	2150	2530	2680	2080	13800	2420	15200	1270	1930	3760	881
19	730	1960	4000	2400	2060	10200	2420	11800	1350	1690	2860	863
20	690	1800	5380	2120	2010	8560	2470	8940	1210	1390	2390	919
21	590	1580	5920	2060	1900	7830	2530	7120	1270	1210	1920	860
22	530	1700	5720	2800	2000	7690	2520	5930	2040	1180	1790	786
23	520	1520	5070	2100	1900	7590	2370	5080	2230	1150	1590	805
24	510	2150	4390	2800	1900	7120	2230	4480	2100	1030	1560	789
25	520	2320	3810	2410	1970	6290	2160	4080	1960	1030	1350	886
26	620	2980	3440	9940	2050	6730	2140	3690	1550	1160	1310	846
27	850	2990	3130	41600	2280	19500	2210	3350	1420	1170	1280	890
28	990	2720	2850	30000	2710	28200	5110	3030	2560	2720	1300	836
29	1200	2580	2650	17800	---	20900	6520	2810	2730	2500	1270	750
30	1100	2600	2530	12800	---	14100	5170	2540	2160	1480	1170	754
31	940	---	2420	8600	---	10400	---	2450	---	1500	1750	---
TOTAL	19409	139370	115960	193920	78750	308900	112610	195720	54500	54610	105920	31628
MEAN	626	4646	3741	6855	2813	9965	3754	6314	1817	1762	3417	1054
MAX	1200	30000	7670	41600	6600	36700	8420	21700	2730	3180	9950	2340
MIN	460	830	1920	1630	1900	1920	2140	2450	1210	1030	1170	750
CFSM	.21	1.53	1.23	2.06	.93	3.28	1.24	2.08	.60	.58	1.12	.35
IN.	.24	1.71	1.42	2.37	.96	3.78	1.38	2.39	.67	.67	1.30	.39

CAL YR 1977 TOTAL 640884 MEAN 1772 MAX 30000 MIN 354 CFSM .58 IN 7.92
WTR YR 1978 TOTAL 1411297 MEAN 3867 MAX 41600 MIN 460 CFSM 1.27 IN 17.27

POTOMAC RIVER BASIN

01638480 CATOCTIN CREEK AT TAYLORSTOWN, VA

LOCATION.--Lat 39°15'16", long 77°34'36", Loudoun County, Hydrologic Unit 02070008, on right bank at upstream side of bridge on State Highway 663 at Taylors town and 3.2 mi (5.1 km) downstream from Milltown Creek.

DRAINAGE AREA.--89.6 mi² (232.1 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 249.15 ft (75.941 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Jan. 27 to Feb. 28, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--7 years, 114 ft³/s (3.228 m³/s), 17.28 in/yr (439 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft³/s (674 m³/s) June 22, 1972, gage height, 23.83 ft (7.263 m), from floodmarks, from rating curve extended above 7,400 ft³/s (210 m³/s) on basis of contracted-opening measurement of peak flow; minimum daily, 1.9 ft³/s (0.054 m³/s) Sept. 14-17, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1230	1920 54.4	6.50 1.981	Mar. 14	2000	1820 51.5	5.97 1.820
Jan. 9	0330	2020 57.2	6.74 2.054	May 13	2400	1320 37.4	4.90 1.494
Jan. 25	1730	2170 61.5	7.05 2.149	May 15	1930	1410 39.9	5.07 1.545
Jan. 26	0830	*4180 118	10.43 3.179	July 3	Unknown	1410 39.9	5.10 1.554
Mar. 13	2030	1460 41.3	5.17 1.576	Aug. 1	Unknown	1820 51.5	6.03 1.838

Minimum daily discharge, 2.9 ft³/s (0.082 m³/s) Oct. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	13	587	104	160	82	163	48	73	27	450	31
2	4.9	14	262	98	140	69	141	44	67	37	44	19
3	4.6	16	185	73	130	73	126	43	67	400	28	13
4	3.6	194	148	77	120	72	122	48	69	160	23	11
5	3.4	118	150	73	110	59	117	84	60	78	20	10
6	3.2	61	200	70	100	63	104	65	56	54	19	9.3
7	2.9	270	120	70	80	63	106	53	54	44	26	8.8
8	3.9	350	82	100	130	60	95	52	57	40	35	8.2
9	6.8	141	91	1040	120	58	86	164	58	42	20	7.6
10	12	160	68	215	110	67	83	156	49	47	17	7.1
11	11	240	62	160	100	330	83	80	44	70	15	7.1
12	6.8	138	62	168	95	568	82	68	44	37	18	8.2
13	4.9	98	62	148	90	874	74	236	83	31	18	30
14	4.4	77	67	172	85	1090	72	756	54	30	16	20
15	9.8	67	100	136	80	930	68	992	43	30	15	13
16	19	60	78	115	78	518	65	990	40	29	13	12
17	67	58	67	109	76	374	64	670	39	29	12	13
18	30	62	1170	305	72	325	64	458	41	26	10	11
19	16	49	677	172	70	273	89	342	39	24	9.3	10
20	11	43	417	113	68	276	111	253	36	23	9.3	8.2
21	8.8	42	565	141	68	227	80	202	40	21	8.8	8.2
22	8.1	42	374	113	68	210	70	165	73	20	8.8	8.2
23	6.8	192	285	113	70	177	64	149	40	20	8.8	8.2
24	5.7	141	248	120	75	156	62	145	36	18	8.8	7.6
25	5.4	95	230	832	90	141	58	132	32	18	8.8	7.6
26	23	188	175	2870	135	534	62	111	32	19	9.3	7.1
27	106	118	127	650	115	579	62	100	76	20	10	6.5
28	50	89	127	400	95	342	56	97	53	19	15	6.5
29	29	100	111	280	---	256	50	90	38	18	13	6.0
30	20	200	113	220	---	205	49	84	31	16	11	5.4
31	16	---	109	180	---	177	---	78	---	148	22	---
TOTAL	507.4	3436	7119	9437	2730	9228	2528	6955	1524	1595	941.9	328.8
MEAN	16.4	115	230	304	97.5	298	84.3	224	50.8	51.5	30.4	11.0
MAX	106	350	1170	2870	160	1090	163	992	83	400	450	31
MIN	2.9	13	62	70	68	58	49	43	31	16	8.8	5.4
CFSM	.18	1.28	2.57	3.39	1.09	3.33	.94	2.50	.57	.58	.34	.12
IN.	.21	1.43	2.96	3.92	1.13	3.83	1.05	2.89	.63	.66	.39	.14
CAL YR 1977	TOTAL	25687.2	MEAN	70.4	MAX	1630	MIN	1.9	CFSM	.79	IN	10.66
WTR YR 1978	TOTAL	46330.1	MEAN	127	MAX	2870	MIN	2.9	CFSM	1.42	IN	19.24

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 (0.5 km) downstream from Catoctin Creek (Virginia), 6 mi (9.7 km) upstream from Monocacy River, and at mile 159.5 (256.6 km).
DRAINAGE AREA.--9,651 mi² (24,996 km²).

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 (61.152 m) 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 (0.317 m) higher.

REMARKS.--Records good. Low flow affected slightly since 1913 by Stony River Reservoir and since December 1950 by Savage River Reservoir. Low flow affected extensively at times by run-of-the-river hydroelectric plants. Gage-height telemeter at station.

AVERAGE DISCHARGE.--83 years, 9,321 ft³/s (264.0 m³/s), 13.11 in/yr (333 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480,000 ft³/s (13,600 m³/s) Mar. 19, 1936, gage height, 41.03 ft (12.506 m), from rating curve extended above 300,000 ft³/s (8,500 m³/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, 530 ft³/s (15.0 m³/s) Sept. 11, 12, 1966, gage height, 0.27 ft (0.082 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 2, 1889, reached a stage of 40.2 ft (12.25 m), from floodmarks, discharge, about 460,000 ft³/s (13,000 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 35,000 ft³/s (990 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 9	1700	64300 1820	13.17 4.014	Mar. 28	0530	107000 3030	18.43 5.617
Dec. 2	2400	39300 1110	9.43 2.874	May 17	1700	100000 2830	17.67 5.386
Jan. 28	0600	132000 3740	21.22 6.468	July 5	1530	35600 1010	8.80 2.682
Mar. 16	1030	*139000 3940	22.01 6.709	Aug. 8	1800	37200 1050	9.07 2.765

Minimum discharge, 1,290 ft³/s (36.5 m³/s) Oct. 6, gage height, 0.81 ft (0.247 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1690	3300	13200	9130	22000	7360	32100	10800	8390	5730	5960	5670
2	1820	2910	32600	8290	18100	7120	26800	9640	7800	5140	6290	7800
3	1650	2650	36900	7500	15600	6920	23000	8820	7610	6170	8040	6870
4	1520	3200	26800	6640	13700	6570	20800	8220	7300	12100	7640	5710
5	1440	3610	19900	5860	11700	6090	18900	8060	6790	30600	11200	4600
6	1330	5160	16600	5760	10300	5970	17500	8350	6540	22600	12100	3950
7	1410	8980	15100	5680	8630	5770	17200	11200	6340	14200	17400	3510
8	1510	23200	14700	6000	8590	5470	16400	11800	5970	10200	34300	3260
9	1530	54200	12300	11000	8680	5400	15600	11200	5820	8900	28600	2970
10	1480	40800	10500	17700	8180	5410	14300	11500	5630	8130	17700	2780
11	1630	26200	9130	16200	8010	6150	13200	13000	5400	7410	12900	2490
12	1840	21800	7790	16100	7910	7700	12300	12700	5140	9070	11700	2560
13	2290	17300	7080	13500	7540	14000	11400	12100	5240	8460	14300	2740
14	2010	13300	6900	12500	7390	29900	10500	22300	5050	7010	14400	2780
15	1970	10500	7160	11500	6940	83200	9590	75100	4610	6010	14200	2800
16	2040	8850	7750	10400	6640	133000	8850	81000	4370	5660	13900	2830
17	2450	7990	10500	9300	6580	90600	8200	96300	4170	5510	11700	2770
18	2660	6930	14700	8510	6540	53900	7800	81900	4160	5930	9770	2740
19	3790	6050	21000	7780	6460	39200	7830	56500	4110	5650	7820	2640
20	3220	5470	26700	7100	6030	38000	8540	41400	3900	5280	6490	2500
21	2850	5210	27200	6270	5820	43000	9890	32100	3820	4730	5410	2610
22	2500	4940	25900	6810	5690	41000	9840	25300	4620	4170	4800	2480
23	2200	5220	22500	6370	5720	42300	9450	20500	5310	3880	4350	2410
24	1970	5890	18200	6060	5500	39600	8810	17200	5080	3500	3940	2270
25	1810	7250	15300	9310	5610	32800	8220	15500	5020	3330	3760	2280
26	1890	10900	14500	25500	5950	30600	7840	14900	4530	3300	3390	2170
27	2100	10800	13900	78300	6300	68300	7530	13700	4280	3290	3350	2170
28	2250	10100	12500	110000	6660	102000	9110	11900	4540	4020	3680	2060
29	3170	9240	10500	53200	---	78300	13400	10700	5650	5890	3810	1880
30	3320	8620	9500	36400	---	53500	12500	9650	5140	4750	4170	1780
31	3450	---	9230	27600	---	39600	---	8950	---	4830	3960	---
TOTAL	66790	350570	496540	562270	242770	1128730	397400	772290	162330	235450	311030	96080
MEAN	2155	11690	16020	18140	8670	36410	13250	24910	5411	7595	10030	3203
MAX	3790	54200	36900	110000	22000	133000	32100	96300	8390	30600	34300	7800
MIN	1330	2650	6900	5680	5500	5400	7530	8060	3820	3290	3350	1780
CFSM	.22	1.21	1.66	1.88	.90	3.77	1.37	2.58	.56	.79	1.04	.33
IN.	.26	1.35	1.91	2.17	.94	4.35	1.53	2.98	.63	.91	1.20	.37

CAL YR 1977 TOTAL 2600720 MEAN 7125 MAX 73700 MIN 1100 CFSM .74 IN 10.02
WTR YR 1978 TOTAL 4822250 MEAN 13210 MAX 133000 MIN 1330 CFSM 1.37 IN 18.59

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 TEMPERATURES: October 1960 to current year.

SUSPENDED-SEDIMENT DISCHARGE: October 1960 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,350 mg/L Apr. 3, 1970; minimum daily mean, 1 mg/L on many days most years.

SEDIMENT LOADS: Maximum daily, 689,000 tons (625,000 tonnes) June 23, 1972; minimum daily, 2.0 tons (1.8 tonnes) on many days during 1964, 1966-69.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum daily, 29.5°C July 21; minimum daily, river was ice covered on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 918 mg/L Mar. 16; minimum daily mean, 2 mg/L Feb. 20.

SEDIMENT LOADS: Maximum daily, 331,000 tons (300,000 tonnes) Mar. 16; minimum daily, 33 tons (30 tonnes) Feb. 20.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	14.0	---	---	---	---	---	16.5	---	---	---	25.0
2	---	15.0	6.5	2.0	---	4.5	---	16.5	---	---	---	24.0
3	18.0	16.0	---	1.0	1.5	---	10.5	17.0	---	---	---	24.0
4	17.0	14.0	---	1.5	1.0	3.0	12.0	---	---	---	---	24.0
5	18.0	17.5	---	2.0	---	---	---	14.0	25.0	22.0	---	24.0
6	17.0	---	6.0	2.5	---	3.0	10.5	---	---	22.0	---	24.0
7	17.0	---	4.0	---	---	3.5	14.0	---	23.0	---	---	25.0
8	---	15.5	3.0	---	---	3.0	---	---	---	---	26.0	25.0
9	---	15.5	---	---	2.5	---	---	---	25.0	---	26.0	26.0
10	15.0	15.0	---	---	1.5	---	14.0	17.0	26.0	26.0	---	23.0
11	16.5	12.5	---	---	1.5	---	14.0	17.5	---	25.5	---	23.5
12	---	11.5	2.0	---	---	---	17.0	18.5	---	26.0	---	25.0
13	---	---	3.0	---	2.0	7.0	17.0	---	---	26.0	---	24.0
14	14.0	9.5	2.0	---	---	7.0	16.5	---	23.0	26.0	---	22.0
15	---	9.5	4.0	---	3.5	4.5	---	15.0	24.0	---	---	21.0
16	---	10.0	5.0	---	2.0	---	---	13.5	25.0	---	21.5	22.5
17	---	---	4.0	---	3.0	---	16.5	13.0	---	---	21.0	22.0
18	12.0	---	---	---	3.0	5.0	14.5	13.0	---	---	26.0	24.0
19	12.0	---	---	---	---	---	---	---	27.5	28.5	26.0	26.0
20	13.0	---	5.0	---	3.0	8.0	13.5	---	---	28.0	27.0	24.0
21	14.0	---	---	---	3.0	9.0	13.0	---	---	29.5	25.0	24.0
22	---	---	---	---	2.5	10.0	---	20.0	27.5	---	24.0	25.0
23	---	---	---	---	3.0	11.0	---	---	27.0	---	24.0	22.0
24	13.5	---	6.0	---	3.5	10.0	15.5	19.5	---	---	25.0	22.0
25	---	8.0	---	---	5.5	4.0	13.5	---	---	---	25.0	21.0
26	---	---	2.0	---	---	---	12.5	21.5	26.0	---	26.5	20.0
27	15.5	---	---	---	---	7.5	14.0	---	---	---	21.0	19.0
28	16.5	---	---	---	---	8.0	16.5	---	28.0	---	26.0	19.0
29	15.5	---	2.5	---	---	10.0	---	---	29.0	---	21.0	---
30	---	---	2.0	---	---	10.0	---	25.0	29.0	---	26.0	17.0
31	13.0	---	---	1.0	---	11.0	---	25.0	---	---	26.0	---
MEAN	15.0	13.0	4.0	1.5	2.5	7.0	14.0	17.5	26.0	26.0	26.0	23.0
WTR YR 1978	MEAN	15.5	MAX	29.5	MIN	1.0						

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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	88	402	45	401	36	1350	11	271	41	2440	40	795
2	90	442	37	291	137	12900	9	201	35	1710	65	1250
3	85	379	36	258	114	11500	21	425	29	1220	45	841
4	83	341	53	458	46	3310	11	197	23	851	15	266
5	71	276	43	419	36	1930	7	111	20	632	10	164
6	54	194	49	683	28	1250	6	93	18	501	15	242
7	45	171	80	2040	19	775	6	92	17	396	15	234
8	37	151	236	16300	18	714	6	97	15	348	35	517
9	28	116	573	82300	16	531	30	891	13	305	20	292
10	23	92	377	42800	14	397	35	1670	8	177	15	219
11	46	202	129	9260	11	271	20	875	12	260	10	166
12	23	114	73	4300	9	189	20	869	11	235	20	416
13	27	167	52	2430	6	115	15	547	8	163	61	2430
14	32	174	35	1260	4	75	15	506	10	200	145	12400
15	31	165	26	737	5	97	15	466	12	225	537	138000
16	30	165	22	526	7	146	10	281	7	125	918	331000
17	30	198	18	388	8	227	10	251	4	71	270	69600
18	31	223	16	299	18	772	10	230	6	106	149	22000
19	53	542	14	229	49	2860	10	210	4	70	118	12500
20	70	561	12	177	75	5410	5	96	2	33	107	11000
21	51	392	10	141	80	5880	5	85	6	94	97	11300
22	29	196	5	67	50	3500	5	92	28	430	87	9630
23	25	148	5	70	30	1820	5	86	27	417	87	9940
24	45	239	10	159	24	1180	5	82	22	327	116	12400
25	32	156	20	391	22	909	30	754	18	273	140	12400
26	23	117	30	883	21	822	150	10300	20	321	165	13900
27	21	119	20	583	18	676	480	101000	25	425	301	62100
28	20	121	15	409	15	506	630	187000	30	539	428	118000
29	46	394	10	249	12	340	185	28000	---	---	179	38100
30	62	556	5	116	14	359	90	9500	---	---	121	17600
31	67	624	---	---	14	349	47	5250	---	---	77	8230
TOTAL	---	8137	---	168624	---	61160	---	350528	---	12894	---	917932
APRIL												
1	57	4940	48	1400	24	544	22	340	35	563	45	689
2	45	3260	43	1120	22	463	20	278	30	509	48	1010
3	35	2170	40	953	21	431	25	416	40	868	33	612
4	30	1680	36	799	19	374	65	2350	35	722	26	401
5	30	1530	32	696	18	330	219	18700	50	1510	21	261
6	28	1320	30	676	15	265	607	37400	50	1630	20	213
7	21	975	52	1570	14	240	165	6330	62	3390	20	190
8	17	753	50	1590	10	161	120	3300	210	19800	17	150
9	15	632	46	1390	10	157	90	2160	319	25000	17	136
10	14	541	43	1340	10	152	65	1430	120	5730	16	120
11	22	784	38	1330	10	146	62	1240	75	2610	13	87
12	19	631	35	1200	10	139	54	1320	90	2840	14	97
13	11	339	30	980	10	141	50	1140	110	4250	16	118
14	12	340	126	8980	10	136	48	908	105	4080	13	98
15	12	311	372	76100	10	124	45	730	100	3830	14	106
16	14	335	198	43500	10	118	40	611	80	3000	14	107
17	14	310	239	61700	10	113	35	521	60	1900	19	142
18	14	295	156	34700	10	112	30	480	57	1500	17	126
19	15	317	116	17700	10	111	25	381	45	950	15	107
20	16	369	92	10300	10	105	20	285	39	683	12	81
21	17	454	73	6330	10	103	25	319	36	526	15	106
22	16	425	58	3960	15	187	25	281	26	337	16	107
23	16	408	54	2990	25	358	20	210	23	270	14	91
24	16	381	50	2320	20	274	20	189	22	234	14	86
25	14	311	45	1880	20	271	20	180	14	142	11	68
26	12	254	41	1650	18	220	20	178	11	101	10	59
27	10	203	37	1370	16	185	20	178	13	118	9	53
28	43	1060	34	1090	18	221	25	271	19	189	8	44
29	78	2820	31	896	25	381	40	636	22	226	7	36
30	65	2190	28	730	20	278	30	385	24	270	7	34
31	---	---	26	628	---	---	25	326	23	246	---	---
TOTAL	---	30338	---	291868	---	6840	---	83473	---	88024	---	5535
TOTAL LOAD FOR YEAR: 2025353 TONS.												

POTOMAC RIVER BASIN

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 (76 m) upstream from bridge on State Highway 611, 2.0 mi (3.2 km) downstream from Panther Skin Creek, and 3.4 mi (5.5 km) northwest of Middleburg.

DRAINAGE AREA.--123 mi² (319 km²).

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 (100.523 m) National Geodetic Vertical Datum of 1929. October 1965 to September 1967 at site 300 ft (91 m) downstream at datum 0.73 ft (0.223 m) lower.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--11 years, 137 ft³/s (3.880 m³/s), 15.13 in/yr (384 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s (544 m³/s) June 22, 1972, gage height, 27.46 ft (8.370 m), from floodmarks, from rating curve extended above 2,900 ft³/s (82 m³/s) on basis of slope-area measurements at gage heights 14.44 ft (4.401 m) and 27.46 ft (8.370 m); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 1-4, 8-12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,350 ft³/s (38 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0500	2050 58.1	9.32 2.841	May 14	0100	1640 46.4	8.23 2.509
Jan. 26	1030	*4890 138	14.17 4.319	May 16	0400	1780 50.4	8.64 2.633
Mar. 14	2030	1580 44.7	8.03 2.448				

Minimum daily discharge, 2.5 ft³/s (0.071 m³/s) Oct. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	34	553	158	271	150	313	79	117	29	330	42
2	4.2	38	362	147	263	124	268	73	102	34	74	24
3	5.0	59	282	126	220	128	250	72	103	261	48	18
4	5.0	427	229	127	203	122	232	91	110	155	50	15
5	3.6	242	238	133	194	108	215	164	91	84	43	14
6	2.8	229	249	116	176	108	194	113	85	58	34	12
7	2.5	586	177	118	130	110	190	102	82	46	54	10
8	2.8	778	152	188	245	103	166	105	99	40	43	9.4
9	4.6	375	151	1190	206	102	148	150	97	82	83	8.0
10	12	448	129	500	185	126	146	153	73	45	141	7.5
11	9.1	534	136	385	169	374	144	119	63	37	101	7.0
12	5.8	310	123	340	162	572	134	111	59	29	332	8.0
13	4.6	236	116	297	157	792	122	281	88	25	122	16
14	4.2	198	116	279	148	984	111	980	64	24	85	15
15	11	175	140	238	141	950	107	700	54	101	67	12
16	16	154	111	213	134	755	103	1580	52	44	57	11
17	98	145	102	220	122	635	102	1040	51	46	46	14
18	36	127	814	337	121	456	102	710	51	32	39	12
19	25	111	825	232	115	413	164	530	45	26	35	9.4
20	19	103	555	206	107	385	164	399	41	21	30	8.0
21	15	99	615	213	111	385	126	332	43	19	25	8.0
22	13	99	450	211	102	357	113	276	116	17	24	8.7
23	11	203	375	196	111	321	102	248	52	16	21	11
24	11	156	325	187	117	289	97	238	40	14	21	15
25	9.5	145	300	778	155	279	94	218	38	17	20	10
26	97	238	236	3130	232	750	117	183	35	21	20	9.4
27	218	167	211	980	199	800	108	166	52	17	20	7.5
28	102	160	209	605	169	605	94	155	58	15	20	7.0
29	62	183	194	441	---	485	86	150	40	13	21	7.0
30	47	236	187	357	---	399	85	137	33	24	17	6.0
31	38	---	167	324	---	351	---	124	---	170	33	---
TOTAL	898.9	6995	8829	12972	4665	12518	4397	9779	2034	1562	2056	361.9
MEAN	29.0	233	285	418	167	404	147	315	67.8	50.4	66.3	12.1
MAX	218	778	825	3130	271	984	313	1580	117	261	332	42
MIN	2.5	34	102	116	102	102	85	72	33	13	17	6.0
CFSM	.24	1.89	2.32	3.40	1.36	3.29	1.20	2.56	.55	.41	.54	.10
IN.	.27	2.12	2.67	3.92	1.41	3.79	1.33	2.96	.62	.47	.62	.11

CAL YR 1977 TOTAL 33068.6 MEAN 90.6 MAX 825 MIN 1.0 CFSM .74 IN 10.00
WTR YR 1978 TOTAL 67067.8 MEAN 184 MAX 3130 MIN 2.5 CFSM 1.50 IN 20.28

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 (120 m) upstream from bridge on State Highway 621 at Evergreen Mills, 1.4 mi (2.3 km) downstream from Little River, 6.7 mi (10.8 km) south of Leesburg, and 10.9 mi (17.5 km) upstream from mouth.

DRAINAGE AREA.--332 mi² (860 km²).

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: 1937(M), 1943(M), 1951(M), 1956(M).

GAGE.--Water-stage recorder. Datum of gage is 248.93 ft (75.874 m) National Geodetic Vertical Datum of 1929.

July 12, 1909, to Dec. 31, 1912, nonrecording gage at site 1,000 ft (300 m) downstream at different datum.

Jan. 21, 1930, to Nov. 28, 1938, nonrecording gage at site 400 ft (120 m) downstream at datum 4.20 ft (1.280 m) lower than present datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--50 years (water years 1910, 1912, 1931-78), 310 ft³/s (8.779 m³/s), 12.68 in/yr (322 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,100 ft³/s (2,210 m³/s) June 22, 1972, gage height, 30.59 ft (9.324 m), from high-water mark in gage house, from rating curve extended above 11,000 ft³/s (310 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 0.40 ft³/s (0.011 m³/s) Sept. 27-30, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May or June 1889 reached a stage of about 29 ft (8.8 m), discharge, about 45,000 ft³/s (1,300 m³/s), site and datum in use 1930-38, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (110 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1430	4180 118	7.00 2.134	Jan. 26	1730	*11700 331	14.94 4.554
Jan. 9	0900	5900 167	9.28 2.828	May 16	2230	4370 124	7.26 2.213

Minimum discharge, 4.6 ft³/s (0.13 m³/s) Oct. 9; minimum gage height, 1.07 ft (0.326 m) Oct. 13-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	48	1580	426	734	384	698	208	307	104	889	186
2	7.4	45	950	395	631	320	614	192	270	105	276	100
3	6.0	55	718	317	545	331	553	179	259	632	144	60
4	5.5	725	592	312	453	313	532	190	295	675	131	47
5	6.4	627	557	316	415	271	509	420	251	295	137	39
6	7.9	400	718	312	440	265	449	319	243	196	97	33
7	6.4	854	490	297	425	291	447	267	242	150	94	29
8	5.1	1750	376	370	413	259	401	254	262	130	115	25
9	5.7	816	370	3960	395	257	357	391	293	166	156	23
10	7.2	641	310	1170	348	303	344	558	237	145	253	22
11	11	1550	251	333	331	852	340	364	223	111	239	20
12	11	718	246	840	323	1580	340	311	214	90	762	21
13	40	526	284	784	320	1980	299	481	233	78	332	92
14	8.6	406	274	848	311	2380	274	2900	230	72	227	64
15	11	348	354	596	289	2400	251	2080	157	135	161	39
16	17	300	295	552	298	1670	246	3720	144	144	133	32
17	100	269	251	552	288	1350	243	2620	139	115	111	34
18	91	246	2580	1190	301	1090	242	1600	144	97	92	35
19	40	200	2850	717	290	943	383	1260	134	75	77	23
20	27	178	1570	597	258	890	524	1000	120	65	68	18
21	21	168	1860	602	279	819	387	824	119	58	57	15
22	19	168	1360	568	266	771	317	680	279	53	51	16
23	17	424	1050	449	219	688	278	607	171	48	48	17
24	16	400	907	395	291	629	262	581	122	43	45	18
25	17	310	833	2700	402	585	248	547	109	46	43	18
26	76	571	670	9160	652	1480	280	468	102	53	42	16
27	532	418	544	3700	587	1870	304	410	115	54	42	13
28	246	348	615	1380	459	1310	252	393	188	47	44	10
29	131	365	487	1030	---	1070	231	379	149	39	50	8.6
30	85	648	466	879	---	889	219	353	134	35	52	8.1
31	60	---	436	855	---	770	---	322	---	219	283	---
TOTAL	1642.5	14522	24844	36602	10963	29010	10824	24878	5885	4275	5251	1081.7
MEAN	53.0	484	801	1181	392	936	361	803	196	138	169	36.1
MAX	532	1750	2850	9160	734	2400	698	3720	307	675	889	186
MIN	5.1	45	246	297	219	257	219	179	102	35	42	8.1
CFSM	.16	1.46	2.41	3.56	1.18	2.82	1.09	2.42	.59	.42	.51	.11
IN.	.18	1.63	2.78	4.10	1.23	3.25	1.21	2.79	.66	.48	.59	.12

CAL YR 1977 TOTAL 81942.5 MEAN 225 MAX 2850 MIN 5.1 CFSM .68 IN 9.18
WTR YR 1978 TOTAL 169778.2 MEAN 465 MAX 9160 MIN 5.1 CFSM 1.40 IN 19.02

POTOMAC RIVER BASIN

01644291 STAVE RUN NEAR RESTON, VA

LOCATION.--Lat 38°56'56", long 77°22'16", Fairfax County, Hydrologic Unit 02070008, on left bank 450 ft (137 m) downstream from the western boundary line of the U.S. Geological Survey National Center property, 0.31 mi (0.50 km) upstream from mouth, and 1.4 mi (2.3 km) southwest of Sunset Hills in Reston.

DRAINAGE AREA.--0.08 mi² (0.21 km²).

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

GAGE.--Water-stage recorder, trapezoidal flume, and crest-stage gage. Datum of gage is 367.25 ft (111.738 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--7 years, 0.13 ft³/s (0.004 m³/s), 22.07 in/yr (561 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 281 ft³/s (7.96 m³/s) Aug. 13, 1978, gage height, 3.43 ft (1.045 m), from rating curve extended above 67 ft³/s (1.90 m³/s) on basis of flow-over-embankment measurement at gage height 2.84 ft (0.866 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 45 ft³/s (1.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 8	1415	172 4.87	2.85 0.869
Aug. 7	1900	49 1.39	1.83 .558
Aug. 13	1530	*281 7.96	3.43 1.045

No flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.18	.01	.00	.00	.01	.00	.01	.05	.56	.01
2	.00	.00	.01	.00	.00	.00	.01	.00	.01	.11	.01	.01
3	.00	.60	.01	.00	.00	.00	.01	.00	.01	1.1	.01	.01
4	.00	.70	.01	.00	.00	.00	.01	.48	.01	.02	.01	.01
5	.00	.01	.19	.00	.00	.00	.00	.10	.00	.01	.07	.01
6	.00	.70	.01	.00	.00	.00	.00	.05	.00	.00	.00	.01
7	.00	1.6	.01	.00	.00	.00	.00	.03	.00	.00	.68	.01
8	.00	.11	.01	.42	.00	.00	.00	.14	.92	.00	.02	.01
9	.48	.01	.01	.63	.00	.00	.00	.18	.06	.00	.42	.01
10	.01	.50	.00	.00	.00	.08	.00	.05	.02	.00	.06	.01
11	.01	.02	.00	.00	.00	.10	.00	.05	.01	.00	.50	.01
12	.01	.02	.00	.01	.00	.04	.00	.03	.01	.00	.01	.16
13	.01	.02	.00	.02	.00	.05	.00	.28	.08	.00	5.9	.03
14	.41	.02	.09	.05	.00	.15	.00	1.0	.01	.00	.04	.01
15	.12	.02	.03	.03	.00	.03	.00	.60	.01	.01	.01	.01
16	.28	.01	.02	.02	.00	.07	.00	.64	.01	.01	.01	.06
17	.08	.01	.02	.50	.00	.03	.00	.03	.03	.01	.01	.01
18	.01	.01	2.3	.20	.00	.03	.16	.03	.03	.01	.00	.00
19	.01	.01	.38	.05	.00	.03	.28	.03	.03	.01	.00	.00
20	.01	.01	.19	.10	.00	.03	.07	.03	.03	.01	.00	.00
21	.01	.01	.37	.02	.00	.03	.01	.03	.12	.01	.00	.00
22	.01	.01	.03	.01	.00	.03	.01	.02	.05	.01	.01	.00
23	.01	.20	.03	.00	.00	.03	.01	.02	.05	.00	.01	.01
24	.01	.02	.03	.00	.00	.05	.00	.02	.05	.05	.01	.00
25	.01	.20	.03	1.4	.00	.30	.00	.02	.05	.02	.01	.00
26	2.5	.02	.02	2.1	.00	1.6	.18	.02	.39	.01	.01	.00
27	.88	.01	.02	.10	.00	.32	.01	.02	.62	.00	.01	.00
28	.01	.01	.02	.03	.00	.12	.01	.02	.05	.00	.01	.00
29	.01	.02	.02	.01	---	.06	.01	.02	.05	.00	.01	.00
30	.00	.30	.01	.00	---	.06	.00	.02	.05	.14	.01	.00
31	.00	---	.01	.00	---	.03	---	.01	---	.57	.08	---
TOTAL	4.89	5.18	4.06	5.71	.00	3.27	.79	3.97	2.77	2.16	8.49	.40
MEAN	.16	.17	.13	.18	.000	.11	.026	.13	.092	.070	.27	.013
MAX	2.5	1.6	2.3	2.1	.00	1.6	.28	1.0	.92	1.1	5.9	.16
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	2.00	2.13	1.63	2.25	.000	1.38	.33	1.63	1.15	.88	3.38	.16
IN.	2.25	2.38	1.86	2.62	.00	1.50	.36	1.82	1.27	.99	3.90	.18

CAL YR 1977	TOTAL	37.95	MEAN .10	MAX 3.6	MIN .00	CFSM 1.25	IN 17.43
WTR YR 1978	TOTAL	41.69	MEAN .11	MAX 5.9	MIN .00	CFSM 1.38	IN 19.15

POTOMAC RIVER BASIN

51

01644295 SMILAX BRANCH AT RESTON, VA

LOCATION.--Lat 38°57'10", long 77°22'04", Fairfax County, Hydrologic Unit 02070008, on right bank 100 ft (30 m) upstream from Dulles Airport Road, 0.4 mi (0.6 km) upstream from mouth, 1.0 mi (1.6 km) west of Sunset Hills in Reston, and 4.3 mi (6.9 km) east of Dulles International Airport.

DRAINAGE AREA.--0.32 mi² (0.83 km²).

PERIOD OF RECORD.--March 1967 to September 1978 (discontinued).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 356.59 ft (108.689 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--11 years, 0.42 ft³/s (0.012 m³/s), 17.82 in/yr (453 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301 ft³/s (8.52 m³/s) Aug. 13, 1978, gage height, 6.37 ft (1.942 m), from rating curve extended above 80 ft³/s (2.3 m³/s) on basis of computation of peak flow through culvert at gage height 5.79 ft (1.765 m); no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20 ft³/s (0.57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	0900	43 1.22	4.09 1.247	Aug. 7	1945	38 1.08	4.04 1.231
Jan. 26	0130	60 1.70	4.28 1.304	Aug. 9	2230	28 .79	3.93 1.198
May 14	2130	40 1.13	4.06 1.237	Aug. 11	2100	31 .88	3.96 1.207
June 8	1500	43 1.22	4.09 1.247	Aug. 13	1600	*301 8.52	6.37 1.942
June 27	2015	22 .62	3.85 1.173	Aug. 30	2300	32 .91	3.98 1.213
Aug. 1	0115	31 .88	3.96 1.207				

No flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.02	1.1	.16	.20	.23	.31	.16	.10	.03	1.7	.05
2	.00	.03	.23	.14	.18	.19	.26	.13	.09	.19	.05	.04
3	.00	.12	.16	.12	.16	.21	.24	.12	.09	3.6	.06	.04
4	.00	.47	.13	.12	.15	.21	.24	1.3	.08	.17	.04	.03
5	.00	.05	.38	.12	.13	.16	.24	.93	.07	.10	.07	.03
6	.00	.73	.19	.13	.14	.16	.23	.35	.07	.07	.03	.03
7	.00	.98	.12	.13	.13	.14	.24	.26	.07	.06	1.5	.03
8	.00	.58	.11	1.4	.12	.17	.23	.69	1.6	.05	.10	.02
9	.41	.10	.11	5.2	.12	.21	.21	1.3	.15	.05	.94	.02
10	.01	.63	.09	.51	.11	.73	.21	.35	.09	.04	.31	.01
11	.00	.21	.09	.31	.11	.78	.24	.25	.07	.04	1.2	.01
12	.00	.11	.09	.26	.11	1.2	.17	.21	.07	.03	.98	.14
13	.00	.10	.10	.47	.10	1.4	.17	.92	.24	.03	15	.24
14	.47	.08	.21	1.1	.10	1.9	.14	5.7	.06	.04	.95	.02
15	.24	.07	.14	.38	.10	.84	.14	6.2	.06	.04	.21	.02
16	.35	.06	.11	.24	.10	.63	.13	5.3	.05	.04	.19	.06
17	.13	.11	.11	2.1	.13	.44	.13	1.6	.07	.04	.15	.02
18	.01	.06	13	1.9	.16	.33	.32	.63	.06	.03	.07	.01
19	.01	.05	3.2	.56	.17	.31	.94	.41	.06	.03	.06	.01
20	.01	.06	1.4	.44	.16	.26	.52	.29	.05	.02	.05	.03
21	.00	.08	3.4	.36	.17	.26	.24	.23	.24	.02	.05	.03
22	.00	.12	.68	.28	.16	.98	.19	.19	.08	.02	.05	.03
23	.00	.54	.35	.24	.16	2.8	.16	.19	.04	.01	.05	.02
24	.00	.12	.28	.26	.16	2.8	.14	.20	.04	.01	.05	.01
25	.00	.41	.26	8.5	.26	3.2	.14	.16	.04	.05	.06	.00
26	2.6	.44	.21	11	.28	10	.37	.13	.47	.02	.04	.00
27	.54	.19	.17	1.2	.24	3.2	.21	.13	1.1	.01	.04	.00
28	.05	.13	.14	.60	.21	.98	.17	.14	.16	.01	.05	.01
29	.03	.38	.14	.40	---	.47	.16	.13	.05	.00	.04	.01
30	.02	.68	.16	.31	---	.35	.16	.11	.04	.07	.91	.00
31	.02	---	.17	.24	---	.35	---	.11	---	1.1	.59	---
TOTAL	4.90	7.71	27.03	39.18	4.32	35.89	7.25	28.82	5.46	6.02	25.59	.97
MEAN	.16	.26	.87	1.26	.15	1.16	.24	.93	.18	.19	.83	.032
MAX	2.6	.98	13	11	.28	10	.94	6.2	1.6	3.6	15	.24
MIN	.00	.02	.09	.12	.10	.14	.13	.11	.04	.00	.03	.00
CFSM	.50	.81	2.72	3.94	.47	3.63	.75	2.91	.56	.59	2.59	.10
IN.	.57	.89	3.13	4.54	.50	4.16	.84	3.34	.63	.70	2.96	.11

CAL YR 1977 TOTAL 100.60 MEAN .28 MAX 13 MIN .00 CFSM .88 IN 11.65
WTR YR 1978 TOTAL 193.14 MEAN .53 MAX 15 MIN .00 CFSM 1.66 IN 22.38

POTOMAC RIVER BASIN

01645784 SNAKEDEN BRANCH AT RESTON, VA

LOCATION.--Lat 38°55'48", long 77°20'43", Fairfax County, Hydrologic Unit 02070008, on right bank at upstream side of culvert on Soapstone Drive, 1.1 mi (1.8 km) upstream from Lake Elsa Dam, and 1.7 mi (2.7 km) south of Sunset Hills in Reston.

DRAINAGE AREA.--0.79 mi² (2.05 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1973 to September 1978 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 320.15 ft (97.582 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Recording rain gage located at station.

AVERAGE DISCHARGE.--5 years, 1.40 ft³/s (0.040 m³/s), 24.07 in/yr (611 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 523 ft³/s (14.8 m³/s) Sept. 14, 1973, gage height, 5.04 ft (1.536 m), from rating curve extended above 98 ft³/s (2.8 m³/s) on basis of computation of peak flow through culvert; minimum daily, 0.08 ft³/s (0.002 m³/s) Sept. 2, 1974.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 6.4 ft (1.95 m), discharge, 760 ft³/s (21.5 m³/s), from floodmarks, on basis of computation of peak flow through culvert.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	0400	213 6.03	2.89 0.881	Aug. 7	1940	159 4.50	2.46 0.750
May 14	2110	*354 10.0	3.91 1.192	Aug. 13	1615	334 9.46	3.80 1.158
June 8	1445	153 4.33	2.39 .728	Aug. 30	2305	190 5.38	2.72 .829

Minimum daily discharge, 0.12 ft³/s (0.003 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.50	3.8	.60	.70	.70	.50	1.0	.90	.59	1.9	.50
2	.15	.57	1.1	.60	.70	.70	.50	.97	.90	1.3	.35	.42
3	.15	1.1	.95	.42	.70	.70	.50	.73	.90	15	.35	.42
4	.15	2.9	.83	.42	.70	.70	.50	5.0	.90	.90	.35	.35
5	.15	.89	2.7	.42	.60	.70	.50	2.3	.70	.60	.42	.28
6	.15	3.6	1.5	.42	.60	.70	.50	1.3	.70	.50	.35	.28
7	.18	5.0	1.1	.42	.60	.70	.70	1.3	.70	.42	5.2	.28
8	.15	3.1	1.1	4.3	.70	.70	.60	1.3	5.5	.42	.60	.28
9	3.3	.70	1.1	10	.70	1.1	.60	2.2	.70	.42	4.4	.28
10	.35	3.8	1.1	1.1	.70	2.8	.60	.90	.60	.28	1.1	.22
11	.22	1.1	1.1	.98	.60	2.5	.70	.70	.50	.22	5.4	.22
12	.22	.70	1.1	.98	.70	2.2	.70	.70	.50	.22	2.4	.91
13	.22	.70	.90	1.4	.70	1.5	.60	2.5	.90	.22	17	.60
14	2.7	.70	1.5	3.3	.70	3.5	.42	36	.35	.22	.90	.35
15	1.8	.70	1.5	1.2	.70	.90	.42	16	.35	.22	.60	.35
16	1.8	.70	1.5	1.0	.70	.60	.42	9.8	.35	.42	.50	.42
17	.90	.70	1.3	6.8	.70	.70	.50	1.9	.50	.35	.35	.28
18	.46	.60	.43	3.6	.90	.70	1.2	1.3	.50	.28	.35	.22
19	.42	.60	4.8	1.4	.70	.70	2.8	1.1	.50	.28	.35	.22
20	.42	.60	2.9	1.3	.70	.70	1.8	.70	.42	.28	.35	.22
21	.42	.78	6.6	1.0	.70	.70	1.2	.70	1.7	.28	.35	.22
22	.42	.80	1.3	.83	.70	.60	.96	.70	.60	.28	.28	.22
23	.42	3.0	1.1	.60	.70	.50	.59	.70	.50	.28	.28	.22
24	.42	.96	.90	.60	.70	.42	.59	.70	.42	.28	.28	.22
25	.42	2.2	.90	16	1.3	1.6	.70	.70	.42	.42	.28	.22
26	15	2.2	.60	40	1.3	15	1.3	.60	2.1	.28	.28	.18
27	3.0	1.0	.50	1.7	.70	2.9	.79	.50	4.2	.28	.28	.18
28	.70	.98	.60	1.3	.70	.90	.50	.50	1.1	.22	.28	.18
29	.70	2.4	.60	1.1	---	.60	.61	.60	.60	.22	.28	.15
30	.70	4.8	.60	.70	---	.60	.83	.90	---	.91	6.2	.15
31	.50	---	.60	.60	---	.60	---	.90	---	4.8	1.5	---
TOTAL	36.71	48.38	89.18	105.09	20.60	47.92	23.13	95.20	29.71	31.39	53.51	9.04
MEAN	1.18	1.61	2.88	3.39	.74	1.55	.77	3.07	.99	1.01	1.73	.30
MAX	15	5.0	.43	40	1.3	15	2.8	36	5.5	15	17	.91
MIN	.12	.50	.50	.42	.60	.42	.42	.50	.35	.22	.28	.15
CFSM	1.49	2.04	3.65	4.29	.94	1.96	.98	3.89	1.25	1.28	2.19	.38
IN.	1.73	2.28	4.19	4.94	.97	2.25	1.09	4.48	1.40	1.48	2.52	.43

CAL YR 1977 TOTAL 406.69 MEAN 1.11 MAX 43 MIN .10 CFSM 1.41 IN 19.13
WTR YR 1978 TOTAL 589.86 MEAN 1.62 MAX 43 MIN .12 CFSM 2.05 IN 27.74

POTOMAC RIVER BASIN

53

01645784 SNAKEDEN BRANCH AT RESTON, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to 1978 (discontinued).

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1973 to September 1978 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,030 mg/L Mar. 13, 1977; minimum daily mean, 1 mg/L June 13, 15, Aug. 25, Sept. 13, 14, 1976, Jan. 13, 14, 1977.

SEDIMENT LOADS: Maximum daily, 245 tons (222 tonnes) June 17, 1974; minimum daily, 0 ton (0 tonne) on many days.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 866 mg/L Mar. 26; minimum daily mean, 3 mg/L May 19, 31, June 1.

SEDIMENT LOADS: Maximum daily, 222 tons (201 tonnes) May 14; minimum daily, 0 ton (0 tonne) on several days in October, January, and September.

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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	4	.00	10	.01	50	.67	6	.01	13	.02	5	.01
2	5	.00	9	.01	21	.06	6	.01	11	.02	5	.01
3	4	.00	23	.07	12	.03	5	.01	10	.02	5	.01
4	4	.00	65	.74	10	.02	5	.01	9	.02	7	.01
5	4	.00	36	.09	28	.31	5	.01	12	.02	9	.02
6	7	.00	64	2.3	27	.11	5	.01	21	.03	8	.02
7	9	.00	74	5.8	23	.07	4	.00	26	.04	8	.02
8	6	.00	87	1.7	20	.06	172	4.2	25	.05	8	.02
9	87	3.7	43	.08	14	.04	226	17	21	.04	11	.03
10	33	.03	81	3.5	14	.04	20	.06	17	.03	45	.34
11	24	.01	44	.13	14	.04	8	.02	16	.03	58	.39
12	21	.01	37	.07	11	.03	8	.02	15	.03	50	.30
13	16	.01	30	.06	9	.02	22	.08	13	.02	47	.19
14	92	1.6	25	.05	22	.09	35	.31	12	.02	347	12
15	63	.31	20	.04	34	.14	20	.06	12	.02	94	.23
16	85	1.1	15	.03	25	.10	18	.05	12	.02	74	.12
17	57	.14	15	.03	22	.08	133	13	11	.02	57	.11
18	35	.04	10	.02	506	117	42	.41	9	.02	18	.03
19	25	.03	10	.02	100	1.3	17	.06	8	.02	14	.03
20	17	.02	10	.02	101	.92	12	.04	7	.01	12	.02
21	12	.01	23	.05	76	2.5	10	.03	7	.01	10	.02
22	11	.01	26	.06	30	.11	9	.02	6	.01	10	.02
23	10	.01	71	.91	28	.08	9	.01	5	.01	8	.01
24	10	.01	40	.10	21	.05	7	.01	5	.01	6	.01
25	10	.01	40	.52	18	.04	179	16	6	.02	89	2.5
26	207	28	55	.33	11	.02	383	121	7	.02	866	70
27	60	.61	30	.08	10	.01	50	.23	5	.01	135	1.3
28	34	.06	15	.04	10	.02	40	.14	5	.01	33	.08
29	19	.04	55	.55	8	.01	28	.08	---	---	13	.02
30	15	.03	98	2.3	8	.01	21	.04	---	---	11	.02
31	12	.02	---	---	7	.01	18	.03	---	---	8	.01
TOTAL	---	35.81	---	19.71	---	123.99	---	172.96	---	0.60	---	87.90

01645784 SNAKEDEN BRANCH AT RESTON, VA--Continued

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[illegible]

POTOMAC RIVER BASIN

55

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 (76 m) downstream from bridge on State Highway 193, 300 ft (91 m) downstream from Rocky Run, 0.7 mi (1.1 km) upstream from mouth, and 1.5 mi (2.4 km) southeast of Great Falls.

DRAINAGE AREA.--57.9 mi² (150.0 km²).

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 (46.116 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, May 30 to July 5, which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--44 years, 59.0 ft³/s (1.671 m³/s), 13.84 in/yr (352 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,200 ft³/s (912 m³/s) June 22, 1972, gage height, 21.40 ft (6.523 m), from floodmarks, from rating curve extended above 1,600 ft³/s (45 m³/s) on basis of contracted-opening measurement at gage height 13.18 ft (4.017 m) and slope-area measurement at gage height 21.40 ft (6.523 m); minimum, 0.05 ft³/s (0.001 m³/s) Sept. 9, 10, 1966, gage height, 1.65 ft (0.503 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 18	1700	1540	43.6	Mar. 26	2230	1160	32.9
Jan. 26	0930	*3480	98.6				

Minimum discharge, 5.8 ft³/s (0.16 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	19	228	53	78	52	62	43	54	27	155	32
2	8.7	19	65	51	67	47	58	42	54	35	34	26
3	7.3	22	50	46	61	50	58	41	62	500	28	24
4	6.5	92	43	44	58	47	54	96	52	100	29	22
5	6.0	36	56	43	58	46	52	138	45	46	29	21
6	6.5	44	68	45	54	44	50	70	43	43	25	19
7	7.3	195	43	46	61	44	52	57	41	37	39	19
8	7.0	229	36	98	57	45	49	56	50	34	62	17
9	50	59	38	491	53	47	46	127	58	35	47	15
10	22	49	36	105	55	110	46	85	50	34	93	15
11	12	74	34	86	50	161	46	57	37	50	31	15
12	11	41	34	60	48	150	46	51	35	30	141	14
13	12	36	33	62	48	141	46	55	80	28	298	55
14	28	33	39	175	48	188	40	235	50	28	177	20
15	75	31	57	89	47	142	40	618	38	28	128	18
16	20	30	39	67	47	102	40	444	35	32	44	18
17	46	32	36	122	48	94	40	187	38	31	36	23
18	20	32	915	420	53	72	58	117	38	26	31	17
19	15	27	505	122	54	68	90	109	37	24	29	16
20	14	25	173	101	52	62	62	85	40	22	27	15
21	14	27	354	80	53	61	50	69	78	21	25	19
22	13	30	136	69	51	60	47	67	60	20	25	16
23	12	89	93	67	46	55	46	72	45	20	25	17
24	12	51	80	70	50	54	46	72	33	18	28	15
25	12	39	72	455	65	54	46	70	31	25	27	14
26	180	101	60	1950	74	566	67	64	40	22	27	13
27	182	46	53	241	61	392	54	56	110	20	26	13
28	41	38	53	128	53	133	47	56	80	24	29	12
29	27	52	55	104	---	102	45	56	45	18	23	12
30	22	72	49	94	---	88	44	56	30	20	20	11
31	20	---	54	86	---	72	---	56	---	110	131	---
TOTAL	916.3	1670	3587	5670	1550	3349	1527	3407	1489	1508	1869	563
MEAN	29.6	55.7	116	183	55.4	108	50.9	110	49.6	48.6	60.3	18.8
MAX	182	229	915	1950	78	566	90	618	110	500	298	55
MIN	6.0	19	33	43	46	44	40	41	30	18	20	11
CFSM	.51	.96	2.00	3.16	.96	1.87	.88	1.90	.86	.84	1.04	.33
IN.	.59	1.07	2.30	3.64	1.00	2.15	.98	2.19	.96	.97	1.20	.36

CAL YR 1977	TOTAL	16426.3	MEAN	45.0	MAX	915	MIN	6.0	CFSM	.78	IN	10.55
WTR YR 1978	TOTAL	27105.3	MEAN	74.3	MAX	1950	MIN	6.0	CFSM	1.28	IN	17.41

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 above Little Falls Dam, 1 mi (1.6 km) upstream from District of Columbia boundary line, 1.2 mi (1.9 km) upstream from Chain Bridge, 1.8 mi (2.9 km) east of Langley, Fairfax County, Va., and at mile 117.4 (188.9 km).

DRAINAGE AREA.--11,560 mi² (29,940 km²).

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 (11.567 m) 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 (1.6 km) upstream on right bank at same datum.

REMARKS.--Records good. 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); and since April 1964, at Violets Lock to Chesapeake and Ohio Canal. Low flow affected slightly by Stony River Reservoir and since December 1950 by Savage River Reservoir. Low flow affected extensively at times by run-of-the-river hydroelectric plants. Gage-height telemeter at station.

AVERAGE DISCHARGE.--48 years, 11,280 ft³/s (319.4 m³/s), 13.25 in/yr (337 mm/yr), adjusted for diversions.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 484,000 ft³/s (13,700 m³/s) Mar. 19, 1936, gage height, 28.1 ft (8.56 m), site then in use; minimum daily observed at gaging station, 121 ft³/s (3.43 m³/s) Sept. 9, 1966, does not include diversion of 489 ft³/s (13.8 m³/s) for municipal use; minimum daily (adjusted), 601 ft³/s (17.0 m³/s) Sept. 10, 1966, includes diversion of 449 ft³/s (12.7 m³/s) for municipal use.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 45,000 ft³/s (1,200 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 9	2330	68800 1950	7.60 2.316	Mar. 16	1800	*153000 4330	10.83 3.301
Dec. 3	0830	46000 1300	6.49 1.978	Mar. 28	1015	123000 3480	9.65 2.941
Jan. 28	1130	145000 4110	10.47 3.191	May 17	2045	117000 3310	9.44 2.877

Minimum daily discharge, 1,210 ft³/s (34.3 m³/s) Oct. 7, does not include diversion for municipal use; minimum daily (adjusted), 1,720 ft³/s (48.7 m³/s) Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
1	1340	3890	16900	11100	26100	8490	40300	13600	10700	5530	9330	4710	
2	1580	3590	33100	10400	22100	8910	33800	12100	9760	6170	7350	6760	
3	1700	3290	44700	9900	19200	8530	28500	11000	9030	7880	7190	8430	
4	1580	3990	36200	8440	16700	8150	25700	10500	9040	16300	8190	6810	
5	1350	5630	26400	7590	14600	7650	23400	10800	8410	27400	8970	5530	
6	1330	5940	22400	7250	13200	7150	21300	10400	7760	32400	12500	4510	
7	1210	8990	20300	7210	12100	7050	20600	11000	7410	19500	12600	3840	
8	1230	23200	18000	7780	11700	6860	19900	14100	7510	13700	29000	3400	
9	1770	52900	16300	27300	11100	6650	18800	14200	7140	10700	35900	3140	
10	1660	55000	13600	29100	11600	6630	17600	15200	6690	9940	23500	2880	
11	1560	36000	11600	19200	10300	7280	16200	15000	6480	9080	16100	2660	
12	1720	29000	9920	19900	9960	11500	15200	15500	6050	8240	14000	2500	
13	1860	22800	9080	18600	9690	15100	14100	14700	5880	9780	15300	2760	
14	2500	17700	8570	17800	9060	27400	12800	25800	5990	8540	15000	2940	
15	2510	14100	8820	15700	8740	69000	11900	79500	5700	7120	15600	2890	
16	2350	11600	10500	13500	8270	140000	11000	105000	5220	6530	14500	2880	
17	2920	10100	10900	14000	7910	125000	10200	114000	4850	6050	13800	2970	
18	3060	9010	25100	16700	7870	72200	9460	104000	4750	5880	11400	2820	
19	3420	7920	42800	13900	7800	51500	9580	73400	4630	6090	9390	2770	
20	4050	6990	40600	11400	7620	46000	10500	53400	4470	5690	7510	2610	
21	3410	6400	41200	9610	7100	51600	11700	41400	4270	5290	6210	2490	
22	3020	6010	42200	9470	6780	50400	12200	32600	5750	4690	5200	2530	
23	2730	6480	33100	9220	6440	49500	11600	26300	5680	4110	4640	2520	
24	2410	8770	26400	8210	6520	48600	11100	22400	6020	3780	4140	2420	
25	2140	9380	21700	12300	6610	41700	10400	19500	5460	3520	3700	2290	
26	2610	11700	19500	60600	7680	41100	9840	18200	5190	3380	3520	2230	
27	3540	14700	16600	93400	8060	68400	9460	17100	5300	3300	3200	2190	
28	3440	13400	14000	117000	8110	118000	9120	15500	5220	3570	3250	2070	
29	3490	12200	12300	70500	---	98000	12600	13700	5230	4270	3960	2040	
30	3810	12000	11900	46300	---	69100	15300	12500	6080	5670	4040	1880	
31	3840	---	11700	33800	---	50600	---	11300	---	5330	5230	---	
TOTAL	75140	432680	676390	757180	302920	1328050	484160	953700	191670	269430	335720	100420	
MEAN	2424	14420	21820	24430	10820	42840	16140	30760	6389	8691	10830	3347	
MAX	4050	55000	44700	117000	26100	140000	40300	114000	10700	32400	35900	8430	
MIN	1210	3290	8570	7210	6440	6630	9120	10400	4270	3300	3200	1880	
(*)	491	460	447	433	428	429	451	467	518	534	538	524	
MEAN#	2915	14880	22270	24860	11250	43270	16590	31230	6907	9225	11370	3871	
CFSM#	.25	1.29	1.93	2.15	.97	3.74	1.44	2.70	.60	.80	.98	.33	
IN#	.29	1.44	2.22	2.48	1.01	4.32	1.60	3.11	.67	.92	1.13	.37	
CAL YR 1977 TOTAL	3257281	MEAN	8924	MAX	87200	MTN	796	MEAN#	9394	CFSM#	0.81	IN#	11.03
WTR YR 1978 TOTAL	5907460	MEAN	16180	MAX	140000	MTN	1210	MEAN#	16660	CFSM#	1.44	IN#	19.56

* Diversion in cfs, for municipal supply of Washington, DC, Washington Suburban Sanitary District, city of Rockville, city of Fairfax (from Goose Creek), and the Chesapeake and Ohio Canal (insignificant diversion to canal during current water year); records furnished by Corps of Engineers, Washington Suburban Sanitary Commission, city of Rockville, and city of Fairfax.

* Adjusted for diversion.

01653000 CAMERON RUN AT ALEXANDRIA, VA

LOCATION.--Lat 38°48'20", long 77°06'08", Fairfax County, Hydrologic Unit 02070010, on right bank 0.5 mi (0.8 km) downstream from Southern Railway bridge at Alexandria, 0.6 mi (1.0 km) downstream from confluence of Holmes Run and Backlick Run, 1.0 mi (1.6 km) east of the U.S. Army Quartermaster Depot, and 2.9 mi (4.7 km) upstream from mouth.

DRAINAGE AREA.--33.7 mi² (87.3 km²).

PERIOD OF RECORD.--June 1955 to current year.

GAGE.--Water-stage recorder. Datum of gage is 23.85 ft (7.269 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 20, 1965, at site 0.5 mi (0.8 km) upstream at datum 15.00 ft (4.572 m) higher. Sept. 20, 1965, to Jan. 19, 1976, at site 0.5 mi (0.8 km) upstream at datum 12.66 ft (3.859 m) higher. Jan. 20, 1976, to Nov. 8, 1976, at site 1,200 ft (370 m) upstream at datum 2.78 ft (0.847 m) higher.

REMARKS.--Records good except those above 600 ft³/s (17 m³/s), which are poor. Some regulation by Lake Barcroft, formerly Alexandria Reservoir, on Holmes Run 3.6 mi (5.8 km) upstream, usable capacity, 2,092 acre-ft (2.58 hm³). Several observations 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, 36.2 ft³/s (1.025 m³/s), 14.59 in/yr (371 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,900 ft³/s (564 m³/s) June 22, 1972, gage height, 18.14 ft (5.529 m), from rating curve extended above 2,500 ft³/s (71 m³/s) on basis of culvert computations of peak flow for main channel and bypass channels; minimum, 1.1 ft³/s (0.031 m³/s) Aug. 15, 1957, Sept. 22-25, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 17	0415	3030	85.5	July 31	0745	2250	63.7
Dec. 18	0930	3210	90.9	Aug. 2	0930	3410	96.6
Jan. 17	2030	2270	64.3	Aug. 11	2200	2240	63.4
Jan. 26	0445	*a6200	176	Aug. 14	1915	2400	68.0
Mar. 26	1315	2690	76.2	Aug. 31	0045	3000	85.0
			5.71				6.05
			1.740				1.844

a From rating curve extended above 580 ft³/s (16 m³/s) on basis of slope-conveyance study.

Minimum daily discharge, 1.2 ft³/s (0.034 m³/s) Oct. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	7.3	161	18	20	17	24	13	13	10	220	19
2	6.9	7.5	28	17	17	17	23	13	12	14	251	14
3	2.4	24	20	15	16	23	23	13	15	383	30	12
4	1.2	118	17	16	19	20	21	244	17	27	28	11
5	1.2	17	42	15	20	22	24	80	15	14	59	9.8
6	1.3	202	29	15	16	19	25	28	13	12	26	8.8
7	1.6	208	16	15	27	17	25	20	13	11	16	7.6
8	1.9	248	12	119	17	16	20	41	14	10	15	7.6
9	173	26	13	430	15	22	18	209	13	10	22	7.4
10	13	44	12	79	14	167	19	29	11	52	64	6.6
11	7.8	32	10	42	14	75	19	20	10	36	226	6.3
12	5.1	18	11	19	15	49	18	18	9.9	10	280	24
13	3.7	12	10	99	20	39	16	36	77	8.6	71	57
14	173	9.6	41	253	18	76	16	245	13	8.4	198	12
15	85	8.6	34	63	16	39	13	329	11	8.7	52	11
16	40	8.7	15	29	17	34	13	389	10	9.2	23	10
17	170	25	12	428	16	31	14	65	11	10	20	10
18	10	15	1170	227	17	22	21	34	10	9.2	15	8.2
19	7.5	11	246	124	16	21	84	26	12	8.5	14	7.3
20	6.3	9.1	83	59	15	19	47	22	13	8.0	13	6.1
21	5.5	10	226	52	14	20	19	20	53	7.5	12	5.7
22	5.3	32	87	36	14	22	16	18	19	7.0	12	11
23	4.6	129	34	32	14	18	15	19	12	6.7	11	9.7
24	4.3	29	25	32	15	17	15	34	10	6.6	11	6.2
25	4.3	50	28	772	16	27	15	20	9.5	13	11	5.5
26	256	96	23	1660	16	825	61	16	10	8.3	11	5.0
27	149	20	18	82	16	208	19	15	81	7.4	14	4.7
28	18	16	21	35	15	44	17	14	66	18	14	4.6
29	11	35	23	28	---	30	14	14	20	10	13	4.2
30	8.4	127	20	24	---	23	14	14	13	27	76	4.0
31	7.1	---	26	22	---	22	---	15	---	203	313	---
TOTAL	1186.0	1594.8	2513	4857	465	2001	688	2073	606.4	974.1	2141	316.3
MEAN	38.3	53.2	81.1	157	16.6	64.5	22.9	66.9	20.2	31.4	69.1	10.5
MAX	256	248	1170	1660	27	825	84	389	81	383	313	57
MIN	1.2	7.3	10	15	14	16	13	13	9.5	6.6	11	4.0
CFSM	1.14	1.58	2.41	4.66	.49	1.91	.68	1.99	.60	.93	2.05	.31
IN.	1.31	1.76	2.77	5.36	.51	2.21	.76	2.29	.67	1.08	2.36	.35

CAL YR 1977 TOTAL 11466.7 MEAN 31.4 MAX 1170 MIN 1.2 CFSM .93 IN 12.66
WTR YR 1978 TOTAL 19415.6 MEAN 53.2 MAX 1660 MIN 1.2 CFSM 1.58 IN 21.43

POTOMAC RIVER BASIN

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 (244 m) upstream from bridge on State Highway 620, 0.2 mi (0.3 km) upstream from Long Branch, and 2.3 mi (3.7 km) southwest of Annandale.

DRAINAGE AREA.--23.5 mi² (60.9 km²).

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 190.91 ft (58.189 m) National Geodetic Vertical Datum of 1929 (levels by Stone and Webster Engineering Corp.). Prior to May 12, 1949, nonrecording gage at site 800 ft (244 m) downstream at same datum. May 12, 1949, to June 4, 1970, water-stage recorder at site 800 ft (244 m) downstream at same datum.

REMARKS.--Records good. Slight diurnal fluctuation during low flow caused by sewage disposal plant above station near Fairfax. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--31 years, 27.6 ft³/s (0.782 m³/s), 15.95 in/yr (405 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) June 22, 1972, gage height, 15.96 ft (4.865 m), from high-water mark in gage house, from rating curve extended above 6,600 ft³/s (190 m³/s) on basis of contracted-opening and flow-over-road measurement of peak flow; minimum, 0.10 ft³/s (0.003 m³/s) Sept. 25, 26, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,900 ft³/s (82.1 m³/s) at 1030 hours Jan. 26, gage height, 9.98 ft (3.042 m), no other peak above base of 1,400 ft³/s (40 m³/s); minimum daily, 0.22 ft³/s (0.006 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.44	3.7	85	11	16	15	20	11	11	5.2	100	11
2	.84	4.7	16	10	15	13	17	10	10	11	15	7.8
3	.38	16	10	9.6	15	14	17	9.8	19	198	8.0	6.1
4	.25	62	8.6	8.6	12	15	17	99	14	24	10	5.8
5	.22	7.8	32	8.6	11	16	16	52	9.8	11	11	5.5
6	.25	48	26	8.9	11	13	15	22	9.8	8.8	7.0	5.5
7	.32	102	10	9.6	10	12	17	16	8.8	6.9	13	4.6
8	.32	114	8.2	54	10	12	14	23	10	7.4	30	4.3
9	60	13	9.2	245	10	16	14	110	11	14	17	4.3
10	5.9	14	8.6	29	10	93	14	29	8.3	47	25	4.0
11	2.0	21	6.8	16	9.3	62	14	18	7.4	21	50	4.0
12	.90	6.6	6.6	13	8.3	47	14	15	6.9	7.4	90	18
13	.77	5.6	6.6	20	8.8	40	12	28	45	6.1	350	56
14	40	5.2	16	108	9.8	56	11	150	8.8	5.8	50	5.5
15	47	5.2	24	35	9.8	35	11	204	7.4	5.8	23	6.9
16	12	5.0	9.2	22	8.3	26	11	222	6.9	11	12	6.4
17	32	12	8.2	114	8.8	26	11	51	7.4	8.3	8.8	11
18	5.2	7.2	663	197	10	17	16	30	7.8	5.8	7.4	4.6
19	2.4	4.7	109	42	9.9	16	52	23	7.8	5.5	6.9	4.0
20	2.1	4.5	50	30	12	14	34	20	8.3	5.2	6.1	3.7
21	1.8	5.4	120	25	16	15	17	17	34	4.9	5.8	3.7
22	1.8	20	32	23	16	15	14	16	19	4.6	5.5	4.6
23	1.6	71	20	20	12	14	13	16	7.8	4.3	5.5	6.4
24	1.6	17	17	22	15	13	13	38	6.4	4.3	5.5	4.0
25	1.8	17	20	313	20	17	12	18	5.8	12	5.5	3.4
26	162	54	16	1090	19	475	41	14	12	5.2	5.2	3.2
27	78	10	11	48	14	101	16	12	72	4.3	6.7	3.2
28	8.2	8.2	10	27	13	38	13	12	34	23	16	3.0
29	4.5	25	10	22	---	28	12	12	7.4	4.9	5.5	2.9
30	3.7	44	10	20	---	24	11	11	5.8	17	59	3.0
31	3.2	---	15	17	---	23	---	11	---	80	169	---
TOTAL	481.49	733.8	1394.0	2618.3	340.0	1321	509	1319.8	429.6	579.7	1129.4	216.4
MEAN	15.5	24.5	45.0	84.5	12.1	42.6	17.0	42.6	14.3	18.7	36.4	7.21
MAX	162	114	663	1090	20	475	52	222	72	198	350	56
MIN	.22	3.7	6.6	8.6	8.3	12	11	9.8	5.8	4.3	5.2	2.9
CFSM	.66	1.04	1.92	3.60	.52	1.81	.72	1.81	.61	.80	1.55	.31
IN.	.76	1.16	2.21	4.14	.54	2.09	.81	2.09	.68	.92	1.79	.34
CAL YR 1977	TOTAL	6128.25	MEAN	16.8	MAX	663	MIN	.22	CFSM	.72	IN	9.70
WTR YR 1978	TOTAL	11072.49	MEAN	30.3	MAX	1090	MIN	.22	CFSM	1.29	IN	17.53

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 (3.1 km) north of Warrenton, and 14.5 mi (23.3 km) upstream from Licking Run.

DRAINAGE AREA.--12.3 mi² (31.9 km²).

PERIOD OF RECORD.--July 1950 to current year.

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

GAGE.--Water-stage recorder. Datum of gage is 419.40 ft (127.833 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation by Warrenton municipal water-supply reservoir 400 ft (120 m) above station. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--28 years, 12.5 ft³/s (0.354 m³/s), 13.80 in/yr (351 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,840 ft³/s (222 m³/s) June 21, 1972, gage height, 12.87 ft (3.923 m), from rating curve extended above 600 ft³/s (17 m³/s) on basis of areal study of flood of 1942; no flow part of each day Aug. 11-14, 1967, probably caused by dam 400 ft (120 m) above gage.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1942 reached a stage of about 13 ft (4.0 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.1 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0100	1300 36.8	7.92 2.414	Jan. 26	0530	*1600 45.3	8.20 2.499

Minimum discharge, 0.11 ft³/s (0.003 m³/s) Oct. 2, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.28	1.7	32	11	20	14	19	7.6	7.0	1.4	2.6	1.9
2	.18	4.0	18	10	18	13	16	6.5	5.7	2.6	1.2	.93
3	.48	4.4	13	8.4	16	13	16	6.2	5.7	21	.82	.93
4	.56	4.8	10	7.0	14	11	15	13	5.2	11	1.4	.60
5	.71	1.3	13	6.8	13	9.3	14	19	4.4	5.7	1.6	.44
6	.71	1.3	15	7.3	12	9.3	12	16	4.0	3.8	1.0	.36
7	.52	3.6	9.3	8.1	11	11	12	14	4.2	2.6	2.3	.52
8	.48	3.2	7.0	40	10	11	10	16	6.5	2.6	2.7	.40
9	.19	1.3	7.1	260	9.6	10	8.7	20	6.8	3.1	2.4	1.1
10	.36	3.1	5.4	48	8.7	36	8.7	18	3.8	3.1	11	1.2
11	.52	4.4	4.6	28	8.1	47	9.3	13	3.1	4.6	19	.60
12	.52	12	4.2	23	8.1	50	8.1	11	2.7	1.7	67	.93
13	.53	7.0	4.6	25	7.6	54	7.6	34	4.8	1.2	14	1.2
14	.60	5.4	5.7	28	7.6	63	5.9	74	2.2	1.6	8.1	1.2
15	.71	5.0	8.1	20	7.8	61	5.9	63	1.9	1.6	5.7	1.2
16	.93	4.4	5.9	17	7.8	52	5.2	123	2.2	1.6	4.8	1.3
17	.44	4.8	5.4	31	7.8	41	5.4	73	2.2	1.4	3.4	1.3
18	1.2	3.2	94	63	8.7	29	6.5	54	2.4	.82	2.4	1.3
19	2.2	2.7	97	35	8.7	25	12	40	7.0	.60	2.0	1.3
20	2.2	2.7	58	31	8.4	22	15	31	5.4	.56	2.0	1.3
21	2.2	2.7	67	23	9.0	20	11	23	4.6	.48	.71	1.3
22	2.0	3.6	47	19	8.7	18	9.0	19	5.9	.48	.71	1.4
23	2.2	6.8	34	17	7.6	16	8.1	17	3.1	.36	.82	1.4
24	2.2	5.9	27	16	11	14	7.6	16	2.0	.44	.60	1.3
25	2.2	5.2	24	115	20	16	7.0	14	1.6	.82	.60	1.3
26	4.6	11	18	550	21	54	15	13	1.7	.52	.82	1.3
27	2.7	5.7	14	85	18	61	13	11	7.0	.48	.60	1.2
28	1.9	5.9	13	56	16	44	11	10	11	.48	.82	1.2
29	1.9	8.1	11	39	---	33	9.3	9.6	3.2	.24	.71	1.2
30	1.7	11	10	28	---	26	8.7	8.4	2.0	.44	.84	1.0
31	1.6	---	11	23	---	22	---	7.8	---	4.4	4.4	---
TOTAL	39.52	146.2	693.3	1678.6	324.2	905.6	312.0	801.1	129.3	81.72	167.05	32.61
MEAN	1.27	4.87	22.4	54.1	11.6	29.2	10.4	25.8	4.31	2.64	5.39	1.09
MAX	4.6	12	97	550	21	63	19	123	11	21	67	1.9
MIN	.18	1.3	4.2	6.8	7.6	9.3	5.2	6.2	1.6	.24	.60	.36
CFSM	.10	.40	1.82	4.40	.94	2.37	.85	2.10	.35	.22	.44	.09
IN.	.12	.44	2.10	5.08	.98	2.74	.94	2.42	.39	.25	.51	.10

CAL YR 1977 TOTAL 2243.89 MEAN 6.15 MAX 97 MIN .18 CFSM .50 IN 6.79
WTR YR 1978 TOTAL 5311.20 MEAN 14.6 MAX 550 MIN .18 CFSM 1.19 IN 16.06

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 (30 m) downstream from bridge on State Highway 806, 0.9 mi (1.4 km) downstream from Licking Run, and 1.4 mi (2.3 km) southeast of Catlett.

DRAINAGE AREA.--93.4 mi² (241.9 km²).

PERIOD OF RECORD.--July 1950 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 199.15 ft (60.701 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--28 years, 85.8 ft³/s (2.430 m³/s), 12.47 in/yr (317 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,600 ft³/s (1,090 m³/s) June 22, 1972, gage height, 27.66 ft (8.431 m), from floodmarks, from rating curve extended above 5,000 ft³/s (140 m³/s) on basis of contracted-opening measurement of peak flow; no flow on many days in 1954, 1957, 1959, 1963, 1964, and 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of about 22 ft (6.7 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s (51 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1130	2930 83.0	10.32 3.146	May 16	0300	2200 62.3	9.18 2.798
Jan. 9	1230	4560 129	12.53 3.819	Aug. 12	0630	1900 53.8	8.64 2.633
Jan. 26	1300	*6620 187	14.80 4.511				

Minimum discharge, 0.47 ft³/s (0.013 m³/s) Oct. 5, 6, gage height, 1.89 ft (0.576 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.90	4.9	482	56	106	60	98	38	98	7.6	149	34
2	.82	3.8	172	51	90	50	78	32	36	5.7	25	13
3	.58	4.9	106	44	94	48	67	30	27	237	12	7.6
4	.58	180	76	37	71	52	67	146	27	142	6.3	5.1
5	.50	88	160	32	73	48	60	368	21	48	7.2	4.0
6	.50	67	211	30	60	54	50	146	17	24	7.6	3.6
7	.74	174	96	38	59	62	50	100	15	15	6.0	3.0
8	.66	318	57	192	57	51	43	98	18	49	10	2.4
9	1.3	106	54	2450	55	51	37	248	23	57	11	2.0
10	3.4	62	45	306	54	522	34	182	17	248	71	1.9
11	2.6	246	43	209	52	582	34	98	13	320	102	1.8
12	1.2	96	33	196	64	459	34	73	11	50	974	1.6
13	.82	56	29	172	64	433	30	92	12	24	154	2.6
14	.90	38	36	256	41	472	27	767	14	17	126	4.0
15	.90	32	74	189	42	407	24	504	8.8	18	51	3.5
16	1.1	29	48	138	40	253	23	1510	6.9	16	32	3.0
17	3.6	30	38	212	42	204	23	459	6.6	16	22	3.2
18	5.1	28	1940	954	50	146	23	251	6.9	12	17	3.0
19	2.8	21	1130	368	54	126	65	180	28	8.5	11	2.8
20	2.0	16	446	224	60	106	122	134	94	6.9	8.8	2.4
21	1.7	16	716	204	62	92	67	100	26	5.1	6.9	2.0
22	1.3	19	306	176	60	82	46	74	42	4.0	5.5	2.3
23	1.1	114	189	158	62	71	37	64	19	3.6	3.8	14
24	.74	86	154	162	62	60	33	62	10	3.2	3.5	8.8
25	.82	62	146	1100	94	60	30	56	7.9	3.3	3.8	6.3
26	110	204	102	4770	142	809	130	44	6.3	4.4	5.1	4.6
27	135	78	74	942	98	564	150	37	11	4.0	4.9	3.6
28	32	56	70	318	74	263	78	36	118	3.3	4.0	3.1
29	15	58	64	204	---	176	52	40	25	2.8	4.6	2.7
30	7.9	134	57	154	---	134	44	34	11	2.6	5.4	2.4
31	5.5	---	50	124	---	110	---	123	---	17	209	---
TOTAL	342.06	2427.6	7204	14466	1882	6607	1656	6126	776.4	1375.0	2059.4	154.3
MEAN	11.0	80.9	232	467	67.2	213	55.2	198	25.9	44.4	66.4	5.14
MAX	135	318	1940	4770	142	809	150	1510	118	320	974	34
MIN	.50	3.8	29	30	40	48	23	30	6.3	2.6	3.5	1.6
CFSM	.12	.87	2.48	5.00	.72	2.28	.59	2.12	.28	.48	.71	.06
IN.	.14	.97	2.87	5.76	.75	2.63	.66	2.44	.31	.55	.82	.06
CAL YR 1977 TOTAL	17026.05		MEAN	46.6	MAX 1940	MIN .23	CFSM .50	IN 6.78				
WTR YR 1978 TOTAL	45075.76		MEAN	123	MAX 4770	MIN .50	CFSM 1.32	IN 17.95				

POTOMAC RIVER BASIN

61

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 (0.8 km) downstream from Darrels Run, 0.8 mi (1.3 km) downstream from Town Run, and 3.0 mi (4.8 km) southwest of Aden.

DRAINAGE AREA.--155 mi² (401 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 166.27 ft (50.679 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--6 years, 193 ft³/s (5.466 m³/s), 16.91 in/yr (430 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft³/s (371 m³/s) Jan. 26, 1978, gage height, 14.77 ft (4.502 m), from rating curve extended above 6,600 ft³/s (190 m³/s); minimum, 0.80 ft³/s (0.023 m³/s) Oct. 8, 12, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 21.37 ft (6.514 m), from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,800 ft³/s (110 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Dec. 18	1830	6900	195	12.43	3.789	Mar. 26	2130	3970	112	10.60	3.231
Jan. 9	1730	6210	176	12.01	3.661	May 16	0800	5570	158	11.55	3.520
Jan. 26	0730	*13100	371	14.77	4.502						

Minimum discharge, 0.80 ft³/s (0.023 m³/s) Oct. 8, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	13	873	108	165	110	148	71	162	21	117	61
2	1.3	11	299	100	140	98	124	55	58	18	37	18
3	1.2	9.0	184	81	130	93	110	46	38	236	31	12
4	1.0	108	139	61	115	90	108	186	33	199	19	10
5	1.0	128	240	46	95	81	103	752	30	81	14	8.8
6	.96	83	374	48	88	78	85	341	25	42	12	7.4
7	.88	270	177	70	81	105	84	197	22	24	9.4	6.3
8	.88	550	112	306	78	96	73	167	20	41	7.8	5.4
9	1.6	170	100	4530	73	96	63	524	20	121	8.3	5.0
10	1.8	115	85	621	70	850	57	312	20	256	37	4.4
11	1.0	325	58	253	64	1030	57	167	18	482	121	3.8
12	.88	133	43	195	64	755	60	130	15	87	1400	3.6
13	.96	86	45	156	78	710	50	114	13	40	182	3.4
14	1.4	61	60	299	72	777	43	912	13	30	139	3.2
15	3.1	49	142	299	81	630	34	1060	13	27	70	3.4
16	2.2	42	105	218	100	363	31	4290	12	26	39	3.6
17	6.4	41	77	256	90	288	28	830	12	23	25	4.4
18	7.8	45	4160	1950	107	203	29	374	10	20	17	3.8
19	7.1	38	4130	657	105	175	90	261	10	16	14	3.4
20	6.4	26	800	341	111	151	169	191	77	12	12	3.0
21	6.4	22	1330	299	103	138	118	150	48	9.1	10	3.0
22	7.1	20	542	216	100	128	85	118	70	7.1	9.1	2.8
23	5.0	236	299	208	90	112	65	101	35	5.8	8.1	9.6
24	4.4	197	237	188	90	101	57	97	24	4.8	6.9	6.5
25	3.6	130	222	1640	133	93	50	90	20	4.4	6.0	5.8
26	95	383	164	9730	188	1940	168	70	15	3.8	5.6	5.0
27	246	162	112	3690	339	1360	285	55	15	3.6	5.4	4.8
28	62	115	93	446	124	410	145	51	81	4.4	5.4	4.0
29	34	105	94	288	---	261	105	54	53	4.2	5.4	3.8
30	26	172	72	208	---	195	86	48	26	4.2	28	3.2
31	16	---	91	185	---	159	---	95	---	15	324	---
TOTAL	554.46	3845.0	15459	27693	3074	11676	2710	11909	1008	1868.4	2725.4	222.4
MEAN	17.9	128	499	893	110	377	90.3	384	33.6	60.3	87.9	7.41
MAX	246	550	4160	9730	339	1940	285	4290	162	482	1400	61
MIN	.88	9.0	43	46	64	78	28	46	10	3.6	5.4	2.8
CFSM	.12	.83	3.22	5.76	.71	2.43	.58	2.48	.22	.39	.57	.05
IN.	.13	.92	3.71	6.65	.74	2.80	.65	2.86	.24	.45	.65	.05

CAL YR 1977 TOTAL 30187.76 MEAN 82.7 MAX 4160 MIN .88 CFSM .53 IN 7.25
WTR YR 1978 TOTAL 82744.66 MEAN 227 MAX 9730 MIN .88 CFSM 1.47 IN 19.86

POTOMAC RIVER BASIN

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 (1.8 km) upstream from South Run.

DRAINAGE AREA.--50.5 mi² (130.8 km²).

PERIOD OF RECORD.--July 1950 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 284.58 ft (86.740 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Jan. 25-26, which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--28 years, 51.0 ft³/s (1.444 m³/s), 13.71 in/yr (348 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft³/s (476 m³/s) June 21, 1972, gage height, 13.92 ft (4.243 m), from rating curve extended above 3,200 ft³/s (91 m³/s) on basis of slope-area measurements at gage heights 13.08 ft (3.987 m) and 13.92 ft (4.243 m); minimum, 0.20 ft³/s (0.006 m³/s) Oct. 10, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft³/s (23 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1100	975 27.6	5.06 1.542	May 14	0030	925 26.2	4.93 1.503
Jan. 9	---	Unknown	Unknown	May 15	2400	850 24.1	4.80 1.463
Jan. 26	---	*Unknown	Unknown	Aug. 12	0400	2140 60.6	7.12 2.170

Minimum discharge, 2.3 ft³/s (0.065 m³/s) Oct. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	7.4	190	51	88	57	90	36	39	12	52	16
2	3.0	7.7	104	47	77	47	80	33	31	12	17	13
3	3.4	11	73	38	71	50	75	30	30	92	10	12
4	3.2	164	58	32	56	46	74	60	32	54	11	11
5	3.0	65	70	32	52	40	69	99	27	36	14	10
6	2.7	41	94	33	48	43	63	72	24	58	11	9.1
7	2.6	178	60	37	45	47	63	62	24	53	12	8.7
8	2.7	246	46	84	45	44	57	62	42	47	16	8.3
9	4.0	82	45	1200	44	44	51	97	40	29	12	8.0
10	5.8	98	37	240	41	93	50	74	25	10	64	8.0
11	3.7	170	32	124	41	179	50	56	21	10	79	8.0
12	3.2	70	29	102	41	258	50	47	19	8.7	579	8.7
13	3.0	51	31	109	41	263	46	122	26	7.3	127	28
14	2.9	41	33	124	40	282	41	490	21	13	97	13
15	3.0	36	49	88	41	266	39	304	17	16	69	11
16	3.2	32	38	72	40	199	37	675	16	12	57	10
17	4.5	31	33	99	41	167	37	311	15	11	33	14
18	3.8	28	598	246	44	134	38	193	16	9.6	19	11
19	3.2	24	446	134	44	122	71	146	15	8.3	18	10
20	3.5	22	230	106	41	115	106	115	16	7.6	16	8.7
21	3.7	21	313	88	43	107	72	95	19	7.3	14	8.7
22	3.2	23	189	75	40	100	58	80	36	6.9	13	9.1
23	2.9	49	131	64	34	90	51	71	18	6.5	13	10
24	2.9	44	113	63	47	83	46	68	14	5.8	12	10
25	3.0	36	102	300	75	85	41	62	13	8.0	12	10
26	72	73	77	2100	99	277	69	51	12	8.0	11	9.1
27	74	46	62	398	82	271	62	46	18	7.3	11	8.3
28	23	39	53	185	69	169	50	44	24	6.5	12	8.3
29	13	46	47	138	---	133	43	44	15	5.8	18	8.0
30	10	75	47	115	---	111	39	40	13	12	12	7.3
31	8.0	---	50	113	---	100	---	40	---	50	25	---
TOTAL	283.0	1857.1	3480	6637	1470	4022	1718	3725	678	630.6	1466	315.3
MEAN	9.13	61.9	112	214	52.5	130	57.3	120	22.6	20.3	47.3	10.5
MAX	74	246	598	2100	99	282	106	675	42	92	579	28
MIN	2.6	7.4	29	32	34	40	37	30	12	5.8	10	7.3
CFSM	.18	1.23	2.22	4.24	1.04	2.57	1.14	2.38	.45	.40	.94	.21
IN.	.21	1.37	2.56	4.89	1.08	2.96	1.27	2.74	.50	.46	1.08	.23

CAL YR 1977 TOTAL 11680.8 MEAN 32.0 MAX 598 MIN 1.4 CFSM .63 IN 8.60
WTR YR 1978 TOTAL 26282.0 MEAN 72.0 MAX 2100 MIN 2.6 CFSM 1.43 IN 19.36

POTOMAC RIVER BASIN

63

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 (15 m) downstream from bridge on State Highway 619, 0.2 mi (0.3 km) upstream from Dawkins Branch, 1.9 mi (3.1 km) downstream from Rocky Branch, and 2.3 mi (3.7 km) northwest of Bristow.

DRAINAGE AREA.--89.6 mi² (232.1 km²).

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

GAGE.--Water-stage recorder. Altitude of gage is 185 ft (56.4 m), from topographic map.

REMARKS.--Records fair. Town of Manassas diverts about 3.0 ft³/s (0.085 m³/s) daily from municipal water-supply reservoir 6.0 mi (9.7 km) upstream. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,800 ft³/s (221 m³/s) Oct. 9, 1976, gage height, 16.11 ft (4.910 m), from rating curve extended above 4,100 ft³/s (120 m³/s); minimum, 0.90 ft³/s (0.025 m³/s) Sept. 30, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 900 ft³/s (25 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1530	1500 42.5	7.44 2.268	May 14	1430	908 25.7	5.72 1.743
Jan. 9	1100	2790 79.0	10.43 3.179	May 16	1530	1740 49.3	7.98 2.432
Jan. 26	1430	*3700 105	12.05 3.673	Aug. 12	0830	938 26.6	5.75 1.753

Minimum discharge, 0.92 ft³/s (0.026 m³/s) Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	64	360	37	112	90	106	53	43	37	25	27
2	2.1	57	191	36	101	81	96	47	42	35	35	9.0
3	2.1	62	110	32	92	76	81	42	41	91	25	4.1
4	2.0	143	77	29	81	72	78	88	40	110	23	2.9
5	2.1	147	90	28	76	63	79	212	43	66	21	2.6
6	3.0	183	130	29	71	62	67	154	39	55	18	2.6
7	2.7	311	84	30	69	66	68	110	37	52	16	2.9
8	2.1	524	51	160	67	66	66	94	34	51	15	2.9
9	2.7	225	50	2200	66	68	54	200	60	55	16	3.2
10	3.0	139	44	500	62	190	52	210	50	42	50	3.2
11	3.3	244	35	115	60	298	53	118	40	34	100	3.2
12	3.2	160	32	67	60	420	48	86	32	27	614	3.5
13	2.8	98	32	62	62	474	39	88	30	9.0	251	5.7
14	2.5	63	35	96	64	500	49	1000	34	3.2	208	2.6
15	2.6	52	44	83	66	487	41	520	26	4.0	120	1.8
16	2.8	47	44	55	68	329	40	1300	21	5.0	87	1.5
17	3.2	48	41	111	67	256	38	580	19	9.0	61	1.5
18	2.9	44	1100	460	72	186	39	355	19	9.0	40	1.8
19	2.6	38	800	230	73	152	75	225	22	7.0	32	1.2
20	2.8	34	420	137	70	129	149	156	30	6.0	34	3.2
21	3.0	31	500	86	72	112	114	123	32	5.0	32	2.4
22	2.7	33	250	59	75	106	82	90	43	5.0	20	2.4
23	2.5	54	152	48	63	94	61	72	43	4.8	11	2.4
24	2.3	70	112	43	68	86	58	68	35	4.5	7.9	2.1
25	50	70	94	702	89	84	51	68	29	4.2	6.8	2.1
26	90	72	70	3200	136	590	82	60	28	4.1	5.2	2.1
27	181	72	47	1180	127	660	108	53	28	4.0	4.6	2.1
28	126	72	39	381	105	319	86	51	43	5.0	3.8	2.1
29	94	70	35	228	---	200	63	49	48	4.5	4.6	2.1
30	70	120	34	182	---	149	58	47	50	4.5	4.6	1.5
31	70	---	36	140	---	120	---	45	---	15	13	---
TOTAL	744.0	3347	5139	10746	2194	6585	2081	6364	1081	767.8	1904.5	107.7
MEAN	24.0	112	166	347	78.4	212	69.4	205	36.0	24.8	61.4	3.59
MAX	181	524	1100	3200	136	660	149	1300	60	110	614	27
MIN	2.0	31	32	28	60	62	38	42	19	3.2	3.8	1.2
CFSM	.27	1.25	1.85	3.87	.88	2.37	.78	2.29	.40	.28	.69	.04
IN.	.31	1.39	2.13	4.46	.91	2.73	.86	2.64	.45	.32	.79	.04

CAL YR 1977	TOTAL	17133.5	MEAN	46.9	MAX	1100	MIN	1.1	CFSM	.52	IN	7.11
WTR YR 1978	TOTAL	41061.0	MEAN	112	MAX	3200	MIN	1.2	CFSM	1.25	IN	17.05

POTOMAC RIVER BASIN

01656700 OCCOQUAN RIVER NEAR MANASSAS, VA

LOCATION.--Lat 38°42'19", long 77°26'46", Prince William County, Hydrologic Unit 02070010, on right bank 200 ft (61 m) downstream from bridge on State Highway 234 at Lake Jackson, 3.3 mi (5.3 km) southeast of Manassas, and 3.7 mi (6.0 km) upstream from Bull Run.

DRAINAGE AREA.--343 mi² (888 km²).

PERIOD OF RECORD.--April 1968 to current year. Prior to October 1970, published as Occoquan Creek near Manassas.

REVISED RECORDS.--WDR VA-76-1: 1972-75.

GAGE.--Water-stage recorder. Datum of gage is 119.53 ft (36.433 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Jan. 25-28, which are fair. Some diurnal fluctuation caused by Lake Jackson Dam 650 ft (198 m) upstream from station. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--10 years, 418 ft³/s (11.84 m³/s), 16.55 in/yr (420 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,600 ft³/s (1,630 m³/s) June 22, 1972, gage height, 40.31 ft (12.286 m), from floodmarks; minimum, 0.02 ft³/s (<0.001 m³/s) Oct. 11, 1976, result of impounding at dam 650 ft (198 m) above gage.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,500 ft³/s (160 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 19	0630	9490 269	15.07 4.593	Mar. 26	Unknown	5870 166	10.98 3.347
Jan. 9	2330	7240 205	12.55 3.825	May 16	2000	7240 205	12.60 3.840
Jan. 26	Unknown	*15200 430	a20.84 6.352				

a From floodmarks.

Minimum daily discharge, 1.4 ft³/s (0.040 m³/s) Oct. 5-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	34	1860	217	312	200	337	154	258	71	76	148
2	2.4	30	931	208	301	212	293	125	154	48	91	71
3	2.2	29	466	171	248	202	245	104	95	291	65	39
4	1.6	248	323	133	225	196	229	176	79	552	54	27
5	1.4	320	327	128	180	169	280	1580	72	232	43	20
6	1.4	208	875	126	170	159	172	775	61	123	37	17
7	1.4	504	438	147	150	192	119	483	54	91	30	15
8	1.8	1590	250	310	150	196	158	349	50	79	23	13
9	11	630	200	5600	154	200	137	986	52	149	26	12
10	11	320	192	1370	147	843	118	900	67	125	37	11
11	6.4	640	131	535	135	2270	116	466	58	716	264	11
12	4.7	403	112	406	120	1870	120	307	48	178	2730	11
13	3.9	238	109	380	150	2110	98	247	51	75	697	18
14	11	161	123	600	140	1870	90	1980	51	45	448	12
15	20	131	215	730	150	1870	84	2300	43	36	325	11
16	14	114	223	441	170	1080	76	6700	36	34	178	9.5
17	9.3	112	173	513	170	800	70	3420	32	34	116	8.4
18	6.4	112	5320	3670	195	580	71	1180	29	33	69	7.6
19	7.3	100	8140	1860	200	466	127	730	32	30	45	6.8
20	6.4	83	2640	875	210	400	364	521	58	24	34	6.8
21	5.2	73	2720	730	200	350	340	377	88	18	31	7.2
22	5.2	73	1630	483	190	326	221	282	98	14	27	6.8
23	5.2	307	825	387	170	212	161	221	90	12	20	13
24	5.2	424	600	345	170	245	135	193	64	10	15	12
25	5.2	275	521	2120	245	227	123	186	50	10	12	11
26	93	725	410	11900	445	3010	179	161	42	9.5	16	9.5
27	403	406	273	9070	290	3950	612	130	43	8.4	12	9.0
28	169	250	208	1000	230	1180	355	116	63	10	10	9.0
29	83	219	175	752	---	730	216	113	120	9.5	9.0	8.0
30	58	356	175	521	---	540	178	108	163	9.5	34	7.6
31	42	---	190	403	---	279	---	100	---	20	502	---
TOTAL	1000.0	9115	30775	46131	5617	26934	5824	25470	2201	3096.9	6076.0	568.2
MEAN	32.3	304	993	1488	201	869	194	822	73.4	99.9	196	18.9
MAX	403	1590	8140	11900	445	3950	612	6700	258	716	2730	148
MIN	1.4	29	109	126	120	159	70	100	29	8.4	9.0	6.8
CFSM	.09	.89	2.90	4.34	.59	2.53	.57	2.40	.21	.29	.57	.06
IN.	.11	.99	3.34	5.00	.61	2.92	.63	2.76	.24	.34	.66	.06

CAL YR 1977 TOTAL 69549.2 MEAN 191 MAX 8140 MIN 1.4 CFSM .56 IN 7.54
WTR YR 1978 TOTAL 162808.1 MEAN 446 MAX 11900 MIN 1.4 CFSM 1.30 IN 17.66

LOCATION.--Lat 38°53'21", long 77°34'14", Prince William County, Hydrologic Unit 02070010, on right bank 20 ft (6 m) downstream from bridge on State Highway 705, 0.7 mi (1.1 km) downstream from Chestnut Lick, 2.5 mi (4.0 km) north of Catharpin, and 6.7 mi (10.8 km) northeast of Gainesville.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,400 ft³/s (1,120 m³/s) June 22, 1972, gage height, 18.92 ft (5.767 m), from floodmarks, from rating curve extended above 3,000 ft³/s (85 m³/s) on basis of slope-area measurement of peak flow; no flow Sept. 8 to Oct. 10, 1970, July 5-9, 1977.

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Dec. 18	1130	1200	34.0	5.64	1.719	May 16	1500	995	28.2	5.30	1.615
Jan. 9	---	Unknown		Unknown		Aug. 1	0200	1170	33.1	5.58	1.701
Jan. 26	0700	*2140	60.6	7.09	2.161	Aug. 11	2200	2000	56.6	6.93	2.112

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.11	4.5	206	16	31	25	28	10	7.8	3.3	198	8.0
2	.11	4.8	51	15	28	20	24	8.7	6.2	3.0	10	5.5
3	.10	7.2	31	12	25	21	22	8.2	6.6	65	5.6	4.8
4	.08	196	23	9.8	21	18	22	27	7.8	20	4.9	4.2
5	.07	28	47	10	20	16	19	80	5.6	8.7	5.6	3.8
6	.06	30	42	11	20	16	17	27	4.6	4.9	3.6	3.2
7	.05	258	20	12	19	18	17	20	4.6	3.6	4.3	2.5
8	.04	208	17	74	19	16	15	21	11	3.1	13	2.3
9	.08	42	15	660	18	16	13	42	11	4.3	13	2.0
10	.20	88	14	64	16	80	13	27	5.9	3.1	57	1.7
11	.62	91	13	36	15	123	14	18	4.3	2.5	398	2.0
12	.20	28	12	22	15	131	13	15	3.6	1.8	328	2.1
13	.14	19	12	22	15	144	11	77	4.9	1.5	206	8.7
14	.14	16	14	57	15	156	9.2	218	3.4	1.5	72	4.2
15	1.8	14	20	31	15	110	8.7	119	3.1	2.2	31	3.2
16	4.5	13	14	20	15	81	8.2	442	3.4	2.8	21	3.0
17	11	14	13	70	16	82	8.2	146	3.0	2.8	16	3.5
18	5.2	12	612	230	19	50	9.2	83	3.3	1.9	11	3.2
19	4.2	9.8	416	64	18	41	29	55	3.0	1.3	9.9	2.3
20	3.1	9.0	130	60	17	33	74	38	2.5	1.1	8.4	1.7
21	2.3	9.4	296	42	14	31	27	28	2.6	1.0	6.7	1.5
22	2.6	11	95	24	13	30	19	23	5.6	.94	6.0	1.7
23	1.8	38	53	18	16	25	15	21	3.1	.89	5.5	2.3
24	1.8	21	42	18	24	22	13	21	2.3	.78	5.2	2.6
25	1.6	18	37	476	65	24	11	19	2.0	.84	5.0	2.8
26	48	72	24	1130	63	311	27	15	1.9	1.0	5.5	2.3
27	41	21	18	156	43	150	21	13	2.6	1.0	5.2	1.5
28	13	18	16	80	30	70	15	13	4.3	.78	5.5	1.2
29	7.6	44	14	60	---	49	12	13	3.0	.67	5.8	1.1
30	6.2	64	15	41	---	36	10	10	12	9.1	4.8	1.1
31	4.2	---	17	35	---	31	---	9.2	---	39	25	---
TOTAL	161.90	1408.7	2349	3575.8	645	1976	544.5	1667.1	145.0	194.40	1496.5	90.0
MEAN	5.22	47.0	75.8	115	23.0	63.7	18.2	53.8	4.83	6.27	48.3	3.00
MAX	48	258	612	1130	65	311	74	442	12	65	398	8.7
MIN	.04	4.5	12	9.8	13	16	8.2	1.9	.67	.36	1.1	1.1
CFSM	.20	1.82	2.94	4.46	.89	2.47	.71	2.09	.19	.24	1.87	.12
IN.	.23	2.03	3.39	5.16	.93	2.85	.79	2.40	.21	.28	2.16	.12

CAL YR 1977	TOTAL	6611.80	MEAN	18.1	MAX	612	MIN	.00	CFSM	.70	IN	9.53
WTR YR 1978	TOTAL	14253.90	MEAN	39.1	MAX	1130	MIN	.04	CFSM	1.52	IN	20.55

POTOMAC RIVER BASIN

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 (6 m) downstream from bridge on State Highway 658, 0.6 mi (1.0 km) downstream from Big Rocky Run, 1.2 mi (1.9 km) southeast of Bull Run, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--49.9 mi² (129.2 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 151.54 ft (46.189 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--6 years, 61.0 ft³/s (1.728 m³/s), 16.60 in/yr (422 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,980 ft³/s (254 m³/s) Sept. 26, 1975, gage height, 15.63 ft (4.764 m), from rating curve extended above 4,100 ft³/s (120 m³/s); minimum, 0.50 ft³/s (0.014 m³/s) Sept. 12, 29, 30, 1978, gage height, 1.52 ft (0.463 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of 28.64 ft (8.729 m), from floodmarks, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1630	4130 117	12.74 3.883	Jan. 26	1330	*4910 139	13.34 4.066
Jan. 9	1300	2080 58.9	10.46 3.188	Mar. 26	2230	1940 54.9	10.28 3.133

Minimum discharge, 0.50 ft³/s (0.014 m³/s) Sept. 12, 29, 30, gage height, 1.52 ft (0.463 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	11	382	39	46	36	44	15	8.6	6.5	32	6.8
2	3.0	11	102	38	39	29	39	14	8.3	6.5	15	3.1
3	2.8	11	58	35	38	28	34	13	8.3	119	6.8	2.3
4	2.5	282	38	30	32	27	32	44	8.3	82	5.4	1.7
5	2.7	62	48	28	29	24	30	166	7.3	26	6.8	1.3
6	2.8	35	101	28	27	23	27	64	6.5	14	5.4	1.0
7	3.0	177	42	30	28	24	27	40	6.2	10	17	1.1
8	2.8	245	24	75	25	23	25	34	6.5	8.6	69	1.0
9	7.6	71	23	1170	24	23	23	116	8.6	8.6	22	.80
10	5.6	53	22	152	23	64	21	82	7.6	16	48	.80
11	4.0	208	18	103	21	222	19	41	6.2	16	20	.80
12	3.2	52	18	59	20	268	18	28	5.6	6.5	127	.60
13	3.0	27	18	57	21	268	18	27	9.3	4.4	39	6.4
14	6.2	21	19	106	21	342	17	317	6.2	3.5	39	4.0
15	17	19	40	106	21	270	16	290	5.1	3.3	20	2.3
16	12	18	34	80	23	137	16	842	4.8	3.5	12	1.6
17	18	18	23	104	23	132	15	345	5.4	3.5	6.2	2.1
18	13	18	2240	526	28	83	16	112	5.4	3.1	4.2	2.1
19	9.3	16	1110	205	29	64	44	69	4.6	2.6	3.5	1.3
20	7.5	15	268	128	29	56	105	48	4.4	2.3	2.7	1.0
21	6.4	15	548	102	28	51	50	37	5.6	2.0	2.3	.80
22	6.4	16	192	82	26	46	30	29	12	1.9	2.1	.70
23	6.1	87	108	74	24	39	23	24	5.6	1.7	1.7	.70
24	5.8	66	87	68	24	34	19	24	4.6	1.4	1.6	.80
25	6.1	37	79	567	44	31	17	23	3.8	2.6	1.6	.80
26	103	148	64	3200	74	934	26	19	3.3	2.3	1.7	.90
27	161	57	50	533	63	609	32	16	50	1.9	1.6	.80
28	42	31	43	135	46	143	23	14	23	1.7	1.6	.80
29	17	48	38	84	---	85	18	14	14	1.7	1.4	.60
30	13	118	36	62	---	62	17	13	9.6	16	1.6	.60
31	12	---	38	53	---	50	---	10	---	40	17	---
TOTAL	507.5	1993	5911	8059	876	4227	841	2930	264.7	419.1	535.2	49.60
MEAN	16.4	66.4	191	260	31.3	136	28.0	94.5	8.82	13.5	17.3	1.65
MAX	161	282	2240	3200	74	934	105	842	50	119	127	6.8
MIN	2.5	11	18	28	20	23	15	10	3.3	1.4	1.4	.60
CFSM	.33	1.33	3.83	5.21	.63	2.73	.56	1.89	.18	.27	.35	.03
IN.	.38	1.49	4.41	6.01	.65	3.15	.63	2.18	.20	.31	.40	.04

CAL YR 1977	TOTAL	13220.30	MEAN	36.2	MAX	2240	MIN	2.3	CFSM	.73	IN	9.86
WTR YR 1978	TOTAL	26613.10	MEAN	72.9	MAX	3200	MIN	.60	CFSM	1.46	IN	19.84

POTOMAC RIVER BASIN

67

01657000 BULL RUN NEAR MANASSAS, VA

LOCATION.--Lat 38°47'50", long 77°27'28", Fairfax County, Hydrologic Unit 02070010, on left bank at upstream side of bridge on State Highway 616, 0.5 mi (0.8 km) downstream from Cub Run, and 3.2 mi (5.1 km) north of Manassas.

DRAINAGE AREA.--148 mi² (383 km²).

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 138.76 ft (42.294 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 14, 1967, at downstream side of former highway bridge at same datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--28 years, 156 ft³/s (4.418 m³/s), 14.31 in/yr (363 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,100 ft³/s (2,160 m³/s) June 22, 1972, gage height, 37.80 ft (11.521 m), from floodmarks, from rating curve extended above 10,600 ft³/s (300 m³/s) on basis of contracted-opening measurement at gage height 19.27 ft (5.873 m) and slope-area measurement of peak flow; minimum, 0.10 ft³/s (0.003 m³/s) many days in September 1954, and Oct. 14, 1954; minimum gage height, 0.96 ft (0.293 m) July 15, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (110 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	2130	7920 224	15.14 4.615	Jan. 26	1800	*10400 295	17.24 5.255
Jan. 9	1630	6600 187	14.01 4.270	Mar. 26	2330	4140 117	11.63 3.545

Minimum discharge, 1.3 ft³/s (0.037 m³/s) Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	20	1300	105	156	119	151	48	38	28	277	38
2	5.6	17	388	100	130	98	129	45	29	14	78	17
3	5.8	20	210	80	123	96	111	40	25	285	29	12
4	5.6	998	150	70	108	98	108	103	25	211	36	8.5
5	5.4	166	192	68	104	83	102	541	25	77	22	7.5
6	5.8	129	368	70	94	81	86	214	19	40	18	6.6
7	6.1	899	162	80	89	96	84	144	17	24	18	5.9
8	5.8	1090	102	140	85	86	78	125	18	45	125	5.1
9	24	260	95	4400	78	86	66	395	42	22	70	4.0
10	14	180	80	600	75	334	63	292	31	20	128	3.6
11	7.8	540	81	260	72	785	60	148	18	38	96	4.7
12	6.7	190	64	195	69	882	60	113	15	18	1980	6.4
13	5.8	120	55	148	74	898	56	111	29	17	286	19
14	20	90	62	341	70	1010	50	1140	17	14	395	19
15	42	74	108	295	72	911	45	977	14	12	119	9.5
16	23	65	96	188	80	462	41	2540	11	12	77	8.5
17	36	64	74	304	75	445	40	1610	12	13	50	5.9
18	37	62	4470	1690	96	270	44	430	13	13	31	5.9
19	20	51	4620	655	96	208	134	255	14	12	21	4.0
20	13	44	902	331	90	179	345	177	12	11	17	3.6
21	9.2	42	1750	278	88	161	171	138	22	11	12	3.2
22	8.4	48	640	195	85	156	116	109	25	9.8	10	3.0
23	7.1	237	340	162	83	134	85	92	20	8.6	8.5	3.6
24	6.4	207	280	162	91	121	74	90	13	9.4	8.0	3.2
25	5.8	131	240	1600	154	116	62	87	9.8	12	7.5	3.6
26	241	502	190	8100	255	2030	108	70	8.0	11	7.5	2.8
27	500	197	130	2600	202	1970	135	56	70	11	5.5	2.8
28	139	124	110	500	148	498	93	52	47	9.8	6.2	2.8
29	58	151	92	350	---	288	69	50	42	7.6	7.5	1.5
30	34	405	92	230	---	205	55	46	60	19	24	2.4
31	24	---	100	170	---	171	---	41	---	150	64	---
TOTAL	1327.9	7123	17543	24467	2942	13077	2821	10279	740.8	1185.2	4033.7	223.6
MEAN	42.8	237	566	789	105	422	94.0	332	24.7	38.2	130	7.45
MAX	500	1090	4620	8100	255	2030	345	2540	70	285	1980	38
MIN	5.4	17	55	68	69	81	40	40	8.0	7.6	5.5	1.5
CFSM	.29	1.60	3.82	5.33	.71	2.85	.64	2.24	.17	.26	.88	.05
IN.	.33	1.79	4.41	6.15	.74	3.29	.71	2.58	.19	.30	1.01	.06

CAL YR 1977 TOTAL 41123.1 MEAN 113 MAX 4620 MIN 3.8 CFSM .76 IN 10.34
WTR YR 1978 TOTAL 85763.2 MEAN 235 MAX 8100 MIN 1.5 CFSM 1.59 IN 21.56

POTOMAC RIVER BASIN

01657415 BULL RUN NEAR CLIFTON, VA

LOCATION (REVISED).--Lat 38°45'59", long 77°24'52", Fairfax County, Hydrologic Unit 02070010, on left bank 0.6 mi (1.0 km) downstream from Popes Head Creek, 1.6 mi (2.6 km) upstream from Buckhall Branch, and 1.8 mi (2.9 km) southwest of Clifton.

DRAINAGE AREA.--185 mi² (479 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 120.24 ft (36.649 m) National Geodetic Vertical Datum of 1929. September 1972 to June 1978, at site 500 ft (152 m) upstream at datum 3.59 ft (1.094 m) higher.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--6 years, 236 ft³/s (6.684 m³/s), 17.32 in/yr (440 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s (623 m³/s) Sept. 26, 1975, gage height, 19.52 ft (5.950 m), datum then in use, from rating curve extended above 400 ft³/s (11 m³/s) on basis of runoff comparison with upstream station near Manassas; minimum, 5.8 ft³/s (0.16 m³/s) Aug. 30, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1972 reached a stage of about 35 ft (10.7 m), discharge, about 80,000 ft³/s (2,300 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,200 ft³/s (120 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	---	Unknown	Unknown	Jan. 26	1930	*12200 346	14.44 4.401
Jan. 9	1830	6930 196	10.32 3.146	Mar. 26	1900	4290 121	7.90 2.408

Minimum discharge, 7.4 ft³/s (0.21 m³/s) Oct. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	31	1230	132	191	158	219	73	66	54	339	63
2	7.8	27	492	128	183	124	185	63	56	35	114	43
3	7.6	27	272	102	144	122	153	57	51	364	57	33
4	7.6	810	196	86	130	109	146	168	51	320	72	28
5	7.6	276	204	84	110	97	139	695	50	104	52	25
6	7.6	128	461	84	106	98	122	322	44	64	43	22
7	7.8	484	227	92	98	118	116	207	40	45	40	18
8	7.8	1100	137	178	97	107	110	170	42	66	134	16
9	26	337	122	4560	92	104	97	576	57	58	91	16
10	29	204	104	809	88	352	92	450	56	62	143	13
11	16	626	83	369	83	840	90	222	42	111	111	16
12	13	245	70	260	82	940	89	155	36	44	1640	16
13	12	148	72	222	90	968	84	137	56	36	337	39
14	15	110	79	520	90	1080	76	1140	41	32	514	33
15	62	92	130	476	89	995	70	1160	36	29	202	27
16	34	80	128	288	100	605	65	2800	30	28	119	22
17	42	74	97	373	97	560	63	1790	30	29	77	23
18	50	73	4770	1460	118	383	63	628	35	27	57	18
19	30	60	5600	840	124	292	175	398	31	25	45	18
20	23	51	940	740	114	251	420	279	32	21	39	15
21	17	49	1430	427	115	219	236	210	31	20	34	16
22	15	54	840	292	110	213	144	160	59	19	31	15
23	14	247	504	230	92	178	107	132	44	17	28	16
24	13	269	358	219	109	153	92	126	38	16	27	15
25	14	162	308	1640	183	141	80	126	32	22	27	15
26	231	536	239	10000	347	2150	124	100	34	21	27	14
27	504	263	162	4120	272	2110	183	84	135	19	24	12
28	165	162	141	695	199	718	120	79	109	20	25	12
29	77	158	116	438	---	438	92	77	53	17	25	10
30	49	420	116	305	---	319	80	72	104	19	27	9.3
31	38	---	122	257	---	257	---	66	---	200	125	---
TOTAL	1550.6	7303	19750	30426	3653	15199	3832	12722	1521	1944	4626	638.3
MEAN	50.0	243	637	981	130	490	128	410	50.7	62.7	149	21.3
MAX	504	1100	5600	10000	347	2150	420	2800	135	364	1640	63
MIN	7.6	27	70	84	82	97	63	57	30	16	24	9.3
CFSM	.27	1.31	3.44	5.30	.70	2.65	.69	2.22	.27	.34	.81	.12
IN.	.31	1.47	3.97	6.12	.73	3.06	.77	2.56	.31	.39	.93	.13
CAL YR 1977	TOTAL	49105.5	MEAN 135	MAX 5600	MIN 7.6	CFSM .73	IN 9.87					
WTR YR 1978	TOTAL	103164.9	MEAN 283	MAX 10000	MIN 7.6	CFSM 1.53	IN 20.74					

POTOMAC RIVER BASIN

69

01657655 HOOES RUN NEAR OCCOQUAN, VA

LOCATION.--Lat 38°40'48", long 77°17'25", Prince William County, Hydrologic Unit 02070010, on left bank 900 ft (274 m) upstream from bridge on State Highway 641, 0.9 mi (1.4 km) downstream from Lake Omiscol, and 1.6 mi (2.6 km) west of Occoquan.

DRAINAGE AREA.--3.97 mi² (10.28 km²).

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

GAGE.--Water-stage recorder. Altitude of gage is 125 ft (38.1 m), from topographic map.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,280 ft³/s (36.2 m³/s) Sept. 26, 1975, gage height, 8.18 ft (2.493 m), from rating curve extended above 70 ft³/s (2.0 m³/s) on basis of velocity-area study; minimum, 0.01 ft³/s (<0.001 m³/s) Sept. 11, 12, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.7 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1100	240 6.80	3.65 1.113	June 27	1900	293 8.30	3.98 1.213
Jan. 26	0430	*752 21.3	6.34 1.932	Aug. 11	1930	308 8.72	4.10 1.250
Mar. 26	1500	210 5.95	3.45 1.052	Aug. 30	2200	Unknown	Unknown
June 26	2100	727 20.6	6.21 1.893				

Minimum daily discharge, 0.02 ft³/s (<0.001 m³/s) Oct. 1-3, 5-6, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.62	11	4.7	3.9	3.1	7.8	2.9	2.4	2.2	2.4	3.5
2	.02	.46	5.6	4.1	3.9	2.7	6.4	2.7	1.7	2.2	2.2	1.4
3	.02	1.3	3.5	3.5	3.7	2.9	4.4	2.3	1.9	2.1	1.6	.40
4	.03	3.7	2.1	2.9	3.3	3.3	4.1	38	2.0	8.2	2.4	.48
5	.02	2.3	2.1	2.1	3.1	2.7	5.6	33	1.6	4.1	3.5	.48
6	.02	3.5	4.4	2.3	3.1	2.9	5.8	18	1.2	2.2	2.0	.48
7	.04	7.6	2.9	2.7	3.1	3.1	6.7	11	1.2	1.4	1.4	.40
8	.04	11	1.8	8.6	3.1	3.2	8.2	12	1.3	1.3	2.7	.40
9	1.3	3.3	1.7	48	3.1	4.1	6.4	46	1.3	1.2	2.2	.35
10	.06	2.9	1.6	14	2.9	19	3.3	15	1.2	1.2	1.0	.25
11	.04	2.1	1.4	6.4	2.7	20	2.5	7.0	1.0	.92	13	.20
12	.03	2.7	1.4	4.4	2.7	14	5.0	5.8	.80	.72	16	.40
13	.02	4.1	1.3	5.6	2.9	17	5.8	6.1	7.7	.48	44	.72
14	1.8	1.8	2.3	19	2.9	25	3.9	29	2.4	.48	12	.72
15	.71	1.2	3.3	12	2.9	16	2.7	35	1.7	.48	5.2	.64
16	.54	.93	2.0	6.7	2.9	7.0	3.3	102	1.2	.56	3.3	.64
17	.40	1.4	1.4	30	2.7	15	1.8	34	.92	.64	1.7	.56
18	.28	.80	86	39	2.9	13	4.1	15	1.0	.72	1.0	.40
19	.20	.93	34	17	3.1	12	4.7	8.2	1.7	.56	.92	.40
20	.16	.62	19	12	2.9	11	3.5	5.7	4.0	.48	.72	.35
21	.20	.62	23	8.6	3.1	23	4.7	4.9	4.1	1.9	.64	.40
22	.13	1.8	17	6.4	3.1	12	4.1	3.5	2.8	4.4	.56	.64
23	.10	7.0	12	5.0	2.9	14	3.5	3.5	1.9	.92	.48	.48
24	.10	5.0	9.4	4.7	2.9	12	2.9	6.9	1.3	.64	.40	.48
25	.08	4.4	9.0	62	2.9	12	2.5	4.9	1.0	.56	.40	.40
26	14	7.8	7.4	207	3.1	85	12	3.0	25	.35	.40	.40
27	9.4	3.3	5.8	38	3.1	50	9.4	2.5	27	.20	.48	.30
28	2.9	1.8	5.6	15	3.1	25	5.8	2.7	11	.40	.64	.25
29	1.3	1.4	5.3	8.6	---	17	3.9	2.7	4.7	.56	.48	.25
30	.71	4.0	5.3	5.8	---	11	3.1	2.4	3.5	1.0	11	.25
31	.62	---	5.6	5.1	---	9.0	---	2.5	---	3.4	13	---
TOTAL	35.29	90.38	294.2	611.2	86.0	467.0	147.9	468.2	120.52	65.37	147.72	17.02
MEAN	1.14	3.01	9.49	19.7	3.07	15.1	4.93	15.1	4.02	2.11	4.77	.57
MAX	14	11	86	207	3.9	85	12	102	27	21	44	3.5
MIN	.02	.46	1.3	2.1	2.7	2.7	1.8	2.3	.80	.20	.40	.20
CFSM	.29	.76	2.39	4.96	.77	3.80	1.24	3.80	1.01	.53	1.20	.14
IN.	.33	.85	2.76	5.73	.81	4.37	1.39	4.39	1.13	.61	1.38	.16

CAL YR 1977 TOTAL 840.53 MEAN 2.30 MAX 86 MIN .02 CFSM .58 IN 7.87
WTR YR 1978 TOTAL 2550.80 MEAN 6.99 MAX 207 MIN .02 CFSM 1.76 IN 23.90

POTOMAC RIVER BASIN

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 (5.5 km) south of Independent Hill, 5.6 mi (9.0 km) west of Dumfries, and 6.5 mi (10.5 km) upstream from mouth.

DRAINAGE AREA.--7.64 mi² (19.79 km²).

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 (72.811 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--27 years, 6.89 ft³/s (0.195 m³/s), 12.25 in/yr (311 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,940 ft³/s (112 m³/s) June 21, 1972, gage height, 11.35 ft (3.459 m); no flow at times in 1954, 1957, 1962-66.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 681 ft³/s (19.29 m³/s) at 0715 hours Jan. 26, gage height, 7.64 ft (2.329 m), no other peak above base of 200 ft³/s (5.7 m³/s); minimum, 0.06 ft³/s (0.002 m³/s) Sept. 8, 10, 11; minimum gage height, 1.92 ft (0.585 m) Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.82	38	5.6	11	5.2	11	4.7	4.5	1.8	3.1	1.1
2	.13	.91	9.3	4.8	9.4	4.4	9.6	4.2	2.8	1.2	1.5	.42
3	.08	1.2	5.5	3.6	8.5	5.0	8.6	4.0	2.3	1.3	.99	.27
4	.08	4.3	4.0	3.0	7.3	4.6	8.0	4.1	2.3	6.1	1.1	.19
5	.08	6.7	4.9	3.1	6.7	3.9	7.8	4.4	2.0	2.6	1.6	.12
6	.09	4.1	8.0	3.3	6.4	4.0	8.0	25	1.8	1.4	1.2	.08
7	.10	19	4.8	4.3	6.0	4.4	8.1	15	1.8	.90	1.0	.07
8	.10	49	3.1	13	5.2	4.7	7.0	14	2.0	1.1	1.4	.06
9	.51	7.8	2.9	68	4.7	4.7	6.3	45	2.1	2.1	.88	.07
10	.79	4.5	2.4	15	4.5	21	6.5	18	1.5	2.5	1.7	.06
11	.77	3.8	2.0	7.6	4.4	28	6.4	14	1.1	3.4	3.5	.06
12	.71	3.0	1.9	5.2	4.1	32	6.9	13	1.1	1.1	3.8	.13
13	.73	2.5	2.3	6.3	4.0	29	6.0	13	5.0	.70	2.5	.18
14	.87	2.3	3.3	20	4.2	35	5.2	40	2.3	.60	2.0	.25
15	.80	1.7	7.4	14	4.3	28	4.9	41	1.4	.70	1.1	.31
16	.49	1.7	4.3	8.4	4.2	19	4.8	98	1.2	.70	.94	.32
17	.56	2.4	3.3	19	4.8	16	4.8	41	1.2	1.1	.70	.40
18	.50	2.3	150	65	5.8	12	5.0	24	1.4	1.0	.56	.36
19	.45	1.8	104	23	6.4	11	12	19	1.2	.90	.50	.28
20	.39	1.6	23	18	5.4	10	17	15	1.7	.60	.67	.27
21	.40	1.6	40	12	5.4	9.8	11	12	1.1	.52	.54	.30
22	.55	2.7	16	9.0	5.6	11	8.2	8.7	1.7	.32	.35	.35
23	.43	17	8.8	7.7	4.4	8.5	6.0	7.0	1.2	.27	.31	.45
24	.46	9.8	6.8	7.1	4.6	7.7	5.0	5.8	.80	.45	.19	.45
25	.45	6.8	6.1	70	6.1	6.8	4.0	5.2	.52	.45	.22	.47
26	16	18	4.6	276	7.5	90	27	4.0	.45	.60	.27	.42
27	8.7	6.2	3.5	35	6.4	63	19	3.4	.90	.45	.26	.38
28	2.9	4.0	3.2	18	5.4	28	9.1	3.6	1.7	1.2	.30	.32
29	1.6	3.5	2.9	16	---	19	6.7	3.6	3.8	.70	.35	.29
30	1.1	6.1	3.1	15	---	15	5.5	3.0	12	.52	1.0	.28
31	.85	---	5.6	12	---	13	---	3.6	---	1.5	5.9	---
TOTAL	41.79	235.83	485.0	788.0	162.7	553.7	255.4	592.8	64.87	50.48	40.43	8.71
MEAN	1.35	7.86	15.6	25.4	5.81	17.9	8.51	19.1	2.16	1.63	1.30	.29
MAX	16	49	150	276	11	90	27	98	12	13	5.9	1.1
MIN	.08	.82	1.9	3.0	4.0	3.9	4.0	3.0	.45	.27	.19	.06
CFSM	.18	1.03	2.04	3.33	.76	2.34	1.11	2.50	.28	.21	.17	.04
IN.	.20	1.15	2.36	3.84	.79	2.70	1.24	2.89	.32	.25	.20	.04

CAL YR 1977 TOTAL 1410.12 MEAN 3.86 MAX 150 MIN .05 CFSM .51 IN 6.87
WTR YR 1978 TOTAL 3279.71 MEAN 8.99 MAX 276 MIN .06 CFSM 1.18 IN 15.97

POTOMAC RIVER BASIN

71

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 (1.8 km) northwest of Garrisonville, and 3.0 mi (4.8 km) upstream from Beaverdam Run.

DRAINAGE AREA.--34.9 mi² (90.4 km²).

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

GAGE.--Water-stage recorder. Altitude of gage is 120 ft (36.6 m), from topographic map.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--7 years, 42.7 ft³/s (1.209 m³/s), 16.62 in/yr (422 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft³/s (329 m³/s) June 22, 1972, gage height, 16.32 ft (4.974 m), from rating curve extended above 1,600 ft³/s (45 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 0.09 ft³/s (0.003 m³/s) Oct. 7, 8, 1977, gage height, 0.96 ft (0.293 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1000	995 28.2	4.65 1.417	May 4	2030	602 17.0	3.83 1.167
Jan. 26	0500	*1850 52.4	6.34 1.932	May 16	0430	580 16.4	3.82 1.164

Minimum discharge, 0.09 ft³/s (0.003 m³/s) Oct. 7, 8, gage height, 0.96 ft (0.293 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.39	7.5	122	29	43	23	41	31	23	13	64	14
2	.39	7.5	51	25	36	23	35	28	18	10	24	5.2
3	.32	9.5	31	21	34	24	32	25	16	37	14	3.3
4	.15	27	23	20	31	26	33	153	16	40	13	2.3
5	.15	23	24	19	33	25	33	238	15	21	15	1.9
6	.15	26	35	19	29	23	31	178	13	14	13	1.7
7	.11	67	27	25	33	24	30	82	12	10	9.7	1.5
8	.11	115	21	56	33	24	28	76	13	8.0	8.6	1.4
9	1.2	36	18	263	32	26	26	157	13	6.3	6.3	1.2
10	.24	24	16	73	33	96	27	78	11	7.4	6.3	1.1
11	.17	19	16	50	32	151	26	53	9.7	7.4	5.5	.90
12	.24	14	13	40	31	135	29	44	9.2	6.3	5.9	1.1
13	.24	11	11	34	30	119	28	42	12	5.5	38	2.0
14	2.4	10	15	88	31	162	24	117	13	5.2	11	2.5
15	3.4	9.5	33	72	31	139	22	167	9.7	5.5	5.5	2.2
16	3.1	8.5	25	51	29	74	21	425	8.0	6.3	5.2	2.0
17	1.9	10	20	104	30	59	21	146	7.4	6.9	4.4	2.0
18	1.6	15	554	262	32	45	21	81	7.4	6.3	3.3	2.0
19	1.6	12	369	109	34	38	42	60	6.9	5.5	2.5	1.7
20	1.2	11	111	79	33	33	54	48	34	5.2	2.2	1.4
21	1.0	9.5	134	64	29	31	39	38	16	4.4	2.0	1.4
22	.83	15	80	53	29	35	31	32	16	4.0	1.7	1.2
23	.83	76	49	50	29	32	25	30	13	3.6	1.7	1.2
24	.83	47	41	45	26	28	25	28	9.7	3.3	1.7	1.4
25	.75	36	35	262	27	26	23	28	8.0	4.4	1.5	1.5
26	79	67	30	1270	29	307	116	24	6.9	4.4	1.5	1.4
27	56	35	25	195	27	235	126	22	12	4.4	1.4	1.4
28	23	24	22	88	24	96	60	21	18	4.4	1.4	1.2
29	14	19	21	69	---	64	42	21	18	3.6	1.4	1.1
30	11	25	20	65	---	51	36	20	24	2.9	1.5	1.1
31	8.5	---	28	51	---	45	---	22	---	12	7.6	---
TOTAL	214.80	816.0	2020	3651	870	2219	1127	2515	408.9	278.2	280.8	64.30
MEAN	6.93	27.2	65.2	118	31.1	71.6	37.6	91.1	13.6	8.97	9.06	2.14
MAX	79	115	554	1270	43	307	126	425	34	40	64	14
MIN	.11	7.5	11	19	24	23	21	20	6.9	2.9	1.4	.90
CFSM	.20	.78	1.87	3.38	.89	2.05	1.08	2.32	.39	.26	.26	.06
IN.	.23	.87	2.15	3.89	.93	2.37	1.20	2.68	.44	.30	.30	.07

CAL YR 1977 TOTAL 6545.12 MEAN 17.9 MAX 554 MIN .11 CFSM .51 IN 6.98
WTR YR 1978 TOTAL 14465.00 MEAN 39.6 MAX 1270 MIN .11 CFSM 1.14 IN 15.42

GREAT WICOMICO RIVER BASIN

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 (4 m) upstream from bridge on State Highway 601, 2.2 mi (3.5 km) northwest of Howland, 3.0 mi (4.8 km) southwest of Heathsville, and 3.5 mi (5.6 km) upstream from mouth.

DRAINAGE AREA.--6.82 mi² (17.66 km²).

PERIOD OF RECORD.--October 1963 to March 1969, October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 23.78 ft (7.248 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 19, 1969, 52 ft (16 m) downstream at datum 0.74 ft (0.226 m) lower.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--14 years (water years 1964-68, 1970-78), 7.42 ft³/s (0.210 m³/s), 14.77 in/yr (375 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 327 ft³/s (9.26 m³/s) Oct. 3, 1976, Mar. 10, 1978, from rating curve extended above 110 ft³/s (3.1 m³/s); maximum gage height, 6.56 ft (1.999 m) Oct. 3, 1976; 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 (1.868 m), present datum, from floodmarks, discharge, about 450 ft³/s (13 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	1430	105 2.97	5.20 1.585	Mar. 10	2100	*327 9.26	6.53 1.990
Jan. 14	0130	104 2.95	5.19 1.582	Mar. 26	1400	128 3.26	5.35 1.631
Jan. 18	0200	125 3.54	5.38 1.640	Apr. 27	0500	160 4.53	5.62 1.713
Jan. 20	1030	111 3.14	5.26 1.603	May 5	0200	120 3.40	5.28 1.609

Minimum daily discharge, 0.41 ft³/s (0.012 m³/s) Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.53	5.7	5.6	10	12	7.3	20	16	11	2.9	19	10
2	.56	6.3	4.5	8.1	12	7.5	18	16	8.1	3.5	25	3.7
3	.44	7.6	4.1	6.8	13	8.0	18	15	9.5	4.2	8.3	2.8
4	.41	10	3.8	6.3	13	8.0	18	32	14	4.1	5.8	3.1
5	.47	6.9	6.3	6.2	13	7.8	17	56	8.1	3.4	4.9	2.3
6	.50	26	5.7	8.4	12	7.8	16	23	6.8	3.0	4.5	1.9
7	.59	40	4.5	12	11	7.3	16	19	7.0	2.6	4.0	1.7
8	.65	7.0	3.8	12	10	9.0	15	21	8.1	2.4	3.2	1.6
9	3.6	4.9	4.4	54	9.5	11	14	40	9.2	2.2	2.7	1.6
10	2.4	4.3	4.1	16	9.0	124	14	22	6.5	2.0	2.4	1.5
11	1.6	3.8	3.6	11	9.0	103	14	18	5.3	4.6	2.2	1.5
12	1.4	3.3	3.5	9.2	8.4	36	15	16	4.8	2.9	2.4	1.5
13	2.0	3.2	3.8	30	8.2	27	13	15	5.3	2.3	2.5	1.5
14	7.4	3.2	7.4	57	13	24	12	23	4.9	4.8	3.4	1.5
15	5.2	3.1	18	20	11	22	11	20	4.3	5.8	2.7	1.5
16	2.3	3.2	6.8	14	11	20	10	22	4.0	14	2.3	1.6
17	2.2	3.3	5.6	34	11	21	10	19	4.1	8.1	1.8	1.4
18	1.7	3.2	49	60	12	18	11	15	4.3	4.8	1.6	1.3
19	1.6	3.2	50	19	11	17	17	13	4.0	3.7	1.4	1.3
20	1.4	3.2	16	83	9.4	16	29	12	9.7	3.1	1.2	1.5
21	1.3	3.2	34	30	9.2	16	14	11	13	2.7	1.2	1.3
22	1.3	4.0	16	19	8.8	16	13	9.7	15	2.3	1.2	1.8
23	1.3	6.9	11	16	8.7	15	12	9.5	7.8	2.1	1.2	3.8
24	1.3	5.3	9.2	15	8.1	15	11	11	5.6	1.9	1.1	2.0
25	1.3	4.3	11	28	8.0	14	11	11	4.9	7.0	1.1	1.6
26	33	5.2	8.1	45	7.6	90	35	9.3	4.5	4.8	1.4	1.4
27	32	4.2	6.8	18	7.1	94	88	9.5	5.0	3.0	1.4	1.3
28	6.4	4.1	6.4	15	6.9	32	25	10	4.8	3.7	1.2	1.3
29	5.7	3.9	5.7	14	---	25	20	10	3.4	2.7	1.1	1.2
30	6.1	3.9	7.8	13	---	22	18	9.3	3.2	2.2	1.6	1.2
31	5.7	---	20	13	---	21	---	11	---	5.4	8.5	---
TOTAL	132.35	196.4	346.5	703.0	282.9	861.7	555	544.3	206.2	122.2	122.3	61.7
MEAN	4.27	6.55	11.2	22.7	10.1	27.8	18.5	17.6	6.87	3.94	3.95	2.06
MAX	33	40	50	83	13	124	88	56	15	14	25	10
MIN	.41	3.1	3.5	6.2	6.9	7.3	10	9.3	3.2	1.9	1.1	1.2
CFSM	.63	.96	1.64	3.33	1.48	4.08	2.71	2.58	1.01	.58	.58	.30
IN.	.72	1.07	1.89	3.83	1.54	4.70	3.03	2.97	1.12	.67	.67	.34

CAL YR 1977 TOTAL 1891.19 MEAN 5.18 MAX 50 MIN .06 CFSM .76 IN 10.31
WTR YR 1978 TOTAL 4134.55 MEAN 11.3 MAX 124 MIN .41 CFSM 1.66 IN 22.55

RAPPAHANNOCK RIVER BASIN

73

01661900 CARTER RUN NEAR MARSHALL, VA

LOCATION.--Lat 38°47'57", long 77°52'09", Fauquier County, Hydrologic Unit 02080103, on left bank 50 ft (15 m) upstream from farm road, 1.2 mi (1.9 km) downstream from Horner Run, 4.7 mi (7.6 km) south of Marshall, 6.7 mi (10.8 km) southwest of The Plains, and 9 mi (14 km) upstream from mouth.

DRAINAGE AREA.--19.5 mi² (50.5 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 390 ft (119 m), from topographic map.

REMARKS.--Records good except those for periods of no gage-height record, Nov. 19 to Jan. 25 and Mar. 1 to May 3, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,100 ft³/s (201 m³/s) Oct. 9, 1976, gage height, 10.4 ft (3.17 m), from floodmarks, from rating curve extended above 190 ft³/s (5.4 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.48 ft³/s (0.014 m³/s) Aug. 11, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.7 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 11	0145	212 6.00	4.38 1.335	Mar. 14	---	Unknown	Unknown
Dec. 18	---	Unknown	Unknown	Mar. 26	---	Unknown	Unknown
Jan. 10	---	Unknown	Unknown	May 13	2300	631 17.9	5.62 1.713
Jan. 26	0545	*1610 45.6	7.01 2.137	May 16	0415	280 7.93	4.66 1.420

Minimum daily discharge, 1.0 ft³/s (0.028 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	4.7	90	20	40	23	35	15	16	6.0	16	3.4
2	1.4	5.7	42	16	30	20	32	16	15	8.3	8.2	2.5
3	1.4	9.1	27	14	30	19	30	14	15	52	7.0	2.2
4	1.3	50	17	16	25	18	29	24	16	27	8.1	2.0
5	1.0	24	20	17	22	16	27	38	14	14	8.2	1.8
6	1.1	23	25	18	20	17	25	29	12	9.5	6.2	1.6
7	1.1	57	21	19	19	18	25	24	13	8.3	12	1.4
8	1.3	81	18	30	18	18	22	24	15	7.6	7.1	1.3
9	4.7	30	16	400	16	18	20	29	16	8.7	6.2	1.3
10	3.6	41	14	150	15	20	20	24	12	7.6	41	1.2
11	2.2	100	13	80	15	60	20	21	9.9	8.3	46	1.2
12	1.7	33	11	40	14	100	20	19	9.5	6.3	50	1.4
13	1.5	21	12	25	14	110	18	86	16	5.7	21	6.6
14	1.6	16	14	30	14	150	16	242	11	6.0	13	2.5
15	1.9	14	19	35	13	120	15	83	9.5	9.1	10	2.3
16	3.6	12	16	30	13	90	15	199	9.1	7.3	8.6	1.8
17	6.0	12	13	35	13	60	15	107	9.1	8.0	7.2	6.3
18	4.7	11	250	50	14	50	15	69	8.7	6.0	6.0	2.7
19	3.8	9.5	160	35	14	45	26	55	8.7	4.9	5.8	2.0
20	3.2	8.6	100	40	13	42	40	43	10	4.6	5.1	1.7
21	2.9	8.1	90	35	14	38	28	35	12	4.1	4.5	1.7
22	2.7	9.0	70	35	15	34	23	29	18	4.1	4.2	2.0
23	2.5	25	35	40	15	32	20	27	9.5	3.9	4.1	2.9
24	2.5	21	35	50	21	30	18	27	8.0	3.7	4.0	2.3
25	3.8	17	32	480	34	34	16	25	7.3	4.9	3.8	2.3
26	14	28	30	960	38	200	26	21	6.9	5.1	4.1	1.8
27	26	18	28	200	30	129	23	20	15	4.5	5.0	1.6
28	11	16	24	90	26	86	19	20	12	4.0	6.8	1.5
29	7.1	18	23	65	---	57	16	21	7.6	3.5	8.2	1.4
30	5.7	30	22	60	---	43	15	19	6.3	8.5	4.6	1.3
31	5.0	---	20	45	---	41	---	17	---	26	3.4	---
TOTAL	131.7	752.7	1307	3160	565	1738	669	1422	348.1	287.5	345.4	66.0
MEAN	4.25	25.1	42.2	102	20.2	56.1	22.3	45.9	11.6	9.27	11.1	2.20
MAX	26	100	250	960	40	200	40	242	18	52	50	6.6
MIN	1.0	4.7	11	14	13	16	15	14	6.3	3.5	3.4	1.2
CFSM	.22	1.29	2.16	5.23	1.04	2.88	1.14	2.35	.60	.48	.57	.11
IN.	.25	1.44	2.49	6.03	1.08	3.32	1.28	2.71	.66	.55	.66	.13

CAL YR 1977 TOTAL 4941.02 MEAN 13.5 MAX 250 MIN .48
WTR YR 1978 TOTAL 10792.40 MEAN 29.6 MAX 960 MIN 1.0

CFSM .69 IN 9.43
CFSM 1.52 IN 20.59

RAPPAHANNOCK RIVER BASIN

01661900 CARTER RUN NEAR MARSHALL, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to May 1978 (discontinued).

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: January 1977 to May 1978 (discontinued).

EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 900 mg/L May 14, 1978; minimum daily mean, 2 mg/L Apr. 1, 15, 1977.

SEDIMENT LOADS: Maximum daily, 730 tons (662 tonnes) Jan. 26, 1978; minimum daily, 0.02 ton (0.02 tonne) on several days during July and August 1977.

EXTREMES FOR PERIOD OCTOBER 1977 TO MAY 1978.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 900 mg/L May 14; minimum daily mean, 3 mg/L Dec. 26-28.

SEDIMENT LOADS: Maximum daily, 730 tons (662 tonnes) Jan. 26; minimum daily, 0.03 ton (0.03 tonne) Oct. 5.

SUSPENDED SEDIMENT, OCTOBER 1977 TO MAY 1978

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	24	.09	14	.18	70	25	9	.49	14	1.5	33	2.0
2	18	.07	13	.20	40	5.0	16	.69	15	1.2	42	2.3
3	13	.05	16	.39	30	2.7	15	.57	16	1.3	75	3.8
4	12	.04	75	11	20	1.5	11	.48	17	1.1	79	3.8
5	12	.03	32	2.1	25	1.4	24	1.1	18	1.1	73	3.2
6	16	.05	24	1.5	30	4.0	27	1.3	19	1.0	70	3.2
7	19	.06	49	8.1	25	1.4	13	.67	21	1.1	70	3.4
8	20	.07	78	20	6	.29	18	1.5	22	1.1	68	3.3
9	40	.51	31	2.5	6	.26	100	125	23	.99	69	3.4
10	30	.29	45	9.8	4	.15	43	17	24	.97	68	3.7
11	26	.15	81	28	4	.14	25	5.4	25	1.0	80	13
12	24	.11	33	2.9	4	.12	12	1.3	26	.98	100	27
13	22	.09	25	1.4	10	.32	31	2.1	27	1.0	127	38
14	20	.09	18	.78	15	.57	47	3.8	28	1.1	146	59
15	17	.09	14	.53	30	1.5	20	1.9	29	1.0	68	22
16	25	.24	14	.45	31	1.3	18	1.5	30	1.1	36	8.7
17	35	2.8	13	.42	11	.39	100	9.5	43	1.5	35	5.7
18	13	.16	13	.39	92	75	140	19	52	2.0	31	4.2
19	12	.12	12	.31	50	40	70	6.6	38	1.4	45	5.5
20	12	.10	11	.26	40	15	90	9.7	35	1.2	53	6.0
21	9	.07	11	.24	35	8.0	40	3.8	35	1.3	53	5.4
22	9	.07	11	.27	14	2.6	35	3.3	35	1.4	50	4.6
23	8	.05	30	5.7	5	.47	30	3.2	35	1.4	25	2.2
24	6	.04	20	2.2	6	.57	85	11	35	2.0	24	1.9
25	11	.11	15	.75	5	.43	114	170	41	3.8	120	11
26	25	1.1	30	6.2	3	.24	251	730	53	5.4	300	162
27	48	3.6	13	.63	3	.23	78	48	43	3.5	80	28
28	22	.65	11	.48	3	.19	34	8.3	33	2.3	45	10
29	15	.29	12	.58	23	1.4	13	2.3	---	---	38	5.8
30	11	.17	40	6.5	15	.89	10	1.6	---	---	32	3.7
31	12	.16	---	---	10	.54	12	1.5	---	---	24	2.7
TOTAL	---	11.52	---	114.76	---	191.60	---	1192.60	---	44.74	---	458.5

RAPPAHANNOCK RIVER BASIN

75

01661900 CARTER RUN NEAR MARSHALL, VA--Continued

SUSPENDED SEDIMENT, OCTOBER 1977 TO MAY 1978

DAY	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN- TRATION (MG/L)	LOADS (T/DAY)
APRIL			MAY	
1	24	2.3	10	.41
2	26	2.2	11	.48
3	25	2.0	9	.34
4	22	1.7	11	.71
5	17	1.2	20	2.1
6	13	.88	30	2.3
7	8	.54	31	2.0
8	10	.59	30	1.9
9	11	.59	30	2.3
10	10	.54	30	1.9
11	13	.70	30	1.7
12	14	.76	30	1.5
13	14	.68	148	124
14	14	.60	900	588
15	14	.57	312	70
16	14	.57	340	210
17	13	.53	40	12
18	30	1.2	30	5.6
19	20	1.4	25	3.7
20	30	3.2	25	2.9
21	17	1.3	25	2.4
22	13	.81	25	2.0
23	9	.49	25	1.8
24	8	.39	25	1.8
25	8	.35	25	1.7
26	14	.98	24	1.4
27	9	.56	24	1.3
28	8	.41	24	1.3
29	8	.35	23	1.3
30	9	.36	21	1.1
31	---	---	20	.92
TOTAL	---	28.75	---	1050.86
TOTAL LOAD FOR YEAR:		3093.33	TONS.	

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 (20 m) downstream from westbound bridge on U.S. Highway 211, 0.9 mi (1.4 km) downstream from Carter Run, 6.2 mi (10.0 km) southwest of Warrenton, 15 mi (24 km) upstream from Hazel River, and at mile 53.0 (85.3 km).

DRAINAGE AREA.--195 mi² (505 km²).

PERIOD OF RECORD.--August 1942 to current year.

REVISED RECORDS.--WSP 1302: 1944(M). WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 312.57 ft (95.271 m) National Geodetic Vertical Datum of 1929. Oct. 8, 1942, to Dec. 17, 1944, nonrecording gage 50 ft (20 m) upstream at present datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--36 years, 193 ft³/s (5.466 m³/s), 13.44 in/yr (341 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,000 ft³/s (906 m³/s) Oct. 15, 1942, gage height, 23.5 ft (7.16 m), from floodmark, from rating curve extended above 24,000 ft³/s (680 m³/s); minimum daily, 0.70 ft³/s (0.020 m³/s) Oct. 4, 5, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s (51 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0730	1920 54.4	7.59 2.313	May 14	0500	2940 83.3	9.78 2.981
Jan. 9	0730	3400 96.3	10.69 3.258	May 16	0700	2240 63.4	8.30 2.530
Jan. 26	1330	*6480 184	15.81 4.819				

Minimum daily, 10 ft³/s (0.28 m³/s) Oct. 6, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	51	531	178	340	215	414	155	172	59	98	34
2	13	52	387	167	330	185	364	145	152	63	71	29
3	13	82	290	140	285	196	330	138	145	352	59	25
4	12	323	239	120	260	182	318	174	159	297	49	22
5	11	358	242	140	240	169	303	364	136	143	80	20
6	10	504	332	138	220	169	268	259	125	101	55	18
7	10	766	231	140	190	182	265	223	123	82	82	17
8	11	1230	188	209	225	169	244	220	140	103	74	15
9	19	540	181	2140	205	169	229	271	150	125	55	14
10	33	455	145	653	195	303	218	229	117	84	180	13
11	25	924	130	422	183	565	223	198	103	89	190	13
12	17	434	120	388	180	783	223	180	96	66	481	14
13	14	310	125	347	185	932	212	330	119	55	150	35
14	12	250	141	341	180	1120	182	1840	109	53	101	33
15	23	213	177	285	175	1210	174	1030	89	63	82	23
16	31	186	147	243	170	928	174	1900	85	63	68	22
17	88	172	132	279	168	726	174	1240	84	63	58	20
18	59	149	982	492	185	565	177	857	85	53	48	20
19	38	130	965	337	180	484	232	680	117	46	42	18
20	30	119	609	292	150	457	284	537	105	40	38	16
21	25	113	636	290	153	421	226	438	92	37	31	15
22	22	114	517	251	148	407	193	361	209	35	28	20
23	22	179	393	222	137	377	172	324	111	33	27	34
24	19	170	339	236	160	342	167	315	82	30	27	30
25	19	139	316	1010	232	339	159	294	74	42	25	26
26	118	193	262	5020	339	867	235	250	69	47	27	23
27	385	158	207	1640	253	1150	259	223	101	41	27	21
28	157	140	190	801	238	809	201	218	121	36	33	18
29	97	150	160	602	---	636	174	209	87	30	36	17
30	72	228	180	481	---	526	164	198	66	27	29	17
31	57	---	183	385	---	454	---	182	---	87	47	---
TOTAL	1475	8832	9677	18389	5906	16037	6958	13982	3423	2445	2398	642
MEAN	47.6	294	312	593	211	517	232	451	114	78.9	77.4	21.4
MAX	385	1230	982	5020	340	1210	414	1900	209	352	481	35
MIN	10	51	120	120	107	169	159	138	66	27	25	13
CFSM	.24	1.51	1.60	3.04	1.08	2.65	1.19	2.31	.59	.41	.40	.11
IN.	.28	1.68	1.85	3.51	1.13	3.06	1.33	2.67	.65	.47	.46	.12

CAL YR 1977 TOTAL 47692.9 MEAN 131 MAX 2240 MIN 3.6 CFSM .67 IN 9.10
WTR YR 1978 TOTAL 90164.0 MEAN 247 MAX 5020 MIN 10 CFSM 1.27 IN 17.20

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 (1.3 km) upstream from mouth, and 1.0 mi (1.6 km) northeast of Laurel Mills.

DRAINAGE AREA.--27.6 mi² (71.5 km²).

PERIOD OF RECORD.--April 1958 to current year.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-72: 1971. WDR VA-74: 1972.

GAGE.--Water-stage recorder. Datum of gage is 374.62 ft (114.184 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Jan. 5 to Mar. 15, which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--20 years, 25.4 ft³/s (0.719 m³/s), 12.50 in/yr (318 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,120 ft³/s (258 m³/s) Oct. 9, 1976, gage height, 13.90 ft (4.237 m), from floodmark, from rating curve extended above 2,500 ft³/s (71 m³/s) on basis of velocity-area study; no flow many days in September 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 310 ft³/s (8.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0130	670 19.0	6.18 1.884	Jan. 26	Unknown	*2760 78.2	10.62 3.237
Nov. 10	2100	485 13.7	5.53 1.686	Mar. 11	Unknown	322 9.12	4.85 1.478
Dec. 18	0400	472 13.4	5.52 1.682	May 14	2330	790 22.4	6.62 2.018
Jan. 9	---	Unknown	Unknown	May 17	0500	537 15.2	5.74 1.750

Minimum discharge, 1.7 ft³/s (0.048 m³/s) Oct. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	8.8	84	27	80	40	49	21	23	8.5	9.6	6.0
2	3.2	12	47	25	45	35	43	20	21	12	9.6	4.7
3	2.4	17	37	23	42	33	40	19	21	55	7.4	4.7
4	1.7	36	31	22	40	32	39	18	21	22	7.8	4.3
5	1.7	60	43	20	37	32	36	35	19	16	20	3.9
6	2.0	72	41	21	35	35	33	33	18	13	10	3.8
7	2.2	128	31	23	32	37	33	27	18	11	19	3.6
8	2.7	181	28	80	32	35	30	26	20	15	13	3.2
9	6.5	59	27	350	32	35	28	30	18	12	14	3.0
10	4.2	106	24	200	32	150	27	30	16	9.6	14	2.7
11	3.2	93	21	100	31	180	27	25	15	8.8	14	2.7
12	3.0	50	21	45	31	150	25	23	14	7.4	22	3.6
13	2.8	37	20	40	31	130	24	22	17	7.1	13	11
14	3.0	31	22	52	32	140	23	78	13	10	13	4.7
15	4.4	27	23	52	32	140	22	225	13	9.2	10	4.3
16	4.6	24	20	43	32	104	22	176	13	9.9	9.2	4.5
17	7.5	22	20	60	32	80	22	355	12	8.8	7.4	5.5
18	4.8	19	228	130	32	61	21	191	12	7.1	6.6	3.9
19	7.5	18	116	90	32	54	28	124	16	6.3	6.3	3.6
20	6.8	16	84	70	32	47	27	94	14	6.0	5.2	3.4
21	6.5	16	90	60	32	45	23	72	16	5.5	4.7	3.6
22	6.5	16	71	45	31	40	22	58	18	5.2	4.5	3.9
23	6.5	22	58	40	31	38	20	47	12	5.0	4.7	5.2
24	6.5	18	50	35	35	36	20	41	11	6.0	4.5	4.1
25	6.5	18	47	220	54	39	19	35	10	8.0	5.5	3.9
26	47	22	38	540	56	134	26	30	9.9	16	6.0	3.6
27	29	18	36	400	50	134	37	28	11	7.1	5.0	3.2
28	16	18	32	300	45	95	26	27	13	6.3	6.9	3.2
29	12	21	32	200	---	76	24	26	9.2	5.0	6.3	2.8
30	11	25	28	150	---	60	22	25	9.6	5.2	6.2	2.8
31	9.1	---	28	130	---	54	---	25	---	16	10	---
TOTAL	233.2	1210.8	1478	3593	1058	2301	838	1986	453.7	340.0	295.4	123.4
MEAN	7.52	40.4	47.7	116	37.8	74.2	27.9	64.1	15.1	11.0	9.53	4.11
MAX	47	181	228	540	80	180	49	355	23	55	22	11
MIN	1.7	8.8	20	20	31	32	19	18	9.2	5.0	4.5	2.7
CFSM	.27	1.46	1.73	4.20	1.37	2.69	1.01	2.32	.55	.40	.35	.15
IN.	.31	1.63	1.99	4.84	1.43	3.10	1.13	2.68	.61	.46	.40	.17

CAL YR 1977 TOTAL 6966.91 MEAN 19.1 MAX 440 MIN .60 CFSM .69 IN 9.39
WTR YR 1978 TOTAL 13910.50 MEAN 38.1 MAX 540 MIN 1.7 CFSM 1.38 IN 18.75

RAPPAHANNOCK RIVER BASIN

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 (0.6 km) upstream from Waterford Run, 1.1 mi (1.8 km) northeast of Rixeyville, 2.8 mi (4.5 km) downstream from Thornton River, and 9.1 mi (14.6 km) upstream from mouth.

DRAINAGE AREA.--287 mi² (743 km²).

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 (87.874 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Nov. 7 to Dec. 12, which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--36 years, 333 ft³/s (9.431 m³/s), 15.76 in/yr (400 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,000 ft³/s (1,700 m³/s) Oct. 15, 1942, gage height, 31.8 ft (9.69 m), from rating curve extended above 27,000 ft³/s (760 m³/s); minimum, 1.1 ft³/s (0.031 m³/s) Sept. 10-13, 1966, gage height, 1.69 ft (0.515 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 26, 1937, reached a stage of 28.4 ft (8.66 m), from floodmarks, discharge, 43,500 ft³/s (1,230 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (71 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	Unknown	5440 154	13.61 4.148	Mar. 14	2400	2590 73.3	8.89 2.710
Dec. 18	1030	3260 92.3	10.10 3.078	Mar. 26	1930	2830 80.1	9.33 2.844
Jan. 9	0700	6730 191	14.97 4.563	May 14	0530	6780 192	15.01 4.575
Jan. 26	1400	*14900 422	19.62 5.980				

Minimum discharge, 15 ft³/s (0.42 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	110	920	347	630	347	774	382	324	147	295	133
2	21	123	815	325	570	308	667	356	273	155	185	96
3	22	261	700	265	500	326	590	329	257	748	153	83
4	19	873	530	225	465	302	553	382	283	612	129	77
5	16	1280	515	275	440	265	517	777	248	318	218	70
6	16	1980	720	260	400	289	460	583	228	228	179	65
7	17	2870	570	265	360	305	444	509	220	180	258	61
8	19	3500	460	380	400	292	403	513	236	159	261	57
9	39	2000	400	4050	385	291	377	579	247	165	180	52
10	73	980	360	1400	365	923	369	487	207	129	330	48
11	51	1500	290	940	350	1100	362	429	187	129	241	45
12	37	980	215	777	335	1100	352	400	176	103	664	47
13	29	730	260	680	345	1300	330	566	202	93	322	155
14	26	570	297	670	320	1570	312	4280	189	114	294	95
15	28	470	379	597	313	1990	298	2320	161	238	238	75
16	33	420	314	489	310	1560	289	2720	158	132	197	69
17	72	370	287	527	300	1190	290	2130	154	127	164	92
18	94	330	1920	849	308	932	287	1570	172	103	137	79
19	61	285	1370	615	303	801	412	1320	203	91	122	65
20	49	255	969	533	265	768	403	1030	341	83	111	56
21	41	235	997	522	280	720	349	855	206	76	98	55
22	37	240	865	436	270	723	315	712	297	83	91	61
23	36	340	699	392	250	685	292	627	214	72	86	151
24	35	390	619	404	290	634	288	583	162	64	82	87
25	34	325	583	1840	377	618	279	516	146	190	82	75
26	179	390	503	9940	491	1570	539	439	136	281	111	68
27	627	365	390	2860	411	2160	755	395	286	135	91	60
28	269	315	360	1600	372	1590	533	386	287	104	87	59
29	186	290	310	1160	---	1230	450	368	209	87	96	55
30	146	390	345	911	---	1000	413	336	165	78	81	51
31	124	---	369	720	---	863	---	324	---	179	194	---
TOTAL	2456	23167	18331	35254	10405	27752	12702	27203	6574	5403	5777	2242
MEAN	79.2	772	591	1137	372	895	423	878	219	174	186	74.7
MAX	627	3500	1920	9940	630	2160	774	4280	341	748	664	155
MIN	16	110	215	225	250	265	279	324	136	64	81	45
CFSM	.28	2.69	2.06	3.96	1.30	3.12	1.47	3.06	.76	.61	.65	.26
IN.	.32	3.00	2.38	4.57	1.35	3.60	1.65	3.53	.85	.70	.75	.29

CAL YR 1977 TOTAL 82765.4 MEAN 227 MAX 3500 MIN 8.3 CFSM .79 IN 10.73
WTR YR 1978 TOTAL 177266.0 MEAN 486 MAX 9940 MIN 16 CFSM 1.69 IN 22.98

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 (20 m) upstream from bridge on U.S. Highway 29 at Remington, 0.3 mi (0.5 km) upstream from Tinpot Run, 0.4 mi (0.6 km) downstream from Ruffans Run, 2.5 mi (4.0 km) downstream from Hazel River, and at mile 35.2 (56.6 km).

DRAINAGE AREA.--620 mi² (1,606 km²).

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 (76.971 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 21, 1951, nonrecording gage at bridge 80 ft (20 m) downstream at same datum.

REMARKS.--Records good. Gage-height telemeter at station.

AVERAGE DISCHARGE.--36 years, 664 ft³/s (18.80 m³/s), 14.54 in/yr (369 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 90,000 ft³/s (2,550 m³/s) Oct. 16, 1942, gage height, 30.0 ft (9.14 m), from floodmarks, from rating curve extended above 43,000 ft³/s (1,200 m³/s) on basis of slope-area determination of peak flow; minimum, 2.8 ft³/s (0.079 m³/s) Sept. 13, 1966, gage height, 2.31 ft (0.704 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood since at least 1828, that of Oct. 16, 1942.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	1145	7310 207	12.37 3.770	Jan. 27	0045	*21800 617	18.52 5.645
Dec. 18	1600	6960 197	12.05 3.673	May 14	1230	9250 262	14.00 4.267
Jan. 9	1645	11000 312	15.02 4.578	May 16	1600	6620 187	11.72 3.572

Minimum discharge, 46 ft³/s (1.30 m³/s) Oct. 6, gage height, 2.83 ft (0.863 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	157	1650	625	1180	729	1310	612	633	295	471	272
2	56	149	1430	583	1150	659	1150	563	544	280	287	181
3	56	256	1050	504	1000	650	1030	528	499	878	231	148
4	54	1020	877	400	900	615	981	638	543	1400	187	134
5	48	1370	864	490	820	542	936	1390	488	644	262	122
6	46	2670	1250	470	800	566	850	1060	442	449	272	111
7	47	3700	916	470	670	630	822	880	421	350	276	104
8	47	5680	724	669	820	582	760	843	450	301	386	98
9	62	2710	662	9210	750	587	698	1040	503	440	260	91
10	97	1700	602	3360	690	1750	674	907	429	308	464	84
11	93	3370	470	1680	660	2610	665	757	373	303	496	79
12	72	1660	500	1240	650	2570	650	682	351	243	1420	78
13	59	1160	480	1230	680	2850	605	777	377	201	729	182
14	53	926	491	1310	650	3250	572	7370	416	192	520	192
15	55	781	635	1140	628	4200	535	4190	334	350	440	137
16	60	675	558	915	636	3110	515	5990	322	252	355	116
17	84	613	476	1060	606	2290	507	4560	317	236	303	142
18	171	543	4270	2390	622	1690	504	3000	332	206	255	137
19	103	461	3920	1490	618	1410	700	2370	345	172	223	112
20	79	415	2160	1120	576	1320	817	1860	688	152	202	97
21	69	387	2310	1080	580	1230	700	1510	409	137	177	89
22	61	391	1890	850	580	1200	603	1270	568	134	158	93
23	59	582	1380	720	470	1140	548	1110	488	125	151	218
24	58	653	1180	740	590	1060	524	1060	348	112	143	166
25	55	521	1080	3120	800	1020	502	997	308	169	137	129
26	373	660	950	14700	1140	2650	778	871	291	388	186	114
27	1320	590	720	12400	932	4550	1270	770	405	212	168	101
28	585	492	660	3410	827	2970	876	737	560	154	152	91
29	336	469	580	2300	---	2160	729	705	448	128	183	85
30	235	646	660	1640	---	1700	662	667	319	111	164	79
31	186	---	649	1360	---	1440	---	632	---	213	285	---
TOTAL	4735	35407	36044	72676	21025	53730	22473	50346	12951	9535	9943	3782
MEAN	153	1180	1163	2344	751	1733	749	1624	432	308	321	126
MAX	1320	5680	4270	14700	1180	4550	1310	7370	688	1400	1420	272
MIN	46	149	470	400	470	542	502	528	291	111	137	78
CFSM	.25	1.90	1.88	3.78	1.21	2.80	1.21	2.62	.70	.50	.52	.20
IN.	.28	2.12	2.16	4.36	1.26	3.22	1.35	3.02	.78	.57	.60	.23

CAL YR 1977 TOTAL 154792 MEAN 424 MAX 5680 MIN 16 CFSM .68 IN 9.29
WTR YR 1978 TOTAL 332647 MEAN 911 MAX 14700 MIN 46 CFSM 1.47 IN 19.96

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 TEMPERATURES: May 1951 to September 1956, October 1965 to September 1976, October 1977 to September 1978.

SUSPENDED-SEDIMENT DISCHARGE: April 1951 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 150 micromhos Sept. 3, 1974; minimum daily, 24 micromhos July 6, 1975.

WATER TEMPERATURES: Maximum, 32.0°C July 3, 1966, June 30, 1969; minimum, 0.0°C on many days during winter periods.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,730 mg/L Mar. 12, 1963; minimum daily mean, 1 mg/L on many days during each year.

SEDIMENT LOADS: Maximum daily, 55,600 tons (50,400 tonnes) Sept. 26, 1975; minimum daily, 0.21 ton (0.19 tonne) Sept. 11, 12, 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 98 micromhos Oct. 26; minimum daily, 30 micromhos Jan. 26.

WATER TEMPERATURES: Maximum daily, 27.0°C July 19, Aug. 17, 24; minimum daily, 0.0°C on several days during winter period.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 889 mg/L Jan. 9; minimum daily mean, 1 mg/L on several days in January and September.

SEDIMENT LOADS: Maximum daily, 31,800 tons (28,800 tonnes) Jan. 26; minimum daily, 0.21 ton (0.19 tonne) Sept. 11, 12.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 15...	1900	56	80	4	26	0	7.6	1.7	4.0	3.0	36	4.7
NOV 15...	1630	761	75	10	23	7	6.0	1.9	3.4	1.7	19	7.7
DEC 15...	1700	696	69	10	21	7	5.6	1.8	3.5	1.5	17	7.0
JAN 15...	1700	1090	65	30	20	10	5.1	1.7	3.3	1.2	12	8.0
FEB 15...	1730	644	55	10	19	2	4.8	1.6	3.1	1.2	20	6.3
MAR 15...	2100	3430	50	20	17	7	4.4	1.5	2.4	1.5	12	7.6
APR 15...	1800	528	61	10	18	2	4.7	1.6	3.2	1.3	20	4.7
MAY 15...	1700	3660	60	35	19	8	4.8	1.7	2.7	1.1	14	7.8
JUN 15...	1900	324	63	10	21	0	5.4	1.8	3.5	1.4	25	3.8
JUL 15...	1600	348	63	10	22	2	5.9	1.8	3.1	2.1	25	4.1
AUG 15...	2030	397	70	10	25	6	6.8	2.0	3.7	2.1	23	4.3
SEP 15...	1700	130	73	10	27	5	7.2	2.2	4.0	2.5	27	3.6

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 15...	4.5	.1	8.8	55	53	.28	1.2	.00	.28	.01	.03	40
NOV 15...	3.7	.1	13	52	51	.80	3.5	.01	.81	.00	.00	70
DEC 15...	3.6	.1	13	49	48	.80	3.5	.00	.80	.00	.00	60
JAN 15...	2.5	.1	12	52	44	.82	3.6	.01	.83	.01	.03	50
FEB 15...	3.6	.1	13	51	48	.90	4.0	.00	.90	.00	.00	20
MAR 15...	2.5	.1	9.5	51	39	.86	3.8	.00	.86	.00	.00	60
APR 15...	3.0	.1	9.1	39	39	.23	1.0	.00	.23	.00	.00	0
MAY 15...	2.6	.1	11	52	42	.62	2.7	.01	.63	.01	.03	10
JUN 15...	4.0	.1	8.0	50	41	.07	.30	.00	.07	.01	.03	0
JUL 15...	3.5	.1	7.8	50	42	.23	1.0	.00	.23	.00	.00	20
AUG 15...	3.3	.1	13	56	49	.56	2.5	.00	.56	.00	.00	0
SEP 15...	4.1	.1	8.9	58	47	.33	1.5	.00	.33	.00	.00	

[illegible]

RAPPAHANNOCK RIVER BASIN

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	95	71	68	40	50	60	61	60	68	65	72
2	---	88	75	67	55	55	65	62	58	65	70	73
3	85	83	71	69	53	57	58	65	58	70	72	72
4	75	84	69	69	57	60	63	53	60	63	69	72
5	83	77	70	63	55	60	61	60	60	65	70	74
6	78	66	71	62	52	55	57	60	60	60	68	74
7	68	62	72	62	55	57	58	55	65	63	72	74
8	80	60	70	65	55	60	58	58	63	65	75	77
9	78	61	69	50	52	60	58	60	63	68	74	81
10	80	62	68	55	52	65	60	60	60	63	73	80
11	75	68	69	50	55	60	59	60	60	65	54	81
12	75	68	71	52	57	63	61	65	58	70	52	77
13	70	68	69	52	55	57	60	60	60	68	69	79
14	78	73	69	50	55	55	53	43	58	63	72	79
15	80	75	69	65	55	50	61	60	63	63	70	73
16	82	74	70	57	55	50	62	50	63	75	71	79
17	77	68	67	55	60	50	60	53	55	72	72	76
18	75	67	64	60	57	50	61	50	58	72	67	76
19	75	68	69	60	60	55	58	40	60	70	73	76
20	90	68	70	63	60	55	62	50	45	78	75	76
21	91	68	74	65	57	50	65	48	60	78	73	76
22	95	69	71	65	55	50	63	53	68	80	75	76
23	93	72	69	65	57	50	63	50	70	72	75	76
24	95	72	69	67	60	50	65	55	70	72	75	76
25	94	73	69	58	57	53	63	60	73	72	70	72
26	98	74	67	30	60	55	65	55	65	71	71	79
27	87	73	68	35	60	58	61	55	60	72	71	79
28	84	74	70	45	57	56	64	55	65	70	77	79
29	85	74	71	52	---	55	62	60	63	72	81	75
30	87	74	69	43	---	55	64	55	68	69	80	75
31	87	---	73	50	---	57	---	58	---	72	62	---
MEAN	83	72	70	57	56	55	61	56	62	69	71	76

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	12.0	7.0	3.0	.5	5.0	14.0	14.0	25.0	22.0	24.0	23.5
2	---	14.5	7.5	2.0	1.0	5.0	10.0	14.0	25.0	22.0	23.5	25.0
3	15.5	15.0	7.0	1.0	2.0	4.5	10.5	13.0	22.5	21.0	24.0	25.0
4	15.0	15.5	6.5	2.0	.5	4.5	11.0	10.0	23.0	21.5	23.0	25.0
5	14.5	16.0	6.0	3.0	.5	4.5	11.0	10.5	24.0	22.0	23.5	25.0
6	13.5	15.0	5.0	4.0	1.0	4.5	11.5	13.0	25.0	23.5	22.5	25.5
7	13.0	15.5	3.0	4.5	1.0	3.5	12.0	12.0	25.5	25.0	22.0	26.0
8	15.5	15.0	2.0	5.0	1.5	3.0	12.0	12.0	26.0	25.0	21.0	26.0
9	15.0	14.5	3.0	3.0	2.5	3.5	12.0	15.0	26.0	20.0	21.0	26.0
10	15.0	14.0	2.0	2.5	2.5	4.0	13.0	14.0	26.0	25.0	20.0	25.5
11	14.5	11.5	.0	1.0	1.5	4.5	15.0	13.0	20.0	20.0	21.0	25.0
12	15.0	9.5	.0	2.0	1.5	5.0	15.5	11.0	20.0	20.0	20.0	25.0
13	14.5	6.5	2.0	2.5	2.5	5.5	16.0	10.5	20.0	25.5	22.0	25.0
14	13.0	7.5	3.0	3.0	2.5	6.5	17.0	11.0	23.0	25.0	25.5	20.0
15	12.0	8.0	4.5	3.0	2.5	7.5	18.0	11.0	23.0	25.0	26.0	20.0
16	11.0	9.5	5.0	2.0	2.5	5.5	18.0	11.0	24.0	25.0	26.0	20.0
17	10.0	11.0	4.5	1.5	2.5	5.0	18.0	15.0	24.0	25.0	27.0	20.5
18	11.5	10.0	5.0	1.0	2.5	6.5	12.0	15.0	25.0	25.0	25.0	25.0
19	12.0	6.5	5.5	1.5	2.5	7.5	11.5	17.5	25.0	27.0	25.0	25.0
20	13.0	8.0	5.0	2.0	3.0	8.0	12.0	20.0	25.0	25.5	25.0	20.0
21	14.0	9.0	4.5	1.0	3.5	9.0	13.0	20.0	19.0	26.0	25.5	20.0
22	13.5	8.5	4.0	1.0	3.0	10.0	14.0	20.0	17.0	26.0	26.0	20.0
23	13.0	8.0	4.5	1.5	3.5	11.0	15.0	20.0	18.0	25.0	26.5	19.5
24	13.0	7.5	4.0	2.0	4.0	10.0	11.5	20.0	20.0	25.5	27.0	19.0
25	13.0	6.0	3.5	1.0	4.5	10.0	12.0	20.0	25.0	26.0	25.5	19.0
26	14.0	5.5	3.0	.0	5.0	6.0	15.5	20.0	25.0	25.5	25.0	19.0
27	14.5	4.0	2.5	2.5	4.5	7.0	16.0	20.5	25.5	25.0	25.0	19.5
28	15.0	4.5	1.5	3.0	4.5	10.0	15.0	23.0	26.0	25.0	25.0	20.0
29	15.0	4.0	1.0	3.5	---	9.0	14.0	23.5	26.0	24.5	22.5	20.0
30	14.0	4.5	1.5	.0	---	11.0	14.0	25.0	23.0	24.0	23.0	19.5
31	11.0	---	2.0	.5	---	13.0	---	25.0	---	24.0	23.0	---
MEAN	14.0	10.0	3.5	2.0	2.5	7.0	13.5	16.0	23.5	24.0	24.0	22.5

01664000 RAPPAHANNOCK RIVER AT REMINGTON, VA--Continued

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCENTRATION (MG/L) LOADS (T/DAY)		MEAN CONCENTRATION (MG/L) LOADS (T/DAY)		MEAN CONCENTRATION (MG/L) LOADS (T/DAY)		MEAN CONCENTRATION (MG/L) LOADS (T/DAY)		MEAN CONCENTRATION (MG/L) LOADS (T/DAY)		MEAN CONCENTRATION (MG/L) LOADS (T/DAY)	
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	9	1.4	11	4.7	167	744	9	15	44	140	23	45
2	10	1.5	12	4.8	74	286	4	6.3	37	115	17	30
3	8	1.2	18	12	28	79	2	2.7	31	84	22	39
4	7	1.0	208	573	14	33	1	1.1	19	46	15	25
5	5	.65	144	533	20	47	2	2.6	23	51	11	16
6	5	.62	390	2810	70	236	5	6.3	25	54	12	18
7	5	.63	350	3500	14	35	9	11	13	24	14	24
8	7	.89	508	7790	13	25	65	117	21	46	12	19
9	9	1.5	174	1270	12	21	889	21800	27	55	11	17
10	15	3.9	90	413	14	23	65	590	19	35	350	1650
11	20	5.0	450	4090	15	19	26	118	15	27	390	2750
12	15	2.9	74	332	9	12	20	67	19	33	435	3020
13	10	1.6	46	144	10	13	19	63	18	33	330	2540
14	8	1.1	23	58	9	12	16	57	15	26	240	2110
15	7	1.0	19	40	16	27	13	40	18	31	370	4200
16	9	1.5	19	35	13	20	14	35	17	29	165	1390
17	12	2.7	16	26	11	14	35	100	13	21	67	414
18	17	7.8	14	21	675	10300	95	613	14	24	44	201
19	12	3.3	9	11	340	3600	40	161	15	25	48	183
20	9	1.9	6	6.7	140	816	30	91	14	22	44	157
21	7	1.3	8	8.4	130	811	22	64	17	27	43	143
22	4	.66	10	11	77	393	17	39	17	27	45	146
23	5	.80	26	41	40	149	14	27	12	15	42	129
24	4	.63	29	51	31	99	14	28	12	19	58	166
25	5	.74	13	18	30	87	540	4550	33	71	82	226
26	135	136	22	39	12	31	800	31800	178	548	230	1650
27	250	891	18	29	5	9.7	380	12700	62	156	390	4790
28	80	126	9	12	3	5.3	180	1660	26	58	160	1280
29	20	18	8	10	3	4.7	115	714	---	---	73	426
30	13	8.2	17	30	7	12	86	381	---	---	38	174
31	14	7.0	---	---	11	19	62	228	---	---	39	152
TOTAL	---	1232.42	---	21923.6	---	17982.7	---	76088.0	---	1842	---	28130
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	37	131	6	9.9	27	46	14	11	35	45	2	1.5
2	43	134	15	23	21	31	18	14	22	17	1	.49
3	44	122	8	11	20	27	175	415	17	11	1	.40
4	28	74	20	34	15	22	185	699	10	5.0	1	.36
5	14	35	234	899	7	9.2	43	75	17	12	1	.33
6	15	34	98	280	5	6.0	22	27	18	13	1	.30
7	36	80	38	90	7	8.0	5	4.7	20	15	1	.28
8	23	47	10	23	6	7.3	2	1.6	37	39	1	.26
9	13	24	22	62	5	6.8	57	68	20	14	2	.49
10	11	20	20	49	2	2.3	26	22	45	56	1	.23
11	16	29	7	14	3	3.0	32	26	30	40	1	.21
12	11	19	15	28	6	5.7	22	14	230	882	1	.21
13	9	15	41	117	7	7.1	12	6.5	75	148	13	6.4
14	9	14	736	15700	6	6.7	10	5.2	48	67	7	3.6
15	8	12	240	2720	9	8.1	44	42	33	39	5	1.8
16	8	11	402	6820	13	11	15	10	22	21	3	.94
17	8	11	230	2830	12	10	14	8.9	13	11	1	.38
18	7	9.5	180	1460	14	13	9	5.0	10	6.9	1	.37
19	23	43	129	825	13	12	7	3.3	12	7.2	3	.91
20	20	44	76	382	176	327	5	2.1	8	4.4	2	.52
21	12	23	52	212	115	127	6	2.2	8	3.8	2	.48
22	6	9.8	56	192	137	210	8	2.9	7	3.0	6	1.5
23	8	12	49	147	43	57	7	2.4	7	2.9	36	21
24	10	14	44	126	10	9.4	7	2.1	3	1.2	20	9.0
25	9	12	40	108	13	11	10	4.6	5	1.8	11	3.8
26	25	53	36	85	21	16	19	20	7	3.5	8	2.5
27	36	123	28	58	44	48	7	4.0	4	1.8	7	1.9
28	7	17	18	36	26	39	7	2.9	3	1.2	9	2.2
29	3	5.9	19	36	23	28	8	2.8	7	3.5	12	2.8
30	2	3.6	21	38	17	15	6	1.8	4	1.8	9	1.9
31	---	---	19	32	---	---	20	12	9	6.9	---	---
TOTAL	---	1181.8	---	33446.9	---	1129.6	---	1518.0	---	1484.9	---	67.06

TOTAL LOAD FOR YEAR: 186026.98 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 (9 m) upstream from bridge on State Highway 641, 2.4 mi (3.9 km) upstream from Bond Branch, and 3.0 mi (4.8 km) west of Culpeper.

DRAINAGE AREA.--15.9 mi² (41.2 km²), of which 10.9 mi² (28.2 km²) 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 (118.707 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation since 1959 by two reservoirs, combined flood storage, 2,240 acre-ft (2.76 hm³); 531 acre-ft (0.655 hm³) additional storage used for low-water regulation for municipal supply for town of Culpeper. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--29 years, 16.1 ft³/s (0.456 m³/s), 13.75 in/yr (349 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,440 ft³/s (154 m³/s) Aug. 18, 1955, from rating curve extended above 910 ft³/s (26 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 11.20 ft (3.414 m) Dec. 4, 1950; minimum discharge, 0.09 ft³/s (0.003 m³/s) Sept. 30, Oct. 1, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft³/s (8.5 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0030	532 15.1	6.25 1.905	Aug. 11	2300	322 9.12	5.12 1.561
Jan. 26	0330	*595 16.9	6.48 1.975				

Minimum discharge, 1.4 ft³/s (0.040 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	5.7	52	16	20	20	19	14	9.4	7.2	30	19
2	2.1	7.1	27	16	20	17	17	12	8.9	8.9	16	11
3	2.0	18	19	14	18	17	15	11	8.6	42	12	8.0
4	1.8	35	16	12	17	16	15	35	8.9	29	17	6.7
5	1.6	42	25	12	16	14	15	55	7.7	16	18	5.9
6	1.6	44	29	12	16	15	14	35	7.2	11	13	5.3
7	1.8	77	19	13	15	17	14	26	7.2	8.9	13	4.7
8	2.1	99	14	51	15	16	13	28	8.0	10	15	4.6
9	4.6	33	14	216	15	16	12	32	8.6	13	9.4	4.4
10	3.8	35	12	90	15	92	12	24	7.2	9.4	8.3	4.0
11	2.8	36	11	32	14	109	12	19	6.3	12	29	4.0
12	2.8	19	10	20	14	89	12	16	6.3	7.5	96	8.9
13	2.6	14	10	20	14	76	11	54	8.3	6.1	33	15
14	2.9	12	13	33	15	80	11	112	6.9	11	18	7.7
15	3.5	10	20	30	15	68	10	52	6.3	12	13	6.5
16	3.8	10	15	22	15	43	10	65	5.9	9.4	11	6.3
17	4.7	10	14	34	15	32	10	39	6.3	8.3	9.1	8.0
18	3.6	9.6	162	78	15	25	11	28	7.2	6.7	8.0	6.5
19	3.3	8.4	101	44	15	23	20	29	6.3	5.9	7.2	5.5
20	3.5	8.4	49	35	15	20	18	22	7.7	5.3	6.7	4.9
21	4.2	8.4	57	26	15	20	15	18	7.7	9.9	5.9	4.9
22	4.0	10	41	20	15	18	13	15	9.7	15	5.5	28
23	4.2	20	29	18	14	17	11	14	7.7	8.3	5.3	36
24	4.6	18	24	17	17	16	11	14	6.3	8.0	5.3	13
25	4.9	15	23	129	34	18	11	13	5.5	30	5.5	9.7
26	38	18	20	326	38	85	44	11	5.9	25	5.9	7.7
27	23	14	16	194	28	75	43	10	43	12	5.7	6.7
28	12	14	15	133	23	39	25	10	33	9.4	6.1	6.3
29	8.4	13	14	83	---	28	18	10	13	7.7	7.5	5.7
30	7.1	17	14	72	---	23	16	9.7	9.4	9.1	6.9	5.3
31	6.2	---	15	36	---	20	---	9.4	---	56	17	---
TOTAL	173.3	680.6	900	1854	498	1164	478	842.1	290.4	430.0	459.3	270.2
MEAN	5.59	22.7	29.0	59.8	17.8	37.5	15.9	27.2	9.68	13.9	14.8	9.01
MAX	38	99	162	326	38	109	44	112	43	56	96	36
MIN	1.6	5.7	10	12	14	14	10	9.4	5.5	5.3	5.3	4.0
CFSM	.35	1.43	1.82	3.76	1.12	2.36	1.00	1.71	.61	.87	.93	.57
IN.	.41	1.59	2.11	4.34	1.17	2.72	1.12	1.97	.68	1.01	1.07	.63

CAL YR 1977 TOTAL 3744.00 MEAN 10.3 MAX 162 MIN .85 CFSM .65 IN 8.76
WTR YR 1978 TOTAL 8039.90 MEAN 22.0 MAX 326 MIN 1.6 CFSM 1.38 IN 18.81

RAPPAHANNOCK RIVER BASIN

85

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 (76 m) downstream from bridge on U.S. Highway 29 (revised), 0.2 mi (0.3 km) downstream from Elk Run, 1.7 mi (2.7 km) upstream from White Run, 3.6 mi (5.8 km) northeast of Ruckersville, and at mile 63.5 (102.2 km).

DRAINAGE AREA.--114 mi² (295 km²).

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 (133.941 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--36 years, 145 ft³/s (4.106 m³/s), 17.27 in/yr (439 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,700 ft³/s (869 m³/s) Oct. 15, 1942, gage height, 20.8 ft (6.34 m), from floodmark in gage house, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurement at gage height 17.78 ft (5.419 m); minimum daily, 0.90 ft³/s (0.025 m³/s) Sept. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft³/s (40 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	2400	2690 76.2	6.34 1.932	Jan. 26	0600	*6030 171	10.30 3.139
Dec. 18	0330	1450 41.1	4.50 1.372	May 13	2300	2800 79.3	6.50 1.981
Jan. 9	0030	4190 119	8.30 2.530	Aug. 27	2030	1810 51.3	5.09 1.551

Minimum daily discharge, 5.2 ft³/s (0.15 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	33	368	131	302	113	326	185	126	60	209	91
2	7.7	35	275	125	265	106	280	167	113	64	95	60
3	8.4	50	230	115	225	110	250	153	110	144	73	52
4	6.8	150	201	108	190	101	231	209	109	134	104	46
5	5.2	300	227	106	180	92	213	264	98	99	164	41
6	5.4	560	236	101	170	95	196	218	92	81	212	37
7	7.0	726	192	102	155	94	186	200	89	70	438	34
8	9.0	1460	170	506	160	97	171	222	92	68	201	30
9	12	715	161	1740	140	95	160	233	91	76	140	28
10	21	607	145	673	135	530	154	208	78	88	132	26
11	17	628	132	457	130	412	148	190	72	91	153	24
12	14	442	129	347	127	375	141	177	68	60	270	23
13	11	333	117	310	125	412	134	635	80	52	237	23
14	9.0	262	141	387	123	495	125	1530	67	69	265	24
15	7.1	219	179	276	122	596	120	1000	61	75	199	23
16	7.1	187	144	226	117	517	116	1070	60	62	165	22
17	8.0	170	135	280	113	417	111	886	115	60	135	23
18	7.5	151	867	367	116	337	112	700	80	49	113	22
19	8.4	134	504	253	117	289	142	569	70	44	99	22
20	8.0	123	392	241	114	268	123	456	112	39	86	21
21	7.7	115	370	196	114	253	113	375	128	36	76	22
22	7.9	126	303	171	111	262	107	311	99	40	69	63
23	8.1	158	252	157	102	255	102	270	78	38	63	64
24	7.8	147	226	151	113	246	99	245	63	103	57	31
25	7.5	135	219	839	169	242	97	215	57	152	53	27
26	45	146	190	3340	147	589	313	189	55	95	51	24
27	125	129	169	1140	125	807	413	172	156	62	203	23
28	90	123	155	756	116	669	286	160	149	54	88	21
29	56	119	186	561	---	539	235	149	81	44	67	22
30	44	125	139	442	---	443	207	158	65	45	63	22
31	37	---	139	364	---	376	---	145	---	90	136	---
TOTAL	622.1	8608	7293	14968	4123	10232	5411	11661	2714	2244	4416	991
MEAN	20.1	287	235	483	147	330	180	376	90.5	72.4	142	33.0
MAX	125	1460	867	3340	302	807	413	1530	156	152	438	91
MIN	5.2	33	117	101	102	92	97	145	55	36	51	21
CFSM	.18	2.52	2.06	4.24	1.29	2.90	1.58	3.30	.79	.64	1.25	.29
IN.	.20	2.81	2.38	4.88	1.35	3.34	1.77	3.81	.89	.73	1.44	.32

CAL YR 1977	TOTAL	33137.1	MEAN	90.8	MAX	1460	MIN	3.0	CFSM	.80	IN	10.81
WTR YR 1978	TOTAL	73283.1	MEAN	201	MAX	3340	MIN	5.2	CFSM	1.76	IN	23.91

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 (30 m) upstream from bridge on State Highway 614, 1.1 mi (1.8 km) upstream from Great Run, 1.7 mi (2.7 km) upstream from mouth, 2.0 mi (3.2 km) southeast of Locust Dale, and 3.4 mi (5.5 km) downstream from Crooked Run.

DRAINAGE AREA.--179 mi² (464 km²).

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 (86.472 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Small diurnal fluctuation at low flow caused by Banco Mill 9 mi (14 km) upstream at State Highway 231. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--35 years, 214 ft³/s (6.060 m³/s), 16.24 in/yr (412 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s (694 m³/s) June 22, 1972, gage height, 20.92 ft (6.376 m), from rating curve extended above 9,100 ft³/s (260 m³/s) on basis of records for other stations in Rappahannock River basin; minimum, 1.2 ft³/s (0.034 m³/s) Sept. 7, 13, 1954; minimum daily, 1.8 ft³/s (0.051 m³/s) Sept. 13, 27, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.9 ft (7.28 m), from floodmarks, discharge, about 44,000 ft³/s (1,200 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 5	2000	1930 54.7	7.83 2.387	Mar. 10	1800	2170 61.5	8.42 2.566
Nov. 8	0500	3920 111	12.20 3.719	May 14	0230	4110 116	12.52 3.816
Dec. 18	0930	1950 55.2	7.87 2.399	June 27	0430	1770 50.1	7.43 2.265
Jan. 9	0430	6010 170	14.48 4.414	July 25	2100	1970 55.8	7.92 2.414
Jan. 26	1030	*9690 274	16.42 5.005				

Minimum discharge, 14 ft³/s (0.40 m³/s) Oct. 4-6, gage height, 1.10 ft (0.335 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	48	446	194	365	203	391	229	170	136	411	268
2	20	55	340	183	336	188	343	206	144	140	208	113
3	18	116	274	168	299	189	308	190	135	470	163	95
4	14	462	235	163	265	176	291	333	151	428	224	86
5	14	1030	289	163	250	160	271	530	126	279	232	78
6	14	1140	339	154	225	163	248	357	116	206	176	73
7	15	1620	246	160	230	170	237	302	111	168	565	74
8	16	2320	209	390	215	168	217	323	118	145	393	65
9	30	852	199	3340	210	167	202	422	122	157	249	62
10	42	623	181	742	205	909	197	320	101	126	203	58
11	24	744	174	496	200	758	193	265	91	126	219	59
12	22	463	171	402	195	665	181	239	87	105	568	59
13	20	353	157	367	190	702	169	522	101	96	312	61
14	20	283	168	509	193	783	159	2440	89	209	331	63
15	21	240	247	400	190	889	150	1150	79	198	248	62
16	22	209	190	312	190	719	146	1330	78	128	204	59
17	28	196	177	376	183	565	143	995	76	122	172	60
18	26	174	1220	645	189	452	142	758	75	102	146	56
19	24	158	745	418	185	392	211	645	71	91	129	53
20	23	147	511	370	186	372	190	523	120	84	116	50
21	22	140	524	311	189	357	166	438	144	79	103	53
22	23	155	425	263	194	373	153	369	137	93	96	53
23	22	237	347	255	170	357	143	326	125	84	91	236
24	21	200	306	249	198	335	141	304	82	90	86	87
25	20	175	294	1380	326	324	136	268	73	854	84	75
26	140	200	257	6760	359	852	456	233	69	550	93	66
27	224	170	222	1720	263	1010	548	210	920	202	97	61
28	99	160	206	858	227	751	351	199	390	153	366	59
29	70	155	215	632	---	604	292	186	195	123	184	55
30	59	167	202	500	---	500	257	175	150	114	103	53
31	51	---	202	427	---	435	---	165	---	288	173	---
TOTAL	1181	12992	9718	23307	6427	14688	7032	14952	4446	6146	6145	2352
MEAN	38.1	433	313	752	230	474	234	482	148	198	218	78.4
MAX	224	2320	1220	6760	365	1010	548	2440	920	854	568	268
MIN	14	48	157	154	170	160	136	165	69	79	84	50
CFSM	.21	2.42	1.75	4.20	1.29	2.65	1.31	2.69	.83	1.11	1.22	.44
IN.	.25	2.70	2.02	4.84	1.34	3.05	1.46	3.11	.92	1.28	1.40	.49

CAL YR 1977 TOTAL 48042.8 MEAN 132 MAX 2320 MIN 9.8 CFSM .74 IN 9.98
WTR YR 1978 TOTAL 109986.0 MEAN 301 MAX 6760 MIN 14 CFSM 1.68 IN 22.86

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 (1.1 km) upstream from Cedar Run and bridge on U.S. Highway 522, 8.5 mi (13.7 km) south of Culpeper, and at mile 29.6 (47.6 km).

DRAINAGE AREA.--472 mi² (1,222 km²).

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 (73.567 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Diurnal fluctuation at low flow caused by mills at Rapidan and on Robinson River at State Highway 231. Gage-height telemeter at station. Several observations 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, 517 ft³/s (14.64 m³/s), 14.87 in/yr (378 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,100 ft³/s (1,650 m³/s) Oct. 16, 1942, gage height, 30.3 ft (9.24 m), from floodmark, from rating curve extended above 43,000 ft³/s (1,200 m³/s) on basis of slope-area measurement of peak flow; minimum, 2.1 ft³/s (0.059 m³/s) Oct. 4, 5, 11, 1954; minimum daily, 2.2 ft³/s (0.062 m³/s) Oct. 4, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (130 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	1000	5520 156	8.31 2.533	Mar. 10	2200	4590 130	6.98 2.128
Dec. 18	1330	4760 135	7.23 2.204	May 14	0945	6720 190	10.03 3.057
Jan. 9	0915	8930 253	12.70 3.871	Aug. 28	0530	4920 139	7.46 2.274
Jan. 26	2000	*14900 422	17.47 5.325				

Minimum discharge, 18 ft³/s (0.51 m³/s) Oct. 6, gage height, 0.31 ft (0.094 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	93	989	473	970	498	929	533	422	269	734	792
2	26	95	878	436	890	470	822	477	375	268	430	338
3	30	141	679	391	800	454	740	445	353	555	311	260
4	28	455	574	341	725	438	698	652	376	748	315	229
5	20	1220	666	359	665	389	660	1480	339	478	447	203
6	20	2240	956	352	683	396	603	876	318	365	374	185
7	24	2690	652	358	553	411	582	701	304	307	917	176
8	26	4230	523	606	555	403	542	715	318	272	754	164
9	42	1930	480	7470	579	415	508	1150	334	278	471	154
10	84	1200	432	2200	531	1660	491	932	293	260	367	143
11	65	1660	377	1450	496	2290	485	701	267	371	434	137
12	53	1050	357	1100	508	1750	474	604	257	267	857	138
13	45	805	370	941	484	1720	441	827	271	218	575	138
14	40	646	357	1280	457	1760	420	5390	284	227	605	140
15	41	545	576	1150	452	2150	397	2780	243	543	506	139
16	44	473	471	859	462	1620	387	3220	239	288	440	135
17	50	467	416	856	441	1290	379	2420	237	267	363	132
18	54	411	2950	1890	468	1050	377	1810	332	235	308	127
19	53	355	2190	1300	460	915	484	1510	254	204	273	119
20	58	321	1320	958	476	843	493	1200	309	187	248	111
21	55	299	1340	892	474	797	429	1000	410	174	222	113
22	52	327	1090	697	513	794	399	852	402	179	204	115
23	53	657	876	613	437	772	373	753	376	179	194	294
24	52	583	771	602	454	741	367	704	265	164	185	196
25	49	458	719	2300	626	710	358	636	236	1350	176	157
26	120	522	642	11300	967	1730	1010	561	222	1050	189	139
27	505	435	544	6170	652	2620	1700	509	1120	360	178	125
28	244	383	501	2290	554	1810	904	489	707	266	2640	122
29	156	360	449	1650	---	1430	701	468	409	227	511	118
30	122	377	508	1300	---	1180	598	444	296	202	353	111
31	103	---	487	1100	---	1030	---	448	---	454	337	---
TOTAL	2338	25428	24140	53684	16332	34536	17751	35287	10568	11212	14918	5450
MEAN	75.4	848	779	1732	583	1114	592	1138	352	362	481	182
MAX	505	4230	2950	11300	970	2620	1700	5390	1120	1350	2640	792
MIN	20	93	357	341	437	389	358	444	222	164	176	111
CFSM	.16	1.80	1.65	3.67	1.24	2.36	1.25	2.41	.75	.77	1.02	.39
IN.	.18	2.00	1.90	4.23	1.29	2.72	1.40	2.78	.83	.88	1.18	.43

CAL YR 1977 TOTAL 107863 MEAN 296 MAX 4230 MIN 20 CFSM .63 IN 8.50
WTR YR 1978 TOTAL 251644 MEAN 689 MAX 11300 MIN 20 CFSM 1.46 IN 19.83

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 (2.6 km) upstream from dam of Virginia Electric and Power Co., 2.2 mi (3.5 km) downstream from Motts Run, 3.8 mi (6.1 km) upstream from Fredericksburg, and at mile 4.4 (7.1 km).

DRAINAGE AREA.--1,596 mi² (4,134 km²).

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 (16.819 m) 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 (0.305 m) higher.

REMARKS.--Records good.

AVERAGE DISCHARGE.--71 years, 1,646 ft³/s (46.61 m³/s), 14.01 in/yr (356 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 140,000 ft³/s (3,960 m³/s) Oct. 16, 1942, gage height, 26.9 ft (8.20 m), present datum, from floodmarks, from rating curve extended above 76,000 ft³/s (2,200 m³/s) on basis of flow over dam and slope-area measurements at gage heights 26.1 ft (7.96 m) and 26.9 ft (8.20 m), present datum; minimum, 5 ft³/s (0.14 m³/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 above base of 16,000 ft³/s (450 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 19	0130	21000	595	Jan. 27	0200	*44700	1270
Jan. 10	0200	27000	765	May 14	1830	18900	535

Minimum discharge, 123 ft³/s (3.48 m³/s) Oct. 8, gage height, 1.31 ft (0.399 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	369	3510	1520	2910	1670	2850	1550	1620	699	1330	1460
2	158	339	3870	1390	2530	1540	2530	1380	1300	610	1610	1070
3	142	336	2500	1240	2340	1420	2190	1260	1080	797	875	583
4	133	943	1970	997	2090	1410	2030	1760	1050	3690	751	475
5	133	2750	1730	985	1870	1280	1930	6380	1060	2050	790	426
6	141	4760	3500	1060	3460	1160	1790	3920	923	1230	1010	387
7	134	6630	2600	1020	7510	1290	1660	2660	843	881	824	364
8	125	10600	1800	1260	5990	1350	1600	2280	834	718	1620	349
9	141	7250	1480	16800	5660	1320	1460	4530	891	662	1250	334
10	155	3720	1380	14200	4410	2000	1370	3640	913	761	847	316
11	190	5320	1120	4580	3340	9600	1350	2420	755	637	1060	299
12	258	3870	1010	3440	2870	7300	1360	1920	688	779	1910	287
13	219	2580	1060	2870	2690	6850	1280	1730	664	563	2710	291
14	207	1970	1030	3130	2590	6890	1190	12800	696	473	1440	368
15	206	1610	1360	3800	2280	8970	1110	10700	672	686	1280	405
16	177	1370	1660	2740	2130	6350	1050	13600	566	861	985	367
17	175	1250	1250	2440	1510	4860	1020	10300	552	620	823	348
18	182	1210	10500	8300	1340	3780	1020	6260	547	570	678	359
19	274	1010	14900	6100	1400	3070	1250	4810	641	506	574	356
20	246	866	6270	3660	1370	2750	1770	3980	906	450	507	326
21	212	791	6000	3100	1380	2550	1650	3140	898	413	463	303
22	197	787	5270	2490	1470	2440	1330	2630	870	392	423	294
23	184	1670	3410	2070	1330	2360	1170	2260	1230	388	393	309
24	173	2350	2730	1970	1240	2210	1060	2080	807	394	379	531
25	170	1610	2420	4550	1560	2060	1020	1970	581	433	367	442
26	256	1970	2210	34700	2530	5100	1730	1760	520	2370	357	369
27	2260	1830	1770	38900	2320	11500	5600	1550	1590	1230	401	336
28	1740	1270	1450	9920	1890	6880	3100	1450	2750	672	2110	310
29	835	1100	1450	5560	---	4810	2150	1410	1630	523	1570	291
30	542	1160	2130	4100	---	3840	1770	1340	892	467	758	281
31	426	---	1610	3410	---	3200	---	1300	---	494	756	---
TOTAL	10560	73291	94950	192302	74010	121810	52390	118770	28969	25999	30851	12636
MEAN	341	2443	3063	6203	2643	3929	1746	3831	966	839	995	421
MAX	2260	10600	14900	38900	7510	11500	5600	13600	2750	3690	2710	1460
MIN	125	336	1010	985	1240	1160	1020	1260	520	388	357	281
CFSM	.21	1.53	1.92	3.89	1.66	2.46	1.09	2.40	.61	.53	.62	.26
IN.	.25	1.71	2.21	4.48	1.73	2.84	1.22	2.77	.68	.61	.72	.29

CAL YR 1977 TOTAL 362861 MEAN 994 MAX 14900 MIN 84 CFSM .62 IN 8.46
WTR YR 1978 TOTAL 836538 MEAN 2292 MAX 38900 MIN 125 CFSM 1.44 IN 19.50

RAPPAHANNOCK RIVER BASIN

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01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples taken at south bank of river 1.5 mi (2.4 km) upstream from discharge station.

PERIOD OF RECORD.--Water years 1929-30, 1956, 1967-74, December 1977 to September 1978.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1955 to September 1956, April 1968 to August 1974.

WATER TEMPERATURES: October 1955 to September 1956, April 1968 to August 1974.

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BIO- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)
DEC 30...	1300	2470	78	7.1	.5	8	14.2	1800	K3000	25	1	6.4
JAN 31...	1230	3510	63	8.0	.5	20	14.5	560	2800	20	11	5.4
FEB 27...	1230	2280	65	7.1	3.0	75	12.3	260	>980	23	5	6.0
MAR 27...	1100	12800	65	7.0	5.5	170	12.0	9800	K0	22	9	5.2
APR 25...	1230	1010	58	7.0	14.0	3	10.6	--	--	20	0	5.1
MAY 24...	1230	2210	53	6.6	24.0	--	8.9	190	66	20	--	5.1
JUN 28...	1115	2870	75	6.8	26.0	--	7.2	8000	7800	22	10	5.7
JUL 31...	1015	463	70	6.0	26.5	--	7.2	660	700	23	5	5.9
AUG 22...	1200	423	80	7.0	25.0	--	9.0	38	40	24	4	6.0
SEP 27...	1300	332	65	7.4	29.5	--	10.8	20	62	27	1	6.5

DATE	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 (MG/L AS HC03)	CAR- BONATE (MG/L AS C03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS C02)	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 Si02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
DEC 30...	2.2	3.7	1.4	29	0	3.7	6.8	5.1	.0	13	63	53
JAN 31...	1.7	2.6	1.3	11	0	.2	6.9	3.4	.1	10	51	37
FEB 27...	2.0	2.8	1.7	22	0	2.8	6.7	3.9	.1	10	54	44
MAR 27...	2.1	2.9	1.7	16	0	2.6	12	3.9	.1	9.0	62	45
APR 25...	1.8	3.4	1.2	24	0	3.8	5.5	3.3	.0	8.1	46	40
MAY 24...	1.8	2.9	1.1	--	--	--	5.8	3.3	.0	12	50	--
JUN 28...	1.8	3.1	2.7	--	--	--	5.6	5.4	.1	8.8	71	41
JUL 31...	2.0	3.3	2.7	--	--	--	5.1	4.3	.1	9.7	56	44
AUG 22...	2.1	3.6	3.1	--	--	--	4.1	5.5	.1	11	54	48
SEP 27...	2.5	4.3	2.5	--	--	--	5.4	5.4	.1	8.6	52	51

> Actual value is known to be greater than the value shown.

K Results based on colony count outside the acceptable range (non-ideal colony count).

RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
DEC 30...	1.2	--	--	--	.03	1	0	3	1	0	2	<10
JAN 31...	1.2	.32	1.5	6.7	.05	--	--	--	--	--	--	--
FEB 27...	1.1	.95	2.1	9.1	.13	--	--	--	--	--	--	--
MAR 27...	.85	1.3	2.2	9.5	.30	1	0	1	1	0	1	40
APR 25...	.21	.26	.47	2.1	.01	--	--	0	--	--	0	--
MAY 24...	.65	--	--	--	.04	--	--	--	--	--	--	--
JUN 28...	1.4	1.6	3.0	13	.64	1	0	1	--	--	--	40
JUL 31...	.49	.40	.89	3.9	.05	--	--	--	--	--	--	--
AUG 22...	.30	.23	.53	2.3	.05	--	--	--	--	--	--	--
SEP 27...	.25	.39	.64	2.8	.01	1	--	0	--	--	--	<10

DATE	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB)
DEC 30...	<6	4	0	0	0	5	3	2	690	120	18	0
JAN 31...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	40	0	0	0	0	11	9	2	14000	70	15	12
APR 25...	--	2	--	--	0	--	--	3	--	130	--	--
MAY 24...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 28...	38	2	7	7	0	75	73	2	31000	400	--	--
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 27...	<10	0	1	0	1	1	0	1	550	290	--	--

< Actual value is known to be less than the value shown.

RAPPAHANNOCK RIVER BASIN

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01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN)
DEC 30...	27	50	20	30	<.5	.0	<.5	0	0	0	20	20
JAN 31...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	3	320	300	20	<.5	.0	<.5	0	0	0	40	30
APR 25...	8	--	--	30	--	--	<.5	--	--	0	--	--
MAY 24...	--	--	--	--	--	--	--	--	--	--	--	--
JUN 28...	--	520	520	0	<.5	.0	<.5	0	0	0	40	30
JUL 31...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 27...	--	30	30	0	<.5	.0	<.5	0	0	0	10	10

DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 30...	0	--	--	18	120	77
JAN 31...	--	1.2	--	30	284	100
FEB 27...	--	4.5	--	75	462	100
MAR 27...	10	--	1900	357	12300	89
APR 25...	0	--	--	17	46	73
MAY 24...	--	8.2	1300	42	251	100
JUN 28...	10	--	2500	718	5560	100
JUL 31...	--	11	1300	22	28	100
AUG 22...	--	2.4	180	5	5.7	100
SEP 27...	0	--	--	8	7.2	100

< Actual value is known to be less than the value shown.

RAPPAHANNOCK RIVER BASIN

01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 27,78 1100	MAY 24,78 1230	JUN 28,78 1115	JUL 31,78 1015	AUG 22,78 1200	
TOTAL CELLS/ML	1900	1300	2500	1300	180	
DIVERSITY: DIVISION	1.1	1.6	1.7	0.8	0.8	
..CLASS	1.2	1.6	1.7	0.8	0.8	
..ORDER	1.3	2.6	1.9	0.9	0.8	
...FAMILY	3.4	3.3	3.4	1.9	1.4	
....GENUS	3.5	3.6	3.9	2.6	1.4	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
....COELASTRACEAE						
.....COELASTRUM	--	-	--	-	220	9
....OOCYSTACEAE						
.....ANKISTRODESMUS	14	1	45	3	--	-
.....CHLORELLA	--	-	--	-	14	1
.....CHODATELLA	--	-	22	2	--	-
.....CLOSTERIOPSIS	--	-	--	-	14	1
.....KIRCHNERIELLA	--	-	11	1	--	-
.....OOCYSTIS	--	-	11	1	--	-
.....SELENASTRUM	--	-	--	-	29	2
.....TETRAEDRON	--	-	--	-	14	1
.....WESTELLA	--	-	--	-	220#	16
...SCENEDESMACEAE						
....CRUCIGENIA	58	3	45	3	58	4
....SCENEDESMUS	--	-	67	5	610#	46
..TETRASPORALES						
...PALMELLACEAE						
...SPHAEROCYSTIS	--	-	180	14	190	8
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	43	2	22	2	--	-
CHRYSOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCACEAE						
....CYCLOTETRA	--	-	90	7	--	-
....MELOSIRA	14	1	--	-	--	-
...PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	58	3	45	3	29	1
....COCCONEIS	--	-	--	-	43	2
....RHOICOSPHEINIA	--	-	11	1	--	-
....CYMBELLACEAE						
.....CYMBELLA	100	5	22	2	86	3
...DIATOMACEAE						
.....DIATOMA	14	1	--	-	--	-
.....OPEPHORA	29	2	--	-	--	-
...EUNOTIACEAE						
.....EUNOTIA	--	-	--	-	14	1
...FRAGILARIACEAE						
.....ASTERIONELLA	--	-	110	9	--	-
.....SYNEDRA	450#	24	34	3	43	2
...GOMPHONEMACEAE						
.....GOMPHONEMA	230	12	--	-	14	1
...MERIDIONACEAE						
.....MERIDION	86	5	--	-	29	1
...NAVICULACEAE						
.....NAVICULA	160	8	56	4	86	3
...PINNULARIA	--	-	--	-	58	2
...NITZSCHACEAE						
.....HANTZSCHIA	--	-	--	-	14	1
.....NITZSCHIA	72	4	11	1	100	4
...SURIRELLACEAE						
.....SURIRELLA	200	11	22	2	14	1
..CHRYSOPHYCEAE						
...CHRYSOMONADALES						
....MALLOMONADACEAE						
.....MALLOMONAS	14	1	--	-	--	-
...OCHROMONADACEAE						
....OCHROMONAS	14	1	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
....CRYPTOCHRYSIDACEAE						
.....CHROOMONAS	43	2	--	-	14	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

RAPPAHANNOCK RIVER BASIN

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01668000 RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE TIME	PHYTOPLANKTON									
	MAR 27,78 1100		MAY 24,78 1230		JUN 28,78 1115		JUL 31,78 1015		AUG 22,78 1200	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
...CHROCCOCCALES										
...CHROCCOCCAEAE										
....ANACYSTIS	--	-	130	10	--	-	58	4	--	-
...HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	190	8	--	-	--	-
....APHANIZOMENON	--	-	--	-	460#	18	--	-	--	-
...OSCILLATORIA										
...OSCILLATORIA	270	15	340#	26	230	9	--	-	--	-
...RIVULARIACEAE										
....RAPHIDIOPSIS	--	-	--	-	230	9	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
...EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	11	1	14	1	--	-	--	-
....TRACHELOMONAS	--	-	--	-	29	1	43	3	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

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 (61 m) upstream from bridge on State Highway 637, 1.7 mi (2.7 km) west of Farmers Fork, 3.8 mi (6.1 km) south of Montross, and 11.4 mi (18.3 km) upstream from mouth.

DRAINAGE AREA.--45.6 mi² (118.1 km²).

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 2.93 ft (0.893 m) 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.--Records good except those for period of no gage-height record, Jan. 28 to Mar. 7, which are fair. Slight diurnal fluctuation at low flow caused by gristmill at Montross. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--35 years, 43.7 ft³/s (1.238 m³/s), 13.01 in/yr (330 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,820 ft³/s (193 m³/s) Aug. 20, 1969, gage height, 10.45 ft (3.185 m), from rating curve extended above 1,400 ft³/s (40 m³/s); no flow at times in 1943, 1957, 1959, 1960, 1966, and 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1935 exceeded 9.3 ft (2.83 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.1 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Dec. 19	1000	558	15.8	6.13	1.868	Jan. 26	1330	*780	22.1	6.52	1.987
Jan. 10	0330	260	7.36	5.44	1.658	Mar. 11	0800	385	10.9	5.80	1.768
Jan. 14	2000	504	14.3	6.04	1.841	Mar. 27	1130	552	15.6	6.12	1.865
Jan. 18	1530	600	17.0	6.20	1.890	Apr. 27	1200	594	16.8	6.19	1.887
Jan. 21	0600	385	10.9	5.80	1.768	May 5	1200	618	17.5	6.23	1.899

Minimum discharge, 3.5 ft³/s (0.099 m³/s) Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	20	27	45	105	52	95	78	71	24	34	11
2	4.6	19	27	37	100	54	87	69	58	23	68	16
3	4.5	20	26	30	100	56	83	64	53	31	55	18
4	4.5	22	25	27	95	57	81	109	70	40	45	16
5	4.5	22	29	25	95	55	78	486	87	41	70	12
6	4.4	27	41	24	94	53	74	245	62	34	70	9.7
7	4.4	71	38	29	90	53	72	153	58	27	49	8.4
8	4.4	63	32	36	86	58	70	130	89	23	33	7.4
9	4.5	39	30	186	83	70	68	183	102	20	26	7.0
10	4.8	30	27	242	82	158	64	162	91	17	22	6.4
11	4.6	25	26	128	81	353	64	121	57	15	18	6.1
12	5.2	22	24	66	80	234	65	100	43	14	17	5.9
13	5.4	21	23	73	80	172	61	91	38	12	38	5.8
14	6.7	20	27	385	80	135	57	95	36	11	65	5.7
15	12	19	46	300	79	135	53	131	32	12	32	5.6
16	12	19	41	112	78	126	50	218	30	19	33	5.6
17	11	19	34	110	75	104	49	181	28	25	26	5.4
18	8.8	21	139	502	78	92	52	128	27	25	21	5.3
19	7.9	21	451	254	76	86	77	104	26	22	17	5.3
20	7.2	20	219	290	74	79	102	91	28	18	14	5.1
21	6.6	20	133	331	70	76	95	83	32	15	12	4.9
22	6.2	22	121	189	68	73	75	74	83	12	10	4.8
23	6.2	28	71	134	65	70	63	68	68	11	9.3	4.8
24	6.2	32	46	118	64	68	56	66	44	9.5	8.5	5.4
25	6.2	32	42	174	60	66	52	66	33	12	7.9	5.1
26	15	37	37	657	58	151	100	60	28	19	7.8	4.6
27	68	33	32	411	56	440	307	56	27	21	7.4	4.6
28	42	30	28	161	54	231	183	57	36	22	7.3	4.6
29	34	27	26	120	---	137	114	61	34	18	7.0	4.6
30	26	25	25	115	---	112	90	58	28	15	6.9	4.6
31	22	---	54	110	---	100	---	64	---	27	7.6	---
TOTAL	364.4	826	1947	5421	2206	3706	2537	3652	1499	634.5	844.7	215.7
MEAN	11.8	27.5	62.8	175	78.8	120	84.6	118	50.0	20.5	27.2	7.19
MAX	68	71	451	657	105	440	307	486	102	41	70	18
MIN	4.4	19	23	24	54	52	49	56	26	9.5	6.9	4.6
CFSM	.26	.60	1.38	3.84	1.73	2.63	1.86	2.59	1.10	.45	.60	.16
IN.	.30	.67	1.59	4.42	1.80	3.02	2.07	2.98	1.22	.52	.69	.18
CAL YR 1977 TOTAL	9379.09			MEAN 25.7	MAX 451	MIN .00	CFSM .56	IN 7.65				
WTR YR 1978 TOTAL	23853.30			MEAN 65.4	MAX 657	MIN 4.4	CFSM 1.43	IN 19.46				

RAPPAHANNOCK RIVER BASIN

95

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 (0.6 km) upstream from Criddlin Swamp, 2.9 mi (4.7 km) downstream from site of Hutchinson Mill Pond (destroyed by flood of August 1969), and 5.0 mi (8.0 km) west of Tappahannock.

DRAINAGE AREA.--15.5 mi² (40.1 km²).

PERIOD OF RECORD.--October 1964 to September 1969, June 1970 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 34.30 ft (10.455 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--13 years, 16.7 ft³/s (0.473 m³/s), 14.63 in/yr (372 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,380 ft³/s (39.1 m³/s) Aug. 20, 1969, gage height, 10.23 ft (3.118 m), from rating curve extended above 100 ft³/s (2.8 m³/s) on basis of velocity-area study; minimum, 0.20 ft³/s (0.006 m³/s) Sept. 12, 13, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.8 m³/s) and minimum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 18	2030	114 3.23	3.93 1.198	Apr. 27	0700	106 3.00	3.87 1.180
Jan. 26	1300	120 3.40	4.03 1.228	May 5	0330	120 3.40	4.05 1.234
Mar. 10	2130	117 3.31	4.02 1.225	May 9	1600	120 3.40	4.06 1.237
Mar. 26	2130	*142 4.02	4.37 1.332				

Minimum discharge, 2.2 ft³/s (0.062 m³/s) Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	9.1	12	27	38	21	34	30	55	12	26	20
2	2.6	10	12	21	37	21	31	27	38	11	48	20
3	2.6	12	11	16	37	23	30	26	33	14	48	14
4	2.4	19	10	14	35	24	30	42	42	16	28	12
5	2.5	20	16	13	34	22	29	103	32	17	49	12
6	2.6	26	28	14	33	20	27	63	25	14	53	11
7	2.6	60	20	20	33	19	27	47	23	12	31	10
8	2.7	43	14	26	31	22	26	46	28	10	20	9.2
9	4.5	25	13	61	30	26	25	92	35	9.7	15	8.6
10	6.7	17	11	46	30	68	25	71	26	9.0	12	8.3
11	7.0	13	10	30	30	88	26	51	21	9.2	10	8.5
12	5.7	10	8.8	24	29	61	26	43	19	9.5	10	8.1
13	5.4	9.4	9.4	34	29	47	24	39	20	8.8	18	7.7
14	9.2	8.8	15	78	28	40	22	45	22	8.8	49	7.7
15	23	8.3	37	60	28	36	21	47	19	12	29	7.6
16	18	8.6	28	39	27	32	22	53	18	17	19	7.4
17	15	9.4	19	42	26	30	24	53	17	26	13	7.2
18	11	9.1	66	74	27	29	23	42	17	19	10	7.0
19	7.6	8.2	81	55	27	26	32	42	16	14	8.8	6.6
20	6.4	7.8	46	76	25	24	44	38	19	11	8.3	6.0
21	5.8	7.9	47	69	24	24	32	33	35	8.6	7.6	5.3
22	5.6	10	42	51	24	23	26	28	62	7.9	7.4	5.1
23	6.4	17	31	41	22	23	23	27	39	7.7	6.9	5.3
24	7.3	18	25	37	22	22	22	28	25	7.4	6.8	5.7
25	7.9	15	26	55	22	22	22	27	17	11	6.8	5.6
26	21	21	23	106	22	74	44	25	14	16	6.9	5.6
27	51	19	18	76	20	105	96	24	14	13	7.0	5.6
28	34	15	16	57	20	61	63	25	25	12	7.4	5.1
29	19	12	15	47	---	46	43	27	22	10	7.2	5.1
30	11	11	16	43	---	39	34	26	17	8.1	7.4	5.0
31	8.6	---	33	40	---	36	---	37	---	11	10	---
TOTAL	317.7	479.6	759.2	1392	790	1153	953	1307	795	372.7	586.5	252.3
MEAN	10.2	16.0	24.5	44.9	28.2	37.2	31.8	42.2	26.5	12.0	18.9	8.41
MAX	51	60	81	106	38	105	96	103	62	26	53	20
MIN	2.4	7.8	8.8	13	20	19	21	24	14	7.4	6.8	5.0
CFSM	.66	1.03	1.58	2.90	1.82	2.40	2.05	2.72	1.71	.77	1.22	.54
IN.	.76	1.15	1.82	3.34	1.90	2.77	2.29	3.14	1.91	.89	1.41	.61
CAL YR 1977 TOTAL	4021.73			MEAN 11.0	MAX 81	MIN .50	CFSM .71	IN 9.65				
WTR YR 1978 TOTAL	9158.00			MEAN 25.1	MAX 106	MIN 2.4	CFSM 1.62	IN 21.98				

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 (1.0 km) south of Henley Fork, 2.3 mi (3.7 km) downstream from Sturgeon Swamp, and 4.2 mi (6.8 km) southwest of Tappahannock.

DRAINAGE AREA.--28.0 mi² (72.5 km²).

PERIOD OF RECORD.--July 1951 to current year.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2.50 ft (0.762 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--27 years, 32.5 ft³/s (0.920 m³/s), 15.76 in/yr (400 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,380 ft³/s (67.4 m³/s) Aug. 20, 1969, gage height, 7.52 ft (2.292 m), from rating curve extended above 1,400 ft³/s (40 m³/s); minimum, 0.01 ft³/s (<0.001 m³/s) Oct. 2, 1954, gage height, 0.33 ft (0.101 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.1 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 27	0600	255 7.22	4.02 1.225	Aug. 1	2100	*262 7.42	4.05 1.234

Minimum discharge, 1.8 ft³/s (0.051 m³/s) Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	16	19	55	81	44	71	61	101	25	81	32
2	2.2	20	20	42	74	45	65	55	62	23	156	26
3	2.5	26	19	36	73	48	63	51	50	24	77	16
4	2.2	34	16	34	70	54	64	72	57	27	45	13
5	2.3	37	21	33	66	48	63	190	52	26	50	13
6	2.2	46	37	35	64	44	58	116	42	23	39	12
7	2.1	116	34	45	64	41	57	88	39	20	32	10
8	2.1	67	25	53	61	44	55	85	51	18	27	9.3
9	4.0	36	22	112	55	53	53	153	50	17	22	8.6
10	7.0	25	20	87	53	104	50	158	42	16	18	8.0
11	7.6	19	18	64	53	178	50	101	35	16	17	7.8
12	5.8	16	16	53	53	111	51	86	32	16	18	8.0
13	5.1	15	17	70	50	91	50	81	31	15	21	7.8
14	20	14	24	166	48	80	45	86	34	14	23	7.6
15	34	14	62	110	46	74	43	92	29	15	24	8.0
16	31	14	48	82	45	68	40	91	27	21	18	8.3
17	10	14	31	84	44	64	40	112	27	34	15	8.2
18	14	13	70	146	42	58	41	86	26	27	14	7.6
19	10	13	150	100	42	56	56	95	28	19	13	7.2
20	8.0	12	84	146	40	53	69	91	38	16	12	6.5
21	7.4	12	79	137	39	53	57	72	77	14	12	5.6
22	6.6	14	80	100	38	51	46	63	136	13	11	5.6
23	6.8	24	55	86	39	50	42	58	76	12	10	7.0
24	7.4	30	48	82	38	49	39	57	47	11	9.8	8.3
25	7.4	24	49	97	38	48	38	56	36	13	9.4	8.6
26	25	27	47	189	39	98	66	52	32	18	9.3	7.7
27	107	28	38	133	43	202	189	49	34	20	9.3	7.1
28	63	23	35	100	42	112	115	50	42	17	9.3	6.8
29	30	19	36	92	---	88	81	54	39	15	9.4	6.2
30	20	18	36	87	---	78	69	52	28	14	12	5.8
31	16	---	61	84	---	73	---	73	---	16	17	---
TOTAL	470.9	786	1317	2740	1440	2260	1826	2586	1400	575	840.5	293.6
MEAN	15.2	26.2	42.5	88.4	51.4	72.9	60.9	83.4	46.7	18.5	27.1	9.79
MAX	107	116	150	189	81	202	189	190	136	34	156	32
MIN	2.1	12	16	33	38	41	38	49	26	11	9.3	5.6
CFSM	.54	.94	1.52	3.16	1.84	2.60	2.18	2.98	1.67	.66	.97	.35
IN.	.63	1.04	1.75	3.64	1.91	3.00	2.43	3.44	1.86	.76	1.12	.39

CAL YR 1977 TOTAL 7489.26 MEAN 20.5 MAX 150 MIN .50 CFSM .73 IN 9.95
WTR YR 1978 TOTAL 16535.00 MEAN 45.3 MAX 202 MIN 2.1 CFSM 1.62 IN 21.97

01669500 DRAGON SWAMP NEAR CHURCH VIEW, VA

LOCATION.--Lat 37°41'05", long 76°43'37", Middlesex County, Hydrologic Unit 02080102, on left bank at downstream side of bridge on State Highway 602, 0.9 mi (1.4 km) upstream from Briery Swamp, 1.8 mi (2.9 km) downstream from Tim Branch Swamp, 2.6 mi (4.2 km) west of Church View, and 2.9 mi (4.7 km) east of Dragonville.

DRAINAGE AREA.--84.9 mi² (219.9 km²).

PERIOD OF RECORD.--August 1943 to current year. Prior to October 1965, published as Dragon Run near Church View.

REVISED RECORDS.--WSP 2103: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 34.00 ft (10.363 m) National Geodetic Vertical Datum of 1929. Prior to July 18, 1966, at site 400 ft (122 m) downstream at same datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--35 years, 83.2 ft³/s (2.356 m³/s), 13.31 in/yr (338 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,990 ft³/s (113 m³/s) June 4, 1963, gage height, 10.00 ft (3.048 m); no flow many days in 1954, 1955, 1957, 1959, and 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1935 reached a stage of about 17 ft (5.2 m), discharge not determined, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Jan. 15	2200	860	24.4	6.76	2.060	Mar. 11	1900	740	21.0	6.55	1.996
Jan. 21	1800	*890	25.2	6.80	2.073	Apr. 28	1700	860	24.4	6.74	2.054
Jan. 27	2300	740	21.0	6.53	1.990						

Minimum discharge, 4.6 ft³/s (0.13 m³/s) Oct. 4, 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	115	83	131	170	79	176	288	98	27	28	21
2	4.9	96	80	140	148	81	150	198	116	25	62	25
3	4.7	83	76	133	145	85	131	148	123	24	67	34
4	4.7	79	73	123	131	94	121	142	134	23	58	33
5	4.7	80	75	108	123	100	116	324	118	23	49	33
6	4.7	87	80	102	118	104	111	428	87	21	85	31
7	4.7	189	80	106	111	100	102	500	69	19	139	28
8	5.2	260	79	108	106	98	94	440	64	18	131	24
9	9.8	280	80	216	111	102	87	405	64	16	87	21
10	16	268	83	422	118	176	81	440	62	15	50	19
11	17	201	75	530	116	680	76	434	62	15	37	17
12	18	145	65	316	114	680	76	395	62	13	37	16
13	20	111	64	252	114	530	72	315	56	12	42	15
14	27	93	72	434	126	342	70	250	50	12	136	14
15	44	81	109	770	134	270	67	218	44	16	258	15
16	46	73	121	710	134	222	62	214	40	22	198	16
17	47	66	121	500	123	190	59	238	36	30	104	16
18	47	64	138	470	111	166	56	234	32	41	53	16
19	42	62	231	560	104	148	62	230	29	44	33	17
20	37	60	400	710	100	131	104	210	28	37	27	18
21	31	57	530	860	96	116	128	187	30	29	24	18
22	27	57	416	770	91	104	136	166	46	24	23	18
23	24	63	308	500	89	96	116	139	121	19	21	19
24	22	70	237	306	85	89	98	116	156	17	19	19
25	20	74	198	250	83	85	83	94	116	18	18	19
26	34	84	164	351	81	126	94	78	74	19	17	18
27	218	88	133	650	79	355	453	67	54	18	16	18
28	344	88	117	650	78	530	800	62	46	19	15	18
29	304	87	108	385	---	470	710	60	38	19	15	18
30	213	84	101	270	---	306	446	59	31	18	18	18
31	157	---	117	198	---	218	---	65	---	18	20	---
TOTAL	1803.1	3245	4614	12031	3139	6873	4937	7144	2086	671	1887	612
MEAN	58.2	108	149	388	112	222	165	230	69.5	21.6	60.9	20.4
MAX	344	280	530	860	170	680	800	500	156	44	258	34
MIN	4.7	57	64	102	78	79	56	59	28	12	15	14
CFSM	.69	1.27	1.76	4.57	1.32	2.62	1.94	2.71	.82	.25	.72	.24
IN.	.79	1.42	2.02	5.27	1.38	3.01	2.16	3.13	.91	.29	.83	.27

CAL YR 1977 TOTAL 23287.64 MEAN 63.8 MAX 530 MIN .34 CFSM .75 IN 10.20
WTR YR 1978 TOTAL 49042.10 MEAN 134 MAX 860 MIN 4.7 CFSM 1.58 IN 21.49

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 (91 m) downstream from bridge on State Highway 606, 1.4 mi (2.3 km) upstream from Beech Swamp, 2.3 mi (3.7 km) north of Ark, and 4.3 mi (6.9 km) northwest of Gloucester.

DRAINAGE AREA.--6.63 mi² (17.17 km²).

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 (11.104 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--29 years, 7.17 ft³/s (0.203 m³/s), 14.69 in/yr (373 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 570 ft³/s (16.1 m³/s) Sept. 12, 1960, gage height, 5.88 ft (1.792 m), from rating curve extended above 130 ft³/s (3.7 m³/s); no flow July 30 to Aug. 2, 1953.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 65 ft³/s (1.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0530	77 2.18	3.33 1.015	Apr. 27	0230	*357 10.1	4.23 1.289
Jan. 20	1130	114 3.23	3.54 1.079	May 5	0230	92 2.61	3.43 1.045
Mar. 11	0200	98 2.78	3.46 1.055	Aug. 2	2300	135 3.82	3.63 1.106
Mar. 26	2400	125 3.54	3.59 1.094				

Minimum discharge, 0.34 ft³/s (0.010 m³/s) Oct. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.55	9.3	5.2	9.6	10	5.8	14	19	26	1.7	8.8	6.5
2	.52	7.2	4.8	7.2	9.2	6.2	12	17	12	1.5	45	5.2
3	.48	7.4	4.4	5.8	9.8	6.8	10	15	10	1.5	54	3.6
4	.44	10	3.5	5.1	9.2	7.6	10	28	19	1.8	37	3.3
5	.44	9.3	7.0	5.1	8.8	7.6	10	62	12	1.7	22	2.7
6	.41	19	15	6.1	8.7	7.4	9.0	29	8.5	1.4	14	2.1
7	.38	45	7.8	9.8	8.5	6.8	8.6	21	7.5	1.5	8.5	1.8
8	.41	15	5.6	7.8	8.2	8.8	8.3	26	8.3	1.3	5.9	1.8
9	1.3	7.4	5.1	18	8.5	13	7.8	52	10	1.3	4.8	1.7
10	3.2	5.1	5.0	13	8.3	47	7.7	36	9.2	1.5	4.7	1.4
11	2.6	3.9	4.0	7.5	7.5	65	7.8	23	7.1	1.3	6.9	1.4
12	1.8	3.3	3.3	6.4	7.7	27	9.4	17	6.1	1.6	17	1.6
13	4.3	3.1	3.6	13	8.3	19	8.3	16	6.2	1.3	16	1.4
14	14	2.8	5.1	33	12	15	7.2	26	6.4	1.8	28	1.4
15	22	3.0	10	17	10	13	6.6	22	5.7	1.8	10	1.6
16	7.8	3.4	7.4	11	8.8	11	6.2	27	5.3	8.5	6.5	1.7
17	3.8	3.4	5.4	14	9.2	10	6.2	26	5.1	16	4.8	1.4
18	3.6	4.0	17	31	8.8	9.0	6.8	17	5.1	8.5	5.3	1.3
19	3.3	3.6	37	18	7.8	8.5	13	16	4.5	5.4	4.6	1.2
20	2.5	3.1	19	78	6.9	7.5	27	14	4.0	4.2	3.2	1.2
21	2.2	2.7	25	39	6.5	7.2	13	12	4.0	3.6	2.6	1.0
22	2.0	2.6	20	22	6.5	7.8	9.0	10	3.9	2.4	2.1	1.2
23	2.0	4.4	11	17	6.1	6.9	7.5	9.2	4.4	1.8	1.9	3.6
24	1.9	4.7	8.8	14	6.1	6.5	6.8	10	4.1	1.4	1.6	3.8
25	1.9	4.0	8.3	18	5.8	8.0	6.6	15	3.8	6.1	1.4	3.1
26	11	7.5	7.7	42	5.7	89	44	11	3.3	6.8	1.6	2.5
27	22	5.9	6.1	25	5.6	100	202	9.2	3.4	5.4	1.7	1.9
28	9.3	4.8	5.6	17	5.4	37	57	9.8	4.0	4.1	1.6	1.8
29	6.2	5.0	5.0	14	---	23	30	11	3.1	2.8	2.6	1.5
30	5.4	4.8	5.8	12	---	18	23	10	2.2	2.2	17	1.3
31	5.8	---	13	11	---	15	---	24	---	6.1	9.6	---
TOTAL	143.53	214.7	291.5	547.4	223.9	620.4	594.8	640.2	214.2	108.3	350.7	66.0
MEAN	4.63	7.16	9.40	17.7	8.00	20.0	19.8	20.7	7.14	3.49	11.3	2.20
MAX	22	45	37	78	12	100	202	62	26	16	54	6.5
MIN	.38	2.6	3.3	5.1	5.4	5.8	6.2	9.2	2.2	1.3	1.4	1.0
CFSM	.70	1.08	1.42	2.67	1.21	3.02	2.99	3.12	1.08	.53	1.70	.33
IN.	.81	1.20	1.64	3.07	1.26	3.48	3.34	3.59	1.20	.61	1.97	.37

CAL YR 1977 TOTAL 2454.61 MEAN 6.72 MAX 53 MIN .27 CFSM 1.01 IN 13.77
WTR YR 1978 TOTAL 4015.63 MEAN 11.0 MAX 202 MIN .38 CFSM 1.66 IN 22.53

YORK RIVER BASIN

99

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 (122 m) downstream from bridge on State Highway 522 and 4.0 mi (6.4 km) northeast of Mineral.

DRAINAGE AREA.--5.53 mi² (14.3 km²).

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 275 ft (83.8 m), from topographic map.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 701 ft³/s (19.9 m³/s) Jan. 26, 1978, gage height, 3.33 ft (1.015 m), from rating curve extended above 310 ft³/s (8.8 m³/s); minimum, 0.04 ft³/s (0.001 m³/s) July 31, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.7 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	0400	*701 19.9	3.33 1.015	Aug. 4	2000	280 7.93	2.57 0.783
May 4	1700	318 9.01	2.67 .814				

Minimum daily discharge, 0.37 ft³/s (0.010 m³/s) Oct. 13, 22-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.56	1.2	14	5.6	6.0	4.5	5.0	5.6	6.1	1.5	3.0	2.4
2	.64	1.2	6.0	4.4	5.6	4.8	4.4	5.0	3.5	3.0	2.4	1.5
3	.56	2.0	4.4	4.1	5.4	5.0	4.4	4.6	4.1	5.3	2.0	1.3
4	.45	4.4	3.8	3.9	5.2	5.0	4.1	76	4.6	3.8	44	1.2
5	.45	29	16	3.8	5.0	4.8	4.1	36	3.2	2.4	14	1.0
6	.45	22	13	3.8	5.0	4.6	4.1	15	2.7	2.0	4.6	1.0
7	.45	28	6.4	4.1	5.0	4.1	5.0	9.3	3.5	1.5	3.8	.76
8	.56	20	4.4	22	5.0	4.6	4.1	15	5.0	1.3	2.4	.76
9	2.2	7.2	4.4	50	5.0	4.6	3.8	44	4.4	1.3	1.7	.76
10	.88	4.6	3.0	11	5.0	54	3.8	16	2.7	1.7	1.5	.76
11	.64	3.5	2.9	8.5	5.2	35	3.8	8.8	2.2	3.0	1.3	.76
12	.45	3.0	2.8	6.7	5.2	32	3.8	7.0	2.0	2.2	5.0	1.7
13	.37	2.7	3.0	6.4	4.8	22	3.8	14	3.0	2.2	12	5.7
14	1.2	2.4	4.4	19	4.6	24	3.5	20	2.0	3.2	8.4	1.7
15	1.5	2.4	11	13	4.5	17	3.2	20	1.7	2.2	3.5	1.2
16	.64	2.2	5.3	8.8	4.6	10	3.2	25	1.7	3.0	2.7	1.2
17	.64	4.1	4.1	34	4.6	8.4	3.2	11	1.7	2.7	2.2	.88
18	.45	3.2	52	32	5.6	7.0	3.8	9.7	1.5	1.5	1.5	.76
19	.45	2.7	22	16	6.5	6.1	10	7.0	3.4	1.3	1.3	.88
20	.45	2.7	11	12	5.6	5.3	8.8	5.3	6.1	1.0	1.2	.88
21	.45	2.4	15	8.8	5.0	5.0	5.0	4.4	7.8	.88	1.2	1.0
22	.37	6.8	9.6	7.8	5.0	4.6	4.4	3.8	7.0	.88	1.0	1.0
23	.37	11	6.8	7.4	5.6	4.6	4.1	3.8	3.5	.76	1.0	1.5
24	.37	7.2	6.0	7.2	4.4	4.4	3.8	3.8	2.7	.64	.88	1.5
25	.37	5.3	6.8	72	5.0	5.3	4.1	3.5	2.0	1.2	1.0	1.3
26	22	8.8	5.6	187	5.6	32	78	3.0	2.0	1.2	1.2	1.0
27	7.2	4.6	4.6	25	4.6	17	52	3.0	4.4	1.0	1.5	1.0
28	2.7	3.8	4.3	13	4.4	9.7	14	3.5	3.8	1.2	2.2	1.0
29	1.3	3.2	4.3	9.7	---	7.4	8.8	3.2	2.2	.88	1.5	1.0
30	1.3	5.2	4.6	8.0	---	6.1	7.0	3.2	1.7	3.2	2.2	1.0
31	1.2	---	7.6	7.0	---	5.6	---	6.6	---	4.6	2.0	---
TOTAL	51.82	206.8	269.1	622.0	143.0	364.5	271.1	396.1	102.2	62.54	134.18	38.40
MEAN	1.67	6.89	8.68	20.1	5.11	11.8	9.04	12.8	3.41	2.02	4.33	1.28
MAX	22	29	52	187	6.5	54	78	76	7.8	5.3	44	5.7
MIN	.37	1.2	2.8	3.8	4.4	4.1	3.2	3.0	1.5	.64	.88	.76
CFSM	.30	1.25	1.57	3.64	.92	2.13	1.64	2.32	.62	.37	.78	.23
IN.	.35	1.39	1.81	4.18	.96	2.45	1.82	2.66	.69	.42	.90	.26

CAL YR 1977 TOTAL 1113.88 MEAN 3.05 MAX 52 MIN .06 CFSM .55 IN 7.49
WTR YR 1978 TOTAL 2661.74 MEAN 7.29 MAX 187 MIN .37 CFSM 1.32 IN 17.90

YORK RIVER BASIN

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 (2.4 km) upstream from bridge on U.S. Highway 1, 2.5 mi (4.0 km) northwest of Doswell, and 4.4 mi (7.1 km) upstream from Bull Run.

DRAINAGE AREA.--441 mi² (1,142 km²).

PERIOD OF RECORD.--March 1926 to current year. 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 (16.965 m) National Geodetic Vertical Datum of 1929.

Mar. 23, 1926, to Aug. 11, 1928, nonrecording gage at site 10.2 mi (16.4 km) upstream at different datum.

Mar. 17, 1929, to Nov. 7, 1930, nonrecording gage at present site and datum.

REMARKS.--Records good. Flow regulated since January 1972 by Lake Anna, capacity, 373,000 acre-ft (460 hm³), 20.5 mi (33.0 km) upstream. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--52 years, 386 ft³/s (10.93 m³/s), 11.89 in/yr (302 mm/yr).

EXTREMES FOR PERIOD OF RECORD:--Maximum discharge, 24,800 ft³/s (702 m³/s) Aug. 21, 1969, gage height, 32.60 ft (9.936 m); maximum gage height, 33.7 ft (10.27 m) Aug. 12, 1928, from floodmarks, present site and datum; minimum discharge, 1.0 ft³/s (0.028 m³/s) Sept. 30, Oct. 1, 2, 1932.

EXTREMES FOR CURRENT YEAR:--Maximum discharge, 9,730 ft³/s (276 m³/s) Jan. 26, gage height, 19.41 ft (5.916 m); minimum, 42 ft³/s (1.19 m³/s) Oct. 1, 2, 4, 5, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	52	110	472	188	396	341	860	169	87	84	720
2	46	52	149	268	186	287	432	368	218	96	82	324
3	50	59	134	169	220	186	396	338	198	230	218	89
4	46	80	103	146	310	570	188	494	876	679	204	79
5	48	115	121	142	400	410	161	3210	415	396	1620	74
6	53	140	241	136	419	214	155	2980	298	171	1160	72
7	53	220	200	311	415	200	169	1300	119	104	361	70
8	53	263	140	580	415	214	248	985	146	89	205	68
9	64	246	113	2680	415	585	310	2140	408	84	144	67
10	60	157	106	3640	436	924	316	2320	310	84	90	67
11	53	112	96	1650	432	2010	205	1160	119	89	82	66
12	50	89	103	258	348	2140	243	905	97	146	80	68
13	46	74	82	278	190	1800	216	745	142	80	129	72
14	70	67	92	1490	359	1220	196	1220	202	79	1310	85
15	73	63	147	932	427	2180	255	1270	89	80	270	75
16	51	60	149	1190	427	1380	253	1500	87	400	110	70
17	52	68	125	521	423	595	155	1420	85	670	87	65
18	48	73	1100	2940	427	292	121	560	84	136	79	62
19	46	78	3330	3210	419	268	552	482	90	79	73	58
20	53	82	2430	1860	216	265	838	728	1010	78	68	56
21	52	80	1560	1010	200	328	514	815	416	78	66	55
22	50	90	1470	521	307	325	186	792	338	72	66	54
23	52	117	549	468	338	307	146	438	411	68	67	56
24	51	151	203	450	236	163	138	159	200	70	67	53
25	51	136	548	1290	205	146	130	123	123	76	70	52
26	171	149	639	8590	307	1090	398	227	101	85	68	52
27	232	136	177	9100	404	2980	3200	234	104	78	67	52
28	126	115	144	7270	408	1340	3020	151	521	76	70	51
29	87	97	144	4580	---	1470	1420	117	488	73	689	51
30	63	87	159	925	---	433	905	119	136	70	792	50
31	53	---	669	326	---	200	---	159	---	80	745	---
TOTAL	2046	3308	15333	57403	9477	24918	15807	28319	8000	4683	9223	2833
MEAN	66.0	110	495	1852	338	804	527	914	267	151	298	94.4
MAX	232	263	3330	9100	436	2980	3200	3210	1010	679	1620	720
MIN	43	52	82	136	186	146	121	117	84	68	66	50
CFSM	.15	.25	1.12	4.20	.77	1.82	1.20	2.07	.61	.34	.68	.21
IN.	.17	.28	1.29	4.84	.80	2.10	1.33	2.39	.67	.40	.78	.24
CAL YR 1977	TOTAL	72494	MEAN 199	MAX 3330	MIN 40	CFSM .45	IN 6.12					
WTR YR 1978	TOTAL	181350	MEAN 497	MAX 9100	MIN 43	CFSM 1.13	IN 15.30					

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 (1.3 km) southwest of Verdon, 2.9 mi (4.7 km) west of Doswell, and 9.6 mi (15.4 km) upstream from mouth.

DRAINAGE AREA.--107 mi² (277 km²).

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 132.30 ft (40.325 m) National Geodetic Vertical Datum of 1929 (levels by La Prade Bros., Engineers).

REMARKS.--Records good. Frequent quarry dewatering by the General Crushed Stone Co. above gage adds about 0.5 ft³/s (0.014 m³/s) at times. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--17 years, 101 ft³/s (2.860 m³/s), 12.82 in/yr (326 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s (340 m³/s) Aug. 21, 1969, gage height, 11.09 ft (3.380 m), from rating curve extended above 7,600 ft³/s (220 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 0.10 ft³/s (0.003 m³/s) Sept. 25, 26, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 650 ft³/s (18 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Dec. 20	0100	762	21.6	4.57	1.393	Mar. 15	2300	660	18.7	4.36	1.329
Jan. 10	0800	980	27.8	4.91	1.497	Mar. 27	2230	790	22.4	4.61	1.405
Jan. 19	1130	945	26.8	4.83	1.472	Apr. 28	0500	1520	43.0	5.57	1.698
Jan. 27	0230	*4120	117	7.55	2.301	May 6	0300	1170	33.1	5.16	1.573
Mar. 12	1400	790	22.4	4.58	1.396						

Minimum discharge, 0.84 ft³/s (0.024 m³/s) Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	27	68	104	149	81	138	178	141	49	19	14
2	2.2	23	86	104	138	83	121	137	88	41	19	13
3	1.1	22	102	90	115	86	110	117	87	37	19	13
4	.90	36	83	73	112	91	106	196	111	40	25	12
5	.87	69	91	72	110	93	102	850	79	34	119	13
6	.87	140	173	72	108	90	99	945	68	33	130	13
7	.87	326	216	81	106	84	97	374	64	31	88	11
8	.90	370	163	144	104	84	104	262	71	29	64	10
9	1.3	570	114	696	106	93	100	463	87	26	43	9.4
10	2.7	283	91	910	106	164	95	555	94	24	30	8.7
11	1.4	144	75	378	104	500	90	350	79	24	25	7.8
12	1.3	70	64	208	108	762	84	214	62	19	23	7.5
13	1.3	70	60	156	102	660	81	162	50	17	44	9.4
14	3.5	53	64	283	97	505	76	175	43	15	71	8.7
15	8.1	43	106	438	95	615	70	186	36	16	40	9.0
16	6.1	38	134	331	95	525	67	183	31	19	38	18
17	3.9	37	115	283	95	320	67	178	29	24	34	19
18	6.7	39	305	620	95	225	65	159	31	26	28	16
19	6.7	41	708	880	104	176	100	137	34	27	24	13
20	6.7	39	640	540	104	149	142	123	62	26	20	11
21	7.0	36	335	374	99	136	156	104	52	23	17	9.4
22	7.3	38	259	266	95	127	127	85	172	19	15	8.1
23	6.7	68	202	200	88	121	100	70	119	18	13	8.4
24	6.4	106	146	156	86	115	86	66	92	16	12	7.8
25	6.1	114	127	359	84	110	78	60	73	16	12	7.5
26	69	117	123	2250	84	242	194	58	57	17	11	6.6
27	188	112	108	3270	83	680	943	54	46	19	10	6.3
28	183	93	91	1030	80	600	1340	55	38	20	9.9	6.0
29	102	76	83	390	---	289	542	52	38	21	9.4	5.5
30	58	65	78	272	---	197	252	50	47	19	9.0	5.2
31	38	---	91	194	---	156	---	73	---	20	13	---
TOTAL	735.91	3265	5101	15224	2852	8159	5732	6671	2081	765	1034.3	307.3
MEAN	23.7	109	165	491	102	263	191	215	69.4	24.7	33.4	10.2
MAX	188	570	708	3270	149	762	1340	945	172	49	130	19
MIN	.87	22	60	72	80	81	65	50	29	15	9.0	5.2
CFSM	.22	1.02	1.54	4.59	.95	2.46	1.79	2.01	.65	.23	.31	.10
IN.	.26	1.14	1.77	5.29	.99	2.84	1.99	2.32	.72	.27	.36	.11

CAL YR 1977 TOTAL 20201.26 MEAN 55.3 MAX 708 MIN .30 CFSM .52 IN 7.02
WTR YR 1978 TOTAL 51927.51 MEAN 142 MAX 3270 MIN .87 CFSM 1.33 IN 18.05

YORK RIVER BASIN

01671500 BUNCH CREEK NEAR BOSWELLS TAVERN, VA

LOCATION.--Lat 38°01'54", long 78°11'30", Louisa County, Hydrologic Unit 02080106, on right bank at upstream side of bridge on U.S. Highway 15, 2.7 mi (4.3 km) south of Boswells Tavern, 4.8 mi (7.7 km) north of Zion Cross-roads, 5.0 mi (8.0 km) upstream from mouth, and 10 mi (16 km) west of Louisa.

DRAINAGE AREA.--4.37 mi² (11.32 km²).

PERIOD OF RECORD.--October 1948 to current year. Prior to October 1967, published as Hudson Creek near Boswells Tavern.

REVISED RECORDS.--WSP 2103: Drainage area. WDR VA-73: 1972.

GAGE.--Water-stage recorder. Datum of gage is 377.14 ft (114.952 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--30 years, 4.64 ft³/s (0.131 m³/s), 14.42 in/yr (366 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,750 ft³/s (77.9 m³/s) Aug. 20, 1969, gage height, 10.64 ft (3.243 m), from rating curve extended above 340 ft³/s (9.6 m³/s) on basis of contracted-opening measurement of peak flow; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 160 ft³/s (4.5 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Jan. 9	0330	315	8.92	4.01	1.222	May 4	2200	299	8.47	3.88	1.183
Jan. 26	0500	331	9.37	4.10	1.250	May 14	0600	227	6.43	3.43	1.045
Mar. 10	1500	283	8.01	3.80	1.158	May 16	1600	347	9.83	4.22	1.286
Apr. 26	1800	*387	11.0	4.43	1.350	Aug. 4	1800	219	6.20	3.40	1.036

No flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.52	18	2.0	4.5	2.0	4.6	17	1.2	.72	1.2	2.5
2	.00	.52	5.0	1.6	3.5	1.5	4.2	14	1.1	1.1	1.2	1.2
3	.00	.78	2.5	1.4	3.1	1.4	4.0	13	1.0	2.4	1.7	.85
4	.00	1.1	1.9	1.3	2.9	1.4	3.7	85	1.2	2.4	2.5	.65
5	.00	25	7.4	2.5	2.6	1.3	3.7	164	1.1	1.4	17	.46
6	.00	20	13	2.0	2.5	1.3	3.7	27	.92	.92	3.3	.46
7	.00	26	4.0	1.6	2.1	1.4	3.4	17	.92	.65	2.1	.35
8	.00	20	2.2	1.9	1.9	1.4	3.1	20	2.0	.72	1.6	.30
9	.00	3.7	2.1	101	1.7	1.5	3.1	35	2.0	.78	1.4	.30
10	.00	3.1	1.6	4.0	1.5	118	3.0	14	1.2	.65	1.9	.25
11	.00	4.2	1.4	1.6	1.4	20	2.9	12	.92	.72	2.8	.25
12	.00	2.0	1.2	1.4	1.4	14	2.7	11	.78	.52	11	.25
13	.00	1.2	1.2	2.6	1.5	14	2.3	17	.85	.46	2.5	.30
14	.00	1.0	2.9	37	1.5	17	2.2	165	.78	.72	1.4	.35
15	.00	.92	10	7.4	1.4	19	2.1	58	.72	.72	1.4	.30
16	.00	.92	4.0	2.5	1.4	11	2.0	140	.65	1.2	1.2	.30
17	.00	2.4	3.7	12	1.5	7.5	1.9	44	.78	1.1	1.0	.30
18	.00	2.4	48	20	1.4	4.9	2.0	22	.72	.72	.78	.25
19	.00	1.2	17	8.0	1.4	4.0	5.0	13	.78	.52	.65	.20
20	.00	1.0	8.3	5.0	1.4	3.7	3.8	9.0	.85	.40	.52	.16
21	.00	.92	11	2.5	1.5	2.4	3.0	6.2	1.0	.40	.46	.20
22	.00	6.7	6.0	1.6	1.8	2.2	2.2	4.3	1.7	.25	.40	.35
23	.00	13	3.7	1.4	1.5	2.0	1.9	2.9	1.7	.20	.35	.58
24	.00	5.6	2.4	1.6	1.7	1.7	1.8	2.5	1.0	2.5	.40	.52
25	.00	3.7	2.3	86	2.0	2.4	3.7	2.1	.78	5.3	.66	.52
26	1.6	9.0	2.0	158	6.0	33	162	2.0	.78	1.4	.58	.40
27	3.3	2.8	1.8	18	3.4	18	164	1.8	2.1	.85	1.2	.35
28	1.6	2.0	1.6	11	2.5	10	30	1.5	2.2	.65	17	.35
29	.78	1.4	1.6	8.0	---	7.1	23	1.4	1.0	.40	2.0	.30
30	.65	4.6	1.6	6.0	---	5.9	20	1.3	.72	.46	1.0	.30
31	.58	---	2.8	5.0	---	4.8	---	1.7	---	1.0	1.0	---
TOTAL	8.51	167.68	192.2	533.0	61.0	335.8	475.0	924.7	33.45	32.23	110.70	13.85
MEAN	.27	5.59	6.20	17.2	2.18	10.8	15.8	29.8	1.12	1.04	3.57	.46
MAX	3.3	26	48	158	6.0	118	164	165	2.2	5.3	25	2.5
MIN	.00	.52	1.2	1.3	1.4	1.3	1.8	1.3	.65	.20	.35	.16
CFSM	.06	1.28	1.42	3.94	.50	2.47	3.62	6.82	.26	.24	.82	.11
IN.	.07	1.43	1.64	4.54	.52	2.86	4.04	7.87	.28	.27	.94	.12

CAL YR 1977 TOTAL 798.31 MEAN 2.19 MAX 48 MIN .00 CFSM .50 IN 6.79
WTR YR 1978 TOTAL 2888.12 MEAN 7.91 MAX 165 MIN .00 CFSM 1.81 IN 24.58

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 (7.2 km) northwest of Ashland, and 7.6 mi (12.2 km) upstream from Newfound River.

DRAINAGE AREA.--394 mi² (1,020 km²).

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 (25.524 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Since 1966, diversion 150 ft (46 m) above station for town of Ashland water supply has averaged less than 0.6 ft³/s (0.017 m³/s). Capacity of the diversion pickup is about 1.5 ft³/s (0.042 m³/s). Small diurnal fluctuation at low flow in some years caused by gristmills above station. Several observations 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, 365 ft³/s (10.34 m³/s), 12.58 in/yr (320 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s (484 m³/s) Aug. 23, 1969, gage height, 24.99 ft (7.617 m); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 12, 1966, caused by diversion above station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 15, 1928, reached a stage of about 24 ft (7.3 m), discharge, about 14,500 ft³/s (411 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,200 ft³/s (62 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 6	2400	2230 63.2	8.41 2.563	Jan. 26	0830	*6190 175	15.56 4.743
Dec. 21	1130	2590 73.4	9.07 2.765	Mar. 13	1800	2850 80.7	10.07 3.069
Jan. 9	1100	2790 79.0	9.61 2.929	Apr. 27	0500	3240 91.8	10.81 3.295
Jan. 20	1200	2450 69.4	8.93 2.722	May 4	2330	2990 84.7	10.29 3.136

Minimum discharge, 5.0 ft³/s (0.14 m³/s) Oct. 4, gage height, 1.04 ft (0.317 m), caused by diversion above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	95	316	383	2500	312	444	562	277	153	107	492
2	7.3	91	727	383	1350	305	394	443	208	127	119	364
3	6.5	89	588	335	740	319	353	371	196	123	174	243
4	6.1	120	389	288	370	319	327	986	582	325	336	153
5	6.1	336	425	259	395	310	315	2750	291	228	1180	125
6	6.1	1160	1070	261	380	290	302	2480	211	190	1450	111
7	6.9	2000	1280	300	370	276	290	2170	181	150	781	101
8	6.9	1850	636	657	365	285	285	916	247	125	372	90
9	11	2010	450	2500	355	319	276	1630	246	111	251	86
10	17	895	386	2380	340	1120	261	1900	243	103	200	76
11	17	434	337	2270	325	2330	259	1070	195	132	161	72
12	15	314	276	1760	317	2600	261	656	159	138	229	69
13	13	279	276	688	312	2790	257	549	155	108	363	85
14	19	223	293	1040	325	2560	247	755	158	111	966	184
15	44	191	505	1440	368	1820	236	1260	142	169	553	150
16	41	170	682	1210	327	1500	223	1160	136	190	257	101
17	40	174	493	940	327	873	214	1380	124	194	193	88
18	55	191	1150	2100	335	651	216	1100	118	182	154	81
19	44	199	2140	2370	358	532	300	696	121	159	130	74
20	35	198	2230	2190	361	467	419	533	197	123	113	67
21	30	172	2290	1140	348	425	411	435	432	104	100	64
22	25	175	1200	793	337	397	321	362	704	91	92	62
23	21	300	868	624	327	372	265	308	385	84	84	62
24	19	605	586	508	312	353	238	284	268	81	78	61
25	17	607	538	1400	300	330	227	272	224	296	77	62
26	453	556	532	5360	302	808	729	257	163	577	74	72
27	948	552	465	5010	330	1700	3070	238	161	289	73	71
28	692	460	366	4940	330	1700	3090	230	252	168	73	66
29	290	326	305	5280	---	961	2830	216	282	140	83	60
30	159	281	295	4600	---	660	1040	211	209	119	637	56
31	114	---	356	3950	---	517	---	356	---	111	261	---
TOTAL	3173.1	15053	22450	57359	13106	28201	18100	26536	7267	5201	9721	3448
MEAN	102	502	724	1850	468	910	603	856	242	168	314	115
MAX	948	2010	2290	5360	2500	2790	3090	2750	704	577	1450	492
MIN	6.1	89	276	259	300	276	214	211	118	81	73	56
CFSM	.26	1.27	1.84	4.70	1.19	2.31	1.53	2.17	.61	.43	.80	.29
IN.	.30	1.42	2.12	5.42	1.24	2.66	1.71	2.51	.69	.49	.92	.33

CAL YR 1977 TOTAL 87778.8 MEAN 240 MAX 2290 MIN 6.1 CFSM .61 IN 8.29
WTR YR 1978 TOTAL 209615.1 MEAN 574 MAX 5360 MIN 6.1 CFSM 1.46 IN 19.79

YORK RIVER BASIN

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 (30 m) downstream from bridge on State Highway 614, 0.3 mi (0.5 km) upstream from Mechumps Creek, 2.0 mi (3.2 km) east of Hanover, and 7.0 mi (11.3 km) upstream from Millpond Creek.

DRAINAGE AREA.--1,081 mi² (2,800 km²).

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 (4.487 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 15, 1976, nonrecording gage at same site and datum, and since June 11, 1957, auxiliary nonrecording gage 1.2 mi (1.9 km) downstream from base gage.

REMARKS.--Records good except those for period of doubtful or no gage-height record, Dec. 10 to Jan. 26, which are fair. Some regulation since January 1972 by Lake Anna, capacity, 373,000 acre-ft (460 hm³), and occasional diurnal fluctuation at low flow caused by mill above station.

AVERAGE DISCHARGE.--37 years, 996 ft³/s (28.21 m³/s), 12.51 in/yr (318 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,300 ft³/s (1,140 m³/s) Aug. 23, 1969, gage height, 31.12 ft (9.485 m), from floodmarks, from rating curve extended above 22,000 ft³/s (620 m³/s); minimum, 12 ft³/s (0.34 m³/s) Sept. 12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 32.6 ft (9.94 m), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,200 ft³/s (374 m³/s) Jan. 28, gage height, 23.36 ft (7.120 m); minimum, 81 ft³/s (2.29 m³/s) Oct. 6, gage height, 2.57 ft (0.783 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	241	519	1040	4340	966	1230	4640	1090	501	233	1280
2	84	224	695	705	1830	912	1290	2360	846	392	227	1140
3	84	223	1060	602	1120	825	1220	1240	756	395	248	682
4	84	289	789	633	1090	896	1070	1350	1340	668	541	354
5	83	492	674	884	1140	1120	870	4290	1580	1190	1540	261
6	83	1070	1250	2080	1230	873	815	6400	1050	704	3100	222
7	87	2760	2170	3500	1150	736	787	7280	773	488	2710	199
8	86	3090	1560	4250	1100	725	803	6470	596	370	1040	185
9	89	3090	1100	5300	1100	910	877	5110	783	316	681	175
10	93	2790	840	6400	1070	1820	911	5360	1000	290	468	166
11	94	1230	700	5800	1030	4310	867	5760	803	283	360	158
12	89	747	620	3200	1020	5360	739	4580	564	334	303	152
13	86	585	590	1680	885	6330	824	2690	495	347	409	163
14	93	486	640	2360	839	6650	694	2140	589	262	1330	186
15	177	401	775	3320	1040	6230	722	3110	537	280	2460	292
16	168	351	986	2900	1030	5820	733	3160	419	359	826	235
17	133	332	1050	2500	1040	4930	689	3540	398	893	452	195
18	121	349	1590	3550	1040	2690	573	3260	376	839	351	185
19	122	355	4200	5200	1070	1540	728	2170	369	412	286	169
20	114	370	5700	6880	1000	1250	1600	1710	535	318	247	156
21	110	360	6790	5850	839	1160	1670	1740	1760	271	217	148
22	107	333	6330	4300	840	1130	1190	1620	1610	243	195	144
23	102	439	4750	2780	918	1060	841	1420	1540	216	184	151
24	99	741	2260	1720	902	966	732	1030	1120	200	174	138
25	98	1010	1280	1270	768	806	676	774	746	223	168	143
26	197	997	1640	4000	770	1310	1010	730	564	531	181	145
27	1840	940	1100	10000	898	3980	3970	794	470	661	174	145
28	1530	881	698	12800	972	5210	6380	763	546	376	165	146
29	978	680	695	11100	---	5540	7760	662	1150	289	262	141
30	524	543	1050	10000	---	4090	7070	621	837	252	1070	134
31	328	---	1310	7750	---	1880	---	666	---	232	1230	---
TOTAL	7967	26399	55405	134354	32071	82025	49341	87440	25242	13135	21832	7990
MEAN	257	880	1787	4334	1145	2646	1645	2821	841	424	704	266
MAX	1840	3090	6790	12800	4340	6650	7760	7280	1760	1190	3100	1280
MIN	83	223	519	602	768	725	573	621	369	200	165	134
CFSM	.24	.81	1.65	4.01	1.06	2.45	1.52	2.61	.78	.39	.65	.25
IN.	.27	.91	1.91	4.62	1.10	2.82	1.70	3.01	.87	.45	.75	.27
CAL YR 1977	TOTAL	214066	MEAN	586	MAX	6790	MIN 83	CFSM	.54	IN	7.37	
WTR YR 1978	TOTAL	543201	MEAN	1488	MAX	12800	MIN 83	CFSM	1.38	IN	18.69	

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 TEMPERATURES: October 1945 to September 1946, April 1968 to January 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)
OCT												
19...	1200	124	100	7.0	12.0	3	10.4	60	79	26	7	6.3
NOV												
04...	1030	274	115	6.7	17.0	5	7.9	480	38	26	4	5.7
DEC												
13...	1000	612	70	6.8	2.0	9	13.7	240	K0	21	7	4.7
JAN												
23...	0930	12900	68	6.8	1.5	15	13.8	280	2500	21	9	5.3
FEB												
07...	1330	1160	57	7.0	1.0	10	14.2	2300	80	18	5	4.3
MAR												
07...	1215	730	62	7.0	2.0	7	14.4	27	18	19	0	4.3
APR												
03...	1230	1220	60	7.0	13.0	8	14.0	230	200	20	7	4.9
MAY												
03...	1100	1190	55	6.6	14.0	15	9.7	--	--	18	5	4.1
JUN												
13...	1230	489	75	6.6	23.5	--	7.5	460	420	26	0	6.2
JUL												
17...	1330	1010	65	6.3	24.0	--	7.5	290	300	22	6	5.1
AUG												
08...	1200	955	63	6.2	26.0	--	6.9	260	720	19	3	4.8
30...	0900	832	68	5.9	27.0	--	6.3	--	--	19	3	4.4
30...	0945	864	65	6.5	27.0	--	6.4	--	--	19	3	4.5
30...	1015	877	65	6.8	27.0	--	6.4	--	--	18	0	4.1
30...	1100	914	80	6.9	27.0	--	--	--	--	19	5	4.5
SEP												
06...	1315	217	80	7.0	27.0	--	6.5	360	280	22	2	5.1

DATE	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 (MG/L AS HC03)	CAR- BONATE (MG/L AS C03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS C02)	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 SI02)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT												
19...	2.6	5.7	2.8	24	0	3.8	10	5.1	.1	8.4	61	53
NOV												
04...	2.8	8.6	3.6	26	0	8.3	15	10	.0	12	79	71
DEC												
13...	2.3	4.4	2.0	17	0	4.3	11	4.9	.0	14	58	52
JAN												
23...	1.8	4.0	1.8	14	0	3.6	8.9	5.1	.1	8.3	56	42
FEB												
07...	1.8	3.7	1.6	16	0	2.6	8.1	3.5	.0	10	54	41
MAR												
07...	1.9	4.5	1.5	25	0	4.0	7.0	4.9	.0	11	53	48
APR												
03...	1.8	4.0	1.9	16	0	2.6	8.1	3.9	.0	8.8	56	42
MAY												
03...	1.8	3.7	1.6	16	0	6.4	7.8	2.8	.1	11	52	41
JUN												
13...	2.5	4.0	2.0	--	--	--	5.3	3.9	.1	13	60	58
JUL												
17...	2.2	3.6	2.4	--	--	--	7.8	4.0	.1	8.3	53	43
AUG												
08...	1.8	3.3	2.5	--	--	--	6.1	3.3	.1	9.1	56	41
30...	1.9	3.4	1.8	19	0	38	8.0	3.1	.1	5.4	52	38
30...	2.0	3.5	3.2	20	0	10	9.0	4.4	.1	5.4	50	43
30...	2.0	3.4	1.8	22	0	5.6	8.1	3.1	.1	5.4	48	40
30...	2.0	3.6	2.0	18	0	3.6	8.2	3.5	.1	5.4	47	39
SEP												
06...	2.3	4.8	2.2	--	--	--	7.3	4.3	.1	11	62	50

K Results based on colony count outside the acceptable range (non-ideal colony count).

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT 19...	.17	--	--	--	.04	--	--	--	--	--	--	--
NOV 04...	.15	--	--	--	.08	--	--	--	--	--	--	--
DEC 13...	.28	--	--	--	.05	2	1	1	2	0	4	<10
JAN 23...	.41	.31	.72	3.2	.03	--	--	--	--	--	--	--
FEB 07...	.34	.24	.58	2.6	.03	--	--	--	--	--	--	--
MAR 07...	.30	.29	.59	2.6	.02	0	0	0	2	0	2	10
APR 03...	.24	.15	.39	1.7	.03	--	--	0	--	--	1	--
MAY 03...	.21	.38	.59	2.6	.04	--	--	1	--	--	0	--
JUN 13...	.28	.31	.59	2.6	.04	2	1	1	2	0	2	<10
JUL 17...	.21	.46	.67	3.0	.04	--	--	--	--	--	--	--
AUG 08...	.21	.75	.96	4.3	.11	--	--	--	--	--	--	--
30...	.20	--	--	--	--	--	--	--	--	--	--	--
30...	.20	--	--	--	--	--	--	--	--	--	--	--
30...	.20	--	--	--	--	--	--	--	--	--	--	--
30...	.21	--	--	--	--	--	--	--	--	--	--	--
SEP 06...	.31	.31	.62	2.7	.05	5	--	0	--	--	--	<10

DATE	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB)
OCT 19...	--	--	--	--	--	--	--	--	--	--	--	--
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--
DEC 13...	<9	1	0	0	2	5	2	3	1000	380	30	18
JAN 23...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 07...	9	1	3	3	0	3	1	2	700	230	7	7
APR 03...	--	0	--	--	0	--	--	5	--	200	--	--
MAY 03...	--	1	--	--	0	--	--	5	--	310	--	--
JUN 13...	<9	1	0	0	0	4	1	3	1500	720	15	3
JUL 17...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 08...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	80	--	--
30...	--	--	--	--	--	--	--	--	--	100	--	--
30...	--	--	--	--	--	--	--	--	--	100	--	--
30...	--	--	--	--	--	--	--	--	--	80	--	--
SEP 06...	<10	0	10	7	3	3	0	3	860	340	--	--

< Actual value is known to be less than the value shown.

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTMBER 1978

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN)
OCT 19...	--	--	--	--	--	--	--	--	--	--	--	--
NOV 04...	--	--	--	--	--	--	--	--	--	--	--	--
DEC 13...	12	80	10	70	<.5	.0	<.5	0	0	0	10	0
JAN 23...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 07...	0	40	10	30	<.5	.0	<.5	0	0	0	10	0
APR 03...	11	--	--	30	--	--	<.5	--	--	0	--	--
MAY 03...	9	--	--	40	--	--	<.5	--	--	0	--	--
JUN 13...	12	100	80	20	<.5	.0	<.5	0	0	0	20	20
JUL 17...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 08...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 06...	--	80	40	40	<.5	.0	<.5	0	0	0	20	10

DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	ALDRIN, TOTAL ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL DDD, TOTAL (UG/L)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL DDE, TOTAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 19...	--	12	--	--	--	--	--	--	--	--
NOV 04...	--	10	ND	ND	ND	ND	ND	ND	ND	ND
DEC 13...	10	--	--	--	--	--	--	--	--	--
JAN 23...	--	1.6	--	--	--	--	--	--	--	--
FEB 07...	--	5.0	--	--	--	--	--	--	--	--
07...	--	--	ND	--	ND	--	ND	--	ND	--
MAR 07...	10	--	--	--	--	--	--	--	--	--
APR 03...	20	--	--	--	--	--	--	--	--	--
MAY 03...	10	--	--	--	--	--	--	--	--	--
25...	--	--	ND	ND	ND	ND	ND	ND	ND	ND
JUN 13...	0	--	--	--	--	--	--	--	--	--
JUL 17...	--	10	--	--	--	--	--	--	--	--
AUG 08...	--	6.6	ND	--	ND	--	ND	--	ND	--
SEP 06...	10	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown.
ND Not detected.

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN TOTAL (UG/L)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 19...	--	--	--	--	--	--	--	--	--	--
NOV 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DEC 13...	--	--	--	--	--	--	--	--	--	--
JAN 23...	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--
MAR 07...	ND	--	ND	--	ND	--	ND	--	ND	--
APR 07...	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--
JUN 25...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUL 13...	--	--	--	--	--	--	--	--	--	--
JUL 17...	--	--	--	--	--	--	--	--	--	--
AUG 08...	ND	--	ND	--	ND	--	ND	--	ND	--
SEP 06...	--	--	--	--	--	--	--	--	--	--

DATE	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)
OCT 19...	--	--	--	--	--	--	--	--	--	--
NOV 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DEC 13...	--	--	--	--	--	--	--	--	--	--
JAN 23...	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--
MAR 07...	ND	--	ND	--	ND	--	ND	--	ND	--
APR 07...	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--
JUN 25...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUL 13...	--	--	--	--	--	--	--	--	--	--
JUL 17...	--	--	--	--	--	--	--	--	--	--
AUG 08...	ND	--	ND	--	ND	--	ND	--	ND	--
SEP 06...	--	--	--	--	--	--	--	--	--	--

ND Not detected.

YORK RIVER BASIN

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01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOT. IN BOTTOM MATERIAL (UG/KG)	METHYL TRI- THION, TOTAL (UG/L)	METHYL TRI- THION, TOT. IN BOTTOM MATERIAL (UG/KG)	PARA- THION, TOTAL (UG/L)	PARA- THION, IN BOT- TOM MA- TERIAL (UG/KG)	TOX- APHENE, TOTAL (UG/L)	TOX- APHENE, IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TRI- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 19...	--	--	--	--	--	--	--	--	--	--
NOV 04...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DEC 13...	--	--	--	--	--	--	--	--	--	--
JAN 23...	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--
07...	ND	--	ND	--	ND	--	ND	--	ND	--
MAR 07...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	--	--	--	--	--	--	--	--	--
MAY 03...	--	--	--	--	--	--	--	--	--	--
25...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUN 13...	--	--	--	--	--	--	--	--	--	--
JUL 17...	--	--	--	--	--	--	--	--	--	--
AUG 08...	ND	--	ND	--	ND	--	ND	--	ND	--
SEP 06...	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 19...	--	--	--	--	--	--	--	3	1.0	100
NOV 04...	ND	ND	ND	ND	ND	ND	330	10	7.4	100
DEC 13...	--	--	--	--	--	--	--	28	46	64
JAN 23...	--	--	--	--	--	--	--	23	801	91
FEB 07...	--	--	--	--	--	--	--	16	50	100
07...	--	--	--	--	--	--	--	--	--	--
MAR 07...	--	--	--	--	--	--	1200	79	156	13
APR 03...	--	--	--	--	--	--	--	13	43	93
MAY 03...	--	--	--	--	--	--	1900	17	55	97
25...	--	--	--	--	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--	3400	25	33	100
JUL 17...	--	--	--	--	--	--	4100	41	112	90
AUG 08...	--	--	--	--	--	--	720	68	175	96
SEP 06...	--	--	--	--	--	--	--	16	9.4	100

ND Not detected.

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 4,77 1030	MAR 7,78 1215	MAY 3,78 1100	JUN 13,78 1230
TOTAL CELLS/ML	330	1200	1900	3400
DIVERSITY: DIVISION	1.6	1.6	1.1	0.9
..CLASS	1.6	1.6	1.3	0.9
...ORDER	1.9	1.7	1.5	1.1
....FAMILY	2.7	2.6	2.3	1.9
....GENUS	2.8	3.1	2.5	2.7

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...COELASTRACEAE								
....COELASTRUM	--	-	--	-	--	-	110	3
....MICRACTINIACEAE								
....MICRACTINIUM	--	-	85	7	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	43	13	210#	17	160	9	170	5
....CLOSTERIDIUM	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	140	11	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	14	1	240	7
...OOCYSTIS	--	-	--	-	96	5	72	2
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	--	-	--	-
....CRUCIGENIA	--	-	23	2	110	6	1300#	39
....SCENEDESMUS	--	-	23	2	27	1	800#	24
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	55	3	*	0
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCAEAE								
....CYCLOTELLA	--	-	--	-	--	-	240	7
....MELOSIRA	22	7	28	2	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	41	2	--	-
...CYMBELLACEAE								
....CYMBELLA	7	2	--	-	--	-	--	-
...DIATOMACEAE								
....DIATOMA	7	2	--	-	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	360#	29	27	1	--	-
....FRAGILARIA	--	-	--	-	55	3	--	-
....SYNEDRA	22	7	51	4	--	-	--	-
...GOMPHONEMATAEAE								
....GOMPHONEMA	--	-	*	0	14	1	--	-
...NAVICULACEAE								
....GYROSIGMA	7	2	--	-	--	-	--	-
....NAVICULA	50#	15	--	-	41	2	--	-
....PLEUROSIGMA	--	-	--	-	--	-	--	-
...NITZSCHIAEAE								
....NITZSCHIA	14	4	--	-	14	1	29	1
...SURIRELLACEAE								
....SURIRELLA	14	4	--	-	--	-	--	-
...TABELLARIACEAE								
....TABELLARIA	--	-	150	12	1100#	57	--	-
...CHRYSTOPHYCEAE								
...CHRYSONOMADALES								
...OCHROMONADACEAE								
....DINORRYON	--	-	--	-	55	3	--	-
...XANTHOPHYCEAE								
...HETEROCOCCALES								
...CHLOROTHECIAEAE								
...OPHTIOCYTIUM	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	17	1	--	-	--	-
...CRYPTOMONODACEAE								
....CRYPTOMONAS	--	-	11	1	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
 * - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YORK RIVER BASIN

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01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 4,77 1030		MAR 7,78 1215		MAY 3,78 1100		JUN 13,78 1230	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
..CHROCCOCCALES								
...CHROCCOCCAEAE								
....ANACYSTIS	--	-	110	9	55	3	190	6
..HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	--	-
....APHANIZOMENON	130#	39	--	-	--	-	--	-
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	41	2	--	-
....OSCILLATORIA	--	-	--	-	--	-	140	4
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
...EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	14	4	17	1	14	1	43	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YORK RIVER BASIN

01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 17,78 1330	AUG 8,78 1200	SEP 6,78 1315
TOTAL CELLS/ML	4100	720	220
DIVERSITY: DIVISION	0.9	1.6	1.5
..CLASS	0.9	1.8	1.5
..ORDER	1.5	2.2	1.5
...FAMILY	1.7	2.7	1.5
....GENUS	1.9	2.9	1.5

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...COELASTRACEAE						
....COELASTRUM	--	-	--	-	--	-
...MICRACTINIACEAE						
....MICRACTINIUM	--	-	--	-	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	220	5	--	-	--	-
....CLOSTERIDIUM	29	1	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-
....KIRCHNERIELLA	72	2	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-
...SCENEDESMACEAE						
....ACTINASTRUM	58	1	--	-	--	-
....CRUCIGENIA	120	3	--	-	--	-
....SCENEDESMUS	--	-	87	12	120#	53
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	--	-
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	72	2	22	3	--	-
....MELOSIRA	--	-	87	12	--	-
..PENNALES						
...ACHNANTHACEAE						
....ACHNANTHES	29	1	--	-	--	-
...CYMBELLACEAE						
....CYMBELLA	29	1	--	-	--	-
...DIATOMACEAE						
....DIATOMA	--	-	--	-	--	-
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	--	-	--	-
....FRAGILARIA	--	-	43	6	--	-
....SYNEDRA	--	-	65	9	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	--	-	--	-	--	-
...NAVICULACEAE						
....GYROSIGMA	--	-	--	-	--	-
....NAVICULA	*	0	65	9	43#	20
....PLEUROSIGMA	*	0	--	-	--	-
...NITZSCHIACEAE						
....NITZSCHIA	100	2	43	6	--	-
...SURIPELLACEAE						
....SURIPELLA	--	-	--	-	--	-
...TABELLARIACEAE						
....TABELLARIA	--	-	--	-	--	-
..CHRYSTOPHYCEAE						
...CHRYSOMONADALES						
...OCHROMONADACEAE						
....DINOBRYON	--	-	--	-	--	-
..XANTHOPHYCEAE						
...HETEROCOCCALES						
...CHLOROTHECIACEAE						
....OPHIOCYTIUM	--	-	22	3	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
...CRYPTOMONIDALES						
...CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	--	-	--	-
...CRYPTOMONODACEAE						
....CRYPTOMONAS	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

YORK RIVER BASIN

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01673000 PAMUNKEY RIVER NEAR HANOVER, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 17, 78 1330		AUG 8, 78 1200		SEP 6, 78 1315	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCCOCCALES						
...CHROCCOCCAEAE						
....ANACYSTIS	610	15	--	-	58#	27
...HORMOGONALES						
...NOSTOCACEAE						
....ANABAENA	--	-	240#	33	--	-
....APHANIZOMENON	--	-	--	-	--	-
...OSCILLATORIACEAE						
....LYNGBYA	--	-	--	-	--	-
....OSCILLATORIA	2700#	66	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....TRACHELOMONAS	29	1	43	6	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m ²)		Chlorophyll	Chlorophyll	Sampling method
		Dry weight	Ash weight	^a (mg/m ²)	^b (mg/m ²)	
Mar. 7	30	4.80	3.86	0.80	0.00	Polyethylene strip

YORK RIVER BASIN

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 (3.2 km) southeast of Studley, 2.4 mi (3.9 km) downstream from Hawes millrace, and 4.1 mi (6.6 km) upstream from mouth.

DRAINAGE AREA.--26.2 mi² (67.9 km²).

PERIOD OF RECORD.--October 1977 to September 1978.

GAGE.--Water-stage recorder. Datum of gage is 38.36 ft (11.692 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Oct. 1 to Nov. 3, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 160 ft³/s (4.5 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 19	1630	220 6.23	6.51 1.984	Mar. 27	1230	173 4.90	5.92 1.804
Jan. 10	0230	294 8.33	7.36 2.243	Apr. 28	0030	244 6.91	6.85 2.088
Jan. 15	0030	204 5.78	6.28 1.914	May 5	2200	252 7.14	6.91 2.106
Jan. 18	1900	228 6.46	6.63 2.021	May 10	1430	212 6.00	6.39 1.948
Jan. 21	0600	228 6.46	6.63 2.021	June 21	2230	162 4.59	5.74 1.750
Jan. 26	1930	*296 8.38	7.38 2.249	Aug. 1	2030	196 5.55	6.18 1.884
Mar. 11	1600	269 7.62	7.11 2.167	Aug. 2	1230	192 5.44	6.15 1.875

Minimum daily discharge, 0.35 ft³/s (0.010 m³/s) Oct. 1-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	16	21	52	66	35	50	54	29	22	38	43
2	.35	18	21	41	62	34	45	46	28	19	161	50
3	.35	22	20	34	62	36	42	40	27	19	76	25
4	.35	24	20	29	58	39	40	71	29	19	35	16
5	.35	37	26	27	57	36	39	202	27	19	30	12
6	.35	66	52	29	53	33	36	188	23	18	32	9.9
7	.35	103	48	36	52	32	35	94	21	16	27	8.8
8	.45	82	33	46	52	35	34	82	22	15	24	8.6
9	.60	63	27	175	48	40	33	128	25	13	20	8.6
10	.50	44	24	240	46	98	33	188	22	12	15	8.5
11	.48	31	21	94	44	231	32	112	18	12	13	8.4
12	.60	24	19	66	42	173	32	74	15	12	15	8.2
13	1.2	21	19	88	42	100	30	65	16	11	15	8.2
14	2.4	20	26	176	44	76	28	74	18	13	15	8.2
15	2.1	19	54	176	44	68	27	74	18	15	13	8.4
16	1.6	18	50	112	41	60	27	62	15	28	11	8.5
17	1.4	19	35	102	40	55	27	68	14	31	11	8.4
18	1.2	19	93	200	40	50	28	56	13	28	12	8.1
19	1.0	20	204	173	40	44	41	48	13	20	11	7.9
20	.90	18	136	176	38	41	56	41	28	15	9.8	7.9
21	.80	17	109	220	37	40	46	37	95	12	9.3	7.8
22	.76	18	109	136	36	39	35	34	118	11	8.7	7.9
23	.74	24	71	91	34	37	31	32	97	10	8.5	8.2
24	.70	27	52	76	33	36	28	32	66	9.5	8.3	8.2
25	3.5	24	50	113	33	37	28	31	36	14	8.4	8.2
26	40	30	46	248	32	98	66	30	25	33	8.6	8.2
27	30	27	39	236	31	166	204	28	24	25	8.8	7.9
28	24	23	33	121	31	112	194	30	36	16	10	7.9
29	19	21	30	88	---	76	94	35	39	12	11	7.8
30	16	20	33	76	---	62	66	33	27	11	11	7.7
31	15	---	54	68	---	54	---	30	---	11	21	---
TOTAL	167.38	915	1575	3545	1238	2073	1507	2119	984	521.5	697.4	352.4
MEAN	5.40	30.5	50.8	114	44.2	66.9	50.2	68.4	32.8	16.8	22.5	11.7
MAX	40	103	204	248	66	231	204	202	118	33	161	50
MIN	.35	16	19	27	31	32	27	28	13	9.5	8.3	7.7
CFSM	.21	1.16	1.94	4.35	1.69	2.55	1.92	2.61	1.25	.64	.86	.45
IN.	.24	1.30	2.24	5.03	1.76	2.94	2.14	3.01	1.40	.74	.99	.50

CAL YR 1977 TOTAL - MEAN - MAX - MIN - CFMS - IN -
WTR YR 1978 TOTAL 15694.68 MEAN 43.0 MAX 248 MIN .35 CFMS 1.64 IN 22.28

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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 (2.6 km) north of Snell, 2.0 mi (3.2 km) south of Spotsylvania, 4.8 mi (7.7 km) downstream from Gladys Run, and 4.9 mi (7.9 km) upstream from U.S. Highway 1.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,900 ft³/s (309 m³/s) June 22, 1972, gage height, 19.03 ft (5.800 m), from rating curve extended above 3,400 ft³/s (96 m³/s); minimum daily, 0.10 ft³/s (0.003 m³/s) Oct. 24-29, 1963, Sept. 6-13, 1966.

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Dec. 19	1500	1240	35.3	9.24	2.816	May 5	2130	1210	34.3	9.09	2.771
Jan. 27	0130	*3170	89.8	12.73	3.880						

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.64	7.3	162	87	90	50	87	85	59	52	44	16
2	.64	6.4	174	68	70	50	80	72	48	47	30	19
3	.64	9.6	79	53	64	52	71	64	37	90	22	13
4	.54	36	55	45	60	56	67	204	43	254	33	9.2
5	.54	103	75	39	57	46	67	864	39	101	54	7.0
6	.54	63	192	41	54	45	63	586	30	55	58	5.7
7	.54	163	132	47	52	47	61	210	25	37	42	4.9
8	.54	340	73	90	50	49	59	158	30	28	26	4.2
9	1.3	168	55	501	49	56	53	415	39	23	19	4.0
10	1.8	65	50	475	51	113	51	385	36	21	15	3.5
11	1.1	41	40	152	51	390	51	192	26	19	12	3.0
12	1.1	29	32	89	51	430	53	124	20	17	17	3.0
13	2.2	23	32	76	50	415	51	103	20	15	26	3.5
14	4.2	19	41	158	50	312	47	180	23	14	23	4.0
15	6.1	17	113	222	51	378	42	222	21	14	17	5.4
16	4.9	16	103	137	50	228	39	430	17	20	15	5.7
17	4.9	20	63	159	51	147	39	505	15	22	13	5.1
18	3.5	26	404	580	56	115	39	240	14	22	11	4.6
19	2.7	24	1050	560	66	96	96	152	14	17	9.2	4.2
20	2.1	19	500	234	59	87	130	152	48	14	7.3	4.0
21	2.0	17	247	168	55	79	96	100	74	12	6.4	4.0
22	2.7	23	254	118	57	77	70	79	67	11	6.4	3.5
23	6.1	86	123	98	50	71	59	65	95	9.2	4.9	3.5
24	5.7	142	89	90	47	66	52	61	68	11	4.6	3.3
25	6.1	87	80	262	47	63	50	58	34	15	4.2	3.3
26	74	124	71	2000	58	246	200	49	25	34	4.4	3.5
27	210	105	54	2630	57	620	680	42	62	23	4.4	3.0
28	65	59	44	533	51	306	367	41	95	16	7.0	2.8
29	27	43	41	174	---	152	147	42	59	13	8.0	2.8
30	14	40	44	129	---	114	104	39	37	11	7.7	2.8
31	10	---	76	106	---	96	---	46	---	16	8.0	---
TOTAL	463.12	1921.3	4548	10121	1554	5052	3071	5965	1220	1053.2	559.5	161.5
MEAN	14.9	64.0	147	326	55.5	163	102	192	40.7	34.0	18.0	5.38
MAX	210	340	1050	2630	90	620	680	864	95	254	58	19
MIN	.54	6.4	32	39	47	45	39	39	14	9.2	4.2	2.8
CFSM	.19	.83	1.90	4.21	.72	2.11	1.32	2.48	.53	.44	.23	.07
IN.	.22	.92	2.19	4.86	.75	2.43	1.48	2.87	.59	.51	.27	.08
CAL YR 1977	TOTAL	15195.03	MEAN	41.6	MAX	1050	MIN	.35	CFSM	.54	IN	7.30
WTR YR 1978	TOTAL	35689.62	MEAN	97.8	MAX	2630	MIN	.54	CFSM	1.26	IN	17.15

YORK RIVER BASIN

01674000 MATTAPONI RIVER NEAR BOWLING GREEN, VA

LOCATION.--Lat 38°03'42", long 77°23'10", Caroline County, Hydrologic Unit 02080105, on right (revised) bank 0.1 mi (0.2 km) upstream from bridge on State Highway 605, 2.2 mi (3.5 km) northwest of Bowling Green, 2.4 mi (3.9 km) upstream from South River, and 7.1 mi (11.4 km) downstream from confluence of Matta and Poni Rivers.

DRAINAGE AREA.--257 mi² (666 km²).

PERIOD OF RECORD.--September 1942 to current year.

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 (25.951 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 17, 1978, gage located on left bank at same datum.

REMARKS.--Records good. Some diurnal fluctuation from gristmill upstream on Po River. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--36 years, 239 ft³/s (6.768 m³/s), 12.63 in/yr (321 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s (379 m³/s) June 23, 1972, gage height, 18.95 ft (5.776 m), from high-water mark in well, from rating curve extended above 8,100 ft³/s (230 m³/s); no flow at times in September and October 1954, and September 1960.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1928 reached a stage of 19.5 ft (5.94 m) based on relative difference in stage between this flood and flood of Oct. 17, 1942, at Milford 4 mi (6 km) downstream, discharge, 15,000 ft³/s (425 m³/s), from rating curve extended above 8,100 ft³/s (230 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 20	2400	2280 64.6	10.44 3.182	Apr. 28	2230	2070 58.6	10.10 3.078
Jan. 27	1000	*6800 193	15.05 4.587	May 7	0100	2210 62.6	10.28 3.133

Minimum discharge, 0.78 ft³/s (0.022 m³/s) Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.87	53	189	296	635	204	464	614	228	127	48	24
2	.87	44	296	305	536	204	392	428	196	126	82	27
3	.90	41	348	271	450	204	339	348	174	146	140	34
4	.90	60	314	196	400	220	305	348	250	246	137	30
5	.84	116	246	177	350	220	288	678	237	392	271	24
6	.81	190	322	176	320	220	271	1760	174	455	330	20
7	.84	253	446	184	300	204	296	1900	142	237	262	17
8	.84	366	482	228	295	196	305	1130	157	129	212	16
9	1.8	446	356	567	290	220	262	920	204	95	129	14
10	5.1	518	254	931	280	280	228	1070	178	78	91	14
11	5.4	383	186	1420	270	464	212	1460	140	68	69	12
12	5.1	184	157	1010	280	691	212	1070	112	58	58	12
13	4.0	116	142	574	275	1070	204	726	99	49	64	12
14	5.1	85	142	555	260	1190	189	574	91	45	168	11
15	27	69	220	678	255	1190	173	574	81	45	330	11
16	25	60	288	778	250	1160	157	726	79	47	163	11
17	18	66	296	726	250	1040	152	980	74	61	89	12
18	14	76	392	778	254	752	151	1070	65	63	65	12
19	12	77	719	1220	271	555	220	980	61	57	49	12
20	11	76	1960	1550	280	446	383	726	66	49	41	11
21	10	64	2000	1340	262	374	428	555	98	42	32	9.4
22	8.9	67	1260	1040	254	339	374	437	237	36	26	9.1
23	7.2	123	920	752	237	305	288	339	228	32	24	11
24	5.7	220	700	536	220	280	237	280	228	30	22	9.7
25	5.7	271	518	568	220	254	204	246	178	64	18	9.7
26	35	288	410	2120	212	356	305	212	111	114	18	8.8
27	246	305	322	6680	212	656	700	188	92	82	19	8.3
28	282	288	254	5380	212	1380	1640	173	120	64	19	13
29	246	220	204	3080	---	1340	1650	168	170	53	19	9.4
30	139	166	196	1380	---	860	980	163	154	43	22	6.6
31	77	---	246	890	---	594	---	194	---	42	22	---
TOTAL	1202.87	5291	14785	36386	8330	17468	12009	21037	4424	3175	3039	431.0
MEAN	38.8	176	477	1174	298	563	400	679	147	102	98.0	14.4
MAX	282	518	2000	6680	635	1380	1650	1900	250	455	330	34
MIN	.81	41	142	176	212	196	151	163	61	30	18	6.6
CFSM	.15	.69	1.86	4.57	1.16	2.19	1.56	2.64	.57	.40	.38	.06
IN.	.17	.77	2.14	5.27	1.21	2.53	1.74	3.05	.64	.46	.44	.06

CAL YR 1977 TOTAL 48922.83 MEAN 134 MAX 2000 MIN .60 CFSM .52 IN 7.08
WTR YR 1978 TOTAL 127577.87 MEAN 350 MAX 6680 MIN .81 CFSM 1.36 IN 18.47

YORK RIVER BASIN

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01674500 MATTAPONI RIVER NEAR BEULAHVILLE, VA

LOCATION.--Lat 37°53'16", long 77°09'48", King and Queen County, Hydrologic Unit 02080105, on left bank 0.4 mi (0.6 km) upstream from bridge on State Highway 628, 2.4 mi (3.9 km) north of Beulahville, and 2.7 mi (4.3 km) downstream from Maracossic Creek.

DRAINAGE AREA.--601 mi² (1,557 km²).

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 (3.789 m) 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 (24 m) upstream at same datum.

REMARKS.--Records good. Diurnal fluctuation at times during low flow caused by gristmill on Po River. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--37 years, 594 ft³/s (16.82 m³/s), 13.42 in/yr (341 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft³/s (479 m³/s) June 25, 1972, gage height, 23.97 ft (7.306 m), from floodmarks; maximum gage height, 24.04 ft (7.327 m) Aug. 23, 1969; minimum discharge, 5.9 ft³/s (0.17 m³/s) Sept. 14, 1966, gage height, 0.94 ft (0.287 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,650 ft³/s (217 m³/s) Jan. 29, gage height, 19.20 ft (5.852 m); minimum, 16 ft³/s (0.45 m³/s) Oct. 5, 6, gage height, 1.61 ft (0.491 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	280	487	728	4660	580	2360	3090	673	442	207	222
2	20	230	485	750	3280	582	2000	2910	770	376	280	233
3	19	215	542	722	2560	599	1510	2340	676	348	287	216
4	18	253	576	647	1870	621	1110	1700	662	365	388	181
5	17	295	625	564	1480	630	918	1740	803	412	112	160
6	17	350	748	512	1180	621	828	2250	778	515	733	141
7	17	673	782	557	1070	594	773	2410	587	582	171	125
8	19	873	794	631	967	582	777	2710	520	536	134	111
9	22	900	799	1100	927	633	814	3450	655	365	579	100
10	46	865	754	1840	879	804	760	3680	693	277	428	93
11	51	814	601	2080	830	1280	696	3170	581	238	325	87
12	44	769	470	2110	787	1650	664	2700	464	222	265	84
13	41	570	407	2250	768	1710	639	2560	408	203	228	87
14	42	394	408	2400	773	1720	616	2590	390	183	328	84
15	192	322	543	2490	779	1840	587	2410	367	176	490	91
16	239	285	609	2220	771	2100	552	2080	331	193	659	92
17	204	271	636	1960	756	2290	530	1820	304	272	530	88
18	165	279	828	2170	758	2350	510	1710	295	302	347	83
19	131	296	1420	2390	769	2270	585	1710	282	274	254	78
20	102	281	1820	2470	769	2050	814	1820	293	229	208	71
21	81	265	1920	2690	756	1730	977	1880	430	200	176	67
22	68	266	2150	2930	724	1310	1040	1790	736	181	152	67
23	60	335	2650	2930	685	983	977	1470	877	163	134	69
24	55	437	2910	2720	653	833	835	1040	997	149	122	68
25	57	539	2590	2300	626	760	686	785	927	170	114	68
26	106	643	2130	2520	609	861	749	691	654	238	108	67
27	604	694	1630	2960	594	1350	1340	607	473	299	104	62
28	817	670	1090	4050	580	1820	2130	564	426	313	105	59
29	752	610	740	6930	---	1930	2400	544	469	261	106	56
30	550	540	610	7560	---	2090	2680	531	517	219	121	54
31	400	---	677	6790	---	2370	---	532	---	204	192	---
TOTAL	4976	14214	33431	74971	31860	41543	31857	59284	17038	8907	10187	3064
MEAN	161	474	1078	2418	1138	1340	1062	1912	568	287	329	102
MAX	817	900	2910	7560	4660	2370	2680	3680	997	582	171	233
MIN	17	215	407	512	580	580	510	531	282	149	104	54
CFSM	.27	.79	1.79	4.02	1.89	2.23	1.77	3.18	.95	.48	.55	.17
IN.	.31	.88	2.07	4.64	1.97	2.57	1.97	3.67	1.05	.55	.63	.19

CAL YR 1977 TOTAL 130262 MEAN 357 MAX 2910 MIN 13 CFSM .59 IN 8.06
WTR YR 1978 TOTAL 331332 MEAN 908 MAX 7560 MIN 17 CFSM 1.51 IN 20.51

SOUTH ATLANTIC SLOPE BASINS

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 (0.2 km) downstream from ford, 1.8 mi (2.9 km) upstream from Back Creek, and 2.2 mi (3.5 km) southwest of Bacova.

DRAINAGE AREA.--158 mi² (409 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,639.20 ft (499.628 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,970 ft³/s (197 m³/s) Apr. 5, 1977, gage height, 13.39 ft (4.081 m), from rating curve extended above 1,300 ft³/s (37 m³/s) on basis of slope-area measurements at gage heights 8.88 ft (2.707 m), 11.40 ft (3.475 m), and 13.88 ft (4.231 m); minimum, 22 ft³/s (0.62 m³/s) Sept. 27, 28, 29, 30, 1978; minimum gage height, 2.99 ft (0.911 m) Sept. 27, 28, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 11.40 ft (3.475 m), discharge, 4,800 ft³/s (136 m³/s), and flood of Dec. 26, 1973, reached a stage of 13.88 ft (4.231 m), discharge, 7,560 ft³/s (214 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	1045	*5680 161	12.26 3.737	Mar. 26	1600	4100 116	10.72 3.267
Mar. 15	0145	2840 80.4	9.26 2.822				

Minimum discharge, 22 ft³/s (0.62 m³/s) Sept. 27, 28, 29, 30; minimum gage height, 2.99 ft (0.911 m) Sept. 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	43	884	100	216	82	346	152	194	47	49	38
2	40	41	541	95	188	74	290	136	161	48	39	36
3	34	42	344	85	160	77	247	123	152	82	36	33
4	30	42	260	75	140	68	221	124	147	118	65	32
5	29	68	224	76	128	63	206	143	124	91	91	30
6	28	141	262	79	118	64	185	126	115	75	86	29
7	29	272	211	91	108	67	181	113	103	66	163	29
8	31	387	179	141	100	69	163	154	106	63	137	27
9	85	235	155	891	95	72	150	223	106	70	107	27
10	80	177	128	408	90	197	142	205	95	62	87	26
11	48	153	118	287	90	276	134	181	85	59	73	29
12	39	123	110	239	87	338	129	163	79	52	63	29
13	35	104	95	203	80	437	121	307	79	47	66	29
14	33	89	102	182	80	1350	110	662	72	47	108	29
15	32	79	188	156	85	2040	103	496	67	51	62	27
16	33	71	163	120	84	1190	96	548	65	55	52	27
17	34	71	147	115	82	707	93	548	65	55	47	27
18	33	64	200	110	83	486	90	443	61	47	43	26
19	32	57	278	100	84	407	93	358	58	41	41	25
20	32	52	258	90	83	478	101	293	56	39	38	24
21	30	49	236	84	81	484	93	248	62	38	37	24
22	30	91	202	82	76	513	87	209	72	38	38	24
23	30	244	166	79	68	419	78	192	59	37	36	24
24	30	202	149	75	78	358	73	219	52	45	35	24
25	30	167	216	400	75	372	72	185	51	52	34	24
26	138	164	232	3910	95	2660	246	161	48	45	33	24
27	180	138	190	1300	86	1900	318	149	91	38	33	23
28	96	120	170	659	84	1020	214	138	70	41	41	23
29	69	126	145	426	---	705	181	131	62	36	38	23
30	55	212	128	331	---	525	165	160	52	36	33	22
31	47	---	110	256	---	416	---	225	---	44	35	---
TOTAL	1502	3824	6791	11245	2824	17914	4728	7515	2609	1665	1846	814
MEAN	48.5	127	219	363	101	578	158	242	87.0	53.7	59.5	27.1
MAX	180	387	884	3910	216	2660	346	662	194	118	163	38
MIN	28	41	95	75	68	63	72	113	48	36	33	22
CFSM	.31	.80	1.39	2.30	.64	3.66	1.00	1.53	.55	.34	.38	.17
IN.	.35	.90	1.60	2.65	.66	4.22	1.11	1.77	.61	.39	.43	.19

CAL YR 1977 TOTAL 45116 MEAN 124 MAX 4590 MIN 27 CFSM .79 IN 10.62
WTR YR 1978 TOTAL 63277 MEAN 173 MAX 3910 MIN 22 CFSM 1.10 IN 14.90

JAMES RIVER BASIN

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02011400 JACKSON RIVER NEAR BACOVA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March to September 1978.

EXTREMES FOR PERIOD MARCH TO SEPTEMBER 1978.--

WATER TEMPERATURES: Maximum, 28.0°C July 23; minimum, 0.5°C Mar. 2-6.

TEMPERATURE (DEG. C) OF WATER, MARCH TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	MARCH			APRIL			MAY		
1	5.0	2.0	3.5	10.5	7.0	8.5	9.0	9.0	9.0
2	3.5	.5	2.0	8.5	7.0	7.5	9.5	9.0	9.0
3	2.5	.5	1.5	8.5	7.0	8.0	9.5	9.0	9.0
4	2.5	.5	1.5	8.5	7.5	8.0	9.5	9.0	9.5
5	5.0	.5	2.0	9.0	8.0	8.5	9.0	9.0	9.0
6	5.0	.5	2.5	8.5	8.0	8.0	9.5	9.0	9.5
7	3.5	2.0	2.5	9.0	8.0	8.5	10.0	9.5	10.0
8	2.5	2.0	2.0	9.0	8.5	8.5	10.0	9.5	10.0
9	5.5	2.0	3.5	9.0	8.5	8.5	10.5	9.5	10.0
10	4.5	3.5	4.0	9.0	8.5	9.0	10.0	9.5	10.0
11	7.0	3.5	5.0	9.5	9.0	9.0	10.0	9.5	10.0
12	5.0	4.0	4.5	9.5	9.0	9.0	10.5	10.0	10.5
13	6.0	4.5	5.0	9.5	9.0	9.0	14.5	10.5	11.5
14	6.5	5.0	5.5	9.5	9.0	9.0	12.0	11.0	11.0
15	7.5	4.5	6.0	9.5	9.0	9.0	11.0	10.5	10.5
16	6.0	5.0	5.5	10.5	8.5	9.0	11.0	10.5	11.0
17	5.5	4.5	5.0	10.0	9.0	9.5	12.0	10.5	11.5
18	6.5	4.0	5.0	9.0	9.0	9.0	12.5	11.0	12.0
19	9.0	4.5	6.5	10.0	9.0	9.5	14.5	11.0	13.0
20	9.0	6.5	7.5	9.5	9.0	9.0	15.0	12.0	13.5
21	9.0	7.0	8.0	9.0	8.5	9.0	16.0	13.0	14.5
22	9.0	7.0	8.5	11.0	8.5	9.5	16.0	13.0	14.5
23	9.5	7.0	8.0	11.0	8.5	10.0	14.5	13.0	14.0
24	10.5	8.5	9.5	11.5	9.0	10.0	14.5	13.5	14.0
25	9.0	6.5	7.5	10.5	9.5	10.0	17.0	13.5	15.0
26	6.5	5.0	6.0	9.5	8.0	8.5	19.5	15.5	17.5
27	7.0	6.5	6.5	8.5	8.5	8.5	21.0	15.5	18.5
28	8.5	6.5	7.5	9.0	8.5	8.5	21.5	16.5	19.0
29	8.5	7.0	8.0	9.0	8.5	9.0	22.5	17.0	19.5
30	8.5	6.5	7.5	9.0	9.0	9.0	21.0	17.5	19.0
31	10.0	7.5	8.5	---	---	---	21.0	17.5	19.0
MONTH	10.5	.5	5.5	11.5	7.0	9.0	22.5	9.0	12.5

JAMES RIVER BASIN

02011400 JACKSON RIVER NEAR BACOVA, VA--Continued

TEMPERATURE (DEG. C) OF WATER, MARCH TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	22.5	17.0	19.5	26.5	22.5	24.5	26.5	24.0	25.0	24.0	22.5	23.5
2	22.5	17.0	19.5	25.0	23.0	24.0	27.5	23.5	25.0	22.5	21.0	21.5
3	20.0	17.5	18.5	24.0	22.5	23.0	27.5	24.0	25.5	24.0	20.0	22.0
4	20.5	15.5	17.5	22.5	21.0	21.5	25.5	22.0	23.5	24.5	20.5	22.5
5	19.5	15.5	17.5	22.5	19.5	21.0	25.0	22.0	23.5	24.5	20.0	22.0
6	22.0	16.5	19.0	24.0	19.5	21.5	24.5	22.0	23.5	25.0	20.0	22.5
7	20.5	18.0	19.5	25.5	20.0	22.5	23.5	21.5	22.5	25.0	21.0	23.0
8	20.0	18.0	19.0	25.5	22.5	24.0	25.0	21.0	23.0	25.5	21.0	23.5
9	22.0	18.0	20.0	26.5	21.5	24.0	24.5	21.5	23.0	25.5	21.0	23.5
10	22.5	16.5	19.5	26.0	23.0	24.5	25.5	21.5	23.5	24.0	22.0	22.5
11	23.5	17.0	20.5	26.0	22.5	24.0	25.0	22.0	23.5	24.5	21.0	22.5
12	24.5	19.5	22.0	25.0	20.0	22.5	26.5	22.5	24.5	25.0	21.5	23.5
13	24.5	20.5	22.0	24.0	20.0	22.0	27.0	21.5	25.0	24.0	21.5	23.0
14	22.5	17.0	19.5	23.0	21.5	22.0	24.0	21.0	22.5	21.0	19.0	20.0
15	21.0	16.0	18.5	25.5	21.5	23.0	26.5	23.0	24.5	22.0	18.0	20.0
16	18.5	17.0	18.0	23.5	21.5	22.5	27.0	24.0	25.5	22.0	19.5	20.5
17	23.5	17.5	20.0	24.5	20.5	22.5	27.5	24.0	25.5	24.0	19.5	21.5
18	25.0	20.5	22.5	26.0	20.5	23.0	26.5	22.0	24.5	24.5	21.0	23.0
19	25.5	21.0	23.5	26.5	21.5	24.0	27.0	23.0	25.0	25.0	22.0	23.5
20	26.0	21.5	24.0	27.0	22.5	24.5	27.0	24.0	25.5	25.0	22.0	23.5
21	24.0	22.0	23.0	27.5	23.5	25.5	25.5	21.0	23.0	25.5	23.0	24.0
22	25.0	20.5	22.5	27.0	24.5	25.5	25.0	20.0	22.5	24.0	22.0	23.5
23	24.5	19.5	22.0	28.0	24.0	26.0	25.5	20.5	23.0	22.5	19.0	20.5
24	24.0	20.0	22.0	27.0	24.0	25.5	25.5	21.5	23.5	19.0	18.0	18.5
25	25.5	20.0	22.5	24.5	23.0	23.5	26.5	22.0	24.0	20.5	17.5	19.0
26	25.5	22.0	23.5	26.5	22.5	24.5	27.0	23.0	25.0	19.5	16.5	18.0
27	27.0	21.5	24.5	27.0	23.0	25.0	25.5	23.5	24.5	19.0	16.0	17.5
28	27.5	23.5	25.5	26.5	23.0	24.5	26.5	22.5	24.5	19.0	17.0	17.5
29	26.5	22.5	24.5	26.5	22.0	24.0	26.5	23.5	25.0	17.5	14.5	16.0
30	27.0	22.5	24.5	24.5	23.0	24.0	26.5	23.5	24.5	16.5	14.5	15.5
31	---	---	---	27.0	22.0	24.5	25.0	23.5	24.5	---	---	---
MONTH	27.5	15.5	21.0	28.0	19.5	23.5	27.5	20.0	24.0	25.5	14.5	21.5

JAMES RIVER BASIN

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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 (270 m) upstream from bridge on State Highway 600, 0.8 mi (1.3 km) upstream from Gap Run, and 4.8 mi (7.7 km) northeast of Sunrise.

DRAINAGE AREA.--56.7 mi² (146.9 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 2,200.02 ft (670.566 m) National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Highways and Transportation).

REMARKS.--Records good except those for period of no gage-height record, Dec. 15 to Jan. 31, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,400 ft³/s (153 m³/s) Jan. 26, 1978, gage height, 6.80 ft (2.073 m); minimum, 3.1 ft³/s (0.088 m³/s) July 21, 1977, gage height, 0.07 ft (0.021 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 850 ft³/s (24 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 1	0300	1360 38.5	4.35 1.326	Mar. 14	1800	1710 48.4	4.70 1.433
Jan. 9	---	Unknown	Unknown	Mar. 26	1130	3510 99.4	5.93 1.807
Jan. 26	0500	*5400 153	6.80 2.073				

Minimum discharge, 3.8 ft³/s (0.11 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	27	852	63	107	33	183	119	200	21	39	21
2	32	24	323	52	86	32	153	95	117	24	30	14
3	21	22	190	48	71	30	126	76	89	154	24	11
4	15	23	135	46	65	27	103	69	73	145	120	9.6
5	11	37	118	45	56	29	97	71	50	81	236	8.1
6	9.4	98	145	44	58	29	83	57	45	49	117	7.7
7	8.4	173	130	44	58	23	79	49	41	37	175	7.0
8	9.4	238	110	110	56	23	69	62	42	34	178	6.4
9	96	154	94	730	52	26	62	114	47	156	117	6.2
10	82	115	74	265	47	79	58	140	39	65	74	5.6
11	46	99	75	150	46	128	58	121	35	50	49	5.6
12	29	85	70	130	40	179	56	99	32	35	41	6.7
13	22	70	54	110	38	202	49	195	32	29	36	7.0
14	18	56	74	95	35	846	44	530	28	32	50	7.0
15	16	45	230	90	30	858	41	367	25	33	36	6.7
16	14	38	190	84	29	513	39	324	23	29	29	6.4
17	16	36	150	75	27	305	37	427	22	28	25	6.4
18	14	31	140	65	26	208	36	347	20	23	21	6.7
19	13	27	170	60	24	190	37	252	18	19	18	6.2
20	12	23	165	56	31	265	45	186	20	17	15	5.6
21	12	21	135	50	37	342	47	143	29	16	13	5.3
22	12	28	110	45	35	393	47	112	30	14	12	5.0
23	12	144	86	40	35	262	45	97	22	13	11	5.0
24	11	173	77	45	35	235	45	114	18	15	10	5.0
25	11	135	160	420	31	256	45	106	17	41	10	5.0
26	96	123	210	2440	38	2110	114	95	16	26	9.2	4.8
27	143	105	150	500	41	1030	320	79	42	19	11	4.2
28	85	87	125	245	37	530	274	68	41	20	20	4.2
29	58	98	105	155	---	386	206	58	33	16	12	4.2
30	42	230	87	125	---	297	156	69	27	22	10	4.0
31	33	---	75	110	---	230	---	406	---	47	14	---
TOTAL	1011.2	2565	4809	6537	1271	10096	2754	5047	1273	1310	1562.2	207.6
MEAN	32.6	85.5	155	211	45.4	326	91.8	163	42.4	42.3	50.4	6.92
MAX	143	238	852	2440	107	2110	320	530	200	156	236	21
MIN	8.4	21	54	40	24	23	36	49	16	13	9.2	4.0
CFSM	.58	1.51	2.73	3.72	.80	5.75	1.62	2.87	.75	.75	.89	.12
IN.	.66	1.68	3.15	4.29	.83	6.62	1.81	3.31	.83	.86	1.02	.14

CAL YR 1977 TOTAL 25497.0 MEAN 69.9 MAX 2200 MIN 3.3 CFSM 1.23 IN 16.72
WTR YR 1978 TOTAL 38443.0 MEAN 105 MAX 2440 MIN 4.0 CFSM 1.85 IN 25.21

JAMES RIVER BASIN

02011480 BACK CREEK ON ROUTE 600, NEAR MOUNTAIN GROVE, VA

LOCATION.--Lat 38°08'05", long 79°51'57", Bath County, Hydrologic Unit 02080201, on right bank 70 ft (21 m) upstream from bridge on State Highway 600, 2.8 mi (4.5 km) northeast of Mountain Grove, and 3.0 mi (4.8 km) upstream from Little Back Creek.

DRAINAGE AREA.--85.8 mi² (222.2 km²).

PERIOD OF RECORD.--October 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,818.05 ft (554.142 m) National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Highways and Transportation).

REMARKS.--Records good except those for period of no gage-height record, Jan. 9-31, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--5 years, 139 ft³/s (3.936 m³/s), 22.00 in/yr (559 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,420 ft³/s (210 m³/s) Dec. 26, 1973, gage height, 9.90 ft (3.018 m), from rating curve extended above 5,200 ft³/s (150 m³/s) on basis of runoff comparisons with nearby stations; minimum, 2.2 ft³/s (0.062 m³/s) Sept. 21, 22, 1978, gage height, 1.21 ft (0.369 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft³/s (37 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 1	---	Unknown	Unknown	Mar. 14	Unknown	3450 97.7	7.25 2.210
Jan. 9	---	Unknown	Unknown	Mar. 26	1230	6160 174	9.05 2.758
Jan. 26	---	*Unknown	Unknown				

Minimum discharge, 2.2 ft³/s (0.062 m³/s) Sept. 21, 22, gage height, 1.21 ft (0.369 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	39	1320	91	138	59	213	136	230	28	60	26
2	32	33	411	83	134	50	180	112	146	27	37	21
3	27	29	234	61	116	50	148	97	115	101	30	16
4	20	29	172	63	98	45	126	92	100	142	108	13
5	17	35	152	61	99	42	119	95	78	92	243	12
6	15	109	190	61	90	41	106	82	68	61	136	10
7	14	206	172	67	86	42	105	73	58	46	192	8.6
8	15	305	138	84	85	40	92	94	58	40	218	8.2
9	90	197	125	1100	83	42	84	164	63	114	146	7.2
10	115	153	100	360	78	102	79	190	56	73	106	7.7
11	66	135	86	190	77	169	76	180	49	60	79	8.6
12	44	116	82	165	73	220	75	157	44	41	63	8.6
13	33	95	78	140	73	250	66	251	42	33	56	9.7
14	26	76	86	120	69	1280	63	820	39	30	65	11
15	22	63	247	100	61	1740	56	505	34	38	54	11
16	21	56	204	90	59	830	53	434	32	33	44	10
17	22	51	165	80	56	411	51	570	32	34	37	10
18	22	46	159	72	57	284	49	434	30	28	33	10
19	19	38	182	64	54	234	50	315	28	23	30	5.9
20	18	34	186	60	54	302	60	221	27	23	28	3.4
21	17	30	167	58	60	377	61	173	53	21	24	2.3
22	17	38	144	56	57	497	60	136	48	20	20	5.9
23	16	162	120	54	54	351	56	119	35	19	16	7.2
24	16	207	111	56	52	305	56	138	30	17	15	7.4
25	15	170	170	540	52	313	56	134	28	40	14	7.7
26	96	153	218	3880	65	3380	112	124	25	32	13	6.6
27	186	133	176	820	65	1880	340	110	57	26	13	6.4
28	121	115	141	370	59	820	287	100	48	25	22	5.9
29	86	115	126	240	---	480	213	90	43	23	18	6.1
30	65	215	113	175	---	346	164	106	33	22	14	6.4
31	49	---	102	160	---	264	---	416	---	48	18	---
TOTAL	1334	3183	6077	9521	2104	15246	3256	6668	1729	1360	1952	279.8
MEAN	43.0	106	196	307	75.1	492	109	215	57.6	43.9	63.0	9.33
MAX	186	305	1320	3880	138	3380	340	820	142	230	243	26
MIN	12	29	78	54	52	40	49	73	25	17	13	2.3
CFSM	.50	1.24	2.28	3.58	.88	5.73	1.27	2.51	.67	.51	.73	.11
IN.	.58	1.38	2.63	4.13	.91	6.61	1.41	2.89	.75	.59	.85	.12

CAL YR 1977	TOTAL	37068.0	MEAN 102	MAX 4150	MIN 5.4	CFSM 1.19	IN 16.06
WTR YR 1978	TOTAL	52709.8	MEAN 144	MAX 3880	MIN 2.3	CFSM 1.68	IN 22.84

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 (0.5 km) downstream from Cummings Run, 0.8 mi (1.3 km) downstream from bridge on State Highway 39, and 2.1 mi (3.4 km) south of Mountain Grove.

DRAINAGE AREA.--134 mi² (347 km²).

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 (518.602 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--27 years, 181 ft³/s (5.126 m³/s), 18.34 in/yr (466 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s (360 m³/s) Mar. 7, 1967, gage height, 10.77 ft (3.283 m), from rating curve extended above 4,000 ft³/s (110 m³/s) on basis of slope-area measurements at gage heights 7.39 ft (2.252 m), 9.05 ft (2.758 m), and 9.35 ft (2.850 m); minimum, 1.5 ft³/s (0.042 m³/s) Aug. 18, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft³/s (54 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 1	0530	2990 84.7	6.44 1.963	Mar. 14	2030	3890 110	7.12 2.170
Jan. 9	0600	2330 66.0	5.89 1.795	Mar. 26	1330	8650 245	9.36 2.853
Jan. 26	0700	*10600 300	10.07 3.069				

Minimum discharge, 8.3 ft³/s (0.24 m³/s) Sept. 21, 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	65	2030	118	174	80	278	203	292	42	64	31
2	36	57	789	106	140	75	238	162	195	42	58	26
3	33	53	424	80	122	70	200	137	162	118	41	22
4	26	50	287	77	104	64	174	135	139	153	107	19
5	22	56	239	80	102	59	163	137	111	110	236	17
6	19	119	305	80	100	61	144	121	97	84	140	16
7	18	266	276	86	98	62	139	111	87	68	225	15
8	19	568	214	114	96	59	123	159	88	64	260	14
9	96	350	186	1560	93	61	115	296	90	132	168	13
10	143	243	142	650	90	165	110	304	80	95	121	14
11	93	212	114	375	88	311	108	254	70	76	93	16
12	69	177	106	308	87	423	106	211	65	56	77	15
13	53	142	104	266	86	504	96	439	62	45	68	16
14	43	116	110	217	73	1890	92	1100	57	39	98	16
15	36	100	369	204	62	2330	82	660	50	50	84	16
16	33	88	340	198	63	1320	78	608	47	47	64	16
17	33	82	260	178	63	697	75	742	44	49	52	15
18	31	74	246	120	65	451	75	553	41	36	44	14
19	28	66	286	86	69	356	77	399	36	29	38	12
20	27	59	300	87	70	495	86	295	33	28	33	10
21	25	54	262	85	78	624	84	241	67	26	29	8.9
22	24	75	218	75	68	747	83	197	67	24	25	9.7
23	23	318	173	67	66	512	78	177	49	23	22	12
24	23	383	154	70	64	426	78	211	41	55	20	12
25	22	285	262	821	64	459	77	201	36	71	19	12
26	120	241	372	5860	89	5160	181	185	34	51	18	10
27	305	199	305	1340	90	2290	555	161	88	36	18	10
28	186	166	231	677	88	991	414	141	73	35	25	10
29	125	167	185	425	---	623	306	128	65	30	23	10
30	96	399	153	290	---	443	243	165	52	28	19	10
31	77	---	132	225	---	342	---	483	---	56	24	---
TOTAL	1900	5230	9575	14925	2452	22150	4658	9316	2418	1798	2313	437.6
MEAN	61.3	174	309	481	87.6	715	155	301	80.6	58.0	74.6	14.6
MAX	305	568	2030	5860	174	5160	555	1100	292	153	260	31
MIN	16	50	104	67	62	59	75	111	33	23	18	8.9
CFSM	.46	1.30	2.31	3.59	.65	5.34	1.16	2.25	.60	.43	.56	.11
IN.	.53	1.45	2.66	4.14	.68	6.15	1.29	2.59	.67	.50	.64	.12

CAL YR 1977 TOTAL 56338.0 MEAN 154 MAX 6100 MIN 10 CFSM 1.15 IN 15.64
WTR YR 1978 TOTAL 77172.6 MEAN 211 MAX 5860 MIN 8.9 CFSM 1.58 IN 21.42

JAMES RIVER BASIN

0211500 BACK CREEK NEAR MOUNTAIN GROVE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June to September 1978.

EXTREMES FOR PERIOD JUNE TO SEPTEMBER 1978.--

WATER TEMPERATURES: Maximum, 30.5°C July 23; minimum, 16.5°C July 5, 6, 13.

TEMPERATURE (DEG. C) OF WATER, JUNE TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	26.5	20.5	24.0	27.0	23.5	25.0	24.5	21.5	23.0
2	---	---	---	25.0	21.0	24.0	28.5	20.5	25.0	22.5	20.5	21.5
3	---	---	---	24.0	20.5	23.0	29.5	20.5	25.5	26.0	19.5	22.5
4	---	---	---	22.5	20.5	21.5	25.5	21.5	24.0	26.0	20.0	23.0
5	---	---	---	23.5	16.5	20.5	24.0	19.0	21.5	---	---	---
6	---	---	---	25.0	16.5	21.5	23.5	21.0	22.0	---	---	---
7	---	---	---	27.5	20.0	23.5	22.5	20.5	21.5	---	---	---
8	---	---	---	26.5	20.5	24.0	24.0	19.5	21.5	---	---	---
9	---	---	---	26.0	21.0	23.5	24.0	20.5	22.0	---	---	---
10	---	---	---	26.0	20.5	23.5	25.5	20.5	23.0	---	---	---
11	---	---	---	27.5	21.5	24.0	25.5	21.0	23.5	---	---	---
12	---	---	---	26.5	18.5	22.5	26.5	21.5	24.0	---	---	---
13	---	---	---	24.0	16.5	22.0	27.0	22.0	24.5	---	---	---
14	---	---	---	24.0	21.0	22.5	25.0	22.0	23.5	---	---	---
15	---	---	---	27.0	21.0	23.5	27.0	22.0	24.5	---	---	---
16	---	---	---	23.5	20.5	22.0	29.0	23.0	25.5	---	---	---
17	---	---	---	27.0	20.0	23.0	29.0	22.5	25.0	---	---	---
18	---	---	---	27.0	20.0	23.5	28.0	21.0	24.5	---	---	---
19	---	---	---	28.5	20.5	24.5	29.0	22.0	25.5	---	---	---
20	---	---	---	29.5	20.5	25.5	29.5	23.5	26.0	---	---	---
21	---	---	---	29.5	23.5	26.0	27.0	19.0	23.0	---	---	---
22	26.5	20.0	23.0	27.0	24.0	25.5	26.5	18.5	22.5	---	---	---
23	26.5	18.0	22.5	30.5	20.5	26.0	27.5	20.0	23.5	---	---	---
24	25.0	19.0	22.0	29.5	21.0	25.0	27.0	21.0	24.5	---	---	---
25	27.0	19.0	23.0	24.0	20.5	22.0	28.0	21.5	24.5	---	---	---
26	27.5	21.5	24.5	27.0	21.5	24.0	29.0	22.0	25.5	---	---	---
27	28.0	20.5	24.5	27.0	22.0	24.5	26.5	23.0	24.5	---	---	---
28	29.5	20.5	25.0	26.5	22.0	24.0	27.5	23.0	25.0	---	---	---
29	27.5	20.5	24.5	27.0	21.0	24.0	27.0	23.0	25.0	---	---	---
30	28.0	21.5	24.5	25.5	20.5	23.5	27.5	23.0	25.0	---	---	---
31	---	---	---	28.5	21.5	25.0	25.0	23.0	24.0	---	---	---
MONTH	29.5	18.0	23.5	30.5	16.5	23.5	29.5	18.5	24.0	26.0	19.5	22.5

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 (0.6 km) upstream from Cedar Creek, 0.5 mi (0.8 km) downstream from Gathright Dam, and 7.3 mi (11.7 km) southwest of Hot Springs.

DRAINAGE AREA.--345 mi² (894 km²).

PERIOD OF RECORD.--October 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft (426.720 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Dec. 20, 1973, nonrecording gage at same site and datum.

REMARKS.--Records good. Some regulation at high flow since October 1973 by Gathright Dam (under construction). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--5 years, 462 ft³/s (13.08 m³/s), 18.19 in/yr (462 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,000 ft³/s (821 m³/s) Dec. 26, 1973, result of cofferdam failure during construction of Gathright Dam, gage height, 18.77 ft (5.721 m), from rating curve extended above 4,400 ft³/s (120 m³/s) on basis of slope-area measurement of peak flow; minimum, 65 ft³/s (1.84 m³/s) Sept. 30, 1978; minimum gage height, 8.23 ft (2.509 m) Oct. 27, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 17.20 ft (5.243 m), from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,000 ft³/s (368 m³/s) Jan. 26, gage height, 15.74 ft (4.798 m); minimum, 65 ft³/s (1.84 m³/s) Sept. 30; minimum gage height, 8.45 ft (2.576 m) Sept. 23, 28, 29-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	155	3270	310	440	225	780	482	624	129	149	97
2	98	142	1730	287	400	203	662	411	460	128	127	99
3	117	135	1000	215	360	202	574	352	386	158	113	90
4	98	133	707	170	300	194	510	337	373	330	128	86
5	91	142	587	185	290	163	475	384	299	253	391	84
6	88	251	678	205	270	175	429	345	264	203	276	81
7	85	510	630	236	240	183	415	310	237	172	399	79
8	88	1180	519	282	235	182	369	437	234	153	493	77
9	211	776	462	2830	240	190	335	723	234	205	355	75
10	332	559	381	1460	225	511	315	710	223	214	268	75
11	218	489	270	847	205	879	302	608	195	175	213	79
12	163	414	240	663	214	1060	293	527	181	153	182	80
13	135	337	250	589	216	1230	271	765	175	132	162	78
14	121	269	270	515	221	3500	254	2320	167	127	219	80
15	110	246	588	439	207	6470	234	1530	155	132	198	77
16	106	219	644	300	199	3290	222	1350	149	145	158	76
17	108	211	544	310	196	1800	214	1540	147	142	137	75
18	106	195	540	290	199	1200	210	1260	141	129	124	75
19	102	176	657	250	204	930	216	977	135	115	115	74
20	98	162	674	240	210	1100	231	756	129	107	109	72
21	94	151	633	225	206	1220	229	634	141	104	101	69
22	92	187	563	200	205	1410	217	542	173	107	97	68
23	91	746	473	180	160	1130	203	478	152	102	94	68
24	91	782	417	190	190	950	195	537	134	99	92	70
25	89	612	523	1090	184	918	192	498	126	175	88	70
26	238	548	734	10600	251	7480	473	450	123	149	87	69
27	669	471	626	5300	242	8060	1140	400	177	121	93	67
28	424	402	516	1680	232	2640	836	357	190	115	92	67
29	284	376	437	1080	---	1680	649	329	165	110	102	67
30	221	669	392	720	---	1220	551	397	143	104	92	65
31	181	---	343	530	---	952	---	681	---	115	90	---
TOTAL	5031	11645	20298	32418	6741	51347	11996	21427	6432	4603	5344	2289
MEAN	162	388	655	1046	241	1656	400	691	214	148	172	76.3
MAX	669	1180	3270	10600	440	8060	1140	2320	624	330	493	99
MIN	82	133	240	170	160	163	192	310	123	99	87	65
CFSM	.47	1.13	1.90	3.03	.70	4.80	1.16	2.00	.62	.43	.50	.22
IN.	.54	1.26	2.19	3.50	.73	5.54	1.29	2.31	.69	.50	.58	.25
CAL YR 1977	TOTAL	134162	MEAN	368	MAX	12600	MIN	78	CFSM	1.07	IN	14.47
WTR YR 1978	TOTAL	179571	MEAN	492	MAX	10600	MIN	65	CFSM	1.43	IN	19.36

02011950 JOHNSON SPRING NEAR HOT SPRINGS, VA

LOCATION.--Lat 37°54'56", long 79°58'22", Alleghany County, Hydrologic Unit 02080201, on right bank at upstream end of culvert on State Highway 638, 90 ft (27 m) upstream from Jackson River, 0.5 mi (0.8 km) upstream from Board Tree Run, 3.7 mi (6.0 km) downstream from Gathright Dam, and 9.6 mi (15.4 km) southwest of Hot Springs.

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,390 ft (424 m), from topographic map.

REMARKS.--Records fair except those for period of no gage-height record, July 13 to Aug. 21, and those for period of backwater, Mar. 26-27, which are poor. Records do not include diversion by two Ram pumps of an average of about 0.4 ft³/s (0.01 m³/s) for private water supplies. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 4.0 ft³/s (0.11 m³/s) Apr. 5, 1977; minimum discharge, 0.26 ft³/s (0.007 m³/s) Oct. 1, 1977; minimum daily, 0.32 ft³/s (0.009 m³/s) Oct. 2, 1977; minimum gage height, 0.20 ft (0.061 m) July 3, Oct. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 3.7 ft³/s (0.10 m³/s) Mar. 26; minimum discharge, 0.26 ft³/s (0.007 m³/s) Oct. 1, gage height, 0.20 ft (0.061 m); minimum daily, 0.32 ft³/s (0.009 m³/s) Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.38	.64	1.8	1.6	1.9	1.5	2.3	2.2	2.7	.76	.55	.49
2	.32	.61	1.8	1.5	1.9	1.4	2.3	2.2	2.6	.75	.53	.49
3	.45	.60	1.8	1.2	1.8	1.4	2.2	2.2	2.6	.78	.52	.48
4	.45	.62	1.8	.94	1.8	1.3	2.2	2.2	2.5	.85	.65	.47
5	.49	.90	1.8	.80	1.8	1.2	2.3	2.2	2.4	.83	.62	.48
6	.48	1.3	1.8	.76	1.8	1.1	2.3	2.2	2.4	.75	.70	.48
7	.48	1.3	1.8	.79	1.8	1.1	2.3	2.2	2.4	.70	.68	.48
8	.48	1.3	1.8	.96	1.8	1.2	2.3	2.2	2.4	.67	.74	.47
9	.81	1.2	1.8	1.5	1.7	1.3	2.3	2.3	2.3	.65	.82	.46
10	1.2	1.2	1.8	1.5	1.6	1.8	2.3	2.3	2.1	.59	.80	.46
11	1.2	1.1	1.7	1.6	1.5	2.0	2.3	2.5	1.8	.57	.73	.48
12	.75	.83	1.7	1.6	1.2	2.0	2.3	2.5	1.7	.57	.71	.49
13	.63	.80	1.6	1.6	1.1	2.0	2.2	2.7	1.6	.56	.69	.49
14	.60	.79	1.5	1.6	1.1	2.7	2.2	2.9	1.6	.57	.68	.51
15	.56	.78	1.4	1.7	1.1	3.1	2.2	2.8	1.4	.61	.88	.51
16	.51	.72	1.5	1.7	1.0	2.5	2.1	2.8	1.3	.58	.85	.50
17	.48	.68	1.6	1.7	1.0	2.3	2.1	2.8	1.3	.56	.76	.48
18	.47	.67	1.6	1.7	1.0	2.3	2.1	2.8	1.2	.55	.52	.48
19	.45	.63	1.4	1.6	1.1	2.2	2.1	2.8	1.2	.54	.47	.47
20	.44	.61	1.6	1.6	1.1	2.2	2.0	2.8	1.1	.53	.47	.46
21	.42	.61	1.6	1.4	1.2	2.2	1.9	2.7	1.1	.53	.47	.48
22	.41	.64	1.6	1.3	1.2	2.2	1.8	2.7	1.0	.52	.47	.47
23	.39	1.2	1.6	1.0	1.2	2.2	1.8	2.7	1.0	.52	.46	.46
24	.38	1.4	1.6	.92	1.2	2.1	1.7	2.7	.99	.53	.46	.46
25	.39	1.5	1.7	1.3	1.1	2.1	1.5	2.7	.90	.63	.46	.48
26	1.2	1.6	1.7	3.5	1.2	3.7	1.7	2.7	.88	.58	.46	.48
27	1.2	1.6	1.7	2.1	1.4	3.4	2.1	2.7	.94	.59	.47	.48
28	1.1	1.6	1.7	1.9	1.4	2.6	2.1	2.6	.94	.55	.48	.48
29	.98	1.7	1.7	1.9	---	2.5	2.1	2.6	.83	.53	.48	.48
30	.84	1.8	1.7	1.9	---	2.4	2.1	2.7	.77	.53	.48	.46
31	.70	---	1.7	1.9	---	2.3	---	2.8	---	.51	.49	---
TOTAL	19.64	30.93	51.9	47.07	39.0	64.3	63.2	79.2	47.95	18.99	18.55	14.36
MEAN	.63	1.03	1.67	1.52	1.39	2.07	2.11	2.55	1.60	.61	.60	.48
MAX	1.2	1.8	1.8	3.5	1.9	3.7	2.3	2.9	2.7	.85	.88	.51
MIN	.32	.60	1.4	.76	1.0	1.1	1.5	2.2	.77	.51	.46	.46

CAL YR 1977 TOTAL 355.85 MEAN .97 MAX 4.0 MIN .32
WTR YR 1978 TOTAL 495.09 MEAN 1.36 MAX 3.7 MIN .32

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 (6 m) upstream from Smith Bridge, 0.8 mi (1.3 km) south of town of Falling Spring, 1.6 mi (2.6 km) downstream from Falling Spring Creek, and 5.5 mi (8.8 km) north of Covington.

DRAINAGE AREA.--411 mi² (1,064 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1925 to current year. Prior to October 1934, published as "at Barber."

REVISED RECORDS.--WSP 952: 1927, 1928(M), 1929-30, 1932-40. WSP 1303: 1926(M), 1930-34(M). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,333.49 ft (406.448 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Oct. 26, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good. Some regulation at high flow since October 1973 by Gathright Dam (under construction) 7.6 mi (12.2 km) upstream from station.

AVERAGE DISCHARGE.--53 years, 488 ft³/s (13.82 m³/s), 16.12 in/yr (409 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft³/s (700 m³/s) Mar. 17, 1936, gage height, 14.74 ft (4.493 m), from rating curve extended above 17,000 ft³/s (480 m³/s) on basis of records for other stations in James River basin; minimum, 36 ft³/s (1.02 m³/s) Oct. 12, 1946, gage height, 2.65 ft (0.808 m), due to regulation from unknown source; minimum daily, 52 ft³/s (1.47 m³/s) Sept. 8, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of about 20 ft (6.1 m), discharge, about 50,000 ft³/s (1,400 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,800 ft³/s (362 m³/s) Jan. 26, gage height, 11.89 ft (3.624 m); minimum, 72 ft³/s (2.04 m³/s) Sept. 27, 28, 29, 30; minimum gage height, 3.11 ft (0.948 m) Oct. 1, Sept. 22, 23, 27, 28, 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	197	3070	358	647	269	968	632	779	163	188	119
2	112	176	1900	331	540	247	834	538	568	163	163	124
3	131	168	1160	281	450	242	725	461	471	188	144	114
4	116	165	854	215	400	233	631	440	456	368	149	108
5	106	182	692	230	360	196	582	505	377	306	407	103
6	100	310	786	260	330	212	528	458	333	253	346	96
7	96	607	738	272	300	220	503	413	302	217	441	93
8	101	1330	592	338	295	225	456	585	294	193	544	90
9	250	959	514	2830	285	245	414	919	293	227	416	88
10	387	684	434	1700	270	813	390	899	284	265	325	87
11	267	577	320	1110	255	1210	374	775	254	225	265	97
12	199	480	290	858	250	1320	365	666	238	195	230	99
13	163	398	300	700	255	1490	340	917	229	166	208	94
14	146	336	311	595	263	3750	316	2400	218	159	302	95
15	133	292	637	500	248	7390	293	1720	204	162	265	94
16	127	265	749	370	239	3680	279	1580	196	184	212	91
17	127	255	615	350	236	2110	271	1740	193	176	182	90
18	125	237	595	330	239	1460	265	1460	185	163	162	88
19	118	215	757	305	246	1150	269	1170	176	146	149	83
20	115	197	793	290	254	1270	284	948	169	134	141	82
21	110	182	752	265	251	1380	284	808	174	130	129	79
22	108	217	661	245	247	1560	269	690	217	134	122	76
23	106	854	547	220	194	1310	254	609	197	135	119	75
24	106	915	476	240	245	1100	245	660	171	126	114	80
25	106	722	568	1140	225	1040	240	615	161	200	109	79
26	268	631	850	10800	302	7290	1510	550	158	192	108	77
27	793	538	721	5900	293	8620	1600	493	251	156	113	74
28	510	457	624	1900	280	2820	1110	446	240	145	125	73
29	350	432	526	1270	---	1880	867	411	207	140	127	73
30	274	735	444	968	---	1420	740	511	182	131	118	73
31	227	---	391	791	---	1140	---	844	---	139	112	---
TOTAL	5969	13713	22667	35962	8399	57292	16206	25863	8177	5681	6535	2694
MEAN	193	457	731	1160	300	1848	540	834	273	183	211	89.8
MAX	793	1330	3070	10800	647	8620	1600	2400	779	368	544	124
MIN	92	165	290	215	194	196	240	411	158	126	108	73
CFSM	.47	1.11	1.78	2.82	.73	4.50	1.31	2.03	.66	.45	.51	.22
IN.	.54	1.24	2.05	3.25	.76	5.19	1.47	2.34	.74	.51	.59	.24

CAL YR 1977 TOTAL 147112 MEAN 403 MAX 13100 MIN 79 CFSM .98 IN 13.32
WTR YR 1978 TOTAL 209158 MEAN 573 MAX 10800 MIN 73 CFSM 1.39 IN 18.93

02012500 JACKSON RIVER AT FALLING SPRING, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1948, 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1968 to current year.

WATER TEMPERATURES: December 1968 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 500 micromhos Oct. 2, 1970; minimum daily, 61 micromhos Dec. 21, 26, 1977.

WATER TEMPERATURES: 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, 290 micromhos Sept. 25, 29; minimum daily, 61 micromhos Dec. 21, 26.

WATER TEMPERATURES: Maximum daily, 27.5°C Aug. 20; minimum daily, 2.0°C Dec. 10, 28, Jan. 10, 12.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT												
15...	1600	129	241	3	120	33	37	5.6	2.1	2.2	100	35
NOV												
15...	1700	287	205	11	86	28	28	4.0	1.8	1.8	71	25
DEC												
15...	1500	788	160	12	74	23	24	3.3	1.5	1.4	61	18
JAN												
15...	1700	476	158	10	73	26	24	3.2	1.5	1.3	58	18
FEB												
15...	1600	242	190	10	90	24	29	4.2	1.9	1.6	80	22
MAR												
15...	1530	5820	95	20	44	9	15	1.7	1.4	1.3	43	9.7
APR												
15...	1330	290	199	10	95	26	31	4.3	1.5	1.7	84	22
MAY												
15...	1745	1580	110	20	54	11	18	2.1	1.5	.9	52	9.7
JUN												
15...	1830	203	215	10	110	31	36	5.0	1.9	1.7	97	26
JUL												
15...	1930	165	228	10	95	29	29	5.5	2.1	2.2	81	30
AUG												
15...	1445	257	217	10	100	26	33	4.8	2.3	1.8	93	25
SEP												
15...	1545	94	273	5	140	47	43	7.3	2.3	2.4	110	40

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT												
15...	3.4	.1	6.0	146	141	.05	.20	.00	.05	.00	.00	50
NOV												
15...	2.4	.1	5.8	111	105	.28	1.2	.00	.28	.00	.00	10
DEC												
15...	1.8	.1	4.8	94	86	.27	1.2	.00	.27	.00	.00	20
JAN												
15...	.7	.1	5.0	74	84	.38	1.7	.00	.38	.00	.00	0
FEB												
15...	1.3	.1	5.4	115	107	.37	1.6	.00	.37	.00	.00	10
MAR												
15...	1.8	.0	4.5	66	59	.59	2.6	.00	.59	.00	.00	50
APR												
15...	2.4	.1	2.9	82	108	.12	.50	.01	.13	.00	.00	0
MAY												
15...	1.4	.0	5.5	69	66	.26	1.2	.00	.26	.00	.00	0
JUN												
15...	2.0	.1	5.3	143	127	.17	.80	.01	.18	.00	.00	0
JUL												
15...	2.0	.1	3.7	119	115	.00	.00	.00	.00	.00	.00	0
AUG												
15...	2.4	.1	6.5	136	123	.22	1.0	.00	.22	.00	.00	0
SEP												
15...	2.1	.1	6.9	166	159	.08	.40	.00	.08	.00	.00	0

02012500 JACKSON RIVER AT FALLING SPRING, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	219	99	84	137	173	---	160	135	225	233	260
2	280	218	124	94	137	180	153	168	140	230	230	257
3	262	225	130	88	158	183	160	170	153	235	239	205
4	260	230	137	121	160	185	160	179	165	183	247	200
5	260	239	137	87	163	195	168	168	180	180	181	240
6	262	240	159	90	158	185	169	173	160	195	181	207
7	270	199	150	181	172	187	173	175	178	165	181	210
8	270	133	159	181	177	185	178	172	190	213	267	220
9	280	140	160	89	183	187	179	135	183	215	184	280
10	208	169	170	108	195	153	182	115	200	195	188	278
11	213	180	188	126	198	127	182	137	205	198	204	240
12	220	180	110	140	200	122	184	140	218	210	208	220
13	223	181	127	141	195	115	188	135	215	218	215	265
14	237	198	97	148	190	97	197	95	218	225	209	265
15	241	205	160	158	190	95	199	110	215	228	217	273
16	247	215	117	168	190	95	198	120	220	235	220	265
17	255	220	67	176	192	110	200	115	210	210	226	280
18	255	212	78	80	197	118	209	120	235	---	233	263
19	260	229	75	142	196	130	208	125	220	230	238	220
20	256	227	75	123	193	123	206	135	225	210	240	223
21	259	223	61	137	190	113	204	150	223	238	199	280
22	263	223	109	112	190	90	204	140	218	230	248	280
23	260	163	97	125	197	120	206	160	220	246	250	225
24	262	153	109	68	193	115	209	155	223	246	224	233
25	262	146	70	80	195	120	210	158	225	230	256	290
26	256	160	61	68	178	83	100	163	218	205	254	260
27	180	167	82	93	175	80	116	167	220	226	260	280
28	170	168	77	103	175	100	135	155	210	240	260	263
29	177	173	104	120	---	115	138	160	198	240	205	290
30	189	153	100	125	---	125	147	165	220	243	205	237
31	200	---	117	138	---	133	---	148	---	241	253	---
MEAN	241	193	113	119	181	134	178	147	201	220	224	250

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	14.0	9.0	5.0	4.0	5.0	---	13.0	21.5	25.5	25.5	24.0
2	19.0	14.5	7.0	3.5	4.5	4.0	13.5	14.0	21.5	24.5	26.5	22.5
3	18.0	16.0	8.0	4.0	4.0	4.0	13.0	14.5	20.5	23.5	27.0	24.0
4	16.0	16.5	8.0	4.5	4.5	4.5	14.0	12.5	20.0	22.5	24.5	24.5
5	16.0	17.0	9.0	4.0	3.0	4.0	15.0	13.0	18.0	22.0	23.5	25.0
6	15.5	16.0	7.0	5.5	3.5	5.0	14.0	14.5	20.0	22.5	23.0	24.5
7	15.0	15.0	3.0	5.0	4.0	4.5	15.5	15.0	20.5	23.0	22.5	24.0
8	14.0	14.5	3.0	6.0	3.5	4.0	16.0	13.5	21.0	25.5	23.5	24.5
9	15.5	14.0	3.0	3.0	3.0	4.5	15.5	13.5	20.5	25.5	22.5	24.0
10	15.0	13.5	2.0	2.0	4.0	5.0	16.5	14.0	21.0	26.0	23.5	23.5
11	15.0	11.0	3.0	2.5	4.5	5.5	16.0	14.5	23.0	25.0	23.5	24.0
12	15.5	8.5	3.0	2.0	4.0	6.0	15.5	16.0	22.5	25.0	25.0	24.5
13	14.5	8.0	5.0	3.0	4.5	6.5	15.0	14.5	22.0	23.0	23.5	23.5
14	14.0	8.0	7.0	3.5	3.5	7.0	14.5	12.0	22.0	22.0	24.0	20.5
15	14.5	8.5	7.0	5.0	4.5	7.5	14.0	12.0	21.5	23.5	25.5	23.5
16	12.5	10.0	7.0	3.5	4.0	6.0	14.5	12.5	19.0	23.0	26.5	22.0
17	12.0	11.0	7.5	4.5	4.5	6.5	15.5	14.0	22.0	23.0	26.5	23.0
18	12.5	10.5	8.0	5.0	5.0	6.5	13.5	14.5	25.0	---	25.5	24.5
19	12.0	7.5	7.5	4.5	5.5	8.5	12.5	16.5	25.0	26.5	26.0	26.0
20	13.5	8.0	7.0	5.0	5.0	9.0	12.0	18.0	24.5	27.0	27.5	26.0
21	13.5	9.5	6.5	2.5	4.5	9.5	10.5	18.0	24.5	27.5	25.5	25.5
22	14.0	10.0	5.0	3.5	3.5	10.0	14.0	17.5	22.5	26.0	25.5	24.5
23	14.0	11.5	5.0	5.5	4.5	11.0	13.0	17.0	25.0	26.5	25.0	21.0
24	14.0	10.0	5.5	5.0	5.0	10.0	14.0	17.0	24.5	26.5	26.0	19.5
25	14.0	9.5	7.0	4.5	5.5	8.0	12.5	17.5	24.0	23.5	26.0	20.5
26	14.5	6.0	3.0	4.0	5.0	6.0	13.0	19.5	25.0	26.0	27.0	21.0
27	13.5	6.5	2.5	4.5	5.5	7.0	12.5	19.5	25.0	24.5	26.0	19.5
28	14.5	7.0	2.0	3.5	5.0	8.0	13.0	21.0	25.5	26.5	24.5	19.0
29	15.5	7.5	3.0	3.0	---	9.0	13.0	21.5	25.5	26.0	25.5	18.0
30	14.5	8.0	3.5	3.5	---	9.5	13.5	21.0	27.5	26.0	25.0	17.0
31	13.5	---	5.0	4.0	---	10.0	---	21.0	---	26.5	25.0	---
MEAN	14.5	11.0	5.5	4.0	4.5	7.0	14.0	16.0	22.5	25.0	25.0	23.0

JAMES RIVER BASIN

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 (76 m) upstream from Dry Run and 1.7 mi (2.7 km) upstream from Dunlap Creek and bridge on U.S. Highway 60.

DRAINAGE AREA.--439 mi² (1,137 km²).

PERIOD OF RECORD.--June to September 1978.

EXTREMES FOR PERIOD JUNE TO SEPTEMBER 1978.--

WATER TEMPERATURES: Maximum, 30.0°C Aug. 20; minimum, 15.5°C Sept. 30.

TEMPERATURE (DEG. C) OF WATER, JUNE TO SEPTEMBER 1978

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	27.0	24.5	26.0	27.0	25.5	26.0	25.5	24.0	24.5
2	---	---	---	26.5	24.5	25.5	27.0	24.5	26.0	24.0	21.0	23.0
3	---	---	---	26.5	24.5	25.0	29.5	25.5	27.0	26.0	22.0	23.5
4	---	---	---	25.0	23.5	24.5	27.0	25.0	26.0	26.5	21.0	24.0
5	---	---	---	23.5	22.0	22.5	26.0	24.5	25.0	26.5	21.0	24.0
6	---	---	---	24.5	21.0	23.0	26.5	24.0	25.0	27.0	22.0	24.0
7	---	---	---	26.0	22.0	24.0	25.0	23.5	24.0	27.0	21.0	24.5
8	---	---	---	27.0	24.0	25.5	25.5	23.5	24.5	27.5	23.0	25.0
9	---	---	---	27.5	21.0	25.5	25.5	23.5	24.5	27.5	23.0	25.0
10	---	---	---	27.0	25.0	26.0	26.0	23.5	24.5	25.0	21.0	24.0
11	---	---	---	27.0	24.5	25.5	26.0	24.0	25.0	25.0	21.0	23.5
12	---	---	---	26.5	23.5	24.5	27.0	24.0	25.5	26.5	23.0	24.5
13	---	---	---	24.5	23.0	24.0	28.0	25.0	26.0	25.5	23.5	24.5
14	---	---	---	24.0	23.0	23.5	26.5	25.0	26.0	23.5	20.5	22.0
15	---	---	---	26.0	21.0	24.0	27.0	24.5	25.5	24.5	20.5	22.0
16	---	---	---	25.0	23.5	24.0	28.0	25.5	26.5	24.0	21.0	22.5
17	---	---	---	26.5	21.0	24.0	28.0	25.5	26.5	25.5	21.0	23.0
18	---	---	---	27.0	23.0	24.5	28.0	24.5	26.0	26.5	22.0	24.0
19	---	---	---	27.0	24.0	25.5	29.0	24.5	26.5	27.5	23.5	25.0
20	---	---	---	28.0	24.5	26.0	30.0	26.0	27.0	27.5	24.0	25.5
21	---	---	---	29.5	25.0	27.0	28.0	24.0	25.5	27.0	24.5	26.0
22	---	---	---	29.0	26.0	27.0	27.5	21.0	24.5	26.0	24.0	25.0
23	26.5	22.5	24.5	29.5	26.0	27.5	27.5	22.5	25.0	24.0	20.5	22.5
24	26.0	22.5	24.0	29.5	26.0	27.0	27.5	23.5	25.0	21.5	20.5	21.0
25	26.5	23.0	24.5	26.0	24.5	25.5	28.0	24.0	25.5	23.0	19.5	20.5
26	27.0	24.0	25.0	27.5	24.0	25.5	28.5	24.5	26.0	22.5	19.0	20.5
27	28.5	24.5	26.0	27.5	24.5	25.5	27.5	25.5	26.5	21.0	17.5	19.5
28	29.5	25.5	27.0	27.5	24.5	25.5	28.5	25.0	26.5	21.0	18.0	19.5
29	27.0	25.0	26.0	27.5	21.0	25.5	28.5	25.0	26.5	20.0	16.0	18.0
30	28.0	24.5	26.0	26.5	24.5	25.5	27.5	25.0	26.0	18.0	15.5	17.0
31	---	---	---	28.5	24.0	26.0	27.0	25.0	26.0	---	---	---
MONTH	29.5	22.5	25.5	29.5	21.0	25.0	30.0	21.0	25.5	27.5	15.5	23.0

LOCATION.--Lat 37°48'10", long 80°02'50", Allegheny County, Hydrologic Unit 02080201, on right bank 20 ft (6 m) downstream from bridge on U.S. Highway 60, 2.2 mi (3.5 km) downstream from Ogle Creek, and 3.0 mi (4.8 km) west of Covington.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
Nov. 8	0030	3980	113	7.34	2.237	Mar. 14	2000	5770	163	8.82	2.688
Jan. 9	0730	2500	70.8	5.84	1.780	Mar. 26	1200	4650	132	8.01	2.441
Jan. 26	0900	*7760	220	9.98	3.042	Apr. 26	2330	4010	114	7.38	2.249
Mar. 10	1900	2570	72.8	5.96	1.817						

Minimum discharge, 12 ft³/s (0.34 m³/s) Sept. 25, gage height, 1.11 ft (0.338 m); minimum daily, 15 ft³/s (0.42 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	66	1320	95	180	125	254	276	106	25	29	22
2	132	58	667	89	165	109	216	222	92	30	24	21
3	98	55	401	73	152	112	183	186	87	55	23	20
4	58	190	286	68	132	104	162	180	90	52	24	20
5	44	359	252	69	124	88	153	240	80	41	25	19
6	37	398	273	70	110	89	139	251	73	36	39	18
7	32	1110	247	104	105	104	133	232	67	33	66	17
8	32	1880	201	227	100	127	119	698	63	31	61	16
9	291	595	184	1790	101	189	110	1070	61	29	49	16
10	237	359	152	667	94	1470	104	621	55	28	77	16
11	118	265	123	369	90	1460	102	409	53	29	63	20
12	76	214	111	280	92	1300	102	314	50	26	48	23
13	58	180	108	248	86	1460	93	536	49	25	40	23
14	49	152	116	212	90	3440	86	1070	45	32	34	21
15	43	122	192	175	85	3030	80	594	43	80	32	21
16	40	100	197	130	79	1460	76	486	42	53	29	20
17	42	14	183	125	78	723	75	442	40	49	27	19
18	42	106	177	118	81	472	79	374	38	43	25	18
19	40	102	168	105	90	370	81	306	35	36	24	18
20	37	94	168	98	104	395	84	250	34	32	22	17
21	35	88	178	93	106	406	81	213	33	29	21	17
22	32	214	175	85	99	380	78	179	36	27	20	16
23	31	1180	156	79	89	297	73	169	34	26	19	16
24	30	625	147	85	90	245	72	185	32	36	19	16
25	30	388	153	1140	92	239	73	166	30	45	19	17
26	253	323	152	5030	165	3320	1660	147	30	35	18	16
27	455	274	140	1240	147	2110	2350	130	32	30	18	16
28	214	235	129	577	133	822	803	116	28	28	22	16
29	138	271	126	378	---	516	472	106	27	27	22	16
30	102	492	108	288	---	375	347	128	26	25	23	15
31	78	---	101	229	---	300	---	130	---	25	24	---
TOTAL	2931	10599	7091	14336	3059	25637	8440	10426	1511	1098	986	546
MEAN	94.5	353	229	462	109	827	281	336	50.4	35.4	31.8	18.2
MAX	455	1880	1320	5030	180	3440	2350	1070	106	80	77	23
MIN	27	55	101	68	78	88	72	106	26	25	18	15
CFSM	.58	2.15	1.40	2.82	.67	5.04	1.71	2.05	.31	.22	.19	.11
IN.	.66	2.40	1.61	3.25	.69	5.82	1.91	2.36	.34	.25	.22	.12
CAL YR 1977	TOTAL	57010	MEAN 156	MAX	7100	MIN 15	CFSM .95	IN 12.93				
WTR YR 1978	TOTAL	86660	MEAN 237	MAX	5030	MIN 15	CFSM 1.45	IN 19.66				

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, 0.5 mi (0.8 km) downstream from Dunlap Creek.

DRAINAGE AREA.--614 mi² (1,590 km²).

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

REVISED RECORDS.--WDR VA-76-1: 1975(M).

GAGE.--Water-stage recorder. Datum of gage is 1,206.50 ft (367.741 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Small diurnal fluctuation at low flow caused by Westvaco plant 0.8 mi (1.3 km) upstream from station and occasionally by dam on Dunlap Creek 12.7 mi (20.4 km) upstream from station. Some regulation at high flow since October 1973 by Gathright Dam (under construction) 19.9 mi (32.0 km) upstream from station. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,200 ft³/s (657 m³/s) Apr. 5, 1977, gage height, 19.85 ft (6.050 m); minimum, 88 ft³/s (2.49 m³/s) Sept. 7, 1976, Jan. 29, 1977 (result of freezeup), gage height, 4.43 ft (1.350 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1972, reached a stage of 24.36 ft (7.425 m), discharge, about 34,000 ft³/s (960 m³/s), from floodmarks, and flood of Dec. 27, 1973, reached a stage of 22.09 ft (6.733 m), from floodmarks, discharge, about 28,000 ft³/s (790 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,200 ft³/s (544 m³/s) Jan. 26, gage height, 17.86 ft (5.444 m); minimum, 91 ft³/s (2.58 m³/s) Sept. 9, 30; minimum gage height, 4.51 ft (1.375 m) Sept. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	293	4310	489	803	441	1340	960	914	191	243	173
2	267	265	3010	458	754	406	1120	799	658	198	228	174
3	259	246	1780	404	667	395	946	677	558	240	212	161
4	212	353	1270	326	552	384	823	640	547	382	214	150
5	181	570	1030	334	561	331	756	778	459	357	396	126
6	166	701	1120	359	526	334	691	750	404	291	470	119
7	155	1620	1070	406	443	361	654	679	366	247	514	119
8	166	3230	866	549	430	408	599	1270	347	222	613	120
9	549	1720	750	4600	443	497	543	2150	348	223	510	110
10	719	1130	643	2730	417	2250	511	1690	335	302	437	116
11	451	894	509	1550	375	2930	490	1280	298	256	359	133
12	327	733	448	1180	375	2830	479	1040	277	224	301	139
13	260	607	456	1050	381	3090	448	1410	265	181	270	134
14	234	510	456	887	388	6370	414	3800	252	180	333	130
15	209	442	806	738	368	10400	383	2670	236	231	320	128
16	200	394	1020	530	353	5670	363	2310	229	237	267	125
17	197	384	861	500	350	3280	352	2460	224	221	234	123
18	199	369	804	480	352	2220	349	2080	214	207	209	123
19	189	345	938	450	369	1700	355	1650	205	171	185	123
20	180	320	1000	420	397	1780	369	1310	201	155	178	115
21	175	297	985	390	397	1930	373	1080	194	147	169	116
22	169	414	897	355	391	2120	351	898	233	148	162	106
23	163	2060	762	325	318	1800	330	796	229	156	160	102
24	158	1710	670	340	361	1470	316	849	198	151	159	107
25	155	1240	710	2060	354	1360	313	799	187	231	160	110
26	436	1050	1020	14800	499	9210	3030	704	180	240	162	107
27	1340	900	907	8400	497	11000	4210	632	226	202	174	103
28	829	764	750	3000	467	4250	2170	569	265	176	192	101
29	547	763	634	1950	---	2760	1500	519	227	176	184	100
30	418	1270	598	1410	---	2040	1160	592	211	165	178	98
31	341	---	531	1060	---	1610	---	896	---	172	167	---
TOTAL	9996	25594	31611	52530	12588	85627	25738	38737	9487	6680	8360	3691
MEAN	322	853	1020	1695	450	2762	858	1250	316	215	270	123
MAX	1340	3230	4310	14800	803	11000	4210	3800	914	382	613	174
MIN	145	246	448	325	318	331	313	519	180	147	159	98
CFSM	.52	1.39	1.66	2.76	.73	4.50	1.40	2.04	.52	.35	.44	.20
IN.	.61	1.55	1.92	3.18	.76	5.19	1.56	2.35	.57	.40	.51	.22
CAL YR 1977	TOTAL	216255	MEAN 592	MAX 18800	MIN 113	CFSM .96	IN 13.10					
WTR YR 1978	TOTAL	310639	MEAN 851	MAX 14800	MIN 98	CFSM 1.39	IN 18.82					

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 (1.3 km) downstream from Blue Spring Creek, and 5.2 mi (8.4 km) southwest of Covington.

DRAINAGE AREA.--153 mi² (396 km²).

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 (388.294 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1956, nonrecording gage at site 1.3 mi (2.1 km) downstream at different datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--41 years, 178 ft³/s (5.041 m³/s), 15.80 in/yr (401 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) June 21, 1972, gage height, 12.33 ft (3.758 m); minimum observed, 13 ft³/s (0.37 m³/s) Nov. 29, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,400 ft³/s (68 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0030	3480 98.6	7.54 2.298	Mar. 26	1800	2520 71.4	6.58 2.006
Jan. 26	0830	*5420 153	8.98 2.737	Apr. 26	2330	4300 122	8.21 2.502
Mar. 14	2400	4440 126	8.32 2.536				

Minimum discharge, 25 ft³/s (0.71 m³/s) Sept. 9, gage height, 2.31 ft (0.704 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	86	798	105	270	134	398	510	147	42	44	38
2	132	81	652	100	240	118	344	406	126	48	41	35
3	72	81	452	72	205	123	292	339	123	77	38	34
4	43	242	354	77	175	118	250	348	136	75	37	33
5	34	452	327	86	170	102	239	555	112	56	37	31
6	33	592	312	90	160	112	216	474	100	51	40	30
7	31	1290	261	88	150	118	202	402	94	48	56	29
8	34	2100	218	134	145	126	188	666	94	44	67	29
9	112	707	212	1170	130	156	171	845	93	41	62	27
10	102	430	183	540	125	845	159	660	87	41	77	27
11	64	342	148	370	110	1040	156	520	80	41	74	32
12	47	268	134	310	110	1040	159	429	75	40	64	48
13	39	225	154	280	116	1260	144	744	77	40	64	37
14	38	193	145	251	118	2520	134	1040	70	61	53	34
15	36	167	161	212	112	3020	123	708	67	84	48	32
16	39	145	145	160	108	1580	121	650	64	74	44	31
17	45	151	140	177	108	975	118	560	64	82	41	31
18	52	151	151	186	108	666	128	474	61	66	38	30
19	43	131	167	154	112	535	136	402	58	53	35	29
20	38	120	174	150	108	510	139	348	82	47	34	29
21	34	115	177	148	112	525	139	301	87	44	33	28
22	33	244	167	130	110	525	136	259	78	41	32	28
23	31	840	151	112	94	460	128	239	67	40	31	28
24	30	564	145	120	114	388	126	231	59	50	30	28
25	30	410	142	513	116	366	126	209	56	48	30	29
26	209	374	134	4230	168	1590	1840	174	53	48	29	29
27	292	305	110	1460	139	1690	2570	156	58	44	30	28
28	186	268	105	780	136	1010	1290	141	50	41	34	28
29	142	305	108	535	---	726	878	136	47	41	56	28
30	115	439	110	375	---	565	640	156	44	38	44	27
31	98	---	108	310	---	465	---	206	---	38	40	---
TOTAL	2270	11818	6745	13425	3869	23408	11690	13288	2409	1584	1383	927
MEAN	73.2	394	218	433	138	755	390	429	80.3	51.1	44.6	30.9
MAX	292	2100	798	4230	270	3020	2570	1040	147	84	77	48
MIN	30	81	105	72	94	102	118	136	44	38	29	27
CFSM	.48	2.58	1.43	2.83	.90	4.94	2.55	2.80	.53	.33	.29	.20
IN.	.55	2.87	1.64	3.26	.94	5.69	2.84	3.23	.59	.39	.34	.23

CAL YR 1977	TOTAL	57075	MEAN	156	MAX	4440	MIN	21	CFSM	1.02	IN	13.88
WTR YR 1978	TOTAL	92816	MEAN	254	MAX	4230	MIN	27	CFSM	1.66	IN	22.57

JAMES RIVER BASIN

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 (5 m) downstream from bridge on State Highway 614 at Williamsville and 0.62 mi (1.00 km) upstream from mouth.

DRAINAGE AREA.--110 mi² (285 km²).

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 (490.771 m) National Geodetic Vertical Datum of 1929. Prior to July 12, 1974, at site 700 ft (213 m) upstream at datum 11.84 ft (3.609 m) higher.

REMARKS.--Records good except those for period of no gage-height record, Jan. 26-27, which are fair. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--18 years, 142 ft³/s (4.021 m³/s), 17.53 in/yr (445 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,430 ft³/s (267 m³/s) Apr. 5, 1977, from rating curve extended above 3,300 ft³/s (93 m³/s); maximum gage height, 10.84 ft (3.304 m) Dec. 26, 1973, from floodmarks; minimum discharge, 21 ft³/s (0.59 m³/s) Dec. 8, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	Unknown	*8430 239	a8.92 2.719	Mar. 15	1700	2380 67.4	5.87 1.789
Mar. 14	1830	4500 127	7.17 2.185	Mar. 26	---	Unknown	Unknown

a From floodmarks.

Minimum discharge, 29 ft³/s (0.82 m³/s) Oct. 1, Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	53	865	106	152	79	275	141	108	47	66	47
2	64	50	370	99	152	70	232	125	97	50	53	40
3	41	50	234	79	132	74	195	114	95	159	47	39
4	35	50	182	72	114	72	178	119	101	112	150	38
5	31	57	184	75	108	62	170	141	83	83	152	36
6	31	116	224	79	104	61	152	121	78	68	93	35
7	30	198	167	86	90	64	155	108	76	61	134	34
8	34	212	137	187	76	61	136	157	86	57	136	34
9	123	156	131	844	75	62	127	201	84	90	102	34
10	86	137	106	280	74	93	123	178	73	66	86	34
11	56	139	91	180	73	148	121	157	66	61	73	34
12	48	116	86	160	72	289	114	143	62	55	64	35
13	41	99	96	140	71	418	106	326	67	51	66	34
14	40	86	110	130	70	1960	101	765	59	56	78	34
15	39	75	177	115	72	1900	93	520	56	61	59	34
16	38	70	141	98	76	1020	91	596	55	72	54	35
17	41	69	135	95	73	596	86	709	55	72	50	34
18	39	63	326	85	74	400	84	482	54	57	46	34
19	38	57	313	78	74	458	88	353	53	53	44	34
20	36	53	238	75	72	520	93	270	54	49	41	33
21	35	52	212	76	72	527	86	217	68	46	40	34
22	35	68	172	70	67	547	81	183	67	48	39	34
23	34	187	143	63	60	406	76	165	54	68	39	32
24	34	160	135	69	72	331	74	178	50	54	38	32
25	32	135	290	284	74	425	73	152	48	55	38	33
26	187	133	214	3900	101	2900	170	132	48	51	38	33
27	182	108	165	880	84	1590	298	121	93	48	39	32
28	108	103	137	547	81	939	201	112	67	47	49	31
29	79	121	129	320	---	610	170	110	55	44	40	30
30	66	200	117	236	---	431	152	114	50	46	38	30
31	57	---	112	189	---	336	---	125	---	60	47	---
TOTAL	1776	3173	6139	9697	2415	17449	4101	7335	2062	1947	2039	1033
MEAN	57.3	106	198	313	86.3	563	137	237	68.7	62.8	65.8	34.4
MAX	187	212	865	3900	152	2900	298	765	108	159	152	47
MIN	30	50	86	63	60	61	73	108	48	44	38	30
CFSM	.52	.96	1.80	2.85	.79	5.12	1.25	2.16	.63	.57	.60	.31
IN.	.60	1.07	2.08	3.28	.82	5.90	1.39	2.48	.70	.66	.69	.35

CAL YR 1977	TOTAL	41214	MEAN 113	MAX 4350	MIN 26	CFSM 1.03	IN 13.94
WTR YR 1978	TOTAL	59166	MEAN 162	MAX 3900	MIN 30	CFSM 1.47	IN 20.01

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 (30 m) downstream from highway bridge, 2.5 mi (4.0 km) upstream from confluence with Jackson River, and 4.0 mi (6.4 km) southeast of Clifton Forge.

DRAINAGE AREA.--461 mi² (1,194 km²).

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 (306.912 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to October 1934, nonrecording gage at site 100 ft (30 m) upstream at present datum.

REMARKS.--Records good. Low flow affected by springs and by occasional regulation from unknown source. Several observations 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, 520 ft³/s (14.73 m³/s), 15.32 in/yr (389 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,200 ft³/s (969 m³/s) Mar. 18, 1936, gage height, 18.62 ft (5.675 m), from rating curve extended above 13,000 ft³/s (370 m³/s) on basis of slope-area measurement at gage height 15.70 ft (4.785 m); minimum, 38 ft³/s (1.08 m³/s) Sept. 2, 1932; minimum daily, 40 ft³/s (1.13 m³/s) Sept. 1, 1932; minimum gage height, 1.58 ft (0.482 m) Sept. 26, 29-30.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.8 ft (6.34 m), from floodmarks, discharge, about 45,000 ft³/s (1,300 m³/s), from rating curve extended above 13,000 ft³/s (370 m³/s) on basis of records for other stations in James River basin.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (140 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	1700	5920 168	7.89 2.405	Mar. 15	0930	10700 303	10.38 3.164
Jan. 26	2300	*15000 425	12.34 3.761	Mar. 27	0330	12600 357	11.32 3.450

Minimum discharge, 62 ft³/s (1.76 m³/s) Sept. 26, 29-30, gage height, 1.58 ft (0.482 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	194	3170	381	600	382	952	560	381	122	115	80
2	128	172	2510	351	550	335	795	479	323	123	108	91
3	120	169	1330	309	480	321	661	414	292	153	100	89
4	122	187	917	235	400	308	574	415	287	227	170	81
5	100	292	735	240	411	273	527	581	277	232	300	77
6	90	492	865	250	373	254	485	585	242	179	250	75
7	85	1280	788	276	320	280	448	477	223	154	300	73
8	100	2250	602	393	310	300	419	731	216	140	280	70
9	416	1160	513	4520	320	298	376	1250	220	137	250	69
10	470	756	446	2440	300	1240	351	1030	212	161	205	67
11	278	640	336	1190	280	1770	334	803	194	156	170	78
12	184	530	304	871	275	1880	325	652	175	137	150	73
13	148	416	300	776	270	2440	308	1200	169	126	138	70
14	135	347	320	662	265	3840	285	3450	162	119	155	72
15	125	295	491	571	290	8440	266	2410	154	120	147	71
16	122	268	602	444	262	4990	251	1770	148	170	135	71
17	122	263	519	360	268	2640	243	2280	145	166	127	71
18	120	245	1110	350	270	1700	239	1870	142	152	110	69
19	118	221	1990	325	289	1280	240	1340	138	136	98	67
20	112	200	1390	300	319	1420	259	1030	134	120	90	65
21	105	186	1090	290	323	1430	256	822	135	110	88	65
22	102	341	927	260	309	1470	239	667	152	108	85	64
23	98	1410	730	235	270	1300	221	563	152	106	83	64
24	95	1230	596	250	250	1040	209	549	136	109	81	64
25	92	856	634	1450	260	976	205	522	124	137	79	65
26	465	675	966	11800	490	7060	1380	434	119	126	79	64
27	1530	558	774	7140	468	8530	1940	377	180	118	79	65
28	742	471	612	2410	405	3480	1310	344	173	111	77	64
29	416	493	490	1440	---	2170	868	318	156	103	82	63
30	295	822	460	1010	---	1490	667	355	137	100	91	62
31	232	---	400	750	---	1150	---	426	---	120	81	---
TOTAL	7357	17419	26917	42279	9627	64487	15633	28704	5698	4278	4303	2119
MEAN	237	581	868	1364	344	2080	521	926	190	138	139	70.6
MAX	1530	2250	3170	11800	600	8530	1940	3450	381	232	300	91
MIN	85	169	300	235	250	254	205	318	119	100	77	62
CFSM	.51	1.26	1.88	2.96	.75	4.51	1.13	2.01	.41	.30	.30	.15
IN.	.59	1.41	2.17	3.41	.78	5.20	1.26	2.32	.46	.35	.35	.17

CAL YR 1977	TOTAL	146498	MEAN 401	MAX 11800	MIN 67	CFSM .87	IN 11.82
WTR YR 1978	TOTAL	228821	MEAN 627	MAX 11800	MIN 62	CFSM 1.36	IN 18.46

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 (305 m) downstream from bridge on U.S. Highway 220, 0.9 mi (1.4 km) downstream from confluence of Cowpasture and Jackson Rivers, 1.8 mi (2.9 km) south of Iron Gate, and at mile 342.3 (550.8 km).

DRAINAGE AREA.--1,373 mi² (3,556 km²).

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 (298.186 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Oct. 26, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good. National Weather Service gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--53 years, 1,597 ft³/s (45.23 m³/s), 15.80 in/yr (401 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,600 ft³/s (1,890 m³/s) Mar. 18, 1936; maximum gage height, 27.01 ft (8.233 m) June 21, 1972; minimum discharge, 148 ft³/s (4.19 m³/s) Sept. 7, 1966, gage height, 1.42 ft (0.433 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of about 33 ft (10.1 m), discharge, about 120,000 ft³/s (3,400 m³/s). Flood in March 1913 reached a stage of 30.4 ft (9.27 m), from floodmarks, discharge, about 98,000 ft³/s (2,800 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 12,000 ft³/s (340 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Dec. 1	1930	12400 351	10.54 3.213	Mar. 15	0830	29400 833	18.01 5.489
Jan. 9	1800	14800 419	11.62 3.542	Mar. 27	0300	30800 872	18.54 5.651
Jan. 26	1830	*40600 1150	21.66 6.602	Apr. 27	0130	14400 408	11.39 3.472

Minimum discharge, 208 ft³/s (5.89 m³/s) Sept. 30, gage height, 1.56 ft (0.475 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	658	8240	1090	2060	1160	2960	2360	1650	413	372	290
2	465	585	7180	1020	1950	1060	2600	1950	1280	409	413	303
3	535	555	3940	925	1700	1020	2180	1650	1120	556	381	303
4	440	580	2780	752	1460	988	1950	1600	1120	693	376	281
5	354	1360	2300	724	1310	890	1750	2120	1020	770	429	268
6	322	1850	2480	782	1220	830	1650	2120	890	627	830	255
7	304	3260	2360	830	1020	890	1510	1800	830	535	890	246
8	313	8440	1900	1090	990	955	1420	2660	800	470	955	246
9	1040	4080	1650	10400	1020	1060	1280	4650	800	441	922	242
10	1550	2600	1450	6940	990	4210	1200	3800	770	525	860	225
11	958	2060	1130	3520	860	6840	1160	2960	710	535	715	268
12	674	1750	990	2660	860	6340	1160	2420	654	455	594	268
13	520	1400	1060	2420	890	7350	1090	3440	627	413	530	272
14	455	1180	1020	2000	890	12200	1020	9310	588	395	561	268
15	408	1020	1400	1700	890	25100	955	6500	550	475	660	259
16	385	925	1900	1360	860	14800	890	5250	520	535	535	251
17	385	892	1700	1260	860	8210	860	5700	510	545	445	251
18	385	860	2140	1360	860	5250	860	4800	495	490	395	242
19	376	788	3240	1220	890	3940	860	3800	470	436	358	242
20	358	724	2720	1090	955	3900	922	2960	455	381	330	234
21	340	685	2420	1060	988	4200	922	2480	500	353	308	225
22	326	913	2180	958	988	4200	860	2060	520	358	290	225
23	318	4220	1850	860	830	3900	830	1800	530	349	281	216
24	304	3940	1600	788	860	3100	800	1800	470	344	277	216
25	295	2780	1650	3030	890	2900	770	1750	427	395	268	225
26	883	2300	2120	31200	1200	17600	5090	1510	409	460	264	225
27	3240	2000	1950	22100	1330	24200	10900	1380	525	413	264	221
28	2050	1700	1650	7180	1200	10300	5400	1240	556	372	312	216
29	1310	1700	1360	4500	---	6340	3660	1160	520	340	303	212
30	958	2600	1360	3240	---	4650	2780	1160	460	330	326	212
31	788	---	1220	2600	---	3660	---	1650	---	340	294	---
TOTAL	21311	58405	70940	120659	30821	191943	60289	89840	20776	14153	14738	7407
MEAN	687	1947	2288	3892	1101	6192	2010	2898	693	457	475	247
MAX	3240	8440	8240	31200	2060	25100	10900	9310	1650	770	955	303
MIN	272	555	990	724	830	830	770	1160	409	330	264	212
CFSM	.50	1.42	1.67	2.84	.80	4.51	1.46	2.11	.51	.33	.35	.18
IN.	.58	1.58	1.92	3.27	.84	5.20	1.63	2.43	.56	.38	.40	.20

CAL YR 1977 TOTAL 461939 MEAN 1263 MAX 37000 MTN 200 CFSM .92 IN 12.49
WTR YR 1978 TOTAL 701282 MEAN 1921 MAX 31200 MIN 212 CFSM 1.40 IN 19.00

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 (6 m) downstream from bridge on State Highway 615 at New Castle and 1,700 ft (518 m) upstream from mouth.

DRAINAGE AREA.--104 mi² (269 km²).

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 (382.311 m) National Geodetic Vertical Datum of 1929. Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--52 years, 126 ft³/s (3.568 m³/s), 16.45 in/yr (418 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s (227 m³/s) Jan. 23, 1935, from rating curve extended above 3,200 ft³/s (91 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 12.48 ft (3.804 m) June 21, 1972; minimum discharge, 6.0 ft³/s (0.17 m³/s) Dec. 5, 1946, result of freezeup; minimum daily, 6.6 ft³/s (0.19 m³/s) Oct. 1, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,100 ft³/s (59 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 7	1730	4350	123	10.17	3.100	Mar. 14	2030	3450	97.7	9.58	2.920
Jan. 26	0700	4050	115	9.97	3.039	Apr. 26	2230	*4500	127	10.33	3.149

Minimum discharge, 10 ft³/s (0.28 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	48	704	69	246	108	302	458	103	20	60	60
2	23	44	496	66	206	97	260	378	78	23	24	50
3	22	57	382	60	175	90	218	329	74	53	22	42
4	20	313	312	58	148	90	187	398	77	45	20	36
5	19	382	289	56	143	95	172	462	63	35	20	31
6	18	546	268	54	125	85	152	359	55	31	20	28
7	16	1750	220	56	115	89	143	310	54	29	110	26
8	17	1330	185	146	105	95	126	564	66	26	89	23
9	28	588	172	1070	108	104	115	680	68	24	97	21
10	53	458	146	500	90	702	106	496	56	23	84	20
11	52	365	126	362	85	752	101	389	48	22	128	47
12	44	305	120	307	80	825	96	329	44	22	165	34
13	36	253	104	263	75	975	87	570	44	21	89	26
14	34	206	103	225	78	2180	77	656	38	27	64	26
15	31	173	120	182	71	1900	71	477	35	32	54	23
16	29	138	112	159	69	1180	68	406	33	32	50	22
17	30	128	110	143	68	776	68	346	34	37	42	21
18	31	112	128	130	67	566	78	297	32	32	34	20
19	29	98	149	120	68	477	90	250	31	28	30	18
20	27	88	152	115	68	432	102	214	40	24	26	17
21	26	81	152	113	65	396	106	183	48	22	24	17
22	24	194	140	106	65	359	103	159	48	20	22	16
23	23	623	122	90	75	310	97	142	42	19	21	16
24	23	432	115	100	62	263	93	156	36	19	19	16
25	22	335	111	502	73	268	96	132	32	21	18	17
26	121	307	101	2760	130	1400	2440	111	30	23	18	17
27	144	253	87	950	115	1000	2290	96	28	23	20	16
28	113	225	79	610	112	656	1000	84	26	24	223	15
29	92	291	74	473	---	508	680	80	23	22	112	15
30	74	389	72	369	---	414	545	154	22	20	78	15
31	58	---	71	289	---	349	---	212	---	24	60	---
TOTAL	1293	10512	5522	10503	2887	17541	10069	9877	1408	823	1843	751
MEAN	41.7	350	178	339	103	566	336	319	46.9	26.5	59.5	25.0
MAX	144	1750	704	2760	246	2180	2440	680	103	53	223	60
MIN	14	44	71	54	62	85	68	80	22	19	18	15
CFSM	.40	3.37	1.71	3.26	.99	5.44	3.23	3.07	.45	.26	.57	.24
IN.	.46	3.76	1.98	3.76	1.03	6.27	3.60	3.53	.50	.29	.66	.27

CAL YR 1977	TOTAL	42411	MEAN	116	MAX	3180	MIN	10	CFSM	1.12	IN	15.17
WTR YR 1978	TOTAL	73029	MEAN	200	MAX	2760	MIN	14	CFSM	1.92	IN	26.12

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 (4 m) upstream from Chesapeake and Ohio Railway bridge, 700 ft (213 m) downstream from Stony Run, 0.2 mi (0.3 km) northeast of Horton, 0.4 mi (0.6 km) northwest of Parr, and 12 mi (19 km) upstream from mouth.

DRAINAGE AREA.--329 mi² (852 km²).

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 (302.514 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to June 7, 1937, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--53 years, 382 ft³/s (10.82 m³/s), 15.77 in/yr (401 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft³/s (572 m³/s) June 21, 1972, gage height, 19.29 ft (5.880 m), from high-water mark in well; minimum daily, 25 ft³/s (0.71 m³/s) Sept. 4, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,200 ft³/s (120 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 8	0930	9400	266	12.12	3.694	Mar. 15	0730	7640	216	11.15	3.399
Jan. 26	1930	9800	278	12.29	3.746	Mar. 26	2030	5340	151	9.82	2.993
Mar. 11	0300	4210	119	9.02	2.749	Apr. 27	1000	*15600	442	14.79	4.508

Minimum daily discharge, 48 ft³/s (1.36 m³/s) Sept. 29-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	140	1560	232	694	348	841	1340	664	96	205	134
2	65	125	1660	222	624	330	724	1060	480	92	170	123
3	71	125	1140	205	508	310	624	925	385	119	109	108
4	77	1050	890	172	395	300	536	862	370	160	100	93
5	66	1580	772	178	360	245	486	1580	313	132	98	87
6	62	1960	778	185	340	263	436	1300	266	111	102	79
7	60	2830	700	183	275	285	400	1060	245	100	117	72
8	63	6220	574	194	300	301	366	1380	248	95	216	68
9	79	2010	502	2480	325	325	334	2510	263	88	199	63
10	88	1220	448	1920	293	1430	309	1830	245	84	213	61
11	109	925	366	1140	260	3190	297	1340	213	79	191	65
12	104	718	321	890	252	2510	281	1100	196	76	264	88
13	95	590	317	802	238	2920	263	1060	205	74	245	92
14	88	480	301	670	235	3630	245	2610	194	82	180	79
15	87	400	334	558	229	6200	229	1740	170	111	148	71
16	87	338	343	445	216	3250	219	1420	155	134	134	68
17	85	305	334	420	216	2210	213	1180	150	113	128	65
18	84	305	395	410	216	1540	216	1030	148	108	113	61
19	84	278	497	400	219	1180	245	869	140	98	104	58
20	84	255	514	450	229	1060	278	742	155	90	95	56
21	80	238	497	410	232	960	343	640	175	84	87	53
22	79	278	458	380	235	925	334	558	167	79	82	52
23	77	1660	395	440	205	796	301	475	162	72	79	51
24	76	1540	356	510	226	688	281	486	150	77	76	51
25	76	1030	343	984	226	640	274	453	134	71	74	51
26	100	869	325	6760	380	3160	3790	380	128	80	72	50
27	427	718	285	4010	395	3870	12200	334	123	93	71	50
28	297	624	255	1920	361	2160	3600	301	117	95	77	49
29	229	596	250	1380	---	1580	2210	285	109	96	263	48
30	194	855	248	1030	---	1220	1660	496	104	95	167	48
31	162	---	238	820	---	995	---	934	---	93	140	---
TOTAL	3388	30262	16396	30800	8684	48821	32535	32280	6574	2977	4319	2094
MEAN	109	1009	529	994	310	1575	1085	1041	219	96.0	139	69.8
MAX	427	6220	1660	6760	694	6200	12200	2610	664	160	264	134
MIN	53	125	238	172	205	245	213	285	104	71	71	48
CFSM	.33	3.07	1.61	3.02	.94	4.79	3.30	3.16	.67	.29	.42	.21
IN.	.38	3.42	1.85	3.48	.98	5.52	3.68	3.65	.74	.34	.49	.24

CAL YR 1977	TOTAL	120746	MEAN 331	MAX 8000	MIN 34	CFSM 1.01	IN 13.65
WTR YR 1978	TOTAL	219130	MEAN 600	MAX 12200	MIN 48	CFSM 1.82	IN 24.78

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 (24 m) upstream from highway bridge, 1.0 mi (1.6 km) downstream from Little Catawba Creek, 1.9 mi (3.1 km) west of Haymarket town, and 8.2 mi (13.2 km) northeast of Catawba.

DRAINAGE AREA.--34.3 mi² (88.8 km²).

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

REVISED RECORDS.--WSP 1303: 1944-45(M). WSP 2104: Drainage area. WDR VA-72: 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 (396.228 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 1, 1953, nonrecording gage at site 80 ft (24 m) downstream at same datum.

REMARKS.--Records good. At a point 5.3 mi (8.5 km) above station, there is an occasional 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 Corp. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--35 years, 35.3 ft³/s (1,000 m³/s), 13.98 in/yr (355 mm/yr), adjusted for pumpage from October 1952 to September 1976.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,740 ft³/s (219 m³/s) June 21, 1972, gage height, 10.35 ft (3.155 m), from rating curve extended above 1,100 ft³/s (31 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.80 ft³/s (0.023 m³/s) Nov. 21, 1963; minimum daily, 0.90 ft³/s (0.025 m³/s) Nov. 22, 1963; minimum gage height, 0.54 ft (0.165 m) Sept. 7-11, 1944, site then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.26 ft (4.042 m), from information by observer.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	1600	1940 54.9	5.72 1.743	Mar. 14	1645	949 26.9	4.47 1.362
Jan. 26	0630	1720 48.7	5.45 1.661	Mar. 26	0815	893 25.3	4.39 1.338
Mar. 10	1515	812 23.0	4.27 1.301	Apr. 26	1300	*3720 105	7.43 2.265

Minimum discharge, 2.0 ft³/s (0.057 m³/s) Oct. 1, gage height, 1.15 ft (0.351 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	6.4	40	22	44	36	68	112	50	9.3	8.9	6.6
2	6.2	6.9	33	20	40	33	59	92	41	11	8.1	5.9
3	3.9	12	27	14	35	32	51	79	41	14	7.7	5.5
4	2.7	116	23	9.7	31	27	47	139	37	11	8.9	5.1
5	2.5	95	24	11	32	25	43	192	27	11	9.7	4.8
6	2.5	87	25	11	30	25	39	129	18	11	10	4.8
7	2.5	446	22	11	24	27	37	104	16	10	12	4.4
8	3.1	119	20	25	30	30	34	197	16	10	12	4.1
9	7.6	47	18	197	25	35	31	314	15	9.7	11	4.1
10	6.3	32	16	88	24	487	30	177	14	9.3	9.7	4.1
11	4.3	25	15	67	23	304	25	127	14	10	8.9	7.7
12	3.2	20	14	54	22	311	16	105	13	9.3	12	6.3
13	3.0	17	19	50	23	314	16	160	14	9.3	10	5.1
14	5.3	15	29	44	22	575	15	184	13	13	9.3	5.1
15	5.4	14	35	37	21	411	14	137	12	11	9.3	5.1
16	5.9	13	29	31	21	225	14	118	12	10	8.9	4.8
17	5.2	16	29	33	20	145	14	99	12	9.3	8.1	4.4
18	4.3	14	61	31	21	107	18	85	11	8.9	7.7	4.1
19	3.7	13	59	28	22	89	25	75	20	8.9	7.4	3.5
20	3.3	12	51	27	24	79	33	67	15	8.9	7.0	3.5
21	3.1	12	47	26	22	72	31	61	13	8.5	6.6	3.8
22	3.1	23	40	21	22	64	29	54	12	8.1	6.3	3.8
23	3.0	43	36	19	20	57	27	53	11	8.5	6.3	3.8
24	3.1	33	33	22	20	50	25	53	11	9.3	5.9	4.1
25	3.1	26	36	167	44	62	32	44	9.7	10	5.5	4.4
26	29	23	30	894	57	535	2270	40	10	8.9	5.5	3.8
27	17	21	27	205	42	311	942	37	10	9.7	7.4	3.5
28	12	20	25	118	40	162	307	35	9.7	8.9	8.1	3.5
29	9.9	20	23	88	---	116	184	35	10	8.5	6.6	3.3
30	8.5	22	22	71	---	92	139	56	9.7	8.5	6.6	3.3
31	7.2	---	22	52	---	79	---	71	---	8.5	7.0	---
TOTAL	182.6	1369.3	930	2493.7	801	4917	4615	3231	517.1	302.3	258.4	136.3
MEAN	5.89	45.6	30.0	80.4	28.6	159	154	104	17.2	9.75	8.34	4.54
MAX	29	446	61	894	57	575	2270	314	50	14	12	7.7
MIN	2.5	6.4	14	9.7	20	25	14	35	9.7	8.1	5.5	3.3
CFSM	.17	1.33	.88	2.34	.83	4.64	4.49	3.03	.50	.28	.24	.13
IN.	.20	1.49	1.01	2.70	.87	5.33	5.01	3.50	.56	.33	.28	.15

CAL YR 1977 TOTAL 7713.3 MEAN 21.1 MAX 803 MIN 2.2 CFSM .62 IN 8.37
WTR YR 1978 TOTAL 19753.7 MEAN 54.1 MAX 2270 MIN 2.5 CFSM 1.58 IN 21.42

02019500 JAMES RIVER AT BUCHANAN, VA

LOCATION.--Lat 37°31'50", long 79°40'45", Botetourt County, Hydrologic Unit 02080201, on left bank at Chesapeake and Ohio Railway station at Buchanan, 300 ft (91 m) upstream from bridge on U.S. Highway 11, 1,000 ft (305 m) upstream from Purgatory Creek, 1.5 mi (2.4 km) downstream from Looney Creek, and at mile 306.4 (493.0 km).

DRAINAGE AREA.--2,075 mi² (5,374 km²).

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: 1913(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 802.90 ft (244.724 m) National Geodetic Vertical Datum of 1929. Prior to July 1, 1927, nonrecording gage at same site and datum.

REMARKS.--Records good. Some regulation at high flow since October 1973 by Gathright Dam (under construction). National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--80 years, 2,467 ft³/s (69.87 m³/s), 16.15 in/yr (410 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 115,000 ft³/s (3,260 m³/s) Mar. 27, 1913, gage height, 31 ft (9.4 m), from floodmarks; minimum, 202 ft³/s (5.72 m³/s) Sept. 8, 1966, gage height, 1.44 ft (0.439 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in November 1877 reached a stage of 34.9 ft (10.64 m), from floodmark, discharge, about 142,000 ft³/s (4,000 m³/s), from rating curve extended above 110,000 ft³/s (3,100 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 21,000 ft³/s (590 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	1530	21900 620	12.70 3.871	Mar. 27	0915	45200 1280	18.72 5.706
Jan. 27	0240	*63200 1790	22.31 6.800	Apr. 27	0945	36900 1050	16.64 5.072
Mar. 15	1635	45800 1300	18.87 5.752				

Minimum discharge, 308 ft³/s (8.72 m³/s) Sept. 30, gage height, 1.92 ft (0.585 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	391	999	7540	1620	3200	1900	4880	4750	2830	638	662	529
2	478	870	12400	1520	2700	1790	4120	3860	2240	616	710	487
3	657	815	6890	1410	2400	1690	3510	3240	1850	794	627	484
4	652	918	4770	1210	2100	1630	3040	3100	1730	865	561	462
5	582	3060	3850	1080	1900	1490	2750	4220	1630	1070	553	431
6	501	4130	3830	1160	2000	1360	2550	4520	1420	953	732	404
7	465	6040	3790	1190	1700	1450	2350	3660	1280	810	1240	384
8	453	16400	3150	1320	1540	1580	2190	4070	1260	724	1140	372
9	550	8910	2650	9470	1650	1800	2000	8770	1230	674	1280	362
10	1710	5050	2370	13700	1610	5820	1850	7870	1190	646	1200	355
11	1470	3650	1990	6280	1470	14500	1760	5740	1110	728	1070	394
12	1050	2960	1640	4370	1390	11400	1690	4510	1010	686	939	411
13	804	2430	1580	3920	1420	12600	1630	4410	1000	624	906	421
14	717	2020	1590	3330	1420	16700	1510	12900	931	606	792	425
15	649	1730	1720	2850	1390	39000	1410	11100	873	621	821	401
16	606	1530	2410	2280	1360	25200	1330	8250	820	1040	446	385
17	596	1470	2390	1900	1320	13900	1280	7980	794	824	723	374
18	573	1400	2890	2000	1320	8880	1290	7350	776	759	652	366
19	575	1320	4520	1900	1360	6570	1320	5780	753	690	605	355
20	554	1220	4200	1700	1450	5720	1410	4640	758	622	576	346
21	524	1140	3660	1600	1510	5860	1470	3810	755	571	550	340
22	507	1190	3280	1600	1520	5920	1460	3240	790	542	532	330
23	487	4940	2860	1300	1380	5700	1370	2800	792	562	522	327
24	473	7150	2450	1200	1290	4650	1300	2740	765	569	506	317
25	459	5030	2290	2980	1460	4110	1270	2650	693	561	496	319
26	681	3900	2580	39600	1990	17600	9180	2340	650	585	487	325
27	3010	3330	2740	45500	2270	40700	33800	2070	739	645	478	323
28	3310	2840	2290	13200	2040	18900	15600	1860	761	692	488	321
29	2030	2580	1930	7890	---	10500	8320	1720	758	553	527	315
30	1480	3380	1850	5590	---	7610	5970	1770	681	523	587	309
31	1180	---	1780	4460	---	5920	---	2750	---	524	565	---
TOTAL	28178	102402	103880	189130	48160	302450	123610	148470	32869	21317	22473	11374
MEAN	909	3413	3351	6101	1720	9756	4120	4789	1096	688	722	379
MAX	3310	16400	12400	45500	3200	40700	33800	12900	2830	1070	1280	529
MIN	391	815	1580	1080	1290	1360	1270	1720	650	523	478	309
CFSM	.44	1.65	1.62	2.94	.83	4.70	1.99	2.31	.53	.33	.35	.18
IN	.51	1.84	1.86	3.39	.86	5.42	2.22	2.66	.59	.38	.40	.20

CAL YR 1977	TOTAL	685638	MEAN	1878	MAX	45500	MIN	341	CFSM	.91	IN	12.29
WTR YR 1978	TOTAL	1134213	MEAN	3107	MAX	45500	MIN	309	CFSM	1.50	IN	20.33

02019500 JAMES RIVER AT BUCHANAN, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1948, 1951-56, 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1952 to September 1956, April 1968 to current year.

WATER TEMPERATURES: October 1947 to September 1948, May 1951 to September 1956, April 1968 to current year.

SUSPENDED-SEDIMENT DISCHARGE: May 1951 to September 1956.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 945 micromhos Sept. 27, 1954; minimum daily, 67 micromhos Oct. 20, 1975, Oct. 10, 1976.

WATER TEMPERATURES: Maximum daily, 31.0°C July 5, 1955; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 700 micromhos Oct. 5; minimum daily, 70 micromhos Jan. 27.

WATER TEMPERATURES: Maximum daily, 29.0°C July 23, 24, Aug. 19, 20; minimum daily, 0.5°C Jan. 12, 16.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	
OCT 15...	1650	634	338	12	120	41	40	5.7	17	3.1	100	33	
NOV 15...	1545	1690	190	4	76	21	24	3.9	9.3	1.7	67	19	
DEC 15...	1530	1740	239	22	89	33	28	4.6	12	2.3	68	22	
JAN 15...	0635	2290	152	10	58	11	18	3.2	4.6	1.2	58	15	
FEB 15...	1820	1370	208	20	78	35	23	5.1	11	1.9	53	24	
MAR 15...	1615	45300	76	10	30	11	10	1.3	1.4	1.4	23	9.4	
APR 15...	1840	1390	240	10	99	21	31	5.3	8.5	1.9	95	20	
MAY 15...	1840	9710	109	10	42	5	14	1.8	2.1	1.3	46	8.6	
JUN 15...	1630	858	320	20	130	43	43	6.3	12	2.2	110	23	
JUL 15...	1835	634	390	15	140	41	45	6.5	17	2.3	120	30	
AUG 15...	2015	898	317	10	130	47	40	6.8	15	2.6	99	28	
SEP 15...	1915	395	460	30	160	52	51	7.5	25	3.8	130	44	
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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 15...	29	.1	5.9	197	185	.24	1.1	.00	.24	.20	.61	20	
NOV 15...	16	.0	2.7	108	110	.00	.00	.00	.00	.04	.12	10	
DEC 15...	21	.1	6.1	126	132	.32	1.4	.01	.33	.19	.58	50	
JAN 15...	6.6	.0	1.7	93	79	.01	.00	.00	.01	.01	.03	10	
FEB 15...	21	.1	.5	145	113	.01	.00	.00	.01	.00	.00	10	
MAR 15...	2.7	.0	3.5	130	42	.30	1.3	.00	.30	.00	.00	0	
APR 15...	19	.1	.2	148	133	.00	.00	.00	.00	.05	.15	10	
MAY 15...	3.6	.0	8.5	61	63	.00	.00	.00	.00	.00	.00	0	
JUN 15...	31	.1	.6	190	173	.00	.00	.00	.00	.17	.52	0	
JUL 15...	40	.1	3.4	233	205	.15	.70	.01	.16	.40	1.2	0	
AUG 15...	29	.1	1.8	184	172	.00	.00	.00	.00	.07	.21	0	
SEP 15...	52	.1	5.6	266	256	.35	1.5	.00	.35	.60	1.8	20	

JAMES RIVER BASIN

02019500 JAMES RIVER AT BUCHANAN, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	562	238	149	207	160	195	152	123	200	401	413	420
2	547	241	103	220	164	205	160	138	180	373	435	380
3	520	253	119	221	170	197	166	144	223	382	383	420
4	540	280	132	209	172	210	179	141	230	380	420	423
5	700	140	144	210	157	230	181	150	220	458	473	440
6	---	138	160	267	157	215	196	141	240	375	343	460
7	458	125	160	282	178	215	201	159	265	360	460	463
8	433	103	162	273	165	232	213	146	275	345	395	498
9	460	110	169	163	180	230	221	140	258	339	300	495
10	490	123	190	94	195	195	213	127	280	367	305	495
11	427	138	193	110	183	105	225	133	300	372	350	410
12	292	155	200	135	193	118	240	120	298	412	260	515
13	290	160	208	141	190	109	236	129	265	430	258	490
14	295	175	223	161	218	120	240	104	305	395	280	460
15	343	190	239	152	208	76	240	109	320	390	317	460
16	348	200	240	172	210	80	200	120	320	307	330	475
17	337	218	210	179	200	101	197	120	338	328	340	460
18	320	223	193	200	240	111	188	130	348	422	300	440
19	380	238	158	197	280	118	208	137	350	380	358	460
20	397	248	148	198	260	123	220	151	360	408	340	503
21	410	253	157	200	237	140	211	159	320	390	373	460
22	412	260	160	218	230	131	197	163	380	360	403	543
23	357	232	168	220	250	127	226	185	398	412	405	520
24	443	125	173	228	248	139	242	193	380	402	440	495
25	470	130	187	221	230	145	194	200	375	455	460	525
26	475	148	177	99	240	113	147	198	380	402	450	530
27	423	159	151	70	215	80	71	190	350	442	470	540
28	197	162	156	108	200	103	109	218	365	460	463	560
29	195	177	181	121	---	100	113	220	385	460	412	593
30	198	186	201	140	---	125	137	235	390	440	440	595
31	223	---	220	150	---	135	---	---	---	407	418	---
MEAN	398	184	175	180	205	146	191	154	310	395	380	484

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	13.0	8.5	3.5	1.5	4.5	12.5	13.5	23.5	26.5	27.0	25.0
2	20.0	13.5	9.5	3.0	2.0	3.5	13.5	13.5	23.5	26.5	27.0	24.5
3	18.5	15.0	8.0	3.0	2.0	3.0	14.0	14.5	23.5	25.5	27.5	25.5
4	17.0	16.5	8.5	2.0	2.0	3.5	14.5	13.0	22.5	25.0	25.5	25.0
5	16.5	16.5	8.0	2.5	1.5	4.0	15.5	13.0	22.0	24.5	26.0	26.0
6	---	16.0	7.0	2.5	1.0	5.0	15.0	14.0	23.0	24.5	27.0	26.5
7	16.0	16.0	4.5	4.0	1.0	4.0	16.0	15.0	23.0	25.5	26.5	27.0
8	15.0	15.0	3.0	4.5	1.5	4.0	18.0	14.0	22.0	26.5	26.5	27.0
9	16.5	15.0	3.0	4.0	2.0	3.0	17.0	14.5	22.5	27.0	27.0	27.0
10	15.5	15.0	1.5	1.0	2.0	4.0	17.5	15.0	23.0	27.5	27.0	25.0
11	15.0	12.5	1.5	1.0	2.0	5.0	17.5	15.5	23.0	26.5	28.0	25.5
12	14.0	9.5	1.0	.5	3.0	6.0	17.5	16.0	24.5	26.5	27.0	26.0
13	13.0	8.0	3.0	1.0	2.0	6.0	17.5	15.5	25.0	25.5	28.0	24.0
14	13.0	7.5	4.0	1.0	2.5	7.0	17.0	13.0	23.0	24.5	27.5	23.0
15	14.0	8.0	6.0	1.0	3.0	9.0	16.0	16.0	23.0	24.5	28.0	23.5
16	12.0	9.0	6.0	.5	3.0	7.0	15.5	12.5	22.5	23.0	28.0	23.5
17	12.0	9.5	6.0	1.0	3.5	6.0	16.5	13.5	24.5	25.0	28.5	25.0
18	12.0	10.0	6.5	2.0	4.0	6.0	14.5	15.0	26.0	25.5	27.0	26.0
19	11.0	9.5	7.5	1.0	4.5	8.0	14.0	17.0	26.0	27.0	29.0	26.5
20	12.0	9.0	6.5	1.0	4.5	9.5	12.5	18.5	26.0	27.5	29.0	26.0
21	14.0	9.0	5.0	1.5	4.0	10.0	11.0	19.5	25.0	28.0	27.5	26.0
22	12.5	9.0	4.0	1.0	3.5	11.0	12.5	20.0	25.5	28.5	27.0	25.5
23	13.0	9.5	4.0	1.5	3.0	11.5	13.5	19.5	26.0	29.0	27.0	22.5
24	13.0	10.0	5.0	1.0	4.5	12.0	15.0	20.0	25.5	29.0	26.5	21.5
25	13.5	9.0	5.5	2.0	6.0	10.0	13.0	21.0	25.5	27.0	28.0	22.0
26	14.5	7.0	3.5	2.0	5.0	7.0	10.0	22.0	26.0	28.0	28.0	22.0
27	15.0	5.0	2.0	2.0	4.5	7.0	9.5	22.5	27.5	26.5	28.0	21.0
28	16.0	4.5	1.5	2.0	4.0	9.0	10.5	23.0	28.5	27.0	28.0	20.5
29	15.0	5.0	1.0	1.5	---	10.0	12.0	23.0	27.5	26.5	28.0	19.0
30	14.5	6.5	1.0	1.0	---	10.0	13.0	23.5	27.5	26.5	27.5	19.0
31	14.5	---	3.0	1.5	---	11.5	---	---	---	26.5	26.0	---
MEAN	14.5	10.5	4.5	2.0	3.0	7.0	14.5	17.0	24.5	26.5	27.5	24.0

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 (6 m) upstream from bridge on State Highway 42 at Goshen and 400 ft (122 m) upstream from Mill Creek.

DRAINAGE AREA.--144 mi² (373 km²).

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 (422.099 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--40 years, 159 ft³/s (4.503 m³/s), 14.99 in/yr (381 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,900 ft³/s (592 m³/s) Oct. 6, 1972, gage height, 12.78 ft (3.895 m), from rating curve extended above 9,200 ft³/s (260 m³/s) on basis of slope-area measurement of peak flow; no flow Sept. 5, 6, 1957, Sept. 28, 1959, result of diversion.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (71 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	1230	*15000 425	11.70 3.566	Mar. 26	1700	4510 128	7.47 2.277
Mar. 14	2330	3630 103	6.94 2.115	May 14	0230	2520 71.4	6.02 1.835

Minimum discharge, 3.5 ft³/s (0.10 m³/s) Sept. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	72	1520	127	230	106	292	246	67	19	17	17
2	30	63	820	112	180	86	242	199	60	20	14	15
3	27	58	477	90	120	82	203	161	56	27	10	15
4	23	148	326	82	100	80	175	150	56	32	10	12
5	20	479	264	86	85	64	157	179	52	28	44	10
6	20	1220	264	78	68	69	143	168	47	23	56	9.1
7	19	1660	237	78	45	69	130	164	45	20	49	8.3
8	20	925	203	93	40	66	117	220	44	20	43	7.0
9	56	555	179	1550	38	66	106	364	43	21	42	6.1
10	112	358	157	744	36	170	95	358	40	21	39	5.7
11	72	264	170	459	33	364	86	287	36	18	30	7.0
12	56	207	160	320	32	555	86	232	34	15	26	6.1
13	46	164	114	242	31	820	78	544	33	12	23	5.4
14	42	140	106	215	31	1710	74	1990	29	13	28	5.7
15	35	124	194	170	31	2520	69	1030	28	15	40	5.7
16	38	109	224	170	30	1340	66	799	26	18	37	5.4
17	42	101	215	180	29	744	64	862	26	16	30	5.1
18	39	88	581	190	32	495	60	640	24	15	23	4.7
19	38	80	834	150	50	387	63	447	22	12	18	5.1
20	35	72	562	155	80	423	64	326	23	11	15	4.4
21	33	66	417	140	75	435	63	250	23	9.6	12	4.4
22	31	78	320	100	65	477	59	199	25	9.6	9.6	5.7
23	30	361	255	88	50	393	54	164	21	9.6	8.3	7.0
24	30	453	215	90	75	320	52	154	22	10	7.4	5.7
25	30	326	260	750	78	311	52	134	20	20	6.6	7.0
26	384	268	331	7640	127	2600	486	112	19	21	5.7	6.1
27	630	215	290	1690	124	2370	1370	95	24	18	5.4	5.4
28	262	179	230	737	117	1180	620	84	27	15	56	5.1
29	157	175	210	435	---	698	411	82	23	15	39	4.7
30	112	242	170	320	---	483	311	90	21	12	26	5.7
31	86	---	143	270	---	364	---	74	---	16	20	---
TOTAL	2585	9250	10448	17551	2032	19847	5848	10804	1016	531.8	790.0	216.6
MEAN	83.4	308	337	566	72.6	640	195	349	33.9	17.2	25.5	7.22
MAX	630	1660	1520	7640	230	2600	1370	1990	67	32	56	17
MIN	19	58	106	78	29	64	52	74	19	9.6	5.4	4.4
CFSM	.58	2.14	2.34	3.93	.50	4.44	1.35	2.42	.24	.12	.18	.05
IN.	.67	2.39	2.70	4.53	.52	5.13	1.51	2.79	.26	.14	.20	.06

CAL YR 1977	TOTAL	47192.1	MEAN	129	MAX	4420	MIN	2.3	CFSM	.90	IN	12.19
WTR YR 1978	TOTAL	80919.4	MEAN	222	MAX	7640	MIN	4.4	CFSM	1.54	IN	20.90

JAMES RIVER BASIN

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 (370 m) upstream from bridge on State Highway 39, and 1.0 mi (1.6 km) upstream from Hays Creek.

DRAINAGE AREA.--329 mi² (852 km²).

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 (335.381 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records good. Since 1966, some regulation at times by Lake Merriweather on Little Calfpasture River. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--50 years, 366 ft³/s (10.37 m³/s), 15.11 in/yr (384 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft³/s (935 m³/s) Mar. 17, 1936, gage height, 13.07 ft (3.984 m), from rating curve extended above 16,000 ft³/s (450 m³/s); minimum, 5.8 ft³/s (0.16 m³/s) Sept. 10, 1966, gage height, 0.79 ft (0.241 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (130 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 9	1130	4610	131	Mar. 26	1900	8660	245
Jan. 26	1330	*19900	564	May 14	0200	6520	185
Mar. 15	0100	7850	222				

Minimum discharge, 18 ft³/s (0.51 m³/s) Sept. 20, gage height, 0.98 ft (0.299 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	231	2690	291	524	293	810	628	189	46	47	38
2	55	240	1880	259	520	248	660	508	160	46	43	35
3	50	201	1060	206	400	246	550	417	148	60	37	35
4	44	283	735	177	340	225	465	473	154	77	38	33
5	41	610	618	179	302	185	410	579	134	73	49	30
6	38	1810	676	172	283	188	380	438	118	64	105	28
7	38	2660	554	190	258	189	350	440	108	56	102	27
8	39	1990	453	228	233	190	317	666	109	51	92	25
9	71	1140	398	3390	226	190	280	1040	107	55	80	24
10	185	719	329	1800	197	848	231	956	96	57	93	24
11	118	545	258	992	179	1450	191	774	86	60	70	26
12	89	409	225	742	176	1800	190	626	79	51	58	25
13	74	316	217	657	178	2330	172	1700	82	44	52	24
14	91	256	237	556	178	4050	155	4940	72	43	64	24
15	128	217	509	446	166	5880	143	2580	65	45	67	24
16	137	191	544	304	164	3420	135	1990	62	73	68	24
17	214	195	487	327	161	2020	129	2140	62	62	56	23
18	135	168	1400	328	173	1360	125	1670	59	52	46	22
19	99	142	1880	269	184	1060	129	1210	55	45	41	20
20	82	126	1310	264	198	1090	144	898	54	41	37	19
21	116	114	985	256	199	1050	131	713	56	38	34	19
22	149	180	775	198	201	1060	121	520	68	38	31	20
23	98	894	605	195	166	895	110	402	58	40	29	24
24	105	959	513	198	204	728	105	432	53	40	27	22
25	120	682	593	1650	205	720	102	372	51	56	27	22
26	479	555	688	13600	382	5130	662	305	48	56	26	22
27	1310	421	594	4530	348	5370	2630	259	73	49	26	21
28	643	352	472	2020	323	2980	1560	225	71	43	50	21
29	387	363	404	1260	---	1910	1020	207	57	39	65	20
30	250	543	356	880	---	1300	780	311	51	38	45	20
31	223	---	317	709	---	1020	---	234	---	39	38	---
TOTAL	5658	17512	22762	37273	7068	49425	13187	28653	2595	1577	1643	741
MEAN	183	584	734	1202	252	1594	440	924	86.2	50.9	53.0	24.7
MAX	1310	2660	2690	13600	524	5880	2630	4940	189	77	105	38
MIN	38	114	217	172	161	185	102	207	48	38	26	19
CFSM	.56	1.78	2.23	3.65	.77	4.85	1.34	2.81	.26	.16	.16	.08
IN.	.64	1.98	2.57	4.21	.80	5.59	1.49	3.24	.29	.18	.19	.08

CAL YR 1977 TOTAL 102953 MEAN 282 MAX 6220 MIN 21 CFSM .86 IN 11.64
WTR YR 1978 TOTAL 188084 MEAN 515 MAX 13600 MIN 19 CFSM 1.57 IN 21.27

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 (30 m) upstream from bridge on Interstate Highway 64, 1.4 mi (2.3 km) upstream from mouth, and 2.9 mi (4.7 km) north of Lexington.

DRAINAGE AREA.--35.0 mi² (90.6 km²).

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 (298.802 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Jan. 27, 1927, to Sept. 30, 1953, nonrecording gage at site 1,000 ft (305 m) downstream at different datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--52 years, 35.2 ft³/s (0.997 m³/s), 13.66 in/yr (347 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft³/s (651 m³/s) Sept. 10, 1950, gage height, 13.8 ft (4.21 m), from floodmarks, site and datum then in use, from rating curve extended above 800 ft³/s (23 m³/s) on basis of contracted-opening and slope-area measurements of peak flow; minimum, 0.90 ft³/s (0.025 m³/s) July 22, 1966 (result of temporary dam upstream); minimum daily, 4.0 ft³/s (0.11 m³/s) many days in August and September 1932, Nov. 21, 1938, July 22, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	0200	*4300 122	8.57 2.612	Mar. 26	0830	2120 60.0	7.02 2.140
Mar. 14	1130	1010 28.6	5.87 1.789	May 13	1600	2180 61.7	7.15 2.179

Minimum discharge, 6.0 ft³/s (0.17 m³/s) Oct. 1, 4, 7, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	12	156	24	49	32	67	40	24	13	10	9.0
2	9.7	12	71	22	44	29	60	35	22	13	9.8	9.0
3	7.1	12	50	20	38	29	53	32	23	16	9.5	8.8
4	6.8	21	39	18	31	25	49	41	22	16	11	9.0
5	6.8	42	55	18	31	23	45	40	20	14	11	8.5
6	6.8	72	60	19	25	24	41	34	19	13	14	8.2
7	6.4	100	42	20	25	27	40	32	20	12	16	8.2
8	8.2	77	36	76	24	27	36	64	21	12	14	8.0
9	26	40	32	229	23	28	34	71	19	12	12	7.7
10	13	31	28	70	23	237	33	57	17	12	13	7.7
11	9.1	24	25	64	22	166	32	48	17	12	11	9.3
12	8.2	20	24	53	22	200	31	43	17	12	11	8.5
13	7.4	18	22	44	22	192	29	340	17	11	11	8.2
14	8.5	17	24	39	22	482	27	214	15	12	16	8.5
15	8.2	14	25	31	21	284	26	125	15	12	12	8.5
16	9.7	14	23	29	21	174	24	134	15	17	11	8.2
17	12	16	24	33	21	116	24	146	15	12	10	8.0
18	9.1	14	99	36	22	90	25	102	14	12	10	8.0
19	8.5	13	82	31	24	77	26	83	24	11	9.8	7.7
20	8.2	12	61	31	25	74	29	67	21	11	9.5	7.5
21	7.8	12	53	28	24	70	25	58	18	11	9.3	7.7
22	7.8	52	45	24	24	66	23	49	18	14	9.0	7.5
23	7.8	89	38	24	20	57	22	47	15	12	9.0	7.5
24	7.8	56	35	25	22	52	21	43	15	11	8.8	7.7
25	7.4	40	36	294	46	82	22	37	14	11	8.8	7.7
26	67	35	31	1390	47	771	141	33	14	11	8.8	7.7
27	34	29	28	200	36	257	122	31	22	10	9.0	7.7
28	20	27	28	118	34	170	73	29	15	9.8	9.5	7.7
29	17	34	28	85	---	118	56	27	14	9.8	8.8	7.7
30	14	45	24	66	---	94	46	28	13	10	8.8	7.5
31	12	---	25	56	---	80	---	27	---	11	8.8	---
TOTAL	390.1	1000	1349	3217	788	4153	1282	2157	535	375.6	330.2	242.9
MEAN	12.6	33.3	43.5	104	28.1	134	42.7	69.6	17.8	12.1	10.7	8.10
MAX	67	100	156	1390	49	771	141	340	24	17	16	9.3
MIN	6.4	12	22	18	20	23	21	27	13	9.8	8.8	7.5
CFSM	.36	.95	1.24	2.97	.80	3.83	1.22	1.99	.51	.35	.31	.23
IN.	.41	1.06	1.43	3.42	.84	4.41	1.36	2.29	.57	.40	.35	.26

CAL YR 1977 TOTAL 8612.7 MEAN 23.6 MAX 473 MIN 5.0 CFSM .67 IN 9.15
WTR YR 1978 TOTAL 15819.8 MEAN 43.3 MAX 1390 MIN 5.4 CFSM 1.24 IN 16.81

JAMES RIVER BASIN

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 (0.8 km) downstream from South River and 2.8 mi (4.5 km) northwest of Buena Vista.

DRAINAGE AREA.--646 mi² (1,673 km²).

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 (258.038 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Since 1966, some regulation at times by Lake Merriweather on Little Calpasture River. Several observations 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, 649 ft³/s (18.38 m³/s), 13.64 in/yr (346 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 105,000 ft³/s (2,970 m³/s) Aug. 20, 1969, gage height, 31.23 ft (9.159 m), from floodmarks, from rating curve extended above 17,000 ft³/s (480 m³/s) on basis of slope-area measurement of peak flow; minimum, 20 ft³/s (0.57 m³/s) Oct. 10, 1941, occurred during filling of a small reservoir 2 mi (3 km) upstream; unqualified minimum, 37 ft³/s (1.05 m³/s) Sept. 9, 1966; minimum gage height, 1.05 ft (0.320 m) Sept. 30, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 18, 1936, reached a stage of about 22 ft (6.7 m), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,200 ft³/s (180 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	1300	*22300 632	15.46 4.712	Mar. 26	2230	10500 297	10.69 3.258
Mar. 15	0100	9970 282	10.37 3.161	May 14	0500	8020 227	9.29 2.832

Minimum discharge, 86 ft³/s (2.44 m³/s) Sept. 30, gage height, 1.05 ft (0.320 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	316	2640	473	1060	573	1480	1080	473	180	148	125
2	140	308	2570	437	998	519	1260	906	424	179	147	123
3	125	338	1510	370	834	500	1070	773	405	248	137	117
4	112	352	1080	327	700	469	957	843	410	318	133	113
5	107	700	925	340	630	411	875	1190	372	236	187	109
6	104	1940	1030	336	600	414	796	895	340	212	206	104
7	104	3020	884	332	520	423	746	838	321	194	286	102
8	107	2630	737	366	515	429	687	996	334	182	278	100
9	156	1580	647	3690	490	435	632	1550	328	203	213	97
10	252	1040	553	2570	445	1870	586	1490	298	189	214	95
11	218	807	435	1520	420	2570	522	1250	276	193	200	101
12	169	647	400	1170	405	2940	508	1050	264	179	187	101
13	148	517	400	1020	400	3510	474	2240	312	164	167	98
14	145	435	408	872	410	5850	442	6640	263	159	215	98
15	182	378	627	729	397	7900	416	3860	241	164	186	99
16	189	339	738	540	390	4950	398	2980	231	193	175	97
17	320	373	673	606	384	3160	383	3000	227	207	163	95
18	255	362	1360	679	399	2250	377	2510	220	174	146	93
19	199	311	2290	585	423	1770	382	1940	225	159	136	92
20	171	281	1730	556	448	1690	398	1540	289	151	129	89
21	153	259	1370	511	441	1620	374	1270	225	144	123	88
22	224	364	1110	448	452	1630	353	1050	268	149	118	90
23	193	1060	891	410	383	1460	330	834	223	149	115	89
24	160	1360	763	415	420	1230	318	842	204	143	112	94
25	191	1020	753	1790	502	1170	315	762	196	154	110	94
26	363	850	852	19400	773	6570	1300	666	189	169	111	92
27	1470	686	745	6950	680	7610	3930	591	284	157	109	90
28	837	583	620	3340	624	4520	2470	541	241	150	114	89
29	552	555	570	2210	---	3040	1680	502	207	139	147	89
30	379	692	530	1630	---	2250	1300	632	190	136	140	87
31	298	---	505	1340	---	1780	---	557	---	146	125	---
TOTAL	8146	24103	30346	55962	15143	75513	25759	45818	8480	5520	4977	2950
MEAN	263	803	979	1805	541	2436	859	1478	283	178	161	98.3
MAX	1470	3020	2640	19400	1060	7900	3930	6640	473	318	286	125
MIN	104	259	400	327	383	411	315	502	189	136	109	87
CFSM	.41	1.24	1.52	2.79	.84	3.77	1.33	2.29	.44	.28	.25	.15
IN.	.47	1.39	1.75	3.22	.87	4.35	1.48	2.64	.49	.32	.29	.17

CAL YR 1977 TOTAL 160931 MEAN 441 MAX 6570 MIN 76 CFSM .68 IN 9.27
WTR YR 1978 TOTAL 302717 MEAN 829 MAX 19400 MIN 87 CFSM 1.28 IN 17.43

JAMES RIVER BASIN

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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 (1.4 km) downstream from Pedlar River, and at mile 268.6 (432.2 km).

DRAINAGE AREA.--3,259 mi² (8,441 km²).

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 (167.192 m) National Geodetic Vertical Datum of 1929. January 1900 to September 1915, nonrecording gage in powerhouse of Owens Illinois Glass Company 1,000 ft (305 m) upstream at different datum. December 1926 to June 1931, water-stage recorder at site 2 mi (3.2 km) downstream at different datum.

REMARKS.--Records good. Some diurnal fluctuation caused by powerplants above station. National Weather Service gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--52 years, 3,561 ft³/s (100.8 m³/s), 14.84 in/yr (377 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 150,000 ft³/s (4,250 m³/s) Aug. 20, 1969, gage height, 35.50 ft (10.820 m), from rating curve extended above 73,000 ft³/s (2,100 m³/s) on basis of records for other stations in James River basin; minimum, 71 ft³/s (2.01 m³/s) Oct. 24, 1963; minimum daily, 223 ft³/s (6.32 m³/s) July 28, 1930; minimum gage height, 2.91 ft (0.887 m) Oct. 5, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 31.3 ft (9.54 m), from floodmarks, discharge, 118,000 ft³/s (3,340 m³/s), from rating curve extended as explained above.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 25,000 ft³/s (710 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	2400	*79700 2260	25.59 7.800	Mar. 27	1045	54400 1540	21.27 6.483
Mar. 15	2115	52100 1480	20.82 6.346	Apr. 27	1500	42200 1200	18.72 5.706

Minimum discharge, 317 ft³/s (8.98 m³/s) July 18, gage height, 3.54 ft (1.079 m); minimum daily, 583 ft³/s (16.5 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	641	1600	8090	2640	5800	3120	7900	7180	4020	930	1010	1270
2	646	1560	16900	2490	5020	2950	6680	5920	3520	1200	1140	857
3	688	1570	10400	2250	4550	2890	5710	4980	3000	1480	1160	880
4	871	1880	6960	2120	3960	2780	4980	5030	2850	1870	1150	866
5	891	3720	5740	1920	3570	2640	4500	6770	2800	1720	1120	836
6	766	7190	5790	1880	3150	2120	4220	6910	2550	1790	1160	780
7	733	10700	5460	1940	2830	2420	3870	5760	2330	1560	1400	757
8	708	19500	4680	2130	2730	2530	3700	5730	2130	1440	2270	723
9	776	14400	4010	9570	2760	2740	3550	11000	2190	1460	1960	699
10	1310	7710	3540	20200	2770	6450	3090	11600	2110	1380	1920	654
11	2160	5430	3130	9750	2590	18800	3070	8660	1980	1230	1800	655
12	1640	4310	2700	6640	2440	16800	2950	6890	2040	1470	1650	696
13	1270	3580	2510	5670	2430	18700	2820	7500	2000	1230	1660	765
14	1210	3070	2640	4990	2500	23600	2680	22200	1690	1180	1670	735
15	1110	2690	2970	4320	2540	45900	2550	19300	1810	1170	1460	738
16	1090	2390	3370	3600	2210	37200	2440	14200	1470	1410	1410	734
17	1100	2580	3690	3300	2450	21600	2370	13100	1380	1720	1360	715
18	1120	2480	4740	3930	2090	14100	2370	12100	1370	1370	1180	678
19	996	2280	7410	3750	2280	10300	2390	9540	1430	1310	981	665
20	946	2100	7220	3450	2450	8550	2440	7630	1680	1200	1030	653
21	896	1950	5950	3130	2510	8500	2460	6350	1540	1110	865	645
22	843	2040	5110	2880	2570	8390	2450	5360	1570	1030	862	641
23	853	4440	4460	2560	2430	8220	2370	4600	1510	1010	834	600
24	834	9710	3880	2370	2310	6970	2280	4400	1460	1020	790	595
25	808	7330	3620	4690	2370	6100	2240	4200	1400	1140	777	593
26	1610	5660	3610	61400	3220	22400	8670	3850	1300	1120	764	591
27	3490	4720	3940	63400	3460	50800	39100	3460	1850	1130	784	595
28	4980	4100	3550	23500	3390	30700	24500	3180	1780	1190	789	595
29	3260	3670	3050	13300	---	17500	12900	3010	1660	1210	752	590
30	2620	3890	2920	9250	---	12500	9100	2940	1280	1010	908	583
31	1710	---	2840	7260	---	9610	---	3560	---	968	1040	---
TOTAL	42576	148250	154880	290280	83380	427880	180350	236910	59700	40058	37656	21384
MEAN	1373	4942	4996	9364	2978	13800	6012	7642	1990	1292	1215	713
MAX	4980	19500	16900	63400	5800	50800	39100	22200	4020	1870	2270	1270
MIN	641	1560	2510	1880	2090	2120	2240	2940	1280	930	752	583
CFSM	.42	1.52	1.53	2.87	.91	4.23	1.85	2.35	.61	.40	.37	.22
IN.	.49	1.69	1.77	3.31	.95	4.88	2.06	2.70	.68	.46	.43	.24

CAL YR 1977	TOTAL	977495	MEAN	2678	MAX	56200	MIN	407	CFSM	.82	IN	11.16
WTR YR 1978	TOTAL	1723304	MEAN	4721	MAX	63400	MIN	583	CFSM	1.45	IN	19.67

JAMES RIVER BASIN

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 (46 m) downstream from Bent Creek, 525 ft (160 m) upstream from bridge on U.S. Highway 60 (revised), 1.3 mi (2.1 km) southeast of Gladstone, and at mile 227.8 (366.5 km).

DRAINAGE AREA.--3,683 mi² (9,539 km²).

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 (116.248 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 12, 1930, nonrecording gage at same site and datum.

REMARKS.--Records good. Large diurnal fluctuation caused by powerplants above station. National Weather Service gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--54 years, 4,175 ft³/s (118.2 m³/s), 15.39 in/yr (391 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 176,000 ft³/s (4,980 m³/s) June 21, 1972, gage height, 27.13 ft (8.269 m), from high-water mark in gage house, from rating curve extended above 89,000 ft³/s (2,500 m³/s) on basis of velocity-area studies and records for other stations in James River basin; minimum, 222 ft³/s (6.29 m³/s) Oct. 13, 14, 1930, gage height, 2.21 ft (0.674 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 26,500 ft³/s (750 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 27	0715	*75400 2140	18.38 5.602	Mar. 27	1830	50300 1420	14.96 4.560
Mar. 16	0500	48000 1360	14.58 4.444	Apr. 27	1415	42100 1190	13.60 4.145

Minimum discharge, 622 ft³/s (17.6 m³/s) Oct. 3, gage height, 2.61 ft (0.796 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	702	1950	6170	3150	6980	3930	8950	7810	3730	1560	1280	1290
2	851	1240	14900	2890	6300	3620	7640	6710	3700	934	1370	1540
3	718	1550	12000	2850	5450	3670	6700	6040	3100	1310	1250	964
4	832	2020	8140	2340	4860	3390	6060	7300	3100	1810	1280	1090
5	841	2560	7150	2090	4280	3130	5470	8960	2860	2020	1260	997
6	940	6480	7100	2100	3990	3120	4880	7200	2710	1640	1260	1060
7	798	10900	6420	2030	3410	2390	4580	6290	2250	1780	1850	892
8	793	14900	5990	3030	3460	2990	4560	6220	2470	1460	2210	882
9	860	17700	4780	9280	3350	2990	4150	9430	2130	1490	2170	906
10	1060	9260	4260	19500	3150	5670	3930	11300	2070	1450	2380	876
11	1920	6720	3670	11700	3130	16400	3550	8630	2030	1430	1640	872
12	1840	5520	3510	7730	2550	16800	3540	7000	1930	1360	1800	864
13	1700	4300	2750	6600	2900	17200	3340	6610	2160	1390	1540	874
14	1290	3700	3070	6550	2550	18900	3250	16900	1870	1340	1970	869
15	1380	3100	3550	5490	3220	37500	2950	18600	1800	1310	1930	892
16	1170	2620	4030	4720	2570	40600	2800	13700	1790	1480	1330	885
17	1270	2860	4120	3870	2570	23200	2640	11800	1650	1810	1470	890
18	1220	3380	6060	5630	2570	15100	3210	11300	1380	1850	1550	885
19	1160	2440	6880	5090	2530	11300	2730	9240	1420	1700	1050	892
20	1050	2330	8130	4750	2880	9220	2320	7550	1690	1390	1060	885
21	1000	2390	7080	3860	2730	8780	2860	6440	1510	1290	1140	886
22	1040	2120	6300	3660	3150	8650	2760	5780	1980	924	859	886
23	833	3400	5510	3620	2760	8580	2550	5000	1490	1090	1400	874
24	888	8690	4650	3140	2900	7750	2960	4800	1530	1040	888	846
25	906	8510	4240	5860	2530	6930	2390	4310	1620	1700	844	824
26	2730	6930	4190	51700	3580	13700	9040	4110	1350	1360	885	800
27	3090	6060	4460	68400	4080	44800	38600	3630	1990	1160	857	750
28	5530	4970	4240	30400	4110	36200	29400	3310	2270	1340	833	690
29	4310	4320	3600	15000	---	18800	13300	3200	1730	1310	1260	680
30	3150	3900	3110	10800	---	13600	9910	3070	1820	1160	919	675
31	2490	---	3220	8370	---	10800	---	3390	---	1090	1160	---
TOTAL	49362	156820	173280	316200	98540	419710	201020	235630	63130	43978	42695	27216
MEAN	1560	5227	5590	10200	3519	13540	6701	7601	2104	1419	1377	907
MAX	5530	17700	14900	68400	6980	44800	38600	18600	3730	2020	2380	1540
MIN	702	1240	2750	2030	2530	2390	2320	3070	1350	924	833	675
CFSM	.42	1.42	1.52	2.77	.96	3.68	1.82	2.06	.57	.39	.37	.25
IN.	.49	1.58	1.75	3.19	1.00	4.24	2.03	2.38	.64	.44	.43	.27

CAL YR 1977 TOTAL 1096948 MEAN 3005 MAX 57000 MIN 347 CFSM .82 IN 11.08
WTR YR 1978 TOTAL 1826581 MEAN 5004 MAX 68400 MIN 675 CFSM 1.36 IN 18.45

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 (5.6 km) downstream from Hat Creek, 4.8 mi (7.7 km) upstream from Piney River, and 6.8 mi (10.9 km) southwest of Lovingsston.

DRAINAGE AREA.--92.8 mi² (240.4 km²).

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 (176.293 m) National Geodetic Vertical Datum of 1929. Sept. 15, 1969, to Oct. 15, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--40 years, 154 ft³/s (4.361 m³/s), 22.54 in/yr (573 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,000 ft³/s (2,270 m³/s) Aug. 20, 1969, gage height, 29.0 ft (8.84 m), from floodmarks, from rating curve extended above 7,600 ft³/s (220 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.50 ft³/s (0.014 m³/s) Sept. 10, 11, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s (45 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	Unknown	*6700 190	a10.92 3.328	Aug. 27	2300	4410 125	8.59 2.618
May 13	2000	3050 86.4	6.97 2.124				

a From high-water mark in well.

Minimum discharge observed, 8.6 ft³/s (0.24 m³/s) Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	27	352	138	330	121	340	294	142	48	59	170
2	13	28	294	128	304	112	301	265	133	49	47	110
3	12	75	252	114	269	112	272	240	129	76	47	88
4	10	128	218	109	240	102	253	352	133	108	56	74
5	9.0	614	331	107	224	102	230	416	117	72	56	62
6	9.0	758	326	103	204	104	215	354	108	58	91	56
7	9.0	735	270	99	181	106	204	317	106	52	158	51
8	9.6	558	232	224	176	112	187	383	119	58	116	47
9	37	346	212	796	160	119	176	455	114	66	86	43
10	38	306	179	420	153	339	168	405	97	56	71	41
11	26	291	158	319	151	288	160	358	90	64	59	41
12	22	229	144	267	148	320	160	320	85	50	64	40
13	18	189	138	240	142	362	146	985	129	45	78	39
14	20	160	302	232	140	554	138	1450	93	47	104	38
15	20	140	346	202	133	704	131	862	83	47	77	38
16	22	128	267	179	131	574	125	704	78	76	62	36
17	39	237	272	204	129	455	125	574	77	62	54	34
18	29	172	572	232	131	380	125	484	69	50	47	33
19	26	149	423	194	131	344	133	430	65	44	42	31
20	22	134	369	194	127	334	129	372	92	40	39	31
21	20	126	316	164	127	337	119	330	78	37	36	31
22	19	191	267	149	125	362	114	291	92	40	34	31
23	18	303	232	138	112	340	106	269	65	50	32	31
24	17	270	212	136	119	317	102	256	61	51	31	31
25	16	243	232	860	127	313	106	221	58	66	31	31
26	68	243	191	3000	133	720	644	198	58	64	31	29
27	74	196	174	1120	123	819	715	184	101	48	445	28
28	44	184	162	704	121	659	502	170	65	47	345	26
29	35	172	151	556	---	520	394	160	56	40	114	25
30	31	182	149	444	---	437	340	188	51	38	106	24
31	29	---	149	380	---	383	---	156	---	50	194	---
TOTAL	772.6	7514	7892	12152	4591	10871	6860	12443	2734	1699	2812	1390
MEAN	24.9	250	255	392	164	351	229	401	91.1	54.8	90.7	46.3
MAX	74	758	572	3000	330	819	715	1450	142	108	445	170
MIN	9.0	27	138	99	112	102	102	156	51	37	31	24
CFSM	.27	2.69	2.75	4.22	1.77	3.78	2.47	4.32	.98	.59	.98	.50
IN.	.31	3.01	3.16	4.87	1.84	4.36	2.75	4.99	1.10	.68	1.13	.56

CAL YR 1977 TOTAL 39395.0 MEAN 108 MAX 1190 MIN 8.2 CFSM 1.16 IN 15.79
WTR YR 1978 TOTAL 71730.6 MEAN 197 MAX 3000 MIN 9.0 CFSM 2.12 IN 28.75

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 (0.3 km) southwest of Piney River Post Office, 1.7 mi (2.7 km) downstream from Indian Creek, and 2.5 mi (4.0 km) southeast of Lowesville.

DRAINAGE AREA.--47.6 mi² (123.3 km²).

PERIOD OF RECORD.--July 1949 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-72: 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 633.58 ft (193.115 m) 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 (6 m) downstream from former highway bridge at same datum. Feb. 26, 1970, to Sept. 20, 1973, on right bank 20 ft (6 m) upstream from bridge at same datum.

REMARKS.--Records good. Periodic dewatering of upstream quarries adds small amount of inflow. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--29 years, 93.5 ft³/s (2.648 m³/s), 26.68 in/yr (678 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s (1,080 m³/s) Aug. 20, 1969, gage height, 13.8 ft (4.21 m), from floodmarks, from rating curve extended above 6,000 ft³/s (170 m³/s) on basis of slope-area measurement of peak flow; minimum, 1.1 ft³/s (0.031 m³/s) Sept. 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1949 reached a stage of 9.9 ft (3.02 m), from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 650 ft³/s (18 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	0330	*3010 85.2	6.43 1.960	May 13	1900	1480 41.9	4.20 1.280

Minimum discharge observed, 4.0 ft³/s (0.11 m³/s) Oct. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	19	200	96	208	50	188	163	72	22	38	43
2	6.2	21	198	88	184	48	167	148	70	22	32	28
3	5.9	38	191	80	156	48	150	132	67	39	26	24
4	5.2	77	174	75	140	44	138	184	64	40	29	21
5	4.0	288	221	72	128	45	126	200	60	29	26	19
6	4.2	456	212	69	112	45	116	191	56	25	40	17
7	4.5	496	203	66	101	46	108	184	56	22	68	16
8	4.5	424	188	120	92	49	99	212	71	32	54	15
9	31	305	169	305	86	53	92	248	56	35	44	14
10	22	264	146	235	84	124	88	235	48	26	37	13
11	13	230	128	198	78	114	84	217	45	26	32	14
12	10	203	114	174	75	126	81	198	43	22	31	13
13	9.0	172	104	164	72	152	75	572	53	20	38	13
14	11	146	168	160	71	215	71	822	40	21	37	13
15	13	124	225	139	67	310	68	516	38	20	30	13
16	18	112	210	124	64	287	65	424	38	47	26	12
17	25	164	213	158	63	245	64	352	37	33	23	11
18	15	139	326	169	61	205	67	310	34	26	22	10
19	14	135	297	150	61	184	67	266	32	26	19	9.2
20	12	126	269	150	58	163	65	230	34	23	18	8.6
21	11	116	235	126	57	154	61	200	40	21	17	9.2
22	10	155	208	116	56	152	57	179	36	22	16	9.2
23	10	210	184	108	53	148	56	161	30	25	15	9.2
24	10	210	162	100	53	142	54	148	28	26	14	9.2
25	9.5	208	164	384	56	146	56	128	27	29	15	9.8
26	46	200	143	1960	54	380	208	114	28	24	15	9.2
27	39	179	132	782	50	424	271	105	50	26	38	8.0
28	29	164	126	458	50	352	235	98	29	22	32	7.3
29	24	150	118	352	---	303	203	91	25	19	30	5.2
30	22	150	110	290	---	258	184	88	23	18	34	5.2
31	20	---	106	240	---	220	---	83	---	32	34	---
TOTAL	462.5	5681	5644	7708	2390	5232	3364	7199	1330	820	930	408.3
MEAN	14.9	189	182	249	85.4	169	112	232	44.3	26.5	30.0	13.6
MAX	46	496	326	1960	208	424	271	822	72	47	68	43
MIN	4.0	19	104	66	50	44	54	83	23	18	14	5.2
CFSM	.31	3.97	3.82	5.23	1.79	3.55	2.35	4.87	.93	.56	.63	.29
IN.	.36	4.44	4.41	6.02	1.87	4.09	2.63	5.63	1.04	.64	.73	.32

CAL YR 1977 TOTAL 26735.6 MEAN 73.2 MAX 824 MIN 4.0 CFSM 1.54 IN 20.89
WTR YR 1978 TOTAL 41168.8 MEAN 113 MAX 1960 MIN 4.0 CFSM 2.37 IN 32.17

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 (11 m) upstream from bridge on State Highway 657, 2.1 mi (3.4 km) upstream from mouth, and 3.5 mi (5.6 km) southeast of town of Tye River.

DRAINAGE AREA.--147 mi² (381 km²).

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 (135.450 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--18 years, 166 ft³/s (4.701 m³/s), 15.34 in/yr (390 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft³/s (1,270 m³/s) Aug. 20, 1969, gage height, 27.95 ft (8.519 m), from floodmark, from rating curve extended above 1,800 ft³/s (51 m³/s) on basis of computation of flow over dam at gage height 11.03 ft (3.362 m) and slope-area measurement at gage height 27.95 ft (8.519 m); minimum, 3.2 ft³/s (0.091 m³/s) Sept. 8-13, 1966; minimum gage height, 0.28 ft (0.085 m) Sept. 9-13, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft³/s (40 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0500	1740 49.3	6.57 2.003	Apr. 27	0300	2080 58.9	7.06 2.152
Jan. 26	0800	*9130 259	12.94 3.944	May 13	2330	1870 53.0	6.80 2.073

Minimum discharge, 16 ft³/s (0.45 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	35	311	117	275	177	258	246	151	91	110	89
2	21	35	203	112	250	169	236	218	143	89	89	74
3	21	40	161	100	233	165	213	199	143	116	84	66
4	18	59	138	100	225	158	201	492	147	135	81	59
5	18	142	342	97	215	151	193	630	138	110	92	55
6	18	440	398	96	200	159	181	356	133	98	86	52
7	18	664	210	96	198	169	179	284	130	92	143	51
8	20	539	167	249	190	169	167	383	155	91	126	49
9	34	208	151	1120	184	179	161	578	159	142	109	48
10	50	145	127	353	180	568	159	383	129	99	100	47
11	27	153	126	295	178	499	155	302	123	100	88	47
12	24	119	122	270	177	413	155	270	121	95	84	47
13	23	105	123	210	176	413	149	547	126	86	84	45
14	34	93	129	220	177	458	143	979	117	88	93	46
15	47	89	314	220	179	533	138	608	113	89	82	46
16	36	81	197	165	173	413	138	614	113	105	77	45
17	66	167	175	206	169	329	136	608	112	103	72	43
18	38	140	571	507	175	266	138	473	110	89	67	41
19	30	110	362	338	179	236	140	383	107	82	64	40
20	27	98	266	281	193	210	135	329	110	79	63	39
21	25	91	233	213	179	193	130	287	116	75	59	40
22	25	122	191	177	199	181	125	248	127	79	56	41
23	24	240	167	169	163	167	120	238	106	88	55	39
24	24	191	153	163	171	159	118	238	100	85	55	38
25	26	153	171	928	187	153	116	206	99	158	54	40
26	288	193	147	4850	258	652	1020	189	100	96	61	39
27	150	155	138	1520	193	716	1280	179	197	93	56	37
28	66	140	137	900	179	488	518	173	119	114	61	37
29	47	126	133	500	---	398	368	167	102	84	57	36
30	39	126	130	370	---	329	287	163	95	78	64	35
31	36	---	135	315	---	284	---	161	---	84	67	---
TOTAL	1336	4999	6328	15257	5455	9554	7457	11131	3741	3013	2439	1411
MEAN	43.1	167	204	492	195	308	249	359	125	97.2	78.7	47.0
MAX	288	664	571	4850	275	716	1280	979	197	158	143	89
MIN	16	35	122	96	163	151	116	161	95	75	54	35
CFSM	.29	1.14	1.39	3.35	1.33	2.10	1.69	2.44	.85	.66	.54	.32
IN.	.34	1.27	1.60	3.86	1.38	2.42	1.89	2.82	.95	.76	.62	.36
CAL YR 1977	TOTAL	34727	MEAN	95.1	MAX	682	MIN	14	CFSM	.65	IN	8.79
WTR YR 1978	TOTAL	72121	MEAN	198	MAX	4850	MIN	16	CFSM	1.35	IN	18.25

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 (15 m) downstream from bridge on State Highway 634, 2.8 mi (4.5 km) downstream from confluence of North and South Forks, and 4.1 mi (6.6 km) south of Greenfield.

DRAINAGE AREA.--94.6 mi² (245.0 km²).

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 (161.632 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 21, 1943, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--35 years, 139 ft³/s (3.936 m³/s), 19.95 in/yr (507 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,000 ft³/s (1,980 m³/s) Aug. 20, 1969, gage height, 31.2 ft (9.51 m), from floodmarks, from rating curve extended above 8,500 ft³/s (240 m³/s) on basis of contracted-opening measurement at gage height 18.11 ft (5.520 m), slope-area measurements at gage heights 17.2 ft (5.24 m), 23.4 ft (7.13 m), and 31.2 ft (9.51 m), and peak runoff comparison with nearby stations; minimum, 0.20 ft³/s (0.006 m³/s) Sept. 8-12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 15, 1942, reached a stage of 23.4 ft (7.13 m), from floodmarks, discharge, about 30,000 ft³/s (850 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0300	1680 47.6	5.52 1.682	May 13	2200	2190 62.0	6.23 1.899
Jan. 26	0330	*2880 81.6	6.96 2.121				

Minimum discharge, 2.3 ft³/s (0.065 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	13	270	116	248	138	292	230	171	60	69	122
2	3.4	20	219	108	228	126	248	208	150	63	112	74
3	3.2	72	190	97	201	120	230	190	146	81	65	64
4	2.7	147	166	94	183	116	219	319	147	86	154	58
5	2.4	606	267	92	171	111	201	383	131	70	118	50
6	2.4	687	270	91	157	114	190	316	123	62	104	46
7	2.5	720	210	90	144	108	180	281	121	57	196	42
8	3.1	432	183	190	141	111	166	328	127	106	130	39
9	13	259	168	995	130	110	160	398	124	162	101	36
10	9.0	290	139	462	123	282	154	340	110	79	86	35
11	5.6	294	124	316	120	316	147	304	104	68	84	36
12	4.7	221	115	248	116	404	152	270	101	61	145	34
13	4.0	176	114	220	114	462	139	702	116	54	121	32
14	4.7	144	190	200	112	695	126	1200	100	56	138	34
15	5.8	122	248	181	109	788	123	800	94	54	154	34
16	8.3	117	199	160	108	634	120	600	93	89	154	31
17	29	136	189	166	108	511	117	480	93	65	114	29
18	10	109	521	192	111	414	120	400	88	52	94	27
19	8.4	92	354	166	111	368	122	370	96	47	81	26
20	7.2	92	304	170	112	354	110	330	143	44	71	24
21	6.6	95	270	141	112	340	102	310	110	41	62	25
22	6.3	128	216	126	115	354	100	280	104	39	58	39
23	6.3	210	196	120	110	328	95	270	86	38	51	48
24	6.0	196	180	118	109	292	94	248	80	42	48	35
25	5.8	174	185	479	148	281	94	223	78	89	60	33
26	48	174	155	1870	185	714	550	205	76	120	57	28
27	40	149	141	860	155	654	579	192	167	63	52	26
28	24	139	130	562	144	528	398	183	89	57	81	26
29	18	122	123	446	---	446	316	177	72	52	53	24
30	16	117	120	340	---	368	259	198	66	45	55	23
31	14	---	123	292	---	328	---	190	---	57	79	---
TOTAL	322.8	6253	6279	9708	3925	10915	5903	10925	3306	2059	2947	1180
MEAN	10.4	208	203	313	140	352	197	352	110	66.4	95.1	39.3
MAX	48	720	521	1870	248	788	579	1200	171	162	196	122
MIN	2.4	13	114	90	108	108	94	177	66	38	48	23
CFSM	.11	2.20	2.15	3.31	1.48	3.72	2.08	3.72	1.16	.70	1.01	.42
IN	.13	2.46	2.47	3.82	1.54	4.29	2.32	4.30	1.30	.81	1.16	.46
CAL YR 1977 TOTAL	31480.0			86.2	MAX 784	MIN 2.4	CFSM .91	IN 12.38				
WTR YR 1978 TOTAL	63722.8			175	MAX 1870	MIN 2.4	CFSM 1.85	IN 25.06				

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 (270 m) downstream from bridge on State Highway 20 at Scottsville, 6.8 mi (10.9 km) upstream from Hardware River, and at mile 188.6 (303.5 km).

DRAINAGE AREA.--4,584 mi² (11,873 km²).

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 (77.169 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 28, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good. Large diurnal fluctuation caused by powerplants above station. National Weather Service gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--54 years, 5,111 ft³/s (144.7 m³/s), 15.14 in/yr (385 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301,000 ft³/s (8,520 m³/s) June 22, 1972, gage height, 34.02 ft (10.369 m), from floodmarks, from rating curve extended above 120,000 ft³/s (3,400 m³/s) on basis of slope-conveyance study; minimum daily, 300 ft³/s (8.50 m³/s) Sept. 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1870 reached a stage of 30.7 ft (9.36 m), discharge, about 215,000 ft³/s (6,100 m³/s), and flood in November 1877 reached a stage of 27.9 ft (8.50 m), discharge, about 160,000 ft³/s (4,500 m³/s), from information by local resident. Flood in March 1913 reached a stage of 25.16 ft (7.669 m), from floodmarks, discharge, 121,000 ft³/s (3,430 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 27,000 ft³/s (760 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 27	0400	*88400 2500	22.23 6.776	Apr. 27	2045	50500 1430	16.92 5.157
Mar. 16	1145	55200 1560	17.69 5.392	May 15	0615	31000 878	13.24 4.036
Mar. 28	0500	58400 1650	18.20 5.547				

Minimum discharge, 694 ft³/s (19.7 m³/s) Oct. 1, gage height, 2.14 ft (0.652 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	775	2710	6980	4290	10500	5420	12500	12000	5390	2210	2080	2220
2	826	2060	13600	3910	9170	5010	10600	10100	5950	1840	2150	2080
3	937	1680	16900	4040	8270	5050	9490	8820	5300	1460	2130	1970
4	801	2230	11400	3080	7380	4460	8500	9410	4900	2370	1890	1370
5	891	3510	9950	3150	6300	4690	7610	17500	4410	3020	1950	1420
6	907	7910	11500	2770	6020	4150	7010	12300	4190	2150	1930	1310
7	992	15500	9000	2940	5230	3910	6660	10900	3980	2420	2020	1320
8	870	17400	8030	3590	4890	3870	5990	10300	3720	2580	3410	1180
9	939	22000	6930	19400	4750	4610	5670	14100	3690	3340	3100	1140
10	1100	13800	6220	19900	4550	6720	5350	17300	3420	2320	2860	1170
11	1450	9780	5010	18300	4590	17100	4940	14700	3090	2250	2580	1130
12	2120	7870	4370	11100	4320	23300	4890	11900	3010	2100	2510	1110
13	1890	6070	4180	9320	3970	21800	4560	10800	3120	2010	2160	1080
14	1920	4910	3840	9280	4240	23300	4400	24800	3200	1890	2530	1080
15	1440	4330	5760	8480	4080	37100	4310	29500	2710	1940	2730	1100
16	1690	3820	5450	6800	4360	51400	3980	22800	2650	2170	2480	1090
17	1540	3850	5770	6070	3820	33300	3810	19200	2540	2350	2070	1060
18	1540	4540	9260	8230	4030	21500	3820	17500	2280	2680	1980	1060
19	1380	4010	9790	8410	3670	15900	3920	15400	2250	2360	1510	1030
20	1310	3510	10800	7490	3900	13000	3580	12900	2570	1970	1440	1010
21	1200	3100	10200	6300	4100	11500	3790	10700	2520	1840	1400	1010
22	1150	3040	8610	5520	4130	11600	3560	9400	2720	1740	1470	1100
23	1150	4360	7910	5030	4440	11400	3650	8420	2590	1300	1140	1080
24	945	7750	6410	4580	4010	11000	3520	7700	2290	1590	1790	1060
25	1010	11600	6130	7590	4050	9510	3800	6950	2250	2240	1130	1030
26	1590	9760	5840	60600	4210	12500	9110	6640	2090	2610	1190	1020
27	5050	8160	5330	85100	5430	44600	43600	6120	3050	2020	1210	947
28	4400	6910	5540	54800	5760	51400	43000	5400	3260	1900	2880	875
29	5960	5890	5110	22800	---	27700	22300	5160	2860	1900	1670	860
30	4230	5340	4590	16000	---	19000	15200	4950	2540	1750	1910	859
31	3080	---	4340	12500	---	15000	---	4980	---	1600	1650	---
TOTAL	55083	207400	234750	441370	144170	530800	273120	378650	98540	65920	62950	35771
MEAN	1777	6913	7573	14240	5149	17120	9104	12210	3285	2126	2031	1192
MAX	5960	22000	16900	85100	10500	51400	43600	29500	5950	3340	3410	2220
MIN	775	1680	3840	2770	3670	3870	3520	4950	2090	1300	1130	859
CFSM	.39	1.51	1.65	3.11	1.12	3.74	1.99	2.66	.72	.46	.44	.26
IN.	.45	1.68	1.91	3.58	1.17	4.31	2.22	3.07	.80	.53	.51	.29

CAL YR 1977 TOTAL 1359835 MEAN 3726 MAX 54900 MIN 484 CFSM .81 IN 11.04
WTR YR 1978 TOTAL 2528524 MEAN 6927 MAX 85100 MIN 775 CFSM 1.51 IN 20.52

JAMES RIVER BASIN

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 (23 m) upstream from bridge on State Highway 637, 0.8 mi (1.3 km) downstream from Briery Run, 2.4 mi (3.9 km) northeast of Scottsville, and 10.8 mi (17.4 km) upstream from mouth.

DRAINAGE AREA.--116 mi² (300 km²).

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 (89.904 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--40 years, 127 ft³/s (3.600 m³/s), 14.87 in/yr (378 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,000 ft³/s (1,470 m³/s) Aug. 20, 1969, gage height, 31.0 ft (9.45 m), from floodmarks, from rating curve extended above 18,000 ft³/s (510 m³/s) on basis of slope-area measurements at gage heights 23.8 ft (7.25 m) and 31.0 ft (9.45 m); minimum, 0.10 ft³/s (0.003 m³/s) Sept. 5-8, 1966; minimum gage height, 0.81 ft (0.247 m) Sept. 8, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0800	3220 91.2	12.53 3.819	Apr. 27	0300	1520 43.0	9.58 2.920
Jan. 26	1000	*4680 133	14.17 4.319	May 14	0700	2330 66.0	11.42 3.481

Minimum discharge, 8.5 ft³/s (0.24 m³/s) Oct. 5, gage height, 1.59 ft (0.485 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	24	289	93	211	160	216	193	108	66	93	180
2	11	26	176	87	202	155	198	171	98	70	181	88
3	12	35	123	78	182	150	180	157	95	90	87	66
4	10	58	103	72	166	144	177	432	98	91	80	58
5	9.0	218	352	70	159	130	171	1000	88	76	141	50
6	9.0	312	364	74	151	137	159	365	83	66	82	47
7	10	540	177	74	148	146	157	272	83	62	124	44
8	11	708	128	373	139	150	144	336	103	84	112	42
9	21	201	112	2070	132	164	139	483	108	245	88	40
10	30	146	95	436	124	842	137	327	83	90	70	39
11	17	139	86	271	124	720	135	263	77	72	59	39
12	14	89	82	222	121	580	128	227	74	65	76	41
13	13	71	80	213	121	528	121	406	80	59	76	41
14	14	61	102	325	123	560	114	1410	70	65	64	42
15	20	57	206	262	124	620	110	628	65	70	58	42
16	37	53	128	201	128	422	107	687	65	96	56	40
17	28	95	112	275	121	327	107	441	65	95	56	38
18	20	87	765	478	132	263	107	327	62	68	48	36
19	17	66	388	343	142	236	132	272	138	59	44	35
20	17	59	253	271	155	216	123	236	114	56	41	33
21	16	57	235	226	151	205	112	207	93	53	38	35
22	16	114	179	185	173	200	105	182	115	50	36	37
23	15	244	146	160	146	180	100	173	85	48	36	102
24	16	186	130	167	148	168	100	169	77	47	36	49
25	16	137	144	847	189	168	107	153	74	170	36	45
26	176	179	120	3610	284	833	778	137	76	79	38	40
27	126	117	101	933	198	800	1000	126	245	62	41	37
28	49	98	95	471	173	432	384	124	103	57	255	37
29	33	86	92	336	---	318	272	119	79	50	76	36
30	28	100	90	272	---	263	227	117	71	48	62	35
31	25	---	97	236	---	227	---	132	---	56	59	---
TOTAL	845.6	4363	5550	13731	4369	10444	6047	10272	2775	2365	2349	1494
MEAN	27.3	145	179	443	156	337	202	331	92.5	76.3	75.8	49.8
MAX	176	708	765	3610	284	842	1000	1410	245	245	255	180
MIN	9.0	24	80	70	121	130	100	117	62	47	36	33
CFSM	.24	1.25	1.54	3.82	1.35	2.91	1.74	2.85	.80	.66	.65	.43
IN.	.27	1.40	1.78	4.40	1.40	3.35	1.94	3.29	.89	.76	.75	.48
CAL YR 1977 TOTAL	26499.9	MEAN	72.6	MAX	765	MIN	7.0	CFSM	.63	IN	8.50	
WTR YR 1978 TOTAL	64604.6	MEAN	177	MAX	3610	MIN	9.0	CFSM	1.53	IN	20.72	

02030500 SLATE RIVER NEAR ARVONIA, VA

LOCATION.--Lat 37°42'10", long 78°22'40", Buckingham County, Hydrologic Unit 02080203, on left bank 100 ft (30 m) upstream from Bumpers Bridge on State Highway 676, 1.8 mi (2.9 km) northwest of Arvonion, 2.9 mi (4.7 km) upstream from Hunts Creek, and 3.8 mi (6.1 km) upstream from mouth.

DRAINAGE AREA.--226 mi² (585 km²).

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: 1935, 1937, 1944, 1949, 1971(M).

GAGE.--Water-stage recorder. Datum of gage is 238.78 ft (72.780 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Feb. 15, 1936, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations 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, 230 ft³/s (6.514 m³/s), 13.82 in/yr (351 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft³/s (1,200 m³/s) June 22, 1972, gage height, 25.10 ft (7.650 m), from high-water mark in gage house, from rating curve extended above 5,900 ft³/s (170 m³/s) on basis of slope-area measurement of peak flow; minimum, 2.0 ft³/s (0.057 m³/s) Sept. 28 to Oct. 2, 1930; minimum gage height, 1.35 ft (0.411 m) Sept. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,100 ft³/s (59 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	2200	2340	66.3	Mar. 10	2030	3310	93.7
Jan. 9	0530	4320	122	Apr. 28	0400	5570	158
Jan. 27	0800	*7420	210	May 5	0430	3480	98.6

Minimum discharge, 24 ft³/s (0.68 m³/s) Oct. 1, 2, 6-7, gage height, 2.14 ft (0.652 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	58	605	169	230	206	236	290	163	106	130	184
2	26	57	372	155	220	213	216	250	152	102	418	125
3	31	64	219	138	210	211	202	227	149	113	157	94
4	30	114	171	115	199	209	197	1000	464	133	122	84
5	27	392	480	125	190	193	196	3400	211	133	116	77
6	25	951	1100	130	205	198	187	1020	167	114	171	71
7	25	1820	366	143	180	203	184	439	153	101	222	68
8	26	731	220	596	190	204	180	614	164	96	146	65
9	33	285	184	3990	180	228	173	1630	182	284	108	62
10	49	186	174	2340	170	1750	169	721	160	181	97	60
11	49	158	143	349	160	1920	171	411	137	136	91	73
12	37	135	125	240	160	927	170	324	131	143	85	68
13	33	111	120	230	165	746	165	332	140	109	91	63
14	34	100	144	766	175	624	159	1290	146	101	88	62
15	46	94	322	762	181	789	152	697	125	107	158	65
16	57	91	236	420	178	439	150	997	122	202	373	65
17	54	118	180	485	178	344	148	742	122	236	124	62
18	58	164	1100	1370	184	285	152	433	120	144	91	58
19	46	120	696	977	199	252	187	336	115	113	79	55
20	41	100	354	520	195	235	193	283	116	101	73	52
21	38	93	355	367	201	220	171	249	150	92	68	52
22	37	123	271	278	224	211	157	225	204	86	64	57
23	38	313	208	220	207	200	150	209	181	81	62	133
24	37	262	183	210	200	193	148	231	128	93	61	91
25	37	191	245	1650	205	192	152	218	116	226	60	72
26	302	291	262	6400	269	743	1890	192	111	149	106	66
27	526	226	185	5890	239	1430	4960	178	412	112	102	60
28	152	162	156	757	210	565	3330	177	246	104	93	57
29	98	140	135	417	---	363	537	175	138	97	77	55
30	73	142	140	280	---	291	354	173	116	87	109	53
31	63	---	161	250	---	254	---	166	---	116	116	---
TOTAL	2153	7792	9612	30739	5504	14838	15436	17629	5041	3998	3858	2209
MEAN	69.5	260	310	992	197	479	515	569	168	129	124	73.6
MAX	526	1820	1100	6400	269	1920	4960	3400	464	284	418	184
MIN	25	57	120	115	160	192	148	166	111	81	60	52
CFSM	.31	1.15	1.37	4.39	.87	2.12	2.28	2.52	.74	.57	.55	.33
IN.	.35	1.28	1.58	5.06	.91	2.44	2.54	2.90	.83	.66	.64	.36

CAL YR 1977 TOTAL 51814 MEAN 142 MAX 1820 MIN 18 CFSM .63 IN 8.53
WTR YR 1978 TOTAL 118809 MEAN 326 MAX 6400 MIN 25 CFSM 1.44 IN 19.56

JAMES RIVER BASIN

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 (15 m) downstream from bridge on State Highway 649, 1.9 mi (3.1 km) southeast of Proffit, and 2.2 mi (3.5 km) upstream from confluence with South Fork.

DRAINAGE AREA.--176 mi² (456 km²).

PERIOD OF RECORD.--April 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 323.43 ft (98.581 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--8 years, 274 ft³/s (7.760 m³/s), 21.14 in/yr (537 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,800 ft³/s (901 m³/s) June 21, 1972, gage height, 30.4 ft (9.27 m), from floodmarks, from rating curve extended above 5,000 ft³/s (140 m³/s); minimum, 1.8 ft³/s (0.051 m³/s) Oct. 6, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 5	1900	2250 63.7	9.86 3.005	Mar. 10	1930	1940 54.9	8.93 2.722
Nov. 7	0200	1690 47.9	8.28 2.524	Mar. 14	2300	1560 44.2	7.82 2.384
Nov. 8	0700	4170 118	13.94 4.249	Mar. 26	1900	1630 46.2	8.00 2.438
Dec. 18	0800	2020 57.2	9.07 2.765	May 14	0700	5480 155	15.68 4.779
Jan. 9	1000	5380 152	15.57 4.746	May 16	1600	2160 61.2	9.50 2.896
Jan. 26	1300	*7950 225	17.70 5.395	Aug. 11	Unknown	3320 94.0	12.44 3.792

Minimum discharge, 1.8 ft³/s (0.051 m³/s) Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	16	500	132	300	201	282	180	145	60	190	164
2	3.6	17	395	121	268	185	244	160	132	73	99	91
3	4.2	29	275	107	239	184	218	147	129	97	79	74
4	3.8	64	218	94	210	171	204	310	132	123	104	63
5	2.8	1060	307	94	200	155	187	540	120	87	256	55
6	2.0	920	380	93	185	158	171	312	110	70	136	49
7	3.4	1340	239	97	170	160	168	246	107	62	320	45
8	3.8	2560	185	388	165	160	156	270	115	60	212	41
9	6.0	738	168	3750	160	166	147	425	121	100	142	35
10	10	470	144	930	150	872	142	338	99	73	130	32
11	5.8	690	126	460	148	978	142	246	91	153	1800	30
12	5.2	380	115	350	155	827	137	212	87	76	650	33
13	5.4	255	115	310	161	895	129	768	112	62	552	32
14	5.6	191	121	365	153	1040	120	3680	90	100	430	32
15	5.8	158	222	300	158	1180	115	1490	81	94	275	33
16	8.0	136	171	227	161	808	110	1770	80	77	208	32
17	11	161	156	299	155	560	108	1380	84	79	155	30
18	9.0	129	1380	605	164	425	110	860	104	62	123	26
19	11	104	772	395	166	338	142	635	77	53	102	23
20	7.5	91	485	350	176	338	132	485	105	48	87	20
21	5.8	84	440	252	178	395	116	395	172	44	74	22
22	5.6	116	338	195	184	380	108	312	186	44	66	58
23	6.0	265	262	175	161	312	100	270	110	41	60	161
24	7.1	237	225	170	174	225	99	248	88	47	56	76
25	7.5	191	212	1180	279	220	97	222	80	237	52	62
26	72	210	182	5890	338	874	575	193	76	97	52	52
27	115	166	158	1860	246	1180	676	176	129	73	102	44
28	54	148	145	860	216	746	338	169	100	59	170	41
29	30	136	134	585	---	560	242	160	76	53	83	35
30	22	142	131	440	---	440	208	153	67	51	84	33
31	18	---	137	350	---	350	---	161	---	120	115	---
TOTAL	460.5	11204	8838	21424	5420	15483	5723	16913	3205	2475	6964	1524
MEAN	14.9	373	285	691	194	499	191	546	107	79.8	225	50.8
MAX	115	2560	1380	5890	338	1180	676	3680	186	237	1800	164
MIN	2.0	16	115	93	148	155	97	147	67	41	52	20
CFSM	.09	2.12	1.62	3.93	1.10	2.84	1.09	3.10	.61	.45	1.28	.29
IN.	.10	2.37	1.87	4.53	1.15	3.27	1.21	3.57	.68	.52	1.47	.32

CAL YR 1977 TOTAL 39735.8 MEAN 109 MAX 2560 MIN 2.0 CFSM .62 IN 8.40
WTR YR 1978 TOTAL 99633.5 MEAN 273 MAX 5890 MIN 2.0 CFSM 1.55 IN 21.06

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 (3 m) upstream from bridge on U.S. Highway 15 at Palmyra, 0.5 mi (0.8 km) upstream from Cunningham Creek, and 15 mi (24 km) upstream from mouth.

DRAINAGE AREA.--664 mi² (1,720 km²).

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 (64.127 m) National Geodetic Vertical Datum of 1929.

Prior to Oct. 24, 1942, water-stage recorder at site 200 ft (60 m) downstream at same datum. Oct. 24, 1942, to Dec. 18, 1947, nonrecording gage 10 ft (3 m) downstream at same datum.

REMARKS.--Records good. Some diurnal fluctuation at times mostly at low and medium flow by South Fork Rivanna River Reservoir. National Weather Service gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--45 years, 713 ft³/s (20.19 m³/s), 14.58 in/yr (370 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,000 ft³/s (2,440 m³/s) Aug. 20, 1969, gage height, 39.85 ft (12.146 m), from rating curve extended above 76,000 ft³/s (2,200 m³/s) on basis of contracted-opening measurement of peak flow and velocity-area study; minimum, 5.2 ft³/s (0.15 m³/s) Sept. 9-11, 1966, gage height, 2.13 ft (0.649 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 8	1330	10600	300	16.70	5.090	Mar. 10	2400	6030	171	11.55	3.520
Jan. 9	1500	14700	416	20.07	6.117	Mar. 27	0130	6110	173	11.66	3.554
Jan. 26	2100	*20800	589	23.51	7.166	May 14	1600	12800	362	18.63	5.678

Minimum discharge, 12 ft³/s (0.34 m³/s) Oct. 7-8, gage height, 2.19 ft (0.668 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	55	1290	497	1150	773	1200	909	563	262	475	926
2	20	54	1450	456	1060	726	1040	813	488	260	515	525
3	17	63	1040	408	916	674	918	721	452	378	439	344
4	15	102	834	343	780	657	856	1380	479	457	361	281
5	13	1180	1200	300	670	574	826	3220	442	394	1590	236
6	13	3360	1790	330	700	550	762	1770	404	310	698	212
7	13	4270	1110	342	580	573	730	1300	381	266	707	196
8	13	8400	784	732	570	585	689	1320	414	248	911	187
9	23	2530	692	11600	540	647	627	2130	463	555	628	175
10	49	1370	627	4150	510	2510	601	1680	404	451	438	164
11	38	2030	489	1940	490	4130	585	1250	347	613	2140	160
12	29	1290	416	1410	470	3160	582	1070	324	441	1350	160
13	23	894	428	1250	480	3380	531	1100	355	282	941	189
14	22	678	433	1660	520	3250	503	10500	398	262	979	217
15	23	538	771	1470	542	4220	468	4710	319	415	682	185
16	33	451	668	1060	548	3260	450	4040	300	346	532	174
17	51	554	537	1090	534	2440	440	4050	296	352	436	163
18	49	508	3550	2620	555	1780	443	2620	326	292	354	154
19	31	394	3030	1990	579	1440	566	2060	368	240	296	147
20	27	336	1860	1470	617	1280	578	1650	370	216	261	136
21	24	303	1630	1220	619	1270	506	1360	458	198	230	129
22	24	451	1330	936	667	1260	461	1130	716	194	205	138
23	25	1020	1040	750	589	1190	428	972	662	205	195	441
24	24	1140	865	670	599	993	417	919	388	185	187	341
25	23	856	816	3100	664	893	416	846	325	848	179	225
26	359	928	719	17000	1310	2810	2110	745	300	465	177	194
27	417	753	582	12700	1030	4690	4210	659	471	300	193	168
28	199	604	490	3300	853	2900	2070	626	586	248	1510	155
29	118	526	420	2240	---	2130	1350	601	374	212	431	148
30	82	509	420	1660	---	1640	1070	568	294	188	349	137
31	63	---	493	1380	---	1370	---	600	---	239	365	---
TOTAL	1877	36147	31804	80074	19142	57755	26433	57319	12467	10322	18754	7007
MEAN	60.5	1205	1026	2583	684	1863	881	1849	416	333	605	234
MAX	417	8400	3550	17000	1310	4690	4210	10500	716	848	2140	926
MIN	13	54	416	300	470	550	416	568	294	185	177	129
CFSM	.09	1.82	1.55	3.89	1.03	2.81	1.33	2.79	.63	.50	.91	.35
IN.	.11	2.03	1.78	4.49	1.07	3.24	1.48	3.21	.70	.58	1.05	.39

CAL YR 1977 TOTAL 148149 MEAN 406 MAX 8400 MIN 13 CFSM .61 IN 8.30
WTR YR 1978 TOTAL 359101 MEAN 984 MAX 17000 MIN 13 CFSM 1.48 IN 20.12

02034500 WILLIS RIVER AT FLANAGAN MILLS, VA

LOCATION.--Lat 37°40'00", long 78°10'00", Cumberland County, Hydrologic Unit 02080205, on left bank 15 ft (5 m) upstream from bridge on State Highway 690, 0.4 mi (0.6 km) east of Flanagan Mills, 6.9 mi (11.1 km) upstream from mouth, and 7.7 mi (12.4 km) downstream from Reynolds Creek.

DRAINAGE AREA.--262 mi² (679 km²).

PERIOD OF RECORD.--April 1926 to current year. Monthly discharge only for some periods, published in WSP 1303.

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 (54.553 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Jan. 3, 1935, nonrecording gage at site 1,300 ft (396 m) upstream at same datum.

REMARKS.--Records good. Regulation of flow from Trice Lake 0.4 mi (0.6 km) upstream, total capacity, about 1,100 acre-ft (1.36 hm³), tributary to Willis River, slightly affects flow at gage. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--52 years, 251 ft³/s (7.108 m³/s), 13.01 in/yr (330 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 24,000 ft³/s (680 m³/s) June 22, 1972; maximum gage height, 29.8 ft (9.08 m) June 22, 1972, from floodmarks (backwater from James River); minimum discharge, 1.5 ft³/s (0.042 m³/s) Sept. 13, 14, 1966, gage height, 2.26 ft (0.689 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,700 ft³/s (48 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 11	0730	1750 49.6	13.08 3.987	Apr. 28	1030	4060 115	16.64 5.072
Jan. 27	1300	*6360 180	19.28 5.877	May 6	0300	2200 62.3	14.18 4.322
Mar. 12	1300	2880 81.6	15.18 4.627				

Minimum discharge, 7.5 ft³/s (0.21 m³/s) Oct. 6.

DISCHARGE, IN. CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.1	85	196	186	961	211	330	1290	176	151	126	161
2	8.7	82	238	181	720	216	300	950	166	136	131	161
3	9.0	82	226	166	482	221	280	701	161	136	230	136
4	8.7	91	196	146	326	226	260	772	221	166	530	113
5	9.3	126	276	131	240	226	250	1880	201	166	614	96
6	7.5	351	690	136	235	216	240	2200	186	136	690	83
7	7.8	970	670	156	221	216	225	1880	176	123	670	75
8	8.4	1080	540	452	210	216	210	1370	186	111	562	68
9	12	1050	307	1350	208	244	200	1320	176	124	426	64
10	18	812	238	1690	203	862	197	1390	161	156	238	62
11	22	396	191	1690	201	2200	190	1240	146	146	181	60
12	21	216	145	1270	196	2800	185	890	136	131	146	64
13	21	161	150	692	196	2220	170	555	136	113	131	73
14	24	126	156	810	196	1720	165	730	141	104	136	71
15	36	125	285	970	206	1520	158	750	131	105	119	68
16	42	109	314	950	206	1290	155	910	122	125	137	66
17	47	131	250	890	206	1040	155	890	118	265	161	65
18	45	125	675	1190	211	634	166	810	114	201	116	62
19	39	108	991	1360	226	490	196	581	115	156	96	58
20	34	98	890	1390	232	400	238	322	146	131	85	54
21	30	90	750	1150	226	350	238	322	226	111	76	52
22	27	100	546	721	226	320	211	262	191	97	70	53
23	26	196	394	490	221	280	191	232	410	85	64	90
24	26	226	283	330	216	260	181	238	259	79	60	126
25	25	216	262	823	211	240	176	226	166	296	58	94
26	266	244	269	4060	221	500	820	211	146	244	58	81
27	468	232	226	6180	221	900	2810	196	600	166	60	72
28	301	201	196	4740	216	1200	3980	186	539	131	71	66
29	192	171	156	2200	---	700	2780	181	254	113	74	60
30	126	151	160	1450	---	430	1780	176	181	100	82	56
31	94	---	176	1260	---	350	---	176	---	116	121	---
TOTAL	2009.5	8151	11042	39210	7640	22698	17437	23837	6087	4420	6319	2410
MEAN	64.8	272	356	1265	273	732	581	769	203	143	204	80.3
MAX	468	1080	991	6180	961	2800	3980	2200	600	296	690	161
MIN	7.5	82	145	131	196	211	155	176	114	79	58	52
CFSM	.25	1.04	1.36	4.83	1.04	2.79	2.22	2.94	.78	.55	.78	.31
IN.	.29	1.16	1.57	5.57	1.08	3.22	2.48	3.38	.86	.63	.90	.34

CAL YR 1977 TOTAL 58334.5 MEAN 160 MAX 1080 MIN 7.5 CFSM .61 IN 8.28
WTR YR 1978 TOTAL 151260.5 MEAN 414 MAX 6180 MIN 7.5 CFSM 1.58 IN 21.48

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 (61 m) downstream from bridge on State Highway 45 between Pemberton and Cartersville, 1.8 mi (2.9 km) downstream from Willis River, and at mile 156.4 (251.6 km).

DRAINAGE AREA.--6,257 mi² (16,206 km²).

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 (49.957 m) National Geodetic Vertical Datum of 1929. Prior to June 4, 1927, nonrecording gage at same site and datum.

REMARKS.--Records good. Moderate diurnal fluctuation caused by powerplants above station. National Weather Service gage-height telemeter and Survey satellite telemeter at station.

AVERAGE DISCHARGE.--80 years, 7,046 ft³/s (199.5 m³/s), 15.29 in/yr (312 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 362,000 ft³/s (10,300 m³/s) June 22, 1972, gage height, 37.87 ft (11.543 m), from floodmarks, from rating curve extended above 160,000 ft³/s (4,500 m³/s) on basis of slope-conveyance study; minimum, 316 ft³/s (8.95 m³/s) Sept. 13, 14, 1966, gage height, 0.02 ft (0.006 m); minimum daily, 330 ft³/s (9.35 m³/s) Sept. 14, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 40,000 ft³/s (1,100 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	1900	47700 1350	15.65 4.770	Mar. 28	1130	61400 1740	18.38 5.602
Jan. 27	1630	*109000 3090	25.08 7.644	Apr. 28	0330	63400 1800	18.75 5.715
Mar. 16	2030	58400 1650	17.83 5.435	May 15	0330	44800 1270	15.30 4.663

Minimum discharge, 652 ft³/s (18.5 m³/s) Oct. 1, gage height, 0.59 ft (0.180 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	671	3050	8410	6080	13700	7010	15200	15700	6200	3740	2740	3500
2	785	2580	13300	5860	11700	6880	12900	12800	6560	3180	3780	4000
3	807	1880	20600	5370	10400	6440	11200	10800	6380	2680	3920	3360
4	924	2000	15100	4980	8920	6410	10000	11500	6170	2970	3640	2750
5	796	3190	12700	4370	7810	5950	9260	30200	5980	4000	4430	2190
6	839	10900	17800	4410	7400	5680	8110	20600	5240	4260	4660	2200
7	888	22900	13600	4070	6570	5530	7710	16000	5050	3170	4170	2010
8	924	29700	11100	5290	6030	5010	6980	14000	4770	3380	4750	2010
9	912	27400	9780	34100	5970	5620	6590	19700	4950	4680	5250	1780
10	987	20700	8180	33700	5890	11100	6320	22100	4680	4600	4540	1850
11	1190	13400	7190	27700	5610	27600	5900	19600	4280	3510	4640	1760
12	1880	10500	6330	16500	5530	32800	5790	15600	3960	3600	6400	1710
13	2090	8160	6050	12700	5170	30500	5410	12900	4000	3100	5100	1730
14	1940	6420	5390	13800	5330	30100	5180	30700	4240	3020	4100	1670
15	1880	5610	7140	14400	5230	39100	4990	41400	3920	2960	4260	1680
16	1410	4930	8200	11100	5580	54500	4660	33300	3580	3220	4480	1650
17	1700	4620	7540	9680	5260	46600	4520	28400	3570	3910	3800	1630
18	1700	5400	14600	15400	5110	28900	4660	23000	3420	3800	3210	1560
19	1530	5490	19200	14300	5460	20700	5040	20000	3160	3570	2970	1530
20	1230	4530	15000	12400	5170	16200	4710	16500	4070	3330	2250	1470
21	1220	4370	15100	10400	5590	13900	4690	13700	4150	2680	2280	1430
22	1020	4140	12900	8270	5700	13500	4380	11700	3990	2530	2220	1420
23	974	5350	11000	7020	6130	13200	4380	10200	4920	2430	2100	1710
24	949	8280	9400	6370	5510	12800	4520	9160	3930	2050	2030	2000
25	785	13200	8480	11300	5580	11500	5010	8870	3470	3310	2390	1670
26	1560	12800	8220	66500	6040	12600	18600	7800	3410	4480	1840	1540
27	5720	11200	7460	106000	7160	42700	52500	7330	4360	3560	2040	1450
28	5280	9390	7280	88600	7220	59200	60100	6650	6070	2830	3110	1340
29	5800	8010	6880	37900	---	38600	35400	6260	4760	2900	4620	1260
30	4520	7070	6300	22400	---	26000	21000	6030	3930	2680	2650	1230
31	3510	---	5970	16400	---	16700	---	5980	---	2520	2990	---
TOTAL	56421	277170	326200	637370	186770	653330	355710	508480	137170	102650	111360	57090
MEAN	1820	9239	10520	20560	6670	21080	11860	16400	4572	3311	3592	1903
MAX	5800	29700	20600	106000	13700	59200	60100	41400	6560	4680	6400	4000
MIN	671	1880	5390	4070	5110	5010	4380	5980	3160	2050	1840	1230
CFSM	.29	1.48	1.68	3.29	1.07	3.37	1.90	2.62	.73	.53	.57	.30
IN.	.34	1.65	1.94	3.79	1.11	3.88	2.11	3.02	.82	.61	.66	.34

CAL YR 1977 TOTAL 1753826 MEAN 4805 MAX 60300 MIN 555 CFSM .77 IN 10.43
WTR YR 1978 TOTAL 3409721 MEAN 9342 MAX 106000 MIN 671 CFSM 1.49 IN 20.27

JAMES RIVER BASIN

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.

WATER TEMPERATURES: April 1968 to January 1976.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	BICAR- BONATE (MG/L AS HCO3)
OCT												
02...	1215	1020	350	8.1	22.0	1	8.8	20	1.0	--	20	--
18...	1245	1930	353	8.0	13.5	5	9.9	40	3.9	8000	66	99
NOV												
01...	0810	3080	298	7.6	13.0	3	9.7	15	2.5	1900	49	92
15...	1200	5700	100	6.9	9.5	15	11.6	15	2.2	2500	270	--
28...	1245	9630	100	7.4	6.5	9	12.1	16	3.1	540	420	--
DEC												
12...	1245	6220	110	7.3	2.0	5	13.8	11	1.0	330	300	42
27...	1230	7320	97	7.7	4.0	7	12.0	11	1.0	1900	1000	--
JAN												
16...	1230	11300	87	6.7	2.0	20	14.2	10	.8	2100	1800	21
23...	1240	6580	96	6.6	1.0	10	14.5	9	1.0	700	480	--
FEB												
06...	1300	7400	103	6.8	1.5	6	14.8	120	.6	4800	<50	32
21...	1230	5360	112	7.2	4.5	10	13.3	8	1.1	720	910	--
MAR												
06...	1230	5820	115	6.9	3.0	7	13.4	15	2.0	20	27	48
20...	1300	15900	80	7.0	9.0	25	12.0	2	2.2	47	31	--
APR												
03...	1330	11200	100	7.0	13.0	10	13.3	10	.9	76	46	47
17...	1245	4840	115	7.3	15.0	3	10.1	9	2.4	57	52	--
MAY												
01...	1315	15400	75	6.5	14.5	20	10.1	9	1.0	--	--	28
16...	1300	32900	80	6.9	14.0	55	10.0	20	1.1	4800	3100	--
JUN												
06...	1300	5190	140	7.5	24.0	9	8.6	10	1.8	450	350	56
20...	1315	4750	108	6.3	27.0	4	7.3	15	1.8	670	1900	--
JUL												
18...	1400	3880	195	7.0	27.0	7	7.3	--	2.2	300	156	--
AUG												
07...	1330	4000	140	6.4	27.5	17	7.3	8	1.8	270	220	--
21...	1330	2190	170	7.1	28.5	3	7.6	11	2.1	52	70	--
SEP												
05...	1300	2180	165	6.3	27.0	7	8.4	--	1.2	58	84	--
19...	1400	1510	225	6.4	29.0	2	8.0	2	1.6	76	128	--

< Actual value is known to be less than the value shown.

JAMES RIVER BASIN

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02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CAR- BONATE (MG/L AS CO3)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT											
02...	--	--	--	--	200	.41	.03	.25	.66	2.9	.18
18...	0	1.6	28	39	213	.34	.03	.37	.71	3.1	.18
NOV											
01...	0	3.7	22	22	154	.27	.02	.33	.60	2.7	.12
15...	--	--	--	--	68	.58	.11	.37	.95	4.2	.08
28...	--	--	--	--	71	.43	.04	.29	.72	3.2	.14
DEC											
12...	0	3.4	10	5.7	68	.43	.07	.16	.59	2.6	.05
27...	--	--	--	--	51	.45	.03	.17	.62	2.7	.07
JAN											
16...	0	6.7	8.5	5.7	60	.51	.05	.25	.76	3.4	.05
23...	--	--	--	--	59	.55	.07	.28	.83	3.7	.05
FEB											
06...	0	8.1	8.8	4.8	72	.62	.10	.38	1.0	4.4	.08
21...	--	--	--	--	67	.59	.14	.49	1.1	4.8	.06
MAR											
06...	0	9.7	9.6	8.0	78	.52	.06	.55	1.1	4.7	.05
20...	--	--	--	--	54	.47	.03	.18	.65	2.9	.06
APR											
03...	0	7.5	7.7	4.4	54	.44	.02	.14	.58	2.6	.06
17...	--	--	--	--	82	.05	.07	.38	.43	1.9	.05
MAY											
01...	0	14	8.0	2.9	62	.28	.03	.30	.58	2.6	.06
16...	--	--	--	--	129	.30	.02	.45	.75	3.3	.17
JUN											
06...	0	2.8	7.6	6.7	78	.25	.07	.28	.53	2.3	.06
20...	--	--	--	--	52	.27	.13	.60	.87	3.9	.10
JUL											
18...	--	--	10	9.2	83	.27	.01	.25	.52	2.3	.06
AUG											
07...	--	--	6.8	8.0	79	.29	.02	.76	1.1	4.6	.08
21...	--	--	--	--	106	.32	.01	.25	.57	2.5	.09
SEP											
05...	--	--	11	10	96	.45	.00	.23	.68	3.0	.09
19...	--	--	--	--	130	.36	.01	.02	.38	1.7	.09

JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS- PENDED TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDED RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, SUS- PENDED RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, SUS- PENDED RECOV- ERABLE (UG/L AS CO)
OCT											
02...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
NOV											
01...	--	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--
DEC											
12...	2	2	0	1	0	1	20	18	2	3	0
27...	--	--	--	--	--	--	--	--	--	--	--
JAN											
16...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--
FEB											
06...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
MAR											
06...	--	--	0	3	0	3	10	9	1	4	2
20...	--	--	--	--	--	--	--	--	--	--	--
APR											
03...	--	--	0	--	--	1	--	--	0	--	--
17...	--	--	--	--	--	--	--	--	--	--	--
MAY											
01...	--	--	0	--	--	0	--	--	1	--	--
16...	--	--	--	--	--	--	--	--	--	--	--
JUN											
06...	5	2	3	0	0	0	10	10	0	0	0
20...	--	--	--	--	--	--	--	--	--	--	--
JUL											
18...	--	--	--	--	--	--	--	--	--	--	--
AUG											
07...	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
SEP											
05...	1	--	1	--	--	--	<10	<10	0	10	7
19...	--	--	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown.

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[illegible]

JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
02...	--	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--	11
NOV											
01...	--	--	--	--	--	--	--	--	--	--	9.6
15...	--	--	--	--	--	--	--	--	--	--	11
28...	--	--	--	--	--	--	--	--	--	--	8.5
DEC											
12...	30	<.5	.0	<.5	0	0	0	20	10	10	--
27...	--	--	--	--	--	--	--	--	--	--	8.2
JAN											
16...	--	--	--	--	--	--	--	--	--	--	1.0
23...	--	--	--	--	--	--	--	--	--	--	1.0
FEB											
06...	--	--	--	--	--	--	--	--	--	--	3.2
21...	--	--	--	--	--	--	--	--	--	--	1.8
MAR											
06...	20	--	--	<.5	--	--	0	10	0	10	3.8
20...	--	--	--	--	--	--	--	--	--	--	2.9
APR											
03...	10	--	--	<.5	--	--	0	--	--	10	7.8
17...	--	--	--	--	--	--	--	--	--	--	8.3
MAY											
01...	10	--	--	<.5	--	--	0	--	--	0	5.9
16...	--	--	--	--	--	--	--	--	--	--	4.7
JUN											
06...	0	<.5	.0	<.5	0	0	0	20	20	0	1.9
20...	--	--	--	--	--	--	--	--	--	--	6.2
JUL											
18...	--	--	--	--	--	--	--	--	--	--	8.2
AUG											
07...	--	--	--	--	--	--	--	--	--	--	3.1
21...	--	--	--	--	--	--	--	--	--	--	5.0
SEP											
05...	10	<.5	.0	<.5	0	0	0	10	0	10	4.7
19...	--	--	--	--	--	--	--	--	--	--	4.9

< Actual value is known to be less than the value shown.

JAMES RIVER BASIN

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02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)	CHLORO- PHYLL A PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO- PHYLL B PHYTO- PLANK- TON, UNCORR. (UG/L)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT						
02...	--	.069	.000	1	2.8	--
18...	--	.000	.000	3	16	100
NOV						
01...	130	2.51	.812	10	83	100
15...	--	1.74	.952	23	354	--
28...	--	1.02	.882	24	624	--
DEC						
12...	--	.000	.000	16	269	77
27...	--	.000	.000	16	316	--
JAN						
16...	--	1.41	.751	29	885	89
23...	--	2.12	.943	27	480	--
FEB						
06...	--	.141	.000	15	300	100
21...	--	.000	.000	9	130	--
MAR						
06...	520	.000	.000	7	110	100
20...	--	.000	.000	48	2060	--
APR						
03...	--	1.03	.760	24	726	92
MAY						
01...	810	--	--	45	1870	88
16...	--	--	--	163	14500	--
JUN						
06...	4600	--	--	83	1160	90
20...	--	--	--	62	795	--
JUL						
18...	540	--	--	23	241	100
AUG						
07...	550	--	--	29	313	--
21...	--	--	--	9	53	--
SEP						
05...	--	--	--	10	59	100
19...	--	--	--	3	12	--

JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 1,77 0810	MAR 6,78 1230	MAY 1,78 1315	JUN 6,78 1300				
TOTAL CELLS/ML	130	520	810	4600				
DIVERSITY: DIVISION	0.6	1.7	1.4	0.7				
..CLASS	0.6	1.7	1.4	0.7				
...ORDER	0.6	2.0	1.6	1.4				
...FAMILY	1.8	3.0	2.4	2.6				
....GENUS	1.8	3.0	2.7	2.9				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
...COELASTRACEAE								
....COELASTRUM	--	-	--	-	--	-	660	14
...MICRACTINIACEAE								
....GOLENKINIA	--	-	--	-	--	-	--	-
...MICRACTINIUM	--	-	--	-	120#	15	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	26	5	27	3	180	4
...KIRCHNERIELLA	--	-	--	-	--	-	--	-
...OOCYSTIS	--	-	--	-	--	-	1300#	29
...SELENASTRUM	--	-	--	-	--	-	--	-
...TETRAEDRON	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
...CRUCIGENIA	--	-	--	-	--	-	220	5
...SCENEDESMUS	--	-	--	-	--	-	660	14
...TETRASPORALES								
...PALMELLACEAE								
...SPHAEROCYSTIS	--	-	13	2	--	-	660	14
...VOLVOCALES								
...CHLAMYDOMONADACEAE								
...CHLAMYDOMONAS	--	-	39	7	--	-	--	-
CHRYSOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	--	-	13	2	--	-	330	7
....MELOSIRA	--	-	--	-	--	-	--	-
...PENNALES								
...ACHNANTHACEAE								
...COCCONEIS	38#	29	--	-	--	-	--	-
...CYMBELLACEAE								
....CYMBELLA	--	-	6	1	--	-	290	6
...DIATOMACEAE								
....DIATOMA	--	-	*	0	--	-	--	-
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	--	-	55	7	--	-
...FRAGILARIA	--	-	--	-	--	-	290	6
...SYNEDRA	19	14	32	6	270#	34	--	-
...GOMPHONEMATAACEAE								

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

JAMES RIVER BASIN

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02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 1,77 0810		MAR 6,78 1230		MAY 1,78 1315		JUN 6,78 1300	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....GOMPHONEMA	--	-	52	10	14	2	--	-
...NAVICULACEAE								
...NAVICULA	57#	43	58	11	41	5	--	-
...NITZSCHIAEAE								
...NITZSCHIA	--	-	--	-	96	12	--	-
..CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...OCHROMONADACEAE								
....OCHROMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
..CHROCOCCALES								
..CHROCOCCAEAE								
....ANACYSTIS	--	-	--	-	41	5	--	-
..HORMOGONALES								
...NOSTOCACEAE								
....APHANIZOMENON	--	-	--	-	--	-	--	-
....CYLINDROSPERMUM	--	-	180#	34	--	-	--	-
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	140#	17	--	-
....OSCILLATORIA	--	-	78	15	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	19	14	6	1	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)								
..DINOPHYCEAE								
..PERIDINIALES								
...PERIDINIACEAE								
....PERIDINIUM	--	-	19	4	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

JAMES RIVER BASIN

02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 18,78 1400	AUG 7,78 1330	SEP 5,78 1300
TOTAL CELLS/ML	540	550	46000
DIVERSITY: DIVISION	0.9	0.7	0.0
..CLASS	0.9	0.8	0.0
...ORDER	1.5	0.9	0.0
...FAMILY	2.2	2.2	0.0
....GENUS	2.4	2.2	0.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)						
..CHLOROPHYCEAE						
...CHLOROCOCCALES						
...COELASTRACEAE						
....COELASTRUM	--	-	110#	20	--	-
...MICRACTINIACEAE						
....GOLENKINIA	--	-	--	-	*	0
...MICRACTINIUM	--	-	--	-	--	-
...OOCYSTACEAE						
....ANKISTRODESMUS	22	4	--	-	--	-
....KIRCHNERIELLA	45	8	--	-	--	-
...OOCYSTIS	--	-	55	10	--	-
...SELENASTRUM	--	-	14	2	--	-
...TETRAEDRON	22	4	--	-	--	-
...SCENEDESMACEAE						
....CRUCIGENIA	--	-	--	-	--	-
...SCENEDESMUS	89#	17	280#	50	--	-
..TETRASPORALES						
...PALMELLACEAE						
...SPHAEROCYSTIS	--	-	--	-	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	--	-	--	-
CHRYSTOPHYTA						
..BACILLARIOPHYCEAE						
...CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	250#	46	--	-	*	0
....MELOSIRA	--	-	42	7	*	0
..PENNALES						
...ACHNANTHACEAE						
...COCONEIS	45	8	14	2	*	0
...CYMBELLACEAE						
....CYMBELLA	22	4	--	-	--	-
...DIATOMACEAE						
....DIATOMA	--	-	--	-	--	-
...FRAGILARIACEAE						
....ASTERIONELLA	--	-	--	-	--	-
...FRAGILARIA	--	-	--	-	--	-
...SYNEDRA	--	-	--	-	--	-
...GOMPHONEMACEAE						

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

JAMES RIVER BASIN

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02035000 JAMES RIVER AT CARTERSVILLE, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	JUL 18,78 1400	AUG 7,78 1330	SEP 5,78 1300			
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....GOMPHONEMA	--	-	--	-	--	-
...NAVICULACEAE						
...NAVICULA	--	-	14	2	--	-
...NITZSCHIACEAE						
....NITZSCHIA	45	8	14	2	--	-
..CHRYSOPHYCEAE						
..CHRYSONOMADALES						
...OCHROMONADACEAE						
....OCHROMONAS	--	-	14	2	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
...CHROCCOCCALES						
...CHROCCOCCACEAE						
....ANACYSTIS	--	-	--	-	*	0
..HORMOGONALES						
...NOSTOCACEAE						
....APHANIZOMENON	--	-	--	-	46000#100	
....CYLINDROSPERMUM	--	-	--	-	--	-
...OSCILLATORIACEAE						
....LYNGBYA	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
...EUGLENALES						
...EUGLENACEAE						
....TRACHELOMONAS	--	-	--	-	*	0
PYRRHOPHYTA (FIRE ALGAE)						
..DINOPHYCEAE						
...PERIDINIALES						
...PERIDINIACEAE						
....PERIDINIUM	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m ²)		Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Sampling method
		Dry weight	Ash weight			
Dec. 12	47	1.02	0.47	0.00	0.00	Polyethylene strip
Mar. 6	21	.55	.31	.35	.00	
Sept. 5	31	2.00	1.33	.94	.06	

JAMES RIVER BASIN

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 (23 m) downstream from bridge on State Highway 711 at Fine Creek Mills, 0.8 mi (1.3 km) upstream from mouth, and 6.7 mi (10.8 km) northeast of Powhatan.

DRAINAGE AREA.--22.1 mi² (57.2 km²).

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 (47.729 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 28, 1953, nonrecording gage and crest-stage gage at site 75 ft (23 m) upstream at same datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--34 years, 19.9 ft³/s (0.564 m³/s), 12.23 in/yr (311 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,180 ft³/s (118 m³/s) Oct. 6, 1972, gage height, 9.02 ft (2.749 m), from rating curve extended above 2,600 ft³/s (74 m³/s); minimum daily, 0.08 ft³/s (0.002 m³/s) Oct. 1, 1968; minimum gage height, 1.53 ft (0.466 m) Sept. 30, Oct. 1, 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.7 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 27	0330	328 9.29	3.36 1.024	Mar. 11	0300	470 13.3	3.75 1.143
Nov. 7	0830	360 10.2	3.46 1.055	Apr. 27	1400	385 10.9	3.53 1.076
Jan. 9	1600	371 10.5	3.49 1.064	May 5	0700	499 14.1	3.82 1.164
Jan. 18	1230	242 6.85	3.07 .936	May 10	0300	253 7.16	3.11 .948
Jan. 26	1130	*1030 29.2	4.90 1.494	Aug. 4	0800	535 15.2	3.90 1.189
Jan. 27	1230	217 6.15	2.98 .908				

Minimum daily discharge, 0.50 ft³/s (0.014 m³/s) Oct. 4, 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.62	8.3	19	25	40	19	29	34	12	13	10	26
2	.95	9.5	18	22	32	19	26	28	11	12	60	15
3	.62	12	13	15	31	19	31	25	22	12	93	11
4	.50	14	12	13	27	22	25	89	32	13	333	10
5	.50	31	37	13	26	19	23	356	15	12	139	8.9
6	.50	88	70	16	26	18	22	128	12	9.5	72	8.3
7	.62	258	34	23	25	16	21	65	12	8.3	70	7.7
8	.62	124	21	73	25	19	21	70	14	7.1	40	7.7
9	3.0	43	21	297	25	22	19	160	15	7.1	32	7.1
10	2.8	28	18	120	24	147	19	166	12	7.1	26	6.5
11	2.0	22	13	56	23	338	19	65	9.5	5.9	22	6.5
12	1.5	16	12	39	23	146	18	47	8.3	5.9	79	7.1
13	1.4	13	13	39	23	85	16	43	12	5.3	45	11
14	17	12	19	98	23	72	15	59	11	8.9	32	9.5
15	28	11	42	102	26	76	15	42	8.9	13	25	8.9
16	12	10	26	56	21	54	14	37	8.3	19	21	8.3
17	9.5	13	21	67	22	42	14	32	8.3	18	15	8.3
18	5.9	12	102	92	23	35	16	26	7.7	10	12	7.7
19	4.4	10	104	117	25	32	31	23	8.9	7.7	11	6.5
20	3.5	9.5	52	89	19	29	31	21	14	7.1	9.5	5.9
21	2.8	10	59	72	19	26	21	19	42	5.9	7.7	5.9
22	2.4	14	47	54	19	25	19	15	99	5.0	7.7	7.7
23	2.6	26	32	42	18	23	15	14	31	4.7	7.1	7.7
24	2.4	23	26	39	18	22	15	19	15	5.0	7.1	5.9
25	2.0	18	31	153	18	25	18	16	12	52	6.5	5.3
26	136	31	37	705	18	70	99	13	11	22	6.5	5.0
27	222	22	22	194	15	100	306	12	49	11	7.1	4.7
28	49	15	16	83	15	59	135	14	142	8.9	7.7	4.2
29	23	14	14	58	---	42	59	15	47	7.1	7.7	4.2
30	13	13	18	52	---	35	42	13	21	6.5	15	4.2
31	8.9	---	28	45	---	31	---	12	---	8.3	15	---
TOTAL	560.03	930.3	997	2869	649	1687	1154	1678	722.9	338.3	1241.6	242.7
MEAN	18.1	31.0	32.2	92.5	23.2	54.4	38.5	54.1	24.1	10.9	40.1	8.09
MAX	222	258	104	705	40	338	306	356	142	52	333	26
MIN	.50	8.3	12	13	15	16	14	12	7.7	4.7	6.5	4.2
CFSM	.82	1.40	1.46	4.19	1.05	2.46	1.74	2.45	1.09	.49	1.81	.37
IN.	.94	1.57	1.68	4.83	1.09	2.84	1.94	2.82	1.22	.57	2.09	.41

CAL YR 1977 TOTAL 5443.31 MEAN 14.9 MAX 258 MIN .30 CFSM .67 IN 9.16
WTR YR 1978 TOTAL 13069.83 MEAN 35.8 MAX 705 MIN .50 CFSM 1.62 IN 22.00

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 (23 m) downstream from Canal bridge, 400 ft (122 m) downstream from head gates, 1,200 ft (366 m) north of north end of Boshier Dam on James River, 1.6 mi (2.6 km) upstream from Huguenot Memorial Bridge, and 2.0 mi (3.2 km) west of city limits of Richmond.

PERIOD OF RECORD.--September 1936 to current year.

GAGE.--Water-stage recorder. Datum of gage is 106.07 ft (32.330 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, at datum 3.06 ft (0.933 m) higher.

REMARKS.--Records good above 40 ft³/s (1.13 m³/s) and fair below. Canal diverts from James River 1,200 ft (366 m) above Boshier Dam and discharges into river at several points below gaging station near Richmond. Above 2,540 ft³/s (71.9 m³/s), gage height, 14.5 ft (4.42 m), there is interchange of flow with James River; discharge above 2,540 ft³/s (71.9 m³/s) included in discharge for James River near Richmond (station 02037500). Figures given show flow in canal only. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--42 years, 820 ft³/s (23.22 m³/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 29.1 ft (8.87 m) 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, 16.68 ft (5.084 m) Jan, 28, interchange of flow with James River makes maximum discharge indeterminate; minimum daily discharge, 8 ft³/s (0.23 m³/s) Oct. 24, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	193	38	528	940	940	25	18	22	980	886	850	886
2	193	35	544	940	940	28	17	17	980	886	886	904
3	193	30	544	940	940	35	17	12	1000	868	904	886
4	198	25	512	940	922	20	17	56	1000	850	960	868
5	198	20	512	922	922	20	16	63	980	886	960	850
6	198	38	528	904	922	25	16	32	960	904	980	832
7	198	34	512	922	922	30	16	22	940	886	960	832
8	198	30	528	940	922	35	15	20	940	868	922	814
9	198	28	544	980	922	30	15	58	922	886	960	814
10	198	28	544	980	922	93	15	30	922	940	940	814
11	144	28	544	940	922	65	18	20	922	904	904	814
12	35	26	528	940	922	46	18	530	904	886	980	814
13	35	26	528	940	922	38	18	940	904	886	940	814
14	40	26	393	922	644	32	17	980	904	868	922	814
15	35	24	20	960	45	28	17	980	904	868	886	814
16	37	24	18	922	18	22	16	1000	886	868	37	814
17	32	22	15	922	18	20	16	1000	886	886	110	814
18	25	22	67	980	20	20	32	798	868	904	814	814
19	20	20	40	960	20	18	30	980	868	886	868	796
20	15	20	106	960	22	18	28	1020	886	886	850	796
21	10	203	818	960	22	25	26	1000	922	868	832	796
22	10	506	922	960	24	22	26	980	960	850	832	796
23	10	528	940	960	24	22	24	980	960	832	832	814
24	8.0	652	940	960	26	20	23	980	940	832	814	832
25	8.0	616	940	940	26	35	22	1000	904	832	832	832
26	88	562	940	1020	28	50	56	980	886	922	832	814
27	43	544	940	2000	28	38	71	1000	886	922	814	814
28	390	528	940	2540	30	26	43	1000	980	886	832	814
29	464	512	940	1690	---	19	35	980	960	850	904	796
30	448	528	940	972	---	18	28	980	922	868	868	796
31	186	---	940	940	---	18	---	980	---	850	868	---
TOTAL	4048.0	5723	17755	32796	13035	941	726	19440	27876	27214	25893	24708
MEAN	131	191	573	1058	466	30.4	24.2	627	929	878	835	824
MAX	464	652	940	2540	940	93	71	1020	1000	940	980	904
MIN	8.0	20	15	904	18	18	15	12	868	832	37	796
CAL YR 1977	TOTAL	141153.0	MEAN	387	MAX	940	MIN	8.0				
WTR YR 1978	TOTAL	200155.0	MEAN	548	MAX	2540	MIN	8.0				

02037500 JAMES RIVER NEAR RICHMOND, VA

LOCATION.--Lat 37°33'47", long 77°32'50", Henrico County, Hydrologic Unit 02080205, on left bank 0.1 mi (0.2 km) upstream from Huguenot Memorial Bridge, 0.5 mi (0.8 km) west of city limits of Richmond, 1.7 mi (2.7 km) downstream from Boshier Dam, 3.3 mi (5.3 km) upstream from Powhite Creek, and at mile 116.60 (187.61 km).

DRAINAGE AREA.--6,758 mi² (17,503 km²).

PERIOD OF RECORD.--October 1934 to current year. Gage-height records collected in vicinity of Mayo's Bridge, at mile 109.5 (176.2 km), 1876-1956, and at mile 108.7 (174.9 km) 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 (30.120 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. City of Richmond takes from 40 ft³/s (1.13 m³/s) to 90 ft³/s (2.55 m³/s) for water supply from river below gage except during periods of low flow when supply is obtained from James River and Kanawha Canal. Flow regulated by powerplants above station. Above 18.2 ft (5.55 m) 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 telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--44 years, 7,492 ft³/s (212.2 m³/s), 15.05 in/yr (382 mm/yr), includes flow in James River and Kanawha Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 313,000 ft³/s (8,860 m³/s), includes canal flow, June 23, 1972, gage height, 28.62 ft (8.723 m); minimum daily, about 10 ft³/s (0.28 m³/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, 370 ft³/s (10.5 m³/s) Sept. 13, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Probable minimum daily discharge, since 1899, of James River and James River and Kanawha Canal combined, about 350 ft³/s (9.9 m³/s) in October 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50,000 ft³/s (1,400 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 28	0730	*122000 3460	19.36 5.901	Mar. 28	2300	62600 1770	14.55 4.435
Mar. 17	0730	58800 1670	14.18 4.322	Apr. 28	1400	67600 1910	15.12 4.609

Minimum discharge, 635 ft³/s (18.0 m³/s) Sept. 30, gage height, 3.33 ft (1.015 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	755	3670	6300	5540	14500	7400	16900	17900	5720	3370	2140	2570
2	695	3370	9740	5430	12200	7070	14500	14500	6010	3140	2480	3040
3	715	2970	17000	5150	10100	6910	12600	12200	6300	2820	3270	3100
4	820	2430	17200	5020	8980	6760	11300	11800	6600	2430	4000	2700
5	910	3020	12600	4620	8080	6300	10100	29400	6010	2720	4370	2140
6	865	6910	16100	4370	7070	6160	9550	27800	5150	3370	4150	1570
7	910	21800	15900	4500	6760	5720	8610	17900	4880	3340	4620	1370
8	955	29700	11300	4640	5720	5860	8250	15400	4750	2740	3870	1240
9	1110	29600	9550	22400	5430	5720	7730	19500	4500	2870	4240	1180
10	1070	25500	8250	43000	5430	9190	7230	24300	4500	3870	4240	1110
11	1160	15900	7070	29400	5290	30200	7070	22000	4240	3620	3140	1040
12	1500	12200	5860	20000	5150	33600	6600	16900	3870	2970	5020	1000
13	2140	9360	5290	14000	5020	33000	6450	13500	3740	2870	4620	1000
14	2450	7400	5290	14000	5020	30300	6160	18900	3740	2550	3870	1000
15	2570	6010	6010	16400	5720	35100	5860	43200	3870	2550	3140	978
16	2280	5430	8250	13100	5580	50800	5720	35000	3500	2620	4120	955
17	2020	4880	7560	10100	5860	55800	5430	29100	3270	2900	4370	932
18	2020	4880	10400	15900	5580	33800	5290	24300	3240	3240	3370	910
19	2090	5430	23100	18400	5720	22600	5430	20400	3120	3170	2100	842
20	1910	5020	16900	15400	5580	17400	6600	17400	3240	2940	2430	798
21	1700	4120	15400	12600	5580	15000	6010	14500	3870	2740	1800	755
22	1700	3740	14000	9740	5720	13500	5430	12200	4500	2240	1560	755
23	1540	4120	10900	7900	5860	13500	5290	10500	4500	2000	1470	865
24	1500	6030	9360	6760	6010	13100	5150	9360	4370	1860	1380	1020
25	1450	9570	8080	8090	5580	12200	5020	8610	3500	1980	1290	1290
26	2920	12600	7560	49900	5720	12600	6450	8080	3100	3240	1590	1110
27	7400	11300	7230	96100	6450	30300	40200	7230	3200	3620	1200	955
28	7660	8980	6160	117000	7230	57300	66600	6910	4880	3020	1220	842
29	5150	7560	6160	73900	---	52600	50300	6300	5430	2380	2640	735
30	5860	6450	5720	25900	---	28500	24900	5870	4120	2380	3220	655
31	4620	---	5720	17900	---	21000	---	5720	---	2240	2260	---
TOTAL	70445	280350	315960	697400	186940	679290	382730	526680	131720	87800	95590	38457
MEAN	2272	9345	10190	22500	6676	21910	12760	16990	4391	2832	3084	1282
MAX	7660	29800	23100	117000	14500	57300	66600	43200	6600	3870	5020	3100
MIN	695	2430	5290	4370	5020	5720	5020	5720	3100	1860	1200	655
(*)	131	191	573	1058	466	30.4	24.2	627	929	878	835	824
MEAN#	2403	9536	10760	23560	7142	21940	12780	17620	5320	37.0	3919	2106
CFSM#	.36	1.41	1.59	3.49	1.06	3.25	1.89	2.61	.79	.55	.58	.31
IN#	.41	1.57	1.84	4.02	1.10	3.74	2.11	3.01	.88	.63	.67	.35

CAL YR 1977 TOTAL 1760579 MEAN 4824 MAX 60800 MIN 455 MEAN# 5211 CFSM# .77 IN# 10.47
WTR YR 1978 TOTAL 3493362 MEAN 9571 MAX 117000 MIN 655 MEAN# 10120 CFSM# 1.50 IN# 20.33

* Diversion, in cubic feet per second, by James River and Kanawha Canal.

Adjusted for diversion.

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 (1.3 km) downstream from Licking Creek, 2.8 mi (4.5 km) upstream from Pocoshock Creek, and 4.7 mi (7.6 km) northwest of Chesterfield.

DRAINAGE AREA.--32.8 mi² (85.0 km²).

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 (38.524 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations 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, 32.0 ft³/s (0.906 m³/s), 13.25 in/yr (337 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,510 ft³/s (71.1 m³/s) Sept. 12, 1960, gage height, 12.67 ft (3.862 m); minimum, 0.01 ft³/s (<0.001 m³/s) Sept. 20, Oct. 3, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 220 ft³/s (6.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 27	1400	270 7.65	6.30 1.920	Jan. 26	1015	791 22.4	9.56 2.914
Nov. 7	0315	290 8.21	6.48 1.975	Mar. 10	2345	*860 24.4	9.62 2.932
Dec. 18	1945	402 11.4	7.39 2.252	Mar. 27	1045	326 9.23	6.78 2.067
Dec. 21	1600	234 6.63	5.91 1.801	Apr. 27	0730	660 18.7	8.86 2.701
Jan. 9	1030	660 18.7	8.93 2.722	May 5	0215	566 16.0	8.41 2.563
Jan. 14	0430	275 7.79	6.37 1.942	May 9	1715	255 7.22	6.18 1.884
Jan. 18	0245	361 10.2	7.10 2.164	Aug. 5	0130	268 7.59	6.22 1.896
Jan. 20	2200	390 11.0	7.33 2.234	Aug. 13	0130	227 6.43	5.80 1.768

Minimum discharge, 0.76 ft³/s (0.022 m³/s) Oct. 7, 8, gage height, 1.95 ft (0.594 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	18	26	57	47	24	48	52	15	11	37	34
2	.98	21	25	44	46	25	44	44	13	8.5	93	19
3	.94	26	22	35	43	30	38	38	20	7.9	21	13
4	.87	30	21	30	40	35	36	129	25	8.2	20	9.9
5	.85	75	49	28	38	30	36	485	19	7.4	121	7.5
6	.82	126	98	31	39	29	32	190	14	6.3	70	6.2
7	.82	264	60	52	35	26	31	98	21	5.5	126	5.3
8	.79	123	37	73	32	34	29	123	22	4.9	36	4.7
9	1.1	54	34	511	31	45	27	224	18	4.4	21	4.3
10	1.0	38	31	284	31	297	27	204	14	4.3	18	5.3
11	1.1	30	26	90	29	634	28	92	12	5.0	14	4.9
12	1.3	25	23	61	28	259	27	59	10	4.6	106	4.4
13	1.7	22	23	99	28	138	26	53	9.7	4.1	104	4.5
14	26	19	34	259	31	95	25	95	9.6	4.0	92	4.6
15	59	18	134	193	30	83	23	70	10	4.1	70	4.9
16	18	18	66	100	28	64	22	51	8.8	12	32	5.3
17	17	19	43	128	27	56	22	58	7.9	16	22	4.8
18	14	19	232	302	28	47	23	46	7.3	11	15	4.1
19	10	17	318	148	27	43	49	37	6.4	7.7	12	3.6
20	8.0	16	142	319	25	40	63	32	12	5.7	10	3.2
21	5.9	16	182	278	25	38	39	28	20	4.5	8.1	2.9
22	4.6	17	150	130	25	38	30	24	29	3.7	7.3	4.0
23	3.8	24	77	87	23	35	26	22	23	3.3	7.0	15
24	3.4	29	57	71	23	33	25	21	14	2.8	6.5	12
25	3.2	24	63	176	23	33	27	21	14	29	5.8	8.4
26	87	41	55	626	22	159	160	19	14	21	5.3	6.4
27	237	30	41	309	21	286	567	17	31	12	4.9	4.5
28	80	24	35	119	21	148	234	17	70	8.7	4.7	4.2
29	33	22	31	79	---	84	98	19	27	7.2	4.7	3.2
30	25	21	33	61	---	63	67	19	15	5.6	5.5	2.9
31	20	---	77	53	---	53	---	16	---	6.7	11	---
TOTAL	668.17	1226	2245	4833	846	3004	1929	2403	531.7	247.1	1170.8	217.0
MEAN	21.6	40.9	72.4	156	30.2	96.9	64.3	77.5	17.7	7.97	37.8	7.23
MAX	237	264	318	626	47	634	567	485	70	29	126	34
MIN	.79	16	21	28	21	24	22	16	6.4	2.8	4.7	2.9
CFSM	.66	1.25	2.21	4.76	.92	2.95	1.96	2.36	.54	.24	1.15	.22
IN.	.76	1.39	2.55	5.48	.96	3.41	2.19	2.73	.60	.28	1.33	.25

CAL YR 1977 TOTAL 9014.85 MEAN 24.7 MAX 318 MIN .79 CFSM .75 IN 10.22
WTR YR 1978 TOTAL 19320.77 MEAN 52.9 MAX 634 MIN .79 CFSM 1.61 IN 21.91

JAMES RIVER BASIN

02038700 JAMES RIVER NEAR DUTCH GAP, VA

LOCATION.--Lat 37°23'26", long 77°21'48", Henrico County, Hydrologic Unit 02080206, at Richmond Yacht Club, on left bank of main channel 1.2 mi (1.9 km) upstream from Dutch Gap, 1.8 mi (2.9 km) downstream from Redwater Creek, 4.9 mi (7.8 km) southeast of Richmond City limits, and at mile 90.7 (145.9 km).

DRAINAGE AREA.--6,957 mi² (18,019 km²).

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	BICAR- BONATE (MG/L AS HCO3)
OCT												
05...	1330	1100	430	7.5	24.0	1	7.3	15	1.3	--	21	--
18...	1300	2050	328	7.6	16.5	7	8.4	50	4.0	6000	230	--
NOV												
03...	1215	3000	210	7.5	17.5	4	9.0	15	2.2	2400	62	--
17...	1115	4900	125	7.5	12.0	15	11.5	15	3.5	3300	42	--
30...	1200	6980	150	7.5	7.0	5	12.4	14	2.4	2000	180	--
DEC												
14...	1012	5680	138	7.2	6.0	15	11.9	12	1.3	230	230	40
28...	1330	7100	120	7.2	4.5	7	12.9	10	1.9	530		--
JAN												
25...	1400	9030	122	7.2	3.5	10	12.1	20	.2	3600	390	--
31...	0815	18800	90	7.9	1.5	65	14.0	11	.8	5900	3100	--
FEB												
13...	1235	5940	145	7.4	3.0	6	14.4	4	1.8	530	250	--
24...	1245	6040	168	7.1	5.0	10	13.5	9	2.0	150	200	--
MAR												
08...	1245	5900	165	7.1	3.5	8	13.6	15	1.7	2500	>950	52
22...	1300	13500	110	7.0	11.5	20	11.6	2	1.0	800	34	--
APR												
05...	1215	10100	125	7.0	15.0	15	13.0	10	.6	3100	2100	--
19...	1230	5460	160	6.8	16.0	5	8.4	10	1.2	23	360	--
MAY												
03...	0830	12200	105	6.7	14.5	20	9.2	9	1.4	--	--	--
18...	1300	25100	163	6.7	16.5	35	10.0	10	1.2	1900	2900	--
JUN												
08...	1300	5700	178	6.8	26.5	15	6.4	15	1.2	81	36	63
22...	0930	5460	197	7.1	28.0	4	5.7	15	2.1	700	2300	--
JUL												
20...	0845	3830	190	6.7	27.5	9	6.8	23	2.0	40	40	--
AUG												
09...	1345	5200	135	6.5	29.0	20	6.6	9	2.0	2300	72	--
23...	1200	2280	225	7.0	30.0	6	8.0	15	2.3	44	36	--
SEP												
07...	1030	2200	175	5.8	28.5	2	6.1	13	2.0	84	23	49
21...	1215	1550	243	7.1	27.0	6	8.0	8	2.5	210	250	--

> Actual value is known to be greater than the value shown.

JAMES RIVER BASIN

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02038700 JAMES RIVER NEAR DUTCH GAP, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (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)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO- PHYLL A PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO- PHYLL B PHYTO- PLANK- TON, UNCORR. (UG/L)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
OCT												
05...	--	--	227	1.3	.10	.74	.23	--	12.6	.000	12	36
18...	--	--	189	.66	.36	.67	.25	13	1.87	.042	10	55
NOV												
03...	--	--	129	.52	.21	.66	.16	9.6	1.49	.052	16	130
17...	--	--	82	.51	.14	.39	.14	13	1.98	2.10	24	318
30...	--	--	95	.44	.08	.48	.24	11	--	--	22	415
DEC												
14...	15	8.0	141	.58	.21	.29	.13	1.6	.000	.000	29	445
28...	--	--	73	.49	.09	.22	.09	9.3	.000	.000	12	230
JAN												
25...	--	--	71	.52	.16	.42	.08	1.0	1.99	1.97	31	756
31...	--	--	56	.50	.10	.51	.13	4.8	3.01	2.98	99	5030
FEB												
13...	--	--	110	.58	.27	.42	.14	5.7	.701	.558	9	144
24...	--	--	90	.64	.25	.54	.11	2.4	.000	.000	12	196
MAR												
08...	15	12	98	.49	.21	.56	.14	5.0	.000	.000	9	143
22...	--	--	65	.44	.15	.31	.09	2.0	.000	.000	22	802
APR												
05...	--	--	65	.42	.15	.25	.10	8.2	1.03	.516	24	654
19...	--	--	102	.04	.33	.50	.13	7.1	--	--	13	192
MAY												
03...	--	--	77	.28	.13	.48	.07	8.2	--	--	27	889
18...	--	--	225	.27	.06	.31	.10	2.6	--	--	--	--
JUN												
08...	14	10	115	.16	.22	.46	.10	1.6	--	--	39	600
22...	--	--	114	.32	.25	.73	.16	7.4	--	--	48	708
JUL												
20...	--	--	111	.28	.33	.70	.16	5.4	--	--	27	279
AUG												
09...	--	--	97	.33	.10	.68	.15	4.4	9.22	.755	29	407
23...	--	--	137	.49	.12	.51	.15	2.5	--	--	22	135
SEP												
07...	20	10	107	.66	.12	.35	.17	2.7	--	--	141	838
21...	--	--	143	.61	.10	.33	.19	2.7	--	--	19	80

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 (110 m) downstream from culvert on State Highway 614, 1.0 mi (1.6 km) upstream from Holiday Lake, and 5.2 mi (8.4 km) southwest of Andersonville.

DRAINAGE AREA.--8.53 mi² (22.09 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1966 to current year.

REVISED RECORDS.--WDR VA-72: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 472.97 ft (144.161 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Recording rain gage at station.

AVERAGE DISCHARGE.--12 years, 9.77 ft³/s (0.277 m³/s), 15.55 in/yr (395 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s (273 m³/s) June 21, 1972, gage height, 14.64 ft (4.462 m), from high-water mark in gage house, from rating curve extended above 4,200 ft³/s (120 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.10 ft³/s (0.003 m³/s) Sept. 11, 12, 1966; minimum gage height, 0.75 ft (0.229 m) July 28, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 6	1545	164 4.64	2.79 0.850	Apr. 27	0200	415 11.8	4.23 1.289
Jan. 9	0045	588 16.7	5.05 1.539	May 4	1700	318 9.01	3.70 1.128
Jan. 26	0300	*665 18.8	5.36 1.634				

Minimum discharge, 0.92 ft³/s (0.026 m³/s) Oct. 1, 5; minimum gage height, 0.87 ft (0.265 m) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	2.1	15	5.1	8.1	9.0	9.4	11	6.9	4.4	4.5	6.6
2	2.0	2.3	8.1	4.7	8.0	8.7	8.7	10	6.6	4.7	5.3	4.0
3	1.2	3.9	6.1	4.2	8.0	9.4	8.4	9.4	12	6.1	4.3	3.5
4	.98	5.1	5.3	4.0	7.9	8.1	8.4	97	10	7.1	4.7	3.2
5	.96	13	22	4.1	6.7	8.4	8.1	55	7.5	5.5	5.5	3.0
6	.99	46	17	4.2	7.0	8.1	7.8	19	6.8	4.8	5.4	2.8
7	1.0	22	8.5	5.1	6.6	8.1	7.8	15	6.8	4.5	5.5	2.7
8	1.0	10	6.4	73	6.4	9.4	7.8	27	7.2	4.9	4.4	2.5
9	2.4	6.5	6.6	144	6.2	9.7	7.5	37	7.2	7.0	3.8	2.4
10	1.7	5.3	5.2	20	6.4	56	7.5	18	6.2	4.8	3.8	3.7
11	1.3	5.3	5.4	15	5.9	35	7.8	14	5.9	5.0	3.5	3.0
12	1.2	4.5	4.7	12	5.7	32	7.5	12	5.7	4.5	3.5	2.7
13	1.1	4.2	4.2	11	5.9	23	7.2	26	5.9	4.2	3.3	2.6
14	3.4	4.0	6.6	29	6.1	30	6.9	34	5.5	4.3	3.3	2.8
15	2.3	3.9	8.9	21	6.0	22	6.6	26	5.4	4.4	3.2	2.7
16	2.4	3.8	6.2	16	5.9	15	6.9	37	5.4	6.8	3.1	2.6
17	2.6	6.5	6.0	22	6.1	12	6.9	24	5.4	5.7	2.8	2.4
18	1.7	5.1	30	34	6.2	10	8.4	16	5.2	4.6	2.5	2.3
19	1.6	4.4	13	23	6.5	9.7	11	13	5.1	4.2	2.4	2.2
20	1.5	4.1	9.3	19	6.5	9.0	7.8	12	7.8	3.9	2.4	2.2
21	1.5	4.0	8.8	15	7.2	8.7	6.9	10	7.1	3.6	2.2	2.3
22	1.5	7.2	6.9	13	7.7	8.4	6.6	9.6	6.2	3.4	2.2	2.6
23	1.5	8.9	6.0	12	8.5	8.1	6.3	9.5	5.5	3.3	2.2	3.4
24	1.5	6.8	5.6	11	8.4	8.1	6.3	10	5.2	3.4	2.1	2.8
25	1.5	6.5	8.0	109	9.4	8.4	9.3	9.0	5.1	4.7	5.4	2.7
26	22	9.4	6.3	237	10	30	208	8.2	5.1	4.0	5.0	2.3
27	5.1	6.0	5.2	30	8.7	25	161	7.9	11	3.7	3.3	2.3
28	3.3	5.1	5.1	18	8.7	15	25	8.1	5.8	3.5	3.0	2.3
29	2.6	4.7	4.9	11	---	12	16	7.8	4.9	3.2	3.1	2.1
30	2.3	7.1	4.6	9.5	---	10	13	7.5	4.6	3.1	3.1	2.1
31	2.1	---	5.5	8.2	---	9.7	---	7.3	---	8.8	7.9	---
TOTAL	77.23	227.7	261.4	944.1	200.7	476.0	616.8	607.3	195.0	146.1	116.7	84.8
MEAN	2.49	7.59	8.43	30.5	7.17	15.4	20.6	19.6	6.50	4.71	3.76	2.83
MAX	22	46	30	237	10	56	208	97	12	8.8	7.9	6.6
MIN	.96	2.1	4.2	4.0	5.7	8.1	6.3	7.3	4.6	3.1	2.1	2.1
CFSM	.29	.89	.99	3.58	.84	1.81	2.42	2.30	.76	.55	.44	.33
IN.	.34	.99	1.14	4.12	.88	2.08	2.69	2.65	.85	.64	.51	.37

CAL YR 1977 TOTAL 2019.55 MEAN 5.53 MAX 50 MIN .81 CFSM .65 IN 8.81
WTR YR 1978 TOTAL 3953.83 MEAN 10.8 MAX 237 MIN .96 CFSM 1.27 IN 17.24

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 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
NOV 01...	1045	2.1	53	7.3	11.5	10.6	320	60	14	0	3.4	1.3
DEC 29...	1135	8.8	37	7.0	1.5	14.2	3200	K4500	10	0	2.4	1.0
FEB 28...	1125	7.9	33	7.1	1.5	14.0	36	20	9	0	2.2	.9
APR 27...	1030	114	22	7.0	9.0	12.0	--	--	6	0	1.3	.7
JUN 09...	0930	7.9	31	6.8	19.5	8.9	100	590	11	0	2.7	1.0
SEP 28...	1045	2.4	38	6.5	16.5	10.6	62	230	8	0	1.0	1.4

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	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)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
NOV 01...	2.8	1.2	21	0	4.0	2.9	.0	14	44	40	.00	.02
DEC 29...	3.0	.7	12	0	2.8	2.2	.1	12	41	30	.00	.02
FEB 28...	2.3	.5	14	0	2.9	2.2	.0	11	34	29	.01	.01
APR 27...	1.0	1.4	10	0	6.4	.8	.0	3.8	30	20	.03	.02
JUN 09...	2.3	.6	--	--	2.2	1.7	.0	12	40	33	.01	.02
SEP 28...	3.0	.6	--	--	2.0	1.7	.0	14	38	33	.00	.01

DATE	ARSENIC TOTAL (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)
NOV 01...	--	--	--	--	--	--	--	--	--	--	--
DEC 29...	0	0	0	<10	4	460	2	30	<.5	0	0
FEB 28...	--	--	--	--	--	--	--	--	--	--	--
APR 27...	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	1	0	0	<10	3	1000	3	20	<.5	0	0
SEP 28...	--	--	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown.

K Results based on colony count outside the acceptable range (non-ideal colony count).

02038850 HOLIDAY CREEK NEAR ANDERSONVILLE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[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 (30 m) upstream from bridge on State Highway 658, 0.8 mi (1.3 km) upstream from Locket Creek, 2.0 mi (3.2 km) northwest of Hampden Sydney, and 6.0 mi (9.7 km) southwest of Farmville.

DRAINAGE AREA.--69.7 mi² (180.5 km²).

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 (103.385 m) 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.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--32 years, 66.0 ft³/s (1.869 m³/s), 12.86 in/yr (327 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,160 ft³/s (259 m³/s) June 21, 1972, gage height, 12.38 ft (3.773 m), from rating curve extended above 1,600 ft³/s (45 m³/s) on basis of slope-area measurement at gage height 11.96 ft (3.645 m); minimum daily, 2.7 ft³/s (0.076 m³/s) Oct. 7, 8, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 15 ft (4.6 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0800	1490 42.2	7.29 2.222	Apr. 27	0530	3000 85.0	8.56 2.609
Jan. 26	0800	*4560 129	9.72 2.963	May 5	0130	1540 43.6	7.34 2.237
Mar. 10	2030	3320 94.0	8.82 2.688	Aug. 7	0300	700 19.8	6.08 1.853

Minimum discharge, 7.6 ft³/s (0.22 m³/s) Oct. 1, gage height, 1.22 ft (0.372 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	32	40	51	142	28	64	280	54	47	46	62
2	19	31	41	48	102	28	58	208	51	42	46	42
3	13	34	38	43	80	36	55	148	52	43	61	37
4	12	39	34	40	66	36	54	333	59	101	122	33
5	11	76	77	38	57	32	53	839	52	76	274	31
6	11	161	158	40	54	29	52	380	50	56	286	29
7	11	316	91	46	49	29	51	265	53	46	468	28
8	11	137	68	170	46	38	49	244	56	41	167	27
9	18	91	60	938	43	62	48	372	58	43	95	30
10	17	67	50	397	41	1070	48	285	52	40	76	70
11	14	51	43	226	39	949	48	178	49	38	64	41
12	13	41	40	138	38	490	49	125	47	36	54	35
13	14	36	38	112	38	410	48	126	51	34	48	32
14	38	32	43	250	40	380	45	234	48	34	44	31
15	34	30	72	290	41	330	44	173	46	34	42	30
16	32	29	61	156	38	214	42	128	45	56	40	29
17	32	32	55	153	36	148	42	116	44	52	37	29
18	24	29	211	390	37	110	46	98	43	44	34	28
19	21	27	166	321	38	92	55	84	44	38	32	27
20	19	26	108	220	34	78	64	76	52	34	31	26
21	18	24	98	151	31	74	56	71	50	32	29	27
22	17	26	80	102	30	68	52	66	64	30	29	28
23	17	36	66	80	29	64	50	64	52	29	27	50
24	17	36	59	67	27	61	50	68	48	33	27	41
25	17	34	63	524	26	60	61	64	49	95	29	36
26	131	37	57	2640	26	90	907	60	50	58	34	31
27	111	33	50	700	24	122	2080	57	194	46	32	29
28	69	30	46	478	24	98	452	57	160	40	31	28
29	50	29	44	400	---	84	420	57	92	36	31	26
30	41	29	43	300	---	74	360	55	61	32	39	25
31	35	---	52	208	---	66	---	56	---	41	42	---
TOTAL	894.9	1631	2152	9717	1276	5450	5503	5367	1826	1407	2417	1018
MEAN	28.9	54.4	69.4	313	45.6	176	183	173	60.9	45.4	78.0	33.9
MAX	131	316	211	2640	142	1070	2080	839	194	101	468	70
MIN	7.9	24	34	38	24	28	42	55	43	29	27	25
CFSM	.42	.78	1.00	4.49	.65	2.53	2.63	2.48	.87	.65	1.12	.49
IN.	.48	.87	1.15	5.19	.68	2.91	2.94	2.86	.97	.75	1.29	.54
CAL YR 1977 TOTAL	15891.5	MEAN	43.5	MAX	390	MIN	5.5	CFSM	.62	IN	8.48	
WTR YR 1978 TOTAL	38658.9	MEAN	106	MAX	2640	MIN	7.9	CFSM	1.52	IN	20.63	

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 (1.8 km) downstream from Buffalo Creek.

DRAINAGE AREA.--303 mi² (785 km²).

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 (85.932 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 29, 1928, nonrecording gage at same site and datum.

REMARKS.--Records good. Diurnal fluctuation at low flow caused by Prince Edward Mill 0.2 mi (0.3 km) upstream. Several observations 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, 284 ft³/s (8.043 m³/s), 12.73 in/yr (323 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,100 ft³/s (937 m³/s) June 22, 1972, gage height, 29.70 ft (9.053 m), from floodmarks, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 3.8 ft³/s (0.11 m³/s) Sept. 25, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,900 ft³/s (54 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 7	0400	2240	63.4	12.71	3.874	Apr. 27	1900	11000	312	20.47	6.239
Jan. 10	0300	5860	166	16.89	5.148	May 5	1830	6180	175	17.15	5.227
Jan. 18	2100	2010	56.9	12.18	3.712	May 9	2300	2650	75.0	13.50	4.115
Jan. 26	2330	*12300	348	21.19	6.459	Aug. 5	0600	1920	54.4	11.94	3.639
Mar. 11	1000	6270	178	17.23	5.252						

Minimum discharge, 22 ft³/s (0.62 m³/s) Oct. 1, gage height, 3.30 ft (1.006 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	71	210	181	440	230	284	711	213	177	211	253
2	38	68	273	168	370	238	263	579	195	154	185	207
3	46	76	187	147	311	249	242	469	203	157	211	148
4	41	93	152	119	275	262	236	953	247	286	536	131
5	30	248	356	141	259	241	230	5080	226	289	1300	120
6	27	758	985	148	255	238	219	3090	193	206	765	108
7	26	1860	479	153	212	237	213	941	191	166	1030	103
8	25	856	276	588	231	264	207	894	206	152	665	113
9	37	397	227	3430	227	341	202	2100	211	237	347	106
10	56	282	204	4220	203	2010	200	1810	197	182	259	244
11	51	223	158	792	187	5430	195	769	175	149	225	199
12	33	187	146	500	201	2580	190	540	165	142	192	139
13	27	160	161	420	198	1520	184	506	172	127	180	119
14	56	144	161	946	205	1080	174	1330	171	122	173	113
15	96	136	304	1190	215	1270	167	1060	153	126	158	111
16	91	131	276	701	211	817	163	980	149	175	147	112
17	83	138	213	641	207	595	160	914	149	236	137	125
18	66	147	871	1810	212	455	174	600	146	171	128	118
19	49	141	870	1630	226	372	223	457	149	140	119	111
20	41	121	479	916	224	328	267	385	199	127	114	106
21	37	115	406	633	220	294	231	336	273	117	110	103
22	35	127	337	442	233	278	203	305	324	109	102	129
23	34	195	258	332	227	260	188	280	224	100	99	169
24	34	212	221	281	223	249	182	285	185	110	97	172
25	35	183	235	1490	220	243	208	275	166	218	97	129
26	286	199	245	9370	237	414	1860	251	164	220	194	111
27	629	207	196	8780	240	1040	9670	233	516	158	140	100
28	239	161	169	1990	224	621	6360	228	578	131	117	95
29	141	142	136	915	---	431	1510	226	325	119	112	92
30	102	125	180	684	---	350	874	218	223	105	191	87
31	80	---	178	571	---	303	---	216	---	122	202	---
TOTAL	2594	7903	9549	44329	6693	23240	25479	27021	6688	5030	8543	3973
MEAN	83.7	263	308	1430	239	750	849	872	223	162	276	132
MAX	629	1860	985	9370	440	5430	9670	5080	578	289	1300	253
MIN	23	68	136	119	187	230	160	216	146	100	97	87
CFSM	.28	.87	1.02	4.72	.79	2.48	2.80	2.88	.74	.54	.91	.44
IN.	.32	.97	1.17	5.44	.82	2.85	3.13	3.32	.82	.62	1.05	.49

CAL YR 1977 TOTAL 67600 MEAN 185 MAX 2300 MIN 23 CFSM .61 IN 8.30
WTR YR 1978 TOTAL 171042 MEAN 469 MAX 9670 MIN 23 CFSM 1.55 IN 21.00

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 (23 m) upstream from Southern Railway bridge at Mattoax, 0.3 mi (0.5 km) upstream from Skinquarter Creek, and 3.7 mi (6.0 km) upstream from Flat Creek.

DRAINAGE AREA.--726 mi² (1,880 km²).

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 (53.191 m) 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.--Records good except those for period of no gage-height record, Apr. 19 to June 28, which are fair. Appomattox Water Authority gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--57 years, 718 ft³/s (20.33 m³/s), 13.43 in/yr (341 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s (991 m³/s) Aug. 18, 1940, gage height, 35.3 ft (10.76 m), from floodmark in gage house, from rating curve extended above 20,000 ft³/s (570 m³/s) on basis of records for stations at Farmville and near Petersburg; minimum, 11 ft³/s (0.31 m³/s) Oct. 2, 1930, gage height, 3.52 ft (1.073 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (110 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	1600	4110 116	18.72 5.706	Mar. 14	0130	10500 297	25.38 7.736
Jan. 13	0700	5360 152	21.17 6.453	Apr. 28	---	Unknown	Unknown
Jan. 21	2000	4070 115	18.64 5.681	May 6	---	Unknown	Unknown
Jan. 29	1400	*14000 396	27.73 8.452	May 10	---	Unknown	Unknown
Mar. 11	1000	4850 137	20.41 7.736				

Minimum discharge, 54 ft³/s (1.53 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	254	371	642	2000	534	818	2600	440	418	327	380
2	55	228	443	642	1270	560	728	1700	430	327	371	550
3	56	224	560	560	850	586	670	1500	420	292	607	467
4	82	236	443	482	728	614	614	1300	460	282	2070	324
5	110	294	538	406	698	642	586	2000	540	720	2050	272
6	71	1450	1760	406	728	586	560	9000	500	600	2620	243
7	60	3760	2180	508	758	586	547	5000	445	450	2580	222
8	58	3610	1250	1040	698	586	534	3000	440	400	2580	208
9	61	3690	788	3760	670	698	508	2500	440	350	1410	202
10	70	3180	670	3950	698	2310	482	4500	460	390	192	203
11	80	922	560	4030	614	4800	482	3000	440	316	657	309
12	90	698	456	4700	586	5150	482	1600	400	240	2260	434
13	88	560	406	5040	586	9100	456	1400	380	218	628	290
14	141	456	495	2670	614	9640	443	1300	390	207	1270	236
15	185	406	818	2850	614	6580	406	3000	370	196	1370	215
16	302	360	1170	2960	642	4400	382	2600	350	276	628	206
17	291	349	882	2810	614	2300	371	2200	340	586	502	203
18	222	349	1760	3380	614	1490	371	1500	335	482	412	203
19	188	349	2850	3380	642	1230	400	1200	330	338	360	202
20	144	327	2960	3760	642	1040	500	1000	340	252	316	191
21	114	300	2080	4070	614	914	640	850	440	214	281	185
22	104	298	1460	3150	586	818	600	760	640	187	252	182
23	96	360	1140	1490	586	758	540	700	760	164	231	319
24	91	469	850	1170	560	698	500	630	600	150	215	576
25	87	508	758	2120	560	670	470	660	400	276	206	412
26	1360	534	758	4900	547	952	1000	600	360	443	200	300
27	2580	508	728	6380	547	2030	5000	540	400	482	229	249
28	1960	482	614	10700	547	2320	11000	520	1300	294	276	214
29	818	394	508	13900	---	1640	8000	500	1140	232	229	198
30	443	360	456	11700	---	1140	5000	450	614	198	218	186
31	314	---	614	5600	---	914	---	443	---	196	281	---
TOTAL	10376	25915	31326	113156	19813	66286	43090	58553	14904	10176	26428	8381
MEAN	335	864	1011	3650	708	2138	1436	1889	497	328	853	279
MAX	2580	3760	2960	13900	2000	9640	11000	9000	1300	720	2620	576
MIN	55	224	371	406	547	534	371	443	330	150	200	182
CFSM	.46	1.19	1.39	5.03	.98	2.95	1.98	2.60	.69	.45	1.18	.38
IN.	.53	1.33	1.61	5.80	1.02	3.40	2.21	3.00	.76	.52	1.35	.43

CAL YR 1977 TOTAL 176425 MEAN 483 MAX 3760 MIN 53 CFSM .67 IN 9.04
WTR YR 1978 TOTAL 428404 MEAN 1174 MAX 13900 MIN 55 CFSM 1.62 IN 21.95

02041000 DEEP CREEK NEAR MANNBORO, VA

LOCATION.--Lat 37°16'59", long 77°52'22", Amelia County, Hydrologic Unit 02080207, on left bank 300 ft (91 m) upstream from bridge on State Highway 153, 0.9 mi (1.4 km) upstream from Sweathouse Creek, 3.4 mi (5.5 km) northwest of Mannboro, and 7.5 mi (12.1 km) southeast of Amelia.

DRAINAGE AREA.--158 mi² (409 km²).

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

REVISED RECORDS.--WSP 1203: 1948 (calendar year figures only). WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 177.20 ft (54.011 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 2, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--32 years, 142 ft³/s (4.021 m³/s), 12.20 in/yr (310 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft³/s (425 m³/s) Oct. 6, 1972, gage height, 24.04 ft (7.327 m), from high-water mark, from rating curve extended above 3,900 ft³/s (110 m³/s); minimum, 0.03 ft³/s (<0.001 m³/s) Oct. 4, 5, 1968; minimum gage height, 0.29 ft (0.884 m) Aug. 9-12, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 14.8 ft (4.51 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 28	0630	1240	35.1	7.15	2.179	Jan. 26	2130	3970	112	11.93	3.636
Nov. 7	2100	2350	66.6	9.15	2.789	Mar. 11	0800	*5630	159	14.46	4.407
Dec. 19	1300	1740	49.3	8.11	2.472	Apr. 27	1930	3550	101	11.24	3.426
Jan. 10	0300	2710	76.7	9.83	2.996	May 5	1900	2470	70.0	9.37	2.856
Jan. 18	2400	1680	47.6	8.05	2.454	Aug. 5	1100	2180	61.7	8.93	2.722
Jan. 21	1000	1410	39.9	7.54	2.298	Aug. 15	0100	1360	38.5	7.38	2.249

Minimum discharge, 4.2 ft³/s (0.12 m³/s) Oct. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	70	94	185	205	108	174	271	100	70	112	84
2	4.6	62	100	170	190	122	156	204	89	51	204	126
3	5.9	68	98	140	180	130	141	168	78	45	170	112
4	12	85	90	112	180	145	131	304	72	44	440	75
5	9.1	132	130	110	172	155	126	1640	66	44	2030	55
6	8.0	470	262	112	175	150	121	1520	68	42	1340	45
7	7.2	1690	329	140	170	140	116	693	101	39	734	40
8	6.9	1580	190	205	160	145	112	390	112	35	303	37
9	7.2	608	140	1300	148	200	108	713	100	34	168	35
10	12	230	122	2070	142	834	104	1110	98	42	116	40
11	14	165	100	696	139	4520	108	713	82	43	176	71
12	15	126	90	302	138	1910	104	298	68	37	258	80
13	16	99	91	274	139	1150	104	230	61	33	100	61
14	42	86	106	673	145	793	99	365	56	30	588	48
15	162	81	300	1070	143	548	95	530	52	29	1160	40
16	212	75	636	793	140	418	89	296	49	42	615	37
17	134	72	302	471	135	278	86	210	46	156	228	36
18	85	74	653	1020	135	230	89	180	44	168	116	34
19	62	69	1520	1280	135	198	126	156	42	86	88	32
20	41	65	913	978	130	180	201	141	43	51	72	31
21	32	61	530	1360	126	168	206	126	42	38	60	30
22	27	61	713	913	122	156	136	116	65	33	51	39
23	22	85	485	543	112	151	112	108	126	30	45	138
24	20	107	235	328	112	141	104	104	120	28	40	162
25	20	105	205	593	108	136	100	100	63	173	37	100
26	138	117	190	2800	108	220	369	96	51	250	36	69
27	586	117	165	2560	108	553	2510	92	81	185	35	51
28	1110	105	135	978	104	991	2490	89	162	82	35	43
29	419	94	108	496	---	512	978	89	198	54	35	38
30	155	88	112	235	---	250	458	87	130	44	36	35
31	96	---	155	220	---	198	---	98	---	72	41	---
TOTAL	3485.1	6847	9299	23127	4001	15830	9853	11237	2465	2110	9469	1824
MEAN	112	228	300	746	143	511	328	362	82.2	68.1	305	60.8
MAX	1110	1690	1520	2800	205	4520	2510	1640	198	250	2030	162
MIN	4.2	61	90	110	104	108	86	87	42	28	35	30
CFSM	.71	1.44	1.90	4.72	.91	3.23	2.08	2.29	.52	.43	1.93	.39
IN.	.82	1.61	2.19	5.45	.94	3.73	2.32	2.65	.58	.50	2.23	.43

CAL YR 1977 TOTAL 39713.7 MEAN 109 MAX 1690 MIN 1.4 CFSM .69 IN 9.35
WTR YR 1978 TOTAL 99547.1 MEAN 273 MAX 4520 MIN 4.2 CFSM 1.73 IN 23.44

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 (0.3 km) south of Matoaca, 2.0 mi (3.2 km) upstream from Rohoic Creek, 2.8 mi (4.5 km) downstream from Lake Chesdin, 3.5 mi (5.6 km) west of Petersburg, and at mile 15.9 (25.6 km).

DRAINAGE AREA.--1,344 mi² (3,481 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 68.30 ft (20.818 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Appomattox Water Authority at Lake Chesdin, capacity, 36,500 acre-ft (45.0 hm³), 2.8 mi (4.5 km) upstream, from which an average of 12.4 ft³/s (0.35 m³/s) is diverted for industrial and municipal use. Records do not include flow of Upper Appomattox Canal of Virginia Electric and Power Co. which diverts around station. National Weather Service gage-height telemeter at station. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--9 years, 1,546 ft³/s (43.8 m³/s), 15.62 in/yr (397 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,800 ft³/s (1,160 m³/s) Oct. 7, 1972, gage height, 18.39 ft (5.605 m); minimum, 106 ft³/s (3.00 m³/s) June 15, 16, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,200 ft³/s (402 m³/s) Mar. 12, gage height, 11.98 ft (3.652 m); minimum, 162 ft³/s (4.59 m³/s) Oct. 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	614	736	1310	10900	864	1590	11500	702	940	536	500
2	169	508	754	1320	6940	870	1350	12300	636	652	680	631
3	169	472	808	1140	2770	980	1220	10100	631	550	876	778
4	168	490	839	966	1800	1090	1140	5350	647	518	1550	691
5	167	705	973	845	1600	1050	1100	6590	631	470	4710	545
6	167	1950	1880	820	1430	1070	973	7700	595	492	5980	466
7	167	7330	3050	973	1390	1030	1020	7750	621	527	5290	411
8	167	8110	2740	1210	1260	1080	921	7500	696	487	4380	348
9	168	7480	1780	5430	1100	1260	857	8000	742	445	3540	320
10	165	6350	1180	7780	1080	2990	827	8670	658	449	1830	320
11	165	4070	993	7940	1040	9230	857	8420	605	470	1140	320
12	166	1590	827	7070	986	13300	802	7270	555	437	4060	414
13	167	1030	736	6670	979	11900	796	5640	560	381	3410	513
14	204	784	772	7460	1010	10400	778	3570	518	364	3060	437
15	181	696	1700	7140	1030	10700	719	3740	479	351	3760	381
16	232	647	2300	5880	1030	10300	680	3990	466	483	3090	361
17	465	652	2290	5410	1020	8550	685	3670	441	585	1840	339
18	450	605	3380	6490	1010	5150	658	2770	414	790	1050	326
19	427	565	6210	6830	1010	2420	845	2170	403	731	719	326
20	351	550	6440	8100	999	1720	1390	1600	414	575	595	305
21	274	536	6190	8050	979	1500	1450	1320	474	474	513	297
22	242	536	4960	7420	986	1380	1270	1120	713	400	426	371
23	219	595	3410	6050	839	1220	1010	999	1560	357	403	560
24	207	680	2240	3240	876	1150	882	946	1600	329	378	731
25	194	796	1760	3060	870	1100	808	889	1010	509	364	851
26	995	966	1550	7540	845	2060	1730	808	652	663	348	642
27	4820	882	1360	9970	814	4880	7160	766	784	833	332	505
28	4970	889	1200	11300	808	5160	9030	742	2750	802	348	437
29	3570	827	993	10800	---	4440	9300	748	2600	585	374	354
30	1680	748	921	11500	---	2850	9380	674	1600	479	396	329
31	881	---	1100	12200	---	1930	---	685	---	487	385	---
TOTAL	22536	52653	66072	181914	47401	123624	61228	137997	25157	16615	56363	13809
MEAN	727	1755	2131	5868	1693	3988	2041	4452	839	536	1818	460
MAX	4970	8110	6440	12200	10900	13300	9380	12300	2750	940	5980	851
MIN	165	472	736	820	808	864	658	674	403	329	332	297
CFSM	.54	1.31	1.59	4.37	1.26	2.97	1.52	3.31	.62	.40	1.35	.34
IN.	.62	1.46	1.83	5.04	1.31	3.42	1.69	3.82	.70	.46	1.56	.38
CAL YR 1977 TOTAL	322041		MEAN	882	MAX	8110	MIN	165	CFSM	.66	IN	8.91
WTR YR 1978 TOTAL	805369		MEAN	2206	MAX	13300	MIN	165	CFSM	1.64	IN	22.29

JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1977 to September 1978.

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)
DEC 28...	1000	1240	78	6.7	4.0	40	13.0	180	M0	21	0	5.6
JAN 25...	1045	2720	51	7.1	3.5	40	14.1	5500	5600	16	6	3.8
FEB 24...	0930	908	60	7.3	4.0	25	14.0	560	190	20	2	4.7
MAR 22...	0830	1440	55	7.0	10.5	55	12.0	20	19	16	8	3.5
APR 19...	0830	790	65	6.6	15.0	8	10.0	23	21	20	1	4.7
MAY 18...	0900	5750	70	6.6	18.0	--	9.6	48	2100	20	68	4.8
JUN 13...	1000	580	75	6.6	23.5	--	8.3	69	60	27	0	6.7
JUL 20...	1130	600	80	6.7	25.5	--	8.2	30	38	27	0	6.5
AUG 10...	1245	433	63	6.6	27.5	--	7.8	126	340	21	0	5.3
SEP 13...	1230	531	75	6.7	25.5	--	7.0	200	2100	27	1	6.7

DATE	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 (MG/L AS HC03)	CAR- BONATE (MG/L AS CO3)	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)
DEC 28...	1.8	3.9	2.3	27	0	8.6	9.3	4.5	.0	12	71	53
JAN 25...	1.5	2.9	1.7	12	0	1.5	8.7	3.0	.1	9.2	50	37
FEB 24...	1.9	4.2	1.5	21	0	1.7	7.4	3.5	.1	16	51	50
MAR 22...	1.8	3.1	2.2	10	0	1.6	8.7	2.3	.0	10	48	37
APR 19...	2.0	4.3	1.8	23	0	9.2	7.4	3.8	.1	11	60	47
MAY 18...	2.0	3.1	1.9	--	--	--	5.8	2.6	.1	12	138	--
JUN 13...	2.6	4.2	1.7	--	--	--	5.0	3.3	.1	10	62	52
JUL 20...	2.7	4.1	3.0	--	--	--	4.9	4.7	.1	12	70	56
AUG 10...	2.0	3.2	2.8	--	--	--	4.3	3.1	.1	12	58	48
SEP 13...	2.5	5.2	1.9	--	--	--	3.5	4.4	.1	15	68	56

M Presence of material verified but not quantified.

JAMES RIVER BASIN

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02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
DEC 28...	.18	--	--	--	.07	0	0	1	1	0	2	30
JAN 25...	.23	.37	.60	2.7	.05	--	--	--	--	--	--	--
FEB 24...	.23	.25	.48	2.1	.03	--	--	--	--	--	--	--
MAR 22...	.27	.44	.71	3.1	.05	2	2	0	0	0	0	10
APR 19...	.04	.41	.45	2.0	.03	--	--	1	--	--	2	--
MAY 18...	.13	--	--	--	.06	--	--	1	--	--	--	--
JUN 13...	.08	.34	.42	1.9	.02	2	1	1	4	2	2	10
JUL 20...	.30	.65	.95	4.2	.04	--	--	--	--	--	--	--
AUG 10...	.14	.64	.78	3.5	.09	--	--	--	--	--	--	--
SEP 13...	.12	.39	.51	2.3	.03	0	--	0	--	--	--	<10

DATE	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB)
DEC 28...	29	1	2	2	0	7	3	4	2500	330	19	15
JAN 25...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 22...	10	0	2	2	0	3	2	1	2200	530	0	0
APR 19...	--	0	--	--	0	--	--	3	--	220	--	--
MAY 18...	--	1	--	--	--	--	--	--	--	250	--	--
JUN 13...	10	0	0	0	0	5	3	2	750	340	8	0
JUL 20...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 10...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	<9	1	1	1	0	2	1	1	710	560	--	--

< Actual value is known to be less than the value shown.

JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN)
DEC 28...	4	110	60	50	<.5	.0	<.5	0	0	0	20	10
JAN 25...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 22...	3	60	10	50	<.5	.0	<.5	0	0	0	10	0
APR 19...	14	--	--	10	--	--	<.5	--	--	0	--	--
MAY 18...	--	--	--	--	--	--	<.5	--	--	0	--	--
JUN 13...	16	160	130	30	<.5	.0	<.5	0	0	0	20	20
JUL 20...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 10...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 13...	--	70	30	40	<.5	.0	<.5	0	0	0	20	20

DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 28...	10	--	--	29	97	89
JAN 25...	--	3.0	--	26	191	95
FEB 24...	--	3.6	--	11	27	100
MAR 22...	10	--	720	27	105	89
APR 19...	10	--	--	8	17	91
MAY 18...	0	--	2700	--	--	--
JUN 13...	0	--	4700	24	38	75
JUL 20...	--	6.1	3000	37	60	85
AUG 10...	--	7.3	3300	43	50	100
SEP 13...	0	--	--	17	24	100

< Actual value is known to be less than the value shown.

JAMES RIVER BASIN

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02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 22,78 0830	MAY 18,78 0900	JUN 13,78 1000	JUL 20,78 1130	AUG 10,78 1245
TOTAL CELLS/ML	720	2700	4700	3000	3300
DIVERSITY: DIVISION	1.1	1.9	1.0	0.9	1.5
..CLASS	1.1	2.0	1.0	1.0	1.5
..ORDER	1.4	2.6	1.7	1.1	1.9
...FAMILY	1.4	2.7	2.0	1.1	2.4
....GENUS	1.6	2.7	2.1	1.2	2.6

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	530	11	--	-	--	-
....OOCYSTACEAE										
....ANKISTRODESMUS	20	3	32	1	--	-	--	-	65	2
....DICTYOSPHAERIUM	--	-	64	2	530	11	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	22	1	110	3
....SCENEDESMACEAE										
....SCENEDESMUS	--	-	64	2	--	-	--	-	170	5
....TETRASTRUM	--	-	--	-	59	1	--	-	--	-
..TETRASPORALES										
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	1100#	23	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	16	1	--	-	--	-	--	-
...VOLVOCAEAE										
....EUDORINA	--	-	730#	27	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....COSMARIUM	--	-	--	-	29	1	--	-	--	-
....STAUSTRUM	--	-	--	-	--	-	--	-	43	1
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	50	7	--	-	100	2	45	1	--	-
....MELOSIRA	80	11	700#	26	2300#	48	2200#	71	1600#	49
..PENNALES										
...ACHNANTHACEAE										
....ACHNANTHES	--	-	--	-	--	-	--	-	22	1
...EUNOTIACEAE										
....EUNOTIA	--	-	--	-	--	-	--	-	22	1
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	96	4	--	-	--	-	--	-
....SYNEDRA	70	10	--	-	29	1	45	1	110	3
...NAVICULACEAE										
....NAVICULA	20	3	--	-	--	-	22	1	43	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

JAMES RIVER BASIN

02041650 APPOMATTOX RIVER AT MATOACA, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 22,78 0830		MAY 18,78 0900		JUN 13,78 1000		JUL 20,78 1130		AUG 10,78 1245	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
...NITZSCHIACEAE										
....NITZSCHIA	--	-	16	1	--	-	--	-	87	3
...TABELLARIAEAE										
....TABELLARIA	--	-	--	-	88	2	--	-	--	-
..CHRYSTOPHYCEAE										
..CHRYSONOMADAELES										
...MALLONADAEAE										
....MALLONAS	--	-	16	1	--	-	--	-	--	-
..XANTHOPHYCEAE										
..HETEROCOCCALES										
...CHLOROTHECIACEAE										
....OPHIOCYTUM	--	-	--	-	--	-	22	1	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
..CHROCCOCCALES										
...CHROCCOCCAEAE										
....ANACYSTIS	480#	67	190	7	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	--	-	500#	15
....APHANIZOMENON	--	-	--	-	--	-	690#	23	130	4
...OSCILLATORIAEAE										
....LYNGBYA	--	-	410#	15	--	-	--	-	--	-
....OSCILLATORIA	--	-	--	-	--	-	--	-	300	9
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	340	13	--	-	22	1	65	2

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON						
Date	Length of exposure (days)	Biomass (g/m ²)		Chlorophyll	Chlorophyll	Sampling method
		Dry weight	Ash weight	^a (mg/m ²)	^b (mg/m ²)	
Mar. 22	30	0.31	0.23	0.12	0.00	Polyethylene strip

JAMES RIVER BASIN

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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 (30 m) downstream from bridge on State Highway 618, 1.1 mi (1.8 km) southwest of Providence Forge, and 1.7 mi (2.7 km) downstream from Schiminoe Creek.

DRAINAGE AREA.--248 mi² (642 km²).

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 (1.850 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good.

AVERAGE DISCHARGE.--36 years, 260 ft³/s (7.363 m³/s), 14.24 in/yr (362 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,710 ft³/s (218 m³/s) Aug. 15, 1955, gage height, 11.67 ft (3.557 m); minimum, 0.70 ft³/s (0.020 m³/s) July 7, 1977; minimum gage height, 1.53 ft (0.466 m) Sept. 13, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,370 ft³/s (67.1 m³/s) Jan. 21, gage height, 9.37 ft (2.856 m); minimum, 2.6 ft³/s (0.074 m³/s) Oct. 8, gage height, 1.72 ft (0.524 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	634	304	461	1020	216	918	1520	144	169	188	43
2	7.0	631	306	450	840	217	714	1170	124	126	319	52
3	5.9	566	294	418	680	228	547	840	110	106	291	55
4	4.1	494	267	410	580	264	430	637	123	98	236	54
5	3.3	427	258	475	530	275	355	739	136	88	264	53
6	2.8	390	277	474	470	277	305	835	157	80	323	61
7	2.8	490	279	463	415	270	276	872	158	70	474	79
8	2.7	575	293	408	375	278	250	1180	158	62	484	104
9	3.1	753	299	489	350	314	233	1520	174	55	490	111
10	7.3	887	345	620	325	431	221	1310	176	48	442	85
11	6.4	973	406	820	335	889	206	1050	156	44	353	62
12	9.1	909	417	960	377	1280	200	880	127	41	305	48
13	16	780	388	980	401	1270	191	1020	107	35	293	36
14	42	631	330	1010	406	1530	181	1100	93	30	353	31
15	138	510	381	1170	365	1520	168	923	83	26	320	27
16	170	402	410	1380	342	1200	156	737	76	38	271	24
17	213	325	452	1520	324	929	142	593	69	69	214	22
18	190	269	494	1600	314	724	135	489	63	62	149	20
19	154	227	798	1790	306	591	168	450	57	61	105	16
20	149	195	1250	2000	298	495	290	432	56	57	84	13
21	163	169	1420	2370	288	426	321	402	87	58	72	12
22	165	152	1680	2300	275	377	290	364	128	59	64	10
23	141	159	1690	1950	260	337	251	318	194	58	58	11
24	108	172	1440	1610	254	304	251	279	200	53	53	15
25	79	181	1210	1380	247	277	272	248	209	95	48	18
26	112	218	1000	1360	237	331	312	218	197	126	44	16
27	380	279	810	1480	226	566	675	191	207	138	44	13
28	580	296	650	1560	217	893	1140	170	222	123	39	11
29	731	289	500	2020	---	982	1160	157	217	103	35	9.0
30	559	293	450	2100	---	1020	1460	157	206	102	33	8.0
31	527	---	461	1610	---	1030	---	152	---	129	35	---
TOTAL	4681.5	13276	19559	37638	11057	19741	12218	20953	4214	2409	6483	1119.0
MEAN	151	443	631	1214	395	637	407	676	140	77.7	209	37.3
MAX	731	973	1690	2370	1020	1530	1460	1520	222	169	490	111
MIN	2.7	152	258	408	217	216	135	152	56	26	33	8.0
CFSM	.61	1.79	2.54	4.90	1.59	2.57	1.64	2.73	.57	.31	.84	.15
IN.	.70	1.99	2.93	5.65	1.66	2.96	1.83	3.14	.63	.36	.97	.17

CAL YR 1977 TOTAL 75717.59 MEAN 207 MAX 1690 MIN .99 CFSM .84 IN 11.36
WTR YR 1978 TOTAL 153348.50 MEAN 420 MAX 2370 MIN 2.7 CFSM 1.69 IN 23.00

JAMES RIVER BASIN

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 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 12...	1400	9.5	130	13.5	32	4	9.5	2.1	11	2.6	35	5.4
DEC 01...	1330	306	108	7.5	22	15	6.2	1.6	10	3.5	9	12
JAN 25...	1300	1400	156	1.5	21	14	5.9	1.5	17	1.9	8	11
MAR 10...	1415	414	105	2.5	20	14	5.6	1.5	12	2.0	8	11
JUL 26...	1445	122	95	24.0	28	10	8.4	1.6	6.3	1.2	21	11
SEP 11...	1030	63	105	23.5	26	9	7.5	1.7	9.0	.7	20	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 CONSTITUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 12...	16	.1	9.2	90	74	.01	.00	.00	.01	.01	.03	460
DEC 01...	17	.1	10	84	65	.00	.00	.00	.00	.02	.06	360
JAN 25...	30	.0	4.8	94	78	.34	1.5	.00	.34	.00	.00	160
MAR 10...	19	.0	2.4	76	59	.29	1.3	.01	.30	.00	.00	230
JUL 26...	7.9	.1	6.9	68	54	.00	.00	.00	.00	.00	.00	530
SEP 11...	13	.1	10	77	63	.00	.00	.00	.00	.01	.03	120

GREAT DISMAL SWAMP BASIN

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02043500 CYPRESS SWAMP AT CYPRESS CHAPEL, VA

LOCATION.--Lat 36°37'24", long 76°36'07", Nansemond County, Hydrologic Unit 03010205, near center of span on downstream side of highway bridge on State Highway 32, 0.5 mi (0.8 km) downstream from Dragon Swamp, 0.8 mi (1.3 km) northwest of Cypress Chapel, and 6.5 mi (10.5 km) south of Suffolk.

DRAINAGE AREA.--23 mi² (60 km²), approximately.

PERIOD OF RECORD.--October 1953 to September 1971, March to September 1978.

GAGE.--Water-stage recorder. Datum of gage is 28.65 ft (8.733 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 21, 1978, recording gage on right bank 30 ft (9.1 m) upstream at same datum.

REMARKS.--Records good. Water-quality records for some prior years have been collected at this location.

AVERAGE DISCHARGE.--18 years, 28.2 ft³/s (0.80 m³/s), 16.65 in/yr (423 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,330 ft³/s (37.7 m³/s) Aug. 11, 1967, gage height, 6.85 ft (2.088 m); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.7 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 27	1400	340 9.63	4.81 1.466	June 9	1230	*543 15.4	5.32 1.622
May 9	2400	324 9.18	4.73 1.442				

No flow July 5-27, Aug. 3-4, Aug. 21-Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, MARCH TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	41	38	15	.92	.03	.00
2						---	33	29	9.9	.25	.01	.00
3						---	26	22	15	.06	.00	.00
4						---	22	23	64	.02	.00	.00
5						---	21	82	48	.00	.24	.00
6						---	18	75	18	.00	.72	.00
7						---	16	50	10	.00	.22	.00
8						---	14	80	19	.00	4.9	.00
9						---	13	232	447	.00	1.4	.00
10						---	11	260	319	.00	.38	.00
11						---	11	128	148	.00	.96	.00
12						---	10	69	63	.00	3.5	.00
13						---	9.9	43	30	.00	4.6	.00
14						---	10	51	24	.00	9.1	.00
15						---	9.2	70	21	.00	12	.00
16						---	7.6	70	10	.00	.27	.00
17						---	6.4	72	6.5	.00	7.5	.00
18						---	6.6	50	4.2	.00	1.7	.00
19						---	16	31	2.3	.00	.35	.00
20						---	33	20	1.2	.00	.01	.00
21						24	28	14	.81	.00	.00	.00
22						23	18	11	46	.00	.00	.00
23						20	13	7.8	111	.00	.00	.00
24						18	9.8	9.8	76	.00	.00	.00
25						18	8.2	50	25	.00	.00	.00
26						80	35	41	10	.00	.00	.00
27						302	153	16	7.5	.00	.00	.00
28						226	149	12	7.9	.01	.00	.00
29						121	93	22	5.0	.15	.00	.00
30						76	55	29	2.3	3.1	.00	.00
31						53	---	26	---	.53	.00	---
TOTAL	---	---	---	---	---	---	896.7	1733.6	1566.61	5.04	193.44	.00
MEAN	---	---	---	---	---	---	29.9	55.9	52.2	.16	6.24	.000
MAX	---	---	---	---	---	---	153	260	447	3.1	72	.00
MIN	---	---	---	---	---	---	6.4	7.8	.81	.00	.00	.00
CFSM	---	---	---	---	---	---	1.30	2.43	2.27	.007	.27	.000
IN.	---	---	---	---	---	---	1.45	2.80	2.53	.01	.31	.00

LOCATION.--Lat 36°35'42", long 76°26'23", Chesapeake City, Hydrologic Unit 03010205, on right bank in outlet canal, 200 ft (61 m) upstream from dam and gates, 0.5 mi (0.8 km) downstream from Lake Drummond, 3.1 mi (5.0 km) north of North Carolina State line, and 20 mi (32 km) southwest of Norfolk.

REVISED RECORDS.--WSP 1032: 1934-43.

REMARKS.--Mean daily gage heights are shown in table below.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.24 ft (1.597 m) Jan. 9; minimum, 3.19 ft (0.972 m) Oct. 7-8.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.21	3.55	4.92	4.93	4.97	5.06	4.80	4.99	4.98	4.98	4.91	4.70
2	3.29	3.57	4.92	4.93	5.10	5.03	4.83	4.98	4.98	5.02	4.97	4.69
3	3.32	3.60	4.95	4.97	5.05	5.03	5.04	4.95	4.93	5.03	4.93	4.66
4	3.26	3.62	4.97	4.96	4.97	5.02	5.01	5.20	4.98	5.08	4.90	4.61
5	3.22	3.68	4.98	4.97	4.96	4.94	5.01	5.07	5.03	4.98	5.00	4.57
6	3.20	3.74	5.10	4.97	4.98	4.91	4.93	5.04	5.05	4.91	4.94	4.54
7	3.19	3.91	5.10	5.00	4.83	4.91	4.93	4.99	5.08	4.66	4.93	4.51
8	3.19	3.98	4.99	4.99	4.95	4.96	4.93	5.05	4.99	4.87	5.00	4.47
9	3.21	4.03	5.00	5.24	5.03	4.96	5.00	5.04	4.93	5.00	4.98	4.43
10	3.23	4.07	4.92	4.96	5.03	4.91	5.03	5.00	5.08	5.02	4.99	4.40
11	3.21	4.10	4.96	4.94	5.04	4.93	5.02	4.97	5.08	5.01	5.05	4.37
12	3.21	4.10	4.95	4.99	5.03	4.93	4.96	5.00	5.07	5.00	4.98	4.33
13	3.33	4.24	4.94	5.05	5.02	5.03	5.01	4.96	5.00	5.02	5.02	4.29
14	3.46	4.23	4.95	5.01	5.02	5.07	5.04	5.00	4.97	5.03	5.02	4.24
15	3.47	4.23	5.08	4.99	5.01	5.02	5.01	4.96	4.93	5.05	4.99	4.21
16	3.60	4.26	5.08	4.99	4.98	4.98	4.99	4.94	4.91	5.10	4.99	4.19
17	3.49	4.33	5.03	4.97	4.94	5.01	4.96	4.85	4.93	5.07	4.97	4.16
18	3.43	4.34	5.01	5.08	4.95	4.95	4.97	4.90	5.01	5.02	4.97	4.12
19	3.44	4.37	5.05	5.10	4.92	4.90	5.00	4.87	4.99	5.02	4.94	4.08
20	3.44	4.39	4.99	5.18	4.87	5.00	5.09	4.97	4.97	5.04	4.91	4.05
21	3.42	4.40	5.04	5.05	4.95	4.97	5.08	5.01	4.97	5.06	4.85	4.02
22	3.43	4.42	5.06	5.10	5.06	4.96	5.06	5.02	5.03	5.06	4.84	3.99
23	3.40	4.57	4.97	5.21	5.02	4.95	5.02	5.00	5.01	5.04	4.84	3.95
24	3.38	4.58	5.00	5.20	4.98	4.93	5.00	5.10	4.94	4.99	4.81	3.90
25	3.37	4.62	5.00	5.09	5.00	4.96	4.98	4.97	4.99	5.01	4.78	3.88
26	3.45	4.72	5.00	5.20	4.96	5.01	4.98	5.02	4.99	5.00	4.76	3.83
27	3.54	4.70	4.99	5.02	4.99	4.99	4.98	5.01	4.99	4.98	4.73	3.79
28	3.55	4.75	4.93	4.91	5.00	4.96	4.96	4.99	4.99	5.01	4.71	3.77
29	3.56	4.78	4.93	4.86	---	4.95	4.99	4.99	5.01	4.98	4.68	3.73
30	3.56	4.83	4.93	4.90	---	4.98	5.01	4.99	4.97	4.94	4.65	3.69
31	3.55	---	4.95	5.02	---	5.03	---	4.99	---	4.89	4.67	---
MEAN	3.37	4.22	4.99	5.03	4.99	4.98	4.99	4.99	4.99	5.00	4.89	4.21
MAX	3.60	4.83	5.10	5.24	5.10	5.07	5.09	5.20	5.08	5.10	5.05	4.70
MIN	3.19	3.55	4.92	4.86	4.83	4.90	4.80	4.85	4.91	4.66	4.65	3.69
CAL YR 1977	MEAN	4.41	MAX	5.23	MIN	2.93						
WTR YR 1978	MEAN	4.72	MAX	5.24	MIN	3.19						

02044000 NOTTOWAY RIVER NEAR BURKEVILLE, VA

LOCATION.--Lat 37°04'40", long 78°11'50", Nottoway County, Hydrologic Unit 03010201, on left bank at downstream side of bridge on State Highway 723, 4.0 mi (6.4 km) upstream from Modest Creek, 5.6 mi (9.0 km) north of Victoria, and 7.5 mi (12.1 km) south of Burkeville.

DRAINAGE AREA.--38.7 mi² (100.2 km²).

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

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 (108.076 m) National Geodetic Vertical Datum of 1929. Prior to July 4, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--32 years, 37.8 ft³/s (1.070 m³/s), 13.26 in/yr (337 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft³/s (379 m³/s) Oct. 23, 1971, gage height, 22.33 ft (6.806 m), from rating curve extended above 3,200 ft³/s (91 m³/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 (8.35 m) in August 1940, from Corps of Engineers floodmark.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	2100	1640 46.4	13.29 4.051	Jan. 26	1100	2530 71.6	15.84 4.828
Nov. 6	2400	2900 82.1	16.68 5.084	Mar. 10	2300	3720 105	18.00 5.486
Jan. 9	1100	1770 50.1	13.72 4.182	Apr. 27	0200	*4010 114	18.36 5.596
Jan. 25	2200	1840 52.1	13.93 4.246	May 5	0330	2070 58.6	14.62 4.456

Minimum discharge, 2.0 ft³/s (0.057 m³/s) Oct. 7, 8, 9, gage height, 1.60 ft (0.488 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	20	33	34	40	20	33	59	12	5.5	15	93
2	7.8	20	29	28	35	23	30	48	11	5.0	8.7	15
3	12	23	22	22	35	27	26	42	9.7	5.0	46	8.2
4	6.2	35	19	20	28	31	25	294	9.9	7.3	129	6.2
5	3.7	143	90	19	25	30	25	965	9.9	6.8	65	5.2
6	2.6	582	117	20	23	33	24	111	9.3	5.5	31	4.5
7	2.2	931	47	36	22	31	23	70	28	4.7	36	3.9
8	2.0	78	30	257	21	38	21	121	21	4.3	27	3.6
9	3.4	48	28	931	20	79	20	466	28	4.3	14	3.4
10	10	35	27	96	19	1230	19	122	17	4.6	10	22
11	7.8	28	21	59	18	1330	20	70	11	4.3	8.2	9.1
12	5.3	24	20	50	17	289	20	56	9.3	4.9	7.5	5.5
13	4.1	20	18	55	17	123	19	80	9.5	4.2	6.6	4.5
14	67	19	83	247	18	89	18	299	11	3.7	29	4.2
15	59	17	334	154	19	87	17	75	8.2	3.7	68	4.3
16	20	16	66	64	19	62	16	60	7.5	20	49	4.0
17	35	18	45	151	19	54	15	57	7.3	18	16	3.9
18	19	18	403	359	21	44	23	42	7.0	8.5	10	3.6
19	15	15	111	102	24	40	52	34	6.6	5.5	7.6	3.3
20	12	14	62	195	21	36	59	29	6.2	4.6	6.3	3.1
21	9.5	14	117	121	20	33	33	25	6.2	3.8	5.5	3.1
22	8.2	15	70	94	20	32	25	22	15	3.5	4.9	9.7
23	7.5	31	46	61	19	29	20	19	10	3.2	4.5	61
24	6.8	31	37	65	18	27	19	19	7.5	3.1	4.3	13
25	7.2	22	49	836	18	26	27	17	6.5	64	4.0	8.0
26	649	36	41	1740	18	92	1430	15	6.3	14	4.2	5.9
27	290	26	28	155	17	146	2600	14	28	8.4	4.3	5.0
28	59	20	25	80	17	70	209	14	15	6.2	4.2	4.4
29	38	21	25	59	---	52	96	14	8.2	5.5	4.2	3.8
30	28	20	22	55	---	41	71	13	6.2	4.5	3.9	3.7
31	23	---	42	54	---	35	---	12	---	4.5	5.0	---
TOTAL	1422.9	2340	2107	6219	608	4279	5035	3284	348.3	251.1	638.9	328.1
MEAN	45.9	78.0	68.0	201	21.7	138	168	106	11.6	8.10	20.6	10.9
MAX	649	931	403	1740	40	1330	2600	965	28	64	129	93
MIN	2.0	14	18	19	17	20	15	12	6.2	3.1	3.9	3.1
CFSM	1.19	2.02	1.76	5.19	.56	3.57	4.34	2.74	.30	.21	.53	.28
IN.	1.37	2.25	2.03	5.98	.58	4.11	4.84	3.16	.33	.24	.61	.32

CAL YR 1977 TOTAL 12388.04 MEAN 33.9 MAX 1100 MIN .03 CFSM .88 IN 11.91
WTR YR 1978 TOTAL 26861.30 MEAN 73.6 MAX 2600 MIN 2.0 CFSM 1.90 IN 25.82

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 (0.2 km) upstream from Beaver Pond Creek, and 2.6 mi (4.2 km) northwest of Rawlings.

DRAINAGE AREA.--309 mi² (800 km²).

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 (56.351 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--28 years, 303 ft³/s (8.581 m³/s), 13.32 in/yr (338 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,900 ft³/s (847 m³/s) Oct. 6, 1972, gage height, 23.25 ft (7.087 m), from rating curve extended above 16,000 ft³/s (450 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.40 ft³/s (0.11 m³/s) Oct. 14, 15, 1954; minimum gage height, 1.83 ft (0.558 m) Oct. 15, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 20.8 ft (6.34 m), discharge, about 19,000 ft³/s (540 m³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (71 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Nov. 8	1000	3860	109	9.29	2.832	Mar. 11	2330	7780	220	13.69	4.173
Jan. 10	1230	4390	124	10.05	3.063	Apr. 27	2200	*14500	411	17.58	5.358
Jan. 21	0630	2620	74.2	7.48	2.280	May 6	0800	3790	107	9.24	2.816
Jan. 27	0700	6680	189	12.94	3.944						

Minimum discharge, 21 ft³/s (0.59 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	150	188	380	428	231	428	682	251	140	568	158
2	38	137	201	334	409	247	390	574	223	121	438	284
3	44	134	198	279	404	288	357	500	208	111	254	210
4	47	140	178	234	380	380	334	593	204	121	357	155
5	41	194	208	215	366	362	329	2170	194	130	650	128
6	36	655	580	223	357	334	311	3430	188	118	549	115
7	33	2110	601	302	343	325	311	1350	198	105	462	104
8	33	3380	343	362	316	348	302	790	260	95	371	99
9	46	940	260	1560	316	476	288	1140	329	87	254	95
10	56	404	234	3960	311	1400	279	1510	325	85	207	144
11	60	293	212	1640	297	5730	283	1010	247	80	179	281
12	60	227	182	529	283	5890	279	628	198	73	164	210
13	60	194	178	540	288	2250	283	534	188	69	164	147
14	106	175	191	1230	306	1010	265	736	191	67	416	121
15	386	166	605	1450	306	790	242	898	175	69	281	119
16	366	156	1090	1060	293	677	238	596	166	250	273	99
17	198	156	500	677	288	554	231	490	159	596	292	103
18	150	153	1020	1450	283	486	270	438	153	313	194	99
19	121	143	1990	1870	283	428	404	399	150	188	152	95
20	90	134	1120	2050	274	404	666	366	143	141	133	94
21	73	130	844	2420	260	380	628	339	153	119	121	90
22	62	134	1170	1180	256	362	418	311	162	112	115	90
23	56	166	655	763	242	343	334	293	175	104	106	104
24	55	194	462	606	234	325	306	288	162	103	103	214
25	53	198	423	817	234	325	297	274	143	286	99	170
26	203	198	442	3110	231	600	1110	260	134	554	99	133
27	1420	212	366	6180	227	1140	9900	242	191	277	99	112
28	1630	194	302	2730	215	1310	9990	242	283	185	99	103
29	443	182	265	790	---	709	2940	242	231	158	99	95
30	251	175	251	554	---	549	898	238	172	138	103	90
31	182	---	320	476	---	462	---	242	---	150	136	---
TOTAL	6421	11824	15579	39971	8430	29115	33311	21805	5956	5145	7537	4061
MEAN	207	394	503	1289	301	939	1110	703	199	166	243	135
MAX	1630	3380	1990	6180	428	5890	9990	3430	329	596	650	284
MIN	22	130	178	215	215	231	231	238	134	67	99	90
CFSM	.67	1.28	1.63	4.17	.97	3.04	3.59	2.28	.64	.54	.79	.44
IN.	.77	1.42	1.88	4.81	1.01	3.51	4.01	2.63	.72	.62	.91	.49

CAL YR 1977 TOTAL 83080.0 MEAN 228 MAX 3380 MTN 1.9 CFSM .74 IN 10.00
WTD YR 1978 TOTAL 189155.0 MEAN 518 MAX 9990 MIN 22 CFSM 1.68 IN 22.77

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 (5 m) downstream from upstream bridge on U.S. Highway 301, 1.8 mi (2.9 km) upstream from Island Swamp, 3.3 mi (5.3 km) south of town of Stony Creek, and 4.4 mi (7.1 km) upstream from Stony Creek.

DRAINAGE AREA.--579 mi² (1,500 km²).

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: 1972.

GAGE.--Water-stage recorder. Datum of gage is 58.42 ft (17.806 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 11, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good. Diurnal fluctuation at low flow caused by Baskerville Mill, 33 mi (53 km) upstream. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--49 years, 554 ft³/s (15.69 m³/s), 12.99 in/yr (330 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,200 ft³/s (714 m³/s) Aug. 17, 1940, gage height, 23.66 ft (7.212 m), from rating curve extended above 13,000 ft³/s (370 m³/s); minimum, 3.4 ft³/s (0.096 m³/s) Aug. 15, 16, 1977; minimum gage height, 0.62 ft (0.189 m) Sept. 2, 5, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s (99 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	2130	6170 175	16.17 4.929	Mar. 13	1530	8760 248	17.78 5.419
Jan. 11	2300	4140 117	14.15 4.313	Mar. 27	1600	4830 137	14.74 4.493
Jan. 14	1630	3600 102	13.48 4.109	Apr. 29	1030	*12800 362	19.39 5.910
Jan. 21	0900	5790 164	16.32 4.974	May 5	2330	4950 140	14.87 4.532
Jan. 29	0700	5630 159	16.49 5.026				

Minimum discharge, 31 ft³/s (0.88 m³/s) Oct. 1, gage height, 2.31 ft (0.704 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	269	422	734	876	433	910	3610	392	277	1730	188
2	37	232	454	701	822	472	833	1290	376	239	1600	267
3	36	219	432	605	782	520	750	1040	362	220	871	350
4	36	228	403	515	741	709	698	1080	432	214	979	247
5	46	689	408	458	711	769	674	4130	374	223	1040	182
6	49	1370	696	443	711	702	642	4800	327	227	1240	149
7	44	5110	1050	541	666	648	612	4760	463	215	927	129
8	40	5420	804	620	623	696	603	3060	447	202	704	117
9	39	4280	576	1920	625	1210	574	3180	553	191	533	109
10	40	1730	506	3420	623	2460	552	3790	622	182	614	144
11	50	677	451	3870	595	6300	545	2870	497	179	330	242
12	61	512	398	2530	573	7620	537	1560	386	177	302	318
13	73	423	371	1110	573	8500	516	1120	326	171	293	227
14	110	369	387	3290	613	7060	514	1500	307	169	468	168
15	457	335	830	3140	625	2540	473	1700	298	172	799	139
16	572	317	1370	2420	590	1440	445	1400	275	228	685	128
17	422	308	1250	1440	576	1170	426	1030	262	707	501	120
18	255	304	1270	2600	571	997	457	884	253	781	397	111
19	187	292	2940	2820	564	885	850	791	246	471	262	107
20	157	274	2770	4270	546	815	1870	708	237	316	203	102
21	1.8	263	2060	5640	515	767	1550	646	235	252	174	96
22	107	262	2650	4540	500	737	1020	631	270	220	155	91
23	93	273	1780	2080	480	696	758	569	278	204	139	90
24	84	337	1080	1180	463	663	644	526	281	194	128	93
25	78	373	921	1160	454	638	599	501	258	470	120	198
26	349	401	955	2890	449	1390	2070	466	236	1190	114	170
27	2760	412	823	4010	432	4490	8100	430	242	746	109	134
28	2360	406	682	4930	421	3740	10400	414	380	488	109	113
29	1670	429	586	5220	---	2300	12300	427	474	353	109	101
30	561	412	549	1600	---	1320	9720	418	358	284	107	91
31	359	---	651	988	---	1020	---	395	---	237	106	---
TOTAL	11291	26926	30525	71685	16720	63706	60642	49726	10447	10199	15448	4721
MEAN	364	898	985	2312	597	2055	2021	1604	348	329	505	157
MAX	2760	5420	2940	5640	876	8500	12300	4800	622	1190	1730	350
MIN	31	219	371	443	421	433	426	395	235	169	106	90
CFSM	.63	1.55	1.70	3.99	1.03	3.55	3.49	2.77	.60	.57	.87	.27
IN.	.73	1.73	1.96	4.61	1.07	4.09	3.90	3.19	.67	.66	1.01	.30

CAL YR 1977 TOTAL 170420.1 MEAN 467 MAX 5420 MIN 4.3 CFSM .81 IN 10.95
WTR YR 1978 TOTAL 372236.0 MEAN 1020 MAX 12300 MIN 31 CFSM 1.76 IN 23.92

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 bridge on U.S. Highway 1, 1.2 mi (1.9 km) southwest of Dinwiddie, 1.7 mi (2.7 km) downstream from Chamberlains Bed Creek, and 5.7 mi (9.2 km) downstream from confluence of White Oak and Butterwood Creeks.

DRAINAGE AREA.--112 mi² (290 km²).

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 (39.606 m) National Geodetic Vertical Datum of 1929. Prior to June 12, 1957, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--32 years, 109 ft³/s (3.087 m³/s), 13.22 in/yr (336 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft³/s (323 m³/s) Oct. 6, 1972, gage height, 20.84 ft (6.352 m), from rating curve extended above 5,800 ft³/s (160 m³/s) on basis of contracted-opening measurement of peak flow; no flow for part of Oct. 13, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,200 ft³/s (34 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
Oct. 27	0430	1780	50.4	9.48	2.890	Mar. 11	1300	2650	75.0	11.12	3.389
Nov. 7	0700	2710	76.7	11.18	3.408	Mar. 27	1030	1500	42.5	9.00	2.743
Jan. 9	1900	1460	41.3	8.87	2.704	Apr. 27	1530	*2770	78.4	11.26	3.432
Jan. 20	2000	2100	59.5	10.12	3.085	May 5	1130	1610	45.6	9.15	2.789
Jan. 26	2300	1660	47.0	9.27	2.825	Aug. 1	0800	1220	34.6	8.28	2.524

Minimum discharge, 2.1 ft³/s (0.059 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	53	81	176	158	86	170	194	40	29	228	14
2	3.1	51	87	146	152	94	146	149	35	19	632	23
3	3.1	52	78	118	140	110	127	122	32	15	222	40
4	2.8	57	70	99	137	149	119	251	35	14	134	35
5	3.0	467	101	90	130	153	116	1420	32	12	415	24
6	3.1	806	286	95	128	130	108	982	36	10	288	19
7	3.1	2480	189	156	123	117	104	378	354	8.4	246	15
8	3.0	1210	122	170	115	128	98	355	90	7.1	168	13
9	3.3	366	98	1020	110	254	92	640	121	7.1	113	12
10	3.1	189	88	1020	110	776	88	557	84	7.7	78	25
11	3.5	128	76	372	108	2480	88	302	57	8.4	62	24
12	5.3	98	66	196	108	1520	92	187	43	7.4	101	23
13	6.3	82	60	292	110	749	86	161	34	7.1	74	23
14	22	71	76	959	124	410	81	355	30	6.6	118	21
15	141	65	337	804	127	319	75	246	26	6.6	102	18
16	133	61	267	438	117	260	69	174	23	51	77	15
17	86	58	170	372	114	208	65	136	19	162	58	13
18	46	55	566	1090	113	176	76	109	18	194	45	12
19	27	51	746	717	112	153	150	93	16	135	34	11
20	17	48	515	1600	106	138	254	82	14	82	27	9.6
21	11	46	707	1550	100	129	208	72	16	64	23	8.8
22	9.6	47	702	679	98	123	145	68	19	53	19	8.8
23	8.2	58	367	332	93	116	102	66	32	47	16	32
24	5.8	76	222	260	88	111	86	66	37	42	15	39
25	4.0	75	208	408	87	106	86	60	29	54	14	27
26	343	82	215	1270	86	494	530	50	21	117	13	26
27	1290	84	156	1350	82	1390	2320	46	32	92	13	22
28	492	75	124	558	80	848	1630	44	72	50	13	18
29	202	75	107	293	---	385	594	46	87	33	12	14
30	106	71	106	215	---	248	281	45	53	24	12	11
31	70	---	170	189	---	189	---	42	---	67	11	---
TOTAL	3058.6	7137	7163	17034	3156	12549	8186	7498	1537	1432.4	4083	596.2
MEAN	98.7	238	231	549	113	405	273	242	51.2	46.2	132	19.9
MAX	1290	2480	746	1600	158	2480	2320	1420	354	194	228	40
MIN	2.3	46	60	90	80	86	65	42	14	6.6	11	8.8
CFSM	.88	2.13	2.06	4.90	1.01	3.62	2.44	2.16	.46	.41	1.18	.18
IN.	1.02	2.37	2.38	5.66	1.05	4.17	2.72	2.49	.51	.48	1.36	.20

CAL YR 1977 TOTAL 35646.73 MEAN 97.7 MAX 2480 MIN .17 CFSM .87 IN 11.84
WTR YR 1978 TOTAL 73430.20 MEAN 201 MAX 2480 MIN 2.3 CFSM 1.80 IN 24.39

CHOWAN RIVER BASIN

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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 (305 m) upstream from bridge on State Highway 653, 1 mi (2 km) downstream from Three Creek, 2.5 mi (4.0 km) southwest of Sebrell, and 5.5 mi (8.8 km) upstream from Assamoosick Swamp.

DRAINAGE AREA.--1,421 mi² (3,680 km²).

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 (1.811 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 23, 1950, nonrecording gage at same site and datum.

REMARKS.--Records good.

AVERAGE DISCHARGE.--37 years, 1,336 ft³/s (37.84 m³/s), 12.77 in/yr (324 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,000 ft³/s (736 m³/s) July 19, 1975, gage height, 24.43 ft (7.446 m); minimum observed, 12 ft³/s (0.34 m³/s) Oct. 23, 1941.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 29.7 ft (9.05 m), from floodmarks, discharge, 48,000 ft³/s (1,360 m³/s), from rating curve extended above 25,000 ft³/s (710 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,400 ft³/s (464 m³/s) May 1, gage height, 21.32 ft (6.498 m); minimum, 40 ft³/s (1.13 m³/s) Oct. 6, gage height, 3.01 ft (0.917 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	4350	1280	2130	8250	1240	7380	16200	1010	1020	555	284
2	49	2700	1320	2300	6680	1270	5690	15100	933	728	1690	376
3	45	1580	1340	2280	4700	1370	4060	12000	878	559	2550	506
4	46	1080	1300	2110	3500	1640	2980	8710	904	448	3230	547
5	44	976	1240	1880	2650	2030	2380	6250	957	385	4570	558
6	40	1840	1300	1690	2400	2310	2050	4950	911	350	4640	433
7	47	3440	1610	1610	2250	2310	1860	5110	805	332	4290	320
8	55	5460	2070	1690	2150	2230	1710	6620	882	307	4030	272
9	58	7100	2100	2090	2100	2520	1600	8280	1330	280	3880	236
10	52	9030	1740	2740	2030	3390	1490	8770	1520	254	3410	215
11	47	10000	1480	3340	1950	5320	1410	8260	1620	240	2380	217
12	46	9070	1310	4000	1880	7090	1350	7780	1360	235	1470	314
13	63	6890	1170	5400	1800	9110	1310	7350	1030	213	1240	420
14	95	4300	1090	6890	1780	11800	1260	6530	803	192	1440	385
15	172	2460	1280	7160	1900	12900	1200	5320	683	177	1680	299
16	458	1610	1830	7010	1950	12200	1130	4460	616	389	2130	248
17	787	1290	2470	7720	1940	10300	1050	4130	560	1150	2620	219
18	764	1140	2870	8480	1910	7850	1010	3890	515	1680	2370	207
19	565	1040	3080	8210	1850	5730	1150	3330	475	1920	1810	184
20	402	966	3470	8230	1780	4110	1830	2590	444	1570	1270	173
21	311	889	4100	9410	1700	3100	2680	2030	419	966	815	160
22	253	832	5100	10800	1620	2540	3250	1740	441	539	585	151
23	204	811	5980	12300	1540	2220	3630	1680	1340	341	455	152
24	169	831	6260	12500	1470	2010	3450	1580	1630	257	375	151
25	146	908	6230	10900	1400	1840	2500	1370	1350	320	324	146
26	281	1020	5700	8870	1350	2010	2080	1210	868	656	291	239
27	2570	1100	4630	7250	1310	3140	3880	1100	627	1590	265	330
28	3940	1150	3620	6630	1260	4810	6840	1020	665	1730	247	280
29	4450	1180	2810	7050	---	6540	9980	1040	1140	1200	232	222
30	4780	1230	2230	8140	---	8240	14300	1100	1350	803	224	183
31	5010	---	2000	8770	---	8550	---	1080	---	622	223	---
TOTAL	25990	86273	84010	189580	67100	151720	96490	160580	28066	21453	55291	8427
MEAN	838	2876	2710	6115	2396	4894	3216	5180	936	692	1784	281
MAX	5010	10000	6260	12500	8250	12900	14300	16200	1630	1920	4640	558
MIN	40	811	1090	1610	1260	1240	1010	1020	419	177	223	146
CFSM	.59	2.02	1.91	4.30	1.69	3.44	2.26	3.65	.66	.49	1.26	.20
IN.	.68	2.26	2.20	4.96	1.76	3.97	2.53	4.20	.73	.56	1.45	.22

CAL YR 1977 TOTAL 475114 MEAN 1302 MAX 10000 MTN 18 CFSM .92 IN 12.44
WTR YR 1978 TOTAL 974980 MEAN 2671 MAX 16200 MTN 40 CFSM 1.88 IN 25.52

CHOWAN RIVER BASIN

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1947, December 1977 to September 1978.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1946 to September 1947.

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)
DEC 15...	1315	1290	100	6.9	6.5	9	11.8	2300	2000	20	0	5.3
JAN 24...	1330	12600	36	6.8	2.5	25	12.6	3600	780	11	7	3.1
FEB 14...	1215	1780	60	6.8	2.0	8	13.8	530	300	16	8	4.2
MAR 29...	1030	6420	47	6.4	11.5	25	9.8	800	200	12	5	3.2
APR 11...	1230	1410	60	6.7	17.5	8	9.3	38	35	19	1	4.9
MAY 10...	1130	8940	40	6.2	16.0	20	8.0	--	--	13	0	3.5
JUN 21...	1215	420	80	6.5	26.5	--	7.0	23	78	25	3	6.5
JUL 28...	1230	1770	55	6.4	25.0	--	6.5	300	340	19	2	5.1
AUG 16...	1215	2150	50	6.6	25.5	--	6.5	790	2700	19	0	5.1
SEP 20...	1200	174	73	7.0	29.0	--	7.2	100	220	26	2	5.9

DATE	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 (MG/L AS HC03)	CAR- BONATE (MG/L AS CO3)	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 CONSTITU- ENTS, DIS- SOLVED (MG/L)
DEC 15...	1.6	4.5	1.7	28	0	5.6	10	7.4	.0	18	72	62
JAN 24...	.9	2.4	1.6	5	0	1.3	7.7	2.9	.1	5.9	44	27
FEB 14...	1.3	3.7	1.3	10	0	2.5	7.7	5.5	.0	11	50	40
MAR 29...	1.0	2.6	2.5	9	0	5.7	12	4.8	.1	5.6	52	37
APR 11...	1.6	4.1	1.5	22	0	7.0	4.9	4.6	.1	7.5	60	41
MAY 10...	1.0	2.5	1.6	16	0	16	5.8	2.6	.0	7.3	48	33
JUN 21...	2.2	5.1	1.6	--	--	--	5.0	5.7	.1	14	70	54
JUL 28...	1.6	3.1	1.8	--	--	--	6.3	3.3	.1	10	62	42
AUG 16...	1.5	3.1	1.6	--	--	--	5.1	3.9	.1	12	68	44
SEP 20...	2.7	3.8	2.5	--	--	--	3.2	3.3	.1	11	66	48

CHOWAN RIVER BASIN

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02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+N03 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N03)	PHOS- PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CH)
DEC 15...	.14	--	--	--	.04	1	0	1	1	0	1	20
JAN 24...	.16	.44	.60	2.7	.04	--	--	--	--	--	--	--
FEB 14...	.23	.30	.53	2.3	.02	--	--	--	--	--	--	--
MAR 29...	.14	.58	.72	3.2	.05	1	0	1	2	1	1	30
APR 11...	.09	.39	.48	2.1	.05	--	--	0	--	--	0	--
MAY 10...	.11	.48	.59	2.6	.05	--	--	0	--	--	2	--
JUN 21...	.18	.34	.52	2.3	.04	2	1	1	--	--	--	<10
JUL 28...	.13	.67	.80	3.5	.09	--	--	--	--	--	--	--
AUG 16...	.12	1.0	1.1	5.0	.07	--	--	--	--	--	--	--
SEP 20...	.15	.51	.66	2.9	.03	0	--	0	--	--	--	<10

DATE	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB)
DEC 15...	19	1	2	2	0	5	4	1	1200	120	24	5
JAN 24...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 29...	30	0	0	0	0	1	0	4	1300	360	8	2
APR 11...	--	2	--	--	0	--	--	3	--	710	--	--
MAY 10...	--	4	--	--	0	--	--	2	--	430	--	--
JUN 21...	<8	2	0	0	0	1	1	0	1400	810	--	--
JUL 28...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 20...	<8	2	1	1	0	5	0	5	1200	630	--	--

< Actual value is known to be less than the value shown.

CHOWAN RIVER BASIN

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

WATER QUALITY DATA, DECEMBER 1977 TO SEPTEMBER 1978

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN)
DEC 15...	19	70	40	30	<.5	.0	<.5	0	0	0	20	20
JAN 24...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 29...	6	40	10	30	<.5	.0	<.5	0	0	0	10	0
APR 11...	9	--	--	50	--	--	<.5	--	--	0	--	--
MAY 10...	8	--	--	10	--	--	<.5	--	--	0	--	--
JUN 21...	--	80	30	50	<.5	.0	<.5	0	0	0	10	0
JUL 28...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 20...	--	300	290	10	<.5	.0	<.5	0	0	0	0	0

DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DEC 15...	0	--	--	22	77	63
JAN 24...	--	1.6	--	30	1020	75
FEB 14...	--	6.8	--	6	29	100
MAR 29...	10	--	260	23	399	90
APR 11...	10	--	--	15	57	85
MAY 10...	10	--	170	13	314	88
JUN 21...	10	--	0	16	18	100
JUL 28...	--	10	1400	54	258	100
AUG 16...	--	14	230	38	221	95
SEP 20...	0	--	--	7	3.3	100

< Actual value is known to be less than the value shown.

CHOWAN RIVER BASIN

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02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 29,78 1030	MAY 10,78 1130	JUN 21,78 1215	JUL 28,78 1230	AUG 16,78 1215
TOTAL CELLS/ML	260	170	0	1400	230
DIVERSITY: DIVISION	1.1	1.4	0.0	1.1	0.7
..CLASS	1.1	1.4	0.0	1.2	0.7
..ORDER	1.2	1.7	0.0	1.8	0.7
...FAMILY	2.2	1.7	0.0	2.0	1.0
....GENUS	2.7	1.9	0.0	2.1	1.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	14	8	--	-	22	2	--	-
...SCENEDESMACEAE										
....SCENEDESMUS	--	-	--	-	--	-	89	6	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	43#	17	86#	50	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	14	6	--	-	--	-	--	-	--	-
....COSMARIMUM	--	-	--	-	--	-	45	3	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	22	2	--	-
....MELOSIRA	--	-	--	-	--	-	45	3	--	-
..PENNALES										
...CYMBELLACEAE										
....CYMBELLA	--	-	--	-	--	-	22	2	14	6
...FRAGILARIACEAE										
....ASTERIONELLA	100#	39	--	-	--	-	--	-	--	-
....SYNEDRA	29	11	--	-	--	-	--	-	--	-
...GOMPHONEMACEAE										
....GOMPHONEMA	14	6	--	-	--	-	--	-	--	-
...MERIDIONACEAE										
....MERIDION	--	-	--	-	--	-	--	-	14	6
...NAVICULACEAE										
....GYROSIGMA	14	6	--	-	--	-	--	-	--	-
....NAVICULA	--	-	--	-	--	-	22	2	14	6
...PINNULARIA	14	6	--	-	--	-	--	-	--	-
...NITZSCHACEAE										
....HANTZSCHIA	--	-	--	-	--	-	22	2	--	-
....NITZSCHIA	14	6	--	-	--	-	45	3	--	-
..XANTHOPHYCEAE										
...HETEROCOCCALES										
...CHLOROTHECIACEAE										

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CHOWAN RIVER BASIN

02047000 NOTTOWAY RIVER NEAR SEBRELL, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	MAR 29,78 1030		MAY 10,78 1130		JUN 21,78 1215		JUL 28,78 1230		AUG 16,78 1215	
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....OPHIOCYTIUM	--	-	--	-	--	-	22	2	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
..CYANOPHYCEAE										
..CHROCOCCALES										
..CHROCOCCACEAE										
....ANACYSTIS	--	-	43#	25	--	-	160	11	--	-
..HORMOGONALES										
..NOSTOCACEAE										
....ANABAENA	--	-	--	-	--	-	870#	63	--	-
....OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	--	-	--	-	190#	82
EUGLENOPHYTA (EUGLENOIDS)										
..EUGLENOPHYCEAE										
..EUGLENALES										
....EUGLENACEAE										
....EUGLENA	--	-	14	8	--	-	--	-	--	-
....TRACHELOMONAS	--	-	14	8	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
..DINOPHYCEAE										
..PERIDINIALES										
....PERIDINIACEAE										
....PERIDINIUM	14	6	--	-	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m ²)		Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Sampling method
		Dry weight	Ash weight			
Apr. 11	42	0.31	0.15	0.00	0.00	Polyethylene strip
June 21	42	1.50	1.10	0.00	0.00	

CHOWAN RIVER BASIN

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 (3 m) upstream from Walls Bridge on State Highway 617, 1.2 mi (1.9 km) downstream from Cypress Swamp, and 3.5 mi (5.6 km) south-east of Dendron.

DRAINAGE AREA.--294 mi² (761 km²).

PERIOD OF RECORD.--October 1941 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 30.99 ft (9.446 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--37 years, 309 ft³/s (8.751 m³/s), 14.27 in/yr (362 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,070 ft³/s (144 m³/s) June 5, 1963, gage height, 9.1 ft (2.77 m), from high-water mark in well; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 13.1 ft (3.99 m), from Corps of Engineers floodmarks, discharge, 10,000 ft³/s (283 m³/s), from rating curve extended above 4,800 ft³/s (140 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,470 ft³/s (98.3 m³/s) Jan. 21, gage height, 7.07 ft (2.155 m); no flow many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1990	327	532	1000	256	1500	1640	138	22	127	96
2	.00	1590	350	514	900	253	1180	1460	132	20	242	104
3	.00	1180	358	485	750	272	928	1140	126	17	280	104
4	.00	896	345	465	700	327	718	944	131	20	475	86
5	.00	712	340	455	650	354	586	1030	100	32	440	64
6	.00	694	345	475	550	372	485	1060	85	39	592	48
7	.00	1410	336	508	480	376	415	1180	76	36	712	38
8	.00	2340	332	520	420	405	368	1320	109	27	568	29
9	.00	2090	332	574	380	544	322	1740	145	20	480	23
10	.00	1940	322	740	335	903	284	2040	142	14	435	21
11	.00	1840	318	1230	320	2090	260	2040	112	10	354	19
12	.00	1590	332	1230	315	2920	250	1840	90	7.6	268	16
13	.02	1360	372	1140	315	2920	239	1500	68	4.2	268	14
14	9.8	1060	376	1030	320	2920	236	1230	51	1.8	861	13
15	35	824	405	1500	330	2390	219	978	39	.80	1100	11
16	51	640	410	1790	335	1890	198	832	32	25	1180	10
17	64	520	440	1900	350	1460	183	712	27	92	1020	8.0
18	66	440	470	2040	380	1120	183	598	24	89	800	6.7
19	61	363	508	2140	390	888	219	496	22	66	610	5.4
20	55	304	628	2590	380	706	292	445	21	53	475	3.6
21	47	264	896	3250	350	580	376	386	17	52	420	1.9
22	43	239	1120	3140	332	485	455	304	26	40	345	1.5
23	40	232	1230	2920	304	430	455	239	32	30	250	14
24	35	225	1360	2590	284	400	430	201	39	22	171	27
25	37	225	1360	2140	276	368	435	180	38	42	119	29
26	51	242	1320	1990	272	450	503	152	31	42	96	26
27	89	239	1100	1840	264	815	856	132	36	35	68	20
28	537	246	920	1790	256	1470	1360	125	36	40	54	16
29	1790	264	750	1540	---	1790	1590	128	34	46	44	21
30	2390	280	658	1410	---	1790	1540	132	28	55	36	34
31	2340	---	580	1200	---	1690	---	136	---	51	29	---
TOTAL	7740.82	26239	18940	45668	11938	33634	17065	26340	1987	1051.40	12919	910.1
MEAN	250	875	611	1473	426	1085	569	850	66.2	33.9	417	30.3
MAX	2390	2340	1360	3250	1000	2920	1590	2040	145	92	1180	104
MIN	.00	225	318	455	256	253	183	125	17	.80	29	1.5
CFSM	.85	2.98	2.08	5.01	1.45	3.69	1.94	2.89	.23	.12	1.42	.10
IN.	.98	3.32	2.40	5.78	1.51	4.26	2.16	3.33	.25	.13	1.63	.12
CAL YR 1977	TOTAL	110046.81	MEAN 301	MAX 2390	MIN .00	CFSM 1.02	IN 13.92					
WTR YR 1978	TOTAL	204432.32	MEAN 560	MAX 3250	MIN .00	CFSM 1.91	IN 25.87					

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 (2.6 km) downstream from Pope Swamp, and 4.2 mi (6.8 km) upstream from Antioch Swamp.

DRAINAGE AREA.--456 mi² (1,181 km²).

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 (2.609 m) National Geodetic Vertical Datum of 1929. Prior to July 18, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--36 years, 485 ft³/s (13.74 m³/s), 14.44 in/yr (367 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s (198 m³/s) Mar. 21, 1975; maximum gage height, 17.51 ft (5.337 m) June 5, 1963; no flow Sept. 10-18, 1944, Sept. 28 to Oct. 31, 1954, and part of each day Sept. 1, 2, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 23.2 ft (7.07 m), discharge, 16,000 ft³/s (453 m³/s), from rating curve extended above 5,500 ft³/s (160 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,210 ft³/s (148 m³/s) Jan. 22, gage height, 13.93 ft (4.246 m); minimum, 0.33 ft³/s (0.009 m³/s) Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.70	1880	405	1000	1700	405	2130	1880	289	43	128	53
2	1.0	2000	420	900	1520	405	1940	1750	315	33	168	102
3	.75	1880	450	840	1350	435	1760	1650	350	25	515	152
4	.55	1640	480	780	1250	532	1520	1500	337	20	1050	166
5	.44	1460	515	720	1170	585	1300	1600	326	16	1460	136
6	.38	1300	532	680	1050	640	1100	1700	337	14	1760	102
7	.38	1520	550	680	925	660	950	1780	306	20	1700	74
8	.33	1880	532	700	840	700	820	1850	281	38	1640	54
9	.85	2480	515	760	760	860	700	2000	532	52	1460	40
10	1.3	2700	498	840	680	1150	620	2550	620	45	1220	33
11	.95	2480	480	880	640	1820	568	2600	602	32	1000	28
12	1.0	2200	450	950	620	2700	515	2800	550	22	840	24
13	2.5	1940	420	1350	602	3680	465	2700	420	18	680	18
14	3.7	1700	435	1460	620	3860	420	2100	289	13	640	14
15	16	1460	532	1520	640	3680	390	1950	219	11	1000	12
16	32	1300	640	1700	640	3340	362	1760	166	40	1580	11
17	37	1080	680	2060	660	2780	337	1580	124	204	1520	10
18	41	900	720	2480	680	2200	315	1400	93	194	1400	9.3
19	48	760	880	2700	700	1760	350	1250	74	246	1200	8.7
20	62	640	1000	3520	680	1460	435	1080	57	281	1000	7.9
21	67	532	1120	4670	640	1220	515	900	45	246	800	12
22	64	450	1300	5210	602	1020	585	780	158	184	640	7.1
23	58	390	1460	5030	585	880	620	680	234	140	515	6.8
24	50	350	1580	4400	532	760	660	568	204	106	420	7.6
25	42	326	1640	3770	498	680	660	465	148	90	326	34
26	43	326	1700	3500	465	740	720	376	106	120	246	72
27	80	326	1640	3420	435	1250	1150	306	82	184	184	87
28	132	337	1520	3180	405	1820	1520	274	72	224	184	74
29	161	362	1350	2780	---	2200	1760	274	62	246	84	55
30	245	376	1200	2340	---	2340	1880	274	52	240	60	37
31	1040	---	1100	1970	---	2270	---	281	---	170	43	---
TOTAL	2232.83	36975	26744	66790	21889	48832	27067	42658	7450	3317	25407	1447.4
MEAN	72.0	1233	863	2155	782	1575	902	1376	248	107	820	48.2
MAX	1040	2700	1700	5210	1700	3860	2130	2800	620	281	1760	166
MIN	.33	326	405	680	405	405	315	274	45	11	43	6.8
CFSM	.16	2.70	1.89	4.73	1.72	3.45	1.98	3.02	.54	.24	1.80	.11
IN.	.18	3.02	2.18	5.45	1.79	3.98	2.21	3.48	.61	.27	2.07	.12
CAL YR 1977	TOTAL	177367.47	MEAN	486	MAX	2700	MIN	.22	CFSM	1.07	IN	14.47
WTR YR 1978	TOTAL	310809.23	MEAN	852	MAX	5210	MIN	.33	CFSM	1.87	IN	25.36

CHOWAN RIVER BASIN

205

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 (0.6 km) south of Burdette, 0.5 mi (0.8 km) upstream from Black Creek, 3.3 mi (5.3 km) downstream from Corrowaugh Swamp, and 6.0 mi (9.7 km) north of Franklin.

DRAINAGE AREA.--617 mi² (1,598 km²).

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 (0.475 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for periods of no gage-height record, Oct. 15 to Dec. 5 and Sept. 11-30, which are fair. Low flow reversed by tide some years. Diversion above station by city of Norfolk for municipal supply most years.

AVERAGE DISCHARGE.--34 years, 639 ft³/s (18.10 m³/s), 14.06 in/yr (357 mm/yr), adjusted for diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s (267 m³/s) Sept. 14, 1960, gage height, 17.14 ft (5.224 m), from floodmarks; minimum daily, 0.40 ft³/s (0.011 m³/s) Sept. 10, 1944, Oct. 28, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of about 22 ft (6.7 m), discharge, 21,000 ft³/s (595 m³/s), from rating curve extended above 9,400 ft³/s (270 m³/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,940 ft³/s (140 m³/s) Jan. 22, gage height, 12.95 ft (3.947 m); minimum, 2.8 ft³/s (0.079 m³/s) Oct. 12, gage height, 0.89 ft (0.271 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	1400	405	1260	2190	483	2420	2190	392	113	340	74
2	27	1950	435	1160	1910	495	2250	2110	380	96	231	70
3	20	2050	450	1040	1740	523	2050	2000	382	79	235	85
4	7.1	1990	460	919	1610	607	1820	1910	422	64	457	116
5	4.6	1650	520	827	1490	677	1580	2030	433	51	1110	130
6	4.2	1380	593	761	1340	706	1350	2130	447	41	1760	113
7	3.6	1260	605	723	1190	725	1130	2190	453	36	1990	79
8	3.2	2150	605	710	1020	758	941	2280	447	37	1960	59
9	3.6	2490	592	769	927	939	792	2460	1090	43	1820	54
10	3.4	2700	584	888	841	1320	679	2640	1520	52	1650	51
11	3.0	2800	565	946	744	2080	614	2820	1320	64	1420	47
12	3.1	2780	535	943	695	2830	562	2930	1060	68	1190	45
13	3.7	2620	501	1100	676	3400	515	2870	740	54	970	40
14	4.6	2400	489	1460	681	3640	475	2710	615	42	184	34
15	8.2	2100	605	1700	691	3620	439	2460	454	32	688	29
16	16	1700	719	1820	693	3450	410	2210	335	59	964	25
17	26	1450	768	2020	717	3190	383	2030	252	343	1390	21
18	36	1130	822	2420	757	2800	369	1860	194	620	1520	18
19	51	900	1030	2780	786	2370	413	1660	154	639	1420	15
20	68	750	1230	3470	781	1980	501	1460	130	512	1220	13
21	75	625	1390	4460	748	1660	577	1250	112	409	992	11
22	78	520	1630	4870	700	1390	611	1060	181	306	770	14
23	65	430	1770	4870	661	1160	634	888	473	223	612	18
24	55	390	1830	4550	629	969	641	748	635	164	505	11
25	46	345	1880	4070	599	820	641	654	577	131	421	20
26	43	330	1890	3780	564	829	695	562	426	160	344	41
27	43	330	1850	3750	525	1360	1110	472	286	302	267	78
28	90	335	1750	3580	495	2070	1630	411	214	492	201	84
29	185	345	1620	3290	---	2440	2080	403	164	523	143	60
30	400	380	1480	2920	---	2590	2220	417	134	510	105	43
31	750	---	1360	2530	---	2560	---	404	---	475	82	---
TOTAL	2147.3	41680	30963	70386	26400	54441	30532	52219	14422	6740	27561	1498
MEAN	69.3	1389	999	2271	943	1756	1018	1684	481	217	889	49.9
MAX	750	2800	1890	4870	2190	3640	2420	2930	1520	639	1990	130
MIN	3.0	330	405	710	495	483	369	403	112	32	82	11
(*)	.45	1.1	1.1	1.2	.00	.00	.00	.00	.00	.00	1.2	1.2
MEAN#	69.8	1390	1000	2272	943	1756	1018	1684	481	217	890	51.1
CFSM#	.11	2.25	1.62	3.68	1.53	2.85	1.65	2.73	.78	.35	1.44	.08
IN#	.13	2.51	1.87	4.24	1.59	3.29	1.84	3.15	.87	.40	1.66	.09

CAL YR 1977 TOTAL 209692.6 MEAN 575 MAX 2800 MIN 2.3 MEAN# 589 CFSM# .95 IN# 12.94
WTR YR 1978 TOTAL 358989.3 MEAN 984 MAX 4870 MIN 3.0 MEAN# 984 CFSM# 1.59 IN# 21.64

* 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 (3.2 km) upstream from discharge station.

PERIOD OF RECORD.--Water years 1947, 1952, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)
OCT												
25...	1045	48	165	7.0	13.5	6	9.1	30	>143	56	38	19
NOV												
08...	1015	2130	148	5.9	18.5	4	5.5	420	320	35	25	11
DEC												
15...	1055	604	102	7.7	6.0	8	12.0	2400	540	35	21	11
JAN												
24...	1045	4570	58	6.8	2.5	20	12.6	2900	2500	19	14	5.8
FEB												
14...	1030	680	83	6.6	1.5	7	13.6	280	240	27	19	8.4
14...	1130	680	--	--	--	--	--	--	--	--	--	--
MAR												
14...	1100	3650	60	6.7	8.5	20	10.9	74	340	18	11	5.5
APR												
11...	1000	618	83	7.1	16.5	9	7.8	45	34	29	13	9.1
MAY												
10...	1000	2530	68	6.2	15.5	10	8.0	--	--	23	6	7.4
JUN												
21...	0945	113	120	6.4	24.5	--	5.5	27	56	40	14	13
JUL												
28...	1000	494	65	5.2	24.0	--	6.2	80	450	22	12	6.9
AUG												
16...	1000	919	110	6.3	24.5	--	6.0	260	2400	28	8	9.3
SEP												
20...	0945	13	110	6.7	28.5	--	7.0	48	52	45	14	15

DATE	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 (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	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 CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT												
25...	2.0	4.4	2.4	21	0	3.4	37	7.7	.0	12	120	95
NOV												
08...	1.9	4.1	3.2	12	0	24	26	9.8	.0	7.7	107	70
DEC												
15...	1.8	3.7	1.8	17	0	.5	15	11	.0	9.4	71	63
JAN												
24...	1.0	2.3	1.8	6	0	1.5	10	4.4	.1	4.2	54	33
FEB												
14...	1.5	3.5	1.5	10	0	4.0	13	8.0	.0	4.8	67	46
14...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
14...	1.1	2.6	1.7	9	0	2.9	10	3.7	.0	3.3	58	33
APR												
11...	1.4	3.4	4.3	19	0	2.4	7.6	9.7	.1	1.2	82	48
MAY												
10...	1.2	3.0	1.8	21	0	21	9.3	6.8	.1	4.1	71	45
JUN												
21...	1.8	3.6	2.0	--	--	--	7.3	10	.1	7.4	100	63
JUL												
28...	1.1	2.5	2.3	--	--	--	11	6.3	.2	.4	74	37
AUG												
16...	1.2	2.5	2.5	--	--	--	6.3	6.6	.0	7.4	90	48
SEP												
20...	1.9	3.7	2.0	--	--	--	7.4	8.3	.1	9.6	90	68

> Actual value is known to be greater than the value shown.

CHOWAN RIVER BASIN

207

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS NO3)	PHOS- PHORUS, TOTAL (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT 25...	.04	--	--	--	.02	--	--	--	--	--	--	--
NOV 08...	.11	--	--	--	.06	--	--	--	--	--	--	--
DEC 15...	.28	--	--	--	.03	2	1	1	1	0	1	30
JAN 24...	.49	.46	.95	4.2	.03	--	--	--	--	--	--	--
FEB 14...	.68	.45	1.1	5.0	.02	--	--	--	--	--	--	--
MAR 14...	.51	.45	.96	4.3	.03	0	0	0	2	2	0	<10
APR 11...	.17	.68	.85	3.8	.05	--	--	1	--	--	0	--
MAY 10...	.62	.71	1.3	5.9	.04	--	--	0	--	--	0	--
JUN 21...	.39	.70	1.1	4.8	.06	1	1	0	4	2	2	<10
JUL 28...	.10	1.0	1.1	4.9	.06	--	--	--	--	--	--	--
AUG 16...	.19	1.2	1.4	6.2	.06	--	--	--	--	--	--	--
SEP 20...	.09	1.0	1.1	4.8	.05	1	--	0	--	--	--	10

DATE	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COBALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB)
OCT 25...	--	--	--	--	--	--	--	--	--	--	--	--
NOV 08...	--	--	--	--	--	--	--	--	--	--	--	--
DEC 15...	29	1	2	0	3	4	2	2	1000	500	19	17
JAN 24...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	<10	0	0	0	0	2	1	1	700	340	0	0
APR 11...	--	2	--	--	0	--	--	4	--	1500	--	--
MAY 10...	--	5	--	--	0	--	--	3	--	550	--	--
JUN 21...	<7	3	0	0	0	3	2	1	2900	1600	50	32
JUL 28...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 20...	8	2	1	1	0	1	0	1	1400	940	--	--

< Actual value is known to be less than the value shown.

CHOWAN RIVER BASIN

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, SUS- PENDE TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN)
OCT 25...	--	--	--	--	--	--	--	--	--	--	--	--
NOV 08...	--	--	--	--	--	--	--	--	--	--	--	--
DEC 15...	2	60	10	50	<.5	.0	<.5	0	0	0	10	0
JAN 24...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	3	20	10	10	<.5	.0	<.5	0	0	0	10	0
APR 11...	13	--	--	80	--	--	<.5	--	--	0	--	--
MAY 10...	9	--	--	20	--	--	<.5	--	--	0	--	--
JUN 21...	18	210	40	170	<.5	.0	<.5	0	0	0	10	0
JUL 28...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 16...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 20...	--	290	250	40	<.5	.0	<.5	0	0	0	10	10

DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	CARBON, ORGANIC TOTAL (MG/L AS C)	ALDRIN, TOTAL ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDE, TOTAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT 25...	--	9.7	--	--	--	--	--	--	--	--
NOV 08...	--	24	--	--	--	--	--	--	--	--
DEC 08...	--	--	ND	ND	ND	ND	ND	--	ND	--
JAN 15...	10	--	--	--	--	--	--	--	--	--
JAN 24...	--	7.4	--	--	--	--	--	--	--	--
FEB 14...	--	13	--	--	--	--	--	--	--	--
MAR 14...	--	--	ND	--	ND	--	ND	--	ND	--
MAR 14...	10	--	--	--	--	--	--	--	--	--
APR 11...	20	--	--	--	--	--	--	--	--	--
MAY 10...	10	--	--	--	--	--	--	--	--	--
MAY 29...	--	--	ND	ND	ND	ND	ND	ND	ND	ND
JUN 21...	10	--	--	--	--	--	--	--	--	--
JUL 28...	--	8.3	--	--	--	--	--	--	--	--
AUG 16...	--	19	ND	--	ND	--	ND	--	ND	--
SEP 20...	0	--	--	--	--	--	--	--	--	--

< Actual value is known to be less than the value shown.
ND Not detected.

CHOWAN RIVER BASIN

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02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- AZINON, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- ELDRIN TOTAL (UG/L)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)	ETHION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)
OCT										
25...	--	--	--	--	--	--	--	--	--	--
NOV										
08...	--	--	--	--	--	--	--	--	--	--
08...	ND	--	ND	ND	ND	ND	ND	ND	ND	ND
DEC										
15...	--	--	--	--	--	--	--	--	--	--
JAN										
24...	--	--	--	--	--	--	--	--	--	--
FEB										
14...	--	--	--	--	--	--	--	--	--	--
14...	ND	--	ND	--	ND	--	ND	--	ND	--
MAR										
14...	--	--	--	--	--	--	--	--	--	--
APR										
11...	--	--	--	--	--	--	--	--	--	--
MAY										
10...	--	--	--	--	--	--	--	--	--	--
29...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUN										
21...	--	--	--	--	--	--	--	--	--	--
JUL										
28...	--	--	--	--	--	--	--	--	--	--
AUG										
16...	ND	--	ND	--	ND	--	ND	--	ND	--
SEP										
20...	--	--	--	--	--	--	--	--	--	--

DATE	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	MALA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG)
OCT										
25...	--	--	--	--	--	--	--	--	--	--
NOV										
08...	--	--	--	--	--	--	--	--	--	--
08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DEC										
15...	--	--	--	--	--	--	--	--	--	--
JAN										
24...	--	--	--	--	--	--	--	--	--	--
FEB										
14...	--	--	--	--	--	--	--	--	--	--
14...	ND	--	ND	--	ND	--	ND	--	ND	--
MAR										
14...	--	--	--	--	--	--	--	--	--	--
APR										
11...	--	--	--	--	--	--	--	--	--	--
MAY										
10...	--	--	--	--	--	--	--	--	--	--
29...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUN										
21...	--	--	--	--	--	--	--	--	--	--
JUL										
28...	--	--	--	--	--	--	--	--	--	--
AUG										
16...	ND	--	ND	--	ND	--	ND	--	ND	--
SEP										
20...	--	--	--	--	--	--	--	--	--	--

ND Not detected.

CHOWAN RIVER BASIN

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL PARA- THION, TOT. IN BOTTOM MATERIAL (UG/KG)	METHYL TRI- THION, TOTAL (UG/L)	METHYL TRI- THION, TOT. IN BOTTOM MATERIAL (UG/KG)	PARA- THION, TOTAL (UG/L)	PARA- THION, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOX- APHENE, TOTAL (UG/L)	TOX- APHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	TOTAL TRI- THION IN BOT- TOM MA- TERIAL (UG/KG)
OCT 25...	--	--	--	--	--	--	--	--	--	--
NOV 08...	--	--	--	--	--	--	--	--	--	--
NOV 08...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DEC 15...	--	--	--	--	--	--	--	--	--	--
JAN 24...	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--
FEB 14...	ND	--	ND	--	ND	--	ND	--	ND	--
MAR 14...	--	--	--	--	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--
MAY 29...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
JUN 21...	--	--	--	--	--	--	--	--	--	--
JUL 28...	--	--	--	--	--	--	--	--	--	--
AUG 16...	ND	--	ND	--	ND	--	ND	--	ND	--
SEP 20...	--	--	--	--	--	--	--	--	--	--

DATE	2,4-D, TOTAL (UG/L)	2,4-D, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	2,4,5-T TOTAL (UG/L)	2,4,5-T TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	SILVEX, TOTAL (UG/L)	SILVEX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PHYTO- PLANK- TON, TOTAL (CELLS PER ML)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 25...	--	--	--	--	--	--	--	4	.52	100
NOV 08...	--	--	--	--	--	--	250	17	98	83
NOV 08...	ND	ND	ND	ND	ND	ND	--	--	--	--
DEC 15...	--	--	--	--	--	--	--	13	21	90
JAN 24...	--	--	--	--	--	--	--	28	345	78
FEB 14...	--	--	--	--	--	--	--	7	--	100
FEB 14...	ND	--	ND	--	ND	--	--	--	--	--
MAR 14...	--	--	--	--	--	--	330	14	138	100
APR 11...	--	--	--	--	--	--	--	12	20	100
MAY 10...	--	--	--	--	--	--	360	11	75	89
MAY 29...	--	--	--	--	--	--	--	--	--	--
JUN 21...	--	--	--	--	--	--	1800	20	6.1	100
JUL 28...	--	--	--	--	--	--	490	21	28	100
AUG 16...	--	--	--	--	--	--	83	11	27	100
SEP 20...	--	--	--	--	--	--	--	12	.42	100

ND Not detected.

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 8,77 1015	MAR 14,78 1100	MAY 10,78 1000	JUN 21,78 0945	JUL 28,78 1000	AUG 16,78 1000				
TOTAL CELLS/ML	250	330	360	1800	490	83				
DIVERSITY: DIVISION	1.9	1.0	0.9	1.1	1.1	0.7				
..CLASS	1.9	1.1	0.9	1.2	1.1	0.7				
..ORDER	2.3	1.8	1.7	1.8	1.5	1.5				
...FAMILY	2.3	2.3	2.2	2.0	2.2	1.9				
....GENUS	2.6	2.7	2.7	2.8	2.4	1.9				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)										
..CHLOROPHYCEAE										
...CHLOROCOCCALES										
....MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	15	1	--	-	--	-
....OOCYSTACEAE										
....ANKISTRODESMUS	13	5	39	12	14	4	15	1	--	-
....CLOSTERIOPSIS	7	3	--	-	--	-	--	-	14#	17
....DICTYOSPHAERIUM	--	-	78#	24	--	-	--	-	--	-
....KIRCHNERIELLA	26	11	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	58#	16	--	-	--	-
....SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	58#	16	--	-	--	-
....CRUCIGENIA	--	-	--	-	--	-	290#	16	--	-
....SCENEDESMUS	--	-	58#	18	87#	24	230	13	--	-
..TETRASPORALES									28#	33
...PALMELLACEAE										
....SPHAEROCYSTIS	--	-	--	-	58#	16	--	-	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	53#	21	87#	26	14	4	--	-	89#	18
..VOLVOCAEEAE									28#	33
....GONIUM	--	-	--	-	--	-	--	-	220#	45
..ZYGNEATALES										
....DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	22	5
....COSMARIUM	--	-	--	-	--	-	500#	28	22	5
....STAUSTRUM	--	-	--	-	--	-	120	7	--	-
CHRYSOPHYTA										
..BACILLARIOPHYCEAE										
...CENTRALES										
....COSCINODISCACEAE										
....CYCLOTELLA	--	-	--	-	--	-	59	3	--	-
..PENNALES										
...FRAGILARIACEAE										
....FRAGILARIA	--	-	--	-	--	-	15	1	--	-
....SYNEDRA	13	5	--	-	--	-	--	-	--	-
...GOMPHONEMATAEEAE										
....GOMPHONEMA	--	-	10	3	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	--	-	--	-	--	-	22	5

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CHOWAN RIVER BASIN

02049500 BLACKWATER RIVER NEAR FRANKLIN, VA--Continued

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

PHYTOPLANKTON

DATE TIME	NOV 8,77 1015	MAR 14,78 1100	MAY 10,78 1000	JUN 21,78 0945	JUL 28,78 1000	AUG 16,78 1000
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
....STAURONEIS	--	-	--	-	22	5
....NITZSCHIAEAE	--	-	--	-	22	5
....NITZSCHIA	--	-	--	-	22	5
..CHRYSTOPHYCEAE	--	-	--	-	22	5
..CHRYSONOMADAEAE	--	-	--	-	22	5
....MALLOMONADAEAE	--	-	--	-	22	5
....MALLOMONAS	--	-	--	-	22	5
....OCHROMONADAEAE	--	-	--	-	22	5
....DINOBRYON	--	-	--	-	22	5
CRYPTOPHYTA (CRYPTOMONADS)						
..CRYPTOPHYCEAE						
..CRYPTOMONIDAEAE						
..CRYPTOCHRYSIDAEAE						
....CHROOMONAS	20	8	--	-	67	14
CYANOPHYTA (BLUE-GREEN ALGAE)						
..CYANOPHYCEAE						
..CHROCCOCCAEAE						
..CHROCCOCCAEAE						
....AGMENELLUM	--	-	29	9	230	13
....ANACYSTIS	92#	37	--	-	290#	16
EUGLENOPHYTA (EUGLENOIDS)						
..EUGLENOPHYCEAE						
..EUGLENALES						
..EUGLENACEAE						
....EUGLENA	26	11	10	3	--	-
....TRACHELOMONAS	--	-	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM; MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

PERIPHYTON

Date	Length of exposure (days)	Biomass (g/m ²)	Chlorophyll a (mg/m ²)	Chlorophyll b (mg/m ²)	Sampling method
		Dry weight	Ash weight		
Apr. 11	42	1.97	0.63	0.31	0.03
June 21	42	7.95	4.02	.08	.00

Polyethylene
strip

02051000 NORTH MEHERRIN RIVER NEAR LUNENBURG, VA

LOCATION.--Lat 36°59'50", long 78°21'00", Lunenburg County, Hydrologic Unit 03010204, on right bank at downstream side of bridge on State Highway 40, 0.5 mi (0.8 km) downstream from Tusekiah Creek, 4.6 mi (7.4 km) upstream from Juniper Creek, and 5.2 mi (8.4 km) northwest of Lunenburg.

DRAINAGE AREA.--55.6 mi² (144.0 km²).

PERIOD OF RECORD.--August 1946 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 (101.71 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to July 5, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period of no gage-height record, Aug. 23 to Sept. 30, which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--32 years, 51.4 ft³/s (1.456 m³/s), 12.55 in/yr (319 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,400 ft³/s (408 m³/s) Oct. 23, 1971, gage height, 28.30 ft (8.626 m), from rating curve extended above 1,700 ft³/s (48 m³/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 (14.6 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,200 ft³/s (62 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1600	2890 81.8	15.99 4.874	Mar. 10	2000	4720 134	20.45 6.233
Nov. 7	---	Unknown	Unknown	Apr. 26	2300	*5500 156	21.64 6.596
Jan. 9	1215	2540 71.9	14.67 4.471	May 4	2200	2690 76.2	15.26 4.651
Jan. 26	0200	2370 67.1	14.03 4.276				

Minimum discharge, 3.3 ft³/s (0.093 m³/s) Oct. 1, 5, 6, 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	20	50	50	54	31	55	62	18	14	49	90
2	7.2	19	40	42	47	32	50	51	18	13	17	35
3	6.1	22	31	35	44	40	42	45	19	15	44	20
4	4.1	26	28	33	45	44	35	811	28	17	138	12
5	3.5	34	190	36	40	45	34	597	20	15	95	9.0
6	3.5	700	151	30	38	50	32	120	23	13	158	8.0
7	3.5	1700	59	51	35	49	32	78	26	12	98	7.4
8	3.5	150	40	119	34	68	30	215	29	11	45	7.0
9	7.6	70	38	999	33	121	29	612	40	12	25	6.6
10	11	50	35	170	32	2400	28	128	24	11	22	8.0
11	6.5	38	30	86	32	2000	29	60	19	12	18	40
12	5.3	34	32	67	33	627	29	56	17	11	16	15
13	5.3	28	27	59	33	256	28	200	19	9.6	15	12
14	114	26	311	299	35	176	26	250	17	9.6	15	9.0
15	87	25	346	335	35	163	25	150	15	10	54	8.0
16	26	24	88	102	33	93	24	90	15	45	36	7.6
17	40	24	59	78	34	72	24	70	15	27	18	7.2
18	21	24	517	590	34	53	40	60	14	15	14	6.9
19	15	21	159	176	34	45	72	50	13	12	11	6.5
20	13	19	84	248	31	38	102	43	13	11	11	6.3
21	11	19	144	173	31	34	48	39	14	9.6	9.3	5.8
22	10	22	97	132	30	31	36	36	20	8.7	8.6	5.4
23	9.6	42	61	84	28	27	33	35	15	8.2	8.1	7.0
24	9.0	38	50	79	29	26	31	35	13	8.3	7.7	60
25	9.0	30	61	450	28	24	56	33	13	91	7.2	25
26	944	51	60	1070	28	259	2850	30	13	22	6.8	12
27	175	34	42	151	26	247	2470	27	283	15	7.0	8.8
28	57	28	36	94	27	97	212	26	37	13	7.6	8.0
29	34	28	39	71	---	79	103	23	21	12	7.0	7.4
30	26	28	32	62	---	70	75	20	17	10	6.8	7.0
31	22	---	53	57	---	60	---	19	---	13	7.0	---
TOTAL	1693.2	3374	2990	6028	963	7357	6680	4071	848	506.0	982.1	467.9
MEAN	54.6	112	96.5	194	34.4	237	223	131	28.3	16.3	31.7	15.6
MAX	944	1700	517	1070	54	2400	2850	811	283	91	158	90
MIN	3.5	19	27	30	26	24	24	19	13	8.2	6.8	5.4
CFSM	.98	2.01	1.74	3.49	.62	4.26	4.01	2.36	.51	.29	.57	.28
IN.	1.13	2.26	2.00	4.03	.64	4.92	4.47	2.72	.57	.34	.66	.31
CAL YR 1977 TOTAL	16713.06			MEAN 45.8	MAX 1700	MIN .56	CFSM .82	IN 11.18				
WTR YR 1978 TOTAL	35960.20			MEAN 98.5	MAX 2850	MIN 3.5	CFSM 1.77	IN 24.06				

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 (15 m) upstream from Gholson Bridge on State Highway 715, 0.6 mi (1.0 km) upstream from Allen Creek, and 3.0 mi (4.8 km) southeast of Lawrenceville.

DRAINAGE AREA.--552 mi² (1,430 km²).

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 (41.623 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 17, 1931, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--50 years, 492 ft³/s (13.93 m³/s), 12.10 in/yr (307 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,000 ft³/s (1,080 m³/s) Aug. 17, 1940, gage height, 42.0 ft (12.80 m), from floodmark, from rating curve extended above 13,000 ft³/s (370 m³/s) on basis of velocity-area studies and records for Nottoway River near Stony Creek; minimum, 4.2 ft³/s (0.12 m³/s) Oct. 7, 8, 1954; minimum gage height, 0.72 ft (0.219 m) Sept. 23, 24, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (130 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 8	1130	7020	199	Mar. 12	1330	10800	306
Jan. 11	0130	6830	193	Apr. 28	Unknown	*18600	527
Jan. 20	0700	5430	154	May 6	1700	6180	175
Jan. 27	2330	9140	259	May 10	0600	4670	132

a From floodmark.

Minimum discharge, 28 ft³/s (0.793 m³/s) Oct. 1, gage height, 1.38 ft (0.421 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	172	269	570	633	377	572	1600	317	222	193	374
2	42	156	313	499	619	396	529	780	287	191	274	357
3	74	154	329	429	596	427	487	656	273	176	324	245
4	58	165	271	372	561	592	458	729	275	181	258	163
5	45	240	288	330	556	687	448	4060	266	190	738	132
6	44	1280	1400	351	560	653	433	5860	277	185	766	118
7	41	5400	1060	469	505	631	414	2460	266	162	905	108
8	38	6670	510	608	488	689	400	1120	337	152	763	103
9	44	2100	380	3130	512	1300	388	3220	482	138	438	99
10	53	568	339	5820	485	3190	378	4050	653	131	334	123
11	54	412	307	4720	455	6730	370	1390	366	150	273	262
12	59	332	251	808	451	10300	366	888	273	135	223	218
13	69	289	252	950	461	7250	363	736	242	124	199	137
14	136	255	284	3030	477	1550	353	1880	242	122	189	116
15	737	233	1700	3230	474	1080	333	2140	228	123	286	106
16	529	220	1910	1590	457	958	319	928	209	250	238	102
17	203	214	697	1050	450	757	313	717	197	687	250	100
18	135	205	1530	3230	442	666	343	620	190	378	192	97
19	137	197	3290	2880	444	606	626	541	186	226	152	94
20	104	187	1170	4080	433	575	1030	492	177	175	138	89
21	88	178	1640	5080	412	549	959	459	178	155	122	86
22	80	179	2030	1950	405	528	563	434	186	137	113	85
23	76	202	939	1180	395	503	451	404	196	129	116	93
24	73	250	643	893	384	484	401	405	187	122	104	159
25	72	272	600	1220	381	477	385	395	169	164	99	162
26	400	264	716	4710	377	965	2430	363	159	554	96	115
27	3860	316	572	7630	367	2450	9800	338	513	340	102	98
28	1590	300	453	7530	359	1760	18000	331	1590	219	112	90
29	417	273	390	1580	---	970	8400	340	432	194	104	85
30	270	254	378	843	---	745	3500	331	275	165	96	79
31	204	---	447	703	---	628	---	316	---	154	127	---
TOTAL	9762	21937	25358	71465	13139	49473	53812	38983	9628	6431	8324	4195
MEAN	315	731	818	2305	469	1596	1794	1258	321	207	269	140
MAX	3860	6670	3290	7630	633	10300	18000	5860	1590	687	905	374
MIN	30	154	251	330	359	377	313	316	159	122	96	79
CFSM	.57	1.32	1.48	4.18	.85	2.89	3.25	2.28	.58	.38	.49	.25
IN.	.66	1.48	1.71	4.82	.89	3.33	3.63	2.63	.65	.43	.56	.28

CAL YR 1977 TOTAL 143997 MEAN 395 MAX 6670 MIN 21 CFSM .72 IN 9.70
WTR YR 1978 TOTAL 312507 MEAN 856 MAX 18000 MIN 30 CFSM 1.55 IN 21.06

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 618, 1.4 mi (2.3 km) southwest of Cochran, and 9.5 mi (15.3 km) upstream from Roses Creek.

DRAINAGE AREA.--30.7 mi² (79.5 km²).

PERIOD OF RECORD.--May 1958 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 215.72 ft (65.751 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--20 years, 30.0 ft³/s (0.850 m³/s), 13.27 in/yr (337 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,030 ft³/s (199 m³/s) Oct. 6, 1972, gage height, 16.65 ft (5.075 m), from rating curve extended above 1,600 ft³/s (45 m³/s) on basis of contracted-opening measurements at gage heights 12.08 ft (3.682 m), 14.57 ft (4.441 m), and 16.65 ft (5.075 m); minimum, 0.10 ft³/s (0.003 m³/s) Oct. 11, 12, 1965, Sept. 23, 1968; minimum gage height, 1.50 ft (0.457 m) Aug. 19, 1965.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft³/s (8.5 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0300	696 19.7	8.36 2.548	Mar. 11	0030	1670 47.3	10.70 3.261
Dec. 18	2030	322 9.12	6.40 1.951	Apr. 27	0500	*3910 111	13.58 4.139
Jan. 9	1900	392 11.1	6.93 2.112	May 5	0800	551 15.6	7.78 2.371
Jan. 20	1600	596 16.9	8.03 2.448	May 9	1530	408 11.6	6.97 2.124
Jan. 26	1430	671 19.0	8.26 2.518				

Minimum discharge, 0.96 ft³/s (0.027 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	11	19	33	43	27	41	67	19	7.7	4.3	34
2	2.8	11	18	29	41	27	38	56	17	7.2	2.4	17
3	2.4	13	15	26	39	34	36	50	20	7.7	2.8	11
4	2.1	14	14	23	38	44	35	115	24	9.2	4.8	9.5
5	2.1	18	28	23	38	36	34	379	17	8.4	4.0	7.9
6	1.7	139	50	25	38	35	33	114	16	7.2	4.1	7.2
7	1.7	348	31	39	37	33	31	69	16	6.8	3.8	6.6
8	1.9	50	24	34	34	46	32	101	18	6.2	2.3	6.4
9	3.3	33	23	255	33	76	31	306	29	5.8	1.6	5.8
10	4.6	27	22	124	33	516	30	137	21	5.6	1.5	10
11	5.2	20	18	52	31	834	30	67	16	5.8	1.4	14
12	5.6	17	17	41	32	231	30	52	14	5.6	1.2	8.4
13	8.7	14	17	84	33	118	29	52	15	5.4	1.2	7.2
14	35	13	26	230	38	86	28	96	14	5.0	5.7	7.0
15	44	12	86	130	34	76	26	56	13	5.2	2.2	6.8
16	12	11	42	66	31	60	26	45	12	30	1.1	6.8
17	7.2	11	33	74	32	54	25	44	12	29	1.4	6.6
18	5.6	10	202	203	31	48	41	39	12	12	1.2	6.0
19	4.6	10	136	89	31	45	63	35	11	8.7	1.1	5.8
20	3.8	9.7	55	449	29	43	72	32	10	7.4	9.7	6.0
21	3.8	9.5	155	231	28	39	43	30	10	6.6	9.0	5.8
22	4.0	10	97	92	28	37	35	27	11	6.0	8.4	6.2
23	4.6	15	50	65	26	36	31	26	11	5.6	1.9	7.9
24	5.2	16	41	56	27	37	29	25	10	5.4	1.7	7.9
25	5.6	13	50	132	25	40	31	24	9.5	14	1.2	7.7
26	83	16	44	503	25	136	552	22	9.5	137	1.0	6.8
27	100	14	33	198	23	185	2060	21	23	29	1.4	6.0
28	28	13	31	85	24	92	287	21	15	17	1.4	5.6
29	17	17	28	61	---	62	124	23	10	14	1.0	5.2
30	13	15	27	52	---	52	84	21	8.4	11	8.6	4.8
31	11	---	38	47	---	44	---	20	---	13	1.1	---
TOTAL	430.6	930.2	1470	3551	902	3229	3987	2172	443.4	444.5	591.3	253.9
MEAN	13.9	31.0	47.4	115	32.2	104	133	70.1	14.8	14.3	19.3	8.46
MAX	100	348	202	503	43	834	2060	379	29	137	5.7	34
MIN	1.1	9.5	14	23	23	27	25	20	8.4	5.0	1.0	4.8
CFSM	.45	1.01	1.54	3.75	1.05	3.39	4.33	2.28	.48	.47	.63	.28
IN.	.52	1.13	1.78	4.30	1.09	3.91	4.83	2.63	.54	.54	.72	.31

CAL YR 1977 TOTAL 7545.87 MEAN 20.7 MAX 348 MIN .50 CFSM .67 IN 9.14
WTR YR 1978 TOTAL 18410.90 MEAN 50.4 MAX 2060 MIN 1.1 CFSM 1.64 IN 22.31

CHOWAN RIVER BASIN

02052000 MEHERRIN RIVER AT EMPORIA, VA

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 (1.9 km) upstream from Falling Run.
DRAINAGE AREA.--747 mi² (1,935 km²).

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 (20.473 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records good. Prior to November 1965, low and medium flow regulated by powerplant 0.8 mi (1.3 km) above station.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--27 years, 681 ft³/s (19.29 m³/s), 12.38 in/yr (314 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,100 ft³/s (598 m³/s) Oct. 8, 1972, gage height, 27.38 ft (8.345 m); minimum, 5.0 ft³/s (0.14 m³/s) Nov. 11, 1954, gage height, 1.00 ft (0.305 m); minimum daily, 8.0 ft³/s (0.23 m³/s) Nov. 8-10, 1954.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 31.5 ft (9.60 m), from floodmarks, discharge, about 40,000 ft³/s (1,100 m³/s), from rating curve extended above 18,000 ft³/s (510 m³/s) on basis of record for station near Lawrenceville.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 6,000 ft³/s (170 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 9	0300	7400 210	19.71 6.008	Mar. 13	0800	11500 326	22.75 6.934
Jan. 11	1600	7100 201	19.39 5.910	Apr. 29	1000	*19400 549	26.62 8.114
Jan. 21	1200	6900 195	19.22 5.858	May 7	0500	6800 193	19.10 5.822
Jan. 28	1900	9110 258	21.30 6.492				

Minimum discharge, 46 ft³/s (1.30 m³/s) Oct. 1, 2, gage height, 1.72 ft (0.524 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	260	420	788	1000	494	956	4450	444	290	301	398
2	49	225	450	812	932	527	884	1600	400	244	546	598
3	54	230	494	670	908	604	812	1210	400	228	585	390
4	76	250	440	582	812	764	740	1130	422	228	650	244
5	73	380	430	494	764	956	716	3500	400	228	1400	190
6	62	1420	1020	494	788	956	692	6160	380	236	1560	168
7	54	6520	1820	604	740	908	670	5770	433	212	1100	155
8	51	7100	946	812	648	980	626	2480	400	190	1340	144
9	51	5900	626	2360	692	1680	604	3050	754	179	754	139
10	54	2200	538	5340	692	3470	582	5480	939	170	598	142
11	64	740	472	6700	648	7200	582	3710	676	197	469	197
12	66	550	400	3020	626	9110	560	1770	422	197	360	320
13	84	450	370	1440	648	10800	560	1340	350	169	300	204
14	166	390	420	3520	692	5750	538	1810	330	159	290	161
15	706	350	1020	4370	692	2030	505	3120	320	160	380	144
16	1320	360	2760	3210	648	1570	483	1840	300	393	533	136
17	406	350	1360	1730	648	1280	461	1290	270	912	340	133
18	214	330	1230	2800	648	1080	505	1100	261	728	300	129
19	179	311	3460	4510	626	980	860	939	252	350	220	125
20	160	293	2720	5410	604	884	1410	832	244	244	190	115
21	128	275	1910	6800	582	836	1590	754	236	204	170	115
22	114	275	3040	4950	560	812	1030	702	280	183	159	118
23	107	284	1930	2270	549	764	740	650	370	169	151	127
24	106	340	1160	1490	527	716	626	624	280	190	148	129
25	103	390	980	1440	505	692	582	702	244	411	142	197
26	702	410	1060	3940	505	1460	2150	572	228	476	139	160
27	3190	400	980	6720	483	3700	9230	494	295	754	136	133
28	3650	450	764	8750	472	3670	15300	482	1820	433	143	118
29	950	440	648	5940	---	1990	19200	494	1010	320	146	110
30	480	420	582	1810	---	1360	13900	494	411	236	134	103
31	320	---	692	1180	---	1080	---	444	---	212	136	---
TOTAL	13785	32293	35142	94956	18639	69103	78094	58993	13571	9302	13820	5542
MEAN	445	1076	1134	3063	666	2229	2603	1903	452	300	446	185
MAX	3650	7100	3460	8750	1000	10800	19200	6160	1820	912	1560	598
MIN	46	225	370	494	472	494	461	444	228	159	134	103
CFSM	.60	1.44	1.52	4.10	.89	2.98	3.49	2.55	.61	.40	.60	.25
IN.	.69	1.61	1.75	4.73	.93	3.44	3.89	2.94	.68	.46	.69	.28

CAL YR 1977 TOTAL 211861 MEAN 580 MAX 7100 MIN 25 CFSM .78 IN 10.55
WTR YR 1978 TOTAL 443240 MEAN 1214 MAX 19200 MIN 46 CFSM 1.63 IN 22.07

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 current year.

WATER TEMPERATURES: April 1968 to September 1971, October 1972 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 690 micromhos Mar. 6, 1975; minimum daily, 30 micromhos Oct. 6, 1972.

WATER TEMPERATURES: Maximum daily, 35.0°C July 14, 21, 22, 26, 1969; minimum daily, 1.0°C Nov. 29, Dec. 3, 1970.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 151 micromhos Dec. 20; minimum daily, 35 micromhos Mar. 13.

WATER TEMPERATURES: Maximum daily, 30.0°C Aug. 17; minimum daily, 2.0°C Feb. 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 15...	1810	836	80	30	22	1	5.1	2.2	6.3	2.3	25	6.2
NOV 15...	1750	370	68	31	22	1	5.2	2.1	8.6	2.5	25	5.0
DEC 15...	1700	1160	93	40	30	12	8.4	2.1	5.0	1.8	21	13
JAN 15...	2000	485	50	350	14	5	3.3	1.5	3.1	1.8	11	9.2
FEB 15...	1752	677	64	20	18	1	4.2	1.9	5.8	1.5	21	5.4
MAR 15...	1710	1770	52	50	14	1	3.2	1.5	3.3	1.6	16	8.0
APR 15...	2010	494	76	50	22	1	5.0	2.2	5.8	1.8	25	4.8
MAY 15...	1815	3180	55	110	16	1	3.8	1.6	3.7	1.5	19	3.9
JUN 15...	1830	312	72	20	21	0	4.9	2.2	5.7	1.5	34	2.0
JUL 15...	1715	160	63	300	19	1	4.6	1.9	4.1	1.9	22	4.6
AUG 15...	1855	502	77	80	22	0	5.1	2.2	5.3	1.7	33	2.9
SEP 15...	1955	142	95	10	24	0	5.6	2.4	8.4	2.1	32	2.4

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 CONSTITUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 15...	5.9	.1	17	69	59	.15	.70	.00	.15	.01	.03	480
NOV 15...	8.3	.1	15	78	60	.24	1.1	.00	.24	.01	.03	110
DEC 15...	6.0	.1	16	73	64	.16	.70	.00	.16	.00	.00	250
JAN 15...	3.5	.0	9.8	62	39	.27	1.2	.01	.28	.01	.03	200
FEB 15...	3.0	.0	18	54	51	.17	.80	.01	.18	.00	.00	200
MAR 15...	2.6	.0	10	55	39	.17	.80	.01	.18	.00	.00	140
APR 15...	5.0	.1	15	55	53	.07	.30	.01	.08	.00	.00	130
MAY 15...	3.0	.1	13	62	41	.09	.40	.01	.10	.00	.00	260
JUN 15...	4.4	.1	18	62	56	.00	.00	.00	.00	.00	.00	240
JUL 15...	3.5	.1	12	72	45	.32	1.4	.01	.33	.01	.03	340
AUG 15...	4.6	.1	16	67	56	.26	1.2	.00	.26	.01	.03	520
SEP 15...	8.2	.1	16	63	62	.20	.89	.00	.20	.02	.06	20

CHOWAN RIVER BASIN

02052000 MEHERRIN RIVER AT EMPORIA, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	55	82	66	52	70	90	50	72	60	77	88
2	75	58	83	65	55	72	61	54	73	60	75	82
3	70	60	82	66	57	73	62	57	70	65	74	81
4	83	64	81	68	55	68	63	60	70	65	48	76
5	85	68	81	69	58	---	65	52	70	65	48	72
6	88	60	80	69	58	68	65	41	75	63	68	69
7	93	52	76	69	60	70	65	50	73	70	67	77
8	90	45	77	69	60	75	65	48	75	68	67	81
9	85	47	76	63	60	---	70	51	75	70	67	89
10	80	50	77	60	60	63	69	50	73	75	67	89
11	90	53	73	46	62	52	70	52	75	73	68	87
12	88	55	70	48	62	38	90	51	---	73	68	92
13	58	58	72	48	62	35	68	58	---	75	68	92
14	88	70	---	49	64	44	74	50	---	73	71	95
15	80	68	93	50	64	52	76	55	72	63	77	---
16	74	63	149	51	66	51	75	60	---	80	77	---
17	68	65	150	51	66	68	74	60	70	73	77	---
18	70	70	149	52	66	55	75	60	---	75	76	---
19	72	67	150	51	65	56	74	57	---	75	71	---
20	75	66	151	49	67	58	72	57	---	73	73	98
21	78	65	140	47	67	60	---	60	80	75	89	98
22	68	72	99	46	67	61	69	67	78	75	89	112
23	70	75	81	44	68	62	67	67	78	73	89	89
24	70	72	78	48	68	65	69	70	78	73	89	89
25	70	80	75	46	67	53	71	71	75	72	92	88
26	68	80	74	44	66	89	66	70	77	80	90	93
27	63	80	71	40	65	67	41	71	70	79	91	95
28	48	80	70	38	68	52	36	71	---	79	93	99
29	50	80	69	40	---	69	39	74	---	73	91	99
30	53	80	67	42	---	54	40	77	---	74	92	100
31	55	---	67	45	---	55	---	77	---	73	92	---
MEAN	74	65	91	53	63	61	66	60	74	72	77	89

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.0	16.0	15.0	16.5	6.0	6.0	20.0	17.0	25.0	25.0	26.0	25.0
2	22.0	16.5	17.0	17.0	5.0	7.5	20.0	15.5	23.5	25.0	25.5	24.5
3	21.0	17.5	20.0	16.5	7.0	9.0	15.0	17.0	24.0	25.5	25.0	25.0
4	20.0	18.0	18.0	16.5	2.0	9.0	20.0	15.0	23.0	25.0	25.0	26.5
5	20.0	19.0	15.0	16.0	10.0	8.5	20.0	15.0	23.0	24.5	24.5	25.0
6	19.0	20.5	12.0	15.0	12.0	9.0	20.0	15.5	23.0	25.5	25.0	25.0
7	20.0	22.0	14.5	15.5	14.0	10.0	22.0	17.0	24.5	25.0	26.5	26.0
8	19.0	21.0	16.0	16.0	10.0	7.0	21.0	16.0	26.0	27.5	26.0	27.0
9	19.5	20.5	15.5	13.0	10.5	8.5	20.5	21.0	25.5	27.5	26.0	27.0
10	20.0	18.0	13.0	14.5	11.0	10.0	18.0	17.5	25.0	27.0	27.0	27.0
11	19.0	15.5	8.5	15.0	13.0	11.0	21.0	20.0	25.5	23.5	25.5	27.0
12	20.0	14.0	5.0	13.5	9.5	15.0	20.0	20.0	---	24.0	26.5	---
13	17.0	11.0	10.0	11.0	10.0	13.0	18.0	20.0	---	25.5	26.0	23.0
14	17.0	12.5	---	10.5	9.5	16.5	19.0	16.0	---	25.0	25.5	23.5
15	15.0	14.0	10.0	11.0	9.0	17.0	18.0	20.0	25.0	25.0	26.0	23.5
16	14.5	16.0	10.0	9.0	7.0	14.0	20.0	19.0	---	24.0	25.5	---
17	12.0	15.0	12.5	11.0	8.5	15.0	18.0	19.0	24.0	24.5	30.0	---
18	13.0	12.0	13.0	8.0	10.5	11.0	18.5	19.5	---	24.0	26.0	---
19	14.0	13.0	14.5	8.0	12.0	13.5	20.0	20.0	---	25.0	27.0	---
20	16.0	13.5	15.0	13.0	15.0	17.0	20.0	25.0	---	25.5	25.5	24.5
21	14.0	14.0	13.5	11.0	10.0	19.0	---	25.0	26.0	28.5	27.0	26.5
22	14.0	17.5	11.0	11.5	9.0	18.0	20.0	25.0	25.0	28.5	26.5	27.0
23	15.0	13.0	12.0	12.0	8.5	16.0	14.5	24.0	25.0	28.0	27.0	22.0
24	15.0	14.0	10.5	9.0	7.0	11.0	19.0	24.0	25.0	28.0	27.5	27.0
25	17.5	14.0	8.5	9.5	9.0	11.5	15.0	23.5	25.5	27.5	27.5	24.5
26	20.0	8.0	6.0	10.0	10.5	18.0	14.0	23.5	28.5	27.0	27.0	24.5
27	20.0	9.0	7.0	9.5	12.0	18.0	12.0	25.0	26.0	26.5	27.0	24.0
28	18.0	13.0	8.5	8.0	10.0	17.5	12.0	21.5	---	27.0	27.0	25.0
29	19.0	13.5	10.0	12.0	---	18.0	15.0	23.5	---	26.5	27.0	25.5
30	18.5	14.0	7.0	11.0	---	17.0	13.5	24.0	---	27.0	28.5	25.5
31	18.0	---	16.0	15.0	---	20.0	---	24.0	---	26.5	29.5	---
MEAN	18.0	15.0	12.0	12.5	9.5	13.5	18.0	20.5	25.0	26.0	26.5	25.0

02052500 FONTAINE CREEK NEAR BRINK, VA

LOCATION.--Lat 36°36'55", long 77°42'00", Greenville County, Hydrologic Unit 03010204, on left bank 30 ft (9 m) upstream from bridge on State Highway 603, 0.3 mi (0.5 km) downstream from Quarrel Creek, 3.6 mi (5.8 km) west of Brink, and 10 mi (16 km) southwest of Emporia.

DRAINAGE AREA.--65.2 mi² (168.9 km²).

PERIOD OF RECORD.--October 1953 to current year.

REVISED RECORDS.--WSP 2104: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 152.59 ft (46.509 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--25 years, 69.3 ft³/s (1.963 m³/s), 14.43 in/yr (367 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s (453 m³/s) Oct. 6, 1972, gage height, 24.14 ft (7.358 m), from floodmark, from rating curve extended above 3,000 ft³/s (85 m³/s); no flow at times some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 850 ft³/s (24 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0400	2960	83.8	16.54	5.041		
Jan. 14	1600	890	25.2	10.64	3.243		
Jan. 20	2030	1580	44.7	13.53	4.124		
Mar. 11	0500	1660	47.0	13.77	4.197		
Mar. 27	0930	930	26.3	10.79	3.289		
Apr. 27	0500	*4760	135	18.75	5.715		
Aug. 5	0100	1220	34.6	12.10	3.688		

Minimum discharge, 0.13 ft³/s (0.004 m³/s) Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	22	54	80	83	50	111	120	21	10	12	34
2	.53	20	54	66	82	59	96	92	17	8.0	214	27
3	.47	21	43	54	79	68	78	73	15	7.0	226	16
4	.41	24	36	45	77	116	74	95	19	7.3	244	9.5
5	.36	111	42	42	75	104	74	464	18	6.8	703	6.8
6	.32	714	70	47	71	91	68	400	15	5.8	436	5.2
7	.21	2170	65	65	70	83	65	202	14	4.8	292	4.1
8	.17	675	44	64	64	134	61	298	15	3.7	114	3.3
9	.26	202	41	493	63	298	57	424	63	3.2	63	3.0
10	.32	88	44	484	63	833	54	352	63	3.3	48	2.6
11	.36	60	38	220	62	1460	53	232	28	10	43	5.2
12	.60	46	34	99	59	653	49	123	18	18	32	7.5
13	1.0	40	34	243	59	292	47	92	14	9.8	27	5.6
14	15	35	42	830	68	178	46	331	12	6.3	31	3.9
15	56	33	124	528	65	148	42	250	9.5	5.0	20	3.3
16	36	31	95	274	57	116	38	131	8.5	112	20	3.2
17	15	31	63	194	66	106	38	87	8.0	162	16	2.6
18	7.9	30	103	388	66	86	50	68	7.3	44	13	2.5
19	5.3	26	202	331	62	74	101	56	6.6	21	9.8	2.1
20	3.7	23	142	1220	55	69	322	47	5.6	12	8.2	1.5
21	2.8	23	270	1110	52	66	158	42	6.1	9.2	6.8	1.3
22	2.3	23	328	416	51	64	71	45	36	7.3	5.4	1.2
23	2.2	26	196	204	48	59	53	43	26	5.8	4.3	2.6
24	1.6	31	101	146	51	55	44	35	16	18	3.9	2.5
25	1.8	30	105	208	50	53	42	31	11	144	3.5	2.3
26	200	41	107	515	46	375	962	27	10	60	3.2	2.3
27	326	38	73	496	42	870	3600	24	33	27	3.0	1.8
28	142	34	59	274	42	504	1080	24	71	57	2.8	1.5
29	60	50	51	148	---	242	344	25	32	60	2.8	1.3
30	39	48	51	109	---	172	172	25	16	26	2.5	1.0
31	27	---	90	96	---	124	---	22	---	17	2.1	---
TOTAL	949.21	4746	2801	9489	1728	7602	8050	4280	634.6	891.3	2611.3	166.7
MEAN	30.6	158	90.4	306	61.7	245	268	138	21.2	28.8	86.4	5.56
MAX	326	2170	328	1220	83	1460	3600	464	71	162	703	34
MIN	.17	20	34	42	42	50	38	22	5.6	3.2	2.1	1.0
CFSM	.47	2.42	1.39	4.69	.95	3.76	4.11	2.12	.33	.44	1.33	.09
IN.	.54	2.71	1.60	5.41	.99	4.34	4.59	2.44	.36	.51	1.53	.10
CAL YR 1977	TOTAL	22708.94	MEAN	62.2	MAX	2170	MIN	.00	CFSM	.95	IN	12.96
WTR YR 1978	TOTAL	44015.11	MEAN	121	MAX	3600	MIN	.17	CFSM	1.86	IN	25.11

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 (29 m) downstream from bridge on State Highway 637, 0.3 mi (0.5 km) downstream from Georges Run, 1.3 mi (2.1 km) downstream from Elliott Creek, and 2.0 mi (3.2 km) southwest of Shawsville.

DRAINAGE AREA.--110 mi² (285 km²).

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 (415.098 m) National Geodetic Vertical Datum of 1929.

Aug. 26, 1974, to July 24, 1975, nonrecording gage at site 95 ft (29 m) upstream at same datum.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--18 years, 108 ft³/s (3.059 m³/s), 13.33 in/yr (339 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,200 ft³/s (402 m³/s) June 21, 1972, gage height, 11.12 ft

(3.389 m), from high-water mark in well, from rating curve extended above 3,700 ft³/s (100 m³/s) on basis of

slope-area measurement of peak flow; minimum, 7.5 ft³/s (0.21 m³/s) July 27-29, 1966, gage height, 0.37 ft

(0.113 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 30, 1959, reached a stage of 9.89 ft (3.014 m), from information

by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 800 ft³/s (23 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	0930	970 27.5	3.22 0.981	Mar. 14	1900	1250 35.4	3.64 1.109
Nov. 4	0700	1030 29.2	3.32 1.012	Mar. 26	1900	1150 32.6	3.48 1.061
Nov. 5	2000	1870 53.0	4.56 1.390	Apr. 26	1400	*4860 138	7.72 2.353
Nov. 6	1600	2060 58.3	4.78 1.457	Apr. 27	1830	2540 71.9	5.40 1.646
Nov. 7	1730	4720 134	7.58 2.310	May 4	2130	1060 30.0	3.33 1.015
Jan. 26	0200	4580 130	7.47 2.277	May 9	0130	1120 31.7	3.45 1.052
Mar. 10	1600	1720 48.7	4.37 1.332				

Minimum daily discharge, 20 ft³/s (0.57 m³/s) Sept. 21, 22, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	61	191	98	172	103	194	510	135	55	59	46
2	187	63	186	94	152	96	174	399	121	98	48	36
3	54	166	172	87	142	94	156	311	130	283	44	33
4	40	794	159	83	130	93	149	624	126	114	53	32
5	35	1210	271	86	128	90	144	828	114	89	68	29
6	32	1560	336	92	119	96	135	515	108	81	50	28
7	31	2360	245	96	119	112	130	381	105	74	83	26
8	33	1160	194	168	116	117	124	745	137	70	66	25
9	61	505	177	550	109	142	119	940	135	64	64	23
10	54	328	147	282	108	1100	117	585	108	59	51	23
11	42	238	135	200	110	772	114	418	101	55	50	23
12	37	188	133	186	110	646	117	336	96	53	61	25
13	36	161	128	164	105	652	105	368	96	53	55	29
14	79	147	135	152	103	899	98	341	89	66	46	26
15	79	135	140	135	101	828	96	290	85	78	44	26
16	68	128	121	130	98	555	94	275	85	87	41	23
17	68	197	119	135	98	376	94	238	85	74	39	22
18	54	174	135	156	103	282	105	217	81	61	36	21
19	49	154	130	135	103	234	110	197	85	55	36	23
20	44	140	128	137	98	210	117	186	96	53	33	21
21	42	133	126	124	96	201	101	177	114	50	33	20
22	38	137	119	108	92	191	96	164	89	46	33	20
23	38	166	114	112	92	174	92	159	85	44	32	21
24	37	159	112	126	96	159	89	159	74	50	32	32
25	37	159	117	392	110	169	108	152	72	78	32	28
26	458	183	101	2260	130	852	2600	142	70	53	48	23
27	246	161	98	646	108	772	2160	135	68	70	39	22
28	158	159	93	376	108	466	1440	133	64	78	51	21
29	112	152	90	252	---	336	970	128	59	53	38	21
30	86	147	101	210	---	267	690	154	57	48	38	20
31	70	---	101	183	---	224	---	152	---	50	43	---
TOTAL	2445	11425	4554	7955	3156	11308	10838	10359	2870	2242	1446	768
MEAN	78.9	381	147	257	113	365	361	334	95.7	72.3	46.6	25.6
MAX	458	2360	336	2260	172	1100	2600	940	137	283	83	46
MIN	31	61	90	83	92	90	89	128	57	44	32	20
CFSM	.72	3.46	1.34	2.34	1.03	3.32	3.28	3.04	.87	.66	.42	.23
IN.	.83	3.86	1.54	2.69	1.07	3.82	3.67	3.50	.97	.76	.49	.26

CAL YR 1977 TOTAL 43814 MEAN 120 MAX 2520 MIN 17 CFSM 1.09 IN 14.82
WTR YR 1978 TOTAL 69366 MEAN 190 MAX 2600 MIN 20 CFSM 1.73 IN 23.46

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 (37 m) upstream from bridge on State Highway 603 at Lafayette, 0.4 mi (0.6 km) downstream from confluence of North and South Forks, and 1.1 mi (1.8 km) upstream from Cove Hollow.

DRAINAGE AREA.--257 mi² (666 km²).

WATER-DISCHARGE RECORDS

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 (357.978 m) National Geodetic Vertical Datum of 1929. Prior to July 30, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good. Occasional diurnal fluctuation caused by meat-processing plant above station.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--35 years, 242 ft³/s (6.853 m³/s), 12.79 in/yr (325 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s (694 m³/s) June 21, 1972, gage height, 15.60 ft (4.755 m), from floodmarks, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 10 ft³/s (0.28 m³/s) Jan. 14, 15, 18, 19, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 12.2 ft (3.72 m), from information by local residents, discharge, 19,000 ft³/s (538 m³/s), from rating curve extended above 12,000 ft³/s (340 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s (99 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 6	1630	3840 109	5.87 1.789	Mar. 10	1730	4820 137	6.60 2.012
Nov. 7	1730	9190 260	9.36 2.853	Mar. 14	2200	3580 101	5.72 1.743
Jan. 26	0730	8680 246	9.10 2.774	Apr. 26	1900	*14500 411	12.12 3.694

Minimum daily discharge, 51 ft³/s (1.44 m³/s) Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	128	619	170	337	236	445	1000	238	101	99	91
2	296	125	514	158	320	219	395	785	217	180	88	74
3	121	201	410	125	285	224	356	642	230	517	83	72
4	84	1150	346	120	266	211	327	1200	234	217	91	68
5	74	1880	465	130	253	186	314	1770	209	164	107	66
6	68	2880	614	146	232	211	296	1090	196	145	94	64
7	66	5290	455	150	194	257	283	812	196	134	127	64
8	68	2810	365	269	185	274	266	1480	226	124	117	62
9	118	1030	332	1790	186	337	253	1970	243	117	107	60
10	121	641	274	688	190	3200	245	1240	196	111	101	60
11	93	450	245	440	195	2300	240	895	175	107	91	62
12	84	351	228	350	198	1830	240	702	167	104	101	68
13	76	296	232	330	203	1830	219	978	179	101	94	68
14	114	257	236	314	198	2500	203	1120	156	114	86	66
15	150	232	270	274	194	2380	198	812	145	127	81	66
16	118	215	232	232	194	1380	194	686	145	178	78	64
17	125	346	228	253	190	910	194	570	145	130	74	62
18	105	323	253	300	203	680	215	494	134	111	70	60
19	96	278	253	261	207	558	224	433	148	104	68	64
20	87	249	249	266	203	492	261	390	188	99	68	60
21	81	228	245	240	198	450	236	355	200	94	66	58
22	79	310	228	215	190	425	219	327	171	91	66	58
23	76	740	211	190	166	380	207	317	145	88	64	66
24	74	482	207	198	190	351	198	317	130	88	64	70
25	71	400	211	909	232	370	211	294	124	130	62	64
26	713	435	190	5520	318	2540	8260	269	120	99	70	60
27	425	360	170	1720	253	2080	6850	251	120	96	74	55
28	283	337	162	910	253	1090	3290	243	111	130	124	55
29	215	342	150	608	---	768	1930	234	107	94	83	51
30	174	337	170	476	---	602	1330	260	104	86	74	51
31	143	---	170	400	---	504	---	273	---	83	78	---
TOTAL	4454	23103	8934	18152	6233	29775	28099	22209	5099	4064	2650	1909
MEAN	144	770	288	586	223	960	937	716	170	131	85.5	63.6
MAX	713	5290	619	5520	337	3200	8260	1970	243	517	127	91
MIN	56	125	150	120	166	186	194	234	104	83	62	51
CFSM	.56	3.00	1.12	2.28	.87	3.74	3.65	2.79	.66	.51	.33	.25
IN.	.64	3.34	1.29	2.63	.90	4.31	4.07	3.21	.74	.59	.38	.28

CAL YR 1977	TOTAL	86715	MEAN 238	MAX 5920	MIN 34	CFSM .93	IN 12.55
WTR YR 1978	TOTAL	154681	MEAN 424	MAX 8260	MIN 51	CFSM 1.65	IN 22.39

ROANOKE RIVER BASIN

02054500 ROANOKE RIVER AT LAFAYETTE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951-52, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1950 to September 1951.

WATER TEMPERATURES: October 1950 to September 1951.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO- CHEM- ICAL (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	BICAR- BONATE (MG/L AS HCO3)
OCT												
11...	1300	93	330	8.3	12.0	1	7.9	--	1.7	--	1225	--
25...	1300	71	280	8.3	11.5	1	10.7	--	1.7	190	514	--
NOV												
15...	1245	232	250	7.8	6.5	1	12.0	--	3.4	48	729	--
29...	1300	337	230	8.2	6.0	2	11.6	--	3.7	470	K22600	--
DEC												
13...	1310	228	245	7.8	3.0	1	13.1	5	5.7	K208	1960	120
JAN												
03...	1230	114	275	8.1	.5	1	12.8	--	6.2	K5	1125	--
24...	1300	207	280	7.4	1.0	2	12.8	--	5.0	80	2500	--
FEB												
07...	1300	190	175	7.1	.0	1	13.1	4	3.4	K10	3600	--
21...	1230	194	290	7.1	2.5	1	12.3	3	2.2	7	5900	--
MAR												
07...	1300	253	220	7.8	4.0	10	13.8	1	.8	K3	8300	--
28...	1230	1090	170	6.9	8.0	10	11.4	2	.6	530	348	89
APR												
11...	1230	236	270	8.3	17.0	1	10.6	7	1.2	208	3200	--
25...	1300	198	270	8.3	12.0	1	11.1	7	1.5	340	2400	--
MAY												
09...	1230	2070	130	7.7	12.5	25	9.6	15	1.1	1700	3800	--
23...	1300	312	220	8.6	17.0	3	8.2	--	1.3	133	380	150
JUN												
06...	1300	221	301	8.8	19.0	1	9.5	8	.8	150	97	160
20...	1245	171	340	8.3	21.0	4	9.6	9	.7	4400	800	--
JUL												
11...	1230	107	295	8.1	22.0	1	8.5	7	.2	800	1700	--
25...	1230	130	255	7.9	22.0	10	8.3	25	.2	K7500	4600	--
AUG												
08...	1300	114	310	8.4	23.0	8	9.3	34	1.2	K16600	570	--
28...	1245	107	340	8.4	23.0	15	8.3	15	.6	4100	4400	--
SEP												
12...	1230	68	406	8.6	21.0	2	8.5	7	.5	440	130	220

K Results based on colony count outside the acceptable range (non-ideal colony count).

ROANOKE RIVER BASIN

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02054500 ROANOKE RIVER AT LAFAYETTE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (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)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO- PHYLL A PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO- PHYLL B PHYTO- PLANK- TON, UNCORR. (UG/L)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)
OCT												
11...	--	--	193	.23	.01	.17	.03	6.8	1.73	1.07	6	1.5
25...	--	--	216	.08	.01	.22	.02	7.2	.460	.000	4	.77
NOV												
15...	--	--	152	.86	.00	.12	.01	19	29.0	30.3	3	1.9
29...	--	--	127	.60	.01	.34	.02	9.1	1.35	1.08	3	2.7
DEC												
13...	15	4.2	139	.72	.00	.13	.01	19	.000	.000	3	1.8
JAN												
03...	--	--	138	.56	.01	.23	.02	10	.000	.000	1	.31
24...	--	--	143	.70	.01	.26	.01	8.3	.707	.314	5	2.8
FEB												
07...	--	--	168	.94	.00	.15	.02	3.6	.388	.000	8	4.1
21...	--	--	163	.80	.05	.25	.03	1.7	.000	.000	2	1.0
MAR												
07...	--	--	154	.59	.00	.10	.02	5.5	.000	.000	8	5.5
28...	12	3.1	94	.57	.01	.00	.03	3.6	--	--	45	132
APR												
11...	--	--	163	.24	.00	.15	.01	3.6	1.16	.000	6	3.8
25...	--	--	160	.23	.00	.10	.02	7.2	--	--	7	3.7
MAY												
09...	--	--	102	.41	.02	.38	.08	7.8	--	--	103	576
23...	--	--	172	.30	.00	.10	.00	7.9	--	--	5	4.2
JUN												
06...	18	4.9	166	.24	.00	.20	.01	4.2	--	--	16	9.5
20...	--	--	191	.48	.03	.28	.02	4.3	--	--	16	7.4
JUL												
11...	--	--	193	.33	.04	.25	.02	4.0	--	--	12	3.5
25...	--	--	146	.28	.01	.37	.05	6.7	--	--	35	12
AUG												
08...	--	--	177	.34	.04	.44	.05	2.4	--	--	27	8.3
28...	--	--	213	.49	.05	.36	.06	3.2	--	--	48	14
SEP												
12...	29	4.8	238	.38	.01	.08	.02	1.9	--	--	11	2.0

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 (15 m) downstream from Walnut Street Bridge, 3.2 mi (5.1 km) upstream from Tinker Creek, and at mile 360.6 (580.2 km).

DRAINAGE AREA.--395 mi² (1,023 km²).

WATER-DISCHARGE RECORDS

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, and 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: 1928(M), 1940(M). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 906.84 ft (276.405 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to June 7, 1937, nonrecording gage on downstream side of highway bridge 50 ft (15 m) upstream at same datum.

REMARKS.--Records good. Prior to 1949, diurnal fluctuation at low flow caused by powerplants above station. Appalachian Power Co. gage-height telemeter at station.

AVERAGE DISCHARGE.--79 years, 373 ft³/s (10.56 m³/s), 12.82 in/yr (326 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,300 ft³/s (716 m³/s) June 21, 1972, gage height, 19.61 ft (5.977 m), from floodmarks; practically no flow Dec. 23, 1909, Dec. 19, 1963, when flow was retarded by freezing, gage height, 0.0 ft (0.00 m); minimum daily discharge, 27 ft³/s (0.76 m³/s) Feb. 20, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (71 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	2130	12200 346	11.78 3.591	Apr. 27	0115	*24100 683	18.95 5.776
Jan. 26	1100	10800 306	10.86 3.310	May 5	0300	3290 93.2	5.22 1.591
Mar. 10	1730	5990 170	7.53 2.295	May 9	0900	2890 81.8	4.82 1.469
Mar. 15	0030	4260 121	6.13 1.868	Aug. 6	1900	4530 128	6.36 1.939
Mar. 26	1500	4640 131	6.45 1.966				

Minimum discharge, 46 ft³/s (1.30 m³/s) Oct. 1, gage height, 0.43 ft (0.131 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	139	782	204	500	371	768	1420	401	139	166	155
2	193	139	776	195	450	351	678	1120	351	224	124	108
3	158	223	619	173	400	355	602	933	355	708	119	96
4	97	1930	521	153	380	343	547	1590	367	383	124	88
5	87	2410	679	163	360	299	500	2800	315	259	139	84
6	85	3660	879	187	350	311	510	1700	287	217	422	80
7	81	6510	714	189	295	375	490	1230	275	196	505	77
8	92	4980	567	278	327	442	442	1950	319	179	351	75
9	128	1580	492	1700	343	510	405	2700	343	176	213	73
10	145	961	410	984	323	3640	383	1870	287	155	162	73
11	116	725	331	617	299	3390	363	1310	251	149	144	79
12	100	540	267	510	295	2550	355	1060	236	147	147	77
13	90	427	284	477	293	2520	331	1090	283	144	144	77
14	150	349	303	410	295	2900	311	1600	228	339	131	79
15	150	300	345	345	291	3280	291	1150	210	213	122	77
16	148	294	296	260	291	2000	283	1000	203	239	117	75
17	128	444	311	307	279	1390	275	858	200	210	111	73
18	118	467	429	395	295	1070	311	756	193	172	104	70
19	103	372	415	340	303	877	323	678	247	147	100	66
20	97	317	382	339	311	780	363	648	475	136	98	70
21	90	275	366	293	299	714	351	613	363	129	92	66
22	85	328	331	249	303	672	327	553	291	124	90	64
23	82	875	292	220	251	602	311	525	236	124	88	68
24	78	735	274	216	291	547	299	510	210	122	84	82
25	76	588	287	1040	307	591	363	470	193	179	82	84
26	750	608	261	7530	500	3340	12400	428	179	155	82	75
27	642	526	218	2600	414	3200	13200	401	172	139	104	68
28	349	471	211	1430	397	1830	4620	379	159	169	152	66
29	245	455	188	989	---	1280	2700	375	147	144	129	64
30	191	464	212	768	---	1040	1890	419	142	122	149	66
31	158	---	207	580	---	870	---	495	---	129	159	---
TOTAL	5081	32092	12669	24141	9452	42440	44992	32631	7918	6068	5154	2355
MEAN	164	1070	409	779	338	1369	1500	1053	264	196	166	78.5
MAX	750	6510	879	7530	500	3640	13200	2800	475	708	422	155
MIN	69	139	188	153	251	299	275	375	142	122	82	64
CFSM	.42	2.71	1.04	1.97	.86	3.47	3.80	2.67	.67	.50	.42	.20
IN.	.48	3.02	1.19	2.27	.89	4.00	4.24	3.07	.75	.57	.49	.22

CAL YR 1977 TOTAL 112886 MEAN 304 MAX 8430 MIN 40 CFSM .78 IN 10.63
WTR YR 1978 TOTAL 224993 MEAN 616 MAX 13200 MIN 64 CFSM 1.56 IN 21.19

ROANOKE RIVER BASIN

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02055000 ROANOKE RIVER AT ROANOKE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1951, 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (HIGH LEVEL) (MG/L)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	BICAR- BONATE (MG/L AS HC03)
OCT												
12...	0800	106	380	8.2	13.0	1	6.7	--	1.8	--	693	--
26...	1000	1060	230	8.0	13.0	35	8.3	--	7.9	K13700	K50100	--
NOV												
16...	0815	278	315	7.7	7.0	2	11.4	--	4.0	280	757	--
30...	0800	452	240	8.0	6.5	2	11.4	--	4.5	260	3600	--
DEC												
14...	0845	278	255	7.9	5.0	1	11.2	21	4.1	1825	7900	150
JAN												
04...	0930	150	295	8.7	.5	1	14.0	--	6.5	180	921	--
25...	0815	458	300	7.2	2.5	15	11.3	--	4.8	770	K5000	--
FEB												
08...	0900	287	300	6.5	.0	2	12.9	2	3.0	K20	222	--
22...	1000	311	280	7.1	2.0	2	12.1	3	1.3	63	245	--
MAR												
08...	0800	419	280	7.6	4.0	4	11.2	2	.8	270	871	--
29...	0900	1320	220	7.1	9.0	10	--	4	--	--	--	110
APR												
12...	1000	359	285	7.7	15.0	2	11.2	6	1.6	300	150	--
26...	0900	7440	120	7.6	9.0	40	10.3	70	1.5	K15000	K23000	--
MAY												
10...	0900	1940	165	7.6	14.0	15	9.7	7	1.4	3900	5100	--
24...	0800	531	260	8.3	17.0	2	5.6	--	1.5	240	1620	--
JUN												
07...	0900	279	339	8.4	21.0	2	7.4	10	.9	830	120	170
21...	0900	359	230	7.6	21.0	95	6.6	20	1.7	K11000	K14300	--
JUL												
12...	0915	152	285	7.8	22.5	9	7.5	11	.1	800	260	--
26...	0915	166	320	7.6	23.0	20	7.7	25	.1	4900	540	--
AUG												
09...	0830	176	360	8.1	23.0	15	7.3	4	.8	K19200	650	--
29...	0900	129	345	8.1	24.5	8	7.2	11	1.7	6800	300	--
SEP												
13...	0830	82	387	8.2	22.0	15	7.0	13	.5	1600	210	190

K Results based on colony count outside the acceptable range (non-ideal colony count).

ROANOKE RIVER BASIN

02055000 ROANOKE RIVER AT ROANOKE, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (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)	CARBON, ORGANIC TOTAL (MG/L AS C)	CHLORO- PHYLL A PHYTO- PLANK- TON, UNCORR. (UG/L)	CHLORO- PHYLL B PHYTO- PLANK- TON, UNCORR. (UG/L)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)
OCT												
12...	--	--	219	.37	.01	.19	.05	6.9	2.58	.235	16	4.6
26...	--	--	130	.33	.03	1.7	.69	9.4	5.16	.469	648	1860
NOV												
16...	--	--	190	1.0	.01	.11	.01	21	.000	.000	3	2.3
30...	--	--	146	.68	.01	.38	.02	10	.000	.000	6	7.3
DEC												
14...	19	5.9	158	.81	.00	.15	.01	18	.697	.680	2	1.5
JAN												
04...	--	--	153	.54	.00	.18	.01	2.6	.000	.000	1	.40
25...	--	--	169	.73	.00	.31	.03	8.1	.707	.314	16	20
FEB												
08...	--	--	178	1.0	.01	.10	.01	.4	.391	.000	2	1.5
22...	--	--	172	.81	.00	.19	.02	2.7	1.40	1.24	4	3.4
MAR												
08...	--	--	162	.58	.00	.17	.01	5.8	4.70	1.56	8	9.1
29...	15	4.3	107	.65	.01	.22	.03	3.0	.069	.000	35	125
APR												
12...	--	--	157	.31	.00	.13	.01	5.2	2.33	.000	7	6.8
26...	--	--	88	.73	.11	2.2	.54	6.9	--	--	1076	21600
MAY												
10...	--	--	117	.49	.01	.28	.04	--	--	--	51	267
24...	--	--	164	.45	.01	.32	.03	7.1	--	--	9	13
JUN												
07...	21	6.8	184	.38	.01	.21	.01	5.3	--	--	8	6.0
21...	--	--	140	.56	.08	.76	.18	8.2	--	--	155	150
JUL												
12...	--	--	217	.45	.02	.29	.04	6.4	--	--	26	11
26...	--	--	202	.41	.02	.42	.04	5.6	--	--	40	18
AUG												
09...	--	--	189	.64	.05	.44	.08	2.6	--	--	31	15
29...	--	--	214	.42	.08	.32	.04	4.3	--	--	23	8.0
SEP												
13...	29	8.5	225	.53	.02	.28	.06	4.4	--	--	34	7.5

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 (335 m) downstream from Norfolk and Western Railway bridge, 0.2 mi (0.3 km) downstream from unnamed tributary, 0.5 mi (0.8 km) south of Glebe Mills, and 1.3 mi (2.1 km) northwest of Daleville.

DRAINAGE AREA.--11.7 mi² (30.3 km²).

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 (371.085 m) National Geodetic Vertical Datum of 1929 (Norfolk and Western Railway bench mark).

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--22 years, 11.4 ft³/s (0.323 m³/s), 13.23 in/yr (336 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,000 ft³/s (113 m³/s) June 21, 1972, gage height, 9.82 ft (2.993 m), from rating curve extended above 100 ft³/s (2.8 m³/s) on basis of contracted-opening measurement at gage height 9.82 ft (2.993 m) and slope-area measurements at gage heights 8.52 ft (2.597 m) and 9.82 ft (2.993 m); minimum, 0.20 ft³/s (0.006 m³/s) Jan. 24, 1961, result of freezeup; minimum daily, 0.90 ft³/s (0.025 m³/s) July 26, 1966; minimum gage height, 0.99 ft (0.302 m) June 12, 24, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1940 reached a stage of 9.0 ft (2.74 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.1 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)		Date	Time	Discharge (ft ³ /s) (m ³ /s)		Gage height (ft) (m)	
Nov. 7	1600	*836	23.7	5.94	1.811	Mar. 14	1145	308	8.72	4.14	1.262
Jan. 26	0200	697	19.7	5.59	1.704	Mar. 26	0745	424	12.0	4.63	1.411
Mar. 10	0900	520	14.7	5.00	1.524	Apr. 26	0845	812	23.0	5.88	1.792

Minimum discharge, 1.7 ft³/s (0.048 m³/s) Oct. 1, gage height, 1.16 ft (0.354 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	4.1	20	4.1	18	17	24	31	11	5.2	12	4.1
2	3.5	4.3	15	6.5	16	15	21	28	11	6.9	5.4	3.9
3	2.1	5.2	13	8.0	15	14	20	24	12	12	4.8	3.7
4	1.9	19	12	7.7	14	12	19	48	11	6.7	5.0	3.5
5	1.8	21	17	7.7	13	12	18	40	10	6.0	4.6	3.5
6	1.8	22	15	7.7	13	13	17	30	9.7	5.6	10	3.4
7	1.9	98	12	7.7	14	13	16	25	9.7	5.4	8.3	3.4
8	2.6	30	11	15	11	16	15	51	10	5.4	6.0	3.4
9	4.6	14	11	36	11	20	14	49	9.7	5.2	5.4	3.2
10	3.8	15	10	20	11	14	14	33	8.8	5.0	5.0	3.4
11	3.4	12	9.4	19	12	78	14	28	8.5	5.0	11	8.5
12	2.8	4.7	9.1	17	12	73	13	25	8.5	4.8	11	4.2
13	2.5	8.3	8.8	13	12	61	12	36	8.5	4.8	6.5	3.5
14	5.0	7.7	11	12	13	118	12	32	7.7	6.2	5.6	3.5
15	4.2	7.2	10	11	13	69	11	27	7.7	5.4	5.2	3.4
16	3.8	6.9	9.1	10	11	46	11	28	7.5	6.0	4.8	3.2
17	3.6	12	11	14	11	36	11	24	7.5	5.2	4.4	3.1
18	3.4	8.3	28	18	12	31	13	22	7.2	4.6	4.2	2.9
19	3.1	7.5	20	15	12	28	13	20	7.2	4.4	4.1	2.9
20	2.9	7.2	17	14	12	23	12	19	7.5	4.2	3.9	3.1
21	2.6	6.9	15	12	12	21	11	18	7.2	4.2	3.9	2.9
22	2.5	15	13	11	12	20	10	16	6.9	5.2	3.9	2.9
23	2.4	19	12	11	11	19	10	17	6.5	5.2	3.7	2.9
24	2.3	14	12	10	11	17	9.7	17	6.2	7.2	3.7	3.1
25	2.2	13	13	75	48	24	13	15	6.0	6.7	4.7	2.9
26	17	13	11	255	24	158	370	14	6.0	5.2	3.5	2.8
27	7.0	11	10	47	20	62	129	13	5.8	8.0	3.7	2.8
28	5.3	11	9.4	32	16	43	54	13	5.6	5.8	4.2	2.6
29	4.6	11	9.1	27	---	35	40	12	5.4	4.8	3.9	2.5
30	4.3	12	9.1	24	---	31	35	12	5.4	4.6	3.9	2.6
31	4.1	---	9.4	20	---	28	---	12	---	4.6	3.9	---
TOTAL	115.2	450.3	392.4	794.4	410	1334	981.7	779	241.7	175.5	164.2	101.8
MEAN	3.72	15.0	12.7	25.6	14.6	43.0	32.7	25.1	8.06	5.66	5.46	3.39
MAX	17	98	28	255	48	181	370	51	12	12	12	8.5
MIN	1.4	4.1	8.8	7.7	11	12	9.7	12	5.4	4.2	4.5	2.5
CFSM	.32	1.28	1.09	2.19	1.25	3.68	2.80	2.15	.69	.48	.47	.29
IN.	.37	1.43	1.25	2.53	1.30	4.24	3.12	2.48	.77	.56	.54	.32

CAL YR 1977 TOTAL 2614.1 MEAN 7.16 MAX 230 MIN 1.7 CFSM .61 IN 8.31
WTR YR 1978 TOTAL 5945.2 MEAN 16.3 MAX 370 MIN 1.8 CFSM 1.39 IN 18.90

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 (60 m) downstream from powerplant of Appalachian Power Co. at Niagara, 2 mi (3 km) downstream from Tinker Creek, 2.1 mi (3.4 km) southeast of Vinton, and at mile 355.3 (571.7 km).

DRAINAGE AREA.--512 mi² (1,326 km²).

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: 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 (249.982 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records good. Flow regulated by dam and powerplant 200 ft (60 m) above station. Several observations 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, 512 ft³/s (14.50 m³/s), 13.58 in/yr (345 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,300 ft³/s (830 m³/s) Apr. 27, 1978, gage height, 19.12 ft (5.828 m), from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurement of peak flow; minimum, 1.0 ft³/s (0.028 m³/s) Oct. 16, 20, 1956; minimum daily, 8 ft³/s (0.23 m³/s) Oct. 9, 1954; minimum gage height, 0.17 ft (0.052 m) Aug. 25, 1971.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s (99 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 6	2100	5180	147	9.13	2.783	Mar. 26	1230	7170	203	10.48	3.194
Nov. 7	2205	14600	413	14.03	4.276	Apr. 27	0150	*29300	830	19.12	5.828
Jan. 26	0905	16100	456	14.63	4.459	May 5	0015	4080	116	8.23	2.509
Mar. 10	1800	8520	241	11.26	3.432	May 8	2245	3550	101	7.75	2.362
Mar. 15	0115	5450	154	9.32	2.841	Aug. 6	2005	6700	190	10.19	3.106

Minimum discharge, 24 ft³/s (0.68 m³/s) Oct. 19, Nov. 17, gage height, 0.68 ft (0.207 m); minimum daily, 141 ft³/s (3.99 m³/s) Sept. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	147	248	1010	368	801	551	1040	1830	629	200	328	298
2	322	264	1000	354	767	534	911	1500	582	350	243	216
3	292	340	827	331	674	536	810	1280	562	1010	246	197
4	179	2170	725	274	618	516	750	2170	542	647	255	187
5	162	2560	976	302	578	458	713	3500	504	426	259	219
6	166	3940	1160	343	560	482	678	2240	464	320	1380	179
7	142	7400	973	317	497	532	656	1670	420	290	650	152
8	180	6110	795	516	438	610	639	2540	480	270	417	167
9	251	1860	708	2160	533	776	623	3290	520	260	331	163
10	229	1210	633	1330	482	5210	545	2410	450	240	302	159
11	217	929	516	854	464	4460	579	1770	380	230	302	175
12	156	711	465	693	449	3230	540	1460	360	220	323	174
13	180	591	461	665	458	3160	500	1580	450	210	282	205
14	353	583	501	595	453	3680	480	2070	350	509	258	178
15	259	470	550	540	464	4190	450	1580	320	346	244	141
16	271	455	473	478	456	2530	440	1470	310	354	236	164
17	229	590	491	572	446	1790	420	1260	300	401	223	158
18	204	621	844	759	448	1400	480	1090	290	314	212	174
19	211	522	790	672	470	1170	500	995	500	250	202	217
20	160	485	705	647	498	1030	560	887	695	210	196	181
21	188	432	667	544	470	948	540	813	596	200	192	204
22	147	554	576	491	482	890	500	756	456	190	226	163
23	162	1010	536	453	420	829	480	728	360	190	194	172
24	150	952	468	443	444	763	450	734	320	226	182	203
25	149	796	503	1490	518	792	612	681	290	378	181	290
26	1110	810	453	11300	700	5100	15800	600	270	291	177	170
27	875	706	397	3510	587	4330	17300	576	260	261	184	154
28	525	728	396	1940	640	2480	5880	546	240	287	250	152
29	394	644	361	1380	---	1730	3240	532	220	261	234	149
30	321	637	373	1090	---	1390	2340	629	210	229	309	150
31	280	---	382	936	---	1170	---	696	---	263	311	---
TOTAL	8611	39328	19715	36347	14815	57267	59456	43883	12330	9833	4429	5511
MEAN	278	1311	636	1172	529	1847	1982	1416	411	317	301	184
MAX	1110	7400	1160	11300	801	5210	17300	3500	695	1010	1480	298
MIN	142	248	361	274	420	458	420	532	210	190	177	141
CFSM	.54	2.56	1.24	2.29	1.03	3.61	3.87	2.77	.80	.62	.59	.36
IN.	.63	2.86	1.43	2.64	1.08	4.16	4.32	3.19	.90	.71	.68	.40

CAL YR 1977 TOTAL 169685 MEAN 465 MAX 11300 MIN 97 CFSM .91 IN 12.33
WTR YR 1978 TOTAL 316425 MEAN 867 MAX 17300 MIN 141 CFSM 1.69 IN 22.99

02056650 BACK CREEK NEAR DUNDEE, VA

LOCATION.--Lat 37°13'40", long 79°52'06", Roanoke County, Hydrologic Unit 03010101, on right bank at upstream side of bridge on State Highway 660, 0.9 mi (1.4 km) upstream from Horseshoe Branch, 1.1 mi (1.8 km) southeast of Dundee, 2.8 mi (4.5 km) west of Hardy Post Office, and at mile 2.4 (3.9 km).

DRAINAGE AREA.--56.8 mi² (147.1 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 822.67 ft (250.750 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 4, 1975, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,500 ft³/s (212 m³/s) May 29, 1976, gage height, 15.00 ft (4.572 m), from floodmarks; minimum, 4.5 ft³/s (0.13 m³/s) part or all of each day July 22, 23, 28, 29, Aug. 4-9, 1977, gage height, 0.60 ft (0.183 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of May 30, 1971, and June 21, 1972, reached a stage of 17.5 ft (5.33 m) and 20.0 ft (6.10 m), respectively, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1115	756 21.4	4.92 1.500	Jan. 26	0445	2860 81.0	9.26 2.822
Nov. 4	0615	744 21.1	4.88 1.487	Mar. 10	1100	1250 35.4	6.24 1.902
Nov. 5	1730	808 22.9	5.08 1.548	Mar. 26	0945	1180 33.4	6.07 1.850
Nov. 6	1700	735 20.8	4.85 1.478	Apr. 26	1730	*5840 165	13.27 4.045
Nov. 7	1800	1640 46.4	7.18 2.188	May 4	1800	990 28.0	5.60 1.707

Minimum discharge, 6.2 ft³/s (0.18 m³/s) Oct. 1, gage height, 0.71 ft (0.216 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	25	98	44	86	62	124	248	74	25	41	45
2	35	27	86	42	77	58	118	194	64	47	28	21
3	17	67	75	34	69	58	102	171	70	134	26	18
4	9.6	463	68	34	63	55	94	422	94	64	26	16
5	8.4	541	157	46	63	48	89	432	60	46	47	15
6	8.0	521	160	39	58	53	84	279	54	42	46	14
7	8.0	819	113	41	46	59	82	216	50	37	83	14
8	8.4	492	90	136	61	62	77	350	60	33	42	13
9	17	212	79	329	56	75	74	434	88	31	50	12
10	21	139	67	118	55	696	72	298	55	28	52	12
11	12	106	60	89	57	386	72	232	47	27	29	13
12	9.8	83	58	82	55	315	70	194	44	26	42	15
13	9.2	70	52	77	52	308	67	218	52	25	29	14
14	47	62	52	62	51	354	63	236	40	48	23	13
15	42	57	66	48	51	386	61	190	39	50	22	14
16	20	51	53	54	51	275	60	179	38	78	21	13
17	23	81	56	70	49	195	58	161	37	42	19	12
18	16	65	160	62	52	151	61	144	35	34	17	11
19	14	57	132	60	53	130	71	133	50	34	16	9.9
20	12	52	98	54	50	121	68	125	58	26	15	9.3
21	11	47	89	50	49	115	62	117	116	23	14	9.6
22	10	51	81	46	51	111	58	100	60	22	14	10
23	10	63	69	45	44	101	55	96	45	22	13	13
24	9.8	58	65	59	51	94	55	90	37	20	13	22
25	9.8	58	64	256	71	91	56	86	35	24	13	15
26	305	80	58	1300	93	684	2580	80	33	24	12	14
27	115	69	52	308	71	406	1500	74	31	23	54	12
28	68	61	46	178	67	258	537	70	28	29	35	12
29	47	58	47	130	---	190	369	70	27	21	20	11
30	35	56	49	109	---	156	303	156	26	19	17	11
31	29	---	45	99	---	136	---	90	---	24	36	---
TOTAL	993.4	4591	2445	4101	1652	6189	7142	5885	1547	1128	915	433.8
MEAN	32.1	153	78.9	132	59.0	200	238	190	51.6	36.4	29.5	14.5
MAX	305	819	160	1300	93	696	2580	434	116	134	83	45
MIN	6.8	25	45	34	44	48	55	70	26	19	12	9.3
CFSM	.57	2.69	1.39	2.32	1.04	3.52	4.19	3.35	.91	.64	.52	.26
IN.	.65	3.01	1.60	2.69	1.08	4.05	4.68	3.85	1.01	.74	.60	.28

CAL YR 1977 TOTAL 19231.6 MEAN 52.7 MAX 1040 MIN 4.5 CFSM .93 IN 12.60
WTR YR 1978 TOTAL 37022.6 MEAN 101 MAX 2580 MIN 6.8 CFSM 1.78 IN 24.25

ROANOKE RIVER BASIN

02056900 BLACKWATER RIVER NEAR ROCKY MOUNT, VA

LOCATION.--Lat 37°02'42", long 79°45'40", Franklin County, Hydrologic Unit 03010101, on right bank 45 ft (14 m) downstream from bridge on State Highway 122, 3.0 mi (4.8 km) northeast of Rocky Mount, and 4.1 mi (6.6 km) upstream from Maggoe Creek.

DRAINAGE AREA.--115 mi² (298 km²).

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.45 ft (267.142 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 7,710 ft³/s (218 m³/s) Apr. 27, 1978, gage height, 15.81 ft (4.819 m); minimum, 9.2 ft³/s (0.26 m³/s) Aug. 11, 1977, gage height, 1.23 ft (0.375 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Nov. 7	2000	1880	53.2	6.60	2.012	Mar. 26	1200	1500	42.5	5.86	1.786
Jan. 26	0800	4890	138	11.59	3.533	Apr. 27	0200	*7710	218	15.81	4.819
Mar. 10	1200	1990	56.4	6.83	2.082	May 4	2300	1550	43.9	6.03	1.838

Minimum discharge, 19 ft³/s (0.54 m³/s) Oct. 1, gage height, 1.41 ft (0.430 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	57	145	98	165	130	206	384	148	74	164	64
2	67	57	133	94	133	127	190	320	138	88	83	61
3	51	67	123	86	133	130	178	280	145	209	73	58
4	30	306	119	84	122	127	166	598	154	130	187	56
5	26	428	180	88	115	105	160	798	131	99	192	54
6	25	620	236	90	105	120	158	450	125	93	105	50
7	25	1030	172	93	100	150	150	366	125	87	288	48
8	27	804	147	175	95	154	145	558	138	83	190	46
9	41	334	136	771	96	220	143	640	160	83	240	44
10	48	227	122	204	97	1230	138	485	127	77	340	42
11	36	176	114	142	98	646	138	404	117	77	131	44
12	31	145	105	123	101	443	136	373	131	77	116	44
13	30	127	102	130	110	398	131	380	131	72	108	44
14	65	116	105	145	114	380	125	468	110	82	92	45
15	100	108	131	128	130	422	123	390	105	111	86	49
16	57	102	108	110	133	331	120	394	105	111	82	48
17	61	164	108	140	116	267	120	356	104	96	75	44
18	46	131	303	236	125	231	122	310	98	78	70	41
19	42	110	223	174	125	210	135	283	99	73	68	38
20	38	102	170	150	116	196	128	257	125	69	66	37
21	36	99	158	130	112	188	122	240	150	67	62	39
22	36	102	140	115	123	180	117	223	162	66	60	41
23	36	130	127	110	104	170	112	214	119	83	58	42
24	34	119	123	120	123	164	108	216	102	66	57	48
25	35	114	123	279	167	162	117	212	96	90	56	50
26	593	156	114	2790	202	863	3960	200	94	78	67	46
27	202	127	104	648	142	540	4070	190	93	132	69	42
28	112	119	95	338	136	359	1020	188	84	120	87	40
29	84	114	90	249	---	280	640	186	79	74	70	39
30	72	111	83	218	---	242	468	180	78	67	69	38
31	63	---	102	185	---	220	---	168	---	63	67	---
TOTAL	2169	6402	4241	8443	3438	9385	13646	10711	3573	2775	3478	1382
MEAN	70.0	213	137	272	123	303	455	346	119	89.5	112	46.1
MAX	593	1030	303	2790	202	1230	4070	798	162	209	340	64
MIN	20	57	83	84	95	105	108	168	78	63	56	37
CFSM	.61	1.85	1.19	2.37	1.07	2.64	3.96	3.01	1.04	.78	.97	.40
IN.	.70	2.07	1.37	2.73	1.11	3.04	4.41	3.46	1.16	.90	1.13	.45

CAL YR 1977 TOTAL 37863.6 MEAN 104 MAX 1650 MIN 9.6 CFSM .90 IN 12.25
WTR YR 1978 TOTAL 69643.0 MEAN 191 MAX 4070 MIN 20 CFSM 1.66 IN 22.53

ROANOKE RIVER BASIN

231

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 (10.5 km) northeast of Penhook and at mile 314.0 (505.2 km).

DRAINAGE AREA.--1,024 mi² (2,652 km²).

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 (242.3 m) are each 105 ft (32.0 m) long. Initial filling began in September 1963 during construction; water in reservoir first reached minimum power pool, elevation, 787 ft (239.9 m), in May 1965. Total capacity at maximum pool elevation, 811 ft (247.2 m), is 1,517,000 acre-ft (1.87 km³) of which 375,000 acre-ft (462 hm³) is above the spillway crest; 157,800 acre-ft (195 hm³) is normally used for power between elevation 787 ft (239.9 m), minimum power pool, and the spillway crest. Capacity at invert of lowest penstock, elevation, 601 ft (183.2 m), is 100 acre-ft (123,000 m³). 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 furnished by Appalachian Power Company.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,250,200 acre-ft (1.54 km³) Apr. 27, 1978, elevation, 799.8 ft (243.78 m); minimum (after first filling to minimum power pool), 995,400 acre-ft (1.23 km³) Jan. 23, 1970, elevation, 787.6 ft (240.06 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,250,200 acre-ft (1.54 km³) Apr. 27, elevation, 799.8 ft (243.78 m); minimum, 1,008,400 acre-ft (1.24 km³) Oct. 21, 22, elevation, 788.3 ft (240.27 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	789.4	1028800	
Oct. 31.....	790.7	1054300	+25500
Nov. 30.....	793.2	1105300	+51000
Dec. 31.....	793.4	1109400	+4100
CAL YR 1977.....			+10200
Jan. 31.....	794.3	1127700	+18300
Feb. 28.....	794.4	1129800	+2100
Mar. 31.....	794.5	1131800	+2000
Apr. 30.....	795.1	1144200	+12400
May 31.....	794.0	1121600	-22600
June 30.....	793.4	1109400	-12200
July 31.....	794.5	1131800	+22400
Aug. 31.....	793.1	1103200	-28600
Sept. 30.....	792.5	1091000	-12200
WTR YR 1978.....			+62200

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 (90 m) downstream from Harpen Creek, 0.5 mi (0.8 km) upstream from bridge on State Highway 40, and 1.1 mi (1.8 km) south of Sandy Level.

DRAINAGE AREA.--350 mi² (906 km²).

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 (188.062 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Nov. 18, 1963, nonrecording gage at same site and datum.

REMARKS.--Records good. Appalachian Power Company gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--15 years, 371 ft³/s (10.51 m³/s), 14.39 in/yr (366 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,400 ft³/s (719 m³/s) Apr. 27, 1978, gage height, 25.56 ft (7.791 m), from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurement of peak flow; minimum, 40 ft³/s (1.13 m³/s) Aug. 21, 22, 24-26, 1963, gage height, 2.00 ft (0.610 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (110 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 26	2230	6000	170	11.14	3.395	Mar. 26	1830	4020	114	8.04	2.451
Jan. 26	1700	14300	405	19.88	6.059	Apr. 27	0500	*25400	719	25.56	7.791
Mar. 10	2030	7910	224	13.76	4.194	May 5	0200	7010	199	12.59	3.837

Minimum discharge, 86 ft³/s (2.44 m³/s) Oct. 1, gage height, 2.31 ft (0.704 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	263	544	250	421	366	429	697	410	250	254	361
2	182	256	440	238	420	351	401	608	377	259	286	249
3	177	266	338	222	375	365	379	554	384	1010	239	217
4	124	543	299	210	347	348	369	2640	426	776	251	208
5	102	829	733	225	320	317	365	4440	380	374	352	195
6	99	1250	1260	242	310	331	352	1500	359	320	309	185
7	101	1090	538	260	260	398	349	983	366	301	423	175
8	105	1340	380	560	310	422	339	2080	411	287	507	168
9	123	683	333	2200	300	636	331	2410	493	280	526	164
10	142	470	298	800	280	4710	328	1370	405	266	578	162
11	132	380	263	455	260	3510	330	935	354	341	381	180
12	114	305	268	917	270	1350	334	805	346	315	297	172
13	115	265	309	1150	290	1050	322	768	366	267	375	168
14	400	240	276	1120	309	984	313	926	339	299	324	172
15	495	228	354	377	334	1090	303	793	316	475	269	178
16	248	222	319	308	330	713	302	830	316	377	252	172
17	250	409	292	456	315	575	302	744	315	376	238	166
18	190	466	1030	982	335	491	314	659	310	296	223	156
19	158	297	896	767	347	452	341	611	303	268	213	148
20	143	256	528	570	328	425	372	579	331	255	207	146
21	134	241	470	449	311	405	330	555	337	245	197	160
22	131	244	413	371	339	387	308	533	481	235	190	170
23	128	311	333	337	302	372	297	521	506	238	187	182
24	124	327	310	349	316	361	293	539	345	250	186	186
25	126	292	310	1550	347	357	335	542	316	322	180	174
26	3390	382	300	12300	573	2130	9360	519	306	304	255	164
27	2090	346	265	2580	421	1820	18400	506	305	252	248	152
28	580	289	240	902	375	799	2050	503	288	271	206	150
29	403	268	225	600	---	595	1060	514	269	270	204	145
30	327	272	210	460	---	502	805	514	259	230	248	140
31	284	---	260	470	---	455	---	470	---	227	237	---
TOTAL	11207	13030	13034	32677	9445	27067	40113	30648	10719	10236	8842	5365
MEAN	362	434	420	1054	337	873	1337	989	357	330	285	179
MAX	3390	1340	1260	12300	573	4710	18400	4440	506	1010	578	361
MIN	90	222	210	210	260	317	293	470	259	227	180	140
CFSM	1.03	1.24	1.20	3.01	.96	2.49	3.82	2.83	1.02	.94	.81	.51
IN.	1.19	1.38	1.39	3.47	1.00	2.88	4.26	3.26	1.14	1.09	.94	.57

CAL YR 1977 TOTAL 98231 MEAN 269 MAX 3390 MIN 51 CFSM .77 IN 10.44
WTR YR 1978 TOTAL 212383 MEAN 582 MAX 18400 MIN 90 CFSM 1.66 IN 22.57

ROANOKE RIVER BASIN

233

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 (3.2 km) south of Leesville, 3.5 mi (5.6 km) upstream from Goose Creek, and at mile 296 (476 km).

DRAINAGE AREA.--1,505 mi² (3,898 km²).

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 (176.17 m), is equipped with 4 radial gates 35 ft (11 m) high by 50 ft (15 m) wide. Storage began on Sept. 29, 1962, during construction, and water in reservoir first reached minimum power pool, elevation, 600.0 ft (182.88 m), on Mar. 5, 1963. Total capacity at maximum pool elevation, 613 ft (186.8 m), is 94,960 acre-ft (117 hm³) of which 75,960 acre-ft (93.7 hm³) is above the spillway crest; 38,200 acre-ft (47.1 hm³) is normally used for power between elevations 600.0 ft (182.88 m), minimum power pool, and the spillway crest. Capacity at invert of lowest penstock, elevation, 579.75 ft (176.708 m), is 21,010 acre-ft (25.9 hm³). Figures given herein represent total contents. Reservoir is part of the Smith Mountain Combination Project (see station 02057400).

COOPERATION.--Records furnished by Appalachian Power Company.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 98,180 acre-ft (121 hm³) Feb. 1, 1965, elevation, 614.0 ft (187.15 m); minimum (after first filling to minimum power pool), 39,880 acre-ft (49.2 hm³) Mar. 19, 1963, elevation, 592.0 ft (180.44 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 97,860 acre-ft (121 hm³) Apr. 27, elevation, 613.9 ft (187.12 m); minimum, 56,970 acre-ft (70.2 hm³) Oct. 10, June 5, Aug. 28, elevation, 599.9 ft (182.85 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	606.6	75300	
Oct. 31.....	606.6	75300	0
Nov. 30.....	611.5	90130	+14830
Dec. 31.....	610.5	86910	-3220
CAL YR 1977.....			-2900
Jan. 31.....	604.4	68990	-17920
Feb. 28.....	602.2	63100	-5890
Mar. 31.....	603.0	65240	+2140
Apr. 30.....	612.0	91740	+26500
May 31.....	607.9	79130	-12610
June 30.....	610.5	86910	+7780
July 31.....	603.5	66580	-20330
Aug. 31.....	610.0	85300	+18720
Sept. 30.....	606.7	75600	-9700
WTR YR 1978.....			+300

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 (0.5 km) upstream from Haden Bridge on State Highway 732, 0.4 mi (0.6 km) upstream from Rockcastle Creek, and 3.5 mi (5.6 km) northwest of Huddleston.

DRAINAGE AREA.--188 mi² (487 km²).

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 (180.719 m) National Geodetic Vertical Datum of 1929. Mar. 15, 1925, to Aug. 4, 1928, nonrecording gage at site 1,300 ft (396 m) downstream at different datum.

REMARKS.--Records good. Prior to October 1954, diurnal fluctuation at low flow caused by mill above station. Appalachian Power Company gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--48 years, 175 ft³/s (4.956 m³/s), 12.64 in/yr (321 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,300 ft³/s (575 m³/s) Oct. 19, 1937, gage height, 25.75 ft (7.849 m), from floodmarks, from rating curve extended above 11,000 ft³/s (310 m³/s) on basis of slope-area measurements at gage heights 19.25 ft (5.867 m) and 24.1 ft (7.35 m); minimum, 3 ft³/s (0.085 m³/s) Aug. 31, 1932, Jan. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s (65 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1030	4760 135	12.09 3.685	Mar. 26	1400	3880 110	10.49 3.197
Jan. 26	0630	*11200 317	19.42 5.919	Apr. 26	1900	8800 249	17.22 5.249
Mar. 10	1130	4130 117	10.98 3.347	May 4	2200	2530 71.6	7.77 2.368

Minimum discharge, 33 ft³/s (0.93 m³/s) Oct. 1, gage height, 1.16 ft (0.354 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	74	259	139	220	166	335	460	166	87	80	212
2	49	70	216	133	200	160	302	410	154	98	80	83
3	45	72	174	126	180	152	278	385	151	210	74	72
4	35	120	152	114	160	148	265	1110	163	149	78	66
5	34	167	406	123	140	132	252	1220	144	113	113	61
6	35	468	492	136	130	142	232	640	137	104	100	59
7	37	532	241	139	120	158	225	505	135	100	142	57
8	41	356	178	244	120	170	208	1020	144	95	132	52
9	66	201	156	1210	115	262	192	1010	175	98	113	52
10	74	152	126	470	118	2350	183	625	139	93	115	52
11	46	136	103	228	120	1120	180	475	130	98	87	57
12	44	109	100	224	128	850	178	422	125	89	78	59
13	42	95	109	201	132	740	166	458	132	83	83	57
14	120	90	133	232	142	722	156	740	120	89	180	56
15	126	88	205	212	166	800	151	535	118	95	85	59
16	70	85	163	159	154	530	149	520	118	91	72	59
17	72	216	156	246	138	390	147	475	118	89	70	54
18	61	170	805	612	154	312	161	410	120	83	65	52
19	54	130	640	380	154	268	171	360	118	78	61	51
20	49	112	338	307	148	238	166	322	123	76	61	48
21	48	106	268	246	142	219	147	300	127	74	57	51
22	45	120	212	193	164	203	139	275	132	70	57	52
23	44	241	182	182	130	182	135	260	125	74	57	56
24	44	208	170	174	142	168	132	265	115	72	56	56
25	44	178	170	1110	236	162	139	245	111	80	56	56
26	1780	254	152	6280	305	1970	4000	220	109	87	56	54
27	506	170	120	1210	205	1220	3400	205	120	76	54	49
28	174	152	112	652	180	625	1030	198	104	89	56	49
29	117	139	103	480	---	475	640	190	95	74	59	48
30	92	136	120	375	---	398	520	188	91	66	65	49
31	77	---	146	250	---	360	---	185	---	70	184	---
TOTAL	4106	5147	6907	16787	4443	15792	14379	14633	3859	2850	2626	1838
MEAN	132	172	223	542	159	509	479	472	129	91.9	84.7	61.3
MAX	1780	532	805	6280	305	2350	4000	1220	175	210	184	212
MIN	34	70	100	114	115	132	132	185	91	66	54	48
CFSM	.70	.92	1.19	2.88	.85	2.71	2.55	2.51	.69	.49	.45	.33
IN.	.81	1.02	1.37	3.32	.88	3.12	2.85	2.90	.76	.56	.52	.36

CAL YR 1977 TOTAL 47103 MEAN 129 MAX 2650 MIN 23 CFSM .69 IN 9.32
WTR YR 1978 TOTAL 93367 MEAN 256 MAX 6280 MIN 34 CFSM 1.36 IN 18.47

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 (4 m) upstream from bridge on U.S. Highway 29, 0.3 mi (0.5 km) south of Altavista, 0.3 mi (0.5 km) downstream from Sycamore Creek, 3.5 mi (5.6 km) upstream from Big Otter River, and at mile 286.5 (461.0 km).

DRAINAGE AREA.--1,789 mi² (4,634 km²).

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 (153.345 m) National Geodetic Vertical Datum of 1929. Prior to Feb. 21, 1951, on left bank 50 ft (15 m) downstream at same datum.

REMARKS.--Records good. Flow regulated since 1962 by Leesville Lake (station 02059400) 9.5 mi (15.3 km) upstream and since 1963 by Smith Mountain Lake (station 02057400) 27.5 mi (44.2 km) upstream. Gage-height telemeters at station.

AVERAGE DISCHARGE.--48 years, 1,813 ft³/s (51.34 m³/s), 13.76 in/yr (350 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 105,000 ft³/s (2,970 m³/s) Aug. 15, 1940, gage height, 40.08 ft (12.216 m), from floodmark, from rating curve extended above 52,000 ft³/s (1,500 m³/s) on basis of unit hydrograph and flood-routing studies by Corps of Engineers and records for other stations in Roanoke River basin; minimum, 13 ft³/s (0.37 m³/s) Jan. 30, 1966; minimum daily, 39 ft³/s (1.10 m³/s) July 10, 1966; minimum gage height, 1.53 ft (0.466 m) Jan. 2, 1977, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,100 ft³/s (1,140 m³/s) Apr. 27, gage height, 27.68 ft (8.437 m); minimum, 126 ft³/s (3.57 m³/s) Oct. 25, gage height, 1.78 ft (0.543 m); minimum daily, 145 ft³/s (4.106 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	868	1770	254	3160	1940	2530	11700	2080	273	849	1280
2	170	852	3360	881	1920	1680	1370	9540	2090	248	972	272
3	800	764	1290	1170	2750	3120	1730	9340	796	1120	885	207
4	769	1290	300	1190	484	753	871	11200	655	894	1080	193
5	772	323	2530	1030	336	308	2860	11400	950	2100	268	685
6	796	467	2490	1410	1330	1350	1670	9760	1290	2600	250	929
7	1020	1370	4760	380	1610	2630	1460	2550	1150	2500	1630	833
8	158	2770	4770	393	1700	2730	1170	9650	3090	500	2440	1900
9	163	4470	2610	7220	1120	1890	923	10900	1920	258	1900	271
10	816	3270	1030	8220	962	7930	1080	4130	683	1050	1760	151
11	824	2130	241	6420	286	12200	1130	3180	556	955	1780	1010
12	829	246	849	2230	284	10800	961	3100	1170	1060	258	793
13	789	210	823	2130	2230	10400	955	3170	959	1080	218	776
14	1150	838	907	536	1750	10300	1250	5060	1680	1560	1060	804
15	389	829	1010	370	1610	10400	850	4770	1330	377	910	952
16	200	846	1350	1810	1610	9860	615	4680	1320	266	1440	191
17	820	1230	451	4210	1550	4840	1100	4650	288	1030	1430	169
18	803	1260	820	5930	550	1080	1270	4050	270	1060	1710	809
19	781	271	2910	3980	336	478	1570	2890	946	1370	355	776
20	812	228	3540	5320	1320	1700	3110	1270	1110	1490	209	792
21	1150	1200	3850	897	1530	2550	3370	1080	1320	1750	960	806
22	171	1130	3010	388	2460	2050	1030	2440	1650	363	822	997
23	159	3090	1940	1720	1580	1720	818	2820	2210	206	808	225
24	788	833	627	1290	2100	2020	1110	1800	1730	990	837	186
25	787	3670	296	5710	598	2590	1170	2820	391	848	984	645
26	4960	854	278	19400	612	8240	13700	1740	1230	910	341	675
27	5870	364	887	18700	3800	11300	36500	730	3360	845	206	598
28	655	4690	1220	15200	3620	8720	31300	711	1170	1070	937	655
29	313	1650	1290	9970	---	3270	26400	1470	958	245	845	1580
30	225	1400	1380	9600	---	2880	25800	1550	812	196	1200	332
31	879	---	360	5980	---	3930	---	2030	---	849	551	---
TOTAL	28963	43413	52949	143939	43198	145659	169673	146181	39164	30063	29895	20492
MEAN	934	1447	1708	4643	1543	4699	5656	4716	1305	970	964	683
MAX	5870	4690	4770	19400	3800	12200	36500	11700	3360	2600	2440	1900
MIN	145	210	241	254	284	308	615	711	270	196	206	151
(*)	+415	+1106	+15	+7	-68	+68	+653	-573	-74	+33	-161	-368
MEAN#	1349	2553	1723	4650	1475	4767	6309	4143	1231	1003	803	315
CFSM#	.75	1.43	.96	2.60	.82	2.66	3.53	2.32	.69	.56	.45	.18
IN#	.87	1.59	1.11	3.00	.86	3.07	3.94	2.67	.77	.65	.52	.20

CAL YR 1977 TOTAL 433035 MEAN 1186 MAX 14300 MIN 125 MEAN# 1196 CFSM# .67 IN# 9.08
WTR YR 1978 TOTAL 893589 MEAN 2448 MAX 36500 MIN 145 MEAN# 2534 CFSM# 1.42 IN# 19.23

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; furnished 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 current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1950 to September 1951, February 1953 to September 1956, April 1968 to current year.

WATER TEMPERATURES: October 1950 to September 1951, February 1953 to September 1956, April 1968 to current year.

SUSPENDED-SEDIMENT DISCHARGE: February 1953 to September 1956.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 580 micromhos Jan. 17, 1969; minimum daily, 54 micromhos Aug. 18, 1955.

WATER TEMPERATURES: Maximum daily, 30.0°C Aug. 10, 1951; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 185 micromhos Aug. 18, 19; minimum daily, 81 micromhos May 13, 14.

WATER TEMPERATURES: Maximum daily, 29.0°C July 23; minimum daily, 3.0°C Dec. 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	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)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT												
15...	1900	276	141	3	57	12	15	4.7	4.6	2.8	55	11
NOV												
15...	1500	2670	150	10	74	26	20	5.8	5.5	2.5	58	11
DEC												
15...	1500	2940	147	20	56	9	14	5.1	5.1	2.2	57	10
JAN												
15...	1500	359	123	30	49	3	12	4.5	4.2	2.0	55	9.1
FEB												
15...	1500	2920	120	20	50	11	12	4.8	4.9	2.1	47	10
MAR												
15...	1500	10300	123	50	46	5	11	4.5	4.5	2.2	50	10
APR												
15...	1900	674	140	10	52	6	13	4.7	5.3	2.2	56	8.6
MAY												
15...	1900	4740	128	25	48	11	12	4.3	4.2	2.3	45	9.3
JUN												
15...	1900	3500	150	20	63	10	16	5.6	4.9	3.3	65	10
JUL												
15...	1900	273	137	10	60	7	17	4.2	5.0	2.4	64	6.4
AUG												
15...	1900	1920	143	10	61	9	15	5.6	4.7	1.8	63	10
SEP												
15...	1900	1890	165	5	61	6	15	5.6	5.0	2.3	66	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 CONSTITU- ENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT												
15...	5.8	.1	12	79	85	.51	2.3	.00	.51	.01	.03	50
NOV												
15...	6.2	.1	6.0	88	87	.40	1.8	.00	.40	.00	.00	20
DEC												
15...	6.0	.1	8.0	88	80	.38	1.7	.00	.38	.00	.00	20
JAN												
15...	4.9	.1	6.6	74	72	.39	1.7	.00	.39	.00	.00	40
FEB												
15...	4.5	.1	7.3	80	71	.38	1.7	.00	.38	.00	.00	10
MAR												
15...	4.4	.1	5.8	80	69	.43	1.9	.01	.44	.00	.00	60
APR												
15...	5.8	.1	7.3	82	75	.14	.60	.01	.15	.00	.00	0
MAY												
15...	4.7	.1	8.0	95	69	.30	1.3	.01	.31	.00	.00	40
JUN												
15...	6.4	.1	2.5	80	81	.13	.60	.00	.13	.00	.00	0
JUL												
15...	5.3	.2	15	99	89	.44	1.9	.00	.44	.01	.03	10
AUG												
15...	5.9	.1	6.5	86	83	.48	2.1	.00	.48	.00	.00	10
SEP												
15...	6.1	.1	7.5	88	87	.44	1.9	.00	.44	.01	.03	40

02060500 ROANOKE RIVER AT ALTAVISTA, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	163	143	140	120	120	138	161	150	130	118	127
2	165	159	147	140	128	123	136	161	153	145	120	125
3	165	159	140	140	128	125	138	160	150	120	135	128
4	165	160	141	140	121	118	139	140	140	140	120	125
5	164	141	146	132	121	130	138	140	143	143	135	120
6	164	140	151	140	120	135	140	113	150	145	145	150
7	164	157	152	146	123	138	138	114	143	138	143	150
8	146	150	---	136	123	140	139	113	140	135	145	138
9	146	154	---	130	120	85	140	120	145	145	145	138
10	165	156	140	139	120	85	140	120	148	120	143	140
11	163	157	124	139	110	110	140	138	150	145	145	140
12	157	139	150	137	108	123	140	138	145	143	145	150
13	157	139	146	131	120	120	139	81	150	145	143	155
14	158	150	147	128	120	115	139	81	150	145	143	145
15	140	150	147	123	120	123	140	128	150	137	145	165
16	137	---	146	---	120	143	140	140	153	140	143	163
17	159	---	140	---	123	144	142	140	150	120	145	160
18	160	---	140	---	117	129	142	140	153	143	185	158
19	160	---	140	---	115	129	143	143	155	140	185	165
20	160	---	140	---	120	140	146	143	170	135	145	155
21	160	150	140	---	130	140	143	144	153	140	145	155
22	160	144	142	---	133	140	143	140	170	145	140	150
23	161	143	143	---	133	140	143	148	153	120	138	142
24	161	145	139	---	135	140	140	145	150	150	145	140
25	---	143	139	---	120	137	140	150	148	145	143	155
26	82	136	140	---	123	138	139	145	155	120	140	153
27	152	136	142	---	125	140	139	150	143	118	140	150
28	155	143	142	---	117	140	151	145	140	133	138	143
29	145	144	142	---	---	138	160	148	143	120	135	140
30	142	144	142	93	---	135	161	150	145	158	138	---
31	159	---	130	120	---	136	---	150	---	138	130	---
MEAN	155	148	142	133	122	129	142	136	150	137	142	146

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.0	15.0	11.5	4.0	3.5	5.0	12.0	12.0	20.0	22.0	22.5	24.5
2	24.0	16.0	12.5	7.0	4.0	5.5	12.0	12.0	19.0	24.0	22.5	25.0
3	19.0	17.0	9.5	8.0	4.0	6.0	11.0	12.0	19.5	22.0	22.5	26.0
4	19.0	17.0	8.0	7.5	4.0	5.5	12.0	13.0	20.0	23.0	22.5	25.5
5	19.0	15.0	7.5	7.0	4.0	5.5	12.0	12.0	19.0	21.0	26.5	23.0
6	18.5	13.5	7.5	6.5	4.0	5.0	14.0	14.0	19.0	21.0	25.0	23.0
7	18.0	12.0	6.0	6.5	4.0	5.5	14.5	14.5	19.5	21.0	22.5	23.0
8	18.0	10.0	---	6.0	4.0	6.0	14.5	14.0	19.0	22.5	22.5	23.0
9	19.0	12.5	---	5.5	4.0	6.5	15.0	14.0	19.0	24.0	22.5	22.5
10	18.0	16.0	4.0	5.0	4.5	6.0	16.0	15.0	19.5	21.5	22.0	22.5
11	18.0	14.5	3.0	5.0	4.5	7.0	16.0	17.0	20.0	22.0	22.5	23.0
12	18.0	11.0	5.0	5.0	5.0	8.0	16.5	17.0	19.5	22.0	27.0	23.0
13	18.0	9.5	7.5	5.0	4.0	7.0	16.5	16.0	20.0	22.5	23.0	22.0
14	18.0	14.0	8.0	5.0	4.0	8.0	17.0	16.0	20.0	22.0	24.0	20.5
15	17.0	14.0	9.5	5.0	4.5	8.0	16.0	15.0	20.0	24.0	23.0	21.0
16	15.0	---	10.0	---	4.5	7.0	15.0	17.0	19.0	26.0	23.0	21.5
17	17.0	---	8.5	---	4.5	6.0	14.0	17.0	19.0	22.0	23.0	22.0
18	17.0	---	7.0	---	5.5	7.5	14.0	17.0	20.0	22.0	23.0	23.0
19	17.0	---	9.0	---	6.0	7.5	14.0	16.0	19.5	22.0	22.5	23.0
20	17.0	---	10.0	---	7.0	8.5	13.0	17.0	20.0	22.5	25.5	22.5
21	16.5	13.5	12.0	---	7.5	10.0	13.0	17.0	20.5	21.0	27.0	22.5
22	16.5	13.5	12.0	---	8.0	11.0	13.0	16.0	20.5	27.0	23.0	22.0
23	16.0	13.0	12.0	---	8.5	11.0	14.0	17.0	20.0	29.0	22.5	20.0
24	15.5	11.0	8.0	---	9.0	12.0	14.5	17.5	21.5	23.0	23.5	19.0
25	---	12.5	6.0	---	9.5	11.0	14.5	18.0	23.0	23.0	23.0	21.5
26	15.0	9.5	8.0	---	10.0	11.0	10.0	18.5	20.5	23.0	25.0	21.0
27	15.0	8.0	8.0	---	10.5	11.0	10.5	18.5	21.0	23.0	26.0	20.5
28	16.5	10.5	9.0	---	11.0	11.0	11.0	19.0	21.5	23.5	23.0	20.5
29	17.0	11.0	9.0	---	---	11.0	11.0	19.0	22.0	26.0	22.0	20.0
30	16.0	11.5	8.0	4.0	---	12.0	11.0	19.5	22.0	27.0	22.0	---
31	15.0	---	6.0	4.0	---	12.0	---	19.5	---	23.0	22.5	---
MEAN	17.5	13.0	8.5	5.5	6.0	8.0	13.5	16.0	20.0	23.0	23.5	22.5

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 (18 m) upstream from bridge on State Highway 682 (revised), 2.0 mi (3.2 km) southwest of Evington, and 2.1 mi (3.4 km) upstream from Flat Creek.

DRAINAGE AREA.--320 mi² (829 km²).

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 (165.817 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Several observations 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, 330 ft³/s (9.346 m³/s), 14.00 in/yr (356 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft³/s (779 m³/s) Oct. 19, 1937, Aug. 19, 1939, gage height, 23.1 ft (7.04 m), from rating curve extended above 7,000 ft³/s (200 m³/s) on basis of unit hydrograph and flood-routing studies by Corps of Engineers, and records for other stations in Roanoke River basin; minimum, 7.5 ft³/s (0.21 m³/s) Sept. 14, 1966; minimum gage height, 0.45 ft (0.137 m) Oct. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (110 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	1200	*14500 411	19.78 6.029	Mar. 26	1730	4370 124	12.75 3.886
Mar. 10	1700	5340 151	14.06 4.285	Apr. 27	0200	9940 282	17.98 5.480

Minimum discharge, 36 ft³/s (1.02 m³/s) Oct. 1, gage height, 0.45 ft (0.137 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	161	587	257	404	317	460	585	321	185	138	261
2	48	156	446	243	393	309	427	502	286	187	141	131
3	60	155	347	219	359	310	401	454	287	482	126	115
4	48	181	303	204	325	295	379	1780	302	370	130	106
5	40	199	613	195	318	265	344	1900	270	258	154	103
6	40	476	805	200	299	288	324	801	255	218	146	105
7	43	1010	449	235	225	322	319	614	250	198	205	98
8	44	973	352	483	265	336	304	1030	270	185	192	94
9	65	482	324	2010	255	456	294	1510	316	203	161	91
10	122	354	287	615	245	3180	290	837	256	177	196	87
11	74	363	261	385	230	1620	288	645	235	171	147	90
12	61	271	251	350	240	1100	283	564	230	171	132	93
13	55	234	260	390	250	921	268	741	249	158	140	91
14	105	211	255	475	277	888	256	1170	222	164	384	91
15	180	199	531	387	351	922	247	785	208	181	235	90
16	102	190	372	321	298	695	245	757	204	179	167	87
17	114	426	330	455	272	577	243	689	205	175	146	83
18	89	366	1270	1130	305	492	269	585	200	155	127	79
19	77	259	842	699	316	449	284	526	198	143	118	74
20	71	222	579	594	310	420	284	479	213	136	113	71
21	67	202	504	483	304	397	257	446	212	130	106	75
22	65	234	417	399	348	378	244	410	270	125	101	77
23	62	520	359	355	270	359	236	396	238	123	99	73
24	58	397	331	343	293	348	235	416	191	120	96	76
25	57	324	353	1850	360	344	242	386	182	142	97	77
26	1840	487	319	10400	568	2290	3900	360	176	145	148	76
27	715	349	260	2200	368	1450	6070	339	674	132	109	71
28	309	304	240	987	333	833	1370	331	318	143	104	70
29	223	282	228	688	---	643	859	322	225	131	103	67
30	190	271	225	535	---	539	679	318	202	117	105	66
31	168	---	265	476	---	483	---	486	---	139	137	---
TOTAL	5228	10258	12965	28563	8781	22226	20301	21164	7665	5543	4503	2771
MEAN	169	342	418	921	314	717	677	683	256	179	145	92.4
MAX	1840	1010	1270	10400	568	3180	6070	1900	674	482	384	261
MIN	36	155	225	195	225	265	235	318	176	117	96	66
CFSM	.53	1.07	1.31	2.88	.98	2.24	2.12	2.13	.80	.56	.45	.29
IN.	.61	1.19	1.51	3.32	1.02	2.58	2.36	2.46	.89	.64	.52	.32

CAL YR 1977	TOTAL	76479	MEAN 210	MAX	2770	MIN 28	CFSM .66	IN 8.89
WTR YR 1978	TOTAL	149968	MEAN 411	MAX	10400	MIN 36	CFSM 1.28	IN 17.43

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 (490 m) upstream from bridge on U.S. Highway 501 at Brookneal, 2.9 mi (4.7 km) upstream from Falling River, and at mile 255.9 (411.7 km).

DRAINAGE AREA.--2,415 mi² (6,255 km²).

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 (107.277 m) 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 (550 m) downstream at same datum. Oct. 2, 1940, to Sept. 30, 1941, nonrecording gage at site 1,600 ft (490 m) downstream at same datum.

REMARKS.--Records good except those for period of doubtful or no gage-height record, May 4 to Sept. 9, which are fair. Flow regulated since 1962 by Leesville Lake (station 02059400) 40.1 mi (64.5 km) upstream and since 1963 by Smith Mountain Lake (station 02057400) 58.1 mi (93.5 km) upstream. Gage-height telemeters at station. Several observations 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, 2,398 ft³/s (67.91 m³/s), 13.48 in/yr (342 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft³/s (3,680 m³/s) Aug. 15, 1940, gage height, 46.5 ft (14.17 m), at present site, from gage-height relation curve, from rating curve extended above 55,000 ft³/s (1,600 m³/s) on basis of slope-area measurement by Geological Survey, unit hydrograph and flood-routing studies by Corps of Engineers, and records for other stations in Roanoke River basin; minimum daily, 140 ft³/s (3.96 m³/s) July 25, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 49,100 ft³/s (1,390 m³/s) Apr. 27, gage height, 32.02 ft (9.760 m); minimum daily, 297 ft³/s (8.41 m³/s) Oct. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1410	1400	3400	749	6710	4390	6660	20000	2800	1100	1300	1200
2	335	1380	3960	722	3760	3070	2880	12600	2900	700	1400	1900
3	297	1360	5820	1540	3910	2950	3630	12200	2700	500	1500	650
4	1100	1360	975	2160	2780	4720	2180	11500	1500	3800	1800	500
5	1060	2010	1670	1890	836	855	3060	18000	1200	1800	1800	450
6	1050	620	6750	1560	855	928	4160	14000	1400	2900	600	750
7	1090	900	5510	2460	2480	2950	3250	7000	1700	3400	850	1300
8	1430	3300	6540	1460	2710	4410	2850	10000	1600	3200	2100	1200
9	313	4800	5830	11000	2400	4750	1920	15000	3800	1000	3200	2200
10	316	6200	4600	12500	1620	11500	2060	9000	2400	700	2600	462
11	1220	4300	826	10600	1460	21900	2520	6000	1100	1400	2400	347
12	1180	2300	708	5970	718	15900	2020	5500	900	1500	2500	1050
13	1180	540	1570	2810	968	14600	1960	5000	1600	1550	700	1100
14	1400	450	1630	4140	3740	14100	1990	7000	1400	1600	500	1050
15	2020	1380	2090	1590	2910	14400	2580	8000	2000	2000	1400	1100
16	617	1420	2180	1270	2700	13400	1410	7000	1700	1000	1500	1300
17	450	1630	2620	4720	2620	9900	1580	6500	1650	800	1800	406
18	1290	2920	2170	9830	2470	3990	2170	6000	700	1400	1900	346
19	1210	1900	3840	9320	917	1890	2840	5500	500	1600	2200	800
20	1150	717	5350	6780	1060	1660	3260	4500	1150	1800	600	1100
21	1180	661	5960	6580	2510	3450	5770	2900	1600	2000	450	1150
22	1670	2200	5420	1410	2910	4170	4350	2000	1800	2300	1050	1000
23	339	2350	4740	1340	3860	3600	1620	3500	2200	800	1200	1300
24	310	4960	3030	3120	2740	3360	1650	4000	2800	500	1100	441
25	1100	1750	927	6770	3230	3590	2220	2600	2200	1500	1150	371
26	4680	5430	915	37800	1340	9150	16000	3600	1000	1550	1400	660
27	8830	1280	861	32400	2450	15900	47100	2500	1900	1400	700	900
28	5360	2290	1640	20800	6180	13100	40000	1300	4800	1300	500	800
29	852	5520	1990	14200	---	7870	31300	1200	2000	1500	1100	850
30	597	2520	2320	12700	---	5260	29200	2100	1400	700	1500	1800
31	544	---	2300	8360	---	5160	---	2200	---	500	1900	---
TOTAL	45580	69848	98142	238551	72844	226873	234190	218200	56400	47800	44700	28483
MEAN	1470	2328	3166	7695	2602	7318	7806	7039	1880	1542	1442	949
MAX	8830	6200	6750	37800	6710	21900	47100	20000	4800	3800	3200	2200
MIN	297	450	708	722	718	855	1410	1200	500	500	450	346
(*)	+415	+1106	+15	+7	-68	+68	+653	-573	-74	+33	-161	-368
MEAN#	1885	3434	3181	7702	2534	7386	8459	6466	1806	1575	1281	581
CFSM#	.78	1.42	1.32	3.19	1.05	3.06	3.50	2.68	.75	.65	.53	.24
IN#	.90	1.59	1.52	3.68	1.09	3.53	3.91	3.09	.83	.75	.61	.27

CAL YR 1977 TOTAL 711484 MEAN 1949 MAX 18600 MIN 210 MEAN# 1959 CFSM# .81 IN# 11.01
WTR YR 1978 TOTAL 1381611 MEAN 3785 MAX 47100 MIN 297 MEAN# 3871 CFSM# 1.60 IN# 21.76

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; furnished by Appalachian Power Co.

Adjusted for change in contents.

ROANOKE RIVER BASIN

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 (4.3 km) northeast of Naruna, and 3.2 mi (5.1 km) upstream from Little Falling River.

DRAINAGE AREA.--173 mi² (448 km²).

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 (125.675 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 15, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good. Small diurnal fluctuation at times during low flow, cause unknown. Prior to 1958, diurnal fluctuation caused by gristmill at Spring Mills. Several observations 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 (water years 1930-34, 1942-78), 147 ft³/s (4.163 m³/s), 11.54 in/yr (293 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,600 ft³/s (923 m³/s) June 22, 1972, gage height, 29.21 ft (8.903 m), from rating curve extended above 6,100 ft³/s (170 m³/s) on basis of slope-area measurement of peak flow; minimum, 3.0 ft³/s (0.085 m³/s) Oct. 9, 1932, gage height, 2.18 ft (0.664 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 26.5 ft (8.08 m), from floodmarks, discharge, 22,000 ft³/s (620 m³/s), by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s (65 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	0700	3680 104	12.14 3.700	Apr. 27	0430	7870 223	17.94 5.468
Jan. 26	1330	*10100 286	20.12 6.133	May 5	0030	4560 129	13.74 4.188
Mar. 10	1600	2780 78.7	10.19 3.106				

Minimum discharge, 20 ft³/s (0.57 m³/s) Oct. 1, gage height, 2.58 ft (0.786 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	48	274	99	168	130	156	212	110	83	227	131
2	26	48	176	92	158	131	141	162	100	84	108	74
3	29	56	127	82	146	142	130	144	119	165	98	64
4	22	68	106	75	136	129	131	1300	232	340	103	59
5	22	79	307	78	130	116	127	2250	128	123	95	55
6	22	414	442	82	128	122	120	554	110	98	96	52
7	23	420	193	93	130	133	121	329	105	88	106	51
8	23	318	139	683	138	159	117	724	113	84	94	49
9	37	147	126	2360	124	240	117	1140	121	135	88	47
10	49	109	112	452	129	1570	122	450	100	91	135	55
11	31	87	95	262	119	945	134	279	93	101	89	52
12	28	73	99	213	122	715	139	220	90	88	82	50
13	28	66	101	178	114	503	136	435	90	81	75	48
14	70	62	98	382	117	499	105	660	85	82	70	50
15	91	61	186	301	131	490	99	252	80	94	69	51
16	49	60	135	207	122	297	98	330	80	108	66	50
17	63	87	115	357	118	240	101	280	80	109	62	48
18	43	91	289	779	125	194	118	215	77	86	58	45
19	36	70	225	494	136	175	140	180	73	77	55	43
20	33	64	168	313	137	160	120	164	104	72	55	42
21	32	62	177	225	134	151	99	150	108	69	53	45
22	32	69	141	181	147	141	93	125	105	66	51	66
23	31	106	118	160	128	134	93	122	159	70	51	78
24	31	102	110	152	126	128	99	130	92	71	48	62
25	32	89	134	1620	126	130	122	122	100	351	54	54
26	467	137	123	7570	156	590	2980	115	87	111	56	50
27	198	104	100	957	132	559	5060	110	404	88	52	46
28	99	88	87	486	123	301	753	118	164	83	51	46
29	71	80	103	307	---	219	429	115	104	75	50	43
30	56	88	107	250	---	182	269	110	90	71	75	42
31	50	---	99	214	---	167	---	130	---	120	100	---
TOTAL	1844	3353	4812	19704	3700	9792	12469	11627	3503	3364	2472	1648
MEAN	59.5	112	155	636	132	316	416	375	117	109	79.7	54.9
MAX	467	420	442	7570	168	1570	5060	2250	404	351	227	131
MIN	20	48	87	75	114	116	93	110	73	66	48	42
CFSM	.34	.65	.90	3.68	.76	1.83	2.41	2.17	.68	.63	.46	.32
IN.	.40	.72	1.03	4.24	.80	2.11	2.68	2.50	.75	.72	.53	.35

CAL YR 1977 TOTAL 36985 MEAN 101 MAX 1380 MIN 16 CFSM .58 IN 7.95
WTR YR 1978 TOTAL 78288 MEAN 214 MAX 7570 MIN 20 CFSM 1.24 IN 16.83

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 (3 m) upstream from bridge on State Highway 40, 0.9 mi (1.4 km) west of Phenix, 1.9 mi (3.1 km) downstream from Rough Creek, and 6.4 mi (10.3 km) upstream from Louse Creek.

DRAINAGE AREA.--98.0 mi² (253.8 km²).

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 (112.834 m) National Geodetic Vertical Datum of 1929. Prior to July 14, 1950, nonrecording gage at same site and datum.

REMARKS.--Records good except those for period of no gage-height record, Feb. 5 to Mar. 6, which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--32 years, 96.0 ft³/s (2.719 m³/s), 13.30 in/yr (338 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,380 ft³/s (209 m³/s) June 22, 1972, gage height, 20.37 ft (6.209 m), from floodmark in gage house, from rating curve extended above 2,700 ft³/s (76 m³/s); minimum, 2.6 ft³/s (0.074 m³/s) Oct. 6, 1970, gage height, 0.74 ft (0.226 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1940 reached a stage of 17.5 ft (5.33 m), from floodmark.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 9	2000	3170 89.8	11.42 3.481	Apr. 27	0930	5250 149	14.00 4.267
Jan. 26	1600	*a7170 203	16.45 5.014	May 5	1200	2280 64.6	10.09 3.075
Mar. 11	1030	2280 64.6	10.06 3.066				

a From rating curve extended above 5,500 ft³/s (160 m³/s).

Minimum discharge, 10 ft³/s (0.28 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	40	85	85	132	57	102	157	76	65	122	127
2	19	40	90	77	115	58	93	132	70	60	78	75
3	24	47	63	69	109	62	86	117	70	132	142	57
4	16	56	55	65	98	67	84	248	81	467	202	51
5	13	62	95	60	90	69	84	1540	72	243	189	47
6	13	122	275	72	79	73	79	691	66	95	148	44
7	14	298	182	79	75	84	78	264	66	77	206	42
8	15	185	105	176	70	96	75	257	71	69	107	41
9	24	167	92	1490	65	137	75	474	79	77	86	41
10	40	69	85	1080	62	495	71	541	68	71	97	47
11	24	56	74	227	60	1630	72	230	60	67	81	44
12	21	48	71	174	57	640	72	151	57	66	70	42
13	21	44	69	145	59	450	69	157	68	59	64	41
14	49	43	74	212	60	294	66	448	62	59	66	42
15	84	41	115	298	64	341	62	461	56	64	60	43
16	43	40	102	200	55	229	61	264	55	87	55	44
17	50	45	86	186	58	163	60	294	55	93	51	41
18	40	50	186	439	58	135	70	202	54	68	47	38
19	31	41	212	510	60	121	86	146	52	58	44	37
20	29	40	140	320	58	114	95	126	60	53	43	37
21	26	39	131	193	57	105	84	114	67	50	41	39
22	26	41	112	141	55	99	68	110	114	48	39	40
23	26	60	94	115	53	93	64	106	89	47	39	64
24	26	60	88	105	51	90	61	101	68	54	38	56
25	26	54	97	353	50	89	75	96	65	149	39	47
26	159	62	101	5080	49	163	612	87	60	83	54	42
27	264	59	81	1900	51	325	4240	81	235	65	45	38
28	93	50	72	427	56	202	1220	83	465	58	42	38
29	58	46	71	210	---	140	378	81	98	54	41	37
30	46	47	76	170	---	119	196	79	74	50	108	37
31	41	---	86	149	---	107	---	80	---	60	81	---
TOTAL	1372	2052	3265	14807	1906	6847	8538	7918	2633	2748	2525	1419
MEAN	44.3	68.4	105	478	68.1	221	285	255	87.8	88.6	81.5	47.3
MAX	264	298	275	5080	132	1630	4240	1540	465	467	206	127
MIN	11	39	55	60	49	57	60	79	52	47	38	37
CFSM	.45	.70	1.07	4.88	.70	2.26	2.91	2.60	.90	.90	.83	.48
IN.	.52	.78	1.24	5.62	.72	2.60	3.24	3.01	1.00	1.04	.96	.54
CAL YR 1977	TOTAL	25372	MEAN	69.5	MAX	722	MIN	11	CFSM	.71	IN	9.63
WTR YR 1978	TOTAL	56030	MEAN	154	MAX	5080	MIN	11	CFSM	1.57	IN	21.27

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 14 ft (4 m) downstream from bridge on State Highway 746, 2.8 mi (4.5 km) northwest of Randolph, 3.6 mi (5.8 km) upstream from Roanoke Creek, and at mile 227.3 (365.7 km).

DRAINAGE AREA.--2,977 mi² (7,710 km²).

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 (93.753 m) National Geodetic Vertical Datum of 1929.

Aug. 27, 1900, to Oct. 13, 1902, nonrecording gage at site 3.2 mi (5.1 km) downstream at datum about 5.9 ft (1.80 m) 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 (1.198 m) lower than present datum.

REMARKS.--Records good. Flow regulated since 1962 by Leesville Lake (station 02059400) 68.7 mi (110.5 km) upstream and since 1963 by Smith Mountain Lake (station 02057400) 86.7 mi (139.5 km) upstream. Gage-height telemeters at station.

AVERAGE DISCHARGE.--37 years, 3,076 ft³/s (87.11 m³/s), 14.03 in/yr (356 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 97,000 ft³/s (2,750 m³/s) Dec. 31, 1901, gage height, 35.0 ft (10.67 m), from graph based on gage readings, site and datum then in use; minimum daily, 179 ft³/s (5.07 m³/s) Sept. 8, 1965, July 7, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 41.6 ft (12.68 m), present site and datum, discharge, 150,000 ft³/s (4,250 m³/s), from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56,200 ft³/s (1,590 m³/s) Apr. 28, gage height, 29.73 ft (9.062 m); minimum, 401 ft³/s (11.4 m³/s) Oct. 4, gage height, 4.37 ft (1.332 m); minimum daily, 471 ft³/s (13.3 m³/s) Oct. 3, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1360	1310	2870	1570	8120	5180	6000	30400	3550	1480	1660	1800
2	936	1500	3960	1060	5350	3300	4260	19800	3320	1130	2040	2550
3	471	1490	5340	1610	3890	3090	3000	13500	3260	772	2050	1370
4	741	1450	2300	1870	4540	4720	3380	13600	2200	6420	2750	825
5	1130	2040	1420	2090	2170	2100	2330	24500	1640	3880	2440	713
6	1120	1980	5800	2040	1670	1310	4330	25900	1900	3750	1830	840
7	1150	4820	5310	2250	2350	2300	3190	16000	2170	4170	1710	1610
8	1360	4670	6320	2540	3030	4300	2950	9300	2100	3840	2580	1520
9	919	5390	6140	13300	3070	4930	2650	19000	4410	1910	3880	2610
10	471	6000	4280	17900	2480	9130	2080	18600	2980	1090	3470	1550
11	893	4650	2170	12900	2070	25200	2300	9530	1530	1750	3200	643
12	1260	3580	1040	7880	1390	24400	2520	7500	1210	2030	3130	1080
13	1340	1240	1560	4330	1260	19000	2160	7070	1940	2040	1450	1420
14	1390	912	1710	5200	3250	15500	2090	10900	1780	2040	868	1360
15	2260	1420	2010	3990	3160	15200	2270	11000	2380	2560	1750	1390
16	1350	1530	2510	2470	3020	14000	2060	9710	2180	1810	2010	1630
17	848	1600	2480	3610	2910	11700	1560	9130	2030	1320	2270	1050
18	1200	2230	2330	9960	2820	6530	2160	8260	1140	1790	2380	557
19	1350	2580	3940	11400	1890	3180	2490	7020	759	2050	2700	827
20	1270	1170	5310	7930	1390	2230	3090	5550	1350	2270	1430	1300
21	1280	875	5550	8080	2300	3420	4650	3540	1990	2420	700	1310
22	1580	1610	5680	3080	2830	4410	4810	2950	2320	2790	1120	1290
23	906	2100	4630	1890	3900	3820	2330	4290	2790	1600	1520	1560
24	477	4570	3380	3060	2870	3420	1840	4570	3440	795	1420	1210
25	842	2180	1970	5480	3430	3690	2270	3540	2650	1960	1420	612
26	2300	4670	1360	25700	1910	5180	9670	4350	1580	2230	1870	682
27	10000	2350	1240	44400	1940	15200	36800	3170	2680	1900	1540	1140
28	7750	1410	1710	37300	5240	15100	54700	1860	6150	1770	810	1030
29	2050	5300	2030	24300	---	10400	47800	1740	2740	1930	1330	1090
30	1070	2830	2180	15200	---	5680	35600	2610	1780	1320	2100	2040
31	825	---	2510	11100	---	4990	---	2890	---	784	2680	---
TOTAL	51899	79457	101040	295490	84250	252610	257340	311780	71949	67601	62108	38609
MEAN	1674	2649	3259	9532	3009	8149	8578	10060	2398	2181	2003	1287
MAX	10000	6000	6320	44400	8120	25200	54700	30400	6150	6420	3880	2610
MIN	471	875	1040	1060	1260	1310	1560	1740	759	772	700	557
(*)	+415	+1106	+15	+7	-68	+68	+653	-573	-74	+33	-161	-368
MEAN#	2089	3755	3274	9539	2941	8217	9231	9487	2324	2214	1842	919
CFSM#	.70	1.26	1.10	3.20	.99	2.76	3.10	3.19	.78	.74	.62	.31
IN#	.81	1.41	1.27	3.70	1.03	3.18	3.46	3.67	.87	.86	.71	.34

CAL YR 1977 TOTAL 759475 MEAN 2081 MAX 20300 MIN 292 MEAN# 2091 CFSM# .70 IN# 9.54
WTR YR 1978 TOTAL 1674133 MEAN 4587 MAX 54700 MIN 471 MEAN# 4673 CFSM# 1.57 IN# 21.31

* Change in contents, equivalent in cubic feet per second, in Smith Mountain and Leesville Lakes; furnished by Appalachian Power Co.

* Adjusted for change in contents.

ROANOKE RIVER BASIN

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02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1930, 1951 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1950 to September 1956, April 1968 to current year.

WATER TEMPERATURES: October 1950 to September 1956, April 1968 to current year.

SUSPENDED-SEDIMENT DISCHARGE: January 1954 to current year.

REMARKS.--Daily sediment records based on once-weekly sediment samples and water-discharge hydrograph.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 470 micromhos May 9, 1976; minimum daily, 35 micromhos Jan. 27, 1978.

WATER TEMPERATURES: Maximum daily, 35.0°C Aug. 15, 1968; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 160 micromhos Oct. 2; minimum daily, 35 micromhos Jan. 27.

WATER TEMPERATURES: Maximum daily, 26.0°C Aug. 2; minimum daily, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	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)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 15...	0800	1480	120	4	46	4	11	4.5	6.2	2.4	51	8.8
NOV 15...	0800	848	115	5	41	10	10	4.0	6.9	2.5	38	9.0
DEC 15...	0800	1370	109	16	40	7	10	3.6	5.5	1.9	40	8.5
JAN 15...	0800	4190	80	30	29	7	7.0	2.9	4.0	2.0	27	8.5
FEB 15...	0800	2380	93	20	35	9	8.6	3.4	4.7	1.7	32	7.7
MAR 15...	0800	15300	95	30	37	4	8.9	3.6	4.0	2.1	40	9.3
APR 15...	0800	1470	113	10	40	2	9.6	3.9	5.0	2.0	46	8.2
MAY 15...	0800	11200	100	20	35	8	8.5	3.3	3.5	2.0	33	7.6
JUN 15...	0800	1200	115	20	44	0	11	4.0	5.1	2.3	55	7.5
JUL 15...	0800	1540	118	50	44	2	11	3.9	5.0	1.7	51	8.1
AUG 15...	0800	3000	122	60	47	5	12	4.2	5.0	1.7	52	7.7
SEP 15...	0800	1230	133	10	53	5	13	5.0	5.5	2.3	58	8.1

ROANOKE RIVER BASIN

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 15...	5.7	.1	9.4	69	75	.31	1.4	.03	.34	.01	.03	40
NOV 15...	6.6	.1	11	80	77	1.8	7.9	.02	1.8	.13	.40	120
DEC 15...	4.6	.1	12	64	68	.37	1.6	.00	.37	.00	.00	70
JAN 15...	3.9	.1	9.5	54	54	.54	2.4	.00	.54	.00	.00	50
FEB 15...	4.1	.1	11	67	59	.39	1.7	.00	.39	.00	.00	50
MAR 15...	4.7	.1	7.1	68	62	.45	2.0	.00	.45	.00	.00	90
APR 15...	4.5	.1	9.4	80	66	.05	.20	.01	.06	.00	.00	20
MAY 15...	3.7	.1	8.5	59	55	.22	1.0	.01	.23	.00	.00	90
JUN 15...	5.1	.1	11	72	74	.06	.30	.00	.06	.00	.00	10
JUL 15...	5.0	.1	11	73	73	.39	1.7	.00	.39	.01	.03	50
AUG 15...	4.8	.1	10	75	73	.41	1.8	.00	.41	.01	.03	40
SEP 15...	5.2	.1	9.6	85	78	.18	.80	.00	.18	.00	.00	0

02066000 ROANOKE RIVER AT RANDOLPH, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	108	109	100	83	83	119	140	122	110	113	118
2	160	100	109	100	95	88	113	129	107	113	98	115
3	159	118	111	100	97	80	110	152	107	115	116	115
4	140	120	114	100	98	90	111	81	101	68	99	118
5	140	115	112	117	100	97	100	104	101	68	117	105
6	152	98	86	115	100	97	100	91	118	123	88	103
7	155	78	110	116	98	80	118	97	98	120	88	98
8	155	73	133	85	80	95	118	91	115	125	129	100
9	140	70	129	80	65	105	117	118	105	125	120	125
10	140	115	128	80	70	90	118	97	125	90	120	100
11	140	123	129	108	95	90	113	91	110	105	120	120
12	133	125	102	117	100	93	112	100	105	100	123	118
13	145	115	102	60	95	95	109	107	110	110	123	120
14	147	113	105	115	72	95	106	100	110	110	125	120
15	120	115	109	80	93	95	113	100	115	118	122	133
16	115	115	110	80	80	100	113	105	125	110	120	138
17	118	133	110	65	100	115	113	119	120	110	108	125
18	108	115	92	90	107	100	117	119	120	102	139	103
19	105	110	92	73	110	110	114	119	118	104	139	100
20	123	113	79	85	105	94	117	120	98	132	134	118
21	133	110	108	83	105	80	119	102	100	133	134	135
22	135	102	126	80	107	105	129	102	103	138	120	138
23	133	122	126	82	103	116	103	97	118	122	115	135
24	105	108	128	70	105	110	103	127	123	122	108	128
25	135	108	102	95	100	110	103	126	120	109	133	130
26	115	114	98	62	100	109	79	112	115	102	130	123
27	78	128	89	35	80	113	68	134	100	115	115	135
28	88	129	88	77	70	106	81	116	95	116	123	138
29	123	89	119	70	---	120	82	127	115	120	110	140
30	98	127	157	70	---	112	140	117	100	123	108	143
31	98	---	126	68	---	118	---	102	---	123	118	---
MEAN	128	110	111	86	93	100	109	111	111	112	118	121

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	13.5	7.0	2.0	.5	4.0	11.0	10.0	20.0	24.0	22.0	22.5
2	18.5	14.0	7.0	1.0	1.0	3.0	11.5	10.0	21.5	24.0	26.0	22.0
3	18.0	16.0	6.5	1.5	1.0	3.5	12.0	10.0	22.0	23.5	25.5	23.0
4	15.0	17.0	8.0	1.0	.5	4.0	12.5	10.0	19.0	23.0	24.0	23.5
5	15.0	18.0	8.0	2.0	.0	3.5	13.0	10.0	18.5	21.0	25.0	23.0
6	15.0	18.0	7.0	3.5	.0	3.0	13.5	10.0	22.0	21.0	24.5	21.5
7	15.0	17.0	.0	4.0	.0	3.0	14.0	10.0	21.0	19.5	24.5	23.0
8	15.5	15.0	.0	2.0	.0	3.0	14.0	10.5	22.5	21.5	25.0	23.0
9	18.0	15.0	1.0	2.0	.5	2.5	14.5	11.0	21.5	25.0	25.0	23.5
10	17.0	15.0	1.0	.0	.0	3.0	14.0	11.0	16.0	25.0	24.0	22.0
11	17.0	12.0	.0	1.0	.0	4.0	15.0	10.5	19.5	25.0	25.0	22.5
12	18.0	10.0	.5	1.0	2.0	5.0	14.5	14.0	20.5	23.5	24.0	22.5
13	16.0	6.0	1.0	3.0	3.0	5.5	15.0	16.0	20.5	21.0	24.5	24.0
14	13.0	5.5	4.5	2.0	3.5	6.0	15.0	15.0	19.0	23.0	24.5	20.5
15	11.0	7.0	6.0	1.5	4.0	6.5	14.5	14.0	19.0	22.5	25.0	20.0
16	10.0	11.0	4.0	1.0	3.5	6.0	14.0	14.0	19.5	21.5	25.0	19.5
17	9.0	12.0	7.0	2.0	5.0	4.0	13.0	14.5	20.0	21.0	25.0	23.5
18	9.0	10.0	7.0	2.0	5.5	6.5	12.0	14.5	23.0	22.0	24.0	24.0
19	8.0	8.5	6.0	3.0	6.0	8.0	11.0	16.0	24.0	24.0	24.5	24.0
20	9.0	9.0	5.5	2.5	4.5	8.5	12.0	17.0	24.0	24.0	25.0	25.0
21	7.0	9.5	6.0	2.0	4.0	9.5	13.0	17.0	21.0	24.0	24.5	23.5
22	9.0	10.0	4.0	1.0	4.5	10.0	12.5	17.5	22.0	24.5	22.0	23.5
23	9.0	9.0	3.5	.0	5.0	10.0	13.0	18.0	22.0	24.5	23.0	23.0
24	9.0	11.0	5.0	1.0	3.5	10.0	13.5	18.0	21.0	24.0	22.5	22.5
25	10.0	11.0	4.0	3.0	5.0	9.0	14.0	18.0	22.0	20.0	23.0	22.0
26	10.0	8.0	3.0	3.0	6.0	7.5	10.0	18.0	22.0	21.0	23.5	20.5
27	15.0	6.0	1.0	1.0	5.0	7.0	10.0	18.0	22.5	19.0	23.5	20.5
28	16.0	6.0	.0	.0	4.0	7.5	10.5	19.5	21.5	18.0	24.0	20.0
29	15.0	6.0	1.0	1.0	---	9.0	11.0	20.0	22.5	20.0	24.0	19.0
30	11.0	7.0	1.0	.5	---	9.5	10.0	20.0	24.0	21.0	24.0	18.5
31	10.0	---	2.0	.0	---	10.0	---	20.0	---	21.0	24.0	---
MEAN	13.0	11.0	4.0	1.5	3.0	6.0	13.0	14.5	21.0	22.5	24.0	22.0

ROANOKE RIVER BASIN

02066000 ROANOKE (STAUNTON) RIVER AT RANDOLPH, VA--Continued

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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	40	147	17	60	51	395	25	106	74	1620	42	587
2	30	76	17	69	64	684	20	57	56	809	26	232
3	25	32	20	80	85	1230	23	100	42	441	25	209
4	32	64	18	70	30	186	25	126	50	613	35	446
5	28	85	24	132	22	84	23	130	26	152	17	96
6	30	91	28	150	100	1570	25	138	20	90	14	50
7	31	96	106	1380	75	1080	33	200	29	184	20	124
8	36	132	82	1030	83	1420	110	754	40	327	42	488
9	28	69	96	1400	80	1330	370	13300	38	315	50	666
10	21	27	125	2030	62	716	200	9670	36	241	130	3200
11	26	63	85	1070	27	158	98	3410	33	184	168	11400
12	30	102	66	638	20	56	66	1400	18	68	125	8230
13	37	134	25	84	26	110	44	514	15	51	95	4870
14	40	150	21	52	26	120	47	660	53	465	74	3100
15	45	275	30	115	29	157	40	431	47	401	70	2870
16	32	117	30	124	30	203	26	173	45	367	65	2460
17	21	48	33	143	25	167	55	536	45	354	60	1900
18	25	81	42	253	20	126	100	2690	45	343	50	882
19	30	109	40	279	35	372	62	1910	20	102	25	215
20	24	82	25	79	50	717	80	1710	16	60	17	102
21	25	86	21	50	54	809	90	1960	22	137	30	277
22	33	141	30	130	49	751	40	333	28	214	33	393
23	19	46	30	170	36	450	21	107	40	421	28	289
24	15	19	80	987	29	265	34	281	30	232	26	240
25	18	41	41	241	20	106	95	1410	41	380	30	299
26	105	652	90	1130	16	59	245	17000	20	103	52	727
27	300	8100	43	273	15	50	585	70100	24	126	180	7390
28	270	5650	26	99	22	102	120	12100	50	707	95	3870
29	60	332	98	1400	20	110	100	6560	---	---	70	1970
30	26	75	55	420	25	147	92	3780	---	---	40	613
31	14	31	---	---	38	258	85	2550	---	---	36	485
TOTAL	---	17153	---	14138	---	13988	---	154196	---	9507	---	58680
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	70	1130	75	6160	35	335	25	100	15	67	67	326
2	42	483	67	3580	32	287	20	61	15	83	82	565
3	30	243	60	2190	32	282	14	29	18	100	60	222
4	26	237	58	2130	18	107	150	2600	23	171	40	89
5	20	126	222	14700	15	66	72	754	20	132	37	71
6	30	351	90	6290	16	82	64	648	20	99	44	100
7	25	215	60	2590	20	117	48	540	17	78	74	322
8	22	175	83	2080	17	96	39	404	34	237	68	279
9	20	143	62	3180	48	572	29	150	46	482	95	669
10	15	84	58	2910	31	249	15	44	45	422	65	272
11	20	124	43	1110	15	62	25	118	42	363	30	52
12	23	156	65	1320	12	39	42	230	40	338	45	131
13	18	105	57	1090	15	79	37	204	26	102	61	234
14	15	85	75	2210	14	67	40	220	18	42	56	206
15	15	92	80	2380	25	161	45	311	35	165	55	206
16	13	72	70	1840	20	118	40	195	42	228	59	260
17	12	51	66	1630	19	104	30	107	46	282	40	113
18	17	99	60	1340	10	31	45	217	50	321	24	36
19	20	134	50	948	8	16	40	221	58	423	40	89
20	25	209	44	659	15	55	30	184	30	116	50	175
21	51	640	30	287	18	97	30	196	21	40	44	156
22	45	584	20	159	20	125	36	271	30	91	40	139
23	34	214	26	301	29	218	20	86	34	140	47	198
24	30	149	27	333	43	399	12	26	30	115	30	98
25	30	184	22	210	25	179	30	159	32	123	20	33
26	120	3130	25	294	20	85	27	163	45	227	23	42
27	240	23800	20	171	31	224	26	133	48	200	38	117
28	150	23600	15	75	78	1300	22	105	27	59	35	97
29	115	14800	15	70	33	244	25	130	44	158	37	109
30	80	7690	23	162	28	135	17	61	68	386	58	319
31	---	---	30	234	---	---	11	23	80	579	---	---
TOTAL	---	79105	---	62633	---	5931	---	8690	---	6369	---	5725
TOTAL LOAD FOR YEAR:		436115		TONS.								

ROANOKE RIVER BASIN

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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 (7.2 km) northeast of Kibler. Townes Dam: Lat 36°41'10", long 80°25'50", Patrick County, Hydrologic Unit 03010103, on Dan River about 4 mi (6 km) north of Kibler.

DRAINAGE AREA.--Talbot Dam, 20.2 mi² (52.3 km²); Townes Dam, 32.9 mi² (85.2 km²).

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 (9.91 hm³), and Townes Reservoir, 1,377 acre-ft (1.70 hm³). Storage began in Talbot Reservoir on Feb. 13, 1939, and in Townes Reservoir several months earlier.

COOPERATION.--Records furnished by city of Danville.

COMBINED MONTHEND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7930	
Oct. 31.....	8050	+120
Nov. 30.....	8340	+290
Dec. 31.....	8080	-260
CAL YR 1977.....		-310
Jan. 31.....	8860	+780
Feb. 28.....	8210	-650
Mar. 31.....	7510	-700
Apr. 30.....	8580	+1070
May 31.....	8090	-490
June 30.....	8260	+170
July 31.....	8070	-190
Aug. 31.....	7720	-350
Sept. 30.....	7630	-90
WTR YR 1978.....		-300

ROANOKE RIVER BASIN

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 (61 m) upstream from bridge on State Highway 704, 700 ft (213 m) downstream from Georges Mill, 0.2 mi (0.3 km) downstream from Elk Creek, 3 mi (5 km) east of Francisco, and 7.9 mi (12.7 km) downstream from Little Dan River.

DRAINAGE AREA.--124 mi² (321 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1924 to current year. Monthly discharge only for some periods, published in WSP 1303.

REVISED RECORDS.--WSP 892: Drainage area. WSP 1303: 1938-50 (monthly runoff). WSP 1433: 1925-26, 1928-29, 1931, 1942, 1948.

GAGE.--Water-stage recorder. Altitude of gage is 830 ft (253 m), from topographic map. Prior to Nov. 15, 1929, nonrecording gage at same site and datum.

REMARKS.--Records good. Considerable diurnal fluctuation and regulation from mills and powerplants above station. Talbott Reservoir (station 02067800) and Townes Reservoir (station 02067820) above Pinnacles hydroelectric plant in Virginia, 28 mi (45 km) above station, were completed in 1938.

AVERAGE DISCHARGE.--54 years, 189 ft³/s (5.352 m³/s), 20.70 in/yr (526 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s (351 m³/s) Oct. 19, 1937, gage height, 12.45 ft (3.795 m); minimum, 7.1 ft³/s (0.20 m³/s) Sept. 8, 1932, gage height, 0.43 ft (0.131 m); minimum daily, 28 ft³/s (0.79 m³/s) Aug. 17, 18, 1963, Sept. 12, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1916 reached a stage of about 15 ft (4.6 m), from information by local residents, discharge, 16,000 ft³/s (453 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	0800	2820 79.9	5.37 1.637	May 4	1630	2580 73.1	5.13 1.564
Jan. 26	0330	*6320 179	8.40 2.560	July 3	0300	2190 62.0	4.74 1.445

Minimum discharge, 62 ft³/s (1.76 m³/s) Oct. 1, gage height, 1.19 ft (0.363 m); minimum daily, 69 ft³/s (1.95 m³/s) Oct. 1, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	146	273	139	362	203	301	288	165	122	140	181
2	182	74	161	138	356	204	291	289	158	175	143	112
3	102	74	150	202	324	210	271	279	161	882	146	110
4	77	158	159	228	323	190	189	1040	135	329	144	104
5	70	441	318	183	323	184	290	726	159	305	207	131
6	71	663	283	145	320	157	161	470	147	204	205	122
7	77	1250	262	150	200	203	167	418	194	149	274	131
8	80	719	317	305	170	281	161	512	287	154	374	152
9	109	438	313	1050	160	249	169	538	378	158	425	153
10	111	364	300	455	155	958	161	470	296	197	238	168
11	107	332	289	430	158	525	180	419	242	342	215	107
12	86	303	238	317	165	322	169	397	196	166	370	102
13	128	297	148	253	166	292	161	431	184	169	479	142
14	184	292	170	226	175	424	153	478	121	151	323	131
15	179	289	263	168	184	389	141	431	119	137	292	105
16	157	285	192	193	176	341	133	418	162	377	261	102
17	131	387	173	234	197	357	150	393	157	300	268	97
18	132	324	232	252	177	341	202	316	146	194	213	94
19	97	309	228	378	144	335	220	309	147	146	176	147
20	98	299	209	395	160	330	193	260	180	149	174	150
21	91	284	231	352	187	257	199	239	144	156	121	91
22	79	164	210	335	195	185	168	225	132	154	114	91
23	71	239	215	316	207	194	132	243	128	162	120	116
24	70	173	206	224	156	251	138	252	134	167	126	85
25	69	140	240	727	147	259	198	253	111	183	144	87
26	958	202	218	2970	156	667	960	243	120	130	140	83
27	357	183	211	681	130	459	840	228	160	147	164	81
28	308	170	204	502	168	381	390	189	187	185	108	79
29	291	187	189	428	---	374	302	207	163	138	164	78
30	281	191	183	400	---	361	270	242	125	112	193	84
31	266	---	180	376	---	335	---	204	---	111	156	---
TOTAL	5088	9377	6965	13152	5741	10218	7460	11407	5138	6451	6617	3416
MEAN	164	313	225	424	205	330	249	368	171	208	213	114
MAX	958	1250	318	2970	362	958	960	1040	378	882	479	181
MIN	69	74	148	138	130	157	132	189	111	111	108	78
(+)	+2	+5	-4	+13	-12	-11	+18	-8	+3	-3	-6	-2

CAL YR 1977 TOTAL 60630 MEAN 166 MAX 1320 MIN 54 MEAN± 166 CFSM± 1.34 IN± 18.18
WTR YR 1978 TOTAL 91030 MEAN 249 MAX 2970 MIN 69 MEAN± 249 CFSM± 2.01 IN± 27.30

+ Change in contents, equivalent in cubic feet per second, in Talbott and Townes Reservoirs furnished by city of Danville, Va.

* Adjusted for change in contents.

ROANOKE RIVER BASIN

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02068500 DAN RIVER NEAR FRANCISCO, NC--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTERRER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDEED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDEED (T/DAY)
NOV 07...	1300	1320	373	1330
JAN 27...	1225	670	120	217
MAR 10...	1335	1630	1040	4580
APR 17...	1345	130	2	.70
MAY 22...	1032	202	14	7.6
JUN 29...	1335	119	9	2.9
AUG 30...	0840	213	87	50

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 (18 m) downstream from bridge on State Highway 700, 1.2 mi (1.9 km) southeast of Nettleridge, 1.4 mi (2.3 km) downstream from Russell Creek, and 3.6 mi (5.8 km) upstream from Spoon Creek.

DRAINAGE AREA.--84.6 mi² (219.1 km²).

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WSP 2104: Drainage area. WDR VA-74: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 871.60 ft (265.664 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 9, 1964, nonrecording gage and crest-stage gage at same site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--16 years, 124 ft³/s (3.512 m³/s), 19.90 in/yr (505 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s (354 m³/s) June 21, 1972, gage height, 18.32 ft (5.584 m), from rating curve extended above 2,900 ft³/s (82 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 21 ft³/s (0.59 m³/s) Aug. 27, 1963; minimum gage height, 2.75 ft (0.838 m) July 28, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1030	1620 45.9	7.80 2.377	May 4	2030	1440 40.8	7.45 2.271
Jan. 26	0530	*3590 102	11.33 3.453	July 2	1730	1030 29.2	6.53 1.990
Mar. 10	1630	1160 32.9	6.82 2.079	July 3	0900	2480 70.2	9.53 2.905
Apr. 26	1800	1610 45.6	7.75 2.362				

Minimum discharge, 35 ft³/s (0.99 m³/s) Oct. 1, gage height, 3.10 ft (0.945 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	71	116	92	167	104	170	233	126	79	112	153
2	90	69	97	90	165	101	160	202	124	308	94	90
3	51	70	88	85	150	109	152	184	122	1100	94	88
4	43	135	85	84	142	106	148	629	120	239	132	82
5	41	215	234	82	136	99	144	686	114	170	136	80
6	40	305	223	84	130	101	138	369	112	144	154	78
7	40	386	146	85	126	109	136	296	193	130	261	76
8	43	290	120	254	124	115	130	412	247	122	180	74
9	79	182	112	516	118	124	128	409	215	136	152	72
10	56	142	98	223	112	696	126	317	136	111	126	71
11	45	120	94	180	110	448	124	267	122	148	111	75
12	41	103	91	160	110	293	124	244	117	112	171	74
13	48	94	87	144	114	259	118	294	117	105	162	88
14	123	88	128	142	112	319	115	330	107	107	124	94
15	82	82	172	122	114	306	112	280	104	105	111	80
16	68	77	132	111	112	246	109	265	102	172	105	78
17	61	147	124	155	109	205	109	236	101	126	105	72
18	54	109	178	200	114	179	110	215	99	105	92	72
19	51	92	152	166	112	165	117	200	94	95	90	76
20	48	84	140	156	106	156	126	187	99	92	85	71
21	46	81	130	126	104	148	110	179	107	88	82	72
22	45	81	116	112	106	144	107	167	98	97	80	71
23	42	100	107	111	104	136	101	165	96	88	81	73
24	42	90	103	103	101	132	99	167	93	85	78	74
25	42	88	140	478	104	134	120	156	93	102	78	74
26	676	100	118	1770	109	452	1030	148	99	92	78	69
27	214	87	105	471	106	340	1020	142	94	85	77	66
28	134	85	105	306	106	254	448	138	87	131	77	68
29	100	82	103	246	---	218	311	142	84	88	95	64
30	84	82	97	207	---	194	259	146	80	83	112	64
31	75	---	98	184	---	179	---	142	---	87	110	---
TOTAL	2643	3737	3839	7245	3323	6571	6201	7947	3502	4732	5545	2339
MEAN	85.3	125	124	234	119	212	207	256	117	153	114	78.0
MAX	676	386	234	1770	167	696	1030	686	247	1100	261	153
MIN	39	69	85	82	101	99	99	138	80	79	77	64
CFSM	1.01	1.48	1.47	2.77	1.41	2.51	2.45	3.03	1.38	1.81	1.35	.92
IN.	1.16	1.64	1.69	3.19	1.46	2.89	2.73	3.49	1.54	2.08	1.56	1.03

CAL YR 1977	TOTAL	31483	MEAN	86.3	MAX	705	MIN	24	CFSM	1.02	IN	13.84
WTR YR 1978	TOTAL	55624	MEAN	152	MAX	1770	MIN	39	CFSM	1.80	IN	24.46

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 (244 m) downstream from bridge on State Highway 629 at Moores Mill, 2.1 mi (3.4 km) downstream from Horse Pasture Creek, and 3.8 mi (6.1 km) southeast of Spencer.

DRAINAGE AREA.--108 mi² (280 km²).

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 (222.791 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Jan. 23, 1936, nonrecording gage at site 800 ft (244 m) upstream at datum 1.50 ft (0.457 m) higher. July 25 to Sept. 27, 1936, nonrecording gage at present site and datum.

REMARKS.--Records good. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--50 years, 126 ft³/s (3.568 m³/s), 15.84 in/yr (402 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft³/s (487 m³/s) Oct. 9, 1947, gage height, 15.80 ft (4.816 m), from rating curve extended above 7,200 ft³/s (200 m³/s) on basis of slope-area measurement at gage height 13.41 ft (4.087 m) and velocity-area study; minimum, 14 ft³/s (0.40 m³/s) Aug. 11, 1956; minimum gage height, 1.08 ft (0.329 m) Oct. 8, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft³/s (40 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1300	1640 46.4	5.04 1.536	Apr. 27	0300	2980 84.4	6.92 2.109
Jan. 26	1300	*3330 94.3	7.27 2.216	May 5	0200	2200 62.3	5.87 1.789
Mar. 10	1900	2660 75.3	6.48 1.975	July 3	1230	1460 41.3	4.73 1.442

Minimum discharge, 39 ft³/s (1.10 m³/s) Oct. 1.

DISCHARGE, IN CURTIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	74	162	92	142	107	148	218	128	88	128	198
2	59	71	117	88	140	107	140	192	121	130	122	98
3	49	74	98	83	130	113	132	174	121	809	94	90
4	45	153	92	81	121	107	130	819	126	234	124	85
5	43	171	323	83	119	100	128	1080	115	154	128	79
6	42	240	346	85	115	109	124	353	117	132	136	78
7	42	427	162	90	114	117	121	270	194	124	218	76
8	43	358	124	236	113	124	119	503	234	113	174	74
9	53	177	113	787	109	151	119	468	243	111	124	71
10	55	132	98	230	105	1530	117	304	151	107	128	71
11	45	113	92	174	102	746	117	246	130	162	115	74
12	41	98	92	156	102	317	117	221	124	121	111	71
13	44	90	88	130	105	259	111	224	124	111	322	76
14	100	85	98	124	107	302	107	294	113	148	148	74
15	124	81	151	119	111	317	105	237	109	145	119	76
16	69	78	115	109	109	227	102	234	109	202	111	76
17	69	96	124	140	105	192	105	208	109	154	111	72
18	56	92	321	280	111	171	107	192	105	119	96	69
19	51	81	218	246	111	156	117	180	105	107	92	69
20	49	76	156	192	105	148	124	168	107	102	87	66
21	47	74	145	151	102	142	109	162	113	98	83	69
22	47	76	124	128	107	134	102	151	186	94	81	69
23	45	88	111	117	94	130	98	148	226	94	79	79
24	45	88	105	113	105	126	98	154	124	103	78	78
25	47	83	126	590	105	126	117	148	111	117	78	76
26	1010	102	115	2660	117	732	1750	140	113	100	78	69
27	274	87	100	496	107	389	1980	134	107	92	83	68
28	137	83	92	263	107	237	516	132	98	113	79	66
29	105	81	94	205	---	195	293	132	92	94	88	64
30	88	83	96	177	---	171	237	130	90	87	100	63
31	79	---	96	156	---	154	---	154	---	87	135	---
TOTAL	3042	3612	4294	8581	3120	7936	7690	8170	3945	4452	3650	2344
MEAN	98.1	120	139	277	111	256	256	264	132	144	118	78.1
MAX	1010	427	346	2660	142	1530	1980	1080	243	809	322	198
MIN	39	71	88	81	94	100	98	130	90	87	78	63
CFSM	.91	1.11	1.29	2.57	1.03	2.37	2.37	2.44	1.22	1.33	1.09	.72
IN	1.05	1.24	1.48	2.96	1.07	2.73	2.65	2.81	1.36	1.53	1.26	.81

CAL YR 1977 TOTAL 32107 MEAN 88.0 MAX 1010 MIN 30 CFSM .82 IN 11.06
WTR YR 1978 TOTAL 60836 MEAN 167 MAX 2660 MIN 39 CFSM 1.55 IN 20.95

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 (2.4 km) west of Philpott, 12.0 mi (19.3 km) upstream from Reed Creek, and at mile 44.3 (71.3 km).

DRAINAGE AREA.--216 mi² (559 km²).

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 (300.2 m), is ungated and 120 ft (40 m) long. Storage began in 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 (304.2 m), is 246,400 acre-ft (304 hm³) of which 48,300 acre-ft (59.6 hm³) is above the spillway crest; 34,100 acre-ft (42.0 hm³) is controlled flood storage between elevations 974 ft (296.9 m), maximum power pool, and 985 ft (300.2 m); 110,000 acre-ft (136 hm³) is available for power between elevations 920 ft (280.4 m), minimum power pool, and 974 ft (296.9 m); and 54,000 acre-ft (66.6 hm³) is inactive and dead storage below elevation 920 ft (280.4 m). Usable capacity is 144,100 acre-ft (178 hm³) between elevations 920 ft (280.4 m) and 985 ft (300.2 m). Figures given herein represent total contents. Reservoir is used for flood control, hydroelectric power, low-water regulation for pollution abatement and industrial water supply, and recreation.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 191,700 acre-ft (236 hm³) June 22, 1972, elevation, 983.06 ft (299.637 m); minimum (after first filling to rule curve), 64,540 acre-ft (79.6 hm³) Sept. 26, 1956, elevation, 927.59 ft (282.729 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 180,700 acre-ft (223 hm³) Apr. 27, elevation, 979.60 ft (298.582 m); minimum, 129,260 acre-ft (159 hm³) Oct. 7, elevation, 960.90 ft (292.882 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	962.07	132110	
Oct. 31.....	963.05	134550	+2440
Nov. 30.....	971.76	157530	+22980
Dec. 31.....	971.28	156180	-1350
CAL YR 1977.....			-840
Jan. 31.....	975.63	168690	+12510
Feb. 28.....	973.10	161300	-7390
Mar. 31.....	975.03	166890	+5590
Apr. 30.....	977.06	172790	+5900
May 31.....	974.35	164980	-7810
June 30.....	973.95	163850	-1130
July 31.....	974.13	164360	+510
Aug. 31.....	973.01	161030	-3330
Sept. 30.....	970.95	155260	-5770
WTR YR 1978.....			+23150

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 (270 m) downstream from Philpott Dam, 3.1 mi (5.0 km) west of Philpott, 11.6 mi (18.7 km) upstream from Reed Creek, and at mile 44.1 (71.0 km).

DRAINAGE AREA.--216 mi² (559 km²).

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 (245.141 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Oct. 8, 1952, at site 1.9 mi (3.1 km) downstream at different datum.

REMARKS.--Records good. Since August 1950, flow regulated by Philpott Lake (station 02071900) 0.2 mi (0.3 km) upstream. Several observations 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, 276 ft³/s (7.816 m³/s), 17.35 in/yr (441 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s (481 m³/s) June 29, 1949, gage height, 20.3 ft (6.19 m), site and datum then in use, from rating curve extended above 9,700 ft³/s (270 m³/s) on basis of slope-area measurements at gage heights 18.2 ft (5.55 m) and 20.3 ft (6.19 m); minimum, 4.0 ft³/s (0.11 m³/s) Aug. 12, 1953, gage height, 1.50 ft (0.457 m); minimum daily, 24 ft³/s (0.68 m³/s) Dec. 16, 17, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,650 ft³/s (103 m³/s) Apr. 27, gage height, 7.34 ft (2.237 m), result of sluicing at dam; minimum, 10 ft³/s (0.28 m³/s) Nov. 1, gage height, 1.83 ft (0.558 m); minimum daily, 44 ft³/s (1.25 m³/s) Jan. 14, 15, 29, Feb. 5, 18, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	115	201	45	768	349	47	1340	593	48	301	302
2	49	114	201	201	766	350	46	1350	600	49	303	47
3	513	114	45	202	765	355	760	1360	48	406	302	47
4	508	119	45	200	769	45	757	1370	48	662	304	510
5	516	47	306	201	44	45	758	1350	403	663	48	516
6	517	47	305	201	663	354	762	1360	404	664	48	516
7	516	156	307	45	666	355	766	1230	404	658	300	512
8	48	155	305	45	667	357	46	1250	404	48	299	514
9	48	153	305	197	665	356	46	1260	405	48	299	47
10	223	153	45	827	670	354	452	1270	49	298	297	47
11	223	152	45	839	45	45	447	1140	49	301	299	255
12	222	47	619	836	45	45	450	765	505	299	47	251
13	224	47	626	833	665	500	449	47	504	301	47	253
14	223	150	620	44	664	760	455	46	509	301	659	253
15	47	151	633	44	671	763	47	546	509	48	170	254
16	48	149	633	414	671	762	47	757	507	49	168	47
17	222	148	45	414	669	756	506	756	49	300	167	47
18	220	151	45	411	44	760	507	757	49	301	173	252
19	220	47	464	409	44	45	507	757	300	299	174	254
20	220	47	461	408	351	761	508	759	301	301	47	254
21	220	205	462	45	345	760	506	46	405	301	405	253
22	47	204	467	45	345	762	47	654	408	48	407	251
23	48	204	463	563	349	765	47	651	353	48	408	47
24	221	203	45	563	353	768	197	651	49	354	409	47
25	220	204	45	565	45	771	198	655	49	357	408	250
26	218	47	564	556	45	46	201	652	456	356	47	567
27	214	47	565	759	352	760	1480	48	457	355	47	252
28	216	204	568	762	353	759	2700	48	459	355	305	252
29	47	203	564	44	---	760	2380	606	459	48	305	251
30	48	202	563	766	---	762	1330	603	457	48	303	45
31	116	---	45	772	---	765	---	604	---	301	303	---
TOTAL	6470	3985	10607	12256	12499	15795	17449	24688	10192	8615	10199	7393
MEAN	209	133	342	395	446	510	582	796	340	278	348	246
MAX	517	205	633	839	769	771	2700	1370	600	664	774	567
MIN	47	47	45	44	44	45	46	46	48	48	47	45
(*)	+40	+386	-22	+203	-133	+91	+99	-127	-19	+8	-54	-97
MEAN#	249	519	320	598	313	601	681	669	321	286	294	149
CFSM#	1.15	2.40	1.48	2.77	1.45	2.78	3.15	3.10	1.49	1.32	1.36	.69
IN#	1.33	2.68	1.71	3.19	1.51	3.21	3.52	3.57	1.66	1.53	1.57	.77

CAL YR 1977 TOTAL 86635 MEAN 237 MAX 759 MIN 44 MEAN# 236 CFSM# 1.09 IN# 14.84
WTR YR 1978 TOTAL 140748 MEAN 386 MAX 2700 MIN 44 MEAN# 418 CFSM# 1.94 IN# 26.28

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; furnished by 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 (8 m) upstream from bridge on State Highway 666 at north edge of North Bassett, 1.0 mi (1.6 km) northwest of Bassett, 3.0 mi (4.8 km) downstream from Town Creek, 5.6 mi (9.0 km) upstream from Reed Creek, 6.2 mi (10.0 km) downstream from Philpott Dam, and at mile 38.1 (61.3 km).

DRAINAGE AREA.--259 mi² (671 km²).

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 (229.542 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records good. Since August 1950, flow regulated by Philpott Lake (station 02071900) 6.2 mi (10.0 km) upstream. Gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--39 years, 327 ft³/s (9.261 m³/s), 17.15 in/yr (436 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft³/s (753 m³/s) Aug. 14, 1940, gage height, 18.28 ft (5.572 m); minimum, 19 ft³/s (0.54 m³/s) July 19, 1956; minimum daily, 44 ft³/s (1.25 m³/s) Aug. 23, 1964; minimum gage height, 1.06 ft (0.323 m) Sept. 18, 26, 1953.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 19, 1937, reached a stage of about 22.9 ft (6.98 m), from information by local residents, discharge, 38,000 ft³/s (1,100 m³/s), from rating curve extended above 23,000 ft³/s (650 m³/s) on basis of backwater studies and records for station at Martinsville.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,390 ft³/s (124 m³/s) Jan. 26, gage height, 7.38 ft (2.249 m); minimum, 52 ft³/s (1.47 m³/s) Feb. 7, result of freezeup, gage height, 1.45 ft (0.442 m); minimum daily, 59 ft³/s (1.67 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	134	248	72	796	385	102	1410	650	102	348	399
2	68	134	235	222	798	384	91	1410	650	98	333	87
3	505	139	79	223	791	390	787	1410	115	592	334	81
4	513	170	74	220	790	80	791	1980	91	714	348	544
5	514	112	419	222	90	78	791	1600	422	708	86	546
6	514	154	397	224	681	390	795	1460	444	705	79	548
7	514	420	348	74	688	390	797	1340	452	700	392	544
8	70	259	336	228	689	390	91	1480	461	104	378	544
9	67	199	333	534	686	390	82	1460	460	79	382	73
10	221	186	80	872	691	390	480	1380	115	332	349	71
11	228	178	71	875	80	181	484	1330	86	348	337	281
12	227	72	631	868	77	166	484	831	518	336	88	279
13	232	70	640	867	685	583	482	153	545	337	137	280
14	286	169	649	111	687	857	483	155	547	346	675	281
15	81	171	668	79	695	839	87	619	548	84	810	281
16	70	171	655	430	695	817	79	846	548	97	806	72
17	230	252	87	471	692	800	525	832	108	340	802	70
18	232	197	202	491	83	801	537	822	81	335	808	276
19	230	79	532	477	81	101	540	818	337	335	807	278
20	228	73	506	459	382	787	540	817	344	333	99	277
21	228	224	499	95	378	794	533	124	508	332	424	279
22	67	229	498	82	382	793	86	693	493	75	434	277
23	61	236	490	581	381	794	76	713	401	73	433	70
24	222	232	79	587	383	797	219	714	85	385	432	70
25	228	233	79	893	84	806	246	712	82	393	452	278
26	592	90	578	1850	93	516	1930	709	470	387	113	587
27	264	79	591	882	386	888	1980	115	492	384	88	278
28	244	226	590	830	386	827	2770	94	492	388	350	277
29	75	225	589	108	---	812	2490	628	492	74	354	276
30	69	230	594	823	---	806	1410	651	490	72	354	67
31	135	---	81	803	---	806	---	654	---	328	410	---
TOTAL	7274	5343	11858	15553	13330	17838	20788	27960	11527	9916	12242	8271
MEAN	235	178	383	502	476	575	693	902	384	320	395	276
MAX	592	420	668	1850	798	888	2770	1980	650	714	810	587
MIN	59	70	71	72	77	78	76	94	81	72	79	67
(*)	+40	+386	-22	+203	-133	+91	+99	-127	-19	+8	-54	-97
MEAN#	275	564	361	705	343	666	792	775	365	328	341	179
CFSM#	1.06	2.18	1.39	2.72	1.32	2.57	3.06	2.99	1.41	1.27	1.32	.69
IN#	1.22	2.43	1.61	3.14	1.38	2.97	3.41	3.45	1.57	1.46	1.52	.77

CAL YR 1977 TOTAL 97609 MEAN 267 MAX 1020 MIN 57 MEAN# 266 CFSM# 1.03 IN# 13.94
WTR YR 1978 TOTAL 161900 MEAN 444 MAX 2770 MIN 59 MEAN# 476 CFSM# 1.84 IN# 24.95

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; furnished by Corps of Engineers.
Adjusted for change in contents.

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 (244 m) downstream from bridge on U.S. Highways 58 and 220, and 5.0 mi (8.0 km) downstream from Beaver Creek.

DRAINAGE AREA.--380 mi² (984 km²).

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 (200.321 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated since August 1950 by Philpott Lake (station 02071900) 19.6 mi (31.5 km) upstream. Some additional regulation by powerplant 1,000 ft (305 m) above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--49 years, 451 ft³/s (12.77 m³/s), 16.12 in/yr (409 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,000 ft³/s (1,100 m³/s) Oct. 19, 1937, gage height, 21.50 ft (6.553 m), from rating curve extended above 17,000 ft³/s (480 m³/s) on basis of computations of flow over dam at gage heights 16.76 ft (5.108 m) and 21.50 ft (6.553 m); minimum, 3.8 ft³/s (0.11 m³/s) Mar. 19, 1955; minimum daily, 19 ft³/s (0.54 m³/s) Oct. 6, 1935; minimum gage height, 0.69 ft (0.210 m) Sept. 8, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,100 ft³/s (343 m³/s) Jan. 26, gage height, 10.77 ft (3.283 m); minimum, 13 ft³/s (0.37 m³/s) Sept. 25, gage height, 1.06 ft (0.323 m); minimum daily, 100 ft³/s (2.83 m³/s) Oct. 2, Sept. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	174	196	475	149	954	502	451	1610	797	374	593	755
2	100	201	367	149	973	475	177	1580	785	230	467	283
3	368	265	245	346	945	502	707	1570	386	1130	467	153
4	553	277	157	319	935	295	926	3040	187	917	563	622
5	560	360	698	295	443	124	926	2170	305	896	277	717
6	568	435	859	313	603	411	1000	1710	545	881	210	717
7	568	888	520	271	803	502	831	1550	748	886	593	707
8	332	584	475	403	821	538	395	1960	674	455	538	717
9	106	353	451	1400	812	603	160	1770	662	192	593	277
10	192	301	346	992	812	2870	451	1610	479	416	538	130
11	246	277	106	1070	339	954	603	1540	160	717	484	332
12	259	255	612	1050	141	502	603	1050	426	502	265	374
13	289	138	749	1080	631	679	584	556	689	493	411	381
14	523	173	831	574	812	1140	584	388	656	726	631	374
15	369	269	859	182	831	1110	289	688	662	325	964	374
16	131	240	812	435	831	1020	127	1060	669	360	983	283
17	230	319	346	688	821	973	475	1050	389	502	954	100
18	295	325	669	916	374	954	650	1010	164	511	954	307
19	289	210	717	850	149	443	669	1000	418	493	954	367
20	283	138	736	755	395	707	688	992	471	502	388	360
21	289	196	707	388	493	926	660	475	542	484	346	374
22	196	295	660	191	475	926	289	650	782	271	556	381
23	109	353	650	538	467	916	145	878	639	164	612	230
24	192	283	277	774	493	916	230	878	298	484	622	145
25	277	374	201	1600	235	945	403	869	145	593	679	301
26	2170	319	459	5010	191	1630	4970	859	372	547	459	758
27	565	160	783	1330	411	1140	3940	427	616	529	220	368
28	367	240	736	1110	484	1060	2760	191	618	622	451	375
29	332	307	717	520	---	1000	2590	574	604	250	502	382
30	141	339	736	764	---	973	1600	803	627	153	529	250
31	130	---	353	983	---	964	---	783	---	403	520	---
TOTAL	11203	9070	17309	25445	16674	26700	28883	35291	15515	16008	17323	11894
MEAN	361	302	558	821	596	861	963	1138	517	516	559	396
MAX	2170	888	859	5010	973	2870	4970	3040	797	1130	983	758
MIN	100	138	106	149	141	124	127	191	145	153	210	100
(*)	+40	+386	-22	+203	-133	+91	+99	-127	-19	+8	-54	-97
MEAN#	401	688	536	1024	463	952	1062	1011	498	524	505	299
CFSM#	1.06	1.81	1.41	2.69	1.22	2.51	2.79	2.66	1.31	1.38	1.33	.79
IN#	1.22	2.02	1.63	3.11	1.27	2.89	3.12	3.07	1.46	1.59	1.53	.88

CAL YR 1977 TOTAL 131767 MEAN 361 MAX 2170 MIN 51 MEAN# 360 CFSM# .95 IN# 12.86
WTR YR 1978 TOTAL 231315 MEAN 634 MAX 5010 MIN 100 MEAN# 666 CFSM# 1.75 IN# 23.79

* Change in contents, equivalent in cubic feet per second, in Philpott Lake, furnished by 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 (0.5 km) downstream from bridge on State Highway 14, 0.8 mi (1.3 km) upstream from bridge on Secondary Road 1714, 1.2 mi (1.9 km) south of Virginia-North Carolina State line, 1.3 mi (2.1 km) downstream from Stuart Creek, and 3.9 mi (6.3 km) upstream from mouth.

DRAINAGE AREA.--538 mi² (1,393 km²).

WATER-DISCHARGE RECORDS

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 (164.458 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated since August 1950 by Philpott Lake (station 02071900) 40 mi (64 km) upstream, usable capacity, 6,325,000,000 ft³ (179.1 hm³). Some additional regulation by hydroelectric plant at Martinsville, Va., 18 mi (29 km) upstream.

AVERAGE DISCHARGE.--39 years, 616 ft³/s (17.45 m³/s), 15.55 in/yr (395 mm/yr), adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft³/s (1,290 m³/s) Aug. 15, 1940, gage height, 19.28 ft (5.877 m), from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of computation of peak flow over dam 1.5 mi (2.4 km) downstream; minimum, 38 ft³/s (1.08 m³/s) Aug. 7, 1967; minimum daily, 46 ft³/s (1.30 m³/s) Aug. 14, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,500 ft³/s (439 m³/s) Apr. 27, gage height, 12.58 ft (3.834 m); minimum, 95 ft³/s (2.69 m³/s) Oct. 2, 23; minimum daily, 109 ft³/s (3.09 m³/s) Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	408	300	783	304	1200	676	1070	2130	930	632	1180	1120
2	127	288	635	289	1200	661	299	2030	906	289	1300	646
3	208	367	445	513	1110	696	506	1950	863	1230	636	203
4	583	386	315	408	1070	659	1080	4090	286	921	748	306
5	579	487	787	426	1050	238	1070	4740	383	1000	679	699
6	575	671	1630	450	369	492	1130	2410	676	900	333	712
7	585	940	862	510	900	699	990	2080	896	975	601	696
8	629	1290	694	910	970	748	990	2810	1250	852	742	688
9	109	586	634	2740	920	867	260	2770	1260	280	704	704
10	187	424	626	1200	917	6890	423	2230	884	288	664	145
11	315	397	199	1340	907	3190	734	1990	293	571	598	260
12	305	366	342	1280	244	1260	747	1380	409	559	628	415
13	323	226	854	1280	412	1170	726	1260	813	523	507	409
14	560	248	928	1220	968	1590	719	676	789	571	471	407
15	714	381	1000	390	979	1730	705	782	783	873	944	421
16	164	322	943	510	973	1440	207	1130	780	480	1020	461
17	303	388	899	900	964	1310	399	1300	793	504	1030	154
18	366	413	860	1450	881	1230	775	1220	239	565	958	211
19	346	268	984	1280	258	1090	822	1200	358	546	977	403
20	338	224	966	1110	479	554	861	1180	587	543	890	397
21	346	290	904	950	652	1150	795	1100	609	529	286	404
22	309	373	829	400	658	1140	701	492	768	559	586	386
23	119	456	796	530	628	1110	227	1020	907	165	585	474
24	201	348	635	930	665	1100	346	1030	690	386	576	181
25	314	497	379	2500	499	1100	516	1020	208	722	581	229
26	4210	402	422	10700	362	2650	8900	1000	335	617	680	468
27	1380	290	898	2480	492	1590	10200	894	710	605	274	673
28	667	338	845	1780	666	1430	4700	305	697	669	295	397
29	622	409	824	1390	---	1270	3770	483	673	599	534	395
30	355	426	854	850	---	1200	2450	914	658	203	563	424
31	267	---	728	1340	---	1160	---	949	---	312	573	---
TOTAL	16514	12801	23500	42360	21393	42090	47118	48565	20433	18468	21143	13488
MEAN	533	427	758	1366	764	1358	1571	1567	681	596	682	450
MAX	4210	1290	1630	10700	1200	6890	10200	4740	1260	1230	1300	1120
MIN	109	224	199	289	244	238	207	305	208	165	274	145
(+)	+40	+386	-22	+203	-133	+91	+99	-127	-19	+8	-54	-97

CAL YR 1977 TOTAL 167601 MEAN 459 MAX 4210 MIN 80 MEAN± 458 CFSM± 0.85 IN± 11.54
WTR YR 1978 TOTAL 327873 MEAN 898 MAX 10700 MIN 109 MEAN± 930 CFSM± 1.73 IN± 23.48

+ Change in contents, equivalent in cubic feet per second, in Philpott Lake furnished by Corps of Engineers.

* Adjusted for change in contents.

ROANOKE RIVER BASIN

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02074000 SMITH RIVER AT EDEN, NC--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
NOV 16...	1402	280	8	6.0
APR 19...	1325	570	8	12
MAY 11...	1252	1980	86	460
JUN 20...	1325	463	20	25
JUL 25...	1535	680	84	154
AUG 08...	1235	663	56	100
30...	1452	438	24	28

ROANOKE RIVER BASIN

02074218 DAN RIVER NEAR MAYFIELD, NC

LOCATION.--Lat 36°32'29", long 79°36'21", Rockingham County, Hydrologic Unit 03010103, near right bank on downstream end of bridge pier on Secondary Road 1761, at North Carolina-Virginia State line, 2.2 mi (3.5 km) upstream from Whiteoak Creek, 3.0 mi (4.8 km) northwest of Mayfield, and at mile 81.0 (130.3 km).

DRAINAGE AREA.--1,780 mi² (4,610 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 458.4 ft (139.7 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Records good. Diurnal fluctuation and regulation at low flow caused by mills and Talbott Reservoir (station 02067800) and Townes Reservoir (station 02067820) on the Dan River and Philpott Lake (station 02074000) on the Smith River. Duke Power Company gage-height and temperature telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,200 ft³/s (884 m³/s) Apr. 27, 1978, gage height, 25.08 ft (7.664 m); minimum, 345 ft³/s (9.77 m³/s) Aug. 2, 1977, gage height, 1.95 ft (0.594 m); minimum daily, 395 ft³/s (11.2 m³/s) July 18, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1972, reached a stage of 28.1 ft (8.56 m), from floodmarks, discharge, 40,000 ft³/s (1,130 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,000 ft³/s (370 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	2230	19000	538	Mar. 11	0230	25700	728
Jan. 9	1600	14600	413	Apr. 27	1030	*31200	884
Jan. 26	2030	30600	867	May 5	0830	20500	581
							20.29
							6.184

Minimum daily discharge, 583 ft³/s (16.5 m³/s) Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	665	1280	2170	1450	3610	1720	2890	4590	2170	1480	2200	5910
2	732	1200	2430	1280	3210	1720	1990	4220	2130	1090	3340	2570
3	880	1060	1820	1350	3130	1890	1850	3830	2070	5030	1690	1310
4	1060	1180	1410	1280	2890	2090	2430	6630	1510	7640	3400	1150
5	933	1820	1940	1300	2800	1610	2340	19500	1470	3250	3380	1520
6	879	2750	6300	1420	2040	1530	2330	8950	1630	2620	2430	1480
7	864	3660	3340	1590	2390	1850	2270	5320	2360	2390	5320	1450
8	906	4780	2320	3900	2360	2030	2180	8200	3240	2100	3810	1410
9	590	2940	2040	12900	2450	2430	1340	9770	4410	1330	3180	1450
10	583	2120	1910	6220	2180	14100	1390	7330	3380	1290	2580	894
11	735	1790	1460	3630	2120	22900	1750	5100	1960	1860	2010	883
12	714	1560	1300	3040	1390	6620	1830	4040	1730	3000	1860	1040
13	700	1350	1940	2980	1450	4160	1780	3700	2050	1700	2020	1040
14	1090	1240	1870	3760	2050	4010	1700	3540	1980	1610	3250	1110
15	1780	1290	2060	2970	2090	5360	1670	3470	1810	2220	2410	1120
16	1280	1280	2280	2210	2110	4320	1200	3480	1770	3350	2250	1100
17	1080	1290	2140	2740	2060	3570	1170	3500	1830	5990	2140	920
18	1060	1550	3310	5810	2080	3190	1650	3210	1280	3250	2080	760
19	954	1390	3520	4860	1470	2980	1820	2980	1270	2110	1930	920
20	912	1190	2830	4570	1430	2060	2010	2850	1550	1780	1820	995
21	863	1130	2520	4590	1660	2640	1910	2970	1870	1660	1130	1010
22	876	1270	2290	3070	1760	2530	1790	1900	2000	1590	1260	1020
23	655	1400	2030	2570	1680	2350	1180	2370	2100	1290	1280	1060
24	604	1390	1900	2760	1670	2280	1150	2400	1880	1180	1260	827
25	703	1410	1620	8100	1720	2310	1390	2390	1340	3070	1260	837
26	9740	1500	1720	27800	1370	5910	16700	2340	1260	2460	1520	971
27	11400	1410	2010	28000	1390	8940	29700	2260	1820	1720	1090	1280
28	3100	1240	1890	8750	1610	4870	15300	1530	1810	1740	1040	936
29	2220	1300	1730	5430	---	3740	7480	1540	1650	2010	1200	920
30	1670	1360	1800	3770	---	3300	5500	2060	1580	1220	1340	896
31	1390	---	1960	4060	---	3050	---	2230	---	1130	1510	---
TOTAL	51618	50130	69760	168160	58170	132060	119690	138260	58910	74160	66990	38789
MEAN	1665	1671	2250	5425	2078	4260	3990	4458	1964	2392	2161	1293
MAX	11400	4780	6300	28000	3610	22900	29700	19500	4410	7640	5320	5910
MIN	583	1060	1300	1280	1370	1530	1150	1530	1260	1090	1040	760
(†)	+40	+386	-22	+203	-133	+91	+99	-127	-19	+8	-54	-97
CAL YR 1977 TOTAL	509711			MEAN 1396	MAX 11400	MIN 395	MEAN# 1395	CFSM# 0.78	IN# 10.59			
WTR YR 1978 TOTAL	1026637			MEAN 2813	MAX 29700	MIN 583	MEAN# 2845	CFSM# 1.60	IN# 21.72			

† Change in contents, equivalent in cubic feet per second, in Philpott Lake furnished by Corps of Engineers.

Adjusted for change in contents.

ROANOKE RIVER BASIN

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02074218 DAN RIVER NEAR MAYFIELD, NC--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968-70, 1972-73, 1977 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1976 to current year.

WATER TEMPERATURES: October 1976 to current year.

INSTRUMENTATION.--Temperature recorder since October 1977.

REMARKS.--Water temperatures near left bank sometimes affected by heated releases from power plant located 8.4 mi (13.5 km) upstream. Releases from town of Eden's sewage treatment plant enter river on left bank approximately 10.2 mi (16.4 km) upstream. Temperature recorder located at gaging station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 199 micromhos July 29, 1977; minimum daily, 37 micromhos Oct. 10, 1976.

WATER TEMPERATURES: Maximum daily, 33.0°C July 20, 1977; minimum, 1.0°C Jan. 3, Dec. 29, 1977, Jan. 11, 12, Feb. 7, 8, 1978.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 177 micromhos Oct. 25; minimum daily, 44 micromhos Jan. 27.

WATER TEMPERATURES: Maximum, 25.5°C July 10, 11, 24, 25, Aug. 29, Sept. 19, 20, 21; minimum, 1.0°C Dec. 29, Jan. 11, 12, Feb. 7, 8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	OXYGEN, DIS- SOLVED (MG/L)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)
OCT										
26...	1230	9550	90	6.8	14.0	650	8.7	18	0	4.5
26...	1445	14600	79	6.8	13.5	--	7.0	--	--	--
26...	1600	16000	86	6.0	13.5	240	7.4	14	0	3.8
28...	1200	2880	71	6.8	--	250	--	14	3	3.2
DEC										
29...	1400	1900	85	6.8	1.0	19	13.2	20	0	5.0
JAN										
26...	1400	29500	31	6.6	1.0	300	13.4	11	1	2.6
APR										
05...	1300	2660	90	7.4	14.0	20	10.3	18	0	4.6
JUN										
08...	1310	3630	95	7.2	20.0	750	8.9	16	0	4.0
21...	1335	1970	110	6.7	25.0	15	8.1	19	0	5.0
AUG										
29...	1115	1290	88	6.7	26.0	15	7.2	23	0	6.0

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	ALKA- LINITY (MG/L AS CAC03)	CARBON DIOXIDE DIS- SOLVED (MG/L AS CO2)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT										
26...	1.6	10	51	1.0	2.7	23	0	19	5.8	9.4
26...	--	--	--	--	--	--	0	--	--	--
26...	1.0	9.0	53	1.1	2.7	18	0	15	29	6.8
28...	1.4	5.8	42	.7	2.8	13	0	11	3.3	7.4
DEC										
29...	1.9	7.8	43	.8	1.5	28	0	23	7.1	6.0
JAN										
26...	1.1	2.2	26	.3	2.0	12	0	10	4.8	6.8
APR										
05...	1.7	10	52	1.0	1.4	25	0	21	1.6	6.9
JUN										
08...	1.5	9.5	53	1.0	1.9	23	0	19	2.3	6.4
21...	1.7	12	54	1.2	1.9	27	0	22	8.6	7.2
AUG										
29...	2.0	8.3	41	.8	1.8	28	0	23	8.9	6.7

ROANOKE RIVER BASIN

02074218 DAN RIVER NEAR MAYFIELD, NC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 26...	10	.1	8.1	68	58	.09	1750	.26	.02	.28
26...	--	--	--	--	--	--	--	--	--	--
26...	9.5	.1	8.1	58	51	.08	2510	.28	.05	.33
28...	6.4	.0	11	58	45	.09	451	.39	.02	.41
DEC 29...	8.4	.0	15	74	61	.10	380	.27	.01	.28
JAN 26...	3.0	.1	5.0	46	30	.06	3660	.22	.06	.28
APR 05...	10	.1	13	56	61	.08	402	.22	.01	.23
JUN 08...	11	.1	12	68	58	.09	666	--	--	--
21...	15	.1	15	79	74	.11	420	.34	.01	.35
AUG 29...	7.5	.1	14	66	62	.09	230	.29	.01	.30

DATE	NITRO- GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOT. IN BOT MAT (MG/KG 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,NH4 + ORG. SUSP. TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS-SOLVED (MG/L AS N)
OCT 26...	.34	--	.08	.01	.01	2.5	.45	2.6	2.1	.46
26...	--	--	--	--	--	--	--	--	--	--
26...	.27	--	.21	.17	.22	5.6	.32	5.8	5.3	.49
28...	.42	--	.08	.01	.01	1.5	.32	1.6	1.3	.33
DEC 29...	.28	5.0	.04	.03	.04	.29	.25	.33	.05	.28
JAN 26...	.27	--	.19	.15	.19	1.9	.31	2.1	1.6	.46
APR 05...	.24	2.0	.03	.03	.04	.40	.19	.43	.21	.22
JUN 08...	--	--	--	--	--	--	--	--	--	--
21...	.38	--	.04	.03	.04	.81	.19	.85	.63	.22
AUG 29...	.30	--	.00	.02	.03	.41	.27	.41	.12	.29

DATE	NITRO- GEN,NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	NITRO- GEN, TOTAL (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, ORTH0, TOTAL (MG/L AS P)	PHOS- PHORUS, ORTH0, DIS-SOLVED (MG/L AS P)	PHOS- PHATE, ORTH0, DIS-SOLVED (MG/L AS PO4)
OCT 26...	--	2.9	13	.78	--	.04	.06	.01	.03
26...	--	--	--	--	--	--	--	--	--
26...	--	6.1	27	2.1	--	.01	.11	.00	.00
28...	--	2.0	8.9	.27	--	.02	.05	.00	.00
DEC 29...	1500	.61	2.7	.10	.31	.15	.06	.12	.37
JAN 26...	--	2.4	11	.65	2.0	.01	.09	.00	.00
APR 05...	1000	.66	2.9	.14	.43	.09	.07	.07	.21
JUN 08...	--	--	--	--	--	--	--	--	--
21...	--	1.2	5.3	.17	.52	.22	.09	.12	.37
AUG 29...	--	.71	3.1	.12	.37	--	.04	--	--

02074218 DAN RIVER NEAR MAYFIELD, NC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	PHOS- PHORUS, TOTAL IN ROT- MAT. (MG/KG AS P)	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS- PENDE TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	ARSENIC TOTAL IN ROT- TOM MA- TETIAL (UG/G AS AS)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM SUS- PENDE RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CADMIUM RECOV. FM ROT- TOM MA- TETIAL (UG/G AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)
OCT										
26...	--	1	0	1	--	1	0	3	--	30
26...	--	--	--	--	--	--	--	--	--	90
26...	--	--	--	--	--	--	--	--	--	60
28...	--	--	--	--	--	--	--	--	--	20
DEC										
29...	290	--	--	--	1	--	--	--	<10	10
JAN										
26...	--	0	0	0	--	1	0	1	--	40
APR										
05...	270	--	--	--	--	--	--	--	--	<10
JUN										
08...	--	--	--	--	--	--	--	--	--	20
21...	--	--	--	--	--	--	--	--	--	10
AUG										
29...	--	--	--	--	--	--	--	--	--	<10

DATE	CHRO- MIUM, SUS- PENDE RECOV. (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	CHRO- MIUM, RECOV. FM ROT- TOM MA- TETIAL (UG/G AS CR)	COPALT, TOTAL RECOV- ERABLE (UG/L AS CO)	COPALT, SUS- PENDE RECOV- ERABLE (UG/L AS CO)	COPALT, DIS- SOLVED (UG/L AS CO)	COPALT, RECOV. FM ROT- TOM MA- TETIAL (UG/G AS CO)	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, SUS- PENDE RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)
OCT										
26...	30	0	--	10	10	0	--	57	50	7
26...	90	0	--	--	--	--	--	290	280	8
26...	60	0	--	--	--	--	--	200	200	4
28...	20	0	--	--	--	--	--	10	7	3
DEC										
29...	9	1	20	--	--	--	10	15	10	5
JAN										
26...	38	2	--	9	1	8	--	67	64	3
APR										
05...	<10	0	<10	--	--	--	--	27	16	11
JUN										
08...	19	1	--	--	--	--	--	36	30	6
21...	--	--	--	--	--	--	--	25	16	9
AUG										
29...	<9	1	--	--	--	--	--	7	3	4

DATE	COPPER, RECOV. FM ROT- TOM MA- TETIAL (UG/G AS CU)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, SUS- PENDE RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	IRON, RECOV. FM ROT- TOM MA- TETIAL (UG/G AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, SUS- PENDE RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	LEAD, RECOV. FM ROT- TOM MA- TETIAL (UG/G AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)
OCT										
26...	--	40000	--	220	--	54	17	37	--	960
26...	--	20000	--	150	--	100	100	0	--	--
26...	--	21000	--	140	--	50	50	0	--	--
28...	--	11000	--	150	--	13	8	5	--	--
DEC										
29...	10	1000	--	140	2000	1	1	0	10	--
JAN										
26...	--	40000	--	120	--	18	16	2	--	860
APR										
05...	<10	1700	--	130	1700	7	0	7	130	--
JUN										
08...	--	18000	--	50	--	18	14	4	--	--
21...	--	6400	--	210	--	44	0	47	--	--
AUG										
29...	--	2500	2400	120	--	3	0	7	--	--

ROANOKE RIVER BASIN

02074218 DAN RIVER NEAR MAYFIELD, NC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	MANGA- NESE, SUS- PENDE RECOV. (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MANGA- NESE, FM ROT- TOM MA- TERIAL (UG/G)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY SUS- PENDE RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	MERCURY FM ROT- TOM MA- TERIAL (UG/L AS HG)	SELF- NIUM, SUS- PENDE TOTAL (UG/L AS SE)	SELF- NIUM, DIS- SOLVED (UG/L AS SE)
OCT									
26...	840	120	--	<.5	.0	<.5	--	0	0
26...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--
DEC									
29...	--	--	180	--	--	--	.0	--	--
JAN									
26...	740	120	--	<.5	.0	<.5	--	1	1
APR									
05...	--	--	--	--	--	--	--	--	--
JUN									
08...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
AUG									
29...	--	--	--	--	--	--	--	--	--

DATE	SELF- NIUM, TOTAL IN ROT- TOM MA- TERIAL (UG/G)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, SUS- PENDE RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)	ZINC, FM ROT- TOM MA- TERIAL (UG/G AS ZN)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C)	CARBON, ORGANIC TOT. IN BOTTOM MAT. (G/KG AS C)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
OCT									
26...	--	110	110	0	--	19	1.7	--	.00
26...	--	240	240	0	--	--	--	--	--
26...	--	190	190	0	--	11	--	--	.10
28...	--	20	20	0	--	8.6	3.5	--	.00
DEC									
29...	0	10	10	0	30	6.9	--	5.2	.00
JAN									
26...	--	110	100	10	--	4.8	7.8	--	--
APR									
05...	--	20	10	10	10	6.0	.7	2.9	.00
JUN									
08...	--	110	110	0	--	--	--	--	--
21...	--	20	10	10	--	5.6	1.2	--	.00
AUG									
29...	--	10	0	10	--	6.6	1.0	--	.00

ROANOKE RIVER BASIN

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02074218 DAN RIVER NEAR MAYFIELD, NC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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
OCT							
26...	1230	9550	1060	27300	--	--	--
26...	1445	14600	2290	90300	--	--	--
26...	1600	16000	1950	84200	--	--	--
28...	1200	2880	293	2280	--	--	--
DEC							
29...	1400	1900	40	205	--	--	--
JAN							
26...	1400	29500	1160	92400	25	32	38
APR							
05...	1300	2660	30	215	--	--	--
JUN							
08...	1310	3630	322	3160	--	--	--
21...	1335	1970	95	505	--	--	--
AUG							
29...	1115	1290	46	160	--	--	--

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 .062 MM
OCT						
26...	--	--	--	--	--	64
26...	--	--	--	--	--	74
26...	--	--	--	--	--	65
28...	--	--	--	--	--	77
DEC						
29...	--	--	--	--	--	50
JAN						
26...	49	54	62	68	80	--
APR						
05...	--	--	--	--	--	100
JUN						
08...	--	--	--	--	--	79
21...	--	--	--	--	--	80
AUG						
29...	--	--	--	--	--	75

ROANOKE RIVER BASIN

02074218 DAN RIVER NEAR MAYFIELD, NC--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	77	101	70	87	106	93	63	85	86	100	72
2	122	90	78	71	86	98	69	72	83	72	67	88
3	98	113	84	69	86	100	70	76	110	73	81	73
4	124	125	83	94	91	101	102	67	78	45	68	72
5	128	113	76	116	79	86	98	51	87	50	70	108
6	125	80	69	97	64	76	103	60	133	59	70	83
7	109	69	70	108	102	98	93	54	88	57	58	144
8	121	68	69	73	108	98	108	55	82	53	85	144
9	106	62	79	58	99	104	69	57	75	56	86	144
10	89	72	75	55	122	60	66	65	84	59	76	84
11	136	101	70	70	110	47	96	68	66	64	89	82
12	148	97	65	86	69	57	102	71	67	64	98	112
13	153	101	112	82	70	58	101	67	110	71	72	124
14	135	80	98	86	98	72	108	61	111	93	59	126
15	91	82	113	71	105	66	104	59	130	127	98	122
16	80	110	100	73	115	72	78	72	122	51	92	119
17	80	95	80	90	112	84	76	78	124	71	81	122
18	91	123	62	72	86	79	81	91	71	80	85	118
19	135	101	63	71	70	72	89	83	74	88	91	100
20	132	88	75	76	71	61	84	93	81	94	79	133
21	128	82	79	71	92	103	96	74	111	95	69	134
22	136	71	83	66	99	86	98	70	112	104	73	126
23	116	123	67	71	97	102	80	93	137	91	103	137
24	117	130	65	94	116	104	78	89	115	81	91	111
25	177	86	64	71	101	95	80	91	79	62	92	88
26	99	79	62	46	94	68	61	91	73	71	130	100
27	53	80	68	44	87	50	46	95	126	81	90	158
28	62	73	70	59	107	57	55	73	81	96	86	107
29	73	71	89	62	---	79	62	79	95	88	126	144
30	70	100	85	63	---	72	61	116	87	77	104	134
31	77	---	80	86	---	85	---	97	---	71	110	---
MEAN	111	91	79	75	94	81	84	75	96	75	86	114
WTR YR 1978	MEAN	88	MAX	177	MIN	44						

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	21.5	20.5	14.0	14.0	8.5	7.5	3.0	3.0	3.0	2.0	5.0	4.5
2	22.5	21.0	14.5	14.0	9.5	8.5	4.0	3.0	4.0	2.5	4.5	4.0
3	21.0	19.0	16.5	14.5	9.5	8.5	4.0	2.5	3.5	3.0	4.0	3.5
4	19.0	17.0	19.5	16.5	9.0	8.5	3.5	2.5	3.5	2.5	3.5	3.0
5	18.5	17.5	19.5	19.0	10.0	9.0	3.5	2.0	4.0	2.5	4.0	2.5
6	18.0	17.0	19.0	18.0	9.5	8.5	4.0	3.0	3.0	2.5	4.5	3.5
7	18.0	16.5	18.0	17.5	8.5	6.5	4.5	4.0	2.0	1.0	5.5	4.5
8	17.5	15.5	18.0	16.5	6.5	5.0	5.0	4.5	2.5	1.0	5.5	4.5
9	18.0	15.5	16.5	15.5	5.0	4.5	6.0	5.0	3.5	2.0	4.5	4.0
10	18.0	16.0	16.0	15.5	5.0	4.0	5.5	2.0	3.0	2.5	4.5	3.5
11	17.0	15.0	15.5	13.5	4.0	3.0	2.0	1.0	3.5	2.5	5.5	3.5
12	16.5	15.5	13.5	10.0	3.5	1.5	2.0	1.0	3.5	2.0	7.0	5.0
13	16.5	14.5	10.0	8.0	4.0	2.5	2.5	2.0	4.0	3.0	8.0	7.0
14	15.0	13.5	9.0	7.0	6.0	4.0	3.0	2.0	4.5	3.5	9.0	8.0
15	13.5	12.0	9.5	8.5	7.5	5.5	3.0	2.0	6.0	4.0	9.5	9.0
16	13.0	11.5	9.5	8.0	7.5	6.5	2.5	2.0	6.0	4.5	9.5	9.5
17	11.5	11.0	12.5	9.5	7.0	6.5	2.5	2.0	5.0	4.0	9.0	8.5
18	11.5	10.5	12.5	11.5	7.5	7.0	3.5	2.0	4.5	4.0	9.0	8.0
19	11.5	10.5	12.0	10.0	7.5	7.0	4.0	2.5	4.5	4.5	8.0	7.5
20	12.0	10.5	10.0	9.0	7.5	7.0	3.0	2.5	4.5	4.0	9.5	8.0
21	11.5	10.5	9.5	9.0	7.0	7.0	4.0	2.0	4.5	3.5	10.5	9.5
22	13.5	10.5	11.0	9.5	7.0	5.5	3.0	2.5	4.5	3.5	11.0	10.5
23	15.0	13.0	10.5	10.5	5.5	4.0	3.0	2.0	4.5	3.0	11.0	11.0
24	15.0	14.0	10.5	9.5	5.0	4.0	3.5	2.0	5.0	3.5	11.5	11.0
25	16.0	14.5	10.5	10.0	6.0	5.0	3.5	3.0	5.5	4.0	12.0	11.0
26	16.0	14.5	10.5	8.5	6.0	4.5	3.5	2.0	6.5	5.5	11.0	8.0
27	15.0	14.5	8.5	6.5	4.5	3.0	3.0	2.0	6.5	5.5	8.0	7.5
28	16.0	15.0	6.5	6.0	3.0	2.0	3.0	2.5	6.0	5.0	9.0	8.0
29	16.0	15.5	7.0	6.5	2.5	1.0	2.5	2.0	---	---	10.0	9.0
30	15.5	14.5	7.5	7.0	2.5	2.0	2.5	1.5	---	---	11.0	10.0
31	14.5	13.0	---	---	3.0	2.5	2.5	2.0	---	---	11.0	10.5
MONTH	22.5	10.5	19.5	6.0	10.0	1.0	6.0	1.0	6.5	1.0	12.0	2.5
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	12.0	11.0	12.5	11.5	22.0	20.5	24.5	24.5	24.0	23.5	24.5	22.5
2	13.5	12.0	14.0	12.0	---	---	24.5	24.0	23.5	23.0	22.5	22.5
3	13.5	13.5	13.0	12.5	---	---	24.5	23.0	23.5	23.0	22.5	22.0
4	14.0	13.5	13.0	11.5	---	---	23.0	22.0	23.5	22.0	23.0	22.5
5	14.0	14.0	12.5	11.5	21.0	20.0	23.0	22.0	22.0	22.0	23.0	22.5
6	14.0	14.0	13.0	12.5	21.0	21.0	22.0	21.0	22.0	22.0	23.0	22.5
7	14.0	14.0	13.5	13.0	21.0	21.0	21.5	20.5	22.0	21.5	22.5	22.0
8	14.5	14.0	14.0	12.0	21.0	20.5	21.0	20.5	23.0	22.0	23.0	22.5
9	15.0	14.0	13.0	12.0	21.0	20.5	23.0	21.0	23.0	22.5	22.5	22.5
10	16.0	15.0	14.5	13.0	21.0	20.5	25.5	23.0	23.0	23.0	23.0	22.5
11	16.5	16.0	14.5	14.0	21.0	20.5	25.5	24.0	23.5	22.5	23.5	22.5
12	16.5	16.0	15.0	14.0	22.5	21.0	25.0	23.0	23.0	23.0	24.0	23.5
13	16.0	15.5	15.0	15.0	23.5	22.5	23.0	22.5	23.5	23.0	24.0	24.0
14	15.5	15.5	16.0	15.0	23.5	22.0	22.5	22.0	23.5	22.5	24.0	22.5
15	15.5	15.0	15.0	14.5	22.5	21.5	22.0	21.5	23.5	23.0	22.5	21.5
16	16.0	15.0	14.5	14.0	22.5	21.0	21.0	20.5	24.0	22.5	23.5	21.5
17	15.5	15.0	14.0	13.5	21.0	21.0	22.0	20.5	23.0	22.5	---	---
18	15.0	14.0	15.0	14.0	22.5	21.0	22.5	22.0	23.0	22.0	---	---
19	14.0	13.5	15.5	15.0	24.0	22.5	23.0	22.5	22.5	22.0	25.5	25.0
20	13.5	13.0	16.5	15.5	24.5	24.0	23.5	22.5	22.5	22.0	25.5	25.5
21	14.0	13.0	17.5	16.5	24.5	24.5	23.5	23.0	23.5	22.5	25.5	25.0
22	13.0	12.5	18.5	17.0	24.5	24.0	24.0	23.5	23.5	23.0	25.0	24.5
23	13.5	13.0	19.0	18.5	24.0	23.0	24.5	23.5	23.5	22.5	24.5	23.0
24	14.5	13.5	19.0	18.5	23.0	23.0	25.5	24.5	23.0	22.5	23.5	22.0
25	14.5	14.5	18.5	18.5	24.0	23.0	25.5	23.5	23.0	23.0	22.0	21.0
26	14.5	9.5	19.0	18.5	24.5	24.0	24.0	23.0	23.0	23.0	22.0	22.0
27	9.5	9.0	19.5	19.0	25.0	24.5	23.5	23.5	23.5	23.0	21.5	21.0
28	10.5	9.5	20.0	19.0	25.0	24.5	23.5	23.0	24.5	23.5	21.0	20.5
29	11.0	10.5	20.0	19.5	25.0	25.0	23.0	23.0	25.5	24.5	20.5	20.0
30	12.0	11.0	21.0	20.0	25.0	25.0	23.0	23.0	25.0	24.5	20.0	19.5
31	---	---	21.0	20.0	---	---	24.0	23.0	24.5	24.0	---	---
MONTH	16.5	9.0	21.0	11.5	25.0	20.0	25.5	20.5	25.5	21.5	25.5	19.5
YEAR	25.5	1.0										

ROANOKE RIVER BASIN

02074218 DAN RIVER NEAR MAYFIELD, NC--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1977 TO JUNE 1978

DATE TIME	DEC 29,77 1400	APR 5,78 1300	JUN 8,78 1310	JUN 21,78 1335				
TOTAL CELLS/ML	160	350	2600	3100				
DIVERSITY: DIVISION	0.5	1.2	1.1	1.4				
..CLASS	0.5	1.4	1.1	1.4				
...ORDER	1.3	1.6	1.2	1.4				
...FAMILY	2.8	2.2	2.8	2.4				
....GENUS	2.8	2.2	3.0	2.6				
ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)								
..CHLOROPHYCEAE								
...CHLOROCOCCALES								
....CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	69	2
....OOCYSTACEAE								
....ANKISTROESMUS	8	5	--	-	--	-	23	1
....CHODATELLA	--	-	--	-	--	-	23	1
....DICTYOSPHAERIUM	--	-	--	-	--	-	46	1
....KIRCHNERIELLA	--	-	--	-	--	-	23	1
....SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	93	3
....SCENEDESMUS	--	-	--	-	--	-	190	6
..VOLVOCELES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	8	5	--	-	--	-	--	-
..ZYGNEMATALES								
...DESMIDIACEAE								
....COSMARIUM	--	-	--	-	23	1	--	-
....SPHAEROZOSMA	--	-	--	-	93	4	--	-
CHRYSTOPHYTA								
..BACILLARIOPHYCEAE								
...CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	33#	21	--	-	23	1	--	-
....STEPHANODISCUS	--	-	14	4	--	-	--	-
..PENNALES								
...ACHNANTHACEAE								
....ACHNANTHES	--	-	--	-	120	4	390	13
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	120	4	23	1
...DIATOMACEAE								
....DIATOMA	17	11	14	4	120	4	46	1
...EUNOTIACEAE								
....EUNOTIA	--	-	--	-	23	1	--	-
...FRAGILARIACEAE								
....SYNEDRA	25#	16	27	8	69	3	46	1
...GOMPHONEMACEAE								
....GOMPHONEMA	17	11	--	-	46	2	--	-
...NAVICULACEAE								
....NAVICULA	17	11	120#	35	790#	30	370	12
...PINNULARIA	--	-	--	-	120	4	23	1
...NITZSCHACEAE								
....NITZSCHIA	33#	21	--	-	280	11	230	7
...SURIPELLACEAE								
....SURIPELLA	--	-	14	4	--	-	--	-
CHRYSTOPHYCEAE								
...CHRYSONOMADALES								
....OCHROMONADACEAE								
....DINOBYRON	--	-	14	4	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
..CYANOPHYCEAE								
...CHROCOCCOCCALES								
....CHROCOCCOCCAEAE								
....ANACYSTIS	--	-	140#	38	--	-	--	-
...HORMOGONALFS								
...NOSTOCACEAE								
....ANARAENA	--	-	--	-	580#	22	--	-
...APHANIZOMENON	--	-	--	-	--	-	23	1
...OSCILLATORACEAE								
....LYNGBYA	--	-	--	-	--	-	1500#	48
....OSCILLATORIA	--	-	--	-	210	8	--	-
EUGLENOPHYTA (EUGLENOIDS)								
..CRYPTOPHYCEAE								
...CRYPTOMONIDALES								
....CRYPTOMONODACEAE								
....CRYPTOMONAS	--	-	14	4	--	-	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%

* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

ROANOKE RIVER BASIN

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 (61 m) downstream from Hickory Forest Creek, 400 ft (122 m) upstream from bridge on State Highway 863 between Callahans Store and Mount Cross, 5.5 mi (8.8 km) northwest of western corporate limits of Danville, and 5.8 mi (9.3 km) upstream from mouth.

DRAINAGE AREA.--112 mi² (290 km²).

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 (140.324 m) National Geodetic Vertical Datum of 1929. Prior to June 26, 1942, at site 1,200 ft (366 m) downstream at datum 5.57 ft (1.698 m) lower.

REMARKS.--Records good. Diurnal fluctuation at low flow caused by small mill above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--49 years, 106 ft³/s (3.002 m³/s), 12.85 in/yr (326 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,000 ft³/s (651 m³/s) Aug. 14, 1940, gage height, 14.8 ft (4.51 m), present datum, from floodmarks, from rating curve extended above 11,000 ft³/s (310 m³/s); minimum, 3 ft³/s (0.08 m³/s) Sept. 29, 1930, gage height, 0.40 ft (0.122 m), site and datum then in use; minimum daily, 8 ft³/s (0.23 m³/s) Aug. 29, 31, Sept. 1, 2, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,500 ft³/s (42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1130	2580 73.1	5.47 1.667	Apr. 26	2330	*8210 233	8.77 2.673
Jan. 8	2130	1900 53.8	4.85 1.478	May 4	2230	3040 86.1	5.78 1.762
Jan. 25	1430	7450 211	8.40 2.560	Sept. 1	0030	1850 52.4	4.82 1.469
Mar. 10	1700	5280 150	7.16 2.182				

Minimum discharge, 28 ft³/s (0.79 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	62	166	80	111	88	105	171	97	56	378	438
2	49	60	112	80	107	86	101	148	86	64	258	84
3	40	61	88	71	100	101	96	132	84	185	116	67
4	32	101	80	70	95	97	96	998	84	130	249	61
5	31	127	305	71	92	92	94	1010	78	80	123	56
6	32	166	410	75	89	97	92	270	76	73	105	55
7	33	150	150	90	87	101	90	202	104	67	105	54
8	33	229	107	637	84	114	86	750	213	64	88	51
9	44	109	96	1110	84	143	84	595	220	62	99	50
10	41	92	82	227	83	2840	82	285	109	61	80	49
11	37	75	75	152	84	1110	84	200	94	61	69	51
12	37	67	71	140	84	387	86	171	90	60	67	51
13	43	62	71	123	86	282	80	274	88	56	71	51
14	162	61	76	116	86	323	78	270	80	69	66	52
15	110	60	86	114	88	344	75	195	76	80	62	52
16	64	60	75	109	84	232	73	224	76	130	60	54
17	66	61	75	214	84	197	75	176	76	88	58	51
18	49	58	430	432	86	176	82	153	73	69	56	49
19	45	55	234	328	88	166	90	135	73	64	55	48
20	43	54	150	264	86	155	103	125	88	60	52	46
21	42	54	132	216	82	153	84	116	82	58	50	49
22	41	58	107	161	88	145	78	112	80	56	49	55
23	41	78	96	130	73	140	76	109	76	55	50	60
24	40	69	90	123	84	137	75	109	71	90	52	54
25	40	67	103	1330	84	140	109	107	67	190	52	54
26	1280	90	92	4440	90	368	5450	99	67	73	56	51
27	286	71	82	465	82	249	3580	96	69	64	54	49
28	123	67	80	244	82	161	433	96	64	86	52	49
29	88	66	82	176	---	132	241	94	60	69	55	46
30	73	72	82	135	---	116	192	94	60	64	71	46
31	64	---	86	120	---	109	---	94	---	84	201	---
TOTAL	3138	2462	3975	12043	2460	8984	12070	7610	2661	2468	2959	1983
MEAN	101	82.1	128	388	81.9	290	402	245	88.7	79.6	95.5	66.1
MAX	1280	229	430	4440	111	2840	5450	1010	220	190	378	438
MIN	29	54	71	70	73	86	73	94	60	55	49	46
CFSM	.90	.73	1.14	3.46	.79	2.59	3.59	2.19	.79	.71	.85	.59
IN.	1.04	.82	1.32	4.00	.82	2.98	4.01	2.53	.88	.82	.98	.66

CAL YR 1977 TOTAL 27146 MEAN 74.4 MAX 1280 MIN 21 CFSM .66 IN 7.02
WTR YR 1978 TOTAL 62813 MEAN 172 MAX 5450 MIN 29 CFSM 1.54 IN 20.86

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 (20 m) downstream from Southern Railway bridge, 1,000 ft (300 m) upstream from Fall Creek, and at mile 62.7 (100.9 km).

DRAINAGE AREA.--2,050 mi² (5,310 km²), 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 (0.40 km) 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 (115.608 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Diurnal fluctuation caused by cotton mills above station. Since August 1950, flow regulated by Philpott Lake (station 02071900) 74.7 mi (120.2 km) upstream. Gage-height telemeters at station. Several observations 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, 2,318 ft³/s (65.65 m³/s), 15.36 in/yr (390 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,000 ft³/s (2,120 m³/s) Aug. 15, 1940, gage height, 20.96 ft (6.389 m); maximum gage height, 21.34 ft (6.504 m) June 22, 1972, backwater from debris; minimum discharge, 11 ft³/s (0.31 m³/s) Sept. 5, 1966, gage height, 1.18 ft (0.360 m); minimum daily, 110 ft³/s (3.12 m³/s) Sept. 5, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 37,000 ft³/s (1,050 m³/s) Apr. 27; maximum gage height, 18.56 ft (5.657 m) Apr. 27, backwater from debris; minimum discharge, 225 ft³/s (6.37 m³/s) Sept. 17, gage height, 1.69 ft (0.515 m); minimum daily, 586 ft³/s (16.6 m³/s) Oct. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	754	1300	2310	1750	3830	2060	3040	5200	2350	1580	2430	8060
2	835	1210	2970	1420	3320	2110	2330	4730	2290	1310	3650	3790
3	966	1190	2200	1310	3270	2370	1900	3690	2210	3310	2010	1710
4	1110	1310	1600	1370	3000	2730	2720	5110	1790	8970	3570	1240
5	1030	1950	1980	1320	2850	2250	2720	20600	1600	3460	4390	1480
6	950	3140	7260	1460	2270	1770	2610	12900	1720	2700	2830	1480
7	937	4340	4720	1730	2370	2250	2690	6900	2610	2370	5310	1460
8	946	5800	2840	5080	2310	2620	2440	10100	3670	2150	4190	1420
9	917	3830	2320	14200	2380	3270	1690	11300	4710	1540	3720	1400
10	631	2460	2130	8700	2180	17600	1570	8350	4020	1340	2990	1130
11	792	1930	1770	4500	2160	25200	1990	5940	2490	1460	2310	906
12	816	1600	1320	3500	1520	9380	2220	4930	1940	3110	2010	1040
13	799	1420	1860	3530	1500	4690	2160	4390	2140	1800	1780	1050
14	1210	1180	2040	4630	2350	4160	2030	4360	2120	1670	3570	1100
15	1770	1160	2190	4010	2490	5590	1960	4230	1970	2150	2480	1110
16	1540	1230	2530	2750	2510	4780	1630	4070	1900	3190	2340	1100
17	1120	1210	2340	3130	2430	3810	1300	4030	1910	6130	2230	1060
18	1100	1370	3600	7100	2450	3440	1820	3720	1600	3670	2140	806
19	992	1470	3800	6220	1860	3270	2230	3450	1380	2240	2000	885
20	925	1150	3100	5610	1550	2620	2420	3280	1600	1840	1910	970
21	871	1040	2600	5530	1870	3120	2360	3320	1850	1690	1390	1010
22	851	1150	2300	3850	2090	3070	2170	2490	2120	1600	1270	1050
23	766	1400	2100	2810	2000	2850	1620	2630	2100	1460	1360	1060
24	586	1410	2000	2850	1950	2710	1300	2750	2050	1200	1340	976
25	689	1400	1890	9210	2140	2750	1700	2760	1630	2980	1350	860
26	7590	1640	1920	30000	1640	5030	21900	2700	1320	2910	1530	911
27	14000	1560	2140	29000	1600	11300	37000	2620	1760	1900	1370	1210
28	3570	1260	2130	13300	1880	6050	21800	2050	1920	1710	1170	957
29	2200	1260	1910	5520	---	4290	8640	1840	1710	2010	1230	924
30	1890	1360	1930	4030	---	3640	6510	2240	1630	1480	1430	917
31	1400	---	2230	4190	---	3280	---	2510	---	1230	1660	---
TOTAL	54553	53730	78030	193610	63770	154060	148470	159190	64110	76160	72960	43072
MEAN	1760	1791	2517	6245	2278	4970	4949	5135	2137	2457	2354	1436
MAX	14000	5800	7260	30000	3830	25200	37000	20600	4710	8970	5310	8060
MIN	586	1040	1320	1310	1500	1770	1300	1840	1320	1200	1170	806
(*)	+40	+386	-22	+203	-133	+91	+99	-127	-19	+8	-54	-97

CAL YR 1977 TOTAL 549814 MEAN 1506 MAX 14000 MIN 225 MEAN# 1505 CFSM# .73 IN# 9.97
WTR YR 1978 TOTAL 1161715 MEAN 3183 MAX 37000 MIN 586 MEAN# 3215 CFSM# 1.57 IN# 21.29

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; furnished by Corps of Engineers.
* Adjusted for change in contents.

02075500 DAN RIVER AT PACES, VA

LOCATION.--Lat 36°38'32", long 79°05'23", Halifax County, Hydrologic Unit 03010104, on right bank 100 ft (30 m) upstream from bridge on State Highway 658, 0.5 mi (0.8 km) southeast of Paces, 0.5 mi (0.8 km) upstream from Big Toby Creek, 2.7 mi (4.3 km) upstream from Birch Creek, and at mile 36.0 (57.9 km).

DRAINAGE AREA.--2,550 mi² (6,600 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 322.48 ft (98.292 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Diurnal fluctuation caused by cotton mills at Danville. Since August 1950, flow regulated by Philpott Lake (station 02071900) 101.4 mi (163.2 km) upstream.

AVERAGE DISCHARGE.--27 years (water years 1952-78), 2,688 ft³/s (76.12 m³/s), 14.31 in/yr (363 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 64,800 ft³/s (1,840 m³/s) June 23, 1972, gage height, 33.15 ft (10.104 m), from rating curve extended above 32,000 ft³/s (910 m³/s); minimum, 193 ft³/s (5.47 m³/s) Sept. 4, 1956, gage height, 1.71 ft (0.521 m); minimum daily, 244 ft³/s (6.91 m³/s) Sept. 4, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 16, 1940, reached a stage of 32.3 ft (9.85 m), from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 46,300 ft³/s (1,310 m³/s) Apr. 28, gage height, 29.08 ft (8.864 m); minimum, 650 ft³/s (18.4 m³/s) Oct. 24, gage height, 2.76 ft (0.841 m); minimum daily, 702 ft³/s (19.9 m³/s) Oct. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	768	1760	2360	2400	4510	2130	3600	5970	2620	1730	1710	8440
2	886	1640	3410	1920	4010	2280	3280	5330	2510	1630	3670	7980
3	1060	1520	2970	1680	3840	2390	2570	4830	2310	1670	3180	3530
4	1180	1720	2260	1700	3580	2840	2590	4710	2250	8830	3100	1920
5	1320	2490	2310	1570	3360	2860	2990	15300	1650	4770	5140	1700
6	1150	4230	5790	1700	3170	2320	2870	21600	1640	3230	3960	1950
7	1080	5360	6850	2060	2540	2410	2950	17200	2330	2780	5480	1880
8	1050	5450	3660	4310	2810	2730	2660	8820	3860	2570	5810	1800
9	1170	5000	2860	16200	2910	3380	2530	14200	5030	2260	4540	1730
10	889	3250	2580	17800	2870	10500	1820	15100	5420	1540	3730	1740
11	767	2530	2360	7950	2690	23600	1980	10800	3470	1500	3150	1210
12	938	2150	1760	4310	2500	25900	2320	6620	2320	2740	2510	1170
13	931	1900	1750	4260	1890	10600	2350	5310	2200	2540	2330	1300
14	1480	1630	2280	6600	2140	5320	2240	6470	2390	1940	3220	1290
15	2660	1540	2590	6650	2640	6090	2120	6360	2230	2150	2960	1350
16	2390	1590	2810	4520	2630	5900	2050	5740	2070	4230	2740	1370
17	1720	1570	2740	3840	2610	4760	1520	4570	2030	7180	2570	1490
18	1440	1610	3680	8520	2570	4150	1690	4490	2070	6060	2460	969
19	1330	1820	4840	8990	2530	3810	2230	4160	1480	3320	2360	949
20	1180	1560	4160	8390	1940	3390	2520	3860	1540	2460	2220	1120
21	1100	1410	3550	7890	1980	2990	2560	3610	1880	2100	2050	1190
22	1020	1410	3190	6560	2230	3290	2320	3320	2410	1940	1380	1220
23	1010	1680	2820	4360	2280	3110	2140	2530	2260	1860	1520	1300
24	781	1790	2550	3760	2160	2960	1540	2960	2380	1470	1510	1280
25	702	1710	2440	8280	2180	2920	1700	2950	2090	2120	1500	1030
26	4490	1940	2280	23400	2100	3730	13900	2890	1570	3550	1540	1040
27	16200	1930	2260	35700	1820	10800	37600	2780	1700	2560	1790	1170
28	10900	1740	2460	31900	1900	7220	42800	2610	2200	2040	1320	1440
29	3630	1600	2220	13300	---	4930	24800	1970	1980	2140	1270	1110
30	2730	1670	2160	5460	---	4200	9500	2030	1830	2190	1460	1080
31	2090	---	2410	4640	---	3830	---	2560	---	1570	1680	---
TOTAL	70042	67200	92360	260620	74390	177340	187740	201650	71720	88670	83860	56748
MEAN	2259	2240	2979	8407	2657	5721	6258	6505	2391	2860	2705	1892
MAX	16200	5450	6850	35700	4510	25900	42800	21600	5420	8830	5810	8440
MIN	702	1410	1750	1570	1820	2130	1520	1970	1480	1470	1270	949
(*)	+40	+386	-22	+203	-133	+91	+99	-127	-19	+8	-54	-97

CAL YR 1977 TOTAL 661920 MEAN 1813 MAX 16200 MIN 448
WTR YR 1978 TOTAL 1432340 MEAN 3924 MAX 42800 MIN 702

* Change in contents, equivalent in cubic feet per second, in Philpott Lake; furnished by Corps of Engineers.

ROANOKE RIVER BASIN

02075500 DAN RIVER AT PACES, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January 1954 to September 1956.

WATER TEMPERATURES: January 1954 to September 1956.

SUSPENDED-SEDIMENT DISCHARGE: January 1954 to current year.

REMARKS.--Daily sediment records based on once-weekly sediment samples and water-discharge hydrograph.

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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	25	52	60	285	53	338	30	194	66	804	30	173
2	30	72	58	257	112	1030	26	135	60	650	33	203
3	38	109	55	226	71	569	22	100	60	622	36	232
4	35	112	70	325	50	305	20	92	56	541	40	307
5	40	143	116	780	73	455	20	85	48	435	33	255
6	35	109	255	2910	205	3200	24	110	45	385	25	157
7	36	105	300	4340	190	3510	31	172	45	309	25	163
8	36	102	280	4120	130	1280	100	1160	46	349	28	206
9	40	126	200	2700	87	672	615	26900	48	377	37	338
10	26	62	140	1230	70	488	535	25700	45	349	570	16200
11	23	48	90	615	65	414	200	4290	40	291	1000	63700
12	25	63	55	319	50	238	75	873	42	283	460	32200
13	29	73	38	195	46	217	84	966	42	214	305	8730
14	68	272	31	136	55	339	122	2170	42	243	215	3090
15	94	675	27	112	62	434	90	1620	44	314	135	2220
16	84	542	30	129	70	531	80	976	45	320	118	1880
17	55	255	26	110	84	621	89	923	46	324	96	1230
18	40	156	25	109	130	1290	160	3680	47	326	85	952
19	40	144	30	147	164	2140	145	3520	44	301	65	669
20	36	115	27	114	110	1240	130	2940	37	194	60	549
21	32	95	23	88	92	882	117	2490	35	187	50	404
22	30	83	20	76	72	620	100	1770	30	181	50	444
23	30	82	30	136	50	381	87	1020	30	185	46	386
24	24	51	30	145	35	241	78	792	20	117	43	344
25	17	32	27	125	23	152	370	8270	25	147	40	315
26	300	3640	35	183	21	129	985	62200	22	125	63	634
27	540	23600	30	156	24	146	696	67400	20	98	420	12200
28	340	10000	27	127	29	193	410	35300	23	118	150	2920
29	220	2160	25	108	23	138	175	6280	---	---	90	1200
30	110	811	25	113	25	146	94	1390	---	---	70	794
31	83	468	---	---	30	195	75	940	---	---	65	672
TOTAL	---	44357	---	20416	---	22534	---	264458	---	8789	---	153767

ROANOKE RIVER BASIN

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 (5 m) downstream from bridge on State Highway 40, 2.8 mi (4.5 km) southeast of Gretna, and 5.8 mi (9.3 km) upstream from Whitethorn Creek.

DRAINAGE AREA.--9.24 mi² (23.93 km²).

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 (191.884 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Occasional regulation at low flow from unknown source. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--29 years, 9.41 ft³/s (0.266 m³/s), 13.83 in/yr (351 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,440 ft³/s (40.8 m³/s) Aug. 24, 1967, from rating curve extended above 640 ft³/s (18 m³/s) on basis of slope-area measurements at gage heights 4.93 ft (1.503 m), 6.22 ft (1.896 m), and 7.75 ft (2.362 m); maximum gage height, 7.75 ft (2.362 m) June 21, 1972; minimum daily discharge, 1.0 ft³/s (0.028 m³/s) Mar. 12, Apr. 5, 1956, July 28, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 150 ft³/s (4.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1000	430 12.2	4.67 1.423	Apr. 26	1930	910 25.8	6.77 2.063
Jan. 25	1230	245 6.94	3.58 1.091	May 4	1700	290 8.21	3.92 1.195
Jan. 26	0430	*1010 28.6	7.20 2.195	May 13	1800	222 6.29	3.43 1.045
Mar. 10	1530	490 13.9	4.94 1.506				

Minimum discharge, 2.6 ft³/s (0.074 m³/s) Oct. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.5	6.8	13	7.6	8.8	8.0	15	17	12	8.5	8.2	7.2
2	8.7	6.8	9.5	7.2	8.7	7.6	14	16	10	9.4	7.0	6.0
3	3.7	7.2	8.8	6.8	8.3	8.8	14	15	13	21	8.2	6.0
4	3.1	9.0	8.6	6.6	8.2	7.6	14	100	12	14	8.3	5.6
5	2.8	9.7	22	6.8	7.9	7.8	13	50	10	11	7.0	5.4
6	2.9	19	14	7.4	7.8	8.2	13	20	9.9	9.6	8.5	4.9
7	2.9	13	9.2	7.8	7.5	8.4	13	17	10	9.4	7.8	4.7
8	3.1	11	8.2	38	7.0	10	13	44	12	9.1	7.2	4.5
9	5.0	8.4	7.8	58	7.0	12	12	42	12	9.6	8.5	4.5
10	4.0	7.6	7.4	14	7.1	194	12	20	9.9	8.5	8.7	4.7
11	3.3	7.4	7.4	11	7.6	31	13	17	9.6	8.8	8.2	4.7
12	3.1	6.8	7.0	9.7	7.6	23	12	17	9.4	7.5	7.2	4.5
13	5.8	7.2	7.2	9.2	8.0	19	12	44	9.4	6.7	8.8	4.5
14	28	7.0	7.8	9.0	8.2	21	12	26	8.8	7.8	8.7	4.9
15	9.5	6.8	8.0	8.8	8.0	18	12	20	8.8	7.8	8.2	5.2
16	11	6.8	7.2	9.0	8.0	16	12	18	8.8	12	8.0	5.2
17	9.2	9.5	8.8	20	7.8	15	12	17	8.8	8.8	8.4	4.7
18	7.4	7.8	20	22	8.2	15	14	17	8.8	7.8	8.2	4.7
19	7.0	7.4	11	16	8.6	15	14	16	8.5	7.2	8.2	4.3
20	6.6	7.4	9.5	13	8.0	15	15	16	12	6.7	4.9	4.5
21	6.6	7.6	9.0	11	7.6	15	13	15	17	6.2	4.9	4.9
22	6.4	7.8	8.0	10	8.0	14	12	15	13	6.2	4.9	4.9
23	6.6	9.0	7.8	9.5	7.6	14	12	15	11	6.7	4.5	5.6
24	6.6	8.4	7.6	9.0	7.8	14	12	15	11	5.8	4.7	6.0
25	6.4	8.4	8.2	136	8.0	15	17	15	10	6.2	4.5	5.8
26	107	9.9	7.2	385	8.2	31	492	14	10	6.2	8.4	5.2
27	11	8.4	7.2	19	7.6	20	232	14	17	6.0	8.2	4.9
28	8.4	8.2	7.0	13	7.6	17	26	14	10	6.2	8.2	4.9
29	7.6	7.8	6.8	11	---	16	19	14	9.4	5.6	8.7	4.7
30	7.2	9.5	7.2	9.9	---	15	17	13	8.8	5.6	8.8	4.7
31	7.0	---	7.6	9.2	---	15	---	13	---	5.6	8.7	---
TOTAL	311.4	257.6	286.0	910.5	220.7	646.4	1113	706	320.9	257.5	144.7	152.3
MEAN	10.0	8.59	9.23	29.4	7.88	20.9	37.1	22.8	10.7	8.31	8.28	5.08
MAX	107	19	22	385	8.8	194	492	100	17	21	8.8	7.2
MIN	2.8	6.8	6.8	6.6	7.0	7.6	12	13	8.5	5.6	4.5	4.3
CFSM	1.08	.93	1.00	3.18	.85	2.26	4.02	2.47	1.16	.90	.68	.55
IN.	1.25	1.04	1.15	3.67	.89	2.60	4.48	2.84	1.29	1.04	.78	.61

CAL YR 1977 TOTAL 2629.3 MEAN 7.20 MAX 107 MIN 1.1 CFM .78 IN 10.58
WTR YR 1978 TOTAL 5377.0 MEAN 14.7 MAX 492 MIN 2.8 CFM 1.59 IN 21.65

ROANOKE RIVER BASIN

273

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 (3 m) downstream from bridge on U.S. Highway 360, 1,700 ft (520 m) downstream from Terrible Creek, 1 mi (1.6 km) northeast of Halifax, and 10 mi (16 km) upstream from mouth.

DRAINAGE AREA.--547 mi² (1,417 km²).

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 (97.091 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Sept. 28, 1904, to Dec. 31, 1905, nonrecording gage at site 400 ft (120 m) upstream at different datum. Dec. 9, 1928, to Sept. 20, 1950, water-stage recorder at site 400 ft (120 m) upstream at present datum.

REMARKS.--Records good. Low and medium flow regulated at times during year by a lake 0.5 mi (0.8 km) above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--51 years, 503 ft³/s (14.24 m³/s), 12.49 in/yr (317 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s (1,420 m³/s) Sept. 20, 1944, gage height, 40.8 ft (12.44 m), from floodmarks, from rating curve extended above 11,000 ft³/s (310 m³/s) on basis of slope-area measurement of peak flow and velocity-area study; minimum, 6.0 ft³/s (0.17 m³/s) on many days in August and September 1932.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,000 ft³/s (481 m³/s) Apr. 27, gage height, 29.78 ft (9.077 m); minimum daily, 68 ft³/s (1.93 m³/s) Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	274	411	369	722	391	556	1160	394	256	273	1100
2	126	256	615	353	653	412	519	998	364	245	418	764
3	171	251	479	316	619	461	392	849	347	406	412	363
4	189	261	382	263	466	491	419	1150	355	967	729	280
5	185	426	485	247	486	469	442	4510	360	730	562	251
6	170	807	1310	310	507	468	426	4880	337	481	722	230
7	110	1610	1310	355	396	498	416	2230	340	343	731	214
8	70	1210	726	1070	409	590	398	1940	597	295	521	202
9	68	795	513	4960	468	791	383	3870	827	311	461	192
10	70	582	408	5050	444	2770	378	3460	716	289	393	185
11	85	417	252	2050	410	7770	381	1800	480	268	336	184
12	118	283	280	807	406	7120	385	1110	385	260	288	185
13	115	274	301	760	408	3340	374	1020	363	250	349	184
14	193	269	332	1290	427	1410	356	2180	338	244	326	180
15	375	256	382	1560	439	1570	335	1820	314	267	282	178
16	641	248	398	1070	432	1410	323	1210	301	408	256	180
17	436	251	345	883	419	997	320	1030	297	487	243	179
18	352	250	508	2010	416	812	339	858	291	400	225	177
19	280	240	1030	2370	426	710	404	742	282	299	213	171
20	245	223	806	1900	427	653	502	673	299	260	207	166
21	226	216	628	1450	414	592	473	610	360	241	198	163
22	218	225	551	1090	409	564	394	558	404	227	190	162
23	215	258	451	805	397	541	353	477	364	226	184	166
24	210	297	346	677	389	364	337	409	306	228	180	235
25	187	302	341	1660	397	487	383	490	283	300	179	234
26	448	315	414	8710	393	656	4460	463	279	418	250	200
27	2410	341	368	11500	388	1640	14700	430	522	321	256	183
28	2020	302	320	7230	376	1290	14400	416	549	271	209	174
29	933	275	254	2490	---	854	7460	411	359	267	201	165
30	496	273	293	1000	---	692	2030	417	282	253	216	158
31	221	---	361	828	---	609	---	414	---	229	359	---
TOTAL	11689	11987	15600	65433	12543	41422	53038	42585	11695	10447	10369	7405
MEAN	377	400	503	2111	448	1336	1768	1374	390	337	334	247
MAX	2410	1610	1310	11500	722	7770	14700	4880	827	967	731	1100
MIN	68	216	252	247	376	364	320	409	279	226	179	158
CFSM	.69	.73	.92	3.86	.82	2.44	3.23	2.51	.71	.62	.61	.45
IN.	.79	.82	1.06	4.45	.85	2.82	3.61	2.90	.80	.71	.71	.50
CAL YR 1977 TOTAL	108357			MEAN 297	MAX 2410	MIN 24	CFSM .54	IN 7.37				
WTR YR 1978 TOTAL	294213			MEAN 806	MAX 14700	MIN 68	CFSM 1.47	IN 20.01				

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 (18 m) upstream from bridge on U.S. Highway 501, 0.8 mi (1.3 km) upstream from Mayo Creek, 2.5 mi (4.0 km) northeast of Denniston, and 7.3 mi (11.7 km) south of South Boston.

DRAINAGE AREA.--289 mi² (749 km²).

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 (96.085 m) National Geodetic Vertical Datum of 1929. July 10, 1929, to Mar. 14, 1934, nonrecording gage at same site and datum.

REMARKS.--Records good. Small diurnal fluctuation at low flow in some years caused by mill above station. Since 1964, flow regulated by Hyco Lake 15.7 mi (25.3 km) upstream, capacity 75,480 acre-ft (93.1 hm³), and since Apr. 26, 1974, by Roxboro Steam-Electric Generating Plant afterbay Reservoir, capacity 12,000 acre-ft (14.8 hm³). Several observations 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, 250 ft³/s (7.080 m³/s), 11.75 in/yr (298 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s (306 m³/s) July 15, 1975, gage height, 24.27 ft (7.397 m), from rating curve extended above 8,200 ft³/s (230 m³/s); minimum, 0.004 ft³/s (<0.001 m³/s) Sept. 14, 1932, gage height, 3.58 ft (1.091 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1928 and September 1945 reached stages of 26.4 ft (8.05 m) and 25.6 ft (7.80 m), respectively, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,340 ft³/s (265 m³/s) Apr. 27, gage height, 22.82 ft (6.956 m); minimum, 6.8 ft³/s (0.193 m³/s) Oct. 1, gage height, 4.49 ft (1.369 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	35	99	540	152	105	139	1330	468	100	132	311
2	12	35	103	428	143	108	108	649	438	97	106	183
3	17	36	77	83	138	130	101	612	153	98	107	98
4	13	49	68	72	126	247	100	944	120	103	121	90
5	13	83	148	71	168	292	98	3120	115	98	130	87
6	14	510	493	80	254	300	96	4090	114	94	245	88
7	14	820	163	158	284	303	94	2820	141	92	333	87
8	14	213	99	445	272	475	91	2380	144	90	611	86
9	16	115	85	1880	260	1270	89	3390	229	89	558	85
10	22	83	76	3900	253	1630	87	4090	196	87	565	84
11	19	68	68	2960	243	3870	125	2910	143	95	516	83
12	16	62	64	1280	234	3840	301	2260	126	93	172	83
13	18	57	65	822	225	2740	295	1190	121	90	146	82
14	227	54	110	1810	232	1980	276	1280	115	94	131	82
15	238	54	573	2250	228	953	113	1550	111	110	99	81
16	57	54	191	1850	216	212	102	2100	109	889	96	81
17	42	54	113	1520	211	326	100	1570	107	999	94	79
18	35	53	264	1470	204	944	105	766	103	227	91	76
19	30	51	198	1580	197	175	109	540	101	140	90	77
20	27	49	195	2970	185	313	113	501	109	127	89	78
21	25	47	1010	3390	173	1170	107	457	307	425	87	77
22	24	50	196	2980	167	1070	103	406	431	231	87	78
23	23	58	105	2670	159	148	100	362	126	221	87	80
24	21	58	92	1140	144	112	98	350	111	214	86	78
25	21	53	98	1260	130	109	115	334	106	232	85	76
26	579	66	99	4030	120	237	2720	295	107	191	85	75
27	456	65	84	4830	107	324	8760	242	350	97	84	74
28	99	57	90	3360	101	200	7740	192	126	98	83	73
29	60	72	96	2090	---	159	3840	161	113	103	84	71
30	46	69	178	338	---	516	2330	141	106	92	84	71
31	38	---	438	180	---	517	---	272	---	90	85	---
TOTAL	2245.3	3130	5738	52437	5326	24775	28555	41304	5146	5806	5369	2754
MEAN	72.4	104	185	1692	190	799	952	1332	172	187	173	91.8
MAX	579	820	1010	4830	284	3870	8760	4090	468	999	611	311
MIN	9.3	35	64	71	101	105	87	141	101	87	83	71

CAL YR 1977 TOTAL 40848.2 MEAN 112 MAX 1010 MIN 3.3
WTR YR 1978 TOTAL 182585.3 MEAN 500 MAX 8760 MIN 9.3

ROANOKE RIVER BASIN

275

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 (4.3 km) upstream from Allen Creek, 6.7 mi (10.8 km) southeast of Boydton, 18 mi (29 km) upstream from the Virginia-North Carolina State line, and at mile 178.7 (287.5 km).

DRAINAGE AREA.--7,780 mi² (20,150 km²), 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 (87.78 m), is equipped with 22 radial gates 32 ft (9.8 m) high by 42 ft (13 m) 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 (97.5 m), is 2,750,300 acre-ft (3.39 km³) of which 1,278,000 acre-ft (1.58 km³) is controlled flood storage between elevations 300 ft (91.4 m), top of power pool, and 320 ft (97.5 m); 720,900 acre-ft (889 hm³) is available for power between elevations 281.2 ft (85.71 m), bottom of power pool, and 300 ft (91.4 m); 751,400 acre-ft (926 hm³) is inactive and dead storage below elevation 281.2 ft (85.71 m). 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 furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 2,656,300 acre-ft (3.28 km³) Apr. 3, 1975, elevation, 318.85 ft (97.185 m); minimum (after first filling to rule curve), 724,700 acre-ft (894 hm³) Feb. 3, 1956, elevation, 280.23 ft (85.414 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,648,400 acre-ft (3.27 km³) May 11, elevation, 318.75 ft (97.155 m); minimum, 1,206,800 acre-ft (1.49 km³) Oct. 14, elevation, 294.16 ft (89.660 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	294.47	1219980	
Oct. 31.....	297.30	1344670	+124690
Nov. 30.....	295.91	1282270	-62400
Dec. 31.....	298.00	1376800	+94530
CAL YR 1977.....			+109390
Jan. 31.....	314.03	2293140	+916340
Feb. 28.....	301.64	1554250	-738890
Mar. 31.....	306.60	1822780	+268530
Apr. 30.....	316.16	2447580	+624800
May 31.....	310.09	2031900	-415680
June 30.....	301.15	1529400	-502500
July 31.....	299.66	1455840	-73560
Aug. 31.....	299.88	1466490	+10650
Sept. 30.....	300.14	1479230	+12740
WTR YR 1978.....			+259250

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 (1.3 km) upstream from Coleman Creek, 2.3 mi (3.7 km) downstream from Layton Creek, 3.7 mi (6.0 km) east of Boydton, and 11.8 mi (19.0 km) southwest of South Hill.

DRAINAGE AREA.--53.4 mi² (138.3 km²).

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 (65.989 m) National Geodetic Vertical Datum of 1929 (levels by Virginia Department of Highways and Transportation).

REMARKS.--Records good. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--17 years, 41.0 ft³/s (1.161 m³/s), 10.43 in/yr (265 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,620 ft³/s (159 m³/s) Oct. 23, 1971, gage height, 21.80 ft (6.645 m), from rating curve extended above 3,100 ft³/s (88 m³/s); no flow many days in August, September, and October 1968, September and October 1970.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 850 ft³/s (24 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 26	1600	1210	34.3	Jan. 25	2100	1710	48.4
Nov. 6	2400	1740	49.3	Jan. 26	1100	2040	57.8
Jan. 9	1400	2240	63.4	Mar. 10	2330	2650	75.0
Jan. 14	0330	882	25.0	Apr. 27	0430	*4180	118
Jan. 18	0130	1070	30.3	May 5	0230	2040	57.8
Jan. 20	0900	1130	32.0	May 9	0600	1550	43.9

Minimum discharge, 0.30 ft³/s (0.008 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	7.8	26	34	39	21	38	53	16	8.0	13	92
2	1.5	7.3	29	28	36	22	34	43	14	7.4	8.4	14
3	2.6	7.6	21	23	35	36	29	37	13	7.4	51	9.0
4	.94	8.9	18	19	34	87	28	384	13	8.0	54	7.8
5	.60	32	77	18	31	90	28	889	13	7.6	35	6.8
6	.45	541	192	20	29	73	25	105	12	6.4	52	6.2
7	.40	426	49	74	26	61	24	68	12	5.7	44	5.8
8	.45	68	29	82	24	142	23	226	14	5.5	56	5.7
9	.78	37	24	1330	24	256	22	811	23	5.2	21	5.4
10	2.1	27	20	154	23	1730	21	130	16	5.0	56	7.0
11	1.7	21	16	68	23	1020	21	72	12	5.1	26	6.8
12	1.2	17	15	48	24	178	20	56	11	4.7	16	5.8
13	1.5	15	14	142	24	105	19	56	12	4.3	13	5.2
14	29	12	36	493	28	81	18	146	11	4.3	15	5.1
15	37	11	210	202	26	78	17	58	9.8	4.5	12	5.0
16	7.6	10	59	81	24	58	16	44	9.4	110	9.8	5.1
17	4.3	10	38	141	24	48	16	38	9.4	32	8.8	5.1
18	3.0	9.7	187	426	24	42	20	33	9.2	14	8.0	4.7
19	2.2	8.4	100	124	24	38	35	29	8.8	9.6	7.0	4.4
20	2.3	8.1	51	781	22	35	38	26	8.4	8.2	6.6	4.1
21	2.2	8.1	166	228	20	34	27	24	8.6	7.0	6.0	4.1
22	2.1	9.2	94	114	21	32	21	21	10	6.4	5.7	4.3
23	1.8	16	48	71	19	29	18	20	12	5.8	5.5	7.0
24	1.7	17	38	62	19	28	17	19	9.8	5.8	5.2	7.4
25	1.8	13	56	782	19	28	21	19	8.8	20	5.1	6.0
26	483	22	55	1400	18	106	1550	17	8.4	41	5.8	5.4
27	82	20	33	187	17	274	2650	16	205	12	5.5	4.7
28	25	15	27	99	17	99	217	16	24	10	5.4	4.4
29	16	22	23	67	---	63	90	17	12	9.2	5.1	4.3
30	11	20	22	52	---	48	65	16	9.0	7.0	5.2	4.0
31	8.7	---	35	44	---	41	---	20	---	8.8	6.2	---
TOTAL	735.22	1447.1	1808	7394	694	4983	5168	3509	554.6	395.9	513.3	262.6
MEAN	23.7	48.2	58.3	239	24.8	161	172	113	18.5	12.8	18.5	8.75
MAX	483	541	210	1400	39	1730	2650	889	205	110	56	92
MIN	.30	7.3	14	18	17	21	16	16	8.4	4.3	5.1	4.0
CFSM	.44	.90	1.09	4.48	.46	3.02	3.22	2.12	.35	.24	.35	.16
IN	.51	1.01	1.26	5.15	.48	3.47	3.60	2.44	.39	.28	.40	.18

CAL YR 1977 TOTAL 10422.36 MEAN 28.6 MAX 541 MIN .06 CFSM .54 IN 7.26
WTR YR 1978 TOTAL 27524.72 MEAN 75.4 MAX 2650 MIN .30 CFSM 1.41 IN 19.17

OHIO RIVER BASIN

KANAWHA RIVER BASIN

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC

LOCATION.--Lat 36°23'40", long 81°24'27", Ashe County, Hydrologic Unit 05050001, on right bank 600 ft (183 m) upstream from bridge on State Highways 16 and 88, 0.2 mi (0.3 km) downstream from Bear Creek, and 4 mi (6.4 km) southeast of Jefferson.

DRAINAGE AREA.--207 mi² (536 km²).

WATER-DISCHARGE RECORDS

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).

GAGE.--Water-stage recorder. Datum of gage is 2,657.04 ft (809.866 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 14, 1934, nonrecording gage on bridge 400 ft (122 m) downstream at same datum. Oct. 14, 1934, to Mar. 25, 1935, nonrecording gage at present site and datum.

REMARKS.--Records good.

AVERAGE DISCHARGE.--54 years, 427 ft³/s (12.09 m³/s), 28.01 in/yr (711 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 52,800 ft³/s (1,500 m³/s) Aug. 14, 1940, gage height, 22.50 ft (6.858 m), from rating curve extended above 5,100 ft³/s (144 m³/s) on basis of slope-area measurement of peak flow; minimum, 52 ft³/s (1.47 m³/s) Dec. 24, 1943, result of freezeup; minimum daily, 65 ft³/s (1.84 m³/s) Sept. 9, 1925.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 15, 1916, reached a stage of 18.0 ft (5.49 m), from floodmarks witnessed by local resident, discharge, 35,200 ft³/s (997 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (74 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 26	1630	3000	85.0	5.68	1.731	Jan. 26	0800	5280	150	7.27	2.216
Nov. 7	0130	*26300	745	14.83	4.520						

Minimum discharge, 155 ft³/s (4.39 m³/s) Sept. 30, gage height, 1.82 ft (0.555 m); minimum daily, 157 ft³/s (4.45 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	272	412	724	465	600	442	661	559	378	238	238	231
2	1350	416	679	458	570	422	616	512	352	297	247	227
3	722	585	627	424	510	435	579	467	346	329	204	269
4	405	882	626	418	460	455	560	740	347	290	199	244
5	340	1610	758	428	440	410	546	976	331	250	332	205
6	314	15400	929	430	400	434	521	693	320	251	306	194
7	297	13800	753	409	356	457	509	610	322	252	775	185
8	325	3660	664	505	370	477	491	753	397	243	892	180
9	822	2040	658	1900	380	580	478	761	432	235	523	175
10	742	1600	639	1020	390	1590	469	648	359	222	388	170
11	485	1310	594	732	395	1490	464	572	320	217	295	193
12	410	1110	594	730	400	896	464	538	327	212	272	219
13	372	981	568	720	410	830	438	804	336	213	388	198
14	356	894	564	710	410	990	416	976	317	217	384	192
15	334	835	736	700	410	1540	406	768	288	218	318	192
16	323	788	632	680	410	1130	401	714	288	275	310	191
17	336	965	579	670	400	888	407	642	289	264	269	183
18	319	869	598	650	400	746	415	583	282	238	294	174
19	307	740	616	620	410	655	476	539	318	237	281	170
20	298	700	561	600	400	592	487	506	423	210	259	162
21	286	677	549	580	400	554	442	481	344	205	235	165
22	280	665	519	555	400	548	415	458	298	199	225	190
23	276	761	489	560	393	521	392	447	289	200	218	185
24	273	732	482	570	440	485	373	490	272	195	212	177
25	291	677	536	941	450	613	501	498	260	195	207	178
26	2100	822	569	4280	450	1490	1280	428	256	192	203	174
27	1080	729	456	1500	456	1600	1040	409	253	193	218	165
28	690	675	469	1040	447	1130	724	396	241	228	243	162
29	561	672	456	827	---	872	613	438	235	194	213	161
30	491	651	487	717	---	769	557	475	234	182	198	157
31	441	---	467	650	---	706	---	404	---	178	201	---
TOTAL	15898	56658	18578	25489	11957	24747	16141	18285	9454	7069	9547	5668
MEAN	513	1889	599	822	427	798	538	590	315	228	308	189
MAX	2100	15400	929	4280	600	1600	1280	976	432	329	892	269
MIN	272	412	456	409	356	410	373	396	234	178	198	157
CFSM	2.48	9.13	2.89	3.97	2.06	3.86	2.60	2.85	1.52	1.10	1.49	.91
IN.	2.86	10.18	3.34	4.58	2.15	4.45	2.90	3.29	1.70	1.27	1.72	1.02

CAL YR 1977 TOTAL 221798 MEAN 608 MAX 15400 MIN 217 CFSM 2.94 IN 39.86
WTR YR 1978 TOTAL 219491 MEAN 601 MAX 15400 MIN 157 CFSM 2.90 IN 39.44

KANAWHA RIVER BASIN

03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1977 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDE (T/DAY)
OCT 18...	1130	303	2	1.6
NOV 07...	1315	10200	432	11900
25...	1210	666	10	18
JAN 05...	1120	389	1	1.1
MAR 06...	1400	471	4	5.1
MAY 22...	1115	477	12	15
JUN 29...	1400	236	7	4.5
JUL 26...	1145	203	59	32
SEP 08...	1050	179	3	1.4

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 U.S. Highway 58, 500 ft (152 m) downstream from Meadow Creek, 1.2 mi (1.9 km) southwest of Old Town, 3.1 mi (5.0 km) southwest of Galax, and 3.6 mi (5.8 km) downstream from Elk Creek.

DRAINAGE AREA.--1,131 mi² (2,929 km²).

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 (673.011 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Appalachian Power Co. long-distance gage-height transmitter at station, recorder at Roanoke.

AVERAGE DISCHARGE.--49 years, 1,891 ft³/s (53.55 m³/s), 22.71 in/yr (577 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s (3,990 m³/s) Aug. 14, 1940, gage height, 25.7 ft (7.83 m), from floodmark, from rating curve extended above 32,000 ft³/s (910 m³/s) on basis of computation of peak flow over dam at Fries 6 mi (10 km) downstream and slope-area measurement of peak flow; minimum, 193 ft³/s (5.47 m³/s) Jan. 9, 1956, gage height, 0.52 ft (0.158 m), result of freezeup; minimum daily, 265 ft³/s (7.50 m³/s) Sept. 19, 1954.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s (250 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 2	2100	11100	314	4.46	1.359	Mar. 10	1900	16400	464	5.63	1.716
Oct. 26	2300	9010	255	3.97	1.210	Mar. 15	0600	10300	292	4.27	1.301
Nov. 6	2025	*91000	2580	18.59	5.666	Mar. 26	1730	12600	357	4.79	1.460
Jan. 26	0830	35800	1010	9.50	2.896						

Minimum discharge, 650 ft³/s (18.4 m³/s) Sept. 27, 28, 30, gage height, 0.95 ft (0.290 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	870	1780	3120	2070	2500	1550	2860	3180	1840	1200	1090	1440
2	5000	1690	3140	1970	2600	1480	2580	2820	1690	1450	975	1120
3	7150	1770	2830	1770	2500	1470	2360	2430	1640	2320	1020	1100
4	2730	2730	2660	1540	2300	1480	2220	2930	1690	2140	1250	1180
5	1850	4690	3850	1750	2200	1340	2110	4530	1600	1520	1760	1050
6	1550	38900	5120	1840	1800	1450	2010	3700	1530	1360	1450	892
7	1380	56800	4110	1810	1600	1740	1940	2930	1540	1310	2440	892
8	1350	21900	3200	2030	1500	1850	1860	3610	2160	1290	4360	832
9	2550	11300	2940	6860	1900	2800	1800	4420	2550	1240	3520	790
10	3500	7800	2760	3500	1700	10400	1770	4020	2120	1180	2530	790
11	2400	6070	2510	2200	1600	10200	1760	3260	1800	1160	1850	832
12	1800	4720	2410	2400	1500	5720	1780	2820	1660	1210	1680	1120
13	1500	4000	2450	2300	1600	4920	1740	3670	1720	1130	2290	1100
14	1630	3560	2370	2200	1700	5740	1620	6560	1780	1130	2690	940
15	1530	3310	3080	2000	1600	9360	1560	5100	1550	1110	2430	860
16	1410	3040	2840	1700	1500	6330	1530	4410	1600	1680	1920	860
17	1410	3820	2540	1900	1400	4490	1530	3710	1540	1760	1590	860
18	1380	4160	2650	2100	1500	3470	1550	3160	1450	1330	1370	804
19	1330	3360	2760	1900	1600	2910	1650	2770	1560	1150	1390	748
20	1280	2920	2500	1800	1790	2620	1860	2480	2130	1120	1300	720
21	1230	2690	2400	1700	1640	2480	1750	2300	1930	1030	1160	734
22	1180	2550	2260	1600	1630	2500	1600	2150	1710	991	1050	720
23	1140	2680	2100	1500	1500	2410	1520	2040	1540	1020	974	720
24	1090	2780	2050	1400	1550	2230	1470	2090	1440	956	941	748
25	1080	2600	2320	6000	1730	2860	1590	2480	1360	1030	888	734
26	5750	2960	2470	26900	1980	10000	4410	2190	1340	1030	901	720
27	7110	2950	2120	11500	1700	9450	7090	2060	1320	1000	939	720
28	3740	2700	2020	5920	1580	5960	5890	1940	1270	1250	1000	692
29	2700	2690	1850	4330	---	4430	4420	2020	1210	1120	956	720
30	2260	2740	2080	3200	---	3630	3550	2180	1200	966	876	706
31	1980	---	2060	2600	---	3190	---	2050	---	912	908	---
TOTAL	72860	215660	83570	112290	49700	130460	71380	96010	49470	39095	44698	26144
MEAN	2350	7189	2696	3622	1775	4208	2379	3097	1649	1261	1403	871
MAX	7150	56800	5120	26900	2600	10400	7090	6560	2550	2320	4360	1440
MIN	870	1690	1850	1400	1400	1340	1470	1940	1200	912	876	692
CFSM	2.08	6.36	2.38	3.20	1.57	3.72	2.10	2.74	1.46	1.12	1.42	.77
IN.	2.40	7.09	2.75	3.69	1.63	4.29	2.35	3.16	1.63	1.29	1.63	.86

CAL YR 1977 TOTAL 917156 MEAN 2513 MAX 56800 MIN 769 CFSM 2.22 IN 30.17
WTR YR 1978 TOTAL 996337 MEAN 2730 MAX 56800 MIN 692 CFSM 2.41 IN 32.77

03164000 NEW RIVER NEAR GALAX, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1931, 1950, 1952, 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to current year.

WATER TEMPERATURES: October to December 1949, April 1968 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 88 micromhos Nov. 13, 1971; minimum daily, 10 micromhos Nov. 20, 1975.

WATER TEMPERATURES (water years 1968-78): Maximum, 31.0°C July 17, 18, 1969; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 62 micromhos Sept. 19, 21, 22; minimum daily, 35 micromhos Oct. 10, 12, Nov. 2, 3.

WATER TEMPERATURES: Maximum daily, 28.0°C on several days in August and September; minimum daily, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS S04)
OCT 15...	0800	1550	43	3	14	0	3.6	1.3	2.8	1.6	17	5.2
NOV 15...	0805	3360	43	3	14	0	3.4	1.3	2.9	1.4	19	3.1
DEC 15...	0800	3110	48	11	14	2	3.5	1.3	2.9	1.1	15	3.9
JAN 15...	0800	2000	45	10	12	4	3.0	1.2	3.6	1.2	10	3.3
FEB 15...	0800	1600	54	20	15	2	3.7	1.4	4.5	1.3	16	3.6
MAR 15...	0800	10100	46	20	12	0	3.1	1.1	2.8	1.1	15	3.2
APR 15...	0800	1550	48	10	14	0	3.3	1.3	2.8	1.3	17	3.1
MAY 15...	0805	5230	45	10	15	0	3.9	1.3	3.2	1.2	21	2.2
JUN 15...	0850	1570	45	5	15	0	3.7	1.4	3.3	1.1	28	1.8
JUL 15...	0825	1120	55	15	18	0	4.4	1.6	3.1	1.6	23	2.4
AUG 15...	1700	2300	53	5	16	0	3.9	1.5	3.7	1.5	21	2.6
SEP 15...	1700	860	57	5	16	0	4.1	1.5	4.3	1.9	20	2.3

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 15...	2.7	.0	12	53	40	.58	2.6	.00	.58	.00	.00	30
NOV 15...	2.4	.0	12	26	38	.57	2.5	.00	.57	.00	.00	30
DEC 15...	3.1	.1	12	36	38	.64	2.8	.00	.64	.00	.00	40
JAN 15...	2.9	.0	12	39	36	.74	3.3	.01	.75	.02	.06	30
FEB 15...	3.5	.0	13	42	42	.76	3.4	.01	.77	.00	.00	70
MAR 15...	1.3	.1	11	41	34	.66	2.9	.00	.66	.00	.00	20
APR 15...	2.6	.1	11	34	35	.19	.80	.00	.19	.00	.00	20
MAY 15...	2.4	.1	12	43	38	.33	1.5	.00	.33	.00	.00	0
JUN 15...	2.9	.1	12	44	40	.00	--	.03	.02	.00	.00	0
JUL 15...	2.2	.1	12	50	41	.40	1.8	.00	.40	.00	.00	10
AUG 15...	3.3	.1	12	46	41	.36	1.6	.00	.36	.00	.00	0
SEP 15...	4.0	.1	8.9	45	39	.51	2.3	.01	.52	.05	.15	10

03164000 NEW RIVER NEAR GALAX, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	42	47	48	48	44	49	48	45	54	45	56
2	51	35	48	48	48	44	49	48	45	54	37	57
3	51	35	47	50	46	44	49	48	43	54	45	59
4	52	41	47	46	46	44	50	48	45	54	45	61
5	47	43	48	46	54	44	50	49	45	55	48	59
6	47	40	48	47	55	44	50	49	43	55	48	52
7	45	36	47	47	---	44	50	48	45	57	45	58
8	37	40	47	45	---	44	50	42	43	55	43	54
9	36	38	47	46	---	44	50	42	40	55	46	59
10	35	40	47	45	54	44	50	42	45	55	52	59
11	42	40	47	45	55	44	50	42	50	54	45	58
12	35	41	47	45	57	44	50	40	48	55	57	60
13	41	42	47	46	57	44	48	43	48	55	50	60
14	45	40	48	45	57	44	48	40	45	54	55	61
15	43	43	48	45	54	46	48	45	45	55	53	57
16	39	42	48	45	54	44	48	45	48	54	50	57
17	37	48	47	46	54	44	48	40	45	56	45	57
18	42	48	47	---	55	44	48	42	52	55	58	60
19	46	49	47	46	55	44	48	45	52	51	50	62
20	42	48	52	46	57	44	50	45	52	49	52	58
21	41	48	52	46	57	46	42	42	52	50	45	62
22	43	47	52	46	57	46	54	42	54	50	50	62
23	42	47	51	46	50	46	48	45	54	51	53	57
24	41	47	51	46	45	46	48	45	54	51	47	57
25	40	47	51	46	44	46	48	42	55	50	45	57
26	39	48	51	46	44	45	48	45	54	51	42	60
27	44	48	51	46	44	46	48	45	54	51	45	58
28	50	52	51	46	44	46	48	42	54	51	50	57
29	38	48	48	46	---	46	48	45	54	45	47	59
30	44	47	45	---	---	48	48	42	54	45	58	57
31	---	---	---	---	---	---	---	42	---	48	47	---
MEAN	43	44	48	46	52	45	49	44	49	53	48	58

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	11.0	7.0	.0	.5	2.0	9.5	10.0	15.0	22.5	23.5	27.0
2	15.0	11.5	7.0	.0	.0	2.5	10.0	10.5	15.0	23.0	23.0	26.5
3	14.5	12.0	6.5	1.0	.5	3.0	10.0	11.0	15.5	22.5	23.0	27.0
4	14.0	12.5	6.0	1.0	1.0	2.0	10.0	11.0	16.0	23.0	22.5	27.5
5	14.0	11.0	6.5	.0	.0	3.0	10.0	11.0	16.0	24.0	22.5	28.0
6	13.5	10.5	7.0	.0	.0	3.0	10.0	10.5	16.0	24.0	23.0	28.0
7	14.0	10.0	6.5	.0	---	3.0	10.0	10.0	16.0	23.5	23.0	28.0
8	13.0	10.0	6.0	.0	---	3.5	9.5	10.0	16.5	23.5	22.5	27.0
9	13.5	10.5	5.5	.0	---	4.0	10.0	10.0	17.0	23.5	22.0	27.0
10	13.0	11.0	6.0	.0	.0	4.5	10.5	10.5	17.0	24.0	23.5	27.5
11	12.5	10.5	5.5	.0	.0	5.0	10.0	11.0	17.0	24.0	24.0	26.0
12	11.5	11.0	5.0	.0	.0	5.5	10.5	10.0	17.5	23.5	24.0	26.0
13	12.0	11.5	5.0	.0	.0	5.5	11.0	10.5	17.0	23.0	24.0	26.5
14	12.5	12.0	5.0	.5	1.0	6.0	10.5	11.0	17.5	23.5	24.0	27.0
15	11.0	11.5	4.5	1.0	1.0	6.5	10.0	11.0	18.0	24.0	24.5	27.0
16	11.5	11.0	4.0	1.0	1.0	7.0	10.5	11.0	18.0	23.5	25.0	27.0
17	11.0	10.0	4.0	1.0	.0	7.5	10.5	12.0	17.5	23.0	28.0	27.0
18	12.0	10.0	3.5	.5	.0	8.0	11.0	11.0	18.0	23.0	27.5	27.5
19	13.0	10.0	3.0	.0	.0	8.0	11.5	11.5	18.0	23.0	28.0	27.5
20	13.0	10.0	2.5	1.0	.0	8.0	12.0	12.0	18.5	22.5	27.0	28.0
21	12.0	9.5	2.0	1.0	.0	8.5	11.5	12.5	19.0	22.0	27.0	27.0
22	12.0	9.0	1.5	1.0	.0	8.5	11.0	12.5	20.0	22.5	27.0	27.0
23	12.0	9.0	1.0	1.0	.0	9.0	10.0	13.0	20.5	23.0	27.5	26.5
24	12.0	9.0	1.0	1.0	1.0	9.0	10.0	13.5	21.0	23.0	28.0	26.0
25	11.0	9.0	1.5	.0	1.0	9.5	9.5	14.0	21.0	23.0	28.0	26.5
26	11.0	9.0	2.0	.0	1.5	10.0	9.5	14.0	21.5	23.5	28.0	26.0
27	11.0	8.5	1.5	.5	2.0	10.0	10.0	14.0	22.0	23.0	28.0	26.0
28	10.5	8.0	.0	.0	2.0	9.5	10.0	14.5	22.0	23.0	28.0	25.5
29	10.0	7.5	.0	1.0	---	10.0	10.5	14.0	22.5	22.5	28.0	25.0
30	11.0	7.0	.0	---	---	9.0	10.0	15.0	22.0	23.0	28.0	25.0
31	---	---	---	---	---	---	---	14.5	---	23.0	27.0	---
MEAN	12.5	10.0	4.0	.5	.5	6.5	10.5	12.0	18.5	23.0	25.5	27.0

KANAWHA RIVER BASIN

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 (61 m) upstream from bridge on State Highway 89 and 1.7 mi (2.7 km) downstream from Wards Mill Branch.

DRAINAGE AREA.--39.4 mi² (102.0 km²).

PERIOD OF RECORD.--September 1944 to current year.

REVISED RECORDS.--WSP 1385: 1953.

GAGE.--Water-stage recorder. Datum of gage is 2,344.17 ft (714.503 m) 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 (61 m) upstream at datum 0.86 ft (0.262 m) higher.

REMARKS.--Records fair except those for periods of doubtful or no gage-height record, Dec. 7 to Jan. 8, Jan. 29 to Mar. 8, May 17 to June 18, June 20 to Aug. 6, Aug. 16 to Sept. 30, which are poor. Several observations 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, 66.8 ft³/s (1.892 m³/s), 23.02 in/yr (585 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,980 ft³/s (198 m³/s) Oct. 17, 1947, gage height, 14.4 ft (4.39 m), from floodmark, site and datum then in use, from rating curve extended above 2,200 ft³/s (62 m³/s) on basis of two slope-area and one contracted-opening measurements at gage heights 9.5 ft (2.90 m), 14.4 ft (4.39 m), and 17.4 ft (5.30 m), respectively, site and datum then in use; minimum, 13 ft³/s (0.37 m³/s) Jan. 5, 1956, result of freezeup; minimum daily, 14 ft³/s (0.40 m³/s) Sept. 2, 1953, Sept. 18, 1954, Sept. 6, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 14, 1940, reached a stage of 17.4 ft (5.30 m), at site and datum used 1944-53, discharge, 11,000 ft³/s (312 m³/s) by contracted-opening measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft³/s (20 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 26	0600	1340	37.9	4.37	1.332	Jan. 26	0230	*a3100	87.8	7.83	2.387
Nov. 5	1845	952	27.0	3.43	1.045	Mar. 10	0545	960	27.2	3.45	1.052
Nov. 7	1130	800	22.7	3.05	.930	Aug. 14	2130	2170	61.5	6.04	1.841
Jan. 9	0010	912	25.8	3.33	1.015						

a From rating curve extended above 510 ft³/s (14 m³/s) on basis of slope-area measurements at gage heights 11.07 ft (3.374 m) and 12.93 ft (3.941 m), respectively.

Minimum daily discharge, 24 ft³/s (0.68 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	43	78	52	85	50	70	80	62	70	39	50
2	127	40	70	48	80	48	66	86	60	170	38	37
3	37	70	64	45	70	52	64	130	66	100	65	35
4	33	164	58	40	70	50	62	200	60	58	70	34
5	30	361	105	45	72	45	60	140	54	50	50	32
6	27	484	75	52	45	60	60	101	60	48	40	31
7	26	467	72	47	50	70	58	140	80	46	122	30
8	29	204	66	100	60	100	57	170	120	45	85	29
9	133	135	64	365	54	147	55	167	80	44	80	28
10	45	106	58	91	50	58	56	104	60	58	56	30
11	40	80	45	83	48	157	65	90	58	50	64	34
12	36	66	47	72	46	134	58	130	60	43	100	40
13	35	60	50	70	50	117	55	215	54	45	200	35
14	40	58	60	68	49	168	52	151	50	44	350	33
15	55	55	110	60	47	130	50	114	54	80	245	32
16	45	52	70	56	45	102	52	102	60	70	60	30
17	48	118	68	64	48	86	54	94	54	50	50	29
18	42	66	66	60	50	79	56	84	46	45	45	28
19	38	62	66	58	52	72	60	80	101	42	42	27
20	35	60	62	54	55	70	58	76	55	40	40	27
21	32	56	60	50	52	66	52	72	60	38	38	27
22	30	54	56	46	50	65	50	70	64	42	37	26
23	30	70	50	44	110	60	48	74	54	40	36	27
24	29	64	52	80	100	70	52	76	48	45	36	28
25	29	60	60	400	80	250	150	70	45	42	35	27
26	591	80	50	1130	70	466	313	66	50	44	40	26
27	159	70	46	184	54	183	248	64	45	70	37	25
28	106	62	45	126	52	129	142	62	43	45	35	25
29	66	60	42	100	---	103	98	70	41	40	38	25
30	50	56	45	95	---	86	90	100	40	39	45	24
31	45	---	55	90	---	75	---	66	---	42	42	---
TOTAL	2098	3383	1915	3875	1694	3875	2411	3244	1784	1685	2260	911
MEAN	67.7	113	61.8	125	60.5	125	80.4	105	59.5	54.4	72.9	30.4
MAX	591	484	110	1130	110	586	313	215	120	170	350	50
MTN	26	40	42	40	45	45	48	62	40	38	35	24
CFSM	1.72	2.87	1.57	3.17	1.54	3.17	2.04	2.67	1.51	1.38	1.85	.77
IN.	1.98	3.19	1.81	3.66	1.60	3.66	2.28	3.06	1.68	1.59	2.13	.86

CAL YR 1977 TOTAL 20461 MEAN 56.1 MAX 1180 MIN 14 CFSM 1.42 IN 19.32
WTR YR 1978 TOTAL 29135 MEAN 79.8 MAX 1130 MIN 24 CFSM 2.03 IN 27.51

03165500 NEW RIVER AT IVANHOE, VA

LOCATION.--Lat 36°50'05", long 80°57'10", Wythe County, Hydrologic Unit 05050001, on left bank at Ivanhoe, 2.1 mi (3.4 km) downstream from Big Branch, and 2.3 mi (3.7 km) upstream from Cripple Creek.

DRAINAGE AREA.--1,340 mi² (3,471 km²).

PERIOD OF RECORD.--August to December 1927, October 1929 to September 1978 (discontinued as a continuous-record station; converted to a crest-stage partial-record station). Monthly discharge only for some periods, published in WSP 1305. Gage-height records collected in vicinity, October 1916 to July 1943, are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 783: Drainage area, 1933(M).

GAGE.--Water-stage recorder. Datum of gage is 1,943.09 ft (592.254 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Large diurnal fluctuation and some regulation caused by powerplants at Buck 2.8 mi (4.5 km) above station and at Byllesby 5.5 mi (8.8 km) above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--49 years, 2,140 ft³/s (60.60 m³/s), 21.69 in/yr (551 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 155,000 ft³/s (4,390 m³/s) Aug. 14, 1940, gage height, 38.1 ft (11.61 m), from floodmarks, from rating curve extended above 32,000 ft³/s (910 m³/s) on basis of flood records for other stations on New River; minimum, 44 ft³/s (1.25 m³/s) Oct. 11, 1965, gage height, 0.59 ft (0.180 m); minimum daily, 184 ft³/s (5.21 m³/s) July 28, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1916 reached a stage of 34.8 ft (10.61 m), from floodmark, discharge, 132,000 ft³/s (3,740 m³/s), from rating curve extended as explained above. Flood in September 1878 was about 5 ft (1.5 m) lower than flood in July 1916 and was the highest between 1840 and 1916.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 13,500 ft³/s (380 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0010	*91600 2590	28.08 8.559	Mar. 10	2200	18500 524	10.43 3.179
Jan. 26	0500	44000 1250	18.37 5.599	Mar. 26	2200	14700 416	8.93 2.722

Minimum discharge, 340 ft³/s (9.63 m³/s) Sept. 28, 29, gage height, 1.45 ft (0.442 m); minimum daily, 361 ft³/s (10.2 m³/s) Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	984	2060	3050	2410	3160	2130	4440	4070	2350	825	1190	1540
2	3020	1910	3490	2330	3350	2010	4150	3790	2120	1780	1220	1110
3	9610	1800	3120	2170	3080	2010	3460	3080	1950	3270	1200	913
4	3660	2600	3010	1690	2770	1900	2630	3450	1990	2540	1490	1470
5	2370	4620	3650	1780	2820	1950	2730	5730	2050	1740	2030	1180
6	1740	29300	5550	2440	2540	2100	2570	5130	1920	1620	1780	893
7	1370	61200	4930	2200	2000	2320	2520	3920	1840	1520	2850	1090
8	1560	24800	3900	2260	1940	2500	2450	4510	2500	1210	4740	829
9	2370	11700	3340	6790	2300	3650	2320	5470	3070	1610	4160	802
10	4290	6000	2770	6190	2200	10600	2200	5150	2600	1230	3570	819
11	3110	5000	2550	3770	2100	13900	2240	4350	2160	1160	2310	1100
12	2500	4500	2690	2850	2000	8020	2320	3680	2350	1360	1910	967
13	1920	4000	2740	3110	2100	6610	2230	4370	1990	1400	3350	1350
14	1760	3700	2800	2920	2200	6750	2220	7890	2260	1130	2880	1140
15	1800	3400	3520	2740	2100	10500	2030	6440	1880	1020	3560	928
16	1640	3100	3380	2710	2000	8360	1890	5410	1750	1940	2400	800
17	1690	3900	2980	2160	1900	6110	2080	4810	1800	2230	2100	1170
18	1600	4190	2960	2700	2000	4830	1970	4140	1720	1490	1490	1000
19	1410	3580	3140	2500	2200	4060	2070	3790	2070	1390	1530	738
20	1440	3180	3090	2400	2300	3530	2190	2990	2650	1210	1350	1040
21	1390	2980	2570	2300	2370	3350	2430	2950	2390	1260	1570	809
22	1150	2880	2160	2100	1990	2810	2000	2900	2080	843	1440	847
23	1290	2900	2420	2000	1900	3070	1920	2680	1750	1080	1160	522
24	1440	3030	2300	1900	1950	3150	2100	2690	1600	1310	1140	842
25	1260	2900	2420	3180	2640	3260	1920	3070	1530	1110	833	1150
26	6870	3080	2930	29900	2900	10100	4500	2860	1770	940	701	1100
27	8840	3260	2440	14200	2750	12200	8890	2600	1310	1240	1190	1170
28	4820	3010	1940	6930	2200	8400	7990	2190	1440	1290	1600	361
29	3280	2920	1870	4740	---	6040	5950	2370	1490	1310	1110	379
30	2720	2960	2200	3740	---	5020	4650	2850	1360	1080	910	635
31	2340	---	2550	3130	---	4410	---	2640	---	1290	1060	---
TOTAL	85244	214460	92460	132240	65760	165600	93060	121970	59740	44428	59424	28694
MEAN	2750	7149	2983	4266	2349	5342	3102	3935	1991	1433	1930	956
MAX	9610	61200	5550	29900	3350	13900	8890	7890	3070	3270	4740	1540
MIN	984	1800	1870	1690	1900	1900	1890	2190	1310	825	701	361
CFSM	2.05	5.34	2.23	3.18	1.75	3.99	2.32	2.94	1.49	1.07	1.44	.71
IN.	2.37	5.95	2.57	3.67	1.83	4.60	2.58	3.39	1.66	1.23	1.66	.80

CAL YR 1977 TOTAL 995891 MEAN 2728 MAX 61200 MIN 643 CFSM 2.04 IN 27.65
WTR YR 1978 TOTAL 1163480 MEAN 3188 MAX 61200 MIN 361 CFSM 2.38 IN 32.30

KANAWHA RIVER BASIN

03166800 GLADE CREEK AT GRAHAMS FORGE, VA

LOCATION.--Lat 36°55'51", long 80°54'02", Wythe County, Hydrologic Unit 05050001, on right downstream abutment of bridge on State Highway 629, 1.0 mi (1.6 km) southwest of Grahams Forge, and at mile 0.4 (0.6 km).

DRAINAGE AREA.--7.15 mi² (18.52 km²).

PERIOD OF RECORD.--May 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,972 ft (600 m), from topographic map.

REMARKS.--Records fair except those for period of doubtful or no gage-height record, Aug. 25 to Sept. 30, which are poor. Recording rain gage at station. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,100 ft³/s (31.2 m³/s) June 16, 1976, gage height, 5.11 ft (1.558 m), from rating curve extended above 60 ft³/s (1.7 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.03 ft³/s (<0.001 m³/s) Sept. 7, 1976, gage height, 1.36 ft (0.415 m), result of storage behind temporary dam; minimum daily, 0.05 ft³/s (0.001 m³/s) Oct. 4, 5, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	1445	175 4.96	3.45 1.052	Apr. 27	1515	130 3.68	3.25 0.991
Jan. 26	0245	172 4.87	3.44 1.049	May 13	1415	184 5.21	3.48 1.061
Mar. 10	0615	*268 7.59	3.76 1.146	July 27	1415	144 4.08	3.32 1.012

Minimum daily discharge, 0.05 ft³/s (0.001 m³/s) Oct. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.09	.28	.16	.55	.46	1.2	2.2	.57	.25	.42	.30
2	.46	.07	.20	.12	.50	.44	1.0	1.6	.57	3.0	.41	.25
3	.08	.06	.16	.12	.46	.36	.89	1.2	.66	1.0	.38	.23
4	.05	.14	.18	.14	.42	.32	.80	3.2	.56	.60	.49	.22
5	.05	2.2	.38	.16	.37	.32	.73	3.0	.47	.40	.47	.21
6	.06	1.6	.34	.16	.30	.48	.71	1.5	.45	.31	.60	.20
7	.07	22	.31	.14	.36	1.3	.62	1.2	.59	.30	2.6	.19
8	.12	5.8	.28	.62	.34	3.5	.55	5.9	.73	.26	.69	.18
9	.62	1.2	.20	1.4	.32	7.2	.51	4.6	.60	.24	.68	.20
10	.15	.22	.18	.50	.30	93	.50	3.0	.48	.47	.59	.25
11	.11	.16	.16	.26	.30	12	.48	2.1	.42	.40	1.1	.19
12	.09	.14	.16	.25	.32	7.6	.45	1.7	.53	.28	2.6	.15
13	.08	.12	.16	.28	.30	4.6	.40	30	1.0	.28	1.6	.23
14	.11	.12	.20	.25	.25	10	.34	10	.43	.28	.76	.18
15	.11	.11	.18	.22	.24	3.6	.31	5.9	.38	1.3	.68	.16
16	.09	.09	.16	.22	.31	1.8	.31	4.1	.38	.64	.64	.15
17	.09	.16	.16	.31	.35	1.1	.31	3.0	.37	.40	.57	.14
18	.07	.09	.25	.34	.37	.81	.31	2.3	.34	.30	.54	.14
19	.07	.08	.18	.31	.39	.65	.44	1.8	.32	.25	.50	.13
20	.06	.08	.18	.31	.36	.53	.38	1.6	.40	.24	.45	.13
21	.06	.08	.16	.31	.34	.44	.33	1.3	.55	.22	.41	.12
22	.06	.16	.16	.28	.31	.37	.29	1.2	.37	.21	.38	.12
23	.06	.20	.16	.25	.31	.33	.27	1.1	.31	.21	.38	.20
24	.06	.14	.16	.25	.31	.30	.25	1.2	.30	.20	.38	.17
25	.06	.25	.18	10	.70	.90	.76	1.0	.28	.22	.40	.16
26	3.9	.20	.16	89	.67	41	10	.93	.28	.22	2.5	.13
27	.86	.16	.16	5.0	.50	8.7	45	.82	.27	6.0	.60	.12
28	.38	.18	.16	1.2	.48	3.6	11	.78	.25	1.1	.50	.11
29	.22	.18	.16	.90	---	2.4	4.4	.76	.25	.61	.40	.11
30	.16	.20	.16	.70	---	1.8	3.0	.72	.30	.50	1.0	.10
31	.12	---	.18	.60	---	1.5	---	.63	---	.45	.50	---
TOTAL	8.66	36.28	6.10	114.76	10.73	211.41	86.54	100.34	13.41	21.14	24.22	5.17
MEAN	.28	1.21	.20	3.70	.38	6.82	2.88	3.24	.45	.68	.78	.17
MAX	3.9	22	.38	.89	.70	.93	.45	.30	1.0	6.0	2.6	.30
MIN	.05	.06	.16	.12	.24	.30	.25	.63	.25	.20	.38	.10
CFSM	.04	.17	.03	.52	.05	.95	.40	.45	.06	.10	.11	.02
IN.	.05	.19	.03	.60	.06	1.10	.45	.52	.07	.11	.13	.03

CAL YR 1977 TOTAL 275.04 MEAN .75 MAX 43 MIN .05 CFSM .11 IN 1.43
WTR YR 1978 TOTAL 638.76 MEAN 1.75 MAX 93 MIN .05 CFSM .25 IN 3.32

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LOCATION.--Lat 36°56'05", long 80°54'19", Wythe County, Hydrologic Unit 05050001, 0.3 mi (0.5 km) upstream from Glade Creek, 0.3 mi (0.5 km) northwest of National Fish Hatchery, 0.4 mi (0.6 km) upstream from Reed Creek, and 1.0 mi (1.6 km) southwest of Gramams Forge.

PERIOD OF RECORD.--July 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,000 ft (610 m), from topographic map.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 6.8 ft³/s (0.19 m³/s) June 9, 1978; minimum daily, 4.1 ft³/s (0.12 m³/s) Oct. 24, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 6.8 ft³/s (0.19 m³/s) June 9; minimum daily, 4.1 ft³/s (0.12 m³/s) Oct. 24.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	4.2	4.3	4.2	4.4	4.4	4.9	5.2	6.5	6.2	5.2	5.2
2	4.2	4.2	4.2	4.2	4.4	4.4	4.9	5.2	6.5	6.2	5.1	5.2
3	4.2	4.2	4.2	4.2	4.4	4.4	4.9	5.2	6.5	6.2	5.1	5.2
4	4.2	4.2	4.2	4.2	4.4	4.4	4.9	5.2	6.5	6.2	5.2	5.2
5	4.2	4.2	4.3	4.2	4.4	4.4	4.9	5.2	6.4	6.2	5.2	5.2
6	4.2	4.3	4.2	4.2	4.4	4.4	4.9	5.2	6.4	6.0	5.2	5.2
7	4.2	4.4	4.2	4.2	4.4	4.4	4.9	5.2	6.4	5.8	5.2	5.2
8	4.2	4.3	4.2	4.2	4.4	4.4	4.9	5.2	6.4	5.6	5.2	5.2
9	4.3	4.3	4.2	4.3	4.4	4.4	4.9	5.8	6.8	5.4	5.1	5.2
10	4.2	4.2	4.2	4.2	4.4	4.5	4.9	5.6	6.6	5.3	5.1	5.1
11	4.2	4.2	4.2	4.5	4.4	4.7	4.9	5.4	6.6	5.2	5.1	5.0
12	4.2	4.2	4.2	4.2	4.4	4.8	4.9	5.4	6.5	5.2	5.1	5.0
13	4.2	4.2	4.2	4.3	4.4	4.8	4.9	5.9	6.6	5.3	5.1	5.0
14	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.3	6.4	5.2	5.1	5.0
15	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.2	6.4	5.2	5.1	5.0
16	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.2	6.3	5.2	5.1	5.0
17	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.2	6.3	5.2	5.0	5.0
18	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.2	6.3	5.2	5.1	4.9
19	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.2	6.3	5.2	5.1	4.9
20	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.3	6.3	5.2	5.0	4.9
21	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.4	6.3	5.2	5.0	4.9
22	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.4	6.4	5.2	5.0	4.8
23	4.2	4.2	4.2	4.3	4.4	4.8	4.9	6.4	6.4	5.2	5.0	4.8
24	4.1	4.2	4.2	4.3	4.4	4.8	4.9	6.5	6.4	5.2	5.0	4.8
25	4.2	4.2	4.2	4.4	4.4	4.8	4.9	6.4	6.4	5.2	5.0	4.8
26	4.3	4.2	4.2	5.0	4.4	4.8	5.0	6.4	6.4	5.2	5.0	4.8
27	4.2	4.2	4.2	4.6	4.4	4.9	5.4	6.5	6.3	5.2	5.0	4.8
28	4.2	4.2	4.2	4.4	4.4	5.0	5.4	6.2	6.3	5.2	5.0	4.8
29	4.2	4.2	4.2	4.4	---	5.0	5.2	6.5	6.2	5.2	5.0	4.8
30	4.2	4.2	4.2	4.4	---	4.9	5.2	6.5	6.2	5.2	5.0	4.8
31	4.2	---	4.2	4.4	---	4.9	---	6.5	---	5.2	5.1	---
TOTAL	130.3	126.5	130.4	134.0	123.2	145.5	148.7	184.0	192.3	168.4	157.5	149.7
MEAN	4.20	4.22	4.21	4.32	4.40	4.69	4.96	5.94	6.41	5.43	5.08	4.99
MAX	4.3	4.4	4.3	5.0	4.4	5.0	5.4	6.5	6.8	6.2	5.2	5.2
MIN	4.1	4.2	4.2	4.2	4.4	4.4	4.9	5.2	6.2	5.2	5.0	4.8
CAL YR 1977 TOTAL	1628.6											
WTR YR 1978 TOTAL	1790.5											

KANAWHA RIVER BASIN

03166880 WEST SPRING AT NATIONAL FISH HATCHERY, NEAR GRAHAMS FORGE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 02...	4.2	--	13.5	3	120	5	25	14	.4	1.4	140	2.3
JAN 31...	4.4	225	13.0	10	130	12	26	15	.5	1.8	140	1.7
APR 19...	4.9	220	13.0	5	120	3	24	14	.6	1.5	140	2.0
JUL 19...	5.2	230	13.5	10	130	12	26	15	.5	1.6	140	2.3

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N03)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N02)	NITRO- GEN, NO2+N03 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 02...	.7	.1	8.0	113	122	.22	1.0	.00	.22	.00	0
JAN 31...	1.6	.1	8.5	111	125	.22	1.0	.00	.22	.01	0
APR 19...	.7	.1	8.4	116	121	.25	1.1	.00	.25	.01	0
JUL 19...	.6	.1	8.1	105	124	.19	.80	.00	.19	.00	20

KANAWHA RIVER BASIN

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03166900 BOILING SPRING AT NATIONAL FISH HATCHERY, NEAR GRAHAMS FORGE, VA

LOCATION.--Lat 36°55'50", long 80°53'47", Wythe County, Hydrologic Unit 05050001, 0.1 mi (0.2 km) off State Highway 629, 0.15 mi (0.24 km) upstream from Reed Creek, and 0.9 mi (1.4 km) southwest of Grahams Forge.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1976 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,980 ft (604 m), from topographic map.

REMARKS.--Records good. Diversion to Wytheville National Fish Hatchery by two pumps with capacities of 2.9 ft³/s (0.082 m³/s) and 1.9 ft³/s (0.054 m³/s). Pumpage is fairly constant. Monthly and yearly flows adjusted for pumpage on basis of fish hatchery pumpage records.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 6.6 ft³/s (0.19 m³/s) May 14, 15, 1978, adjusted for pumpage; minimum daily, 4.8 ft³/s (0.14 m³/s) Jan. 5, 7, 1978, adjusted for pumpage.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 6.6 ft³/s (0.19 m³/s) May 14, 15, adjusted for pumpage; minimum daily, 4.8 ft³/s (0.14 m³/s) Jan. 5, 7, adjusted for pumpage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	3.1	3.1	2.0	2.5	2.4	3.1	3.3	3.6	3.4	3.3	3.1
2	3.3	3.1	3.1	2.0	2.4	2.4	3.1	3.3	3.6	3.4	3.3	3.1
3	3.2	3.0	3.1	2.0	2.4	2.4	3.1	3.3	3.6	3.5	3.3	3.1
4	3.1	3.0	3.1	2.0	2.4	2.4	3.1	3.3	3.6	3.4	3.3	3.1
5	3.1	3.0	3.2	1.9	2.4	2.4	3.1	3.3	3.6	3.4	3.3	3.0
6	3.1	3.1	3.2	2.0	2.4	2.4	3.1	3.3	3.6	3.4	3.2	3.0
7	3.1	3.2	3.2	1.9	2.5	2.4	3.1	3.3	3.6	3.4	3.2	3.0
8	3.1	3.3	3.2	2.0	2.4	2.5	3.1	3.4	3.6	3.4	3.2	3.0
9	3.2	3.2	3.2	2.2	2.4	2.6	3.1	3.4	3.6	3.4	3.2	3.0
10	3.2	3.2	3.2	2.2	2.4	3.0	3.1	3.4	3.6	3.4	3.2	3.0
11	3.2	3.2	3.2	2.1	2.4	2.9	3.1	3.4	3.6	3.4	3.2	3.0
12	3.1	3.1	2.6	2.1	2.4	2.9	3.1	3.4	3.6	3.4	3.2	3.0
13	3.1	3.1	2.1	2.1	2.4	2.8	3.1	3.5	3.6	3.4	3.2	3.0
14	3.1	3.1	2.1	2.1	2.4	2.9	3.1	3.7	3.5	3.4	3.2	3.0
15	3.1	3.1	2.1	2.1	2.4	2.9	3.1	3.7	3.5	3.4	3.2	2.9
16	3.1	3.1	2.1	2.1	2.4	2.9	3.1	3.6	3.5	3.4	3.2	2.9
17	3.1	3.1	2.1	2.0	2.4	2.8	3.1	3.6	3.5	3.4	3.2	2.9
18	3.1	3.1	2.1	2.1	2.4	2.8	3.1	3.6	3.5	3.3	3.2	2.9
19	3.1	3.1	2.1	2.1	2.4	2.8	3.1	3.6	3.5	3.3	3.2	2.9
20	3.1	3.1	2.1	2.1	2.4	2.8	3.1	3.6	3.5	3.3	3.1	2.9
21	3.1	3.1	2.1	2.1	2.4	2.8	3.1	3.6	3.5	3.3	3.1	2.8
22	3.1	3.1	2.0	2.0	2.4	2.8	3.1	3.6	3.5	3.3	3.1	2.8
23	3.1	3.1	2.0	2.0	2.4	2.8	3.0	3.6	3.5	3.3	3.1	2.9
24	3.1	3.1	2.0	2.0	2.4	2.8	3.0	3.6	3.5	3.3	3.1	2.9
25	3.1	3.1	2.0	2.2	2.4	2.8	3.0	3.6	3.5	3.3	3.1	2.9
26	3.3	3.1	2.0	2.8	2.4	3.1	3.2	3.6	3.5	3.3	3.1	2.9
27	3.2	3.1	2.0	2.6	2.4	3.1	3.5	3.6	3.5	3.3	3.1	2.9
28	3.2	3.1	2.0	2.5	2.4	3.0	3.5	3.6	3.5	3.3	3.1	2.9
29	3.2	3.1	2.0	2.5	---	3.0	3.4	3.6	3.4	3.3	3.1	2.9
30	3.2	3.1	2.0	2.5	---	3.0	3.3	3.6	3.4	3.3	3.1	2.8
31	3.1	---	2.0	2.5	---	3.1	---	3.6	---	3.3	3.1	---
TOTAL	97.3	93.3	76.3	66.8	67.4	85.7	94.1	108.6	106.1	104.1	98.5	88.5
MEAN	3.14	3.11	2.46	2.15	2.41	2.76	3.14	3.50	3.54	3.36	3.18	2.95
MAX	3.3	3.3	3.2	2.8	2.5	3.1	3.5	3.7	3.6	3.5	3.3	3.1
MIN	3.1	3.0	2.0	1.9	2.4	2.4	3.0	3.3	3.4	3.3	3.1	2.8
(*)	1.9	1.9	2.5	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
MEAN*	5.04	5.01	4.96	5.05	5.31	5.66	6.04	6.40	6.44	6.26	6.08	5.85

CAL YR 1977 TOTAL 1043.1 MEAN 2.86 MAX 3.7 MIN 2.0 MEAN* 5.26
WTR YR 1978 TOTAL 1086.7 MEAN 2.98 MAX 3.7 MIN 1.9 MEAN* 5.68

* Pumpage, equivalent in cubic feet per second, by Wytheville National Fish Hatchery.
* Adjusted for pumpage.

KANAWHA RIVER BASIN

03166900 BOILING SPRING AT NATIONAL FISH HATCHERY, NEAR GRAHAMS FORGE, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS S04)
NOV 02...	5.0	--	13.0	2	120	8	23	14	.4	1.5	130	1.7
JAN 31...	5.4	220	12.5	10	120	11	24	14	.4	1.9	130	2.2
APR 19...	6.0	218	13.0	5	120	0	23	14	.6	1.6	140	3.0
JUL 19...	6.2	200	13.0	10	120	8	23	14	.5	1.5	130	2.3

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 CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N03)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N02)	NITRO- GEN, N02+N03 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 02...	.9	.1	8.3	113	115	.20	.90	.00	.20	.01	20
JAN 31...	1.1	.1	8.8	112	118	.24	1.1	.00	.24	.01	0
APR 19...	1.5	.1	8.8	127	123	.28	1.2	.00	.28	.01	0
JUL 19...	1.4	.1	8.2	107	116	.21	.90	.00	.21	.01	20

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 (6 m) downstream from highway bridge at Grahams Forge, 2.2 mi (3.5 km) downstream from Glade Creek, and at mile 7.3 (11.7 km).

DRAINAGE AREA.--247 mi² (640 km²).

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 (586.633 m) National Geodetic Vertical Datum of 1929.

Prior to Oct. 1, 1916, nonrecording gage at same site at datum 0.68 ft (0.207 m) lower. Feb. 3, 1927, to Oct. 28, 1934, and June 11, 1974, to July 22, 1975, nonrecording gage, at present site and datum.

REMARKS.--Records good. Occasional diurnal fluctuation at low flow caused by mills above station. Several observations 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, 267 ft³/s (7.561 m³/s), 14.68 in/yr (373 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft³/s (496 m³/s) July 16, 1916, gage height, 11.4 ft (3.47 m), present datum, from floodmarks, from rating curve extended above 7,600 ft³/s (220 m³/s) on basis of velocity-area study and slope-area measurement at gage heights 11.4 ft (3.47 m) and 10.01 ft (3.051 m), respectively; minimum observed, about 5 ft³/s (0.1 m³/s) Dec. 22, 1909, gage height, 0.49 ft (0.149 m), present datum, result of freezeup; minimum daily, 22 ft³/s (0.62 m³/s) Jan. 30, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s (65 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0700	3680 104	4.96 1.512	Mar. 15	0130	2720 77.0	4.35 1.326
Nov. 7	2200	3630 103	4.93 1.503	Mar. 27	0200	2760 78.2	4.38 1.335
Jan. 26	1700	4200 119	5.29 1.612	Apr. 27	0800	3760 106	5.01 1.527
Mar. 10	2200	*4270 121	5.33 1.625				

Minimum discharge, 60 ft³/s (1.70 m³/s) Oct. 1, gage height, 1.39 ft (0.424 m); minimum daily, 73 ft³/s (2.07 m³/s) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	150	914	191	359	249	512	761	222	110	97	117
2	354	141	793	185	361	231	449	606	206	159	106	114
3	290	133	566	158	317	228	396	503	203	545	98	114
4	145	165	444	146	278	213	358	525	206	272	106	111
5	114	223	419	164	266	188	336	692	189	175	154	108
6	100	887	435	156	248	193	311	659	179	152	117	107
7	93	3000	393	156	176	241	295	549	178	140	219	104
8	93	1990	340	167	248	370	274	1170	191	133	286	102
9	276	976	319	425	212	570	258	1550	209	126	207	101
10	395	678	281	246	204	2590	249	1020	186	124	390	100
11	207	504	241	324	194	2510	240	740	170	132	188	103
12	150	384	223	349	189	1770	237	600	162	125	501	100
13	128	314	218	278	191	1610	227	1110	165	118	247	93
14	133	269	221	263	194	1870	210	1580	154	119	175	95
15	133	240	259	234	189	2030	200	1030	146	118	153	88
16	124	218	252	219	186	1170	194	795	143	142	138	83
17	125	268	245	224	185	866	196	648	141	127	127	81
18	139	407	270	238	195	679	195	546	138	114	121	79
19	129	317	315	220	221	572	200	468	135	109	122	78
20	119	262	304	217	212	501	238	410	183	106	114	77
21	108	232	296	215	199	443	207	371	165	102	108	78
22	100	221	266	192	193	421	192	340	144	100	104	77
23	96	302	237	176	166	374	182	315	142	100	100	78
24	92	330	223	181	190	340	177	322	135	98	98	80
25	90	305	238	333	192	390	198	325	129	106	96	80
26	889	469	271	3330	280	1770	1670	289	124	114	95	77
27	769	498	247	1580	256	2050	3500	263	124	126	101	76
28	379	403	231	910	258	1150	2490	248	120	126	110	76
29	256	437	201	655	---	852	1470	245	116	114	104	74
30	199	848	221	523	---	695	990	266	113	101	103	75
31	168	---	195	441	---	591	---	236	---	99	103	---
TOTAL	6466	15571	10078	13096	6359	27727	16651	19182	4818	4332	4788	2726
MEAN	209	519	325	422	227	894	555	619	161	140	154	90.9
MAX	889	3000	914	3330	361	2590	3500	1580	222	545	501	117
MIN	73	133	195	146	166	188	177	236	113	98	95	74
CFSM	.85	2.10	1.32	1.71	.92	3.62	2.25	2.51	.65	.57	.62	.37
IN.	.97	2.35	1.52	1.97	.96	4.18	2.51	2.89	.73	.65	.72	.41

CAL YR 1977 TOTAL 102869 MEAN 282 MAX 10600 MIN 66 CFSM 1.14 IN 15.49
WTP YR 1978 TOTAL 131794 MEAN 361 MAX 3500 MIN 73 CFSM 1.46 IN 19.85

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 (213 m) downstream from highway bridge, 3.5 mi (5.6 km) southeast of Allisonia, 4 mi (6 km) upstream from Little Reed Island Creek, and at mile 4.5 (7.2 km).

DRAINAGE AREA.--278 mi² (720 km²).

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 (579.955 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1916, nonrecording gage at site 4 mi (6 km) downstream at different datum.

REMARKS.--Records good. Several observations 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, 400 ft³/s (11.33 m³/s), 19.54 in/yr (496 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s (411 m³/s) Sept. 30, 1959, gage height, 12.54 ft (3.822 m), from rating curve extended above 6,000 ft³/s (170 m³/s) on basis of slope-area measurement of peak flow; minimum, 63 ft³/s (1.78 m³/s) Jan. 20, 1971, gage height, 1.63 ft (0.497 m), result of freezeup; minimum daily, 84 ft³/s (2.38 m³/s) Sept. 17, 1956, Sept. 23-25, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft³/s (99 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1230	4240 120	6.42 1.957	Apr. 26	1930	4080 116	6.31 1.923
Nov. 7	1830	4460 126	6.57 2.003	Apr. 27	2300	3540 100	5.92 1.804
Jan. 9	0700	6520 185	7.95 2.423	Aug. 7	1800	3780 107	6.09 1.856
Jan. 26	1115	*12300 348	11.29 3.441	Aug. 13	0700	4000 113	6.25 1.905
Mar. 10	1330	5600 159	7.33 2.234				

Minimum discharge, 159 ft³/s (4.50 m³/s) Oct. 1, gage height, 2.08 ft (0.634 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	290	544	369	614	367	502	863	471	279	285	344
2	430	278	491	337	563	344	474	693	426	514	259	277
3	341	278	425	290	500	360	452	601	427	1230	248	258
4	217	588	401	278	486	367	442	1050	464	547	454	243
5	190	845	605	324	505	330	436	1590	406	394	474	230
6	183	1450	828	364	444	384	418	916	388	359	335	226
7	193	2680	522	328	292	450	417	717	419	341	1580	222
8	203	1760	445	485	420	519	399	1070	640	323	877	211
9	485	796	435	3790	370	811	392	1250	824	311	573	207
10	522	594	369	860	350	3870	392	894	507	311	574	203
11	298	501	315	562	330	1730	397	706	426	413	385	214
12	239	440	328	546	330	1080	425	634	404	343	442	238
13	213	401	387	564	350	958	389	976	414	303	1440	222
14	328	382	430	523	340	1160	369	1440	375	325	520	234
15	455	369	744	400	320	1290	360	899	359	309	474	227
16	328	359	491	420	330	823	358	771	366	576	385	223
17	359	759	435	440	340	653	362	671	431	510	369	210
18	286	577	480	400	350	564	372	614	360	350	327	200
19	254	450	470	390	360	523	409	573	344	308	314	194
20	235	401	425	380	385	497	427	542	433	293	290	190
21	220	382	411	350	372	475	379	523	389	278	278	190
22	213	382	378	310	366	460	360	498	433	268	268	192
23	206	475	355	300	318	438	348	489	446	292	261	185
24	203	435	359	500	418	420	343	511	363	284	254	191
25	200	411	425	3000	395	508	382	522	333	313	250	200
26	2090	555	382	7300	492	1770	2540	473	326	287	249	191
27	853	455	315	1470	371	1470	2830	457	339	294	288	179
28	501	420	319	864	384	857	2350	443	308	500	256	178
29	392	406	294	570	---	661	1620	442	290	298	245	177
30	337	387	369	639	---	578	1120	522	284	261	310	173
31	302	---	387	626	---	531	---	705	---	260	295	---
TOTAL	11441	18506	13564	27979	11095	25248	20464	23055	12395	11674	13559	6429
MEAN	369	617	438	903	396	814	682	744	413	377	437	214
MAX	2090	2680	828	7300	614	3870	2830	1590	824	1230	1580	344
MIN	165	278	294	278	292	330	343	442	284	260	245	173
CFSM	1.33	2.22	1.58	3.25	1.42	2.93	2.45	2.68	1.49	1.36	1.57	.77
IN.	1.53	2.48	1.82	3.74	1.48	3.38	2.74	3.09	1.66	1.56	1.81	.86

CAL YR 1977 TOTAL 144133 MEAN 395 MAX 4270 MIN 127 CFSM 1.42 IN 19.29
WTR YR 1978 TOTAL 195409 MEAN 535 MAX 7300 MIN 165 CFSM 1.92 IN 26.15

03168000 NEW RIVER AT ALLISONIA, VA

LOCATION.--Lat 36°56'15", long 80°44'45", Pulaski County, Hydrologic Unit 05050001, on left bank 0.2 mi (0.3 km) downstream from Big Reed Island Creek and 0.5 mi (0.8 km) upstream from Allisonia.

DRAINAGE AREA.--2,202 mi² (5,703 km²).

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 (563.380 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Large diurnal fluctuation and some regulation by powerplant 25 mi (40 km) above station. Corps of Engineers gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--49 years, 3,185 ft³/s (90.20 m³/s), 19.64 in/yr (499 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 185,000 ft³/s (5,240 m³/s) Aug. 14, 1940, gage height, 23.42 ft (7.138 m), from rating curve extended above 52,000 ft³/s (1,500 m³/s) on basis of flood records for other stations on New River; minimum, 412 ft³/s (11.7 m³/s) Sept. 7, 1930, gage height, 0.47 ft (0.143 m); minimum daily, 453 ft³/s (12.8 m³/s) Sept. 6, 1930.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 17,500 ft³/s (500 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	2315	18600 527	5.65 1.722	Mar. 11	0030	31800 901	7.75 2.362
Nov. 7	0315	*109000 3090	16.59 5.057	Mar. 26	2230	24000 680	6.54 1.993
Jan. 26	1000	78700 2230	13.55 4.130	Apr. 27	2345	21200 600	6.08 1.853

Minimum discharge, 790 ft³/s (22.4 m³/s) Sept. 29, gage height, 1.00 ft (0.305 m); minimum daily, 810 ft³/s (22.9 m³/s) Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1240	2740	5110	3290	4800	3120	5380	7090	3680	1540	2150	2120
2	3150	2610	5420	3220	5000	2910	5030	6320	3220	2550	1810	1880
3	11700	2420	4750	2810	4570	2920	4910	5300	3140	5710	1540	1380
4	5120	3530	4480	2160	4080	2750	3920	5760	2940	4220	2270	1930
5	3100	5910	5240	2330	4120	2480	4240	9360	3130	3010	2920	1800
6	2140	23700	7700	3110	3000	2830	3960	8220	2880	2380	2520	1510
7	2030	86500	6870	2970	2800	3350	3880	6350	2810	2360	5030	1550
8	1840	37200	5490	3130	3200	3950	3730	7650	3570	1990	6820	1360
9	3030	15900	4810	11800	3400	5740	3460	9990	4700	1920	5980	1150
10	5810	10400	3940	8800	3200	19500	3340	8730	4030	2310	5710	1270
11	4390	8150	3570	4000	3000	23100	3280	7110	3170	1990	3540	1540
12	3250	6620	3450	4500	2900	13200	3510	6230	3240	1930	3110	1570
13	2490	5650	3660	4200	3000	11000	3250	7430	3320	1840	5670	1730
14	2570	5040	4060	4000	3100	11600	3180	13500	2930	1900	4180	1650
15	2670	4620	5050	3800	2900	16300	3020	10400	2870	1820	5030	1440
16	2280	4330	4780	3100	2800	12200	2740	8540	2350	2360	3750	1280
17	2320	5220	4270	3500	2700	8840	3070	7500	2780	3400	2690	1600
18	2230	5680	4250	3900	2800	7010	2650	6410	2480	2410	2430	1340
19	2070	4790	4370	3500	3000	5940	3070	5860	2540	1980	2200	1310
20	1840	4200	4230	3400	3400	5360	3220	4960	3400	1900	1980	1280
21	1720	3920	3810	3300	3070	4980	3450	4790	3770	1730	2270	1320
22	1860	3860	3820	3000	2830	4080	2940	4490	3050	1580	2060	1320
23	1710	4060	3530	2800	2250	4560	2900	4340	2690	1430	1730	979
24	1760	4220	3300	2700	2720	4530	2780	4190	2380	1970	1940	1150
25	1720	4080	3400	11900	3260	4820	2750	4420	2290	1740	1760	1580
26	10100	4510	4010	54200	4130	15500	9430	4560	2370	1600	1250	1400
27	13200	4800	3310	22500	3560	19400	18700	3970	2120	1820	1440	1850
28	7040	4380	2910	10700	3220	11900	17200	3490	2120	2170	2050	880
29	4860	4210	2410	7660	---	8500	12000	3460	2080	1870	1720	810
30	3870	4650	2810	5000	---	7160	8610	4290	1870	1620	1700	989
31	3340	---	3550	4500	---	5920	---	4400	---	1720	1670	---
TOTAL	116450	287900	132360	209780	92810	255450	153600	199110	87920	68770	90720	42968
MEAN	3756	9597	4270	6767	3315	8240	5120	6423	2931	2218	2926	1432
MAX	13200	86500	7700	54200	5000	23100	18700	13500	4700	5710	6820	2120
MIN	1240	2420	2410	2160	2250	2480	2650	3460	1870	1430	1250	810
CFSM	1.71	4.36	1.94	3.07	1.51	3.74	2.33	2.92	1.33	1.01	1.33	.65
IN.	1.97	4.86	2.24	3.54	1.57	4.32	2.59	3.36	1.49	1.16	1.53	.73

CAL YR 1977 TOTAL 1428740 MEAN 3914 MAX 86500 MIN 1010 CFSM 1.78 IN 24.14
WTR YR 1978 TOTAL 1737838 MEAN 4761 MAX 86500 MIN 810 CFSM 2.16 IN 29.36

KANAWHA RIVER BASIN

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 (0.8 km) upstream from Little River, and 5.5 mi (8.8 km) upstream from Radford.

DRAINAGE AREA.--2,382 mi² (6,169 km²).

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 Co.). 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 (554.28 m) is equipped with 9 lift gates 30 ft (9.1 m) high by 50 ft (15.2 m) 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 (562.97 m), 1.5 ft (0.46 m) below top of gates, is 230,100 acre-ft (284 hm³) of which about 100,000 acre-ft (123 hm³) is controlled storage above minimum pool elevation of 1,820.0 ft (554.74 m). Reservoir is used for hydroelectric power and recreation.

COOPERATION.--Records furnished by Appalachian Power Co.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1843.28	213900	
Oct. 31.....	1845.53	223500	+9600
Nov. 30.....	1844.80	220400	-3100
Dec. 31.....	1845.41	223000	+2600
CAL YR 1977.....			+2200
Jan. 31.....	1844.22	217900	-5100
Feb. 28.....	1845.12	221700	+3800
Mar. 31.....	1845.15	221900	+200
Apr. 30.....	1846.06	225800	+3900
May 31.....	1844.55	219300	-6500
June 30.....	1843.83	216200	-3100
July 31.....	1845.70	224200	+8000
Aug. 31.....	1844.13	217500	-6700
Sept. 30.....	1844.00	216900	-600
WTR YR 1978.....			+3000

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 highway bridge at Snowville, 0.5 mi (0.8 km) southeast of Grayson, 7 mi (11 km) south of Radford, and at mile 8.6 (13.8 km).

DRAINAGE AREA.--300 mi² (777 km²).

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 (553.529 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 20, 1931, nonrecording gage at bridge 1.0 mi (1.6 km) downstream at datum 17.99 ft (5.483 m) lower. Nov. 20, 1931, to Nov. 12, 1941, water-stage recorder 1.2 mi (1.9 km) downstream at datum 20.58 ft (6.273 m) lower.

REMARKS.--Records good except those for period of no gage-height record, Jan. 26 to Feb. 21, which are fair. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--50 years, 363 ft³/s (10.28 m³/s), 16.43 in/yr (417 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s (646 m³/s) June 21, 1972, gage height, 13.40 ft (4.084 m), from rating curve extended above 16,000 ft³/s (450 m³/s) on basis of slope-area measurements at gage heights 12.76 ft (3.889 m) and 13.40 ft (4.084 m); minimum, 21 ft³/s (0.59 m³/s) Feb. 22, 1942, result of freezeup; minimum daily, 50 ft³/s (1.42 m³/s) Sept. 21, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 26	1930	3820 108	4.41 1.344	Mar. 10	1715	7820 221	6.90 2.103
Nov. 6	2400	3680 104	4.32 1.317	Apr. 26	2215	5040 143	5.23 1.594
Nov. 7	2345	6090 172	5.92 1.804	Apr. 28	0200	4820 137	5.08 1.548
Jan. 9	0900	3350 94.9	4.10 1.250	May 5	0230	3050 86.4	3.90 1.189
Jan. 26	Unknown	*15000 425	10.33 3.149				

Minimum discharge, 119 ft³/s (3.37 m³/s) Oct. 1, gage height, 0.98 ft (0.299 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	246	515	363	540	387	517	1080	441	239	246	221
2	195	236	525	317	520	351	483	827	392	365	230	222
3	280	268	444	222	500	345	453	697	395	925	200	211
4	159	1110	417	219	450	345	438	960	449	580	250	204
5	137	1410	591	296	420	301	435	2200	388	361	679	192
6	131	2470	841	351	400	369	417	1150	363	294	311	186
7	134	3650	563	331	260	519	415	850	355	272	395	185
8	146	3100	417	390	370	462	396	1310	430	253	473	178
9	222	1030	453	2500	340	646	382	1980	571	243	340	170
10	265	728	355	700	320	4690	377	1230	437	239	420	166
11	191	593	283	500	300	2820	379	884	359	285	334	172
12	159	497	319	480	290	1730	412	749	341	301	370	183
13	149	444	367	514	290	1520	379	801	357	265	666	172
14	265	410	413	479	310	1610	353	1130	328	275	393	213
15	518	390	522	442	290	1790	337	838	297	366	318	197
16	285	372	426	364	280	1010	333	739	285	438	285	193
17	289	606	383	370	280	762	336	679	368	458	260	180
18	244	596	407	400	290	623	350	600	331	319	240	168
19	200	442	461	360	310	560	389	560	291	270	231	162
20	182	393	409	350	320	525	409	530	334	250	222	155
21	169	369	396	340	350	501	370	500	393	230	222	156
22	161	369	374	310	340	491	344	480	661	220	209	161
23	158	455	336	280	270	462	327	450	439	230	205	161
24	154	443	334	270	405	439	321	540	363	241	202	164
25	153	407	349	450	399	466	341	492	315	384	198	181
26	1450	511	345	9000	736	1590	2300	451	300	324	204	177
27	1030	463	236	2000	438	1830	3690	429	294	261	206	162
28	492	411	259	1200	418	937	3750	414	268	276	290	157
29	370	417	221	900	---	710	2440	409	247	260	222	155
30	306	399	313	700	---	605	1540	416	236	220	256	147
31	268	---	375	580	---	549	---	591	---	210	241	---
TOTAL	8987	23235	12649	25978	10436	29945	23413	24966	11028	9794	9318	5351
MEAN	290	775	408	838	373	966	780	805	368	316	301	178
MAX	1450	3650	841	9000	736	4690	3750	2200	661	925	679	222
MIN	125	236	221	219	260	301	321	409	236	210	198	147
CFSM	.97	2.58	1.36	2.79	1.24	3.22	2.60	2.68	1.23	1.05	1.00	.59
IN.	1.11	2.88	1.57	3.22	1.29	3.71	2.90	3.10	1.37	1.21	1.16	.66

CAL YR 1977 TOTAL 131297 MEAN 360 MAX 5500 MIN 87 CFSM 1.20 IN 16.28
WTR YR 1978 TOTAL 195100 MEAN 535 MAX 9000 MIN 125 CFSM 1.78 IN 24.19

KANAWHA RIVER BASIN

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 (610 m) downstream from bridge on U.S. Highway 11 at Radford, 5 mi (8 km) downstream from Little River, and 5.5 mi (8.8 km) downstream from Claytor Dam.

DRAINAGE AREA.--2,748 mi² (7,117 km²).

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 (521.866 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 30, 1939, nonrecording gage at highway bridge 2,000 ft (610 m) upstream at datum 0.85 ft (0.259 m) lower.

REMARKS.--Records good. Flow regulated since 1939 by Claytor Reservoir (station 03169000). Some additional regulation at low flow by dam and powerplant on Little River. Corps of Engineers gage-height telemeter at station. Several observations 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, 3,839 ft³/s (108.7 m³/s), 18.97 in/yr (482 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 218,000 ft³/s (6,170 m³/s) Aug. 14, 1940, gage height, 35.96 ft (10.961 m), from rating curve extended above 76,000 ft³/s (2,200 m³/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 (4.67 m³/s) Aug. 25, 27, 1944, gage height, 1.08 ft (0.329 m); minimum daily, 550 ft³/s (15.6 m³/s) Aug. 22, 1911.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 16, 1916, reached a stage of 35.7 ft (10.88 m), discharge, 200,000 ft³/s (5,660 m³/s), at site and datum used by Geological Survey 1907-15, from reports of the National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 108,000 ft³/s (3,060 m³/s) Nov. 7, gage height, 24.10 ft (7.346 m), from rating curve extended as explained above; minimum, 600 ft³/s (17.0 m³/s) Sept. 12, 13, gage height, 1.60 ft (0.488 m); minimum daily, 939 ft³/s (26.6 m³/s) Sept. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1620	3350	6980	3150	4980	4830	6440	11200	4450	1160	3020	1800
2	4990	3480	5760	4310	4460	3900	4670	7670	4500	1240	2300	1020
3	7230	3030	5190	3640	5380	4290	5390	7360	2900	5060	2490	1010
4	8560	5870	2990	2740	3960	4380	5310	9950	1330	5810	4010	967
5	6210	8030	8170	2660	3830	1330	4620	8640	3780	4840	2940	2860
6	2790	19700	8150	3650	5060	3980	4800	9390	3100	4490	1730	2440
7	2630	82500	5910	2540	4210	4730	4920	9410	4030	4530	4920	2010
8	2430	43200	5440	5180	3590	5430	2920	11000	6000	1060	8260	2440
9	2980	16900	5800	11600	3730	4790	2330	10600	6060	1160	4800	953
10	5370	12600	5710	10900	4490	18800	5500	9180	3910	2810	4710	939
11	4940	9990	2390	7740	3230	27600	4580	8720	1300	2390	5490	1960
12	3670	7570	4710	4000	2060	15900	3140	7680	3170	2690	4340	1700
13	2770	6200	3830	5070	4790	14600	3750	10500	4160	2810	4540	1730
14	3190	5600	4770	4370	3840	14500	3790	12300	3260	3280	3500	1700
15	2430	4690	4420	2360	3740	17700	3040	12000	4000	1150	5830	2190
16	2730	5520	5270	5640	4260	14200	2510	11300	4290	1290	4420	1700
17	2120	5410	5300	5460	4580	11300	3390	9470	2580	2760	5970	2000
18	2050	5890	4490	5840	4010	10600	5010	7330	2360	3600	3880	3500
19	2100	4830	4330	5630	2820	6260	3510	6260	2580	4770	1060	2000
20	2400	3850	5380	7530	4280	5780	3720	6270	3770	3580	1040	1700
21	2180	5100	5490	4200	3710	5760	3590	3170	4330	2440	2150	1600
22	1050	5240	5110	1320	3960	5640	3020	5920	4210	1520	2390	1500
23	1030	5500	4370	4040	4000	4680	1700	5550	3830	1030	2470	1200
24	2030	3770	3660	4150	3640	5740	3160	5780	3230	2670	2160	950
25	2100	5320	3050	6480	2570	10600	6490	5700	1210	2080	2960	1100
26	7970	5660	2340	51300	1780	12600	13300	5060	3540	2480	977	1600
27	10700	3060	3020	28200	5390	17400	20300	4320	4140	2070	950	1700
28	10000	5550	3330	12500	4480	13200	22800	3090	2580	1700	2750	1700
29	5300	6130	4400	10700	---	11200	16100	2820	3570	1140	2790	1400
30	2720	5440	3690	9050	---	8800	12700	4660	3610	1060	2810	1000
31	4250	---	2250	6330	---	8390	---	6310	---	2370	1790	---
TOTAL	122540	308980	145700	242280	110830	298910	186500	238610	105780	81040	105447	50369
MEAN	3953	10300	4700	7815	3958	9642	6217	7697	3526	2614	3402	1679
MAX	10700	82500	8170	51300	5390	27600	22800	12300	6060	5810	8260	3500
MIN	1030	3030	2250	1320	1780	1330	1700	2820	1210	1030	950	939
(*)	+157	-53	+42	-83	+69	+2	+66	-105	-52	+130	-109	-9
MEAN#	4110	10247	4742	7732	4027	9644	6283	7592	3474	2744	3293	1670
CFSM#	1.50	3.73	1.73	2.81	1.47	3.51	2.29	2.76	1.26	1.00	1.20	.61
IN#	1.72	4.16	1.99	3.24	1.53	4.05	2.55	3.19	1.41	1.15	1.38	.68

CAL YR 1977 TOTAL 1590084 MEAN 4356 MAX 82500 MIN 752 MEAN# 4359 CFSM# 1.59 IN# 21.54
WTR YR 1978 TOTAL 1996986 MEAN 5471 MAX 82500 MIN 939 MEAN# 5475 CFSM# 1.99 IN# 27.05

* Change in contents, equivalent in cubic feet per second, in Claytor Reservoir; furnished by Appalachian Power Co.
* Adjusted for change in contents.

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 (0.3 km) downstream from bridge on State Highway 100, 0.2 mi (0.3 km) downstream from Sugar Run, and at mile 7.9 (12.7 km).

DRAINAGE AREA.--305 mi² (790 km²).

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 (507.772 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 1, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good. Several observations 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, 327 ft³/s (9.261 m³/s), 14.56 in/yr (370 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft³/s (479 m³/s) Apr. 5, 1977, gage height, 16.69 ft (5.087 m), from rating curve extended above 7,200 ft³/s (200 m³/s) on basis of slope-area measurement at gage height 16.50 ft (5.029 m); minimum, 15 ft³/s (0.42 m³/s) Dec. 21, 1958, gage height, 2.42 ft (0.738 m), result of freezeup; minimum daily, 24 ft³/s (0.68 m³/s) Sept. 27, 28, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in September 1878 reached a stage of about 23.5 ft (7.2 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (110 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Jan. 26	1230	*9930 281	12.90 3.932	Mar. 27	0130	4570 129	9.54 2.908
Mar. 10	2000	5840 165	10.47 3.191	Apr. 27	0300	6620 187	10.95 3.338
Mar. 14	2300	5970 169	10.56 3.219				

Minimum discharge, 41 ft³/s (1.16 m³/s) Sept. 23, gage height, 2.87 ft (0.875 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	158	1730	193	484	239	634	1240	251	89	67	59
2	133	141	1360	183	457	213	543	925	214	98	66	56
3	215	135	906	144	384	207	467	730	200	218	63	54
4	119	289	685	137	322	209	412	689	201	262	62	53
5	89	775	581	156	314	178	378	1050	185	151	82	51
6	75	1320	615	156	279	193	343	997	166	127	89	49
7	69	2280	558	148	215	223	323	799	157	115	92	48
8	70	2780	452	164	235	285	295	1940	169	107	122	47
9	169	1370	417	936	249	365	271	2640	208	99	285	46
10	341	842	360	680	232	2850	256	1650	196	94	270	45
11	207	615	276	526	202	3230	246	1140	159	93	199	47
12	144	461	255	479	200	2470	241	872	144	91	229	49
13	116	368	270	475	197	2590	229	1160	139	89	146	50
14	107	303	255	409	200	3830	210	2100	134	94	109	48
15	119	264	296	341	195	4110	196	1410	124	94	102	48
16	118	235	289	243	190	2130	188	1060	119	92	90	47
17	111	255	273	293	186	1400	188	825	127	97	81	47
18	124	380	296	296	187	993	199	670	119	89	74	46
19	113	348	392	261	195	775	205	565	120	81	100	44
20	102	296	401	267	188	665	209	487	339	76	125	43
21	92	258	380	255	194	609	203	431	225	73	88	42
22	86	267	337	235	184	589	195	385	197	75	75	42
23	80	620	286	195	155	518	185	346	175	81	67	42
24	76	764	261	226	188	451	178	333	147	68	63	44
25	73	605	264	526	171	456	186	326	128	67	61	48
26	705	625	261	6450	220	2600	2780	285	118	68	59	47
27	791	586	213	2670	228	3470	5060	256	112	71	57	46
28	443	508	213	1430	246	1790	3770	236	106	70	62	45
29	300	596	176	948	---	1230	2450	225	98	67	61	43
30	229	1300	224	711	---	929	1690	225	93	68	67	42
31	188	---	197	581	---	743	---	309	---	65	64	---
TOTAL	5655	19744	13479	20714	6697	40540	22730	25306	4870	3029	3177	1418
MFAN	182	658	435	668	239	1308	758	849	162	97.7	102	47.3
MAX	791	2780	1730	6450	484	4110	5060	2640	339	262	285	59
MIN	51	135	176	137	155	178	178	225	93	65	57	42
CFSM	.60	2.16	1.43	2.19	.78	4.29	2.49	2.78	.53	.32	.33	.16
IN.	.69	2.41	1.64	2.53	.82	4.94	2.77	3.21	.59	.37	.39	.17

CAL YR 1977 TOTAL 113078 MEAN 310 MAX 9000 MIN 43 CFSM 1.02 IN 13.79
WTR YR 1978 TOTAL 168359 MEAN 461 MAX 6450 MIN 42 CFSM 1.51 IN 20.53

KANAWHA RIVER BASIN

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 (4.5 km) southwest of Narrows, and at mile 3.5 (5.6 km).

DRAINAGE AREA.--223 mi² (578 km²).

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 (482.751 m) 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.--Records good. Several observations 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, 299 ft³/s (8.468 m³/s), 18.21 in/yr (463 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,900 ft³/s (365 m³/s) Jan. 29, 1957, gage height, 12.55 ft (3.825 m), from floodmark in gage well, 13.8 ft (4.21 m), from floodmark at downstream side of bridge, from rating curve extended above 5,700 ft³/s (160 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 8.8 ft³/s (0.25 m³/s) Dec. 25, 1953, gage height, 2.28 ft (0.695 m), result of freezeup; minimum daily, 16 ft³/s (0.45 m³/s) Sept. 17, 18, 26-28, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,200 ft³/s (62 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Nov. 7	2200	4870	138	8.89	2.710	Mar. 26	2230	3040	86.1	7.34	2.237
Jan. 26	1115	*7020	199	10.10	3.078	Apr. 26	2300	5060	143	9.05	2.758
Mar. 10	2230	3550	101	7.79	2.374	May 8	1800	2670	75.6	6.97	2.124
Mar. 14	2045	6980	198	10.08	3.072						

Minimum discharge, 30 ft³/s (0.85 m³/s) Sept. 30, gage height, 2.42 ft (0.738 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	216	1660	195	394	188	531	1030	180	61	50	45
2	360	190	1170	186	376	160	450	787	161	69	49	46
3	302	173	853	142	309	162	384	638	166	117	53	43
4	178	184	672	134	263	165	340	591	173	127	85	42
5	128	277	604	144	255	146	309	715	150	92	88	40
6	104	1020	602	160	228	150	280	730	136	78	87	38
7	89	4050	527	151	173	190	265	639	128	70	105	36
8	84	3070	461	154	191	223	243	1680	138	65	161	35
9	278	1370	434	333	201	335	222	2100	198	63	113	34
10	483	923	372	228	187	2090	211	1330	169	63	116	33
11	297	711	304	250	165	2420	203	943	139	69	117	70
12	209	551	277	293	163	2070	226	743	126	84	154	63
13	163	445	280	286	167	2350	202	763	121	72	118	50
14	161	368	283	278	169	4360	183	957	119	73	103	42
15	150	319	356	239	158	4150	172	810	108	71	90	40
16	154	278	346	196	153	2030	166	701	102	73	78	40
17	272	426	331	216	153	1270	175	596	99	75	69	38
18	240	541	344	213	151	896	180	505	94	70	62	36
19	216	451	357	194	159	711	191	438	99	61	103	35
20	200	381	323	198	146	636	230	381	99	57	78	34
21	176	330	312	189	146	636	234	338	109	54	64	33
22	153	336	283	173	141	626	231	302	116	51	57	33
23	133	658	248	157	121	528	216	273	103	49	53	32
24	120	697	236	171	148	449	209	272	89	48	50	34
25	110	599	259	313	138	661	232	283	82	54	48	37
26	556	607	269	4590	189	2230	2710	242	77	77	46	37
27	785	526	230	2010	181	2320	3810	214	75	68	46	35
28	549	478	224	1120	194	1340	3240	194	72	62	46	35
29	411	859	202	754	---	974	2070	180	67	63	44	33
30	319	1590	217	593	---	761	1390	186	64	59	45	31
31	257	---	203	479	---	629	---	212	---	53	45	---
TOTAL	7683	22624	13239	14739	5419	35856	19505	19773	3559	2148	2423	1180
MEAN	248	754	427	475	194	1157	650	638	119	69.3	78.2	39.3
MAX	785	4050	1660	4590	394	4360	3810	2100	198	127	161	70
MIN	46	173	202	134	121	146	166	180	64	48	44	31
CFSM	1.11	3.38	1.92	2.13	.87	5.19	2.92	2.86	.53	.31	.35	.18
IN.	1.28	3.77	2.21	2.46	.90	5.98	3.25	3.30	.59	.36	.40	.20

CAL YR 1977 TOTAL 117132 MEAN 321 MAX 8380 MIN 37 CFSM 1.44 IN 19.54
WTR YR 1978 TOTAL 148148 MEAN 406 MAX 4590 MIN 31 CFSM 1.82 IN 24.71

03176500 NEW RIVER AT GLEN LYN, VA

LOCATION.--Lat 37°22'20", long 80°51'45", Giles County, Hydrologic Unit 05050002, on right bank at upstream side of bridge on U.S. Highway 460 at Glen Lyn, 0.3 mi (0.5 km) upstream from East River, and 6.3 mi (10.1 km) downstream from Wolf Creek.

DRAINAGE AREA.--3,768 mi² (9,759 km²).

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 (454.225 m) 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 (61 m) upstream from highway bridge at same datum.

REMARKS.--Records good. Flow regulated since 1939 by Claytor Reservoir (station 03169000) 55 mi (88 km) above station. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--51 years, 4,983 ft³/s (141.1 m³/s), 17.96 in/yr (456 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 226,000 ft³/s (6,400 m³/s) Aug. 14, 1940, gage height, 27.50 ft (8.382 m), from rating curve extended above 89,000 ft³/s (2,500 m³/s) on basis of slope-area measurement of peak flow; minimum, 730 ft³/s (20.7 m³/s) Jan. 30, 1966, result of freezeup; minimum daily, 820 ft³/s (23.2 m³/s) Sept. 8, 1930; minimum gage height, 2.10 ft (0.640 m) Sept. 8, 1930.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 110,000 ft³/s (3,120 m³/s) Nov. 7, gage height, 18.12 ft (5.523 m), from rating curve extended as explained above; minimum, 966 ft³/s (27.4 m³/s) Sept. 5, 11, gage height, 3.04 ft (0.927 m); minimum daily, 1,090 ft³/s (30.9 m³/s) Sept. 5, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3660	4710	11900	2980	5840	5260	8430	15400	6030	3620	2430	1900
2	2780	3860	9480	3960	5810	5490	7480	12500	4970	1530	2990	1860
3	6090	3930	8530	4560	5430	4670	6350	8960	5050	1820	2380	1170
4	9840	3830	6980	3860	6220	4890	6820	11800	3550	7300	2580	1210
5	7020	7950	6520	3130	5010	4960	6460	12000	1950	4220	4390	1090
6	5510	15200	11000	3100	4820	1790	5720	12300	4050	5040	3130	2710
7	3220	75800	8070	4100	5560	4700	5940	11500	3440	4720	2070	2410
8	2860	69900	6890	2980	4890	5750	5960	15000	4810	4370	10200	2010
9	3310	26500	6650	11800	4530	7070	3740	18500	7690	1390	5690	2420
10	4380	16100	7230	13800	4610	15900	3470	13800	5290	1280	6260	1170
11	6010	13500	6130	13400	5120	41900	6390	12200	4040	2910	5860	1090
12	5470	9660	3130	13200	3740	24900	5220	11100	1670	2580	5610	1940
13	4030	9130	5590	8920	2730	21900	3950	11800	3640	2820	5190	1810
14	3190	5550	4960	6260	5430	26900	4460	17900	4310	2960	4360	1760
15	3600	6280	5890	5400	4400	30500	4480	15800	3420	3440	4300	1690
16	2950	5630	5230	3830	4360	23900	3640	14900	4190	1500	5950	2230
17	3190	6890	6010	6010	4860	16500	3190	12500	4500	1480	4640	1180
18	2670	6600	7580	6740	5170	14000	4150	10400	2890	3360	6220	3800
19	2460	6810	4310	6500	4530	10600	5770	8120	2660	3670	3630	2370
20	2530	5550	5510	8620	3440	7730	4280	7850	3030	4710	1450	2070
21	2750	5000	6480	6360	4790	7960	4530	7310	4850	3460	1340	1770
22	2510	6010	6320	4580	4410	8030	4330	4950	4340	2520	2560	1700
23	1350	7820	5930	1990	4290	7460	3820	6800	4480	1720	2530	1560
24	1300	7820	5150	4570	4610	6570	2370	6650	4130	1170	2400	1240
25	2270	5970	4420	6930	4090	10600	4180	7060	3420	2760	2270	1170
26	4100	7820	3890	52700	3330	18900	20000	6240	1490	2200	3020	1780
27	13000	6810	3010	53300	2830	27200	35300	6010	3640	2540	1220	1860
28	11900	5000	3600	19400	5960	19700	36400	4770	4200	2170	1200	1810
29	8070	7270	3890	13900	---	15600	26000	3950	2690	1890	2810	1870
30	5670	10500	5190	12600	---	12500	18400	3700	3570	1500	2820	1360
31	3470	---	4100	7390	---	11500	---	5910	---	1280	2890	---
TOTAL	141160	373400	189570	316870	130810	425330	261230	317680	117990	87930	114390	54010
MEAN	4554	12450	6115	10220	4672	13720	8708	10250	3933	2836	3690	1800
MAX	13000	75800	11900	53300	6220	41900	36400	18500	7690	7300	10200	3800
MIN	1300	3830	3010	1990	2730	1790	2370	3700	1490	1170	1200	1090
(*)	+157	-53	+42	-83	+69	+2	+66	-105	-52	+130	-109	-9
MEAN#	4711	12397	6157	10137	4741	13722	8774	10145	3881	2966	3581	1791
CFSM#	1.25	3.29	1.63	2.69	1.26	3.64	2.33	2.69	1.03	.79	.95	.48
IN#	1.44	3.67	1.88	3.10	1.31	4.20	2.60	3.10	1.15	.91	1.10	.53

CAL YR 1977 TOTAL 1966300 MEAN 5387 MAX 75800 MIN 1030 MEAN# 5390 CFSM# 1.43 IN# 19.42
WTR YR 1978 TOTAL 2530370 MEAN 6933 MAX 75800 MIN 1090 MEAN# 6937 CFSM# 1.84 IN# 25.00

* Change in contents, equivalent in cubic feet per second, in Claytor Reservoir; furnished by Appalachian Power Co.
* Adjusted for change in contents.

KANAWHA RIVER BASIN

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 TEMPERATURES: October 1964 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (water years 1968-71, 1973-78): Maximum, 350 micromhos Nov. 6, 1968; minimum, 75 micromhos

Jan. 14, June 3, 1975.

WATER TEMPERATURES (water years 1964-71, 1973-78): Maximum, 29.0°C July 10, 1973, July 14, 19, 21, 1977; minimum,

0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 189 micromhos Sept. 25; minimum daily, 90 micromhos Nov. 9.

WATER TEMPERATURES: Maximum daily, 27.0°C on several days in July and August; minimum daily, 0.0°C Feb. 9-11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT												
15...	1300	3400	130	5	60	14	14	6.0	3.2	2.0	56	9.4
NOV												
15...	1320	6390	101	70	43	12	11	3.8	2.0	2.0	38	9.4
DEC												
15...	1000	7590	123	10	54	15	14	4.7	2.5	1.5	48	10
JAN												
15...	0730	9180	127	5	54	13	14	4.7	2.5	1.1	50	9.1
FEB												
15...	1000	6830	120	20	56	16	14	5.2	3.1	1.5	49	11
MAR												
15...	1315	31300	103	10	41	6	11	3.4	1.5	1.5	43	8.1
APR												
15...	1300	6270	146	10	64	16	16	5.9	2.4	1.3	59	11
MAY												
15...	0815	16100	118	10	50	12	13	4.3	2.1	1.3	47	7.0
JUN												
15...	1000	5030	140	15	68	11	17	6.2	2.8	1.2	70	9.9
JUL												
15...	0730	6750	150	10	69	10	16	7.0	3.1	1.6	72	13
AUG												
15...	1300	5830	128	10	53	8	13	5.1	3.0	1.4	55	8.0
SEP												
15...	1330	2500	165	10	75	20	17	7.8	3.7	1.9	67	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 CONSTITU- ENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
OCT												
15...	3.6	.1	7.6	78	77	.70	3.1	.00	.70	.01	.03	30
NOV												
15...	2.7	.0	6.8	56	61	1.0	4.4	.00	1.0	.00	.00	110
DEC												
15...	3.1	.1	7.8	79	71	.90	4.0	.01	.91	.01	.03	30
JAN												
15...	2.6	.0	8.0	72	70	.85	3.8	.00	.85	.01	.03	40
FEB												
15...	2.9	.0	6.8	79	74	1.2	5.3	.00	1.2	.01	.03	30
MAR												
15...	3.4	.0	6.0	66	59	.54	2.4	.01	.55	.00	.00	40
APR												
15...	3.2	.1	4.7	94	75	.14	.60	.13	.27	.00	.00	10
MAY												
15...	2.7	.1	6.7	72	62	.41	1.8	.01	.42	.00	.00	10
JUN												
15...	3.1	.1	6.6	92	84	.63	2.8	.00	.63	.02	.06	10
JUL												
15...	3.0	.1	6.8	88	88	.32	1.4	.01	.33	.01	.03	0
AUG												
15...	3.0	.1	7.5	74	70	.47	2.1	.00	.47	.02	.06	30
SEP												
15...	3.4	.1	6.2	103	90	.56	2.5	.00	.56	.03	.09	0

03176500 NEW RIVER AT GLEN LYN, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	104	100	140	120	120	133	116	128	145	176	153
2	139	127	108	120	120	122	133	118	125	143	158	164
3	140	130	117	119	115	118	133	125	128	160	141	164
4	119	130	113	119	117	120	133	124	135	140	141	181
5	115	128	113	133	120	130	140	123	155	125	141	181
6	121	112	108	133	120	132	132	121	138	125	152	176
7	127	104	112	133	117	137	137	120	135	128	153	162
8	148	97	120	120	120	135	151	120	128	130	139	150
9	148	90	120	120	123	137	168	118	125	140	129	152
10	140	92	110	106	120	137	168	118	128	160	139	151
11	130	96	113	106	118	102	133	123	125	170	140	171
12	126	98	132	112	120	106	133	124	150	163	140	180
13	125	98	127	123	142	111	143	129	145	158	141	180
14	126	102	122	121	120	116	143	116	138	155	137	173
15	132	104	123	127	120	103	146	118	140	150	128	165
16	130	103	123	136	120	108	140	119	135	145	127	163
17	159	110	119	119	120	109	153	127	128	163	124	160
18	141	105	116	124	118	116	140	128	148	160	128	159
19	141	102	112	122	120	116	131	134	155	158	127	159
20	148	102	124	120	123	123	135	140	138	125	173	159
21	150	116	119	122	125	128	150	150	135	128	173	161
22	156	104	119	122	138	121	150	148	130	130	162	167
23	150	104	112	140	130	121	150	139	130	163	162	167
24	168	117	121	140	125	127	151	138	133	160	160	180
25	157	112	122	128	127	126	144	136	135	158	155	189
26	126	113	131	117	132	104	109	136	145	165	151	186
27	126	117	140	100	155	103	107	136	140	158	157	181
28	116	116	133	107	155	112	107	138	125	177	176	180
29	116	113	128	111	---	116	109	135	140	162	160	179
30	104	110	121	109	---	120	112	155	150	168	144	178
31	135	---	121	120	---	121	---	135	---	170	144	---
MEAN	135	109	119	122	125	119	137	129	136	151	148	169

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.5	14.5	9.0	4.5	2.0	2.5	11.5	11.5	21.5	24.5	26.5	26.0
2	19.0	14.5	9.5	3.0	2.0	1.5	12.0	12.0	21.5	24.0	27.0	26.0
3	19.5	15.0	8.0	2.5	2.0	2.0	13.0	12.0	22.0	25.0	27.0	25.5
4	19.0	16.0	8.5	2.5	1.5	2.0	12.5	12.0	21.5	24.0	26.0	25.0
5	19.0	17.0	9.0	4.0	2.0	2.0	13.5	12.0	20.0	23.5	25.0	24.5
6	19.0	16.5	9.0	4.5	1.5	2.5	14.0	12.0	22.0	24.0	25.5	24.0
7	18.0	15.5	5.0	5.5	1.0	5.0	14.5	13.0	22.5	23.0	25.0	25.0
8	17.5	16.0	5.5	5.0	1.0	4.5	14.5	14.0	21.0	23.5	25.5	25.0
9	17.0	15.5	5.0	4.0	.0	4.0	15.0	15.0	21.0	24.0	25.0	25.0
10	16.0	16.0	4.5	2.5	.0	4.5	15.0	15.0	22.0	25.5	24.0	25.5
11	16.0	15.5	4.0	1.5	.0	4.0	15.5	15.5	23.0	26.0	24.0	24.5
12	15.5	14.0	4.0	1.0	.5	4.5	14.0	16.0	22.5	24.5	24.5	25.0
13	15.0	10.0	4.5	3.0	2.0	5.0	13.5	15.0	24.0	23.0	24.5	25.0
14	14.0	9.5	7.5	2.0	2.5	6.5	14.0	14.5	20.0	23.0	25.5	23.5
15	13.5	11.0	8.0	1.5	3.0	7.0	14.0	12.5	19.5	25.5	26.0	23.0
16	13.0	11.5	7.5	1.5	3.5	6.0	14.5	12.5	22.0	26.0	26.5	23.5
17	12.0	12.0	7.0	2.0	3.5	5.5	13.5	14.5	22.0	24.5	27.0	23.5
18	11.5	11.0	6.5	3.0	4.0	5.0	15.0	15.5	23.0	25.0	25.0	24.0
19	12.0	9.5	6.0	2.5	3.5	6.0	14.0	17.0	24.5	26.5	25.5	25.5
20	12.0	9.5	6.5	2.0	3.0	7.0	12.0	17.0	25.0	27.0	25.5	26.0
21	12.5	10.5	6.0	2.0	2.5	9.0	12.5	17.0	25.0	26.5	25.0	25.5
22	13.0	12.0	6.0	2.0	3.0	9.0	12.0	17.5	25.0	27.0	26.0	25.5
23	13.5	11.5	4.5	1.5	1.0	9.5	12.0	17.5	24.5	27.0	25.5	23.5
24	14.0	11.0	6.0	2.0	1.5	10.5	12.5	18.0	24.0	27.0	25.0	21.0
25	15.0	10.0	5.0	3.5	2.0	10.0	14.0	19.5	23.5	27.0	25.5	21.5
26	15.0	8.5	4.5	3.0	2.5	7.0	10.0	20.0	24.0	25.5	26.0	21.5
27	15.5	6.5	3.0	2.5	3.0	7.5	9.0	21.0	24.5	26.0	26.0	21.5
28	15.0	6.0	2.0	2.0	3.0	9.0	11.5	21.0	26.5	26.0	26.5	22.0
29	14.5	8.0	2.0	1.0	---	11.0	11.0	21.0	25.0	25.0	27.0	20.5
30	14.0	8.5	4.0	1.0	---	10.5	11.5	20.5	25.0	25.5	26.5	19.0
31	13.0	---	5.0	1.0	---	10.0	---	21.5	---	26.0	26.0	---
MEAN	15.5	12.0	6.0	2.5	2.0	6.0	13.0	16.0	23.0	25.0	25.5	24.0

KANAWHA RIVER BASIN

03177700 BLUESTONE RIVER AT BLUEFIELD, VA

LOCATION.--Lat 37°15'21", long 81°16'55", Tazewell County, Hydrologic Unit 05050002, on right bank 50 ft (15 m) downstream from pump house and 1,000 ft (305 m) upstream from outfall of sewage treatment plant at Bluefield, 0.9 mi (1.4 km) downstream from Beaverpond Creek, and 3.5 mi (5.6 km) upstream from Brush Fork.

DRAINAGE AREA.--39.8 mi² (103.1 km²).

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Nonrecording gage. Altitude of gage is 2,350 ft (716 m), from topographic map.

REMARKS.--Records good. Discharge figures herein do not include effluent from sewage treatment plant as some of it comes from another watershed. Several observations of water temperature were made during the year.

COOPERATION.--Records computed and furnished by the Virginia State Water Control Board.

AVERAGE DISCHARGE.--13 years, 55.0 ft³/s (1.558 m³/s), 18.77 in/yr (477 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,120 ft³/s (31.7 m³/s) Jan. 26, 1978, gage height, 7.80 ft (2.377 m), from rating curve extended above 780 ft³/s (22 m³/s); minimum observed, 5.0 ft³/s (0.14 m³/s) Oct. 6, 1965, Dec. 3, 1969; minimum gage height, 0.30 ft (0.091 m) Sept. 8, 9, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 1,120 ft³/s (31.7 m³/s) Jan. 26, gage height, 7.80 ft (2.377 m), from rating curve extended above 780 ft³/s (22 m³/s); minimum observed, 6.7 ft³/s (0.19 m³/s) Sept. 20, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	45	184	33	76	43	76	152	38	14	20	12
2	92	42	134	32	70	39	69	118	86	34	15	11
3	49	39	107	29	61	39	61	94	38	31	12	10
4	39	40	86	28	54	37	59	88	34	18	21	10
5	31	46	95	27	48	37	59	100	32	16	21	11
6	26	304	99	28	45	44	51	86	29	15	15	9.7
7	23	615	78	27	40	47	50	80	30	14	22	8.9
8	38	356	70	43	38	72	46	192	32	14	18	8.6
9	154	236	74	68	37	156	43	222	34	14	15	8.2
10	66	214	63	56	36	372	42	145	27	14	17	7.8
11	51	199	56	53	36	296	52	106	25	34	19	9.3
12	43	133	54	50	37	282	42	90	23	17	31	8.9
13	39	100	53	43	39	304	39	114	25	16	24	8.9
14	42	86	63	40	60	454	36	106	22	16	18	8.6
15	34	67	60	36	46	356	35	94	20	15	19	9.7
16	52	60	60	33	48	266	34	76	20	21	15	9.3
17	67	128	59	34	46	184	37	76	20	19	14	8.2
18	54	100	76	36	47	134	36	70	19	17	14	8.2
19	46	79	54	36	54	104	39	64	22	15	28	8.6
20	40	67	53	35	53	92	38	54	21	14	19	6.7
21	35	60	49	32	46	84	36	55	21	14	16	7.4
22	32	113	46	31	43	89	32	50	20	14	14	7.4
23	30	96	42	32	40	82	31	47	18	14	12	7.8
24	27	86	41	34	39	70	31	58	17	14	12	8.9
25	30	91	40	152	46	140	70	47	16	34	12	10
26	117	102	39	849	50	199	424	45	19	21	13	8.2
27	77	85	37	274	46	266	500	40	15	15	11	8.9
28	72	91	34	184	45	154	356	38	14	22	10	8.6
29	67	244	34	127	---	127	266	49	14	14	11	8.6
30	59	229	33	110	---	100	214	60	14	14	11	8.2
31	50	---	32	88	---	86	---	43	---	17	14	---
TOTAL	1643	4153	2005	2680	1326	4755	2904	2659	765	561	513	267.6
MEAN	53.0	138	64.7	86.5	47.4	153	96.8	85.8	25.5	18.1	16.5	8.92
MAX	154	615	184	849	76	454	500	222	86	34	31	12
MIN	23	39	32	27	36	37	31	38	14	14	10	6.7
CFSM	1.33	3.47	1.63	2.17	1.19	3.84	2.43	2.16	.64	.46	.42	.22
IN.	1.54	3.88	1.87	2.50	1.24	4.44	2.71	2.49	.72	.52	.48	.25
*FT ³ /S	3.68	4.27	4.47	4.03	4.09	4.46	4.25	6.04	5.04	5.44	5.57	4.60

CAL YR 1977 TOTAL 21496.6 MEAN 58.9 MAX 717 MIN 8.5 CFSM 1.48 IN 20.09 *FT³/S 3.05
WTR YR 1978 TOTAL 24231.6 MEAN 66.4 MAX 849 MIN 6.7 CFSM 1.67 IN 22.65 *FT³/S 4.67

* Sewage Treatment Plant effluent in cubic feet per second.

BIG SANDY RIVER BASIN

301

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 (610 m) downstream from Rocklick Creek, and 2,500 ft (762 m) downstream from bridge on State Highway 645.

DRAINAGE AREA.--297 mi² (769 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 866.37 ft (264.070 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--11 years, 394 ft³/s (11.16 m³/s), 18.02 in/yr (458 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,000 ft³/s (1,590 m³/s) Apr. 4, 1977, gage height, 27.38 ft (8.345 m), from rating curve extended above 7,000 ft³/s (200 m³/s) on basis of slope-area measurement of peak flow; minimum, 5.0 ft³/s (0.14 m³/s) Oct. 1, 13, 14, 17, 18, 19, 20, 1969, gage height, 3.65 ft (1.113 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 23.0 ft (7.0 m), information from local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (130 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Nov. 6	1630	14700	416	13.78	4.200	Mar. 10	1230	4930	140	8.58	2.615
Jan. 26	0430	*24200	685	17.56	5.352	Apr. 27	0130	8030	227	10.46	3.188

Minimum discharge, 24 ft³/s (0.68 m³/s) Sept. 30, gage height, 3.87 ft (1.180 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	162	1110	220	419	366	327	623	174	49	87	180
2	734	144	709	207	413	311	298	494	148	134	79	124
3	293	126	548	140	335	351	266	416	181	377	66	177
4	170	110	461	145	296	315	244	638	177	243	74	125
5	111	103	677	150	296	257	232	1130	137	143	312	90
6	87	5670	961	160	269	336	214	966	120	99	247	74
7	77	3800	760	182	216	481	214	724	120	77	396	64
8	77	2350	602	221	210	1190	187	1090	173	69	384	57
9	1520	1270	644	1010	200	3200	176	2200	201	72	456	52
10	686	974	602	824	195	4550	171	1540	143	126	648	62
11	310	1000	545	552	190	2810	164	959	120	309	366	107
12	194	739	475	482	190	2110	164	712	107	136	376	82
13	138	520	426	478	200	1850	145	742	129	90	266	61
14	114	403	411	395	438	1910	131	784	95	109	289	58
15	98	341	416	337	455	1950	119	788	80	97	505	52
16	369	296	376	220	407	1290	116	718	78	256	229	50
17	540	387	364	345	422	913	120	637	73	347	157	47
18	393	415	371	439	450	703	124	531	68	188	121	43
19	266	366	332	508	460	599	145	438	86	125	104	39
20	186	317	309	636	422	521	142	375	167	91	96	37
21	142	295	292	537	394	473	131	332	110	74	85	35
22	117	471	263	480	356	436	119	286	110	65	70	35
23	104	888	232	442	285	381	106	257	78	60	64	36
24	93	854	235	492	326	349	122	384	68	281	57	36
25	102	683	311	2650	308	320	653	369	63	475	56	36
26	746	580	274	11000	377	335	3460	293	92	489	175	32
27	627	452	248	2610	347	358	5100	245	85	286	130	29
28	419	477	243	1390	361	374	1820	220	61	206	102	28
29	312	1280	232	871	---	383	1010	225	52	142	129	29
30	244	1870	232	648	---	370	787	215	47	107	242	26
31	196	---	225	524	---	344	---	219	---	95	254	---
TOTAL	9542	27343	13886	29295	9237	30136	17007	19550	3343	5417	6622	1903
MEAN	308	911	448	945	330	972	567	631	111	175	214	63.4
MAX	1520	5670	1110	11000	460	4550	5100	2200	201	489	648	180
MIN	77	103	225	140	190	257	106	215	47	49	56	26
CFSM	1.04	3.07	1.51	3.18	1.11	3.27	1.91	2.13	.37	.59	.72	.21
IN.	1.20	3.42	1.74	3.67	1.16	3.77	2.13	2.45	.42	.68	.83	.24
CAL YR 1977 TOTAL	167094			MEAN 458	MAX 24800	MIN 42	CFSM 1.54	IN 20.93				
WTR YR 1978 TOTAL	173281			MEAN 475	MAX 11000	MIN 26	CFSM 1.60	IN 21.70				

BIG SANDY RIVER BASIN

03207800 LEVISA FORK AT BIG ROCK, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1969 to June 1972, March 1974 to current year.

WATER TEMPERATURES: October 1969 to June 1972, August 1973 to current year.

SUSPENDED-SEDIMENT DISCHARGE: January 1970 to June 1972, August 1973 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1975.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 1,180 micromhos Oct. 12, 1969; minimum, 120 micromhos Mar. 29, 30, 1975.

WATER TEMPERATURES: Maximum, 33.5°C June 28, 1978; minimum, 0.0°C on many days December to January during most years.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 27,800 mg/L Aug. 11, 1977; minimum daily mean, 1 mg/L Oct. 19, 1970.

SEDIMENT LOADS: Maximum daily, 502,000 tons (445,000 tonnes) Apr. 4, 1977; minimum daily, 0.04 tons (0.04 tonnes) Oct. 19, 1970.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 999 micromhos Sept. 29, 30; minimum, 155 micromhos Mar. 10.

WATER TEMPERATURES: Maximum, 33.5°C June 28; minimum, 2.5°C Jan. 29.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 11,500 mg/L Nov. 6; minimum daily mean, 3 mg/L Apr. 11.

SEDIMENT LOADS: Maximum daily, 173,000 tons (157,000 tonnes) Nov. 6; minimum daily, 1.3 tons (1.2 tonnes) Apr. 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
MAR												
27...	1235	355	485	8.0	160	120	37	17	19	2.1	55	150
29...	1750	385	360	--	280	240	60	31	13	2.6	46	260
APR												
03...	1530	264	420	7.2	160	110	36	17	20	2.3	56	140
05...	1800	228	440	--	170	120	41	17	23	2.7	59	150
12...	1900	158	490	--	190	130	45	20	26	2.8	74	170
19...	1900	158	500	--	200	140	48	20	27	2.5	77	180
26...	1850	4750	280	--	100	63	27	8.4	7.7	1.8	47	63
MAY												
03...	1800	400	480	--	160	120	38	17	19	2.2	49	140
10...	1900	1280	250	--	97	69	23	9.5	9.8	1.9	33	84
17...	1900	607	350	--	140	100	31	14	15	2.2	42	120
22...	1400	280	350	7.7	180	--	42	18	22	2.6	--	160
25...	1900	345	420	--	170	110	42	16	21	2.7	70	150
31...	2000	200	534	--	210	140	48	21	26	3.2	76	170
JUN												
07...	2000	122	700	--	260	180	63	26	47	3.6	97	220
14...	2000	86	560	--	260	180	62	25	38	3.6	100	220
22...	2000	98	606	--	220	150	55	21	35	2.8	95	180
28...	2000	56	781	--	270	180	68	25	55	4.0	110	230
JUL												
05...	1500	134	340	7.8	180	110	44	17	27	3.0	--	140
12...	2000	110	542	--	210	140	50	20	26	3.0	85	170
19...	2000	113	460	--	190	120	45	18	30	2.8	83	150
26...	2000	380	350	--	170	120	44	15	13	2.7	68	120
AUG												
02...	2000	75	620	--	200	150	46	21	40	3.3	65	200
08...	1450	244	315	7.7	170	110	41	16	19	2.8	--	120
16...	2000	196	440	--	170	120	40	17	19	2.7	66	140
23...	2000	63	660	--	240	170	55	26	38	3.5	85	230
30...	1650	200	445	--	180	120	47	16	22	3.0	81	120
SEP												
06...	1700	73	620	--	260	180	64	25	36	3.4	100	190
13...	1900	61	705	--	270	180	66	26	43	3.4	110	200
20...	1750	36	840	--	310	210	76	30	55	4.0	130	260
27...	1400	26	750	8.3	350	240	83	35	65	4.0	140	290
27...	1850	28	960	--	340	210	83	33	65	5.6	160	290

BIG SANDY RIVER BASIN

303

03207800 LEVISA FORK AT BIG ROCK, VA--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
MAR												
27...	6.6	.1	7.1	277	269	.68	3.0	.00	.68	.00	.00	0
29...	8.8	.1	8.5	420	410	.73	3.2	.01	.74	.00	.00	0
APR												
03...	5.7	.1	6.0	275	255	--	--	--	--	--	--	--
05...	12	.1	5.8	302	282	.21	.90	.01	.22	.00	.00	10
12...	11	.1	5.2	332	317	.11	.50	.01	.12	.00	.00	10
19...	11	.1	3.0	350	330	.19	.80	.01	.20	.00	.00	20
26...	3.9	.1	6.1	163	144	.68	3.0	.01	.69	.00	.00	50
MAY												
03...	8.5	.1	7.6	288	259	.52	2.3	.01	.53	.00	.00	0
10...	3.8	.0	6.9	174	157	.46	2.0	.00	.46	.00	.00	10
17...	5.9	.1	7.2	252	218	.41	1.8	.00	.41	.00	.00	0
22...	6.2	.1	6.5	333	--	--	--	--	--	--	--	--
25...	11	.1	6.2	320	286	.53	2.3	.01	.54	.00	.00	0
31...	11	.1	7.5	347	327	.56	2.5	.03	.59	.00	.00	20
JUN												
07...	44	.1	7.1	500	460	.31	1.4	.01	.32	.00	.00	0
14...	18	.1	7.0	461	424	.21	.90	.01	.22	.00	.00	0
22...	18	.1	7.4	411	368	.32	1.4	.01	.33	.00	.00	20
28...	44	.1	6.6	519	489	.35	1.5	.01	.36	.00	.00	30
JUL												
05...	18	.1	7.9	336	297	--	--	--	--	--	--	--
12...	15	.1	6.6	375	335	.54	2.4	.00	.54	.01	.03	20
19...	18	.1	7.9	347	315	.42	1.9	.01	.43	.01	.03	20
26...	7.0	.1	6.2	236	247	1.2	5.4	.07	1.3	.00	.00	0
AUG												
02...	33	.1	5.6	450	382	.30	1.3	.01	.31	.00	.00	0
08...	12	.1	7.6	297	252	--	--	--	--	--	--	--
16...	12	.1	8.2	324	275	.88	3.9	.00	.88	.00	.00	0
23...	25	.1	2.9	462	423	.06	.30	.01	.07	.00	.00	20
30...	15	.1	6.0	287	271	.49	2.2	.00	.49	.00	.00	0
SEP												
06...	25	.1	4.8	416	399	.33	1.5	.00	.33	.00	.00	10
13...	35	.1	3.1	466	431	.07	.30	.01	.08	.00	.00	0
20...	37	.1	2.9	564	530	.20	.90	.00	.20	.01	.03	0
27...	41	.1	2.9	620	591	--	--	--	.18	.00	.00	10
27...	52	.1	2.6	642	612	.15	.70	.05	.20	.39	1.2	20

BIG SANDY RIVER BASIN

03207800 LEVISA FORK AT BIG ROCK, VA--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	872	430	---	313	308	260	305	340	388	561	516	780
2	811	422	---	310	298	260	309	365	408	534	546	786
3	563	430	---	306	306	255	317	387	415	359	514	806
4	547	---	---	305	319	256	328	372	397	303	510	822
5	564	---	---	304	317	262	339	275	407	334	516	841
6	596	---	---	305	314	269	344	257	445	375	566	858
7	640	---	---	311	332	254	350	286	465	409	586	875
8	814	---	---	313	337	225	354	277	458	440	586	891
9	933	---	---	296	332	228	357	219	421	460	591	906
10	870	---	---	293	329	155	360	211	417	467	598	922
11	860	---	---	288	328	166	363	243	436	523	549	946
12	793	---	---	287	324	191	363	270	440	588	533	943
13	787	---	---	286	319	197	365	280	443	605	569	943
14	789	---	---	286	293	223	372	263	447	617	574	951
15	792	---	---	286	250	204	377	256	478	636	437	954
16	909	---	---	286	247	230	381	255	500	616	388	961
17	899	---	---	283	249	250	384	255	524	353	428	963
18	723	---	---	282	242	264	382	269	537	318	457	968
19	673	---	---	282	233	275	375	289	517	376	488	970
20	668	---	---	282	233	285	366	309	464	389	492	977
21	517	---	---	284	238	294	366	322	396	407	494	984
22	459	---	---	285	240	297	370	334	439	428	513	987
23	512	---	---	284	253	311	372	352	442	451	536	993
24	545	---	---	283	260	327	379	354	476	457	554	991
25	507	---	---	244	272	335	352	331	495	451	561	991
26	381	---	---	177	267	334	199	343	629	428	538	995
27	402	---	325	200	254	326	167	351	549	374	556	997
28	428	---	321	229	251	320	226	365	532	458	656	995
29	426	---	316	252	---	311	282	366	543	424	776	999
30	430	---	313	274	---	303	320	376	561	415	811	999
31	436	---	313	282	---	302	---	377	---	426	810	---
MEAN	650	427	318	281	284	264	337	308	469	451	556	933

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	13.0	---	8.0	5.0	6.0	16.5	17.5	30.5	33.0	32.0	28.5
2	18.5	13.5	---	7.0	5.5	5.0	17.0	17.5	31.0	31.0	32.5	28.0
3	18.0	14.0	---	5.0	5.5	4.5	18.0	18.0	30.0	29.5	32.5	28.5
4	17.0	---	---	5.5	5.0	5.0	18.0	18.5	29.5	29.0	31.0	29.0
5	16.5	---	---	6.0	5.0	5.5	18.5	18.0	29.5	29.0	28.5	28.5
6	17.0	---	---	7.0	4.5	8.0	18.0	18.0	30.5	30.5	30.5	29.0
7	16.5	---	---	9.0	4.5	9.5	18.5	18.5	30.5	30.5	30.0	29.5
8	16.5	---	---	10.5	4.5	9.5	18.0	18.5	29.5	30.5	29.0	29.5
9	16.5	---	---	8.0	4.5	10.5	19.0	19.0	29.5	31.0	28.5	29.5
10	15.5	---	---	7.0	4.0	10.5	20.5	19.0	30.0	31.5	27.5	30.0
11	15.0	---	---	7.0	4.0	13.0	19.0	19.5	30.5	29.5	28.5	29.5
12	15.5	---	---	7.0	4.0	14.5	17.5	20.0	30.5	28.5	28.5	29.0
13	14.5	---	---	7.5	4.5	16.0	17.5	19.5	30.0	28.0	29.0	29.0
14	13.0	---	---	8.0	5.0	17.5	16.5	18.0	28.5	27.5	29.0	29.0
15	13.0	---	---	8.0	5.5	18.0	16.0	17.0	28.0	28.0	29.0	28.5
16	13.0	---	---	8.5	6.0	17.0	16.0	17.0	29.0	27.0	30.0	29.0
17	12.5	---	---	9.0	6.5	16.0	17.0	18.5	30.0	27.0	31.0	28.5
18	12.5	---	---	9.0	6.0	16.0	17.5	21.5	31.0	28.5	30.5	29.0
19	12.5	---	---	10.5	5.5	17.5	16.5	23.5	30.5	29.5	31.0	29.5
20	12.5	---	---	11.0	5.0	19.5	13.5	25.0	30.5	30.5	31.0	30.0
21	12.5	---	---	12.0	5.0	20.5	12.0	26.5	30.0	31.0	30.0	30.5
22	12.5	---	---	12.5	4.0	20.5	13.5	26.0	30.0	32.0	30.5	30.5
23	13.0	---	---	13.0	4.0	21.0	14.5	26.0	29.5	32.5	31.0	29.0
24	13.5	---	---	13.0	4.5	22.5	16.5	25.5	29.5	30.0	31.5	28.5
25	14.0	---	---	14.0	6.0	23.0	16.0	26.0	30.0	28.0	31.5	28.0
26	14.0	---	---	10.5	6.0	21.0	11.5	27.5	31.0	27.5	30.5	28.0
27	14.0	---	5.5	4.0	5.0	19.5	13.0	28.0	33.0	29.0	30.0	27.5
28	14.5	---	5.5	3.0	5.5	21.0	17.0	28.5	33.5	29.0	30.5	27.5
29	14.5	---	5.5	2.5	---	21.5	16.5	28.5	33.0	30.0	31.0	27.0
30	14.5	---	6.0	3.5	---	20.5	15.0	29.0	33.0	30.5	30.0	27.0
31	13.5	---	6.5	4.5	---	17.0	---	29.5	---	31.0	29.0	---
MEAN	14.5	13.5	6.0	8.0	5.0	15.0	16.5	22.0	30.5	29.5	30.0	29.0

SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DAY	MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)		MEAN CONCENTRATION (MG/L)	
	LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)		LOADS (T/DAY)	
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH												
1	1480	800	30	13	166	498	22	13	77	87	192	190
2	6550	13300	145	56	107	205	72	40	270	301	185	155
3	1640	1300	168	57	63	93	158	60	224	203	188	178
4	150	69	148	44	388	483	170	67	153	122	184	156
5	95	28	250	70	765	1400	168	68	120	96	210	146
6	68	16	11500	173000	150	389	90	39	100	73	300	272
7	58	12	3800	39000	82	168	332	163	133	78	580	753
8	209	43	750	4760	62	101	482	288	158	90	2360	7580
9	4370	18000	340	1170	50	87	97	265	130	70	3480	30100
10	670	1240	130	342	90	146	53	118	108	57	1260	15500
11	140	117	23	62	50	74	80	119	107	55	450	3410
12	98	51	63	126	37	47	70	91	118	61	800	4560
13	77	29	90	126	53	61	32	41	187	101	960	4800
14	72	22	80	87	170	189	4	4.3	228	270	1900	9800
15	77	20	82	75	283	318	42	38	174	214	1420	7480
16	138	137	186	149	223	226	48	29	125	137	830	2890
17	59	86	271	283	263	258	48	45	77	88	610	1500
18	46	49	312	350	178	178	183	217	70	85	410	778
19	50	36	116	115	80	72	247	339	58	72	379	613
20	78	39	45	39	70	58	250	429	60	68	333	468
21	78	30	74	59	95	75	192	278	119	127	279	358
22	70	22	925	1180	100	71	470	609	217	209	245	286
23	63	18	385	923	66	41	713	851	177	136	219	225
24	53	13	210	484	23	15	2750	3670	160	141	183	172
25	873	330	180	332	23	19	6760	37100	167	139	118	102
26	2070	3290	207	324	30	22	1000	29700	215	219	83	75
27	300	508	398	486	30	20	153	1080	198	186	150	145
28	155	175	800	1030	28	18	125	469	202	197	170	172
29	75	63	1520	5250	27	17	112	263	---	---	112	116
30	53	35	222	1120	23	14	120	210	---	---	85	85
31	40	21	---	---	30	18	112	158	---	---	49	46
TOTAL	---	39899	---	231112	---	5381	---	76861.3	---	3682	---	93111
APRIL MAY JUNE JULY AUGUST SEPTEMBER												
1	22	19	27	45	70	33	45	6.0	87	20	1700	826
2	12	9.7	35	47	68	27	222	80	30	6.4	1350	452
3	13	9.3	215	241	55	27	396	403	26	4.6	1090	521
4	28	18	740	1270	53	25	255	167	80	16	153	52
5	21	13	130	397	40	15	100	39	1100	927	92	22
6	10	5.8	22	57	32	10	55	15	1200	800	68	14
7	9	5.2	15	29	31	10	40	8.3	1100	1180	48	8.3
8	10	5.0	500	1470	30	14	72	13	780	809	30	4.6
9	15	7.1	1210	7190	30	16	110	21	690	850	33	4.6
10	6	2.8	122	507	20	7.7	148	50	500	875	66	11
11	3	1.3	109	282	25	8.1	285	238	480	474	45	13
12	8	3.5	92	177	25	7.2	130	48	490	497	20	4.4
13	33	13	62	124	33	11	118	29	220	158	37	6.1
14	28	9.9	72	152	33	8.5	182	54	420	328	37	5.8
15	75	24	92	196	22	4.8	115	30	445	607	39	5.5
16	60	19	118	229	20	4.2	310	214	370	229	58	7.8
17	5	1.6	85	146	20	3.9	310	290	150	64	38	4.8
18	30	10	60	86	74	14	350	178	72	24	33	3.8
19	20	7.8	81	96	218	51	310	105	38	11	32	3.4
20	20	7.7	50	51	242	109	130	32	40	10	30	3.0
21	27	9.5	25	22	130	39	40	8.0	43	9.9	28	2.6
22	18	5.8	20	15	146	43	33	5.8	23	4.3	22	2.1
23	12	3.4	22	15	78	16	140	23	17	2.9	21	2.0
24	6	2.0	296	307	47	8.6	2280	1730	16	2.5	21	2.0
25	1690	7030	184	183	31	5.3	1950	2500	30	4.5	26	2.5
26	5290	47300	66	52	120	30	500	660	95	45	21	1.8
27	1530	21100	20	13	55	13	127	98	60	21	24	1.9
28	670	3290	28	17	55	9.1	100	56	67	18	32	2.4
29	210	573	90	55	30	4.2	48	18	112	39	32	2.5
30	50	106	145	84	20	2.5	78	23	720	470	48	3.4
31	---	---	95	56	---	---	138	35	1350	926	---	---
TOTAL	---	79612.4	---	13611	---	577.1	---	7177.1	---	9433.1	---	1996.3
TOTAL LOAD FOR YEAR: 562453.3 TONS.												

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 (0.6 km) downstream from Fishtrap Dam, 1.1 mi (1.8 km) upstream from Lower Pompey Branch, 1.9 mi (3.1 km) northeast of Millard, 2.4 mi (3.9 km) upstream from confluence with Russell Fork, and at mile 130.1 (209.3 km).

DRAINAGE AREA.--392 mi² (1,015 km²).

WATER-DISCHARGE RECORDS

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 (182.880 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Apr. 19, 1968, nonrecording gage at site 3.7 mi (6.0 km) upstream at different datum. Apr. 19, 1968, to June 18, 1973, water-stage recorder at site 1.0 mi (1.6 km) downstream at datum 59.96 ft (18.276 m) higher.

REMARKS.--Records good. Flow regulated by Fishtrap Lake beginning October 1968.

AVERAGE DISCHARGE.--40 years, 473 ft³/s (13.40 m³/s), 16.39 in/yr (416 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,000 ft³/s (935 m³/s) Jan. 29, 1957, gage height, 33.9 ft (10.33 m), from floodmark, site and datum then in use, from rating curve extended above 15,000 ft³/s (420 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 107.55 ft (32.781 m) 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 (0.003 m³/s) Nov. 8, 9, 1939, site then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,560 ft³/s (157 m³/s) Jan. 30, gage height, 81.18 ft (24.744 m); maximum gage height, 89.44 ft (27.261 m) Jan. 26, backwater from Russell Fork; minimum daily discharge, 43 ft³/s (1.22 m³/s) Oct. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	641	62	1780	268	4620	425	417	942	335	75	69	965
2	793	56	1760	313	4350	569	436	624	164	87	70	392
3	874	55	1720	236	4060	505	157	682	268	91	73	190
4	777	154	1670	191	3680	425	55	792	295	374	76	100
5	770	280	1630	164	772	425	74	1710	171	392	328	98
6	102	409	1700	253	248	470	54	1920	174	128	398	99
7	44	1050	1670	304	379	720	77	998	184	82	592	100
8	87	2900	1610	213	312	972	79	1740	464	82	751	101
9	246	4040	1130	670	312	2200	79	2830	229	79	657	91
10	217	4140	874	1430	312	4200	77	2620	83	80	762	91
11	43	2500	925	979	310	4890	79	1170	144	126	502	89
12	45	1390	677	378	309	3250	79	1090	171	398	524	87
13	45	1380	688	280	309	2360	79	897	171	429	600	87
14	46	1370	616	342	398	1950	80	1040	150	216	288	85
15	320	1360	579	1010	801	2520	79	1100	93	55	489	84
16	847	1070	542	712	844	2030	79	956	93	56	636	83
17	49	620	464	360	640	1420	82	949	96	245	213	81
18	55	620	502	481	604	1070	82	778	93	377	92	84
19	322	616	529	800	614	751	80	625	88	52	93	82
20	683	616	264	953	652	754	85	298	108	61	95	70
21	819	616	140	954	625	754	83	374	166	73	96	55
22	813	612	438	743	615	501	83	501	166	73	95	57
23	804	1710	296	596	531	979	85	301	109	71	95	53
24	790	2910	316	604	366	393	83	511	82	208	96	53
25	793	2280	319	588	368	206	86	687	80	509	99	120
26	796	1740	319	89	396	614	90	558	82	591	99	184
27	791	1690	494	72	601	643	1030	213	79	281	208	179
28	788	1280	473	47	500	538	2940	207	79	135	266	180
29	794	887	231	1580	---	498	2710	277	78	127	153	234
30	550	1490	410	4670	---	642	1640	275	78	106	95	313
31	66	---	318	5310	---	536	---	301	---	71	580	---
TOTAL	14810	39903	25084	25590	28528	38210	11139	27966	4573	5730	9190	4487
MEAN	478	1330	809	825	1019	1233	371	902	152	185	296	150
MAX	874	4140	1780	5310	4620	4890	2940	2830	464	591	762	965
MIN	43	55	140	47	248	206	54	207	78	52	69	53
(†)	-80	-166	-142	+508	-574	-4	+461	+6	-1	+9	+10	-60
MEAN‡	398	1164	667	1333	445	1229	832	908	151	194	306	90
CFSM‡	1.02	2.97	1.70	3.40	1.14	3.14	2.12	2.32	.39	.49	.78	.23
IN.‡	1.17	3.31	1.96	3.92	1.18	3.61	2.37	2.67	.43	.57	.90	.26

CAL YR 1977 TOTAL 210243.00 MEAN 576 MAX 8160 MIN .00 MEAN‡ 577 CFSM‡ 1.47 IN.‡ 19.97
WTR YR 1978 TOTAL 235210.00 MEAN 644 MAX 5310 MIN 43 MEAN‡ 645 CFSM‡ 1.65 IN.‡ 22.36

† Change in contents, equivalent in cubic feet per second, in Fishtrap Lake.

‡ Adjusted for change in contents.

BIG SANDY RIVER BASIN

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03208000 LEVISA FORK BELOW FISHTRAP DAM, NEAR MILLARD, KY--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 21...	1225	810	520	7.5	15.0	0	210	160	49	21	22
DEC 15...	1130	579	390	8.0	4.0	7	150	100	34	15	16
FEB 24...	1525	368	400	7.1	3.0	10	140	110	33	15	15
APR 04...	1545	6.2	460	8.0	15.0	10	150	110	35	16	17
MAY 16...	1600	911	269	7.7	15.0	5	120	84	27	12	11

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	BICAR- BONATE (MG/L AS HCO3)	ALKA- LINITY (MG/L AS CAC03)	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)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)
OCT 21...	3.4	63	52	180	12	.1	6.9	330	400	30	700
DEC 15...	2.4	53	43	130	6.3	.1	8.3	230	760	30	0
FEB 24...	2.0	36	30	130	5.6	.1	7.5	245	390	30	260
APR 04...	2.2	50	41	140	6.6	.1	7.3	273	320	70	1000
MAY 16...	2.3	40	33	100	4.3	.1	7.2	196	170	40	760

DATE	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, INOR- GANIC, TOTAL (MG/L AS C)	CARBON, INOR- GANIC, DIS- SOLVED (MG/L AS C)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT DIS- CHARGE, SUS- PENDED (T/DAY)
OCT 21...	10	17	7	260	180	6.0	3.4	19	19	23	50
DEC 15...	0	11	1	680	680	--	--	--	--	40	63
FEB 24...	0	6	4	390	390	11	2.4	15	15	24	24
APR 04...	0	28	9	100	100	4.5	4.0	8.0	5.2	12	.20
MAY 16...	20	27	15	70	30	1.3	1.0	6.3	4.2	13	32

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 (55 m) downstream from highway bridge at Haysi and 700 ft (213 m) downstream from McClure River.

DRAINAGE AREA.--286 mi² (741 km²).

WATER-DISCHARGE RECORDS

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 (377.224 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 21, 1939, nonrecording gage at highway bridge 180 ft (55 m) upstream at same datum.

REMARKS.--Records good. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--52 years, 332 ft³/s (9.402 m³/s), 15.76 in/yr (400 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,000 ft³/s (1,670 m³/s) Apr. 4, 1977, gage height, 28.24 ft (8.608 m), from rating curve extended above 32,000 ft³/s (910 m³/s) on basis of slope-area measurement of peak flow; minimum observed, 0.2 ft³/s (0.006 m³/s) June 27, 28, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,500 ft³/s (130 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 6	1445	22600	16.44	Mar. 10	1200	4960	7.04
Jan. 26	0330	*28900	19.12	Apr. 27	0130	8730	9.37

Minimum discharge, 13 ft³/s (0.37 m³/s) Oct. 1, gage height, 1.76 ft (0.536 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	156	1220	207	345	330	294	501	365	63	76	213
2	919	137	709	192	345	289	268	395	264	224	58	156
3	319	126	523	149	281	321	239	326	276	906	69	145
4	157	114	429	98	243	285	220	635	255	400	200	116
5	105	102	711	120	243	232	213	1330	193	224	641	92
6	78	7920	1120	140	220	307	196	966	162	153	316	76
7	63	3460	764	157	200	468	190	679	165	118	303	65
8	69	2500	574	193	190	1120	171	869	224	101	380	56
9	1200	1350	532	1440	180	2860	162	1290	355	104	928	52
10	566	947	437	879	180	4350	159	913	251	128	951	49
11	271	921	395	547	170	2250	159	628	190	468	420	106
12	174	625	364	506	180	1500	156	484	153	187	425	104
13	127	435	324	456	190	1210	142	518	268	128	350	97
14	103	330	311	378	326	1550	131	490	190	174	840	69
15	86	273	307	317	307	1510	123	479	145	123	1260	78
16	265	235	268	190	298	989	118	462	126	247	430	86
17	504	342	253	300	330	724	121	415	111	648	251	61
18	356	371	257	530	365	554	126	345	99	272	180	61
19	240	317	233	560	370	473	147	289	145	159	177	61
20	173	273	218	637	330	415	142	247	667	113	183	47
21	135	254	208	531	316	375	128	224	350	88	150	43
22	107	443	188	458	281	345	116	196	255	92	118	39
23	90	880	168	427	247	303	106	177	180	69	99	40
24	77	711	172	455	264	281	108	635	136	92	86	36
25	81	546	320	2160	264	264	473	785	113	289	80	35
26	1210	450	363	13700	365	294	4560	468	147	425	123	33
27	656	349	320	2070	321	312	5240	335	128	207	92	30
28	404	333	279	1040	335	335	1460	268	92	139	106	28
29	289	1550	260	686	---	360	819	264	78	101	247	27
30	226	2380	236	542	---	340	616	572	67	80	436	26
31	183	---	222	441	---	312	---	667	---	69	255	---
TOTAL	9293	28830	12685	30506	7686	25258	17103	16852	6150	6591	10230	2127
MEAN	300	961	409	984	275	815	570	544	205	213	330	70.9
MAX	1210	7920	1220	13700	370	4350	5240	1330	667	906	1260	213
MIN	60	102	168	98	170	232	106	177	67	63	58	26
CFSM	1.05	3.36	1.43	3.44	.96	2.85	1.99	1.90	.72	.75	1.15	.25
IN.	1.21	3.75	1.65	3.97	1.00	3.29	2.22	2.19	.80	.86	1.33	.28

CAL YR 1977	TOTAL	151466	MEAN	415	MAX	30600	MIN	14	CFSM	1.45	IN	19.70
WTR YR 1978	TOTAL	173311	MEAN	475	MAX	13700	MIN	26	CFSM	1.66	IN	22.54

BIG SANDY RIVER BASIN

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03208500 RUSSELL FORK AT HAYSI, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, April to September 1978.

WATER QUALITY DATA, APRIL TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
APR												
04...	0910	220	195	7.2	89	37	20	9.4	19	1.9	63	76
05...	1140	214	300	7.9	94	40	21	10	22	2.1	65	81
MAY												
23...	0815	178	220	8.0	100	--	24	10	20	2.2	--	84
JUL												
06...	0830	156	170	7.6	82	31	19	8.4	16	2.3	--	61
AUG												
09...	0815	816	125	7.9	51	18	12	5.1	5.8	2.0	--	32
SEP												
27...	1330	28	550	8.7	150	0	35	15	70	3.0	190	130

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 CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
APR												
04...	2.4	.1	5.9	171	166	.11	.01	.10	.11	.00	.01	--
05...	4.5	.1	5.3	186	178	--	--	--	--	--	--	10
MAY												
23...	3.5	.1	6.4	202	--	.15	.01	--	.12	.01	.00	--
JUL												
06...	4.6	.0	7.9	163	150	.35	.01	.22	.23	.02	.00	--
AUG												
09...	2.4	.1	8.3	94	88	.37	.03	.46	.44	.25	.01	--
SEP												
27...	8.8	.2	3.9	349	360	--	--	--	--	--	--	20

BIG SANDY RIVER BASIN

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 (366 m) upstream from Stacy Branch, and 1.2 mi (1.9 km) upstream from South Fork Pound River.

DRAINAGE AREA.--17.2 mi² (44.5 km²).

PERIOD OF RECORD.--July 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (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 (501.09 m) is in a saddle 350 ft (107 m) 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 (474.42 m). 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 (501.09 m), top of spillway, is 11,290 acre-ft (13.9 hm³) of which 8,110 acre-ft (10.0 hm³) is flood-control storage for summer operations between elevations 1,611.0 ft (491.03 m) top of summer conservation pool, and 1,644.0 ft (501.09 m); an additional 1,290 acre-ft (1.59 hm³) is available for flood control during the period December to March between elevations 1,601.0 ft (487.98 m), top of winter conservation pool, and 1,611.0 ft (491.03 m); contents at established minimum pool, 1,601.0 ft (487.98 m), is 1,900 acre-ft (2.34 hm³); dead storage is 7 acre-ft (8,630 m³) below elevation 1,556.5 ft (474.42 m). Figures given herein represent total contents. Lake is used for flood control, low-water augmentation for water-quality control, and recreation.

COOPERATION.--Capacity tables furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,920 acre-ft (8.53 hm³) Apr. 8, 1977, elevation, 1,629.41 ft (496.644 m); minimum (after initial filling for regular operation), 1,660 acre-ft (2.05 hm³) Jan. 23, 1969, elevation, 1,598.62 ft (487.259 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,640 acre-ft (4.49 hm³) May 25, elevation, 1,613.82 ft (491.892 m); minimum, 1,960 acre-ft (2.42 hm³) Feb. 4, elevation, 1,601.65 ft (488.183 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1610.58	3120	
Oct. 31.....	1607.19	2640	-480
Nov. 30.....	1602.32	2040	-600
Dec. 31.....	1601.88	1990	-50
CAL YR 1977.....			-20
Jan. 31.....	1605.68	2440	+450
Feb. 28.....	1601.95	2000	-440
Mar. 31.....	1603.33	2150	+150
Apr. 30.....	1611.36	3240	+1090
May 31.....	1612.38	3400	+160
June 30.....	1611.38	3240	-160
July 31.....	1611.48	3260	+20
Aug. 31.....	1611.65	3290	+30
Sept. 30.....	1610.72	3140	-150
WTR YR 1978.....			+20

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 (213 m) downstream from Stacy Branch, 1,600 ft (488 m) downstream from North Fork Pound River Dam, and 0.9 mi (1.4 km) upstream from confluence with South Fork.

DRAINAGE AREA.--18.5 mi² (47.9 km²).

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,500.00 ft (457.200 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Oct. 1, 1965, on left bank at datum 44.88 ft (13.679 m) higher.

REMARKS.--Records good. Flow regulated since August 1966 by North Fork Pound River Lake (station 03208680). Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--17 years, 29.7 ft³/s (0.841 m³/s), 21.80 in/yr (554 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,480 ft³/s (127 m³/s) Mar. 12, 1963, gage height, 61.58 ft (18.770 m), present datum, from rating curve extended above 650 ft³/s (18 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.02 ft³/s (<0.001 m³/s) Sept. 16, 1964, Aug. 11, 12, Oct. 28, Nov. 10, 1969; minimum daily, 0.04 ft³/s (0.001 m³/s) Sept. 15, 1964, Aug. 11, 1969; minimum gage height, 47.66 ft (14.527 m) Sept. 16, 1964, present datum. Maximum discharge since construction of North Fork Pound River Dam in 1966, 1,010 ft³/s (28.6 m³/s) May 18, 1975, gage height, 55.04 ft (16.776 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 63.9 ft (19.5 m), present datum, from Corps of Engineers floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 325 ft³/s (9.20 m³/s) Mar. 10, gage height, 51.30 ft (15.636 m); minimum, 2.5 ft³/s (0.071 m³/s) Sept. 18, gage height, 48.20 ft (14.691 m); minimum daily, 2.7 ft³/s (0.076 m³/s) Sept. 19, 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	33	96	20	185	35	5.2	30	105	5.9	8.6	8.5
2	25	28	37	11	98	23	4.9	21	64	28	7.8	10
3	47	22	29	7.3	32	29	4.7	18	40	82	5.2	9.8
4	24	22	31	7.4	13	32	4.6	69	28	87	4.9	9.6
5	8.8	22	164	7.4	8.0	27	4.6	143	21	38	4.7	9.6
6	8.4	32	211	11	8.0	31	4.6	124	17	19	4.5	9.6
7	15	129	98	16	11	47	4.7	85	11	9.5	7.1	9.6
8	22	186	50	18	12	81	4.6	90	31	3.7	9.2	9.6
9	32	178	41	121	12	167	4.6	120	37	3.8	9.4	9.6
10	42	151	45	159	12	271	4.6	98	21	3.7	9.4	9.7
11	75	73	49	65	12	213	4.6	65	21	5.2	9.2	10
12	71	34	37	27	12	173	4.6	49	14	7.0	9.3	9.8
13	34	28	25	39	12	177	4.6	51	7.5	7.5	9.3	9.6
14	21	28	25	35	22	184	4.5	74	7.7	7.4	9.4	7.1
15	19	27	25	27	30	189	4.5	83	7.8	7.1	9.3	6.0
16	21	27	25	21	32	88	4.5	79	8.0	7.4	9.2	5.9
17	21	23	24	18	32	47	4.6	58	8.0	7.9	9.2	6.0
18	24	20	24	46	29	31	4.6	37	8.0	8.0	9.2	3.8
19	26	16	24	69	27	32	4.6	27	8.0	8.0	9.2	2.7
20	25	14	22	49	20	32	4.1	21	8.0	8.0	9.3	2.7
21	25	14	18	25	23	32	3.4	21	8.0	8.0	9.2	3.0
22	25	41	15	32	23	32	3.3	15	8.0	8.0	9.2	3.0
23	25	102	9.6	34	18	32	3.2	12	7.7	8.2	9.4	3.2
24	18	86	7.3	34	16	21	3.2	118	7.7	8.7	8.8	3.2
25	12	53	21	77	16	43	4.2	171	7.7	9.1	5.7	3.3
26	27	26	25	41	18	96	27	136	9.0	8.8	4.5	3.4
27	53	53	25	12	34	100	55	85	8.0	9.0	4.5	3.4
28	37	63	19	8.0	45	66	113	75	8.0	8.9	4.4	3.4
29	29	107	11	160	---	34	51	76	8.0	8.5	4.4	3.4
30	28	151	18	303	---	6.9	34	36	6.0	8.4	4.4	3.4
31	30	---	20	264	---	5.6	---	79	---	8.7	5.4	---
TOTAL	875.4	1789	1270.9	1764.1	812.0	2377.5	389.6	2166	551.1	448.4	233.3	191.9
MEAN	28.2	59.6	41.0	56.9	29.0	76.7	13.0	69.9	18.4	14.5	7.53	6.40
MAX	75	186	211	303	185	271	113	171	105	87	9.4	10
MIN	5.2	14	7.3	7.3	8.0	5.6	3.2	12	6.0	3.7	4.4	2.7
(*)	-8	-10	-1	+7	-8	+2	+18	+3	-3	.00	.00	-3
MEAN#	20.2	49.6	40.0	63.9	21.0	78.7	31.0	72.9	15.4	14.5	7.53	3.40
CFSM#	1.09	2.68	2.16	3.45	1.14	4.25	1.68	3.94	.83	.78	.41	.18
IN#	1.26	2.99	2.49	3.98	1.18	4.91	1.87	4.54	.93	.90	.47	.20

CAL YR 1977 TOTAL 9803.8 MEAN 26.9 MAX 332 MIN 2.7 MEAN# 26.9 CFSM# 1.45 IN# 19.71
WTR YR 1978 TOTAL 12869.2 MEAN 35.3 MAX 303 MIN 2.7 MEAN# 35.3 CFSM# 1.91 IN# 25.88

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake; furnished by Corps of Engineers.

Adjusted for change in contents.

03208800 POUND RIVER ABOVE INDIAN CREEK, AT POUND, VA

LOCATION.--Lat 37°07'26", long 82°36'29", Wise County, Hydrologic Unit 05070202, on left bank at Pound 1,600 ft (488 m) downstream from confluence of North and South Forks, 2,400 ft (732 m) upstream from bridge on U.S. Highway 23, and 3,800 ft (1,160 m) upstream from Indian Creek.

DRAINAGE AREA.--36.7 mi² (95.1 km²).

PERIOD OF RECORD.--October 1965 to September 1978 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder with rock and concrete control. Datum of gage is 1,535.64 ft (468.063 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation since August 1966 by North Fork Pound River Lake (station 03208680) 1.4 mi (2.3 km) upstream. Corps of Engineers long-distance gage-height transmitter at station, recorder at North Fork Pound River Lake control tower. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--13 years, 60.3 ft³/s (1.708 m³/s), 22.31 in/yr (567 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,460 ft³/s (98.0 m³/s) May 18, 1975, gage height, 19.44 ft (5.925 m), from rating curve extended above 970 ft³/s (27 m³/s); practically no flow Aug. 29, 1977, when flow was retarded by temporary dam; minimum daily discharge, 0.50 ft³/s (0.014 m³/s) July 2-4, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Jan. 29, 1957, and Mar. 12, 1963, reached stages of 25.7 ft (7.83 m) and 21.2 ft (6.46 m), respectively, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,360 ft³/s (38.5 m³/s) Jan. 26, gage height, 10.63 ft (3.240 m); minimum, 4.9 ft³/s (0.14 m³/s) Sept. 27-30, gage height, 3.46 ft (1.055 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	47	208	46	231	65	38	67	151	23	19	22
2	100	41	102	33	143	49	34	52	98	193	15	19
3	73	34	72	24	61	63	31	45	78	190	11	17
4	41	33	72	24	39	65	29	195	56	172	18	15
5	20	32	416	23	31	58	28	292	46	81	23	15
6	17	217	372	30	29	68	27	211	43	48	15	14
7	23	258	194	36	32	100	25	150	40	32	19	13
8	35	306	120	79	32	188	24	178	113	22	20	13
9	190	265	117	279	32	343	23	229	123	23	18	13
10	86	222	111	237	31	493	21	174	65	20	17	13
11	106	127	104	117	30	354	22	117	53	23	17	15
12	90	68	80	65	30	303	20	89	42	21	21	13
13	50	55	59	78	34	297	18	108	44	26	26	12
14	36	52	62	69	61	385	17	125	31	22	20	9.7
15	31	49	62	54	62	336	16	138	28	20	18	11
16	44	48	59	44	65	194	16	131	26	21	17	8.6
17	45	48	56	56	64	127	17	98	25	19	15	8.0
18	46	40	55	112	61	88	17	70	23	19	14	6.5
19	45	34	52	132	58	81	17	55	25	18	14	5.3
20	43	31	49	104	48	76	17	46	42	18	23	5.3
21	42	31	43	61	49	75	15	43	42	17	16	5.1
22	41	94	37	64	47	72	14	34	31	17	14	5.1
23	40	189	30	65	40	67	13	30	26	16	14	5.2
24	31	153	30	67	40	52	12	418	23	17	13	5.3
25	31	102	94	262	45	127	30	315	21	33	11	5.1
26	99	58	77	660	52	205	202	210	40	22	28	5.1
27	92	87	64	162	64	201	298	134	24	20	12	4.9
28	64	118	50	86	77	149	208	114	20	26	9.9	4.9
29	49	273	38	242	---	96	112	110	19	19	8.4	4.9
30	47	339	44	352	---	50	79	150	26	17	8.1	5.0
31	45	---	46	311	---	43	---	159	---	18	29	---
TOTAL	1723	3451	2975	3974	1588	4870	1440	4287	1424	1233	523.4	299.0
MEAN	55.6	115	96.0	128	56.7	157	48.0	138	47.5	39.8	16.9	9.97
MAX	190	339	416	660	231	493	298	418	151	193	29	22
MIN	17	31	30	23	29	43	12	30	19	16	8.1	4.9
(*)	-8	-10	-1	+7	-8	+2	+18	+3	-3	.00	.00	-3
MEAN#	47.6	105	95.0	135	48.7	159	66.0	141	44.5	39.8	16.9	6.97
CFSM#	1.30	2.86	2.59	3.68	1.33	4.33	1.80	3.84	1.21	1.08	.46	.19
IN#	1.50	3.19	2.98	4.25	1.38	5.00	2.01	4.44	1.35	1.25	.53	.21

CAL YR 1977 TOTAL 21310.8 MEAN 58.4 MAX 1750 MIN 3.2 MEAN# 58.4 CFSM# 1.59 IN# 21.60
WTR YR 1978 TOTAL 27787.4 MEAN 76.1 MAX 660 MIN 4.9 MEAN# 76.1 CFSM# 2.07 IN# 28.16

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake; furnished by Corps of Engineers.

Adjusted for change in contents.

BIG SANDY RIVER BASIN

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03208850 POUND RIVER BELOW BOLD CAMP CREEK, AT POUND, VA

LOCATION.--Lat 37°07'19", long 82°35'55", Wise County, Hydrologic Unit 05070202, on left bank at Pound, 1,000 ft (305 m) upstream from bridge on State Highway 83, 1,500 ft (457 m) downstream from Bold Camp Creek, and 2,500 ft (762 m) downstream from Indian Creek.

DRAINAGE AREA.--61.2 mi² (158.5 km²).

PERIOD OF RECORD.--October 1965 to September 1978 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 1,527.36 ft (465.539 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation since August 1966 by North Fork Pound River Lake (station 03208680) 2.6 mi (4.2 km) upstream. Corps of Engineers long-distance gage-height transmitter at station, recorder at North Fork Pound River Lake control tower. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--13 years, 96.4 ft³/s (2.730 m³/s), 21.39 in/yr (543 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,290 ft³/s (178 m³/s) May 18, 1975, gage height, 25.64 ft (7.815 m), from rating curve extended above 1,900 ft³/s (54 m³/s); minimum, 1.0 ft³/s (0.028 m³/s) July 27, 28, 1966; minimum daily, 1.3 ft³/s (0.037 m³/s) July 4, 27, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Jan. 29, 1957, and Mar. 12, 1963, reached stages of about 30.8 ft (9.39 m) and 28.2 ft (8.60 m), respectively, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,390 ft³/s (67.7 m³/s) Jan. 26, gage height, 15.41 ft (4.697 m); minimum daily, 8.0 ft³/s (0.23 m³/s) Sept. 27-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	52	260	63	221	92	68	102	180	56	54	29
2	161	48	134	51	148	75	64	81	132	234	25	25
3	80	41	100	40	82	94	58	71	120	306	20	23
4	49	41	97	39	61	99	53	266	91	258	35	21
5	33	41	594	39	53	84	50	420	73	177	61	20
6	30	406	486	46	50	103	48	282	67	112	30	20
7	33	351	226	51	50	138	46	178	72	80	35	19
8	47	389	146	111	50	281	44	242	169	45	37	18
9	341	290	150	354	48	504	42	324	225	47	32	18
10	103	234	134	256	47	737	38	235	129	42	30	18
11	98	136	122	139	47	481	40	154	93	45	30	22
12	86	87	101	86	46	393	38	123	74	34	40	19
13	55	71	84	95	54	367	35	159	83	40	53	18
14	42	65	88	87	90	541	32	156	59	63	36	16
15	40	62	85	71	85	449	30	165	52	40	32	18
16	59	60	79	58	92	260	29	157	50	45	27	16
17	56	66	75	78	93	176	30	130	47	40	22	15
18	52	53	75	130	91	132	31	104	45	39	22	13
19	50	47	69	143	87	121	32	86	46	37	21	11
20	46	43	66	129	73	111	31	74	55	39	32	9.0
21	44	44	60	89	71	108	29	71	74	36	22	9.0
22	43	121	52	88	68	106	26	62	67	35	20	8.5
23	41	207	45	86	59	100	24	53	53	33	20	8.5
24	40	161	51	90	61	82	23	597	46	35	19	9.0
25	49	115	133	334	76	137	22	470	43	63	18	9.0
26	155	78	107	1190	89	221	394	281	79	45	40	8.8
27	102	91	89	264	87	231	551	171	57	40	21	8.0
28	76	121	70	149	100	172	288	142	46	81	17	8.0
29	60	390	56	238	---	128	156	133	42	39	15	8.0
30	55	477	60	359	---	82	118	179	43	35	14	9.0
31	52	---	64	310	---	72	---	208	---	40	43	---
TOTAL	2217	4388	3958	5263	2179	6677	2470	5876	2412	2261	923	453.8
MEAN	71.5	146	128	170	77.8	215	82.3	190	80.4	72.9	29.8	15.1
MAX	341	477	594	1190	221	737	551	597	225	306	61	29
MIN	30	41	45	39	46	72	22	53	42	33	14	8.0
(*)	-8	-10	-1	+7	-8	+2	+18	+3	-3	.00	.00	-3
MEAN#	63.5	136	127	177	69.8	217	100	193	77.4	72.9	29.8	12.1
CFSM#	1.04	2.22	2.08	2.89	1.34	3.55	1.63	3.15	1.26	1.19	.49	.20
IN#	1.20	2.48	2.39	3.33	1.39	4.30	1.83	3.63	1.41	1.37	.56	.22

CAL YR 1977 TOTAL 32301.0 MEAN 88.5 MAX 4000 MIN 6.0 MEAN# 88.5 CFSM# 1.45 IN# 19.63
WTR YR 1978 TOTAL 39077.8 MEAN 107 MAX 1190 MIN 8.0 MEAN# 107 CFSM# 1.75 IN# 23.75

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake; furnished by Corps of Engineers.

* Adjusted for change in contents.

BIG SANDY RIVER BASIN

03208900 POUND RIVER NEAR GEORGES FORK, VA

LOCATION.--Lat 37°09'51", long 82°31'30", Dickenson County, Hydrologic Unit 05070202, on right bank 50 ft (15 m) upstream from bridge on State Highway 624, 150 ft (46 m) upstream from Camp Creek, and 2.6 mi (4.2 km) northwest of the community of Georges Fork.

DRAINAGE AREA.--82.5 mi² (213.7 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 1,470.39 ft (448.175 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some regulation since August 1966 by North Fork Pound River Lake (station 03208680) 13 mi (21 km) upstream. Corps of Engineers gage-height telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--15 years, 127 ft³/s (3.597 m³/s), 20.90 in/yr (531 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,900 ft³/s (309 m³/s) May 18, 1975, gage height, 14.91 ft (4.545 m), from rating curve extended above 3,600 ft³/s (100 m³/s); minimum, 1.6 ft³/s (0.045 m³/s) Sept. 17, 18, 1964, gage height, 1.80 ft (0.549 m); minimum daily, 1.7 ft³/s (0.048 m³/s) Sept. 17, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Jan. 29, 1957, and Mar. 12, 1963, reached stages of 16.2 ft (4.94 m) and 14.4 ft (4.39 m), respectively, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,770 ft³/s (107 m³/s) Jan. 26, gage height, 9.27 ft (2.825 m); minimum, 10 ft³/s (0.28 m³/s) Sept. 28-30, gage height, 2.24 ft (0.683 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	79	387	78	264	114	89	127	179	60	49	57
2	440	76	200	69	191	94	80	103	136	267	33	38
3	157	62	137	49	103	109	72	87	130	376	31	33
4	103	60	121	45	85	117	66	368	103	279	32	30
5	55	57	795	45	66	109	64	689	85	160	69	27
6	43	723	712	47	62	119	60	384	73	94	46	25
7	37	581	335	56	60	169	59	232	84	71	38	23
8	65	632	210	91	60	344	55	345	175	47	45	22
9	712	462	206	507	58	725	53	518	232	46	39	21
10	210	340	188	350	58	1040	52	326	123	43	38	21
11	151	213	166	243	56	697	51	202	99	65	35	31
12	131	130	139	100	56	554	51	154	86	45	43	28
13	91	103	114	110	66	509	46	209	96	60	54	22
14	65	93	115	100	121	722	42	202	67	70	40	21
15	55	86	113	85	110	627	40	213	57	46	37	20
16	84	81	105	70	115	354	39	200	53	61	33	24
17	92	89	99	99	115	240	40	161	50	60	31	17
18	82	73	98	162	113	166	40	126	45	43	29	16
19	79	64	89	175	108	151	42	104	44	38	27	13
20	70	57	85	177	96	135	41	86	53	35	39	11
21	65	57	77	118	90	125	39	81	85	34	33	11
22	60	160	70	105	85	122	36	71	70	33	28	11
23	58	344	60	100	70	112	34	62	50	31	25	12
24	55	252	56	110	79	101	33	788	43	37	23	13
25	47	173	145	375	84	148	80	620	39	75	21	12
26	259	119	127	2050	116	253	807	331	90	65	54	11
27	166	114	111	438	104	295	999	197	53	42	29	11
28	130	147	103	232	118	228	406	154	41	88	31	10
29	99	490	82	299	---	170	206	146	37	42	20	10
30	88	682	77	414	---	113	152	196	35	36	21	10
31	80	---	79	363	---	98	---	211	---	34	62	---
TOTAL	3860	6599	5401	7262	2709	8860	3874	7693	2513	2483	1135	611
MEAN	125	220	174	234	96.8	286	129	248	83.8	80.1	36.6	20.4
MAX	712	723	795	2050	264	1040	999	788	232	376	69	57
MIN	31	57	56	45	56	94	33	62	35	31	20	10
(*)	-8	-10	-1	+7	-8	+2	+18	+3	-3	.00	.00	-3
MEAN#	117	210	173	241	88.8	288	147	251	80.8	80.1	36.6	17.4
CFSM#	1.42	2.55	2.10	2.92	1.08	3.49	1.78	3.04	.98	.97	.44	.21
IN#	1.63	2.84	2.42	3.37	1.12	4.02	1.99	3.51	1.09	1.12	.51	.23

CAL YR 1977 TOTAL 43822.6 MEAN 120 MAX 5090 MIN 8.0 MEAN# 120 CFSM# 1.45 IN# 19.75
WTR YR 1978 TOTAL 53000.0 MEAN 145 MAX 2050 MIN 10 MEAN# 145 CFSM# 1.76 IN# 23.89

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake; furnished by 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 500 ft (152 m) downstream from Clinchfield Railway bridge, 1,000 ft (305 m) downstream from Rush Creek, and 2.1 mi (3.4 km) southeast of Clintwood.

DRAINAGE AREA.--66.5 mi² (172.2 km²).

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 (439.003 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Corps of Engineers gage-height telemeter at station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--15 years, 84.1 ft³/s (2.382 m³/s), 17.17 in/yr (436 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,000 ft³/s (510 m³/s) Apr. 4, 1977, gage height, 26.09 ft (7.952 m), from floodmark, from rating curve extended above 3,100 ft³/s (88 m³/s) on basis of slope-area measurement of peak flow; minimum, 0.5 ft³/s (0.014 m³/s) Sept. 28, 1964, gage height, 0.91 ft (0.277 m).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 20.0 ft (6.1 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 6	1330	2300 65.1	10.52 3.206	Apr. 27	0200	1220 34.6	7.43 2.265
Jan. 26	0430	*4870 138	15.39 4.691	May 24	1430	1320 37.4	7.75 2.362

Minimum discharge, 6.6 ft³/s (0.19 m³/s) Oct. 1, gage height, 1.33 ft (0.405 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	29	298	58	90	81	77	130	97	28	23	34
2	172	26	175	52	88	71	68	102	74	100	15	23
3	51	24	126	49	75	80	64	90	140	148	34	24
4	28	23	101	27	65	71	59	204	117	86	71	18
5	20	22	356	28	62	69	57	333	81	48	74	15
6	16	915	336	30	52	75	50	226	66	35	53	13
7	14	551	195	40	50	110	47	163	62	31	36	12
8	17	473	144	75	50	258	41	222	115	29	34	11
9	310	255	148	338	47	493	40	335	136	29	37	11
10	96	187	121	179	45	679	38	222	88	28	36	11
11	50	148	102	134	44	409	41	165	66	110	28	37
12	34	106	93	134	50	312	41	133	56	40	30	19
13	25	77	84	127	64	252	36	176	141	45	48	14
14	22	62	88	98	109	423	32	163	69	44	123	13
15	19	53	87	83	86	348	28	152	52	32	94	17
16	48	49	76	50	85	238	28	134	43	33	36	15
17	49	74	71	80	87	182	28	112	37	34	26	12
18	37	63	70	120	88	143	29	90	33	24	23	11
19	31	54	63	140	86	121	34	72	33	21	19	10
20	25	49	59	144	78	105	32	65	40	26	26	9.6
21	21	47	55	108	75	97	30	59	47	20	17	9.3
22	19	108	49	85	68	90	27	51	46	17	14	9.4
23	17	175	44	80	63	80	25	49	30	15	14	9.8
24	16	137	46	90	67	75	24	575	25	19	14	9.9
25	18	106	156	354	71	76	37	378	22	89	13	9.5
26	291	88	125	2240	94	101	555	185	49	52	59	8.6
27	110	69	99	402	79	106	745	119	29	29	21	8.7
28	69	71	95	225	84	106	279	202	23	26	25	8.2
29	50	349	86	150	---	101	182	256	20	21	30	8.6
30	40	518	74	122	---	92	145	312	18	18	27	8.2
31	34	---	62	102	---	84	---	148	---	20	50	---
TOTAL	1769	4908	3684	5944	2002	5528	2919	5623	1855	1297	1150	419.8
MEAN	57.1	164	119	192	71.5	178	97.3	181	61.8	41.8	37.1	14.0
MAX	310	915	356	2240	109	679	745	575	141	148	123	37
MIN	14	22	44	27	44	69	24	49	18	15	13	8.2
CFSM	.86	2.47	1.79	2.89	1.08	2.68	1.46	2.72	.93	.63	.56	.21
IN.	.99	2.75	2.06	3.33	1.12	3.09	1.63	3.15	1.04	.73	.64	.23

CAL YR 1977	TOTAL	35219.9	MEAN	96.5	MAX	8000	MIN	5.4	CFSM	1.45	IN	19.70
WTR YR 1978	TOTAL	37098.8	MEAN	102	MAX	2240	MIN	8.2	CFSM	1.53	IN	20.75

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 (2.1 km) upstream from Blacklog Branch, and 3.7 mi (6.0 km) northwest of Haysi.

DRAINAGE AREA.--221 mi² (572 km²).

PERIOD OF RECORD.--September 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (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 (429.77 m) is in a saddle 0.3 mi (0.5 km) upstream from dam and is equipped with 6 radial gates 36 ft (11.0 m) high by 42 ft (12.8 m) 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 (374.90 m). 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 (440.74 m), top of gates, is 145,700 acre-ft (180 hm³) of which 78,600 acre-ft (96.9 hm³) is controlled flood storage for summer operations between elevations 1,396.0 ft (425.50 m), top of summer conservation pool, and 1,446.0 ft (440.74 m); an additional 16,500 acre-ft (20.3 hm³) is available for flood control during the period December to March between elevations 1,380.0 ft (420.62 m), top of winter conservation pool, and 1,396.0 ft (425.50 m); contents at established minimum pool, 1,314.0 ft (400.51 m), is 12,000 acre-ft (14.8 hm³); dead storage is 300 acre-ft (370,000 m³) below elevation 1,230.0 ft (374.90 m). Figures given herein represent total contents. Reservoir is used for flood control, low-water augmentation for water-quality control, and recreation.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 116,500 acre-ft (144 hm³) Apr. 7, 1977, elevation, 1,430.80 ft (436.108 m); minimum (after initial filling for regular operation), 11,800 acre-ft (14.5 hm³) Apr. 1, 1965, elevation, 1,313.42 ft (400.330 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 69,500 acre-ft (85.7 hm³) Jan. 29, elevation, 1,398.11 ft (426.144 m); minimum, 47,400 acre-ft (58.4 hm³) Mar. 24, elevation, 1,376.55 ft (419.572 m).

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1395.99	67100	
Oct. 31.....	1386.30	56700	-10400
Nov. 30.....	1381.27	51700	-5000
Dec. 31.....	1380.41	50900	-800
CAL YR 1977.....			-100
Jan. 31.....	1384.56	54900	+4000
Feb. 28.....	1380.79	51300	-3600
Mar. 31.....	1382.74	53100	+1800
Apr. 30.....	1396.48	67600	+14500
May 31.....	1396.50	67700	+100
June 30.....	1396.59	67800	+100
July 31.....	1396.35	67500	-300
Aug. 31.....	1396.73	67900	+400
Sept. 30.....	1394.94	65900	-2000
WTR YR 1978.....			-1200

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 (335 m) upstream from Blacklog Branch, 1,700 ft (518 m) downstream from John W. Flannagan Dam, 1.4 mi (2.3 km) upstream from mouth, and 3.4 mi (5.5 km) northwest of Haysi.

DRAINAGE AREA.--221 mi² (572 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1926 to current year. Monthly discharge only for some periods, published in WSP 1305. Prior to October 1960, 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 (365.760 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Dec. 20, 1939, nonrecording gage at site 3.8 mi (6.1 km) upstream at different datum. Dec. 20, 1939, to Sept. 30, 1963, water-stage recorder at site 4.6 mi (7.4 km) upstream at datum 79.91 ft (24.357 m) higher.

REMARKS.--Records good. Flow regulated since March 1965 by John W. Flannagan Reservoir (station 03208990) 1,700 ft (518 m) upstream and since August 1966 by North Fork Pound River Lake (station 03208680) 33 mi (53 km) upstream.

AVERAGE DISCHARGE.--52 years, 276 ft³/s (7.816 m³/s), 16.96 in/yr (431 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,000 ft³/s (850 m³/s) Mar. 23, 1929, gage height, 16.5 ft (5.03 m), from floodmarks, site and datum then in use; minimum, less than 0.1 ft³/s (0.003 m³/s) on several days in September 1932. Maximum discharge since construction of John W. Flannagan Dam in 1965, 4,540 ft³/s (129 m³/s) Apr. 8, 1977, gage height, 8.20 ft (2.499 m); minimum, 1.2 ft³/s (0.034 m³/s) Feb. 16, 1968, gage height, 1.42 ft (0.433 m); minimum daily, 2.3 ft³/s (0.065 m³/s) June 26-29, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,980 ft³/s (113 m³/s) Nov. 9, gage height, 7.73 ft (2.356 m); minimum, 13 ft³/s (0.37 m³/s) Jan. 26-29, gage height, 1.84 ft (0.561 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	52	1420	194	1840	320	44	435	376	72	63	140
2	700	52	657	194	631	320	44	312	308	439	63	140
3	720	52	389	150	443	320	44	261	363	470	63	140
4	324	130	332	98	332	320	44	465	365	470	63	127
5	209	194	1050	98	254	246	44	1470	272	299	66	85
6	49	316	1430	128	218	264	44	1120	183	142	96	75
7	49	262	1210	165	179	422	44	771	147	98	96	57
8	690	1620	727	215	135	602	45	785	225	98	96	49
9	944	3320	570	764	135	1260	45	1350	543	98	96	49
10	53	2590	485	893	135	1570	45	1130	472	89	96	49
11	53	49	412	700	135	2170	44	696	287	141	96	49
12	53	49	430	452	135	2420	44	471	221	120	96	49
13	53	49	304	360	135	1780	44	557	185	100	96	49
14	53	860	304	380	324	1480	45	719	187	100	97	49
15	806	1460	304	293	364	1780	46	602	181	100	118	49
16	615	969	251	168	272	987	46	529	141	100	127	49
17	52	352	194	237	282	674	46	458	102	100	127	49
18	52	304	237	461	298	565	46	336	102	100	127	49
19	293	304	300	456	300	437	46	325	104	86	127	49
20	819	254	262	520	300	385	46	272	104	66	128	49
21	1070	194	218	356	300	388	46	262	127	66	127	66
22	1060	308	179	312	399	850	46	215	156	66	107	80
23	1060	725	138	312	370	1400	46	200	155	66	75	80
24	1050	879	138	312	182	430	46	1170	133	62	65	80
25	896	758	170	272	182	53	46	1930	105	99	60	79
26	312	552	332	43	182	51	49	857	75	130	52	57
27	721	488	332	13	182	44	351	547	150	129	52	47
28	719	486	332	13	276	42	836	295	114	129	67	47
29	605	1110	265	1700	---	43	739	308	68	128	75	47
30	52	1630	194	3590	---	43	500	687	68	85	75	336
31	52	---	194	3270	---	43	---	675	---	63	114	---
TOTAL	14237	20368	13760	17119	8920	21709	3601	20210	6019	4311	2806	2320
MEAN	459	679	444	552	319	700	120	652	201	139	90.5	77.3
MAX	1070	3320	1430	3590	1840	2420	836	1930	543	470	128	336
MIN	49	49	138	13	135	42	44	200	68	62	52	47
(*)	-1.77	-94	-14	+72	-73	+31	+262	+5	-1	-5	+7	-37
MEAN*	282	585	430	624	246	731	382	657	200	134	97.5	40.3
CFSM*	1.28	2.65	1.95	2.82	1.11	3.31	1.73	2.97	.90	.61	.44	.18
IN*	1.47	2.95	2.24	3.26	1.16	3.81	1.93	3.43	1.01	.70	.51	.20

CAL YR 1977 TOTAL 111976 MEAN 307 MAX 4410 MIN 46 MEAN* 307 CFSM* 1.39 IN* 18.84
WTR YR 1978 TOTAL 135380 MEAN 371 MAX 3590 MIN 13 MEAN* 369 CFSM* 1.67 IN* 22.66

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake and John W. Flannagan Reservoirs; furnished by Corps of Engineers.

* Adjusted for change in contents.

BIG SANDY RIVER BASIN

03209000 POUND RIVER BELOW FLANNAGAN DAM, NEAR HAYSI, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, April to September 1978.

WATER QUALITY DATA, APRIL TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
APR 04...	1130	53	195	6.9	94	71	18	12	6.3	1.8	29	85
MAY 23...	0945	215	210	7.3	110	--	21	13	6.5	1.9	--	95
JUL 06...	1000	176	250	7.2	120	95	23	14	7.0	2.1	--	100
AUG 09...	1000	96	260	6.9	110	92	22	13	6.6	2.0	--	92
SEP 27...	1520	47	280	8.0	110	85	24	13	7.0	2.1	35	100

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, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
APR 04...	3.1	.0	6.5	157	147	.47	.04	.07	.24	.00	.01	--
MAY 23...	3.0	.0	6.2	195	--	.44	.00	--	.08	.01	.00	--
JUL 06...	2.7	.0	6.9	208	168	.41	.00	.11	.20	.00	.00	--
AUG 09...	2.6	.0	10	198	158	.39	.00	.09	.09	.00	.00	--
SEP 27...	2.8	.1	6.5	170	175	--	--	--	--	--	--	0

03209200 RUSSELL FORK AT BARTLICK, VA

LOCATION.--Lat 37°14'45", long 82°19'25", Dickenson County, Hydrologic Unit 05070202, on left bank at Bartlick, just upstream from bridge on State Highway 611, 0.2 mi (0.3 km) downstream from Pound River, and 1.1 mi (1.8 km) upstream from Fall Branch.

DRAINAGE AREA.--526 mi² (1,362 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,165.00 ft (355.092 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated since March 1965 by John W. Flannagan Reservoir (station 03208990) 1.9 mi (3.1 km) upstream and since August 1966 by North Fork Pound River Lake (station 03208680) 35 mi (56 km) upstream. Corps of Engineers gage-height telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--16 years, 692 ft³/s (19.60 m³/s), 17.87 in/yr (454 mm/yr), unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft³/s (1,420 m³/s) Apr. 4, 1977, gage height, 27.55 ft (8.397 m), from rating curve extended above 11,000 ft³/s (310 m³/s) on basis of computation of peak flow over dam; minimum, 5.3 ft³/s (0.15 m³/s) Sept. 18, 1964, gage height, 5.03 ft (1.533 m); minimum daily, 5.5 ft³/s (0.16 m³/s) Sept. 17, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of about 30 ft (9.1 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,700 ft³/s (756 m³/s) Jan. 26, gage height, 19.80 ft (6.035 m); minimum, 71 ft³/s (2.01 m³/s) Sept. 29, gage height, 7.24 ft (2.207 m); minimum daily, 75 ft³/s (2.12 m³/s) Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	149	230	3240	451	2290	714	389	1070	749	127	157	368
2	2010	205	1630	436	1030	671	358	794	574	582	143	310
3	1120	191	1040	340	762	705	326	651	624	1320	142	295
4	495	268	846	260	625	655	306	715	616	825	279	250
5	280	324	1850	294	555	520	298	2840	461	510	703	190
6	138	8590	3020	325	482	673	277	2730	341	296	441	160
7	124	4220	2340	364	395	1030	271	1740	307	212	427	140
8	932	4810	1460	449	374	2560	248	1520	425	193	453	120
9	2580	5560	1210	2520	363	5350	237	2960	850	194	472	110
10	672	4190	1020	1980	357	6460	232	2620	693	203	1070	105
11	353	1160	857	1290	344	5260	229	1620	464	599	519	170
12	256	795	851	965	349	4770	229	1070	366	339	527	165
13	200	565	706	882	373	3160	212	1010	428	253	450	160
14	173	1290	683	809	709	4080	200	1380	371	300	799	130
15	883	1850	686	645	741	3510	186	1170	319	248	1520	135
16	862	1280	595	384	637	2110	181	1070	263	338	561	140
17	597	739	510	608	675	1450	180	922	200	798	382	120
18	441	730	542	1050	722	1160	185	724	186	408	316	120
19	571	678	595	1120	731	922	208	650	200	282	313	120
20	1000	587	540	1270	688	826	213	554	738	206	317	100
21	1190	492	484	972	671	790	195	512	442	176	292	110
22	1150	791	430	843	744	1380	181	423	383	177	233	120
23	1130	1820	350	788	617	1720	167	389	317	155	177	130
24	1110	1810	344	829	495	629	166	1900	259	176	150	125
25	946	1460	511	3390	508	354	189	2980	202	389	142	120
26	1720	1100	759	12600	614	388	3180	1360	197	590	180	100
27	1470	891	716	2410	567	404	7150	893	269	375	171	90
28	1150	871	653	1250	692	431	3140	584	198	308	187	80
29	891	2760	558	2970	---	450	1950	574	134	267	271	75
30	309	4790	494	4790	---	435	1240	1230	126	194	491	450
31	263	---	469	4190	---	410	---	1400	---	154	399	---
TOTAL	25165	55047	29989	51474	18110	53977	22523	40055	11702	11194	13184	4808
MEAN	812	1835	967	1660	647	1741	751	1292	390	361	425	160
MAX	2580	8590	3240	12600	2290	6460	7150	2980	850	1320	1520	450
MIN	124	191	344	260	344	354	166	389	126	127	142	75
(*)	-177	-94	-14	+72	-73	+31	+262	+5	-1	-5	+7	-37
MEAN#	635	1741	953	1732	574	1772	1013	1297	389	356	432	123
CFSM#	1.21	3.31	1.81	3.29	1.09	3.37	1.93	2.47	1.74	1.68	1.82	1.23
IN#	1.39	3.69	2.09	3.80	1.14	3.88	2.15	2.84	1.83	1.78	1.95	1.26

CAL YR 1977 TOTAL 282717 MEAN 775 MAX 26400 MIN 74 MEAN# 775 CFSM# 1.47 IN# 19.99
WTR YR 1978 TOTAL 337228 MEAN 924 MAX 12600 MIN 75 MEAN# 922 CFSM# 1.75 IN# 23.79

* Change in contents, equivalent in cubic feet per second, in North Fork Pound River Lake and John W. Flannagan Reservoirs; furnished by Corps of Engineers.

* Adjusted for change in contents.

TENNESSEE RIVER BASIN

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 (122 m) upstream from highway bridge at Riverside, 900 ft (274 m) upstream from Spring Branch, 3.2 mi (5.1 km) downstream from Redstone Branch, 4.0 mi (6.4 km) southeast of Chilhowie, and at mile 97.2 (156.4 km).

DRAINAGE AREA.--76.1 mi² (197.1 km²).

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 (7.2 km) 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 (642.143 m) National Geodetic Vertical Datum of 1929. Nov. 1, 1920, to Nov. 14, 1931, nonrecording gage at site 400 ft (122 m) downstream at same datum.

REMARKS.--Records good. Prior to August 1951, diurnal fluctuation at low flow caused by mill 500 ft (152 m) above station. Several observations 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, 112 ft³/s (3.172 m³/s), 19.99 in/yr (508 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,600 ft³/s (272 m³/s) Nov. 6, 1977, gage height, 10.20 ft (3.109 m), from rating curve extended above 3,700 ft³/s (100 m³/s) on basis of slope-area measurement of peak flow; minimum recorded, 2 ft³/s (0.06 m³/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 (0.23 m³/s) July 19, 1926.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 650 ft³/s (18 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 2	0930	773	21.9	3.82	1.164	Mar. 10	1430	1510	42.8	4.89	1.490
Oct. 26	0800	777	22.0	3.83	1.167	Mar. 14	1900	1300	36.8	4.56	1.390
Nov. 6	1700	*9600	272	10.20	3.109	Apr. 28	0200	905	25.6	3.89	1.186
Jan. 26	0500	2920	82.7	6.52	1.987						

Minimum discharge, 26 ft³/s (0.74 m³/s) Sept. 28-30, gage height, 1.23 ft (0.375 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	107	199	96	159	79	161	309	106	49	45	34
2	453	94	195	91	147	74	142	256	101	69	42	33
3	192	89	179	79	132	74	128	220	113	168	41	33
4	114	95	162	77	121	71	117	200	113	106	58	32
5	84	240	168	77	115	66	112	198	101	82	55	32
6	69	4040	189	79	108	66	106	188	92	71	49	31
7	62	2510	178	77	101	72	101	178	87	66	89	30
8	61	1020	160	79	98	99	98	223	103	61	106	30
9	103	541	152	121	94	156	94	293	112	58	94	29
10	120	365	132	123	91	968	91	274	101	56	77	29
11	96	268	121	156	87	733	89	220	92	60	69	29
12	81	219	116	125	84	539	91	185	87	55	67	30
13	72	183	114	100	85	539	84	246	98	53	58	30
14	70	158	119	92	91	957	79	381	82	53	55	29
15	65	143	135	86	85	871	77	315	75	50	52	29
16	67	134	140	84	82	495	75	290	74	55	49	29
17	72	187	136	96	80	326	74	254	69	58	46	29
18	74	188	139	113	82	243	74	213	66	50	46	28
19	74	170	130	112	87	200	74	180	77	46	50	28
20	70	150	126	112	84	175	80	156	77	45	45	27
21	65	138	121	105	82	168	77	140	71	43	42	27
22	61	129	113	96	79	168	74	126	67	42	39	27
23	58	128	106	91	75	149	72	117	63	41	38	27
24	55	119	103	92	75	134	71	149	61	45	37	27
25	55	119	117	315	74	171	79	156	58	52	41	28
26	536	144	112	1830	80	357	309	138	56	49	53	27
27	345	148	110	685	77	454	504	125	55	48	41	27
28	233	143	106	385	80	319	768	125	53	94	38	27
29	189	143	101	262	---	249	623	138	50	58	36	26
30	151	164	99	210	---	210	393	125	49	49	36	26
31	125	---	98	183	---	183	---	117	---	46	35	---
TOTAL	3908	12276	4176	6229	2635	9365	4917	6235	2409	1878	1629	870
MEAN	126	409	135	201	94.1	302	164	201	80.3	60.6	52.5	29.0
MAX	536	4040	199	1830	159	968	768	381	113	168	106	34
MIN	36	89	98	77	74	66	71	117	49	41	35	26
CFSM	1.66	5.38	1.77	2.64	1.24	3.97	2.16	2.64	1.06	.80	.69	.38
IN.	1.91	6.00	2.04	3.04	1.29	4.58	2.40	3.05	1.18	.92	.80	.43

CAL YR 1977 TOTAL 51292 MEAN 141 MAX 4040 MIN 29 CFSM 1.85 IN 25.07
WTR YR 1978 TOTAL 56527 MEAN 155 MAX 4040 MIN 26 CFSM 2.04 IN 27.63

03473000 SOUTH FORK HOLSTON RIVER AT VESTAL, VA

LOCATION.--Lat 36°39'06", long 81°50'39", Washington County, Hydrologic Unit 06010102, on right bank 500 ft (152 m) upstream from bridge on U.S. Highway 58 at Vestal, 0.7 mi (1.1 km) downstream from Laurel Creek, 3.2 mi (5.1 km) northwest of Damascus, 4.9 mi (7.9 km) upstream from Middle Fork, and at mile 77.2 (124.2 km).

DRAINAGE AREA.--301 mi² (780 km²).

WATER-DISCHARGE RECORDS

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 1306: 1932-33(M).

GAGE.--Water-stage recorder. Datum of gage is 1,792.30 ft (546.293 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Some diurnal fluctuation caused by powerplant above station. Tennessee Valley Authority gage-height radio transmitter at station, receiver and recorder at Elizabethton, TN.

AVERAGE DISCHARGE.--47 years, 477 ft³/s (13.51 m³/s), 21.52 in/yr (547 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft³/s (623 m³/s) Apr. 5, 1977, gage height, 17.11 ft (5.215 m), from rating curve extended above 10,000 ft³/s (280 m³/s) on basis of slope-area measurement of peak flow; minimum, 30 ft³/s (0.85 m³/s) Oct. 14, 1941, Dec. 24, 1943, gage height, 2.16 ft (0.658 m); minimum daily, 60 ft³/s (1.70 m³/s) Sept. 18, 1954, Sept. 26, 27, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 2	0700	*17900 507	15.82 4.822	Mar. 10	2300	6660 189	10.26 3.127
Nov. 6	2200	15200 430	14.78 4.505	Mar. 15	0800	3350 94.9	7.53 2.295
Jan. 26	0530	8820 250	11.70 3.566				

Minimum discharge, 83 ft³/s (2.35 m³/s) Sept. 12, gage height, 2.32 ft (0.707 m); minimum daily, 91 ft³/s (2.58 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	638	505	1070	425	649	279	715	996	435	205	180	142
2	8150	446	980	397	611	250	639	819	395	253	172	130
3	2010	410	848	321	530	265	569	715	406	830	172	128
4	1060	396	781	301	473	255	520	680	414	549	247	125
5	716	476	1320	318	451	211	486	756	357	380	329	120
6	545	7380	1390	335	403	241	449	715	332	315	220	118
7	440	7230	1090	326	347	261	426	685	336	279	395	113
8	430	3110	878	335	330	340	399	888	680	261	506	111
9	902	1940	808	556	320	1280	383	1220	1060	244	350	109
10	968	1470	652	471	305	3100	368	1140	906	230	292	107
11	740	1140	564	440	297	4240	368	906	675	276	261	118
12	585	915	524	410	287	2290	395	761	535	233	308	99
13	479	756	502	390	306	1950	350	990	685	218	259	109
14	439	647	568	370	397	2100	325	1470	525	220	292	107
15	379	575	677	350	317	3030	312	1670	440	215	279	105
16	453	544	678	344	302	1990	305	1520	391	247	225	109
17	496	1110	644	399	305	1430	305	1240	357	239	205	111
18	480	1060	676	518	315	1100	305	990	325	207	192	105
19	477	886	608	475	348	882	319	803	380	192	202	99
20	442	738	577	519	321	766	346	685	418	185	233	97
21	393	641	544	461	303	695	319	603	336	177	192	95
22	353	588	493	417	291	710	302	530	322	172	172	95
23	320	587	440	381	256	675	285	482	285	167	162	105
24	293	536	437	388	285	608	279	935	264	182	155	103
25	281	518	694	1690	265	761	329	1070	247	256	150	103
26	1780	615	655	6390	302	1490	1000	830	241	233	190	97
27	1520	587	596	2560	256	1650	1620	685	236	220	165	94
28	1110	583	538	1570	284	1330	1890	603	225	312	150	94
29	888	627	469	1130	---	1100	1520	649	215	225	145	94
30	716	716	468	896	---	935	1160	554	207	195	142	91
31	588	---	444	756	---	809	---	510	---	185	137	---
TOTAL	29071	37732	21613	24639	9856	37023	16988	27100	12630	8102	7079	3233
MEAN	938	1258	697	795	352	1194	566	874	421	261	228	108
MAX	8150	7380	1390	6390	649	4240	1890	1670	1060	830	506	142
MIN	281	396	437	301	256	211	279	482	207	167	137	91
CFSM	3.12	4.18	2.32	2.64	1.17	3.97	1.88	2.90	1.40	.87	.76	.36
IN.	3.59	4.66	2.67	3.05	1.22	4.58	2.10	3.35	1.56	1.00	.87	.40

CAL YR 1977 TOTAL 231868 MEAN 635 MAX 12800 MIN 128 CFSM 2.11 IN 28.66
WTR YR 1978 TOTAL 235066 MEAN 644 MAX 8150 MIN 91 CFSM 2.14 IN 29.05

TENNESSEE RIVER BASIN

03473000 SOUTH FORK HOLSTON RIVER AT VESTAL, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1952, 1968 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1949 to September 1950, October 1967 to September 1973.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT 12...	1100	590	--	9.0	51	11	14	4.0	2.5	1.4	49	4.9
NOV 15...	1315	570	140	6.5	61	6	16	5.1	3.0	1.5	67	6.1
JAN 11...	1300	440	130	.0	60	10	16	4.9	3.3	1.2	61	7.3
FEB 14...	1120	415	140	2.0	58	1	15	5.0	3.7	1.5	69	8.0
APR 06...	1000	450	125	13.5	55	1	14	4.8	2.8	1.3	65	5.7
MAY 18...	1445	968	70	14.5	36	0	9.1	3.1	2.7	1.5	46	5.9
JUL 06...	0930	318	153	18.5	77	11	20	6.5	1.5	2.8	80	4.0
AUG 25...	1145	150	200	20.0	93	11	24	8.0	7.7	1.6	100	14

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 12...	3.3	.1	6.1	67	63	.48	2.1	.00	.48	.00	.00	30
NOV 15...	2.6	.0	6.8	72	78	.86	3.8	.02	.88	.00	.00	10
JAN 11...	2.9	.0	6.3	68	75	.66	2.9	.03	.69	.00	.00	10
FEB 14...	3.5	.1	5.7	77	80	.81	3.6	.04	.85	.02	.06	70
APR 06...	2.4	.1	4.2	66	69	.43	1.9	.01	.44	.00	.00	20
MAY 18...	2.0	.0	5.2	65	54	.33	1.5	.01	.34	.00	.00	10
JUL 06...	1.4	.1	5.5	76	84	.59	2.6	.01	.60	.02	.06	30
AUG 25...	2.3	.1	4.8	111	113	.29	1.3	.01	.30	.00	.00	0

LOCATION.--Lat 36°48'26", long 81°37'20", Smyth County, Hydrologic Unit 06010102, on right bank at downstream side of bridge on U.S. Highway 11 at Sevenmile Ford, 0.3 mi (0.5 km) upstream from Meade Creek, 3.3 mi (5.3 km) downstream from Walker Creek, and at mile 32.1 (51.6 km).

REVISED RECORDS.--WSP 973: 1942(m). WSP 1306: 1947(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,960.00 ft (597.408 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Prior to April 1977, some diurnal fluctuation at low flow caused by mill 9 mi (14 km) above station. Since May 1936, flow occasionally regulated by the filling or draining of Hungry Mother Lake on Hungry Mother Creek, capacity, about 1,600 acre-ft (1.97 hm³). Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s (411 m³/s) Nov. 6, 1977; maximum gage height, 10.75 ft (3.277 m) Jan. 29, 1957; minimum discharge, 9 ft³/s (0.25 m³/s) Sept. 26, 1944; minimum daily, 20 ft³/s (0.57 m³/s) Sept. 26, 1944, Aug. 2, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2.000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge		Gage height		Date	Time	Discharge		Gage height	
		(ft ³ /s)	(m ³ /s)	(ft)	(m)			(ft ³ /s)	(m ³ /s)	(ft)	(m)
Nov. 6	1740	*14500	411	10.33	3.149	Jan. 26	0530	3680	104	4.41	1.344
Nov. 7	1000	4860	138	5.13	1.564	Mar. 10	1330	3200	90.6	4.16	1.268

Minimum discharge, 36 ft³/s (1.02 m³/s) Sept. 29, 30, gage height, 1.09 ft (0.332 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	100	599	148	220	126	230	307	115	63	103	49
2	599	93	442	139	214	118	204	247	107	76	74	47
3	200	90	351	122	202	119	182	213	108	190	61	45
4	112	94	304	117	194	115	169	225	107	106	92	44
5	88	169	318	116	181	107	161	337	95	83	125	43
6	75	5480	328	118	171	112	152	310	90	73	90	43
7	68	3410	291	117	160	145	147	267	89	67	210	42
8	75	1030	265	122	145	222	138	566	111	65	188	41
9	245	607	261	159	135	340	132	665	122	64	123	41
10	195	436	229	121	122	1650	128	442	98	63	96	40
11	125	334	208	110	117	970	128	319	87	65	125	42
12	100	268	197	100	114	732	132	267	82	61	244	40
13	85	224	191	98	118	657	110	369	97	59	123	41
14	88	191	204	96	127	829	103	490	81	61	93	39
15	82	172	229	94	117	724	100	395	75	59	79	40
16	92	169	219	94	116	467	97	350	73	65	69	41
17	109	549	212	118	116	346	99	301	72	73	64	40
18	100	414	226	135	120	279	98	255	69	59	60	39
19	92	294	214	129	136	240	100	220	116	56	61	38
20	83	238	202	134	125	213	110	193	152	54	60	38
21	75	212	172	128	122	195	105	177	96	52	55	38
22	69	224	159	121	117	190	99	161	85	51	51	43
23	65	227	145	118	110	171	95	150	82	50	50	40
24	64	213	146	121	110	159	92	183	74	99	48	40
25	64	224	269	463	111	323	120	172	69	91	67	47
26	480	309	258	1960	133	688	994	150	74	74	78	40
27	321	286	217	780	121	745	1320	137	69	68	57	39
28	215	271	186	481	125	479	858	135	66	85	51	39
29	163	540	167	326	---	365	513	140	63	66	50	38
30	132	520	160	280	---	301	366	131	63	59	57	38
31	112	---	154	240	---	261	---	134	---	56	52	---
TOTAL	4473	17388	7523	7404	3899	12388	7282	8408	2687	2213	2756	1235
MEAN	144	580	243	239	139	400	243	271	89.6	71.4	88.9	41.2
MAX	599	5480	599	1960	220	1650	1320	665	152	190	244	49
MIN	64	90	145	94	110	107	92	131	63	50	48	38
CFSM	1.09	4.39	1.84	1.81	1.05	3.03	1.84	2.05	.68	.54	.67	.31
IN.	1.26	4.90	2.12	2.09	1.10	3.49	2.05	2.37	.76	.62	.78	.35
CAL YR 1977	TOTAL	79778	MEAN 219	MAX	5990	MIN 40	CFSM 1.66	IN 22.48				
WTR YR 1978	TOTAL	77656	MEAN 213	MAX	5480	MIN 38	CFSM 1.61	IN 21.88				

TENNESSEE RIVER BASIN

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 (15 m) downstream from bridge on State Highway 803, 0.9 mi (1.4 km) upstream from Cedar Creek, 4.1 mi (6.6 km) southeast of Meadowview, and at mile 13.2 (21.2 km).

DRAINAGE AREA.--211 mi² (546 km²).

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 (554.803 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for period of no gage-height record, Mar. 7 to May 19, which are fair. Prior to 1954, flow regulated by powerplant 0.9 mi (1.4 km) above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--24 years, 237 ft³/s (6.712 m³/s), 15.25 in/yr (387 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft³/s (354 m³/s) Nov. 7, 1977, gage height, 13.41 ft (4.087 m); minimum, 6 ft³/s (0.17 m³/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 (0.20 m³/s) Nov. 19, 1950.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 29, 1957, reached a stage of 11.8 ft (3.60 m), from floodmark, discharge, 10,000 ft³/s (283 m³/s), and flood of Dec. 10, 1972, reached a stage of 11.0 ft (3.35 m), from floodmark, discharge, 8,540 ft³/s (242 m³/s), from information by Tennessee Valley Authority. Flood of Mar. 30, 1975, reached a stage of 10.37 ft (3.161 m), discharge, 7,410 ft³/s (210 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (57 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0045	*12500 354	13.41 4.087	Mar. 10	---	Unknown	Unknown
Jan. 26	1130	4250 120	8.21 2.502	Apr. 27	---	Unknown	Unknown

Minimum discharge, 58 ft³/s (1.64 m³/s) Sept. 30, gage height, 1.92 ft (0.585 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	161	783	241	409	216	370	480	216	113	113	82
2	977	150	643	230	384	209	330	390	194	141	129	80
3	392	144	513	209	345	209	290	340	194	450	103	78
4	222	141	452	198	315	201	270	350	198	260	110	75
5	170	156	460	195	301	187	260	520	178	178	191	71
6	146	2920	474	197	282	191	240	480	168	156	144	71
7	131	6410	441	197	256	240	230	420	165	141	265	71
8	132	1860	397	200	252	350	220	880	205	132	335	69
9	314	957	390	242	243	580	210	1020	235	127	205	69
10	340	682	351	202	239	2600	200	700	191	124	162	67
11	228	535	316	196	227	1600	200	500	168	124	150	69
12	183	435	300	180	220	1200	210	430	156	118	340	69
13	158	367	292	170	224	1050	180	560	175	113	209	67
14	152	318	297	165	252	1300	170	760	159	116	156	67
15	145	286	328	160	227	1150	160	620	144	116	132	65
16	147	272	309	160	220	780	155	550	141	124	118	67
17	165	703	301	193	216	560	160	480	138	129	108	67
18	161	658	310	212	220	440	160	410	132	113	103	67
19	151	466	304	212	239	380	160	350	150	105	110	65
20	140	380	295	222	227	340	175	320	274	100	113	64
21	130	329	268	214	220	310	165	291	178	98	98	64
22	122	329	250	204	216	300	160	265	156	95	91	68
23	116	334	233	199	201	270	150	243	147	93	88	64
24	112	314	232	200	198	250	145	409	135	129	86	64
25	114	302	347	518	198	500	230	370	129	138	84	74
26	442	395	387	2950	224	1100	1500	291	129	135	127	66
27	463	390	331	1380	209	1200	2000	260	132	113	100	62
28	305	370	294	854	212	920	1400	239	121	129	88	62
29	239	659	266	655	---	600	840	252	116	118	84	60
30	202	749	257	539	---	480	580	239	113	103	84	60
31	176	---	249	470	---	420	---	252	---	95	88	---
TOTAL	6966	22172	11070	12164	6976	20033	11520	13671	4937	4226	4314	2044
MEAN	225	739	357	392	249	646	384	441	165	136	139	68.1
MAX	977	6410	783	2950	409	2600	2000	1020	274	450	340	82
MIN	91	141	232	160	198	187	145	239	113	93	84	60
CFSM	1.07	3.50	1.69	1.86	1.18	3.06	1.82	2.09	.78	.65	.66	.32
IN.	1.23	3.91	1.95	2.14	1.23	3.53	2.03	2.41	.87	.75	.76	.36

CAL YR 1977 TOTAL 114753 MEAN 314 MAX 8220 MIN 76 CFSM 1.49 IN 20.23
WTR YR 1978 TOTAL 120093 MEAN 329 MAX 6410 MIN 60 CFSM 1.56 IN 21.17

TENNESSEE RIVER BASIN

325

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 (15 m) upstream from bridge on State Highway 1405, 75 ft (23 m) downstream from Goose Creek, 0.9 mi (1.4 km) downstream from Clear Creek, 3.7 mi (6.0 km) northeast of Bristol, VA post office, and at mile 20.6 (33.1 km).

DRAINAGE AREA.--27.7 mi² (71.7 km²).

PERIOD OF RECORD.--July 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,780.98 ft (542.843 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Small diurnal fluctuation at low flow caused by withdrawal of water, which is returned to stream 600 ft (183 m) above station, for car-washing operation. Since September 1965, some regulation at high flow by flood-control reservoirs, capacity, 7,600 acre-ft (9.37 hm³). Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--21 years, 35.9 ft³/s (1.017 m³/s), 17.60 in/yr (447 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,600 ft³/s (45.3 m³/s) Oct. 2, 1977, gage height, 9.94 ft (3.030 m), from rating curve extended above 390 ft³/s (11 m³/s) on basis of slope-area measurement of peak flow; minimum, 3.4 ft³/s (0.096 m³/s) Dec. 30, 1963; minimum daily, 7.4 ft³/s (0.21 m³/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 (3.7 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,600 ft³/s (45.3 m³/s) Oct. 2, gage height, 9.94 ft (3.030 m), from rating curve extended as explained above; minimum, 8.0 ft³/s (0.23 m³/s) Sept. 25; minimum gage height, 2.70 ft (0.823 m) Sept. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	23	60	38	71	41	40	37	34	26	19	17
2	343	22	53	37	69	40	39	35	34	28	19	16
3	54	21	49	35	64	41	38	34	34	32	19	16
4	39	21	50	34	61	38	37	41	33	30	24	17
5	33	20	58	33	59	37	37	49	32	27	22	15
6	30	113	56	34	56	40	36	41	31	25	20	15
7	28	180	50	33	53	43	36	40	36	25	24	15
8	30	130	48	39	51	59	34	46	63	25	22	15
9	51	87	50	52	50	66	34	49	55	24	20	15
10	35	77	44	42	49	142	34	43	41	26	19	15
11	30	64	42	38	47	104	35	41	37	29	19	18
12	30	57	40	38	45	89	34	39	35	24	19	12
13	27	52	39	38	48	80	32	48	35	25	18	12
14	26	48	43	37	54	84	31	44	33	25	18	12
15	24	45	42	36	47	79	30	47	33	24	18	13
16	26	49	39	34	47	78	30	44	33	24	18	13
17	24	91	38	35	47	76	30	42	32	24	18	13
18	22	61	40	37	46	74	33	41	31	22	17	12
19	21	52	38	37	46	72	33	40	38	22	17	12
20	20	48	38	46	44	71	31	38	37	22	16	12
21	19	46	37	42	44	65	30	37	32	22	16	16
22	19	46	36	40	42	51	29	36	33	21	16	27
23	18	46	35	39	40	49	28	37	32	21	16	11
24	18	42	38	41	39	47	29	58	30	36	15	10
25	24	41	57	111	42	47	40	46	30	28	16	12
26	71	40	46	349	42	48	53	40	29	24	18	11
27	36	38	42	172	40	48	51	37	28	22	16	11
28	31	41	40	131	40	46	42	40	27	21	16	12
29	28	76	38	112	---	44	38	38	26	19	17	12
30	26	64	38	87	---	42	38	36	26	18	17	11
31	24	---	38	78	---	41	---	35	---	19	17	---
TOTAL	1277	1741	1362	1955	1383	1882	1062	1279	1030	760	566	418
MEAN	41.2	58.0	43.9	63.1	49.4	60.7	35.4	41.3	34.3	24.5	18.3	13.9
MAX	343	180	60	349	71	142	53	58	63	36	24	27
MIN	18	20	35	33	39	37	28	34	26	18	15	10
CFSM	1.49	2.09	1.59	2.28	1.78	2.19	1.28	1.49	1.24	.88	.66	.50
IN.	1.71	2.34	1.83	2.63	1.86	2.53	1.43	1.72	1.38	1.02	.76	.56

CAL YR 1977 TOTAL 15003 MEAN 41.1 MAX 575 MIN 12 CFSM 1.48 IN 20.15
WTR YR 1978 TOTAL 14715 MEAN 40.3 MAX 349 MIN 10 CFSM 1.46 IN 19.76

TENNESSEE RIVER BASIN

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 (0.8 km) upstream from Cedar Branch bridge, 1.5 mi (2.4 km) northeast of Saltville, 7.8 mi (12.6 km) downstream from Laurel Creek, and at mile 84.6 (136.1 km).

DRAINAGE AREA.--222 mi² (575 km²).

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 (519.236 m) National Geodetic Vertical Datum of 1929. June 11, 1907, to Nov. 12, 1908, nonrecording gage on highway bridge 2.1 mi (3.4 km) downstream at different datum. Nov. 2, 1920, to May 23, 1934, nonrecording gage on highway bridge 0.5 mi (0.8 km) downstream at datum 7.74 ft (2.359 m) lower.

REMARKS.--Records good. Several observations 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, 302 ft³/s (8.553 m³/s), 18.47 in/yr (469 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft³/s (467 m³/s) Jan. 29, 1957, gage height, 13.20 ft (4.023 m), from rating curve extended above 13,000 ft³/s (370 m³/s) on basis of slope-area measurement of peak flow; maximum gage height, 13.57 ft (4.136 m) Nov. 6, 1977; minimum discharge, 1.0 ft³/s (0.028 m³/s) Oct. 15, 16, 1947, gage height, 0.13 ft (0.040 m), flow retarded by mine cave-in; minimum daily, 2.0 ft³/s (0.057 m³/s) Oct. 15, 1947.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,000 ft³/s (85 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 6	2315	*15900 450	13.57 4.136	Mar. 10	1830	4890 138	6.49 1.978
Jan. 26	1000	9010 255	9.34 2.847	Apr. 27	0530	4240 120	5.99 1.826

Minimum discharge, 39 ft³/s (1.10 m³/s) Sept. 30, gage height, 0.51 ft (0.155 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	244	1400	259	335	197	377	507	298	86	122	67
2	1780	214	952	242	320	176	333	394	241	95	106	61
3	630	195	672	194	277	184	294	331	215	194	74	59
4	333	185	526	176	247	174	266	334	206	210	98	56
5	227	207	513	170	242	147	250	488	175	138	168	54
6	173	4670	568	175	220	164	233	508	156	105	133	52
7	142	8480	499	180	193	222	221	436	154	90	192	50
8	141	3730	421	194	180	354	206	1070	247	82	388	48
9	899	1760	414	307	170	718	195	1560	374	82	245	47
10	871	1110	343	244	160	3240	186	994	317	76	223	46
11	450	805	290	235	155	2540	186	642	243	74	194	47
12	308	585	272	220	150	1560	210	489	200	85	615	49
13	234	456	272	210	172	1420	188	499	218	74	328	47
14	214	374	278	205	203	1800	171	697	180	81	229	45
15	190	324	362	200	187	2020	162	612	151	80	170	44
16	196	292	353	195	179	1110	156	530	136	86	134	45
17	314	696	332	210	176	733	159	458	125	98	110	45
18	300	795	333	246	182	529	168	394	115	79	97	44
19	290	547	319	232	208	428	177	342	108	69	90	43
20	266	425	299	248	194	380	184	302	117	64	86	42
21	226	358	291	234	185	360	185	275	115	60	77	41
22	192	338	269	211	178	353	174	251	117	58	70	49
23	165	385	241	197	146	314	164	229	111	55	66	57
24	146	407	238	204	175	286	160	282	96	64	63	50
25	136	385	475	1050	163	500	187	354	88	116	65	50
26	1190	390	530	6500	207	1130	1340	317	89	107	123	46
27	1050	350	423	2070	188	1600	3300	281	92	83	88	44
28	629	341	358	985	200	974	1660	262	83	100	73	42
29	452	1330	309	622	---	675	963	300	76	95	70	41
30	352	1930	290	474	---	523	658	370	72	73	78	41
31	289	---	277	387	---	432	---	413	---	65	74	---
TOTAL	12852	32308	13119	17276	5592	25243	13113	14921	4915	2824	4649	1452
MEAN	415	1077	423	557	200	814	437	481	164	91.1	150	48.4
MAX	1780	8480	1400	6500	335	3240	3300	1560	374	210	615	67
MIN	67	185	238	170	146	147	156	229	72	55	63	41
CFSM	1.87	4.85	1.91	2.51	.90	3.67	1.97	2.17	.74	.41	.68	.22
IN.	2.15	5.41	2.20	2.89	.94	4.23	2.20	2.50	.82	.47	.78	.24

CAL YR 1977 TOTAL 145275 MEAN 398 MAX 10900 MIN 42 CFSM 1.79 IN 24.34
WTR YR 1978 TOTAL 148264 MEAN 406 MAX 8480 MIN 41 CFSM 1.83 IN 24.84

03490000 NORTH FORK HOLSTON RIVER NEAR GATE CITY, VA

LOCATION.--Lat 36°36'31", long 82°34'05", Scott County, Hydrologic Unit 06010101, on left bank 75 ft (23 m) upstream from bridge on U.S. Highway 23, 1.6 mi (2.6 km) downstream from Big Moccasin Creek, 2.1 mi (3.4 km) southeast of Gate City, and at mile 8.8 (14.2 km).

DRAINAGE AREA.--672 mi² (1,740 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1931 to current year. Monthly discharge only for some periods, published in WSP 1306.

REVISED RECORDS.--WSP 783: 1932(M). WSP 823: Drainage area. WSP 1276: 1932-34.

GAGE.--Water-stage recorder. Datum of gage is 1,197.56 ft (365.016 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Prior to 1957, diurnal fluctuation at low flow caused by one or more mills above station. Tennessee Valley Authority gage-height radio transmitter at station, receiver and recorder at Jefferson City, TN.

AVERAGE DISCHARGE.--47 years, 905 ft³/s (25.63 m³/s), 18.29 in/yr (465 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,000 ft³/s (1,160 m³/s) Apr. 5, 1977, gage height, 19.79 ft (6.032 m), from rating curve extended above 31,000 ft³/s (880 m³/s) on basis of slope-area measurement of peak flow; minimum, 36 ft³/s (1.02 m³/s) Sept. 16, 17, 1964; minimum gage height, 1.00 ft (0.305 m) Jan. 6, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 7,000 ft³/s (200 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 2	1000	8350	236	8.34	2.542	Mar. 11	0345	9800	278	9.03	2.752
Nov. 7	2115	22100	626	13.91	4.240	Apr. 27	2200	7370	209	7.85	2.393
Jan. 26	1600	*23600	668	14.42	4.395						

Minimum discharge, 117 ft³/s (3.31 m³/s) Oct. 1, gage height, 1.49 ft (0.454 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	452	747	4330	914	1600	753	1100	1590	1170	278	330	242
2	6190	640	3040	851	1300	781	998	1270	886	294	274	226
3	3250	567	2250	760	1140	788	900	1040	725	420	298	238
4	1330	508	1770	634	1040	753	816	991	648	1030	662	209
5	836	460	1980	557	970	683	725	1670	585	767	1130	184
6	596	4010	2550	592	920	697	662	2000	494	515	893	177
7	452	14500	2160	592	860	872	613	1610	468	390	753	167
8	402	13000	1670	655	820	1280	564	1590	823	330	1180	160
9	1560	5800	1470	2180	760	2730	536	3420	1380	286	1220	154
10	2820	3370	1330	1880	720	6070	501	3330	1150	278	963	163
11	1700	2530	1100	1230	690	8750	508	2260	907	1340	781	767
12	1060	1870	956	1000	660	4630	543	1640	718	613	711	278
13	769	1420	907	840	648	3530	550	1510	669	402	991	216
14	600	1160	893	760	732	3370	487	1860	802	355	886	181
15	505	984	1120	720	823	4710	438	1870	627	325	711	184
16	508	914	1280	700	760	3490	408	1770	501	325	550	170
17	520	2510	1170	683	739	2430	402	1560	438	366	444	160
18	690	2860	1100	928	760	1790	408	1300	390	360	378	154
19	671	2070	1080	1010	802	1420	456	1110	426	315	335	148
20	620	1490	1030	1960	830	1240	487	963	1040	274	320	143
21	574	1180	1040	1720	781	1150	480	858	823	242	310	137
22	492	1040	970	1280	732	1110	456	767	606	226	286	134
23	419	1020	872	1100	620	1050	444	690	578	216	258	163
24	365	1110	823	1030	599	963	420	1200	474	378	238	170
25	376	1110	2090	2730	613	893	487	4190	378	474	230	163
26	3000	1060	2600	19800	725	1100	2070	1920	325	501	234	148
27	3290	1010	1950	12000	774	2190	5650	1290	306	529	310	145
28	2080	956	1460	4240	732	2510	5070	1040	302	683	340	137
29	1480	3050	1150	3150	---	1840	2970	907	278	558	270	129
30	1130	6210	1050	2600	---	1460	2040	914	262	414	242	124
31	901	---	977	2000	---	1240	---	1070	---	345	246	---
TOTAL	39638	79156	48168	71096	23150	66273	32189	49200	19179	13821	16774	5771
MEAN	1279	2639	1554	2293	827	2138	1073	1587	639	446	541	192
MAX	6190	14500	4330	19800	1600	8750	5650	4190	1380	1340	1220	767
MIN	365	460	823	557	599	683	402	690	262	216	230	124
CFSM	1.90	3.93	2.31	3.41	1.23	3.18	1.60	2.36	.95	.66	.81	.29
IN.	2.19	4.38	2.67	3.94	1.28	3.67	1.78	2.72	1.06	.77	.93	.32
CAL YR 1977 TOTAL	431286			1182		36700	MIN 124	CFSM 1.76				IN 23.87
WTR YR 1978 TOTAL	464415			1272		19800	MIN 124	CFSM 1.89				IN 25.71

TENNESSEE RIVER BASIN

03490000 NORTH FORK HOLSTON RIVER NEAR GATE CITY, VA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1968 to February 1978 (discontinued).

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1949 to September 1951, October 1967 to February 1978 (discontinued).

INSTRUMENTATION.--Continuous ethyl alcohol-actuated thermograph.

REMARKS.--Temperature records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 31.5°C July 20, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR PERIOD OCTOBER 1977 TO FEBRUARY 1978.--

WATER TEMPERATURES: Maximum, 19.5°C Oct. 1; minimum, 0.5°C on many days during winter period.

TEMPERATURE (DEG° C) OF WATER, OCTOBER 1977 TO FEBRUARY 1978

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY	
1	19.5	18.5	14.0	12.0	10.5	9.5	4.5	3.5	1.0	.5
2	18.5	17.0	14.0	12.0	10.0	9.0	4.0	3.0	1.5	1.0
3	18.0	16.0	15.5	13.5	9.0	8.5	3.0	1.5	2.0	.5
4	16.0	15.0	16.0	15.0	9.0	8.5	1.5	.5	3.0	1.0
5	16.0	14.5	17.0	16.0	10.0	9.0	2.0	.5	2.0	1.5
6	15.5	14.0	17.0	15.5	10.0	7.0	3.0	2.0	1.5	.5
7	15.5	14.0	15.5	14.5	7.0	4.0	5.0	3.0	.5	.5
8	15.0	14.5	14.5	14.5	4.0	3.5	6.0	5.0	1.0	.5
9	15.5	14.5	15.0	14.5	4.0	2.0	5.5	2.0	1.5	.5
10	14.5	13.5	14.5	12.0	2.0	2.0	3.0	.5	1.5	.5
11	14.0	13.0	12.0	9.5	2.0	1.0	.5	.5	1.5	.5
12	14.0	13.0	9.5	8.0	1.5	.5	.5	.5	3.0	.5
13	13.5	11.5	8.0	6.0	3.0	1.0	1.0	.5	3.5	1.5
14	11.5	10.5	6.5	5.5	4.5	3.0	1.0	.5	3.5	2.0
15	11.5	9.5	6.5	5.5	5.5	4.5	1.0	.5	4.0	3.0
16	11.5	10.5	8.0	6.0	6.5	5.0	.5	.5	4.0	3.0
17	11.0	9.5	10.0	8.0	6.5	5.5	1.0	.5	4.5	3.5
18	11.0	9.0	9.5	8.5	7.0	6.5	1.5	1.0	4.5	3.5
19	10.5	9.5	8.5	8.0	7.0	6.5	1.0	1.0	4.0	3.5
20	11.0	9.0	9.0	8.0	8.0	6.5	1.0	1.0	4.5	2.0
21	11.0	9.0	9.5	8.5	7.0	5.5	2.0	1.0	3.5	2.0
22	11.5	9.5	10.0	9.5	5.5	4.0	2.0	1.5	3.0	1.0
23	12.0	10.5	11.5	10.0	4.0	3.0	2.0	1.0	1.5	.5
24	13.0	11.0	12.0	11.5	5.0	4.0	3.0	1.5	3.0	.5
25	13.0	12.0	11.5	9.5	6.5	5.0	5.0	3.0	4.5	1.5
26	13.5	13.0	9.5	6.0	5.5	3.5	5.0	3.5	5.0	3.0
27	13.5	13.0	6.0	4.0	3.5	2.0	3.5	2.0	5.5	3.0
28	14.0	13.5	5.0	4.0	2.0	1.0	2.0	1.0	4.5	4.0
29	14.5	13.5	8.5	5.0	1.0	.5	1.0	.5	---	---
30	14.5	13.5	9.5	8.5	1.5	.5	1.0	.5	---	---
31	14.0	13.0	---	---	3.5	1.5	1.0	.5	---	---
MONTH	19.5	9.0	17.0	4.0	10.5	.5	6.0	.5	5.5	.5

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 (1.6 km) southeast of Richlands, 1.6 mi (2.6 km) downstream from Middle Creek, 2.2 mi (3.5 km) upstream from Big Creek, and at mile 321.0 (516.5 km).

DRAINAGE AREA.--139 mi² (360 km²).

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 (586.460 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 6, 1950, nonrecording gage at bridge 1.1 mi (1.8 km) downstream at datum 6.53 ft (1.990 m) lower.

REMARKS.--Records good. Prior to October 1970, diurnal fluctuation at low flow caused by mill 1.7 mi (2.7 km) above station. Several observations of water temperature were made during the year. Water-quality records for some prior periods have been collected at this location.

AVERAGE DISCHARGE.--33 years, 193 ft³/s (5.466 m³/s), 18.86 in/yr (479 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s (273 m³/s) Jan. 29, 1957, gage height, 19.3 ft (5.88 m), from floodmark, from rating curve extended above 4,900 ft³/s (140 m³/s) on basis of contracted-opening measurement of peak flow; minimum, 3.2 ft³/s (0.091 m³/s) Sept. 8, 1955; minimum daily, 8.8 ft³/s (0.25 m³/s) July 6, Sept. 10, 16, 1964; minimum gage height, 0.45 ft (0.137 m) July 2, 3, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1901, reached a stage of 21.3 ft (6.49 m), present site and datum, from floodmark, discharge, 11,500 ft³/s (326 m³/s), from report by Tennessee Valley Authority. Flood of Feb. 18, 1944, reached a stage of 13.7 ft (4.18 m), present site and datum, from floodmark, discharge, 5,500 ft³/s (156 m³/s), from report by Tennessee Valley Authority.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s (45 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 6	2200	5370 152	12.95 3.947	Mar. 10	1530	2800 79.3	8.31 2.533
Nov. 29	2200	1620 45.9	5.94 1.811	Apr. 27	0200	2710 76.7	8.12 2.475
Jan. 26	Unknown	*7370 209	16.10 4.907				

Minimum discharge, 26 ft³/s (0.74 m³/s) Sept. 29, 30; minimum gage height, 0.82 ft (0.250 m) Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	140	686	126	238	152	201	352	201	60	121	71
2	635	125	454	119	223	133	180	270	156	67	102	58
3	234	114	343	90	193	139	162	221	136	287	84	54
4	132	106	286	88	172	131	148	221	129	151	101	52
5	98	112	402	88	164	118	142	279	110	100	147	50
6	80	2580	518	92	151	129	133	252	99	78	123	48
7	71	3090	374	98	138	185	127	229	94	66	189	46
8	75	1840	295	135	125	376	117	434	114	61	229	44
9	250	984	285	447	115	934	112	759	130	72	181	43
10	500	678	245	323	110	2310	110	524	102	65	226	43
11	250	604	212	256	110	1510	110	361	89	134	231	52
12	159	445	196	237	105	1080	121	283	82	90	446	48
13	124	330	189	212	123	1050	108	335	102	75	338	47
14	124	264	208	193	247	1190	97	436	85	73	212	46
15	110	223	249	169	197	1080	93	380	73	67	160	44
16	178	204	236	151	179	670	91	353	69	203	124	39
17	425	736	220	164	178	478	97	314	67	127	106	36
18	287	567	211	258	176	354	100	268	65	86	93	35
19	217	362	192	247	190	291	109	229	65	68	123	33
20	172	275	176	248	174	252	109	199	76	59	99	32
21	139	232	165	213	162	228	104	180	68	55	83	32
22	119	256	148	191	146	216	101	159	67	53	73	36
23	105	375	134	177	136	195	94	144	62	54	67	34
24	96	397	134	181	137	179	100	201	57	430	63	34
25	94	337	175	430	138	183	129	210	54	560	77	36
26	447	314	161	4500	176	214	1040	164	62	408	115	35
27	373	277	146	1700	154	284	1970	140	58	229	74	31
28	310	284	141	750	152	298	1260	132	52	400	64	30
29	249	922	138	490	---	281	669	150	51	204	58	28
30	203	1150	127	357	---	252	473	207	55	139	60	27
31	167	---	128	285	---	223	---	343	---	112	58	---
TOTAL	6556	18323	7574	13015	4509	15115	8407	8729	2630	4633	4227	1244
MEAN	211	611	244	420	161	488	280	282	87.7	149	136	41.5
MAX	635	3090	686	4500	247	2310	1970	759	201	560	446	71
MIN	71	106	127	88	105	118	91	132	51	53	58	27
CFSM	1.52	4.40	1.76	3.02	1.16	3.51	2.01	2.03	.63	1.07	.98	.30
IN.	1.75	4.90	2.03	3.48	1.21	4.05	2.25	2.34	.70	1.24	1.13	.33

CAL YR 1977	TOTAL	84263	MEAN	231	MAX	5250	MIN	31	CFSM	1.66	IN	22.55
WTR YR 1978	TOTAL	94962	MEAN	260	MAX	4500	MIN	27	CFSM	1.87	IN	25.41

TENNESSEE RIVER BASIN

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 (152 m) upstream from highway bridge at Cleveland, 0.5 mi (0.8 km) downstream from Muddy Hollow, 2.3 mi (3.7 km) downstream from Weaver Creek, 4.4 mi (7.1 km) downstream from Thompson Creek, and at mile 271.6 (437.0 km).

DRAINAGE AREA.--528 mi² (1,368 km²).

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 (457.273 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1931, nonrecording gage on highway bridge 500 ft (152 m) downstream at datum 1.0 ft (0.30 m) lower.

REMARKS.--Records good. Several observations 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, 712 ft³/s (20.16 m³/s), 18.31 in/yr (465 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,500 ft³/s (977 m³/s) Apr. 5, 1977, gage height, 26.40 ft (8.047 m), from rating curve extended above 26,000 ft³/s (740 m³/s) on basis of contracted-opening measurement at gage height 24.40 ft (7.437 m); minimum, 35 ft³/s (0.99 m³/s) Sept. 28, 1964; minimum gage height, 0.96 ft (0.293 m) Feb. 10, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (140 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 7	0715	13200 374	15.98 4.871	Mar. 10	2330	6950 197	10.95 3.338
Jan. 26	1010	*21200 600	20.87 6.361	Apr. 27	1430	5450 154	9.45 2.880

Minimum discharge, 95 ft³/s (2.69 m³/s) Oct. 1, gage height, 1.49 ft (0.454 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	132	545	2780	530	1030	577	682	1240	721	174	650	276
2	2150	463	1940	500	953	535	617	960	540	260	490	249
3	1450	409	1490	431	823	524	559	787	468	549	355	282
4	690	369	1230	358	716	511	510	732	440	694	476	231
5	437	344	1400	356	675	445	478	1280	391	457	1380	205
6	327	5090	2060	373	629	458	451	1170	345	317	827	186
7	273	11100	1660	381	539	620	422	960	320	252	785	171
8	246	5780	1310	419	500	1070	396	1080	393	221	1140	162
9	1160	3450	1190	1900	470	2590	372	1960	559	220	945	155
10	2000	2520	1060	1580	450	5330	358	1870	468	213	1040	151
11	1020	2260	882	1190	430	5420	355	1380	370	223	938	285
12	670	1750	794	1000	423	3130	384	1080	323	290	1340	261
13	490	1350	747	946	444	2840	367	1030	805	237	1220	195
14	397	1050	749	825	757	2860	330	1340	538	265	939	178
15	358	879	951	715	826	3360	304	1340	390	243	702	167
16	409	780	940	567	682	2340	292	1360	322	556	532	162
17	955	2100	874	625	671	1760	293	1230	290	821	423	153
18	1020	2280	830	1020	664	1380	306	1050	268	473	359	145
19	770	1530	767	1110	689	1130	341	887	257	315	361	138
20	620	1170	701	1450	667	976	350	760	655	246	400	133
21	495	947	665	1230	620	877	341	673	396	209	355	127
22	409	903	607	1020	578	829	322	601	327	187	287	128
23	348	1030	543	881	489	757	308	536	300	173	253	130
24	309	1250	513	838	506	685	293	729	265	514	229	138
25	309	1170	953	2540	491	636	336	1070	235	1910	219	139
26	1810	1080	1010	18600	601	716	1320	831	242	2100	769	134
27	1710	958	803	8460	603	855	4720	654	249	995	450	127
28	1280	959	686	3220	575	952	3190	558	219	1280	296	122
29	1020	2600	624	2100	---	903	2130	524	195	991	288	117
30	812	4220	590	1540	---	833	1530	583	182	591	369	113
31	660	---	553	1270	---	748	---	758	---	444	281	---
TOTAL	24736	60336	31902	57975	17501	46647	22657	31013	11473	16420	19098	5160
MEAN	798	2011	1029	1870	625	1505	755	1000	382	530	616	172
MAX	2150	11100	2780	18600	1030	5420	4720	1960	805	2100	1380	285
MIN	132	344	513	356	423	445	292	524	182	173	219	113
CFSM	1.51	3.81	1.95	3.54	1.18	2.85	1.43	1.89	1.72	1.00	1.17	0.33
IN.	1.74	4.25	2.25	4.08	1.23	3.29	1.60	2.19	1.16	1.35	1.35	0.36

CAL YR 1977 TOTAL 303745 MEAN 832 MAX 27800 MIN 99 CFSM 1.58 IN 21.40
WTR YR 1978 TOTAL 344918 MEAN 945 MAX 18600 MIN 113 CFSM 1.79 IN 24.30

TENNESSEE RIVER BASIN

331

03524500 GUEST RIVER AT COEBURN, VA

LOCATION.--Lat 36°55'45", long 82°27'23", Wise County, Hydrologic Unit 06010205, at State Highway 72, 1.0 mi (1.6 km) southeast of Coeburn, 1.4 mi (2.3 km) upstream from Jaybird Branch, 1.8 mi (2.9 km) downstream from Pine Camp Creek, and 6 mi (10 km) upstream from mouth.

DRAINAGE AREA.--87.3 mi² (226.1 km²).

PERIOD OF RECORD.--Water years 1950, April to September 1978.

WATER QUALITY DATA, APRIL TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
APR												
04...	1140	92	290	7.5	100	63	23	11	11	2.0	48	77
04...	1430	92	280	8.0	100	58	22	11	10	2.0	52	77
MAY												
23...	1230	79	290	7.8	110	--	25	12	13	2.2	--	76
JUL												
06...	1315	53	300	7.7	150	91	34	16	13	3.0	--	100
AUG												
09...	1300	52	300	7.5	160	92	39	16	14	3.2	--	110
SEP												
27...	1345	11	530	8.2	200	97	47	21	27	4.3	130	130

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
APR												
04...	5.7	.1	5.1	190	159	--	--	--	--	--	--	10
04...	5.3	.1	5.3	167	158	.39	.04	.24	.32	.07	.04	--
MAY												
23...	4.7	.1	5.7	198	--	.50	.04	--	.65	.06	.01	--
JUL												
06...	7.7	.1	7.1	256	217	.80	.05	.41	.32	.16	.03	--
AUG												
09...	8.8	.0	6.3	281	240	1.1	.05	.87	.43	.10	.02	--
SEP												
27...	13	.2	5.0	339	315	--	--	--	--	--	--	0

TENNESSEE RIVER BASIN

03527000 CLINCH RIVER AT SPEERS FERRY, VA

LOCATION.--Lat 36°38'55", long 82°45'02", Scott County, Hydrologic Unit 06010205, on right bank 200 ft (61 m) downstream from bridge on U.S. Highway 58, 0.5 mi (0.8 km) downstream from Copper Creek, 0.8 mi (1.3 km) northwest of Speers Ferry, 1.8 mi (2.9 km) south of Clinchport, and at mile 211.0 (339.5 km).

DRAINAGE AREA.--1,126 mi² (2,916 km²).

PERIOD OF RECORD.--Water years 1931, 1950, 1952, 1965-67, 1969-76, April to September 1978.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: October 1949 to September 1950, November 1964 to September 1967.

WATER QUALITY DATA, APRIL TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
APR 05...	1210	1060	240	7.8	110	22	30	9.0	4.8	1.7	110	26
MAY 24...	1245	1880	240	8.1	120	16	32	8.7	4.2	1.6	--	23
JUL 07...	1110	643	260	7.8	140	38	36	11	5.5	2.2	--	38
AUG 10...	1145	1450	245	7.6	150	32	41	12	4.5	2.1	--	26

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 CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)
APR 05...	4.2	.0	.9	145	131	.24	.03	.29	.47	.01	.01
MAY 24...	3.4	.0	2.3	151	--	.31	.03	--	.15	.05	.01
JUL 07...	4.7	.1	5.7	199	162	.95	.01	.40	.34	.05	.02
AUG 10...	3.9	.1	7.0	204	169	.84	.01	.38	.00	.06	.03

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 (0.6 km) upstream from Grissom Island, 4.6 mi (7.4 km) downstream from Big War Creek, 10 mi (16 km) east of Tazewell, and at mile 159.8 (257.1 km).

DRAINAGE AREA.--1,474 mi² (3,818 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1918 to current year. Prior to April 1919 monthly discharge only, published in WSP 1306. 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. 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 (323.30 m) National Geodetic Vertical Datum of 1929. Apr. 1, 1919, to Sept. 30, 1927, nonrecording gage on railroad bridge 23.3 mi (37.5 km) downstream at datum 102.7 ft (31.30 m) lower. Aug. 8, 1927, to July 16, 1941, water-stage recorder at site 8.0 mi (12.9 km) downstream at datum 47.2 ft (14.39 m) lower. Water-stage recorder at present site and datum since July 29, 1935.

REMARKS.--Records good.

AVERAGE DISCHARGE.--60 years, 2,104 ft³/s (59.59 m³/s), 19.38 in/yr (492 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,100 ft³/s (2,780 m³/s) Apr. 5, 1977, gage height, 29.32 ft (8.937 m), from floodmarks; minimum, 108 ft³/s (3.06 m³/s) Sept. 11, 1925; minimum gage height at present site and datum, 0.33 ft (0.101 m) Sept. 20, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1862 reached a stage of about 24 ft (7.3 m), present site and datum, from information by local resident, discharge, about 66,000 ft³/s (1,870 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 14,000 ft³/s (400 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Nov. 8	0630	19600 555	11.94 3.639	Jan. 27	1630	*33600 952	16.45 5.014
Dec. 1	0230	14000 396	9.74 2.969				

Minimum discharge, 312 ft³/s (8.84 m³/s) Oct. 1, gage height, 0.90 ft (0.274 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	316	1580	13500	2010	4020	1570	1980	3170	1730	550	1110	767
2	3080	1340	9510	1890	3460	1610	1820	2650	1690	608	953	665
3	9720	1170	5860	1730	2770	1690	1670	2170	1510	660	969	600
4	4020	1050	4300	1530	2510	1860	1520	2100	1300	896	1310	623
5	2190	959	5330	1360	2270	1770	1410	4100	1210	1250	1970	623
6	1480	3230	6670	1300	2010	1710	1320	5610	1080	1180	2410	516
7	1030	14300	6650	1340	1820	1880	1260	4040	1000	885	2240	458
8	868	19300	4940	1660	1630	2620	1180	3390	3130	718	1720	421
9	3140	13400	4080	5240	1420	4950	1110	5030	6360	764	1700	396
10	8600	8000	3710	6660	1440	8360	1060	5790	3300	615	1770	381
11	5020	5760	3170	4830	1390	12200	1020	4710	2200	574	1690	724
12	2890	4790	2710	3390	1290	11600	1010	3540	1660	1210	2050	919
13	1930	3740	2410	3000	1260	7400	985	3020	1390	893	2060	840
14	1460	2940	2240	2810	1470	6520	959	3230	1440	716	2150	684
15	1170	2410	2320	2460	1760	7660	905	3400	1670	706	2130	569
16	1010	2080	2550	2120	1980	7490	849	3250	1250	676	1620	492
17	994	3150	2530	1900	1890	5550	806	3040	1040	710	1250	473
18	1120	5750	2470	2340	1900	4200	824	2730	912	1240	996	454
19	1620	5470	2380	2890	1950	3350	876	2390	856	1220	839	422
20	1440	3770	2260	4510	1930	2860	904	2070	876	872	748	394
21	1210	2930	2320	5240	1860	2520	922	1820	1270	683	705	362
22	1030	2690	2210	4220	1750	2320	893	1630	1310	573	691	347
23	899	2880	2010	3390	1620	2120	850	1490	1110	507	680	404
24	804	3310	1860	2980	1460	1960	811	2270	1110	486	588	603
25	762	3420	4510	3680	1410	1830	838	5810	905	619	550	464
26	2270	3140	6980	16900	1410	1960	1170	5050	772	2370	581	413
27	6240	2740	4910	32300	1500	2240	4570	3270	692	3440	583	380
28	4420	2520	3510	31900	1570	2450	8920	2430	686	2660	946	356
29	2950	4690	2750	23000	---	2480	6380	2040	654	1670	764	338
30	2320	11300	2320	8230	---	2350	4230	1850	599	1840	592	322
31	1890	---	2160	5340	---	2150	---	1790	---	1330	543	---
TOTAL	77893	143809	125130	192150	52750	121230	53052	98880	44712	33121	38908	15410
MEAN	2513	4794	4036	6198	1884	3911	1768	3190	1490	1068	1255	514
MAX	9720	19300	13500	32300	4020	12200	8920	5810	6360	3440	2410	919
MIN	316	959	1860	1300	1260	1570	806	1490	599	486	543	322
CFSM	1.71	3.25	2.74	4.21	1.28	2.65	1.20	2.16	1.01	.73	.85	.35
IN.	1.97	3.63	3.16	4.85	1.33	3.06	1.34	2.50	1.13	.84	.98	.39
CAL YR 1977 TOTAL	926982			MEAN 2540	MAX 83300	MIN 294	CFSM 1.72	IN 23.39				
WTR YR 1978 TOTAL	997045			MEAN 2732	MAX 32300	MIN 316	CFSM 1.95	IN 25.16				

TENNESSEE RIVER BASIN

03528000 CLINCH RIVER ABOVE TAZEWELL, TN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-65, 1971 to current year.

PERIOD OF DAILY RECORD. --

WATER TEMPERATURES: October 1962 to September 1965, April 1971 to September 1975.

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 31.0°C June 20, 23, 24, 1964; minimum, 0.0°C many days during winter months of 1963-65.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (LOW LEVEL) (MG/L)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)
OCT 12...	1200	1090	260	7.6	13.7	12	40	9.9	14	<1.0
JAN 06...	1130	1310	285	--	3.0	--	--	--	--	--
18...	1255	2920	250	8.0	2.1	6	5	14.0	2	1.0
FEB 08...	1200	1590	310	--	.5	--	--	--	--	--
APR 18...	1315	826	300	8.2	16.5	7	2	9.3	6	2.2
MAY 12...	1035	3580	255	--	15.5	--	--	--	--	--
JUL 18...	1115	--	300	8.2	25.0	10	30	8.9	9	1.4
AUG 28...	1350	1020	--	--	27.0	--	--	--	--	--

[illegible]

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[illegible]

TENNESSEE RIVER BASIN

03529500 POWELL RIVER AT BIG STONE GAP, VA

LOCATION.--Lat 36°52'08", long 82°46'32", Wise County, Hydrologic Unit 06010206, at U.S. Highway 23 at Big Stone Gap, 1 mi (2 km) upstream from South Fork Powell River, and 2.5 mi (4.0 km) downstream from Pigeon Creek.

DRAINAGE AREA.--112 mi² (290 km²).

PERIOD OF RECORD.--Water years 1950, April to September 1978.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1949 to September 1950.

WATER TEMPERATURES: October 1949 to September 1950.

WATER QUALITY DATA, APRIL TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
APR 05...	0830	143	245	7.2	110	35	26	12	26	2.4	97	94
MAY 23...	1515	149	280	8.8	110	22	21	14	30	2.8	--	96
JUL 06...	1545	76	400	8.4	140	44	33	15	31	3.8	--	110
AUG 09...	1530	65	415	8.1	160	60	36	16	31	3.2	--	110
SEP 26...	1300	22	530	8.1	180	40	42	18	44	3.9	170	130

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, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
APR 05...	2.5	.1	4.4	223	215	.33	.01	.14	.16	.01	.00	--
MAY 23...	2.0	.1	5.3	238	--	.24	.01	--	.12	.01	.01	--
JUL 06...	3.8	.1	6.3	271	263	.53	.13	.74	.95	.03	.02	--
AUG 09...	3.2	.1	6.0	289	263	.62	.01	.29	.05	.04	.01	--
SEP 26...	4.0	.1	5.0	342	331	--	--	--	--	--	--	0

TENNESSEE RIVER BASIN

337

03530500 NORTH FORK POWELL RIVER AT PENNINGTON GAP, VA

LOCATION.--Lat 36°46'26", long 83°01'59", Lee County, Hydrologic Unit 06010206, 0.8 mi (1.3 km) north of town of Pennington Gap, 1.3 mi (2.1 km) downstream from Straight Creek, and 4.5 mi (7.2 km) upstream from Powell River.

DRAINAGE AREA.--70 mi² (181 km²), approximately.

PERIOD OF RECORD.--Water years 1950, April to September 1978.

WATER QUALITY DATA, APRIL TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
APR 05...	1040	68	150	6.8	64	45	15	6.5	7.7	1.5	24	59
MAY 24...	0945	140	200	8.0	76	--	21	5.6	8.0	1.9	--	50
JUL 07...	0915	14	265	8.1	130	85	34	12	14	2.5	--	110
AUG 10...	0900	45	260	7.8	110	80	27	10	8.8	2.2	--	88
SEP 26...	1025	8.0	410	6.9	160	100	42	14	19	2.8	72	140

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, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)
APR 05...	2.1	.0	5.1	117	109	.16	.01	.12	.15	.00	.00	--
MAY 24...	6.3	.1	4.1	160	--	.33	.11	--	.42	.19	.02	--
JUL 07...	3.2	.1	5.3	222	211	.11	.03	.15	.18	.02	.00	--
AUG 10...	2.7	.1	6.7	194	163	.25	.01	.22	.28	.01	.00	--
SEP 26...	3.8	.1	4.3	262	262	--	--	--	--	--	--	20

TENNESSEE RIVER BASIN

03530510 NORTH FORK POWELL RIVER AT U.S. HIGHWAY 58 ALT., AT PENNINGTON GAP, VA

LOCATION.--Lat 36°45'40", long 83°00'51", Lee County, Hydrologic Unit 06010206, at bridge on U.S. Highway Alt. 58, near east town limit of Pennington Gap, 3.6 mi (5.8 km) downstream from Straight Creek, and at mile 2.3 (3.7 km).

DRAINAGE AREA.--80 mi² (207 km²).

PERIOD OF RECORD.--Water years 1973 to February 1978 (discontinued).

WATER QUALITY DATA, OCTOBER 1977 TO FEBRUARY 1978

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CaCO3)	HARDNESS, NONCARBONATE (MG/L AS CaCO3)	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM DIS-SOLVED (MG/L AS Mg)	SODIUM DIS-SOLVED (MG/L AS Na)	POTASSIUM DIS-SOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE DIS-SOLVED (MG/L AS Cl)
OCT 14...	0755	--	8.0	85	53	22	7.4	10	1.9	40	61	2.8
NOV 14...	1215	185	5.0	65	41	16	6.2	9.4	1.7	30	57	2.2
JAN 05...	1300	205	2.0	78	55	19	7.3	9.0	1.4	27	71	1.8
FEB 21...	1315	185	.5	70	51	17	6.6	7.1	1.3	23	61	2.4

DATE	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)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS N)	NITROGEN, NITRATE DIS-SOLVED (MG/L AS NO3)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DIS-SOLVED (MG/L AS P04)	IRON, DIS-SOLVED (UG/L AS FE)
OCT 14...	.1	6.3	146	133	.37	1.6	.00	.37	.00	.00	40
NOV 14...	.0	6.6	99	115	.30	1.3	.00	.30	.00	.00	10
JAN 05...	.1	6.0	130	130	.30	1.3	.00	.30	.00	.00	0
FEB 21...	.1	5.9	116	114	.30	1.3	.00	.30	.00	.00	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 (53 m) downstream from highway bridge, 2 mi (3 km) southeast of Jonesville, 10 mi (16 km) upstream from Wallen Creek, and at mile 143.1 (230.2 km).

DRAINAGE AREA.--319 mi² (826 km²).

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 (383.768 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several observations 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, 543 ft³/s (15.38 m³/s), 23.12 in/yr (587 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft³/s (1,610 m³/s) Apr. 5, 1977, gage height, 44.32 ft (13.509 m), from floodmark, from rating curve extended above 20,000 ft³/s (570 m³/s) on basis of slope-area measurement of peak flow; minimum, 17 ft³/s (0.48 m³/s) Sept. 19, 20, 1954, and as result of storage behind temporary dam Oct. 18, 1961; minimum gage height, 0.68 ft (0.207 m) Oct. 18, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft³/s (140 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 2	1230	*14400 408	22.21 6.770	Nov. 30	0230	5430 154	10.74 3.274
Oct. 9	1530	8580 243	15.58 4.749	Jan. 26	1245	11200 317	19.27 5.873
Nov. 7	0330	9460 268	16.85 5.136				

Minimum discharge, 55 ft³/s (1.56 m³/s) Sept. 30, gage height, 1.39 ft (0.424 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	387	304	3830	477	595	289	448	448	372	126	138	158
2	9890	276	2180	444	555	284	405	381	323	154	163	126
3	2520	256	1420	379	478	296	366	327	339	348	123	102
4	1030	241	1080	331	427	385	338	454	408	262	131	93
5	606	229	1770	328	407	333	321	1830	326	198	791	86
6	441	2020	2370	334	371	320	303	1380	281	156	456	82
7	358	6710	1580	354	321	446	293	894	259	137	311	81
8	337	2980	1140	468	307	1250	272	983	438	124	395	79
9	5470	1990	1030	2910	290	2040	257	2760	1340	329	275	76
10	2940	1630	900	1730	275	2640	248	1790	822	184	213	76
11	1240	1480	722	1040	270	1830	243	1120	522	172	188	331
12	756	1090	631	802	268	1390	243	787	405	232	659	235
13	534	799	575	704	272	1280	229	878	375	155	465	142
14	439	635	560	600	379	2190	215	1180	377	138	327	112
15	382	537	674	509	371	1950	204	1050	290	135	385	115
16	380	481	644	413	332	1320	200	926	260	134	285	141
17	405	990	592	431	343	969	198	752	239	146	211	121
18	341	918	597	785	363	733	204	613	221	139	182	94
19	312	687	555	712	363	609	240	510	207	117	154	84
20	282	565	518	1300	343	532	239	439	195	104	136	77
21	254	509	504	1040	335	479	226	393	195	98	123	74
22	234	1030	457	777	320	446	209	356	195	94	114	73
23	219	2030	415	630	283	401	194	325	183	90	108	69
24	214	1630	406	589	287	373	187	1030	167	119	102	68
25	205	1190	2390	1220	282	454	198	2770	156	497	103	66
26	850	930	2060	8490	296	795	321	1310	148	621	153	64
27	870	718	1230	3670	281	893	1320	812	144	315	187	61
28	585	657	852	1830	277	767	1110	597	146	357	119	58
29	464	2750	646	1210	---	653	680	499	140	252	104	57
30	391	4940	564	888	---	557	516	448	132	178	99	56
31	339	---	515	738	---	491	---	420	---	145	117	---
TOTAL	33675	41202	33407	36133	9691	27395	10427	28462	9605	6256	7317	3057
MEAN	1086	1373	1078	1166	346	884	348	918	320	202	236	102
MAX	9890	6710	3830	8490	595	2640	1320	2770	1340	621	791	331
MIN	205	229	406	328	268	284	187	325	132	90	99	56
CFSM	3.40	4.30	3.38	3.66	1.09	2.77	1.09	2.88	1.00	.63	.74	.32
IN.	3.93	4.80	3.90	4.21	1.13	3.19	1.22	3.32	1.12	.73	.85	.36

CAL YR 1977	TOTAL	265159	MEAN 726	MAX	35000	MIN 69	CFSM 2.28	IN 30.92
WTR YR 1978	TOTAL	246627	MEAN 676	MAX	9890	MIN 56	CFSM 2.12	IN 28.76

TENNESSEE RIVER BASIN

03532000 POWELL RIVER NEAR ARTHUR, TN

LOCATION.--Lat 36°32'30", long 83°37'49", Claiborne County, Hydrologic Unit 06010206, on left bank 500 ft (150 m) upstream from bridge on U.S. Highway 25E, 2.3 mi (3.7 km) east of Arthur, 2.4 mi (3.9 km) downstream from Indian Creek, and at mile 65.4 (105.2 km).

DRAINAGE AREA.--685 mi² (1,774 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1919 to current year. Gage-height records collected at same site December 1892 to August 1893, September 1904 to March 1925 are in reports of the National Weather Service (published as "near Tazewell").

REVISED RECORDS.--WSP 1336: 1920, 1921(M), 1923.

GAGE.--Water-stage recorder. Datum of gage is 1,043.84 ft (318.162 m) Tennessee River Survey datum. Prior to July 23, 1927, nonrecording gage, and July 23, 1927, to Sept. 30, 1970, water-stage recorder, at same site at datum 2.00 ft (0.610 m) higher.

REMARKS.--Records good.

AVERAGE DISCHARGE.--59 years, 1,151 ft³/s (32.60 m³/s), 22.82 in/yr (580 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59,500 ft³/s (1,690 m³/s) Apr. 6, 1977, gage height, 38.96 ft (11.875 m), from floodmark; minimum, 47 ft³/s (1.33 m³/s) Jan. 6, 1940, result of freezeup; minimum daily, 60 ft³/s (1.70 m³/s) Sept. 23, 1955; minimum gage height, 1.32 ft (0.402 m) Sept. 6, 1975, result of dredging.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1826 reached a stage of 29.5 ft (8.99 m), present datum, discharge, 34,000 ft³/s (963 m³/s), and flood of Jan. 29, 1918, reached a stage of 29.2 ft (8.90 m), present datum, discharge, 33,000 ft³/s (935 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 9,000 ft³/s (260 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 3	1430	12100 343'	16.31 4.971	Dec. 1	0100	9020 255	13.50 4.115
Nov. 8	0700	11200 317	15.54 4.737	Jan. 27	1200	*13600 385	17.52 5.340

Minimum discharge, 142 ft³/s (4.02 m³/s), Sept. 30, gage height, 1.47 ft (0.448 m).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	263	695	8250	1170	1680	719	1190	1010	1050	318	303	227
2	371	625	5920	1090	1470	742	1100	896	943	319	273	243
3	9840	578	3740	1020	1340	804	1020	796	857	316	269	280
4	3910	540	2660	918	1200	893	939	876	855	479	342	240
5	1510	510	3290	831	1100	988	883	1670	877	499	479	197
6	1030	1580	3830	801	1030	954	833	2690	757	413	1230	177
7	804	5630	3960	810	964	1010	794	2070	701	349	952	166
8	712	9780	2950	1210	882	1250	753	1780	1270	313	892	155
9	2580	5010	2340	4320	811	2000	718	2950	2160	397	779	150
10	7390	3360	2130	4960	815	3560	678	4050	2240	516	666	148
11	4340	2750	1910	3110	788	4310	659	2720	1500	429	527	206
12	2060	2410	1640	2190	751	3650	639	1900	1150	337	495	290
13	1430	1900	1490	1830	741	2710	621	2190	971	358	697	475
14	1110	1530	1390	1610	932	2670	597	2570	862	340	836	349
15	920	1290	1310	1410	964	3270	560	2490	833	303	675	296
16	816	1150	1320	1220	959	3520	536	2180	700	356	602	253
17	746	1600	1280	1130	921	2570	522	1880	635	320	594	236
18	763	2170	1260	1390	961	2020	561	1580	585	280	449	263
19	698	1870	1280	1750	968	1640	594	1350	549	266	381	246
20	625	1490	1230	2500	940	1430	591	1170	522	253	339	206
21	577	1300	1140	2910	898	1290	587	1050	498	224	296	188
22	529	2140	1100	2320	857	1190	559	947	480	203	269	174
23	488	3390	1020	1860	811	1110	527	882	472	191	246	171
24	454	3730	977	1630	761	1030	501	1520	446	209	233	169
25	474	2990	1680	2290	731	981	509	4860	422	293	221	169
26	1030	2310	3470	7780	763	1260	723	4060	398	543	212	166
27	1320	1900	3090	12200	730	1580	1070	2380	378	826	218	158
28	1470	1600	2130	6180	738	1770	1820	1710	360	552	286	153
29	1110	3440	1660	3460	---	1630	1560	1480	347	511	293	142
30	916	7460	1390	2490	---	1460	1190	1480	339	449	230	142
31	789	---	1260	1990	---	1310	---	1190	---	356	233	---
TOTAL	51075	76728	72097	80380	26506	55321	23834	60377	24157	11518	14517	6435
MEAN	1648	2558	2326	2593	947	1785	794	1948	805	372	468	215
MAX	9840	9780	8250	12200	1680	4310	1820	4860	2240	826	1230	475
MIN	263	510	977	801	730	719	501	796	339	191	212	142
CFSM	2.41	3.73	3.40	3.79	1.38	2.61	1.16	2.84	1.18	.54	.68	.31
IN.	2.77	4.17	3.92	4.37	1.44	3.00	1.29	3.28	1.31	.63	.79	.35

CAL YR 1977	TOTAL	516153	MEAN	1414	MAX	50300	MIN	215	CFSM	2.06	IN	28.03
WTR YR 1978	TOTAL	502945	MEAN	1378	MAX	12200	MIN	142	CFSM	2.01	IN	27.31

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD. --

COOPERATION.--Records furnished by Tennessee Valley Authority.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 29.0°C July 20, 22, 23, 24, 1972; minimum, 0.0°C Jan. 16, 1972, Jan. 13, 1973.

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (JTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, CHEM- ICAL (LOW LEVEL) (MG/L)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)
OCT 03...	1410	12400	180	--	18.0	--	--	--	--	--
11...	1030	419	220	7.8	13.2	12	70	10.2	14	<1.0
JAN 18...	1145	1398	260	8.2	4.0	6	5	13.9	3	<1.0
APR 18...	1110	573	280	7.4	16.5	6	3	9.3	6	2.4
JUL 18...	1130	275	300	--	24.0	--	--	--	--	--
18...	1415	--	320	8.8	27.0	12	14	9.7	6	1.6
AUG 28...	1235	242	--	--	29.5	--	--	--	--	--

[illegible]

03532000 POWELL RIVER NEAR ARTHUR, TN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

[illegible][illegible]

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 those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in the following table. Discharge measurements made at miscellaneous sites are given in a second table.

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 1978							
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, at culvert on State Highway 42, 1.3 mi north of Christian. Datum of gage is 1,622.53 ft National Geodetic Vertical Datum of 1929.	0.49	1967-78	1-26-78	3.92	64
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. Datum of gage is 1,023.05 ft National Geodetic Vertical Datum of 1929.	3.16	1959-69a, 1970-78	11- 7-77	6.26	752
01632970	Crooked Run near Mt. Jackson, Va.	Lat 38°45'44", long 78°41'06", Shenandoah County, at culvert on State Highway 263, 2.3 mi west of Mt. Jackson. Datum of gage is 962.84 ft National Geodetic Vertical Datum of 1929.	6.49	1972-78	8- 7-78	8.90	2,600
01633650	Pughs Run near Woodstock, Va.	Lat 38°55'48", long 78°32'43", Shenandoah County, at culvert on State Highway 623, 4.0 mi northeast of Woodstock. Datum of gage is 1,027.27 ft National Geodetic Vertical Datum of 1929.	3.66	1972-78	1-26-78	4.45	87
01656200	Broad Run near Warrenton, Va.	Lat 38°48'25", long 77°48'47", Fauquier County, at bridge on State Highway 17, 7 mi north of Warrenton.	2.94	1950-78	8-12-78	3.39	35
GREAT WICOMICO RIVER BASIN							
01661600	Great Wicomico River near Horse Head, Va.	Lat 37°53'15", long 76°27'00", Northumberland County, at culvert on State Highway 604, 1.7 mi west of Horse Head.	6.98	1969-78	8- 1-78	5.84	910
RAPPAHANNOCK RIVER BASIN							
01665050	Pony Mountain Branch near Culpeper, Va.	Lat 38°27'04", long 77°57'24", Culpeper County, at culvert on State Highway 3, 2.7 mi southeast of Culpeper.	.30	1958-69a, 1970-78	6-27-78	2.72	118
01668300	Farmers Hall Creek near Champlain, Va.	Lat 38°00'05", long 76°58'40", Essex County, at culvert on U.S. Highway 17, 1.2 mi southeast of Champlain. Datum of gage is 42.10 ft National Geodetic Vertical Datum of 1929.	2.18	1966-78	1-26-78	5.23	89

a Records furnished by U.S. Department of Agriculture, Soil Conservation Service.

Annual maximum discharge at crest-stage partial-record stations during water year 1978--Continued

Annual maximum discharge at crest-stage partial-record stations during water year 1978					Annual Maximum		
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Date	Gage height (ft)	Dis-charge (ft ³ /s)
PIANKATANK RIVER BASIN							
01669800	My Ladys Swamp near Saluda, Va.	Lat 37°34'34", long 76°31'30", Middlesex County, at culvert on State Highway 629, 4.4 mi southeast of Saluda. Datum of gage is 4.16 ft National Geodetic Vertical Datum of 1929.	4.81	1969-78	4-27-78	5.65	196
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, 4.6 mi north-west of Ferncliff. Datum of gage is 424.22 ft National Geodetic Vertical Datum of 1929.	.61	1960-68a, 1969-78	10-26-77	6.17	300
01671650	Waldrop Creek near Louisa, Va.	Lat 38°00'08", long 78°04'22", Louisa County, at culvert on State Highway 632, 4.2 mi southwest of Louisa. Datum of gage is 361.41 ft National Geodetic Vertical Datum of 1929.	2.85	1969-78	10-26-77	7.20	380
01671750	Harris Creek near Trevilians, Va.	Lat 38°01'02", long 78°03'06", Louisa County, at culvert on State Highway 632, 2.7 mi southeast of Trevilians.	3.31	1969-78	10-26-77	5.90	535
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.	16.8	1950-69, 1972-78	1-26-78	5.07	207
01674700	Aylett Creek at Aylett, Va.	Lat 37°47'05", long 77°06'23", King William County, at culvert on U.S. Highway 360 at Aylett. Datum of gage is 26.72 ft National Geodetic Vertical Datum of 1929.	6.17	1969-78	4-27-78	4.06	(*)
JAMES RIVER BASIN							
02012950	Sweet Springs Creek tributary at Sweet Chalybeate, Va.	Lat 37°39'25", long 80°14'10", Alleghany County, at culvert on State Highway 311, 0.9 mi north of Sweet Chalybeate. Datum of gage is 1,926.94 ft National Geodetic Vertical Datum of 1929.	.66	1966-75, 1978	10- 8-77	4.41	46
02015600	Cowpasture River near Head Waters, Va.	Lat 38°19'30", long 79°26'14", Augusta County, at bridge on U.S. Highway 250, 1.2 mi west of Head Waters. Datum of gage is 1,985.65 ft National Geodetic Vertical Datum of 1929.	11.3	1949-78	1-26-78	4.87	662
02017300	Craig Creek at New Castle, Va.	Lat 37°30'06", long 80°06'18", Craig County, at bridge on State Highway 616, at New Castle. Datum of gage is 1,245.69 ft National Geodetic Vertical Datum of 1929.	112	1967-78	4-26-78	14.35	9,870
02017700	Craig Creek tributary near New Castle, Va.	Lat 37°33'21", long 79°59'52", Craig County, at culvert on State Highway 606, 7.1 mi northeast of New Castle.	2.05	1968-78	4-26-78	5.90	212
02018800	North Fork near Fincastle, Va.	Lat 37°32'07", long 79°56'03", Botetourt County, at culvert on State Highway 606, 3.9 mi northwest of Fincastle. Datum of gage is 1,248.65 ft National Geodetic Vertical Datum of 1929.	4.17	1968-78	1-26-78	6.25	485

* Discharge not determined.

a Records furnished by U.S. Department of Agriculture, Soil Conservation Service.

Annual maximum discharge at crest-stage partial-record stations during water year 1978--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							
02020100	Renick Run near Buchanan, Va.	Lat 37°35'27", long 79°38'04", Botetourt County, at culvert on Frontage Road of Interstate Highway 81, 4.8 mi northeast of Buchanan. Datum of gage is 1,261.85 ft National Geodetic Vertical Datum of 1929.	2.06	1967-78	1-26-78	5.15	362
02021700	Cedar Grove Branch near Rockbridge Baths, Va.	Lat 37°53'00", long 79°23'10", Rockbridge County, at culvert on State Highway 39, 1.8 mi southeast of Rockbridge Baths. Datum of gage is 1,041.22 ft National Geodetic Vertical Datum of 1929.	12.3	1967-78	1-26-78	9.50	700
02023300	South River near Steeles Tavern, Va.	Lat 37°55'50", long 79°09'55", Augusta County, at bridge on State Highway 608, 3 mi east of Steeles Tavern.	15.7	1951-78	1-26-78	5.67	1,950
02027700	Buffalo River tributary near Amherst, Va.	Lat 37°33'45", long 78°57'35", Amherst County, at culvert on U.S. Highway 60, 5.2 mi southeast of Amherst. Datum of gage is 583.66 ft National Geodetic Vertical Datum of 1929.	.46	1966-78	3-26-78	3.50	35
02028800	Ballinger Creek at Esmont, Va.	Lat 37°49'39", long 78°36'32", Albemarle County, at bridge on State Highway 6, at Esmont.	5.42	1967-78	1-26-78	12.09	868
02028900	Miller Creek near Scottsville, Va.	Lat 37°48'30", long 78°30'46", Albemarle County, at bridge on State Highway 6, 1.5 mi west of Scottsville. Datum of gage is 309.87 ft National Geodetic Vertical Datum of 1929.	6.60	1967-78	1-26-78	10.11	(*)
02030800	Stockton Creek near Afton, Va.	Lat 38°01'48", long 78°48'30", Albemarle County, at culvert on State Highway 6, 1.7 mi east of Afton. Datum of gage is 835.27 ft National Geodetic Vertical Datum of 1929.	2.80	1967-78	1-26-78	5.91	210
02030900	Powells Creek near Crozet, Va.	Lat 38°04'50", long 78°43'02", Albemarle County, at bridge on State Highway 684, 1.2 mi northwest of Crozet.	2.32	1967-78	1-26-78	3.19	(*)
02032200	Doyles River near Whitehall, Va.	Lat 38°12'10", long 78°40'17", Albemarle County, at bridge on State Highway 810, 5.9 mi north of Whitehall. Datum of gage is 928.08 ft National Geodetic Vertical Datum of 1929.	6.70	1967-78	1-26-78	12.09	(*)
02032300	Muddy Run near Stanardsville, Va.	Lat 38°14'05", long 78°37'02", Albemarle County, at bridge on State Highway 810, 11 mi southwest of Stanardsville. Datum of gage is 756.79 ft National Geodetic Vertical Datum of 1929.	3.36	1967-78	5-13-78	8.33	5,650
02032540	Haneytown Creek near Stanardsville, Va.	Lat 38°16'48", long 78°30'50", Greene County, at bridge on State Highway 810, 4.5 mi west of Stanardsville. Datum of gage is 616.34 ft National Geodetic Vertical Datum of 1929.	4.45	1967-78	1-26-78	12.81	565
02032550	Lynch River at Nortonville, Va.	Lat 38°14'16", long 78°32'32", Albemarle County, at bridge on State Highway 810, 7 mi southwest of Stanardsville. Datum of gage is 591.70 ft National Geodetic Vertical Datum of 1929.	13.6	1967-78	5-13-78	16.16	16,000

* Discharge not determined.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1978--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							
02037800	Falling Creek near Midlothian, Va.	Lat 37°27'15", long 77°35'20", Chesterfield County, at bridge on State Highway 653, 4 mi southeast of Midlothian. Datum of gage is 170.06 ft National Geodetic Vertical Datum of 1929.	18.1	1951-78	3-10-78	5.60	520
02040500	Flat Creek near Amelia, Va.	Lat 37°23'27", long 78°03'45", Amelia County, at bridge on State Highway 681, 6.0 mi northwest of Amelia.	73.0	1946-70, 1972-78	3-11-78	10.13	(*)
02042250	Bailey Branch tributary at Spring Grove, Va.	Lat 37°10'29", long 76°59'13", Surry County, at culvert on State Highway 10, 1.0 mi northwest of Spring Grove. Datum of gage is 61.39 ft National Geodetic Vertical Datum of 1929.	.71	1967-78	10-27-77	5.01	141
02042300	Horsepen Branch at Richmond, Va.	Lat 37°35'45", long 77°30'40", Henrico County, at culvert on U.S. Highway 250 (Broad Street), at Richmond.	1.35	1965-78	8-31-78	4.15	818
02042400	Jordans Branch at Richmond, Va.	Lat 37°35'10", long 77°29'55", Henrico County, at bridge on U.S. Highway 250 (Broad Street), at Richmond.	2.41	1965-78	10-26-77	8.56	(*)
02042780	West Branch Long Hill Swamp near Lightfoot, Va.	Lat 37°18'50", long 77°46'01", James City County, at culvert on State Highway 612, 2.0 mi south of Lightfoot.	2.47	1970-76, 1978	8- 1-78	3.78	102
CHOWAN RIVER BASIN							
02044200	Falls Creek tributary near Victoria, Va.	Lat 37°02'04", long 78°10'26", Lunenburg County, at culvert on State Highway 49, 3.6 mi northeast of Victoria.	.34	1962-78	4-27-78	4.45	74
02046500	Anderson Branch at Sussex, Va.	Lat 36°55'10", long 77°15'45", Sussex County, at bridge on State Highway 40, 1.0 mi east of Sussex. Datum of gage is 58.00 ft National Geodetic Vertical Datum of 1929.	5.35	1949-56*, 1967-78	3-10-78	5.50	154
02050050	Blackwater River tributary near Holland, Va.	Lat 36°38'44", long 76°51'29", Nansemond County, at culvert on State Highway 189, 4.9 mi southwest of Holland. Datum of gage is 29.25 ft National Geodetic Vertical Datum of 1929.	2.76	1967-78	1-20-78	5.61	155
ROANOKE RIVER BASIN							
02057700	Powder Mill Creek at Rocky Mount, Va.	Lat 37°00'26", long 79°52'25", Franklin County, at culvert on U.S. Highway 220 bypass at Rocky Mount.	.64	1967-78	4-27-78	15.10	158
02065100	Snake Creek near Brookneal, Va.	Lat 37°00'42", long 78°57'52", on U.S. Highway 501, 2.1 mi south of Brookneal.	1.68	1967-78	3-10-78	>10.50	(*)
02065300	Right Hand Fork near Appomattox, Va.	Lat 37°16'12", long 78°49'14", Appomattox County, at culvert on State Highway 727, 5.2 mi south of Appomattox.	2.08	1967-78	1-26-78	8.25	318
02067810	Maple Swamp Branch near Meadows of Dan, Va.	Lat 36°44'10", long 80°26'28", Patrick County, at culvert on U.S. Highway 58, 1.8 mi west of Meadows of Dan.	.49	1967-78	1-26-78	4.79	86

* Discharge not determined.

* Operated as a continuous-record gaging station.

> Greater than.

Annual maximum discharge at crest-stage partial-record stations during water year 1978--Continued							
Station No.	Station Name	Location	Drainage area (mi ²)	Period of record	Annual Maximum		
					Date	Gage height (ft)	Dis-charge (ft ³ /s)
ROANOKE RIVER BASIN--Continued							
02075350	Powells Creek near Turbeville, Va.	Lat 36°34'50", long 79°11'20", Halifax County, at culvert on U.S. Highway 58, 8.8 mi south-west of Turbeville. Datum of gage is 383.95 ft National Geodetic Vertical Datum of 1929.	0.28	1958-69a, 1970-78	1-26-78	3.66	150
02076200	Bearskin Creek near Chatham, Va.	Lat 36°50'30", long 79°29'05", Pittsylvania County, at culvert on State Highway 57, 4.5 mi west of Chatham.	4.06	1967-78	1-26-78	8.10	820
02076700	Blacks Creek near Mt. Airy, Va.	Lat 36°56'40", long 79°09'56", Pittsylvania County, at culvert on State Highway 40, 1.5 mi east of Mt. Airy.	3.44	1966-78	1-26-78	7.50	575
KANAWHA RIVER BASIN							
03165700	Cripple Creek at Cedar Springs, Va.	Lat 36°49'31", long 81°16'45", Wythe County, at bridge on State Highway 749, 0.6 mi southeast of Cedar Springs.	11.3	1967-78	11- 6-77	20.37	1,860
03165800	Sugar Run near Speedwell, Va.	Lat 36°49'45", long 81°10'10", Wythe County, at bridge on State Highway 685, 1.1 mi north of Speedwell.	3.57	1967-78	8-11-78	14.54	(*)
03167300	Mira Fork tributary near Dugspur, Va.	Lat 36°50'16", long 80°35'47", Carroll County, at culvert on U.S. Highway 221, 2.2 mi northeast of Dugspur. Datum of gage is 2,602.96 ft National Geodetic Vertical Datum of 1929.	.62	1967-78	10-25-77	4.55	108
03167700	Beaverdam Creek at Hillsville, Va.	Lat 36°46'05", long 80°43'33", Carroll County, at culvert on State Highway 1009, 0.2 mi east of Hillsville corporation limits. Datum of gage is 2,373.04 ft National Geodetic Vertical Datum of 1929.	4.75	1968-78	1-26-78	5.51	472
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.	4.77	1957-69a, 1970-78	4-26-78	2.17	114
03171500	New River at Eggleston, Va.	Lat 37°17'22", long 80°37'01", Giles County, on left bank 50 ft downstream from highway bridge at Eggleston. Datum of gage is 1,615.59 ft National Geodetic Vertical Datum of 1929.	2,941	1915-76*, 1977-78	11- 7-77	25.59	99,000
03171800	Helveys Mill Creek tributary at Point Pleasant, Va.	Lat 37°07'24", long 81°01'16", Bland County, at culvert on State Highway 42, 0.2 mi west of Point Pleasant.	.38	1957-78	4-26-78		(*)
TENNESSEE RIVER BASIN							
03471200	South Fork Holston River at Teas, Va.	Lat 36°46'22", long 81°27'05", Smyth County, at bridge on State Highway 601, at Teas. Datum of gage is 2,496.96 ft National Geodetic Vertical Datum of 1929.	31.1	1967-78	11- 6-77	16.38	5,410
03472500	Beaverdam Creek at Damascus, Va.	Lat 36°37'40", long 81°47'28", Washington County, at Damascus, 0.6 mi upstream from mouth. Datum of gage is 1,946.66 ft National Geodetic Vertical Datum of 1929.	56.0	1948-59*, 1960-78	10- 2-77	8.45	b6,000

* Discharge not determined.

* Operated as a continuous-record gaging station.

a Records furnished by the U.S. Department of Agriculture, Soil Conservation Service.

b Approximately.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1978--Continued

Annual Maximum discharge at crest-stage partial-record stations during water year 1978--Continued					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							
03473500	Middle Fork Holston River at Groseclose, Va.	Lat 36°53'19", long 81°20'51", Smyth County, 10 ft downstream from bridge on State Highway 679, at Groseclose. Datum of gage is 2,442.86 ft National Geodetic Vertical Datum of 1929.	7.39	1948-57#, 1958-78	11- 6-77	4.28	203
03473600	Middle Fork Holston River near Groseclose, Va.	Lat 36°53'10", long 81°22'25", Smyth County, at bridge on U.S. Highway 11, 1.5 mi west of Groseclose. Datum of gage is 2,379.26 ft National Geodetic Vertical Datum of 1929.	13.3	1967-75, 1978	11- 6-77	14.84	(*)
03474700	Hutton Creek near Chilhowie, Va.	Lat 36°47'00", long 81°44'05", Washington County, at bridge on U.S. Highway 11, 3.3 mi southwest of Chilhowie.	8.32	1967-78	11- 7-77	11.27	371
03474800	Hall Creek near Glade Spring, Va	Lat 36°45'47", long 81°48'15", Washington County, at bridge on U.S. Highway 11, 2.5 mi south of Glade Spring.	7.90	1967-78	11- 7-77	11.37	(*)
03475600	Cedar Creek near Meadowview, Va.	Lat 36°44'50", long 81°51'20", Washington County, at culvert on U.S. Highway 11, 1.2 mi south of Meadowview. Datum of gage is 2,034.66 ft National Geodetic Vertical Datum of 1929.	3.38	1967-78	4- 4-77 4-26-78	c7.51 6.25	90 42
03475700	Spring Creek near Abingdon, Va.	Lat 36°40'43", long 82°02'29", Washington County, at culvert on U.S. Highway 11, 3.8 mi southwest of Abingdon. Datum of gage is 1,977.54 ft National Geodetic Vertical Datum of 1929.	2.99	1967-78	1-26-78	3.77	(*)
03487800	Lick Creek near Chatham Hill, Va.	Lat 36°57'44", long 81°28'21", Smyth County, 270 ft upstream from bridge on State Highway 42, 2.9 mi east of Chatham Hill. Datum of gage is 2,076.97 ft National Geodetic Vertical Datum of 1929.	25.5	1966-68#, 1969-78	11- 7-77	8.09	2,660
03487850	Possum Jaw Creek near Chatham Hill, Va.	Lat 36°57'41", long 81°27'52", Smyth County, at bridge on State Highway 42, 3.3 mi east of Chatham Hill. Datum of gage is 2,084.80 ft National Geodetic Vertical Datum of 1929.	4.36	1967-78	11- 6-77	10.94	779
03489800	Cove Creek near Shelleys, Va.	Lat 36°39'13", long 82°21'16", Scott County, at bridge on U.S. Highway 58, 2 mi north of Shelleys. Datum of gage is 1,381.53 ft National Geodetic Vertical Datum of 1929.	17.3	1951-78	10- 2-77	7.28	1,670
03489870	Big Moccasin Creek at Collinwood, Va.	Lat 36°44'16", long 82°19'25", Russell County, at bridge on State Highway 612, at Collinwood. Datum of gage is 1,796.34 ft National Geodetic Vertical Datum of 1929.	41.9	1967-68#, 1969-78	1-26-78	6.41	3,270
03524500	Guest River at Coeburn, Va.	Lat 36°55'45", long 82°27'23", Wise County, at bridge on State Highway 72, 1.0 mi southeast of Coeburn. Datum of gage is 1,925.80 ft National Geodetic Vertical Datum of 1929.	87.3	1950-59#, 1960-78	1-26-78	11.11	4,080
03526000	Copper Creek near Gate City, Va.	Lat 36°40'26", long 82°33'57", Scott County, on right bank at upstream side of highway bridge, 2.6 mi northeast of Gate City. Datum of gage is 1,301.95 ft National Geodetic Vertical Datum of 1929.	106	1948-72#, 1973-78	1-26-78	12.36	5,900

* Discharge not determined.

* Operated as a continuous-record gaging station.

c Revised.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Annual maximum discharge at crest-stage partial-record stations during water year 1978--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							
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, 0.8 mi northwest of Speers Ferry. Datum of gage is 1,196.52 ft National Geodetic Vertical Datum of 1929.	1,126	1921-76#, 1977-78	1-26-78	27.23	40,300

* Operated as a continuous-record gaging station.

Measurements at miscellaneous sites

The following list of miscellaneous measurements made at sites throughout the State, except those in the Big Sandy River basin and Tennessee River basin, were furnished by the Virginia State Water Control Board.

Discharge measurements made at miscellaneous sites during water year 1978						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
PARKER CREEK BASIN						
Parker Creek	Atlantic Ocean	Lat 37°44'10", long 75°39'28", Accomack County, 0.4 mi upstream from bridge on U.S. Highway 13, 1.3 mi northeast of Accomac.	-	-	8-22-78	3.8
					8-23-78	3.6
Parker Creek	Atlantic Ocean	Lat 37°44'00", long 75°39'09", Accomack County, at culvert on U.S. Highway 13, 1.3 mi north-east of Accomac.	-	1977	8-22-78	3.1
					8-22-78	3.1
					8-23-78	3.9
Parker Creek	Atlantic Ocean	Lat 37°43'57", long 75°38'57", Accomack County, at culvert on U.S. Highway 13 business, 1.4 mi northeast of Accomac.	-	1977	8-22-78	3.7
					8-23-78	3.7
Parker Creek	Atlantic Ocean	Lat 37°43'53", long 75°38'45", Accomack County, 0.3 mi down-stream from culvert on U.S. Highway 13 business, 1.7 mi northeast of Accomac.	-	-	8-22-78	3.9
					8-23-78	3.9
					8-23-78	3.5
Parker Creek	Atlantic Ocean	Lat 37°43'53", long 75°37'52", Accomack County, at bridge on State Highway 744, 2.2 mi north-east of Accomac.	-	-	8-22-78	5.5
					8-23-78	5.7
North Fork Parker Creek	Parker Creek	Lat 37°44'46", long 75°36'40", Accomack County, at culvert on State Highway 661, 3.7 mi northeast of Accomac.	-	1977	8-22-78	*2.0
					8-23-78	*2.1
MESSONGO CREEK BASIN						
Messongo Creek	Chesapeake Bay	Lat 37°52'34", long 75°35'44", Accomack County, 310 ft upstream from bridge on State Highway 693, 0.2 mi southwest of Hallwood.	-	-	5-31-78	1.0
					6-14-78	*.50
					6-28-78	*.15
Unnamed tributary	Messongo Creek	Lat 37°52'34", long 75°35'33", Accomack County, 0.3 mi upstream from bridge on State Highway 693, at Hallwood.	-	-	6-14-78	.70
					6-28-78	.70
Unnamed tributary	Messongo Creek	Lat 37°52'34", long 75°35'43", Accomack County, 300 ft upstream from bridge on State Highway 693, 0.2 mi southwest of Hallwood.	-	-	5-31-78	.05
					6-14-78	.74
					6-28-78	.72
Messongo Creek	Chesapeake Bay	Lat 37°52'40", long 75°36'22", Accomack County, 0.6 mi down-stream from bridge on State Highway 693, 0.8 mi west of Hallwood.	-	-	5-31-78	1.0
					6-14-78	*1.2
					6-28-78	*.99
Unnamed tributary	Messongo Creek	Lat 37°52'39", long 75°36'23", Accomack County, 0.6 mi down-stream from bridge on State Highway 693, 0.8 mi west of Hallwood.	-	-	5-31-78	1.2
					6-14-78	.26
					6-28-78	.00
Messongo Creek	Chesapeake Bay	Lat 37°52'39", long 75°36'55", Accomack County, 0.2 mi upstream from bridge on State Highway 692, 1.2 mi west of Hallwood.	-	-	5-31-78	2.3
					6-14-78	*1.3
					6-28-78	*.82
Messongo Creek	Chesapeake Bay	Lat 37°52'51", long 75°37'05", Accomack County, at bridge on State Highway 692, 1.4 mi west of Hallwood.	-	-	5-30-78	2.4
Messongo Creek	Chesapeake Bay	Lat 37°52'52", long 75°37'18", Accomack County, at Messongo Bridge on State Highway 692, 1.5 mi west of Hallwood.	-	-	6-14-78	*1.2

* Base flow.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at miscellaneous sites during water year 1978--Continued

Discharge measurements made at miscellaneous sites during water year 1978--Continued					Measurements	
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
NASSAWADOX CREEK BASIN						
Nassawadox Creek	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.	a4.2	1968-77	10-20-77	*0.43
					11-16-77	*.88
					12-14-77	*1.3
					1-26-78	19
					3- 8-78	*7.1
					4-19-78	*9.1
					6- 1-78	*5.7
					7-12-78	*1.3
	8-21-78	*.64				
POTOMAC RIVER BASIN						
Big Spring	Mossy Creek	Lat 38°20'38", long 79°05'18", Augusta County, 100 ft east of State Highway 747, 0.2 mi west of intersection with State Highway 731, at Mt. Solon.	-	1962	4-10-78	*13
Blue Hole Spring	Mossy Creek	Lat 38°20'40", long 79°05'00", Augusta County, 200 ft south of State Highway 747, 0.2 mi east of intersection with State Highway 731, at Mt. Solon.	-	1962	4- 4-78	*3.9
Joseph Spring	Mossy Creek	Lat 38°20'42", long 79°03'57", Augusta County, 0.2 mi south of State Highway 747, 1.0 mi east of intersection with State Highway 731, and 1.0 mi east of Mt. Solon.	-	-	4- 4-78	*15
Mossy Creek Church Spring	Mossy Creek	Lat 38°21'08", long 79°02'57", Augusta County, on east shoulder of State Highway 613, 0.2 mi southeast of intersection with State Highway 747, and 2.0 mi northeast of Mt. Solon.	-	-	4- 4-78	*1.8
Seawright Spring	Naked Creek	Lat 38°16'50", long 78°59'19", Augusta County, 200 ft south of State Highway 746, 0.2 mi west of intersection with State Highway 804, and 2.1 mi north-west of Mount Sidney.	-	1962	4- 4-78	*4.0
Dice's Spring	Naked Creek	Lat 38°18'24", long 78°55'22", Augusta County, on south shoulder of State Highway 694, 0.4 mi west of intersection with State Highway 768, and 0.7 mi northeast of Burketown.	-	1962	4- 4-78	*4.3
Cochran Spring	Middle River	Lat 38°04'23", long 79°14'57", Augusta County, 0.2 mi northeast of State Highway 603, 2.4 mi northwest of intersection with State Highway 252, 2.4 mi north-west of Middlebrook, and at Shipplett's Trout Farm.	-	1962	4-10-78	*3.1
Kennedy Spring	Middle River	Lat 38°10'20", long 79°10'19", Augusta County, 0.2 mi north of State Highway 254, 0.7 mi east of intersection with State Highway 833 at Westview, and 2.0 mi northeast of Swoope.	-	1962	4- 5-78	*3.6
Cave Spring	Middle River	Lat 38°12'23", long 79°10'04", Augusta County, on left bank of Middle River 0.2 mi west of State Highway 836, 1.3 mi south of Churchville.	-	1962	4- 5-78	*5.1
Quick's Spring	Falling Spring Run	Lat 38°12'27", long 79°02'12", Augusta County, 400 ft north-west of State Highway 626, 0.5 mi south of intersection with State Highway 612, and 1.5 mi west of Verona.	-	-	4- 4-78	*3.0

* Base flow.
a Approximately.

Discharge measurements made at miscellaneous sites during water year 1978--Continued

Discharge measurements made at miscellaneous sites during water year 1978--Continued				Measurements	
Stream	Tributary to	Location	Drainage area (mi ²)	previously (water years)	Date Discharge (ft ³ /s)
POTOMAC RIVER BASIN--Continued					
Broadhead Spring No. 2	Broadhead Creek	Lat 37°59'28", long 79°12'20", Augusta County, on right bank of Broadhead Creek, 200 ft south of State Highway 675, 0.1 mi east of intersection with State Highway 674, and 2.5 mi southwest of Greenville.	-	1962	4- 5-78 *1.4
Dodge Spring	Coles Run	Lat 37°59'35", long 79°01'38", Augusta County, 50 ft west of State Highway 660, 1.2 mi south of intersection with State Highway 610, 2.9 mi south of Stuarts Draft, and at Shenandoah Acres.	-	-	4-10-78 *3.4
Dodge Spring	Coles Run	Lat 37°59'47", long 79°01'36", Augusta County, 500 ft east of State Highway 660, 1.0 mi south of intersection with State Highway 610, 2.7 mi south of Stuarts Draft, and at Shenandoah Acres.	-	1962	4-10-78 *4.3
Houff Spring	South River	Lat 38°01'53", long 78°58'02", Augusta County, on left bank of South River, 0.5 mi northwest of State Highway 624, 1.2 mi west of intersection with State Highway 664, and 1.2 mi west of Lyndhurst.	-	1962	4- 6-78 *3.3
Browns Spring	South River	Lat 38°01'49", long 78°58'05", Augusta County, on right bank of South River, 0.5 mi northwest of State Highway 624, 1.2 mi west of intersection with State Highway 664, and 1.2 mi west of Lyndhurst.	-	1962	4- 6-78 *2.3
Hartman's Spring	South River	Lat 38°02'12", long 78°57'22", Augusta County, 0.3 mi south of State Highway 632, 0.7 mi west of intersection with State Highway 664, and 0.7 mi northwest of Lyndhurst.	-	-	4- 4-78 *2.9
Coiner Spring No. 1	South River	Lat 38°03'12", long 78°55'53", Augusta County, 0.2 mi north of State Highway 664, 0.9 mi southwest of city limits of Waynesboro.	-	1962	4- 4-78 *.16
Coiner Spring No. 2	South River	Lat 38°03'14", long 78°55'55", Augusta County, 0.2 mi north of State Highway 664, 0.9 mi southwest of city limits of Waynesboro.	-	1962	4-10-78 *1.2
District Home Spring	South River	Lat 38°05'24", long 78°52'45", Augusta County, at District Home, 400 ft west of State Highway 865, just north of Waynesboro city limits.	-	-	4- 4-78 *5.7
South Fork Shenandoah River	Shenandoah River	Lat 38°24'34", long 78°38'10", Rockingham County, 500 ft upstream from bridge on U.S. Highway 33, 0.9 mi west of Elkton.	-	-	9-19-78 370
South Fork Shenandoah River	Shenandoah River	Lat 38°27'24", long 78°38'13", Rockingham County, 800 ft west of State Highway 856, 1.0 mi west of intersection with U.S. Highway 340, and 2.2 mi southwest of Shenandoah.	-	-	9-19-78 430
South Fork Shenandoah River	Shenandoah River	Lat 38°30'53", long 78°37'15", Page County, 600 ft west of U.S. Highway 340, 2.1 mi north of intersection with State Highway 602, and 2.0 mi north of Shenandoah.	-	-	9-19-78 530

* Base flow.

Discharge measurements made at miscellaneous sites during water year 1978--Continued						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
POTOMAC RIVER BASIN--Continued						
Hawksbill Creek	South Fork Shenandoah River	Lat 38°39'16", long 78°27'47", Page County, at bridge on State Highway 642, 0.8 mi south of Luray.	-	1976	7-25-78 7-26-78	27 24
Hawksbill Creek	South Fork Shenandoah River	Lat 38°40'01", long 78°27'37", Page County, 200 ft upstream from bridge on State Highway 675, at Luray.	-	-	7-25-78 7-26-78	25 23
Unnamed Spring	Hawksbill Creek	Lat 38°40'13", long 78°27'29", Page County, 200 ft west of U.S. Highway 340, 0.2 mi downstream from bridge on State Highway 675, at Luray.	-	-	7-25-78 7-26-78	.26 .25
Hawksbill Creek	South Fork Shenandoah River	Lat 38°40'27", long 78°27'28", Page County, 200 ft downstream from bridge on U.S. Highway 211 Bypass, 0.7 mi north of Luray.	-	-	7-25-78 7-26-78	27 25
Hawksbill Creek	South Fork Shenandoah River	Lat 38°40'55", long 78°27'32", Page County, 600 ft northeast of State Highway 652, 1.2 mi northeast of intersection with State Highway 675, and 1.1 mi north of Luray.	-	-	7-25-78 7-26-78	31 30
Yager Spring	Hawksbill Creek	Lat 38°40'55", long 78°27'33", Page County, 550 ft northeast of State Highway 652, 1.2 mi northeast of intersection with State Highway 675, and 1.1 mi north of Luray.	-	-	7-25-78 7-26-78	6.8 7.0
Hawksbill Creek	South Fork Shenandoah River	Lat 38°41'12", long 78°27'21", Page County, 300 ft west of U.S. Highway 340, 0.5 mi south of intersection with State Highway 648, and 1.5 mi north of Luray.	-	-	7-25-78 7-26-78	35 35
Dry Run	Hawksbill Creek	Lat 38°41'13", long 78°27'19", Page County, 20 ft downstream from bridge on U.S. Highway 340, 1.5 mi north of Luray.	-	-	7-25-78 7-26-78	1.5 .80
Hawksbill Creek	South Fork Shenandoah River	Lat 38°41'48", long 78°27'32", Page County, 0.8 mi east of State Highway 654, 1.5 mi north of intersection with State Highway 675, and 2.2 mi north of Luray.	-	-	7-25-78 7-26-78	44 39
Hawksbill Creek	South Fork Shenandoah River	Lat 38°41'53", long 78°28'11", Page County, 0.2 mi east of State Highway 654, 0.2 mi south of intersection with State Highway 653, and 2.3 mi northwest of Luray.	-	-	7-25-78 7-26-78	39 38
Hawksbill Creek	South Fork Shenandoah River	Lat 38°42'29", long 78°27'24", Page County, at bridge on State Highway 648, 3.0 mi north of Luray.	-	-	7-24-78 7-26-78	32 38
North Fork Shenandoah River	Shenandoah River	Lat 38°37'09", long 78°47'44", Rockingham County, 0.5 mi downstream from bridge on State Highway 617, at Broadway.	-	-	10-18-77	*14
Linville Creek	North Fork Shenandoah River	Lat 38°37'08", long 78°47'41", Rockingham County, 200 ft upstream from mouth, at Broadway.	-	-	10-18-77	*6.5
North Fork Shenandoah River	Shenandoah River	Lat 38°38'15", long 78°46'26", Rockingham County, at bridge on State Highway 42, at Timberville.	-	-	10-18-77	*24
Plains Mill Spring	North Fork Shenandoah River	Lat 38°38'45", long 78°43'18", Rockingham County, 250 ft upstream from mouth, 2.7 mi west of New Market.	-	-	10-18-77	*4.3

* Base flow.

Discharge measurements made at miscellaneous sites during water year 1978--Continued

Discharge measurements made at miscellaneous sites during water year 1978--Continued					Measurements	
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
POTOMAC RIVER BASIN--Continued						
North Fork Shenandoah River	Shenandoah River	Lat 38°38'57", long 78°42'27", Rockingham County, 0.6 mi upstream from bridge on State Highway 617, 1.9 mi west of New Market.	-	-	10-18-77	*38
Happy Creek	Shenandoah River	Lat 38°54'20", long 78°11'10", Warren County, 30 ft upstream from bridge on U.S. Highway 522, 1.0 mi south of Front Royal, and 2.9 mi upstream from mouth.	14.0	1948-77	10-12-77	*1.5
Wancopin Creek	Goose Creek	Lat 38°58'22", long 78°43'37", Loudoun County, 200 ft downstream from bridge on U.S. Highway 50, 0.5 mi northeast of Middleburg.	-	1977	10-25-77 4-11-78	*.04 *2.0
Wancopin Creek	Goose Creek	Lat 38°58'24", long 77°43'34", Loudoun County, 400 ft downstream from bridge on U.S. Highway 50, 0.6 mi northeast of Middleburg.	-	1977	10-25-77 4-11-78	*.17 *2.5
Wancopin Creek	Goose Creek	Lat 38°58'28", long 77°43'33", Loudoun County, 800 ft downstream from bridge on U.S. Highway 50, 0.6 mi northeast of Middleburg.	-	1977	10-25-77 4-11-78	*.07 *1.7
Wancopin Creek	Goose Creek	Lat 38°58'33", long 77°43'32", Loudoun County, 0.2 mi downstream from bridge on U.S. Highway 50, 0.7 mi northeast of Middleburg.	-	1977	10-25-77 4-11-78	*.06 *2.5
Wancopin Creek	Goose Creek	Lat 38°58'38", long 77°43'32", Loudoun County, 0.3 mi downstream from bridge on U.S. Highway 50, 0.8 mi northeast of Middleburg.	-	1977	10-25-77 4-11-78	*.04 *2.0
Wancopin Creek	Goose Creek	Lat 38°58'43", long 77°43'29", Loudoun County, 0.4 mi downstream from bridge on U.S. Highway 50, 0.9 mi northeast of Middleburg.	-	-	4-11-78	*2.5
Wancopin Creek	Goose Creek	Lat 38°58'53", long 77°43'26", Loudoun County, 0.7 mi downstream from bridge on U.S. Highway 50, 1.1 mi northeast of Middleburg.	-	1977	10-25-77 4-11-78	*.05 *2.4
Wancopin Creek	Goose Creek	Lat 38°59'10", long 77°43'28", Loudoun County, 1.0 mi downstream from bridge on U.S. Highway 50, 1.3 mi north of Middleburg.	-	1977	10-25-77 4-10-78 4-11-78	*.10 *3.3 *3.4
Potomac Creek	Potomac River	Lat 38°22'34", long 77°27'05", Stafford County, at bridge on U.S. Highway 1, 4.0 mi southwest of Brooke.	36.0	1971-77	10-12-77 11-17-77 12-12-77 3- 6-78 4- 2-78 8-24-78	*.69 *8.0 14 18 41 *7.8
RAPPAHANNOCK RIVER BASIN						
01662500 Rush River	Thornton River	Lat 38°42'50", long 78°09'05", Rappahannock County, at bridge on old U.S. Highways 211 and 522, 0.5 mi east of Washington, and 1.6 mi upstream from Big Branch.	14.7	1953-77	10-11-77	*.83

* Base flow.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at miscellaneous sites during water year 1978--Continued

Discharge measurements made at miscellaneous sites during water year 1978--Continued					Measurements	
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
YORK RIVER BASIN						
Contrary Creek	North Anna River	Lat 38°02'07", long 77°54'10", Louisa County, 1.7 mi northeast of Mineral, 2.5 mi upstream from bridge on State Highway 522.	1.90	1975-77	10-19-77	*0.04
					11-16-77	*.44
					12-20-77	3.8
					1-12-78	2.7
					2-27-78	1.5
					4-12-78	1.2
					4-27-78	18
					5-16-78	7.7
					6-19-78	*.35
					7-27-78	*.26
9-13-78	1.4					
Contrary Creek	North Anna River	Lat 38°02'29", long 77°53'54", Louisa County, 2.0 mi upstream from bridge on State Highway 522, 2.2 mi northeast of Mineral.	2.34	1975-77	10-19-77	*.06
					11-16-77	*.50
					12-20-77	4.3
					1-12-78	1.8
					2-27-78	1.8
					4-12-78	1.5
					4-27-78	21
					5-16-78	8.9
					6-19-78	*.46
					7-27-78	*.29
9-13-78	1.7					
Contrary Creek	North Anna River	Lat 38°02'52", long 77°53'31", Louisa County, 1.4 mi upstream from bridge on State Highway 522, 2.8 mi northeast of Mineral.	3.72	1975-77	10-19-77	*.23
					11-16-77	*1.0
					12-20-77	7.0
					1-12-78	4.3
					2-27-78	3.1
					4-12-78	*2.7
					4-27-78	29
					5-16-78	18
					6-19-78	*.99
					7-27-78	*.74
9-13-78	*1.8					
Contrary Creek	North Anna River	Lat 38°03'46", long 77°51'39", Louisa County, 1.1 mi downstream from bridge on State Highway 522, 4.5 mi northeast of Mineral.	6.76	1975-77	10-12-77	*.47
					10-27-77	6.3
					11-22-77	11
					12- 7-77	7.5
					12-28-77	*4.8
					4- 4-78	*4.6
					4-18-78	3.9
					5- 9-78	42
					6-19-78	*2.2
					6-26-78	*2.6
7- 6-78	*2.6					
8- 7-78	*4.9					
North Anna River	Pamunkey River	Lat 38°00'46", long 77°42'05", Louisa County, at bridge on State Highway 601, 1.1 mi upstream from Northeast Creek, and 3.9 mi southwest of Partlow.	-	1975-77	11-18-77	53
					12-14-77	41
					3-10-78	1,810
					4-18-78	63
					5-24-78	51
					7-10-78	58
01673500 Totopotomoy Creek	Pamunkey River	Lat 37°40'09", long 77°22'58", Hanover County, at upstream side of bridge on U.S. Highway 301, 1.6 mi northeast of Atlee.	5.89	1949-77	10- 4-77	*.10
					8-22-78	49
JAMES RIVER BASIN						
Augusta Spring	Little Calfpasture River	Lat 38°06'12", long 79°19'09", Augusta County, 50 ft west of State Highway 859, 1,000 ft north of intersection with State Highway 811 at Augusta Springs.	-	-	4- 5-78	*.24
Unnamed tributary	Stockton Creek	Lat 38°02'46", long 78°47'45", Albemarle County, at downstream side of culvert under Chesapeake and Ohio Railroad, 600 ft north of Interstate Highway 64, 1.5 mi west of Greenwood, and 2.3 mi upstream from mouth.	-	-	3- 6-78	*1.2
					4-17-78	*.98
					5-22-78	2.8
					6-29-78	*.45
					7-24-78	*.03
					9- 8-78	*.04

* Base flow.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978--Continued

Discharge measurements made at miscellaneous sites during water year 1978--Continued				Measurements		
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
JAMES RIVER BASIN--Continued						
Appomattox River	James River	Lat 37°17'09", long 77°43'52", Amelia County, 1.4 mi downstream from Winticomack Creek, 3.8 mi south of Winterpock, and at mile 37.7.	-	1977	10-28-78 5-18-78	3,940 2,150
Upper Appomattox Canal	Appomattox River	Lat 37°13'18", long 77°30'12", Dinwiddie County, 300 ft below VEPCO dam, 1.5 mi west of Matoaca, 1.7 mi upstream from State Highway 600, and 5.2 mi west of Petersburg. (See station 02041650).	-	1971-77	11-14-77 3- 6-78 7-11-78	13 6.4 9.6
Bailey Creek	James River	Lat 37°16'23", long 77°17'35", City of Hopewell, 1,000 ft upstream from bridge on State Highway 156, 1.1 mi southeast of intersection with State Highway 36 at Hopewell.	-	-	10- 4-77 1-12-78	*2.9 13
GREAT DISMAL SWAMP BASIN						
02043500 Cypress Swamp	Great Dismal Swamp	Lat 36°37'30", long 76°36'10", Nansemond County, at bridge on State Highway 32, 0.5 mi downstream from Dragon Swamp, 0.8 mi northeast of Cypress Chapel, and 6.5 mi south of Suffolk.	a23	1953-71# 1972-77	11-16-77 12-14-77	29 14
ROANOKE RIVER BASIN						
Pigg River	Roanoke River	Lat 36°59'15", long 79°52'42", Franklin County, 0.9 mi downstream from bridge on U.S. Highway 220 Business, at Rocky Mount.	-	-	9-12-78 9-13-78	*42 56
Pigg River	Roanoke River	Lat 36°59'22", long 79°52'35", Franklin County, 1.1 mi downstream from bridge on U.S. Highway 220 Business, at Rocky Mount.	-	-	9-12-78 9-13-78	*45 58
Pigg River	Roanoke River	Lat 36°59'37", long 79°52'12", Franklin County, at bridge on U.S. Highway 220 bypass, at town limits of Rocky Mount.	-	-	9-11-78 9-12-78 9-13-78	*42 *41 53
Pigg River	Roanoke River	Lat 36°59'45", long 79°51'37", Franklin County, at bridge on State Highway 713, 0.6 mi east of town limits of Rocky Mount.	-	-	9-12-78 9-13-78	*41 58
Ash Camp Creek	Roanoke Creek	Lat 37°02'18", long 78°29'35", Charlotte County, 0.3 mi southwest of State Highway 59, 0.5 mi southwest of Keysville.	-	-	6-21-78 6-26-78 7-12-78 7-13-78	*.46 *.67 *.47 *.03
Ash Camp Creek	Roanoke Creek	Lat 37°02'17", long 78°29'37", Charlotte County, 0.4 mi southwest of State Highway 59, 0.6 mi southwest of Keysville.	-	-	6-21-78 6-26-78 6-26-78 7-12-78 7-13-78	*.88 *.79 *1.0 *.55 *.09
Ash Camp Creek	Roanoke Creek	Lat 37°01'55", long 78°29'59", Charlotte County, 1.0 mi southwest of State Highway 59, 1.1 mi southwest of Keysville.	-	-	6-21-78 6-26-78 7-12-78 7-13-78	*.70 *.84 *.70 *.08
Unnamed tributary	Ash Camp Creek	Lat 37°02'05", long 78°31'25", Charlotte County, 0.9 mi southwest of intersection of State Highways 40 and 728, 10 ft above confluence with Ash Camp Creek, and 2.5 mi southwest of Keysville.	-	-	7-13-78	*.17

* Base flow.

Operated as a continuous-record station.

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Discharge measurements made at miscellaneous sites during water year 1978--Continued

Discharge measurements made at miscellaneous sites during water year 1978--Continued				Measured previously (water years)	Measurements	
Stream	Tributary to	Location	Drainage area (mi ²)		Date	Discharge (ft ³ /s)
ROANOKE RIVER BASIN--Continued						
Ash Camp Creek	Roanoke Creek	Lat 37°02'05", long 78°31'29", Charlotte County, 0.9 mi south-west of intersection of State Highways 40 and 728, 2.5 mi southwest of Keysville.	-	-	7-13-78 7-14-78	*0.75 *.84
Ash Camp Creek	Roanoke Creek	Lat 37°02'04", long 78°31'54", Charlotte County, 0.6 mi south of State Highway 40, 2.3 mi upstream from culvert on State Highway 654, and 1.4 mi south-east of Eureka.	-	-	6-21-78 6-26-78 7-13-78 7-14-78	*.82 *1.6 *.94 *1.1
Ash Camp Creek	Roanoke Creek	Lat 37°01'57", long 78°33'51", Charlotte County, at culvert on State Highway 654, 1.3 mi southwest of intersection with State Highway 40, and 1.1 mi southwest of Eureka.	-	-	6-21-78	*2.3
Coleman Creek	Allen Creek	Lat 36°40'08", long 78°22'45", Mecklenburg County, 0.2 mi downstream from bridge on U.S. Highway 58, 0.4 mi north-east of Boydton.	-	1977	1-24-78 3- 7-78 3-27-78 4-18-78 4-26-78 4-26-78 4-26-78 4-26-78 4-27-78 4-27-78 5-31-78 7-11-78 8-23-78	*4.9 *4.7 16 *2.4 230 433 344 296 105 82 *1.4 *.71 *.68
BIG SANDY RIVER BASIN						
03207210 Levisa Fork	Big Sandy River	Lat 37°10'24", long 81°56'28", Buchanan County, at bridge on State Highway 618, 2.3 mi west of Grimsleyville.	-	-	9-26-78	*.70
03207220 Contrary Creek	Levisa Fork	Lat 37°11'38", long 81°57'12", Buchanan County, at bridge on State Highway 680, 50 ft upstream from mouth, and 1.9 mi southeast of Keen Mountain.	-	-	9-26-78	*.69
03207230 Garden Creek	Levisa Fork	Lat 37°12'42", long 82°00'24", Buchanan County, 300 ft up-stream from mouth, at Oakwood.	-	-	9-26-78	*2.1
03207300 Dismal Creek	Levisa Fork	Lat 37°14'22", long 82°02'03", Buchanan County, 0.8 mi up-stream from mouth, 2.4 mi northwest of Oakwood.	-	-	9-26-78	*10
03207410 Prater Creek	Levisa Fork	Lat 37°13'53", long 82°05'58", Buchanan County, at mouth, at Vansant.	-	-	9-26-78	*1.3
03207440 Slate Creek	Levisa Fork	Lat 37°18'44", long 81°58'41", Buchanan County, 0.5 mi up-stream from Upper Rockhouse Branch, 0.8 mi southeast of Stacy.	-	-	4- 3-78 5-22-78 7- 5-78 8- 8-78 9-26-78	*11 *10 *2.2 *7.9 *.09
03207450 Slate Creek	Levisa Fork	Lat 37°16'39", long 82°05'38", Buchanan County, 0.4 mi up-stream from mouth, at Grundy.	-	-	9-26-78	*1.9
03207505 Looney Creek	Levisa Fork	Lat 37°18'36", long 82°07'46", Buchanan County, 200 ft up-stream from mouth, at inter-section of U.S. Highway 460 and State Highway 656, and 2.8 mi northwest of Grundy.	-	-	9-27-78	*1.9
03207510 Stilltner Creek	Levisa Fork	Lat 37°18'35", long 82°08'34", Buchanan County, 300 ft up-stream from mouth, at bridge on U.S. Highway 460, and 3.2 mi northwest of Grundy.	-	-	9-27-78	*.26

* Base flow.

Discharge measurements made at miscellaneous sites during water year 1978--Continued

Discharge measurements made at miscellaneous sites during water year 1978--Continued					Measurements	
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Date	Discharge (ft ³ /s)
BIG SANDY RIVER BASIN--Continued						
03207520 Poplar Creek	Levisa Fork	Lat 37°18'21", long 82°09'21", Buchanan County, at mouth, 2.7 mi northeast of Harman.	-	-	9-27-78	*0.37
03207530 Bull Creek	Levisa Fork	Lat 37°18'41", long 82°09'57", Buchanan County, 200 ft upstream from mouth, 2.3 mi northeast of Harman.	-	-	9-27-78	*3.0
03207550 Lynn Camp Creek	Levisa Fork	Lat 37°19'30", long 82°09'51", Buchanan County, at bridge on U.S. Highway 460, 400 ft upstream from mouth, and 3.0 mi northeast of Harman.	-	-	9-27-78	*1.1
03207600 Home Creek	Levisa Fork	Lat 37°20'42", long 82°10'30", Buchanan County, at bridge on State Highway 700, 0.2 mi upstream from mouth, and 1.1 mi southeast of Big Rock.	-	-	9-27-78	*1.4
03207792 Rocklick Creek	Levisa Fork	Lat 37°21'21", long 82°11'22", Buchanan County, at mouth, at Big Rock.	7.75	-	9-27-78	*.67
03207805 Conaway Creek	Levisa Fork	Lat 37°20'45", long 82°12'29", Buchanan County, on right bank at bridge on State Highway 610, 0.4 mi south of Conaway, and at mile 0.4.	7.40	1974-76†	9-27-78	*1.6
03208030 Russell Fork	Levisa Fork	Lat 37°04'08", long 82°02'48", Buchanan County, 1.1 mi upstream from Ball Creek, 1.5 mi southeast of Council.	-	-	9-26-78	*.14
03208039 Ball Creek	Russell Fork	Lat 37°04'40", long 82°03'45", Buchanan County, 0.3 mi upstream from Quinn Branch, at mouth, and 0.5 mi southeast of Council.	-	-	9-26-78	*.66
03208040 Russell Fork	Levisa Fork	Lat 37°04'40", long 82°03'57", Buchanan County, at bridge on State Highway 80, 900 ft downstream from Ball Creek, and 0.3 mi southeast of Council.	-	-	9-26-78	*1.4
03208050 Hurricane Creek	Russell Fork	Lat 37°06'05", long 82°08'12", Buchanan County, at bridge on State Highway 80, 400 ft upstream from mouth, and at Davenport.	-	-	9-26-78	*1.6
03208060 Russell Fork	Levisa Fork	Lat 37°06'36", long 82°09'27", Buchanan County, 200 ft upstream from Indian Creek, 1.3 mi northwest of Davenport.	-	-	9-26-78	*3.7
03208070 Indian Creek	Russell Fork	Lat 37°06'35", long 82°09'30", Buchanan County, 200 ft upstream from mouth, 1.3 mi northwest of Davenport.	-	-	9-26-78	*3.1
03208080 Fox Creek	Russell Fork	Lat 37°09'17", long 82°11'23", Buchanan County, at bridge on State Highway 605, 100 ft upstream from mouth, and 3.1 mi east of Colley.	-	-	9-26-78	*.57
03208090 Pawpaw Creek	Russell Fork	Lat 37°09'56", long 82°12'23", Buchanan County, 400 ft upstream from mouth, 2.0 mi downstream from Fox Creek, and 2.3 mi northeast of Colley.	-	-	9-26-78	*.60
03208100 Russell Fork	Levisa Fork	Lat 37°09'49", long 82°15'20", Dickenson County, at bridge on State Highway 80, 100 ft upstream from Fryingpan Creek, and 1.3 mi southeast of Birchleaf.	-	-	9-27-78	*9.8

* Base flow.

† Operated as a continuous-record station.

Discharge measurements made at miscellaneous sites during water year 1978--Continued						
Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
BIG SANDY RIVER BASIN--Continued						
03208110 Fryingpan Creek	Russell Fork	Lat 37°09'47", long 82°15'19", Dickenson County, at mouth, 1.3 mi southeast of Birchleaf.	-	-	9-27-78	*7.1
03208150 Lick Creek	Russell Fork	Lat 37°10'27", long 82°16'14", Dickenson County, 700 ft upstream from mouth, at Birchleaf.	-	-	9-27-78	*1.8
03208200 Russell Fork	Levisa Fork	Lat 37°12'03", long 82°17'31", Dickenson County, at bridge on State Highway 83, 0.2 mi upstream from Russell Prater Creek, and at Haysi.	-	-	9-27-78	*17
03208300 Russell Prater Creek	Russell Fork	Lat 37°12'28", long 82°17'16", Dickenson County, 0.4 mi upstream from mouth, at Haysi.	-	-	9-27-78	*2.1
03208340 McClure Creek	McClure River	Lat 37°00'59", long 82°17'45", Dickenson County, 500 ft downstream from Trammel Branch, at Trammel.	-	-	9-28-78	*.68
03208350 Roaring Fork	McClure Creek	Lat 37°01'42", long 82°17'59", Dickenson County, at mouth, 1.0 mi north of Trammel.	-	-	9-28-78	*1.8
03208360 McClure Creek	McClure River	Lat 37°02'30", long 82°18'58", Dickenson County, at bridge on State Highway 655, at Wakenva.	-	-	9-28-78	*3.1
03208370 Open Fork	McClure River	Lat 37°04'09", long 82°20'49", Dickenson County, at mouth, at Nora.	-	-	9-28-78	*2.9
03208400 McClure River	Russell Fork	Lat 37°04'12", long 82°20'50", Dickenson County, 300 ft downstream from Open Fork, at Nora.	-	-	9-28-78	*7.1
03208410 Buffalo Creek	McClure River	Lat 37°04'47", long 82°20'59", Dickenson County, at bridge on State Highway 63, at mouth, and 0.7 mi north of Nora.	-	-	9-28-78	*.15
03208420 Caney Creek	McClure River	Lat 37°06'22", long 82°22'47", Dickenson County, at mouth, at McClure.	-	-	9-28-78	*2.2
03208430 Big Branch	McClure River	Lat 37°07'22", long 82°23'10", Dickenson County, at bridge on State Highway 63, at mouth, and 0.2 mi south of Freemont.	-	-	9-28-78	*.44
03208450 McClure River	Russell Fork	Lat 37°07'31", long 82°23'05", Dickenson County, at bridge on State Highway 83, at Freemont.	-	-	9-27-78	*11
03208470 Mill Creek	McClure River	Lat 37°09'43", long 82°21'35", Dickenson County, at bridge on State Highway 83, at mouth, and at Clinchco.	-	-	9-27-78	*.71
03208490 McClure River	Russell Fork	Lat 37°12'18", long 82°17'52", Dickenson County, at bridge 600 ft upstream from mouth, at Haysi.	-	-	9-27-78	*12
03208810 Indian Creek	Pound River	Lat 37°07'07", long 82°35'55", Wise County, at bridge on U.S. Highway BUS. 23, at Pound.	-	-	9-27-78	*.97
03208830 Bold Camp Creek	Pound River	Lat 37°07'09", long 82°35'40", Wise County, at mouth, at Pound.	-	-	9-27-78	*2.8
03208940 Cranes Nest River	Pound River	Lat 37°05'01", long 82°29'24", Dickenson County, 100 ft upstream from Lick Fork, 1.2 mi south of Darwin.	-	-	9-28-78	*4.4

* Base flow.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1978--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
BIG SANDY RIVER BASIN--Continued						
03208945 Lick Fork	Cranes Nest River	Lat 37°05'03", long 82°29'27", Dickenson County, at bridge on State Highway 72, 1.2 mi south of Darwin.	-	-	9-28-78	*0.98
TENNESSEE RIVER BASIN						
Clinch River	Tennessee River	Lat 37°07'17", long 81°36'24", Tazewell County, at private bridge, 0.4 mi north of U.S. Highways 19 and 460, 1.9 mi upstream from bridge on State Highway 637, and 1.4 mi north- east of Maxwell.	-	-	7-10-78	34
03524270 Guest River	Clinch River	Lat 37°00'21", long 82°39'05", Wise County, at bridge on State Highway 626, at Lipps.	-	-	9-27-78	*.87
03524300 Guest River	Clinch River	Lat 36°58'35", long 82°37'16", Wise County, at bridge on State Highway 625, 1.5 mi southwest of Stephens.	-	-	9-27-78	*1.6
03524310 Rocky Fork	Guest River	Lat 36°58'31", long 82°37'02", Wise County, at mouth, 1.4 mi southwest of Stephens.	-	-	9-27-78	*.48
03524330 Guest River	Clinch River	Lat 36°57'19", long 82°36'42", Wise County, 100 ft downstream from Parson Branch, at Esserville.	-	-	9-26-78	*2.6
03524350 Bear Creek	Guest River	Lat 36°56'30", long 82°35'54", Wise County, at railway bridge at mouth, 1.8 mi east of Norton.	-	-	9-27-78	*3.0
03524400 Guest River	Clinch River	Lat 36°56'30", long 82°35'35", Wise County, 0.3 mi downstream from Bear Creek, at upstream side bridge on U.S. Highway ALT. 58, and 2.0 mi east of Norton.	-	-	9-27-78	*7.4
03524450 Toms Creek	Guest River	Lat 36°56'25", long 82°28'21", Wise County, at bridge on May Avenue, 0.3 mi upstream from mouth, and at Coeburn.	-	-	9-27-78	*5.0
03529300 Powell River	Clinch River	Lat 36°55'09", long 82°42'17", Wise County, 1.7 mi upstream from Roaring Fork, 0.8 mi downstream from Bear Branch, and 4.3 mi west of Norton.	-	-	9-26-78	*5.8
03529320 Roaring Fork	Powell River	Lat 36°55'20", long 82°43'37", Wise County, 0.2 mi above mouth, 5.5 mi west of Norton.	-	-	9-26-78	*4.9
03530050 Powell River	Clinch River	Lat 36°46'48", long 82°55'30", Lee County, at bridge on U.S. Highway ALT. 58, 1.1 mi down- stream from Poor Valley Creek, and 0.9 mi east of Dryden.	-	-	9-26-78	*33

* Base flow.

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

Samples are collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin. Such sites are referred to as miscellaneous sites.

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
JAMES RIVER BASIN												
02042760 - CHICKAHOMINY R AT BARRETT'S FERRY BR, VA. (LAT 37 15 50 LONG 076 52 32.01)												
DEC , 1977												
20...	1040	--	173	7.3	49	17	14	3.5	13	2.2	40	15
JUN , 1978												
01...	1345	--	115	6.8	33	8	8.7	2.7	8.0	2.1	30	8.8
02042770 - JAMES RIVER AT JAMESTOWN FERRY PIER, VA. (LAT 37 13 12 LONG 076 47 30.01)												
DEC , 1977												
20...	1330	--	285	6.7	57	25	15	4.8	23	2.8	39	19
JUN , 1978												
02...	0800	--	115	7.0	36	3	10	2.6	7.3	1.7	40	9.4
BIG SANDY RIVER BASIN												
03207192 - LEVISA FORK NEAR VANDYKE, VA. (LAT 37 08 48 LONG 081 54 48)												
JUN , 1978												
05...	1340	--	160	7.5	67	36	15	7.2	3.2	1.8	38	40
03207194 - LEVISA FORK AT VANDYKE, VA. (LAT 37 08 41 LONG 081 55 54)												
JUN , 1978												
05...	1320	--	160	7.5	62	31	15	6.0	4.2	1.7	38	36
03207196 - PISTOL BRANCH AT VANDYKE, VA. (LAT 37 08 41 LONG 081 55 57)												
JUN , 1978												
05...	1330	--	120	7.5	56	29	13	5.7	3.9	1.9	33	26
03207200 - GRASSY CREEK AT GRIMSLEYVILLE, VA. (LAT 37 10 08 LONG 081 53 39)												
MAR , 1978												
27...	0900	--	280	7.8	69	40	19	5.3	19	2.0	36	28
03207210 - LEVISA FORK NEAR GRIMSLEYVILLE, VA. (LAT 37 10 24 LONG 081 56 28)												
MAR , 1978												
27...	0915	--	175	8.3	56	34	15	4.5	9.1	1.6	27	33
JUN												
05...	1240	--	218	7.3	81	26	22	6.4	9.1	1.9	67	38
SEP												
26...	1020	.70	300	7.1	140	50	38	11	14	2.3	110	49
03207220 - CONTRARY CREEK NEAR KEEN MOUNTAIN, VA. (LAT 37 11 38 LONG 081 57 12)												
MAR , 1978												
27...	0930	--	350	8.0	140	120	33	14	6.0	2.1	28	120
SEP												
26...	1100	.69	673	7.5	320	210	80	28	18	2.8	130	230
03207230 - GARDEN CREEK AT OAKWOOD, VA. (LAT 37 12 42 LONG 082 00 24)												
MAR , 1978												
27...	0945	--	280	8.4	110	71	25	11	9.0	1.9	45	82
SEP												
26...	1135	2.1	547	8.0	220	120	50	22	24	3.1	120	130

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
JAMES RIVER BASIN--CONTINUED												
02042760 - CHICKAHOMINY R AT BARRETT'S FERRY BR, VA. (LAT 37 15 50 LONG 076 52 32.01)												
DEC , 1977 20...	17	.0	8.9	110	96	.57	2.5	.01	.58	.05	.15	180
JUN , 1978 01...	11	.1	7.0	75	66	.44	1.9	.00	.44	.03	.09	310
02042770 - JAMES RIVER AT JAMESTOWN FERRY PIER, VA. (LAT 37 13 12 LONG 076 47 30.01)												
DEC , 1977 20...	33	.1	9.0	141	129	.72	3.2	.01	.73	.05	.15	150
JUN , 1978 02...	8.6	.1	7.2	70	69	.46	2.0	.00	.46	.02	.06	170
BIG SANDY RIVER BASIN--CONTINUED												
03207192 - LEVISA FORK NEAR VANDYKE, VA. (LAT 37 08 48 LONG 081 54 48)												
JUN , 1978 05...	1.2	.0	8.5	121	97	.32	1.4	.01	.33	.00	.00	0
03207194 - LEVISA FORK AT VANDYKE, VA. (LAT 37 08 41 LONG 081 55 54)												
JUN , 1978 05...	2.2	.0	7.8	111	92	.17	.80	.01	.18	.00	.00	10
03207196 - PISTOL BRANCH AT VANDYKE, VA. (LAT 37 08 41 LONG 081 55 57)												
JUN , 1978 05...	1.7	.0	7.7	101	77	.18	.80	.00	.18	.00	.00	30
03207200 - GRASSY CREEK AT GRIMSLEYVILLE, VA. (LAT 37 10 08 LONG 081 53 39)												
MAR , 1978 27...	36	.1	7.1	140	138	.88	3.9	.00	.88	.00	.00	20
03207210 - LEVISA FORK NEAR GRIMSLEYVILLE, VA. (LAT 37 10 24 LONG 081 56 28)												
MAR , 1978 27...	11	.0	6.6	100	96	.38	1.7	.00	.38	.00	.00	10
JUN 05...	8.8	.0	6.3	137	127	.27	1.2	.00	.28	.00	.00	40
SEP 26...	12	.0	3.8	194	184	--	--	--	.00	.00	.00	20
03207220 - CONTRARY CREEK NEAR KEEN MOUNTAIN, VA. (LAT 37 11 38 LONG 081 57 12)												
MAR , 1978 27...	1.0	.0	9.0	207	201	.57	2.5	.00	.57	.00	.00	0
SEP 26...	7.2	.1	2.8	442	433	--	--	--	.00	.00	.00	10
03207230 - GARDEN CREEK AT OAKWOOD, VA. (LAT 37 12 42 LONG 082 00 24)												
MAR , 1978 27...	1.6	.1	6.1	158	162	.63	2.8	.00	.63	.01	.03	0
SEP 26...	20	.1	3.9	346	315	--	--	--	.48	.02	.06	50

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
BIG SANDY RIVER BASIN--CONTINUED												
03207300 - DISMAL CREEK NEAR OAKWOOD, VA. (LAT 37 14 22 LONG 082 02 03)												
MAR , 1978												
27...	1000	--	400	7.3	140	96	32	14	21	2.3	51	130
SEP												
26...	1245	10	844	6.9	330	250	78	33	55	3.6	100	300
03207410 - PRATER CREEK AT MOUTH, AT VANSANT, VA. (LAT 37 13 53 LONG 082 05 58)												
MAR , 1978												
27...	1015	--	275	8.7	92	55	23	8.5	13	2.0	46	71
SEP												
26...	1335	1.3	480	8.6	210	98	57	17	28	3.4	140	110
03207440 - SLATE CREEK NR STACY, VA. (LAT 37 18 44 LONG 081 58 41)												
MAR , 1978												
27...	1055	--	160	7.5	54	40	12	5.9	3.6	1.6	17	42
APR												
03...	1145	11	135	7.1	47	32	10	5.4	3.4	1.5	18	38
MAY												
22...	1030	10	140	8.4	54	--	12	5.9	4.3	1.8	--	40
JUL												
05...	1115	2.2	190	8.1	95	56	23	9.0	5.6	2.3	--	56
AUG												
08...	1145	7.9	105	7.5	55	24	13	5.4	4.8	2.0	--	29
SEP												
26...	1430	.09	411	8.0	160	81	42	14	16	2.9	100	76
03207450 - SLATE CREEK AT GRUNDY, VA. (LAT 37 16 39 LONG 082 05 38)												
MAR , 1978												
27...	1040	--	345	8.1	140	110	31	15	6.0	2.1	33	110
SEP												
26...	1515	1.9	699	8.7	330	250	76	35	19	3.4	100	240
03207500 - LEVISA FORK NR. GRUNDY, VA. (LAT 37 17 52 LONG 082 07 34)												
APR , 1978												
03...	1335	209	350	7.4	120	76	28	12	16	2.0	53	100
MAY												
22...	1245	222	270	8.1	130	--	32	13	16	2.4	--	110
JUL												
05...	1300	106	340	7.7	150	84	37	13	21	2.8	--	100
AUG												
08...	1300	193	250	7.6	130	76	32	12	16	2.6	--	84
SEP												
27...	0800	21	829	7.1	280	170	68	26	65	3.6	130	210
03207505 - LOONEY CREEK NEAR GRUNDY, VA. (LAT 37 18 36 LONG 082 07 46)												
MAR , 1978												
27...	1115	--	700	8.1	300	240	65	33	16	3.0	65	270
SEP												
27...	0855	1.9	1020	7.5	520	430	120	53	32	3.9	110	450

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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)	NITROGEN, NITRATE DIS- SOLVED (MG/L AS N)	NITROGEN, NITRATE DIS- SOLVED (MG/L AS NO3)	NITROGEN, NITRITE DIS- SOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOSPHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOSPHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
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BIG SANDY RIVER BASIN--CONTINUED

03207300 - DISMAL CREEK NEAR OAKWOOD, VA. (LAT 37 14 22 LONG 082 02 03)

MAR , 1978												
27...	3.6	.1	7.1	247	237	.36	1.6	.00	.36	.00	.00	0
SEP												
26...	21	.1	5.5	585	546	--	--	--	.04	.00	.00	810

03207410 - PRATER CREEK AT MOUTH, AT VANSANT, VA. (LAT 37 13 53 LONG 082 05 58)

MAR , 1978												
27...	8.9	.0	7.5	166	159	.53	2.3	.00	.53	.01	.03	0
SEP												
26...	32	.1	5.3	339	322	--	--	--	.01	.14	.43	30

03207440 - SLATE CREEK NR STACY, VA. (LAT 37 18 44 LONG 081 58 41)

MAR , 1978												
27...	2.6	.0	7.7	74	86	.48	2.1	.00	.48	.00	.00	10
APR												
03...	1.4	.0	7.1	84	76	--	--	--	--	--	--	--
MAY												
22...	3.5	.0	6.2	110	--	--	--	--	--	--	--	--
JUL												
05...	4.8	.0	6.0	160	130	--	--	--	--	--	--	--
AUG												
08...	4.3	.0	11	106	88	--	--	--	--	--	--	--
SEP												
26...	25	.1	2.5	238	228	--	--	--	.00	.01	.03	60

03207450 - SLATE CREEK AT GRUNDY, VA. (LAT 37 16 39 LONG 082 05 38)

MAR , 1978												
27...	3.0	.0	8.4	203	196	.86	3.8	.00	.86	.00	.00	0
SEP												
26...	13	.1	4.5	479	441	--	--	--	.24	.02	.06	30

03207500 - LEVISA FORK NR. GRUNDY, VA. (LAT 37 17 52 LONG 082 07 34)

APR , 1978												
03...	12	.1	5.8	206	202	--	--	--	--	--	--	--
MAY												
22...	7.3	.0	5.9	241	--	--	--	--	--	--	--	--
JUL												
05...	20	.1	7.9	263	239	--	--	--	--	--	--	--
AUG												
08...	13	.0	7.7	229	199	--	--	--	--	--	--	--
SEP												
27...	66	.1	2.5	513	506	--	--	--	.08	.04	.12	30

03207505 - LOONEY CREEK NEAR GRUNDY, VA. (LAT 37 18 36 LONG 082 07 46)

MAR , 1978												
27...	1.5	.1	9.9	463	435	.99	4.4	.01	1.0	.00	.00	0
SEP												
27...	3.3	.1	8.8	773	727	--	--	--	.32	.00	.00	20

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
BIG SANDY RIVER BASIN--CONTINUED												
03207510 - STILTNER CREEK NEAR GRUNDY, VA. (LAT 37 18 35 LONG 082 08 34)												
MAR , 1978												
27...	1130	--	775	7.9	330	300	69	38	13	2.9	35	300
SEP												
27...	0920	.26	550	7.5	380	320	83	43	21	3.6	74	330
03207520 - POPLAR CREEK NEAR HARMON, VA. (LAT 37 18 21 LONG 082 09 21)												
MAR , 1978												
27...	1140	--	590	8.2	220	190	52	22	15	2.5	38	200
SEP												
27...	0945	.37	1050	7.6	510	420	120	50	37	4.3	110	420
03207530 - BULL CREEK NEAR HARMON, VA. (LAT 37 18 41 LONG 082 09 57)												
MAR , 1978												
27...	1150	--	950	8.2	290	180	65	31	70	3.6	130	320
SEP												
27...	1025	3.0	1390	8.0	530	350	120	56	180	6.4	220	670
03207550 - LYNN CAMP CREEK NEAR HARMON, VA. (LAT 37 19 30 LONG 082 09 51)												
SEP , 1978												
27...	1105	1.1	1050	8.1	610	530	140	64	19	3.8	100	540
03207600 - HOME CREEK NEAR BIG ROCK, VA. (LAT 37 20 42 LONG 082 10 30)												
MAR , 1978												
27...	1220	--	680	8.0	140	100	32	15	18	2.0	49	130
SEP												
27...	1130	1.4	875	8.1	490	410	110	52	25	4.2	93	400
03207792 - ROCKLICK CREEK AT BIG ROCK, VA. (LAT 37 21 21 LONG 082 11 22)												
MAR , 1978												
27...	1230	--	570	8.1	210	160	47	22	19	2.3	59	190
SEP												
27...	1235	.67	690	8.0	410	320	96	41	33	4.2	110	330
03207805 - CONAWAY CREEK AT CONAWAY, VA. (LAT 37 20 45 LONG 082 12 29)												
SEP , 1978												
27...	1320	1.6	995	8.1	560	470	120	62	70	4.7	98	570
03208028 - OLD SCHOOL HOUSE SPRING NEAR COUNCIL, VA. (LAT 37 03 27 LONG 082 02 40)												
JUN , 1978												
06...	1420	--	18	6.5	3	3	.9	.3	.5	.7	1	2.8

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
BIG SANDY RIVER BASIN--CONTINUED												
03207510 - STILTNER CREEK NEAR GRUNDY, VA. (LAT 37 18 35 LONG 082 08 34)												
MAR , 1978												
27...	1.5	.1	9.0	495	458	1.7	7.5	.01	1.7	.00	.00	10
SEP												
27...	3.8	.1	8.8	570	533	--	--	--	.70	.02	.06	20
03207520 - POPLAR CREEK NEAR HARMON, VA. (LAT 37 18 21 LONG 082 09 21)												
MAR , 1978												
27...	8.0	.1	6.8	352	327	.48	2.1	.01	.49	.00	.00	0
SEP												
27...	23	.1	7.5	770	718	--	--	--	.36	.09	.28	80
03207530 - BULL CREEK NEAR HARMON, VA. (LAT 37 18 41 LONG 082 09 57)												
MAR , 1978												
27...	3.8	.1	7.9	603	568	.62	2.7	.01	.63	.01	.03	0
SEP												
27...	11	.1	8.4	1210	1160	--	--	--	.30	.03	.09	60
03207550 - LYNN CAMP CREEK NEAR HARMON, VA. (LAT 37 19 30 LONG 082 09 51)												
SEP , 1978												
27...	3.9	.1	8.1	912	834	--	--	--	1.3	.04	.12	0
03207600 - HOME CREEK NEAR BIG ROCK, VA. (LAT 37 20 42 LONG 082 10 30)												
MAR , 1978												
27...	7.6	.1	7.3	246	238	.51	2.3	.01	.52	.00	.00	0
SEP												
27...	13	.1	6.9	705	658	--	--	--	.13	.00	.00	20
03207792 - ROCKLICK CREEK AT BIG ROCK, VA. (LAT 37 21 21 LONG 082 11 22)												
MAR , 1978												
27...	1.7	.1	7.0	356	320	.48	2.1	.00	.48	.00	.00	10
SEP												
27...	10	.1	6.1	601	575	--	--	--	.13	.02	.06	10
03207805 - CONAWAY CREEK AT CONAWAY, VA. (LAT 37 20 45 LONG 082 12 29)												
SEP , 1978												
27...	1.8	.2	11	943	889	--	--	--	.13	.00	.00	10
03208028 - OLD SCHOOL HOUSE SPRING NEAR COUNCIL, VA. (LAT 37 03 27 LONG 082 02 40)												
JUN , 1978												
06...	1.6	.0	4.2	13	12	.18	.80	.00	.18	.00	.00	0

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
BIG SANDY RIVER BASIN--CONTINUED												
03208030 - RUSSELL FORK NEAR COUNCIL, VA. (LAT 37 04 08 LONG 082 02 48)												
APR , 1978												
05...	1000	--	40	6.8	11	0	2.6	1.0	2.7	.9	22	6.5
JUN												
06...	1020	--	40	7.1	13	1	3.4	1.2	2.4	.9	15	5.3
SEP												
26...	1010	.14	62	7.6	20	4	5.1	1.8	2.5	.9	20	5.8
03208038 - CURVIN HARRIS SPRING NEAR COUNCIL, VA. (LAT 37 04 37 LONG 082 03 13)												
JUN , 1978												
06...	1150	--	100	6.8	35	0	8.0	3.7	7.1	1.2	44	16
03208039 - BALL CREEK NEAR COUNCIL, VA. (LAT 37 04 40 LONG 082 03 45)												
SEP , 1978												
26...	1050	.66	290	8.8	140	63	31	14	7.4	2.5	88	74
03208040 - RUSSELL FORK AT COUNCIL, VA. (LAT 37 04 40 LONG 082 03 57)												
APR , 1978												
05...	1010	--	122	7.1	56	29	13	5.7	4.6	1.6	33	35
SEP												
26...	1115	1.4	250	8.3	110	43	25	11	6.6	2.1	79	45
03208050 - HURRICANE CREEK AT DAVENPORT, VA. (LAT 37 06 05 LONG 082 08 12)												
SEP , 1978												
26...	1210	1.6	245	9.1	110	33	26	10	8.3	2.4	89	43
03208060 - RUSSELL FORK NEAR DAVENPORT, VA. (LAT 37 06 36 LONG 082 09 27)												
APR , 1978												
05...	1030	--	140	7.2	52	28	12	5.4	4.4	1.7	29	32
SEP												
26...	1330	3.7	240	8.7	120	47	27	12	7.7	2.4	85	47
03208070 - INDIAN CREEK NEAR DAVENPORT, VA. (LAT 37 06 35 LONG 082 09 30)												
APR , 1978												
05...	1035	--	440	8.2	130	37	28	14	42	2.2	110	130
SEP												
26...	1405	3.1	725	9.0	150	0	30	17	120	2.6	250	170
03208080 - FOX CREEK NEAR COLLEY, VA. (LAT 37 09 17 LONG 082 11 23)												
SEP , 1978												
26...	1550	.57	312	8.9	140	72	31	14	5.2	2.4	77	79
03208090 - PAWPAW CREEK NEAR COLLEY, VA. (LAT 37 09 56 LONG 082 12 23)												
SEP , 1978												
26...	1510	.60	115	7.9	46	4	11	4.5	4.5	1.8	51	17
03208100 - RUSSELL FORK NEAR BIRCHLEAF, VA. (LAT 37 09 49 LONG 082 15 20)												
APR , 1978												
05...	1055	--	218	7.8	66	29	15	7.0	16	1.8	45	56
SEP												
27...	0855	9.8	380	8.4	120	9	25	13	39	2.5	130	81

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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, 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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
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BIG SANDY RIVER BASIN--CONTINUED

03208030 - RUSSELL FORK NEAR COUNCIL, VA. (LAT 37 04 08 LONG 082 02 48)

APR , 1978												
05...	5.1	.0	5.9	33	36	--	--	--	--	--	--	10
JUN												
06...	2.4	.0	6.3	27	30	.18	.80	.00	.18	.00	.00	10
SEP												
26...	2.8	.0	6.3	38	36	--	--	--	.23	.01	.03	50

03208038 - CURVIN HARRIS SPRING NEAR COUNCIL, VA. (LAT 37 04 37 LONG 082 03 13)

JUN , 1978												
06...	.4	.0	13	68	71	.07	.30	.00	.07	.00	.00	0

03208039 - BALL CREEK NEAR COUNCIL, VA. (LAT 37 04 40 LONG 082 03 45)

SEP , 1978												
26...	3.5	.1	5.0	190	182	--	--	--	.17	.00	.00	30

03208040 - RUSSELL FORK AT COUNCIL, VA. (LAT 37 04 40 LONG 082 03 57)

APR , 1978												
05...	5.1	.0	5.5	92	87	--	--	--	--	--	--	10
SEP												
26...	5.7	.0	5.4	149	141	--	--	--	.24	.00	.00	70

03208050 - HURRICANE CREEK AT DAVENPORT, VA. (LAT 37 06 05 LONG 082 08 12)

SEP , 1978												
26...	3.5	.1	5.8	149	143	--	--	--	.08	.01	.03	40

03208060 - RUSSELL FORK NEAR DAVENPORT, VA. (LAT 37 06 36 LONG 082 09 27)

APR , 1978												
05...	3.8	.0	5.8	82	79	--	--	--	--	--	--	30
SEP												
26...	5.6	.0	5.1	164	149	--	--	--	.08	.00	.00	70

03208070 - INDIAN CREEK NEAR DAVENPORT, VA. (LAT 37 06 35 LONG 082 09 30)

APR , 1978												
05...	2.5	.1	6.9	283	280	--	--	--	--	--	--	10
SEP												
26...	5.7	.2	5.7	488	482	--	--	--	.01	.01	.03	100

03208080 - FOX CREEK NEAR COLLEY, VA. (LAT 37 09 17 LONG 082 11 23)

SEP , 1978												
26...	2.2	.0	6.3	181	178	--	--	--	.04	.01	.03	10

03208090 - PAWPAW CREEK NEAR COLLEY, VA. (LAT 37 09 56 LONG 082 12 23)

SEP , 1978												
26...	2.2	.1	6.9	77	74	--	--	--	.24	.00	.00	130

03208100 - RUSSELL FORK NEAR BIRCHLEAF, VA. (LAT 37 09 49 LONG 082 15 20)

APR , 1978												
05...	3.6	.1	5.5	124	127	--	--	--	--	--	--	20
SEP												
27...	4.5	.1	4.8	236	234	--	--	--	.04	.00	.00	30

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CA CO_3)	HARD- NESS, NONCAR- BONATE (MG/L CAC O_3)	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 (MG/L AS HCO O_3)	SULFATE DIS- SOLVED (MG/L AS SO O_4)
BIG SANDY RIVER BASIN--CONTINUED												
03208110 - FRYINGPAN CREEK NEAR BIRCHLEAF, VA. (LAT 37 09 47 LONG 082 15 19)												
APR , 1978												
05...	1050	--	580	8.2	120	0	28	12	85	1.9	170	160
SEP												
27...	0925	7.1	1100	8.7	130	0	27	15	240	2.5	440	240
03208150 - LICK CREEK AT BIRCHLEAF, VA. (LAT 37 10 27 LONG 082 16 14)												
SEP , 1978												
27...	1005	1.8	280	8.0	120	52	28	12	8.6	2.4	82	67
03208200 - RUSSELL FORK NEAR HAYSI, VA. (LAT 37 12 03 LONG 082 17 31)												
APR , 1978												
05...	1110	--	280	7.8	74	21	17	7.6	27	1.7	64	73
SEP												
27...	1145	17	600	8.5	120	0	27	13	95	2.8	230	130
03208300 - RUSSELL PRATER CREEK AT HAYSI, VA. (LAT 37 12 28 LONG 082 17 16)												
APR , 1978												
05...	1115	--	335	8.2	140	120	32	15	9.0	2.3	31	120
SEP												
27...	1110	2.1	550	8.6	230	130	58	21	25	3.5	120	170
03208324 - BENTIN CHAFFIN SPRING NEAR TRAMMEL, VA. (LAT 36 59 59 LONG 082 15 11)												
JUN , 1978												
07...	1330	--	310	6.9	110	0	29	9.1	21	1.6	140	25
03208326 - KNOT HOLLOW SPRING NEAR TRAMMEL, VA. (LAT 37 00 25 LONG 082 15 07)												
JUN , 1978												
07...	1040	--	195	7.4	87	31	21	8.3	4.3	1.9	68	32
03208328 - KNOT HOLLOW CREEK NEAR TRAMMEL, VA. (LAT 37 00 26 LONG 082 16 07)												
JUN , 1978												
07...	1110	--	580	7.8	150	0	38	14	75	3.1	190	150
03208330 - MCCLURE CREEK NEAR TRAMMEL, VA. (LAT 37 00 25 LONG 082 16 14)												
APR , 1978												
04...	1520	--	545	8.1	170	43	40	16	50	3.1	150	130
03208340 - MCCLURE CREEK AT TRAMMEL, VA. (LAT 37 00 59 LONG 082 17 45)												
APR , 1978												
04...	1515	--	500	8.5	160	37	37	16	50	3.1	130	130
SEP												
28...	1050	.68	510	7.9	200	32	49	20	70	3.9	210	180
03208350 - ROARING FORK NEAR TRAMMEL, VA. (LAT 37 01 42 LONG 082 17 59)												
SEP , 1978												
28...	1020	1.8	745	8.0	180	0	41	19	90	3.2	270	150

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

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 SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
BIG SANDY RIVER BASIN--CONTINUED												
03208110 - FRYINGPAN CREEK NEAR BIRCHLEAF, VA. (LAT 37 09 47 LONG 082 15 19)												
APR , 1978 05...	2.0	.1	6.1	381	379	--	--	--	--	--	--	10
SEP 27...	3.6	.3	5.0	724	751	--	--	--	.11	.00	.00	40
03208150 - LICK CREEK AT BIRCHLEAF, VA. (LAT 37 10 27 LONG 082 16 14)												
SEP , 1978 27...	3.9	.0	5.6	173	168	--	--	--	.00	.00	.00	50
03208200 - RUSSELL FORK NEAR HAYS, VA. (LAT 37 12 03 LONG 082 17 31)												
APR , 1978 05...	2.8	.1	5.6	170	166	--	--	--	--	--	--	10
SEP 27...	5.0	.2	4.6	385	391	--	--	--	.04	.00	.00	30
03208300 - RUSSELL PRATER CREEK AT HAYS, VA. (LAT 37 12 28 LONG 082 17 16)												
APR , 1978 05...	5.1	.1	7.7	216	207	--	--	--	--	--	--	10
SEP 27...	11	.1	4.3	370	353	--	--	--	.09	.02	.06	0
03208324 - BENTIN CHAFFIN SPRING NEAR TRAMMEL, VA. (LAT 36 59 59 LONG 082 15 11)												
JUN , 1978 07...	5.3	.1	5.9	167	167	.24	1.1	.00	.24	.00	.00	0
03208326 - KNOT HOLLOW SPRING NEAR TRAMMEL, VA. (LAT 37 00 25 LONG 082 15 07)												
JUN , 1978 07...	5.3	.0	7.3	125	114	.01	.00	.00	.01	.00	.00	40
03208328 - KNOT HOLLOW CREEK NEAR TRAMMEL, VA. (LAT 37 00 26 LONG 082 16 07)												
JUN , 1978 07...	5.7	.2	7.1	397	388	.28	1.2	.00	.28	.00	.00	0
03208330 - MCCLURE CREEK NEAR TRAMMEL, VA. (LAT 37 00 25 LONG 082 16 14)												
APR , 1978 04...	17	.1	6.5	346	337	--	--	--	--	--	--	20
03208340 - MCCLURE CREEK AT TRAMMEL, VA. (LAT 37 00 59 LONG 082 17 45)												
APR , 1978 04...	10	.1	4.9	322	324	--	--	--	--	--	--	0
SEP 28...	10	.1	6.0	435	444	--	--	--	.25	.03	.09	10
03208350 - ROARING FORK NEAR TRAMMEL, VA. (LAT 37 01 42 LONG 082 17 59)												
SEP , 1978 28...	2.6	.1	6.6	463	446	--	--	--	.15	.00	.00	10

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L 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 (MG/L AS HCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
BIG SANDY RIVER BASIN--CONTINUED												
03208360 - MCCLURE CREEK AT WAKENVA, VA. (LAT 37 02 30 LONG 082 18 58)												
APR , 1978												
04...	1505	--	480	8.5	150	48	34	15	47	2.5	120	140
JUN												
07...	1240	--	520	7.6	160	38	38	16	49	2.9	150	130
SEP												
28...	0950	3.1	710	7.7	190	7	42	20	65	3.6	220	170
03208370 - OPEN FORK AT NORA, VA. (LAT 37 04 09 LONG 082 20 49)												
SEP , 1978												
28...	1105	2.9	700	8.5	230	100	55	22	65	3.6	150	220
03208400 - MCCLURE RIVER AT NORA, VA. (LAT 37 04 12 LONG 082 20 50)												
APR , 1978												
04...	1455	--	450	8.2	140	70	32	15	36	2.2	87	140
SEP												
28...	0910	7.1	600	7.5	200	44	47	20	70	3.7	190	190
03208410 - BUFFALO CREEK NEAR NORA, VA. (LAT 37 04 47 LONG 082 20 59)												
SEP , 1978												
28...	1035	.15	223	8.3	83	14	21	7.3	9.7	2.3	84	22
03208420 - CANEY CREEK AT MCCLURE, VA. (LAT 37 06 22 LONG 082 22 47)												
SEP , 1978												
28...	0945	2.2	310	8.2	120	26	30	12	15	2.4	120	50
03208430 - BIG BRANCH AT FREEMONT, VA. (LAT 37 07 22 LONG 082 23 10)												
SEP , 1978												
28...	0925	.44	240	7.9	56	0	15	4.5	23	2.4	71	7.4
03208450 - MCCLURE RIVER AT FREMONT, VA. (LAT 37 07 31 LONG 082 23 05)												
APR , 1978												
04...	1440	--	310	--	110	58	24	11	22	2.0	57	88
SEP												
27...	1545	11	500	8.6	170	49	41	17	43	3.4	150	140
03208470 - MILL CREEK AT CLINCHCO, VA. (LAT 37 09 43 LONG 082 21 35)												
SEP , 1978												
27...	1500	.71	678	8.0	260	86	59	27	37	4.0	210	150
03208490 - MCCLURE RIVER AT HAYSI, VA. (LAT 37 12 18 LONG 082 17 52)												
APR , 1978												
05...	1125	--	320	8.0	120	57	27	12	19	2.2	73	91
SEP												
27...	1405	12	505	8.7	180	64	42	18	38	3.6	140	120
03208700 - N. F. POUND RIVER AT POUND, VA. (LAT 37 07 32 LONG 082 37 36)												
SEP , 1978												
27...	0800	3.4	170	6.1	67	54	13	8.3	2.2	1.4	15	58

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)
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BIG SANDY RIVER BASIN--CONTINUED

03208360 - MCCLURE CREEK AT WAKENVA, VA. (LAT 37 02 30 LONG 082 18 58)

APR , 1978												
04...	5.2	.1	5.3	305	308	--	--	--	--	--	--	0
JUN												
07...	3.6	.1	7.0	332	323	.59	2.6	.00	.60	.00	.00	30
SEP												
28...	5.2	.1	5.6	426	421	--	--	--	.25	.01	.03	0

03208370 - OPEN FORK AT NORA, VA. (LAT 37 04 09 LONG 082 20 49)

SEP , 1978												
28...	17	.1	4.7	496	462	--	--	--	.04	.00	.00	30

03208400 - MCCLURE RIVER AT NORA, VA. (LAT 37 04 12 LONG 082 20 50)

APR , 1978												
04...	4.9	.1	5.0	291	278	--	--	--	--	--	--	10
SEP												
28...	9.7	.1	4.0	426	438	--	--	--	.02	.00	.00	10

03208410 - BUFFALO CREEK NEAR NORA, VA. (LAT 37 04 47 LONG 082 20 59)

SEP , 1978												
28...	8.4	.0	6.3	121	119	--	--	--	.17	.00	.00	100

03208420 - CANEY CREEK AT MCCLURE, VA. (LAT 37 06 22 LONG 082 22 47)

SEP , 1978												
28...	5.6	.1	5.7	185	181	--	--	--	.24	.00	.00	0

03208430 - BIG BRANCH AT FREEMONT, VA. (LAT 37 07 22 LONG 082 23 10)

SEP , 1978												
28...	34	.0	6.3	139	128	--	--	--	.00	.00	.00	410

03208450 - MCCLURE RIVER AT FREMONT, VA. (LAT 37 07 31 LONG 082 23 05)

APR , 1978												
04...	4.0	.1	5.7	191	185	--	--	--	--	--	--	10
SEP												
27...	8.7	.1	4.0	327	331	--	--	--	.05	.00	.00	10

03208470 - MILL CREEK AT CLINCHCO, VA. (LAT 37 09 43 LONG 082 21 35)

SEP , 1978												
27...	12	.1	9.1	424	405	--	--	--	.58	.36	1.1	20

03208490 - MCCLURE RIVER AT HAYSI, VA. (LAT 37 12 18 LONG 082 17 52)

APR , 1978												
05...	4.0	.1	4.4	190	196	--	--	--	--	--	--	10
SEP												
27...	13	.1	3.2	313	307	--	--	--	.03	.01	.03	0

03208700 - N. F. POUND RIVER AT POUND, VA. (LAT 37 07 32 LONG 082 37 36)

SEP , 1978												
27...	1.3	.1	5.5	102	98	--	--	--	.06	.00	.00	730

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
BIG SANDY RIVER BASIN--CONTINUED												
03208800 - POUND RIVER ABOVE INDIAN CREEK, AT POUND, VA. (LAT 37 07 26 LONG 082 36 29)												
APR , 1978												
04...	1330	30	500	7.3	210	180	40	26	18	2.7	34	210
SEP												
27...	0825	5.1	550	6.8	230	170	46	27	26	3.1	71	230
03208810 - INDIAN CREEK AT POUND, VA. (LAT 37 07 07 LONG 082 35 55)												
SEP , 1978												
27...	0850	.97	940	7.2	440	350	100	46	34	3.5	110	380
03208830 - BOLD CAMP CREEK AT POUND, VA. (LAT 37 07 09 LONG 082 35 40)												
SEP , 1978												
27...	0920	2.8	1080	7.2	530	440	110	63	45	5.2	110	510
03208900 - POUND RIVER NEAR GEORGES FORK, VA. (LAT 37 09 51 LONG 082 31 30)												
APR , 1978												
04...	1355	66	510	7.3	210	180	42	26	15	2.7	37	210
SEP												
28...	0940	10	700	7.9	320	250	66	38	29	4.1	86	330
03208940 - CRANES NEST RIVER NEAR DARWIN, VA. (LAT 37 05 01 LONG 082 29 24)												
SEP , 1978												
28...	1040	4.4	769	7.8	340	250	72	40	21	3.5	110	300
03208945 - LICK FORK NEAR DARWIN, VA. (LAT 37 05 03 LONG 082 29 27)												
SEP , 1978												
28...	1015	.98	1830	7.5	1100	1100	210	140	33	5.4	22	1100
03208950 - CRANES NEST RIVER NEAR CLINTWOOD, VA. (LAT 37 07 26 LONG 082 26 20)												
APR , 1978												
04...	1425	58	550	7.3	250	220	49	31	11	3.2	40	240
SEP												
28...	0905	8.5	825	7.3	420	350	86	50	21	4.4	86	410
03524250 - WINSTON ISOM SPRING NEAR LIPPS, VA. (LAT 37 02 26 LONG 082 40 33)												
JUN , 1978												
08...	1050	--	300	7.1	140	73	38	10	4.6	1.1	77	87
03524252 - BILL BURLESON SPRING NEAR LIPPS, VA. (LAT 37 02 25 LONG 082 40 21)												
JUN , 1978												
08...	1120	--	30	6.7	8	0	1.5	1.0	1.1	.9	12	5.0
03524270 - GUEST RIVER AT LIPPS, VA. (LAT 37 00 21 LONG 082 39 05)												
SEP , 1978												
27...	1100	.87	500	7.3	220	170	45	26	15	3.2	65	200

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N03)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+N03 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)
BIG SANDY RIVER BASIN--CONTINUED												
03208800 - POUND RIVER ABOVE INDIAN CREEK, AT POUND, VA. (LAT 37 07 26 LONG 082 36 29)												
APR , 1978												
04...	2.8	.1	7.3	338	324	--	--	--	--	--	--	0
SEP												
27...	2.8	.2	5.9	380	376	--	--	--	.04	.00	.00	0
03208810 - INDIAN CREEK AT POUND, VA. (LAT 37 07 07 LONG 082 35 55)												
SEP , 1978												
27...	33	.2	7.7	730	698	--	--	--	8.9	.00	.00	10
03208830 - BOLD CAMP CREEK AT POUND, VA. (LAT 37 07 09 LONG 082 35 40)												
SEP , 1978												
27...	5.8	.2	7.9	869	801	--	--	--	.00	.00	.00	40
03208900 - POUND RIVER NEAR GEORGES FORK, VA. (LAT 37 09 51 LONG 082 31 30)												
APR , 1978												
04...	3.2	.1	7.3	337	325	--	--	--	--	--	--	0
SEP												
28...	5.7	.2	5.6	535	521	--	--	--	.00	.00	.00	0
03208940 - CRANES NEST RIVER NEAR DARWIN, VA. (LAT 37 05 01 LONG 082 29 24)												
SEP , 1978												
28...	4.2	.1	5.4	536	501	--	--	--	.04	.00	.00	10
03208945 - LICK FORK NEAR DARWIN, VA. (LAT 37 05 03 LONG 082 29 27)												
SEP , 1978												
28...	3.0	.2	8.4	1620	1510	--	--	--	.38	.00	.00	50
03208950 - CRANES NEST RIVER NEAR CLINTWOOD, VA. (LAT 37 07 26 LONG 082 26 20)												
APR , 1978												
04...	3.6	.1	7.8	391	365	--	--	--	--	--	--	70
SEP												
28...	4.6	.1	5.2	630	625	--	--	--	.19	.00	.00	0
03524250 - WINSTON ISOM SPRING NEAR LIPPS, VA. (LAT 37 02 26 LONG 082 40 33)												
JUN , 1978												
08...	1.6	.0	16	209	196	.03	.10	.00	.03	.00	.00	0
03524252 - BILL BURLESON SPRING NEAR LIPPS, VA. (LAT 37 02 25 LONG 082 40 21)												
JUN , 1978												
08...	.8	.0	7.0	19	24	.11	.50	.00	.11	.00	.00	0
03524270 - GUEST RIVER AT LIPPS, VA. (LAT 37 00 21 LONG 082 39 05)												
SEP , 1978												
27...	1.9	.1	7.4	346	331	--	--	--	.10	.00	.00	0

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L 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)	BICAR- BONATE (MG/L AS HC03)	SULFATE DIS- SOLVED (MG/L AS SO4)
BIG SANDY RIVER BASIN--CONTINUED												
03524300 - GUEST RIVER NEAR STEPHENS, VA. (LAT 36 58 35 LONG 082 37 16)												
APR , 1978												
04...	1300	--	295	6.2	120	100	25	14	6.1	2.0	22	110
JUN												
08...	1230	--	230	7.0	98	65	21	11	5.8	2.2	40	79
SEP												
27...	1025	1.6	445	7.5	200	140	43	23	12	3.3	79	160
03524310 - ROCKY FORK NEAR STEPHENS, VA. (LAT 36 58 31 LONG 082 37 02)												
APR , 1978												
04...	1250	--	230	6.5	86	72	18	10	6.0	1.8	17	68
SEP												
27...	1005	.48	530	7.3	280	220	62	30	20	4.7	70	240
03524330 - GUEST RIVER AT ESSERVILLE, VA. (LAT 36 57 19 LONG 082 36 42)												
APR , 1978												
04...	1235	--	260	6.5	100	88	22	12	6.0	1.8	20	93
SEP												
26...	1535	2.6	575	7.3	250	190	53	29	13	4.1	81	220
03524350 - BEAR CREEK NEAR NORTON, VA. (LAT 36 56 30 LONG 082 35 54)												
SEP , 1978												
27...	1200	3.0	600	7.3	240	180	54	26	21	5.0	80	180
03524400 - GUEST RIVER NEAR NORTON, VA. (LAT 36 56 30 LONG 082 35 35)												
APR , 1978												
04...	1215	--	290	6.7	120	95	26	13	5.8	1.9	28	97
SEP												
27...	1240	7.4	590	7.7	260	180	57	28	17	4.4	89	200
03524450 - TOMS CREEK AT COEBURN, VA. (LAT 36 56 25 LONG 082 28 21)												
APR , 1978												
04...	1155	--	460	7.7	180	45	41	18	35	3.0	160	110
SEP												
27...	1320	5.0	265	7.9	210	51	50	20	42	4.0	190	130
03529300 - POWELL RIVER NEAR NORTON, VA. (LAT 36 55 09 LONG 082 42 17)												
SEP , 1978												
26...	1440	5.8	640	8.0	290	210	62	32	23	3.4	96	250
03529320 - ROARING FORK NEAR NORTON, VA. (LAT 36 55 20 LONG 082 43 37)												
SEP , 1978												
26...	1400	4.9	465	8.0	140	3	34	14	43	3.2	170	98
03530050 - POWELL RIVER AT DRYDEN, VA. (LAT 36 46 48 LONG 082 55 30)												
SEP , 1978												
26...	1130	33	465	6.8	160	29	41	14	29	3.0	160	93

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N03)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, N02+N03 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS P04)	IRON, DIS- SOLVED (UG/L AS FE)
BIG SANDY RIVER BASIN--CONTINUED												
03524300 - GUEST RIVER NEAR STEPHENS, VA. (LAT 36 58 35 LONG 082 37 16)												
APR , 1978												
04...	1.8	.1	7.5	185	177	--	--	--	--	--	--	10
JUN												
08...	1.6	.1	5.8	160	149	.55	2.4	.00	.56	.00	.00	40
SEP												
27...	3.4	.1	4.9	295	289	--	--	--	.00	.00	.00	0
03524310 - ROCKY FORK NEAR STEPHENS, VA. (LAT 36 58 31 LONG 082 37 02)												
APR , 1978												
04...	8.3	.1	7.1	138	128	--	--	--	--	--	--	10
SEP												
27...	21	.1	6.1	437	420	--	--	--	.43	.00	.00	80
03524330 - GUEST RIVER AT ESSERVILLE, VA. (LAT 36 57 19 LONG 082 36 42)												
APR , 1978												
04...	5.1	.1	7.4	160	157	--	--	--	--	--	--	0
SEP												
26...	7.1	.1	5.5	386	375	--	--	--	.73	.00	.00	10
03524350 - BEAR CREEK NEAR NORTON, VA. (LAT 36 56 30 LONG 082 35 54)												
SEP , 1978												
27...	26	.2	6.9	394	374	--	--	--	3.0	.65	2.0	20
03524400 - GUEST RIVER NEAR NORTON, VA. (LAT 36 56 30 LONG 082 35 35)												
APR , 1978												
04...	5.8	.1	6.5	174	170	--	--	--	--	--	--	0
SEP												
27...	16	.2	6.3	387	379	--	--	--	1.3	.21	.64	10
03524450 - TOMS CREEK AT COEBURN, VA. (LAT 36 56 25 LONG 082 28 21)												
APR , 1978												
04...	9.6	.1	6.7	296	302	--	--	--	--	--	--	0
SEP												
27...	8.8	.2	9.6	361	359	--	--	--	.00	.23	.71	0
03529300 - POWELL RIVER NEAR NORTON, VA. (LAT 36 55 09 LONG 082 42 17)												
SEP , 1978												
26...	4.0	.1	8.5	459	431	--	--	--	.11	.00	.00	10
03529320 - ROARING FORK NEAR NORTON, VA. (LAT 36 55 20 LONG 082 43 37)												
SEP , 1978												
26...	1.9	.1	5.9	294	284	--	--	--	.00	.00	.00	30
03530050 - POWELL RIVER AT DRYDEN, VA. (LAT 36 46 48 LONG 082 55 30)												
SEP , 1978												
26...	4.1	.1	4.2	276	267	--	--	--	.00	.02	.06	0

GROUND-WATER LEVELS

ACCOMACK COUNTY

375600075280002. 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 (200 mm), depth 60 ft (18.3 m), screen depth unknown.

DATUM.--Altitude of land-surface datum is 35 ft (11 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing, 1.38 ft (0.42 m) above land-surface datum. Measuring point reported as 6.09 ft (1.86 m) above land-surface datum from 1963 to 1975. All water levels prior to 1975 should be 4.71 ft (1.44 m) lower than shown.

REMARKS.--Records furnished by the National Aeronautics and Space Administration.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.29 ft (6.79 m) below land-surface datum, June 5, 1978; lowest measured, 24.70 ft (7.53 m) below land-surface datum, Sept. 9, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 9	23.72	MAY 5	22.83	AUG 8	22.81
MAR 1	22.89	JUN 5	22.29	SEP 5	23.12
APR 5	22.91	JUL 5	22.42		

ALBEMARLE COUNTY

380333078264801. Local number, 43N1.

LOCATION.--Lat 38°03'33", long 78°25'48", 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 (150 mm), depth 409 ft (124.7 m), cased to 52 ft (15.8 m), open hole 52 to 409 ft (15.8 to 124.7 m).

DATUM.--Altitude of land-surface datum is 335 ft (102 m) National Geodetic Vertical Datum of 1929. Measuring

point: Top of casing, 0.3 ft (0.1 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 28.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.58 ft (3.53 m) below land-surface datum, May 31, 1971; lowest measured, 19.50 ft (5.94 m) below land-surface datum, Oct. 15-18, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 16	17.32	APR 18	14.01	JUL 12	17.02
MAR 14	13.05	MAY 23	11.99	AUG 15	18.44

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 (200 mm), depth 288 ft (87.8 m), cased to 40 ft (12.2 m), open hole 40 to 288 ft (12.2 to 87.8 m).

DATUM.--Altitude of land-surface datum is 860 ft (262 m) National Geodetic Vertical Datum of 1929. Measuring

point: Top of casing, 1 ft (0.3 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 12.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 34.78 ft (10.60 m) below land-surface datum, June 13, 1973; lowest, 54.69 ft (16.67 m) below land-surface datum, Feb. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	52.28	52.30	-	-	51.99	51.58	-	-	-	-	-	48.24
10	52.40	52.60	-	-	52.43	51.75	-	-	-	-	-	47.90
15	-	52.87	-	-	52.31	51.71	-	-	-	-	-	48.55
20	52.61	-	-	-	52.26	51.54	-	-	-	-	-	48.78
25	52.33	-	-	-	52.30	51.00	-	-	-	-	48.37	48.68
EOM	52.55	-	-	-	52.00	-	-	-	-	-	48.43	48.73

WTR YR 1978 HIGHEST 47.63 AUG 27, 1978 LOWEST 52.87 NOV 15, 1977

372514078394301. Local number, 41H2.

LOCATION.--Lat 37°25'14", long 78°39'43", Hydrologic Unit 02080207, 1 mi (1.6 km) 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.--Augured observation water well, diameter 3 in (80 mm) to 68 ft (20.7 m), 1.25 in (32 mm) 68 to 73 ft (20.7 to 22.3 m), depth 73 ft (22.3 m), screened 68 to 73 ft (20.7 to 22.3 m).

DATUM.--Altitude of land-surface datum is 640 ft (195 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing 1.5 ft (0.5 m) 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 (10.06 m) below land-surface datum, May 20, 1973; lowest measured, 49.41 ft (15.06 m) below land-surface datum, Mar. 30, 1971.

APPOMATTOX COUNTY--Continued

372514078394301--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	46.19	JAN 6	45.96	APR 19	42.75	JUL 6	39.71
NOV 17	45.60	FEB 23	44.65	JUN 2	40.56		

372608078404601. Local number, 41H3.

LOCATION.--Lat 37°26'08", long 78°40'46", Hydrologic Unit 02080207, 0.85 mi (1.4 km) west of Ranger Headquarters on south side of dirt road off of State Highway 636. Owner: U.S. Geological Survey.

AQUIFER.--Candler formation of Paleozoic age.

WELL CHARACTERISTICS.--Augered observation water well, diameter 3 in (80 mm) to 49 ft (14.9 m), 1.25 in (32 mm) 49 to 54 ft (14.9 to 16.5 m), depth 54 ft (16.5 m), screened 49 to 54 ft (14.9 to 16.5 m).

DATUM.--Land-surface datum is 683.8 ft (208.4 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.3 ft (0.4 m) 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, 7.31 ft (2.23 m) below land-surface datum, Apr. 12, 1973; lowest measured, 28.30 ft (8.62 m) below land-surface datum, Oct. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	28.30	JAN 6	25.86	APR 19	19.86	JUL 6	18.92
NOV 17	28.26	FEB 23	22.56	JUN 2	17.74		

ARLINGTON COUNTY

385346077073701. Local number, 53V1.

LOCATION.--Lat 38°53'34", 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 (600 mm), depth 35 ft (10.7 m), terracotta casing.

DATUM.--Altitude of land-surface datum is 410 ft (125 m) National Geodetic Vertical Datum of 1929. 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 (5.41 m) below land-surface datum, Apr. 20, 1935; lowest measured, 34.80 ft (10.61 m) below land-surface datum, Jan. 4, 1932.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	29.37	OCT 26	29.72	NOV 15	29.43	JAN 30	25.39	APR 27	24.13	JUL 28	23.94
12	29.52	NOV 2	29.74	30	29.32	FEB 27	25.00	MAY 25	23.40	AUG 28	24.22
19	29.60	10	29.53	DEC 29	27.59	MAR 27	24.64	JUN 26	23.65	SEP 30	25.21

385253077042301. Local number, 54V3.

LOCATION.--Lat 38°52'53", long 77°04'23", Hydrologic Unit 02070010, at Arlington National Cemetery. Owner: U.S. Department of Defense.

AQUIFER.--Terrace gravels of Holocene age and sand of Early Cretaceous age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 48 in (1,200 mm), depth 50 ft (15.2 m).

DATUM.--Altitude of land-surface datum is 205 ft (62 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of brick and stone casing, 3 ft (0.9 m) above land-surface datum.

PERIOD OF RECORD.--January 1958 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 40.34 ft (12.30 m) below land-surface datum, June 26, 1978; lowest measured, 44.90 ft (13.69 m) below land-surface datum, Mar. 4, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	43.02	OCT 26	43.09	NOV 15	43.23	JAN 30	42.30	APR 27	41.02	JUL 28	40.37
12	43.05	NOV 2	43.19	30	43.19	FEB 27	41.52	MAY 25	40.63	AUG 28	40.58
19	43.10	10	43.17	DEC 29	42.97	MAR 27	41.37	JUN 26	40.34	SEP 30	40.90

BUCKINGHAM COUNTY

372541078392101. Local number, 41H1.

LOCATION.--Lat 37°25'41", long 78°39'21", Hydrologic Unit 02080207, 0.45 mi (0.72 km) 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 (80 mm) to 83 ft (25.3 m), 1.25 in (32 mm) 83 to 88 ft (25.3 to 26.8 m), depth 88 ft (26.8 m), screened 83 to 88 ft (25.3 to 26.8 m).

DATUM.--Altitude of land-surface datum is 660 ft (201 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.20 ft (0.37 m) 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 (9.43 m) below land-surface datum, May 20, 1973; lowest measured, 47.63 ft (14.52 m) below land-surface datum, Mar. 30, 1971.

GROUND-WATER LEVELS

BUCKINGHAM COUNTY--Continued

372541078392101--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	46.39	JAN 6	47.45	APR 19	43.76	JUL 6	40.07
NOV 17	47.02	FEB 23	46.02	JUN 2	41.17		

372519078374001. Local number, 41H4.

LOCATION.--Lat 37°25'19", long 78°37'40", Hydrologic Unit 02080207, 0.65 mi (1.0 km) northeast of Holiday Creek and 0.85 mi (1.4 km) 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 (80 mm) to 72 ft (22 m), 1.25 in (32 mm) 72 to 77 ft (22.0 to 23.5 m), depth 77 ft (23.5 m), screened 72 to 77 ft (22.0 to 23.5 m).

DATUM.--Altitude of land-surface datum is 647 ft (197 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.4 ft (0.43 m) 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, 28.68 ft (8.74 m) below land-surface datum, May 29, 30, 1974; lowest measured, 44.29 ft (13.50 m) below land-surface datum, Oct. 20, 21, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	40.64	JAN 6	40.20	APR 19	36.41	JUL 6	33.42
NOV 17	40.94	FEB 23	37.57	JUN 2	32.98		

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: Kenneth Daul.

AQUIFER.--Petersburg granite of Late Paleozoic age.

WELL CHARACTERISTICS.--Drilled water well, diameter 6 in (150 mm), depth 100 ft (30.5 m), cased to 50 ft (15.2 m), open hole 50 to 100 ft (15.2 to 30.5 m).

DATUM.--Land-surface datum is 57.30 ft (17.47 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1 ft (0.3 m) above land-surface datum.

PERIOD OF RECORD.--October 1939 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.73 ft (3.27 m) below land-surface datum, Jan. 26, 1978; lowest measured, 19.09 ft (5.82 m) below land-surface datum, Jan. 14, 1942.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	16.92	OCT 26	16.78	NOV 28	15.11	FEB 27	12.43	MAY 26	12.52	AUG 25	14.80
12	16.91	NOV 2	16.13	DEC 27	13.25	MAR 28	12.05	JUN 30	14.15	SEP 26	15.12
18	16.84	9	15.60	JAN 26	10.73	APR 28	12.77	JUL 31	14.96		

FAIRFAX COUNTY

385152077211301. Local number, 52U1.

LOCATION.--Lat 38°51'52", long 77°21'13", Hydrologic Unit 02070008, Fair Acres Farm, northwest of Fairfax on U.S. Highway 50. Owner: Atwell Somerville, Jr.

AQUIFER.--Wissahickon formation of Late Precambrian (?) age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 4 ft (1.2 m), depth 24 ft (7.3 m), uncemented stone casing.

DATUM.--Altitude of land-surface datum is 400 ft (122 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of access pipe, 3.05 ft (0.93 m) above land-surface datum.

PERIOD OF RECORD.--August 1931 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.17 ft (2.80 m) below land-surface datum, June 25, 1972; lowest measured, 23.58 ft (7.19 m) below land-surface datum, Dec. 26, 1931.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	19.56	OCT 26	19.72	NOV 15	18.66	JAN 30	13.18	APR 27	13.03	JUL 28	14.22
12	19.67	NOV 2	19.29	30	18.48	FEB 27	14.00	MAY 25	12.31	AUG 28	15.52
19	19.64	10	18.57	DEC 28	16.10	MAR 27	12.02	JUN 26	13.99	SEP 25	16.28

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 (600 mm), depth 28 ft (8.5 m).

DATUM.--Altitude of land-surface datum is 340 ft (104 m) National Geodetic Vertical Datum of 1929. Measuring point: Hole in cement platform, 0.67 ft (0.20 m) above land-surface datum.

PERIOD OF RECORD.--May 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.54 ft (3.82 m) below land-surface datum, Apr. 30, 1973; lowest measured, 27.57 ft (8.40 m) below land-surface datum, Nov. 30, 1964.

FAIRFAX COUNTY--Continued

384518077163501--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	24.51	OCT 26	25.03	NOV 15	25.28	JAN 30	22.95	APR 27	19.92	JUL 28	19.93
12	24.70	NOV 2	25.14	30	25.44	FEB 27	21.97	MAY 25	18.73	AUG 28	19.39
19	24.84	10	25.01	DEC 29	24.76	MAR 27	19.29	JUN 26	18.87	SEP 30	20.44

385638077220101. Local number, 52V2.

LOCATION.--Lat 38°56'38", 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 (200 mm), depth 205 ft (62 m), cased to 35 ft (11 m), open hole 35 to 205 ft (11 to 62 m).

DATUM.--Altitude of land-surface datum is 390 ft (119 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.0 ft (0.6 m) above land-surface datum.

PERIOD OF RECORD.--October 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.79 ft (2.37 m) below land-surface datum, May 16, 1978; lowest measured, 16.76 ft (5.11 m) below land-surface datum, Oct. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	16.61	15.76	13.29	11.63	9.50	-	9.05	10.01	11.25	12.63	14.10	13.84
10	16.67	-	13.38	10.41	9.97	-	9.45	9.45	11.58	12.95	13.93	14.13
15	16.66	-	13.20	10.26	10.52	-	10.00	8.84	12.12	13.14	12.60	14.25
20	16.50	-	12.27	9.60	10.63	-	9.88	8.12	12.41	13.75	13.00	14.54
25	16.61	-	11.30	9.35	10.70	-	9.95	9.42	12.70	14.03	-	14.70
EOM	16.10	-	11.94	9.46	10.62	-	10.01	10.48	12.82	14.30	-	14.96

WTR YR 1978 HIGHEST 7.79 MAY 16, 1978 LOWEST 16.76 OCT 14, 1977

384532077054801. Local number, 54U40.

LOCATION.--Lat 38°45'32", long 77°05'48", Hydrologic Unit 02070010, at Huntley Meadows Park, west of U.S. Highway 1 and south of Alexandria. Owner: Fairfax County Park Authority.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in (150 mm), depth 299 ft (91.1 m), screened 294 to 299 ft (89.6 to 91.1 m).

DATUM.--Altitude of land-surface datum is 50 ft (15 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of 2 in (50 mm) casing, 1.0 ft (0.30 m) above land-surface datum.

PERIOD OF RECORD.--May 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 159.22 ft (48.53 m) below land-surface datum, May 25, 1978; lowest measured, 164.82 ft (50.24 m) below land-surface datum, Sept. 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MAY 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 20, 1977	161.50	OCT 5, 1977	164.74	MAY 25, 1978	159.22
JUN 7, 1977	163.81	DEC 29, 1977	164.77	JUL 6, 1978	159.51
JUL 7, 1977	164.23	FEB 27, 1978	160.67	JUL 17, 1978	159.38
AUG 3, 1977	164.74	MAR 27, 1978	159.62	AUG 17, 1978	159.40
SEP 7, 1977	164.82	APR 27, 1978	159.59		

FLOYD COUNTY

365436080190401. Local number, 28D1.

LOCATION.--Lat 36°54'36", long 80°19'04", Hydrologic Unit 05050001, in the town of Floyd. Owner: Town of Floyd.

AQUIFER.--Lynchburg formation of Precambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 8 in (200 mm), depth 90 ft (27.4 m), cased to 52 ft (15.8 m), open hole 52 to 90 ft (15.8 to 27.4 m).

DATUM.--Altitude of land-surface datum is 2,460 ft (750 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.8 ft (0.2 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 20.

PERIOD OF RECORD.--April 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.00 ft (3.66 m) below land-surface datum, May 29, 1973; lowest, 18.85 ft (5.75 m) below land-surface datum, Oct. 29, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	18.27	17.80	15.70	15.79	14.29	14.70	13.53	12.70	13.02	13.39	14.05	14.62
10	18.32	16.04	15.70	15.39	14.35	14.38	13.58	12.50	13.18	13.48	14.10	14.74
15	18.39	15.86	15.63	15.31	14.49	13.74	13.72	12.45	13.30	13.57	14.20	14.82
20	18.48	15.80	15.63	15.22	14.51	13.77	13.80	12.61	13.30	13.70	14.30	14.95
25	18.52	15.74	15.62	15.19	14.58	13.81	13.91	12.77	13.22	13.77	14.43	15.07
EOM	18.07	15.76	15.72	14.30	14.58	13.44	12.90	12.89	13.36	13.98	14.50	15.18

WTR YR 1978 HIGHEST 12.40 MAY 13, 1978 LOWEST 18.52 OCT 24, 25, 1977

GROUND-WATER LEVELS

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 (100 mm), depth 354 ft (107.9 m), screened 335 to 354 ft (102.1 to 107.9 m).

DATUM.--Land-surface datum is 21.24 ft (6.47 m) 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 (4.42 m) below land-surface datum, June 25, 1942; lowest measured, 184.60 ft (56.27 m) below land-surface datum, May 18, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	177.94	JAN 23	181.05	MAY 25	184.04
NOV 8	179.72	MAR 14	180.00	JUL 11	181.18
DEC 20	181.96	MAY 18	184.60	AUG 10	180.96

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 (200 mm), depth 303 ft (92.4 m), cased to 52 ft (15.8 m), open hole 52 to 303 ft (15.8 to 92.4 m).

DATUM.--Altitude of land-surface datum is 380 ft (116 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.20 ft (0.37 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 11.

PERIOD OF RECORD.--October 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 36.85 ft (11.23 m) below land-surface datum, Aug. 1, 1973; lowest, 45.09 ft (13.74 m) below land-surface datum, Dec. 30, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	40.07	-	40.40	40.58	40.26	39.89	39.51	39.20	38.50	38.15	37.94	37.90
10	40.10	-	40.62	40.59	40.05	39.70	39.40	-	38.49	38.01	37.90	37.93
15	-	-	40.43	40.58	40.09	39.77	39.40	-	38.39	37.97	37.90	37.90
20	-	40.48	40.50	40.45	39.93	39.78	39.28	-	38.27	38.00	37.90	37.90
25	-	40.35	40.44	40.31	39.83	39.71	39.26	-	38.20	37.97	37.87	37.90
EOM	-	40.48	40.51	-	39.85	39.59	39.19	-	38.12	37.94	37.89	37.97

WTR YR 1978 HIGHEST 37.83 SEP 16, 1978 LOWEST 40.62 DEC 10, 1977

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 (150 mm), depth 300 ft (91.4 m), screen depth unknown.

DATUM.--Land-surface datum is 50.26 ft (15.32 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.34 ft (0.10 m) above land-surface datum.

PERIOD OF RECORD.--May 1939 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.73 ft (6.32 m) below land-surface datum, Jan. 25, 1954; lowest measured, 56.95 ft (17.36 m) below land-surface datum, Aug. 14, 1943.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	35.22	DEC 9	33.16	FEB 10	34.61	APR 14	34.40	JUN 16	34.41	AUG 18	33.93
14	35.25	16	31.29	17	34.73	21	34.51	23	34.42	25	34.16
21	35.16	23	32.88	24	34.59	28	31.78	30	34.40	SEP 1	34.38
28	33.18	30	34.56	MAR 3	34.68	MAY 5	33.08	JUL 7	34.44	8	34.46
NOV 4	30.66	JAN 6	34.62	10	29.55	12	32.55	14	34.50	15	34.52
11	30.21	13	33.14	17	32.44	19	34.04	21	34.54	22	34.56
18	34.49	20	31.04	24	34.56	26	34.25	28	34.56	29	34.37
25	34.56	27	32.56	31	32.05	JUN 2	34.30	AUG 4	34.54		
DEC 2	34.45	FEB 3	34.42	APR 7	34.61	9	34.36	11	33.55		

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 (150 mm), depth 305 ft (93.0 m), screened 285 to 305 ft (86.9 to 93.0 m).

ISLE OF WIGHT COUNTY--Continued

364059076544901--Continued

DATUM.--Altitude of land-surface datum is 25 ft (8 m) National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 3.50 ft (1.07 m) above land-surface datum.

REMARKS.--Water level affected by local pumpage.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 99.00 ft (30.18 m) below land-surface datum, Dec. 27, 1960; lowest, 191.72 ft (58.44 m) below land-surface datum, May 19-20, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	184.60	186.03	188.61	185.73	188.17	189.52	189.59	190.63	191.25	190.07	-	186.01
10	184.69	186.66	188.95	187.10	186.42	188.46	189.71	191.21	190.97	188.85	187.85	185.56
15	183.93	187.18	189.08	187.68	185.32	187.84	190.35	191.26	-	188.72	188.09	185.69
20	184.62	187.87	188.91	187.59	186.22	189.68	190.33	191.72	-	189.30	187.98	186.83
25	184.42	188.33	185.99	187.95	188.49	189.37	190.91	190.84	189.99	190.78	187.60	186.73
EOM	184.58	188.35	180.94	188.77	189.14	-	190.80	191.65	190.56	189.51	187.83	185.37

WTR YR 1978 HIGHEST 177.25 DEC 27, 1977 LOWEST 191.72 MAY 19-20, 1978

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 (100 mm), depth 628 ft (191.4 m), screened 430 to 435 ft (131.1 to 132.6 m), 475 to 480 ft (144.8 to 146.3 m), 580 to 585 ft (176.8 to 178.3 m), 618 to 623 ft (188.3 to 189.9 m).

DATUM.--Altitude of land-surface datum is 32 ft (10 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing, 2 ft (0.61 m) above land-surface datum.

REMARKS.--Water level affected by local pumpage.

PERIOD OF RECORD.--February 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 154.99 ft (47.24 m) below land-surface datum, Aug. 23, 1974; lowest measured, 208.76 ft (63.63 m) below land-surface datum, May 18, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	201.98	DEC 20	205.64	MAR 14	201.51	JUL 11	204.86
NOV 8	203.99	JAN 23	204.74	MAY 18	208.76	AUG 10	201.40

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 (100 mm), depth 860 ft (262.1 m), screened 720 to 725 ft (219.5 to 221.0 m), 800 to 805 ft (243.8 to 245.4 m), 855 to 860 ft (260.6 to 262.1 m).

DATUM.--Altitude of land-surface datum is 37 ft (11 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing, 4.25 ft (1.30 m) above land-surface datum. Measuring point changed from 2.2 ft (0.67 m) above land-surface datum July 28, 1978. Top section of casing was damaged and replaced July 1978.

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 (47.75 m) below land-surface datum, Dec. 27, 1969; lowest measured, 219.29 ft (66.84 m) below land-surface datum, May 18, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	210.99	DEC 20	214.39	MAR 14	201.14	AUG 9	180.11
NOV 8	214.11	JAN 23	212.45	MAY 18	219.29		

364425076532701. Local number, 55B45.

LOCATION.--Lat 36°44'25", long 76°53'27", Hydrologic Unit 03010202, near Maynards Crossroads. Owner: R. J. Goodrich.

AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in (100 mm), depth 348 ft (106.1 m), screened 338 to 348 ft (103.0 to 106.1 m).

DATUM.--Altitude of land-surface datum is 37 ft (11 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top edge of recorder shelf, 2.20 ft (0.67 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 33.

PERIOD OF RECORD.--December 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 130.06 ft (39.64 m) below land-surface datum, Aug. 15, 1974; lowest, 163.21 ft (49.75 m) below land-surface datum, July 29, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	156.70	159.91	158.90	157.99	157.60	-	159.70	158.30	159.58	-	162.36	162.14
10	156.57	159.25	158.64	-	156.80	-	158.70	157.36	159.60	160.60	162.60	161.80
15	157.00	159.60	159.29	-	156.85	158.29	159.19	157.01	159.88	-	162.44	161.71
20	157.81	159.79	159.82	-	157.45	158.21	159.29	158.40	158.81	162.66	162.66	161.80
25	158.26	159.66	159.22	-	156.62	158.98	160.11	159.48	159.87	162.69	162.33	161.01
EOM	158.48	159.45	157.08	158.99	-	158.70	158.34	160.00	159.68	163.09	163.11	161.19

WTR YR 1978 HIGHEST 156.40 OCT 12, 1977 LOWEST 163.21 JUL 29, 1978

GROUND-WATER LEVELS

JAMES CITY COUNTY

371311076463601. Local number, 56F1.

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 (100 mm), depth 342 ft (104.2 m), screen depth unknown.

DATUM.--Altitude of land-surface datum is 10 ft (3 m) National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 3.15 ft (0.96 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 18.

PERIOD OF RECORD.--May 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 43.29 ft (13.19 m) below land-surface datum, May 8, 1969; lowest, 66.95 ft (20.41 m) below land-surface datum, Sept. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	66.60	65.29	-	-	63.61	63.36	63.20	63.75	-	-	-	-
10	66.31	-	-	-	63.31	62.96	63.27	-	-	-	-	-
15	66.08	-	-	-	63.30	63.15	63.35	-	-	-	-	-
20	65.95	-	-	-	63.30	63.40	63.30	-	-	-	-	-
25	65.95	-	-	-	63.48	63.15	63.62	-	-	-	-	-
EOM	64.99	-	-	-	63.48	63.05	63.40	-	-	-	-	-

WTR YR 1978 HIGHEST 62.70 APR 29, 1978 LOWEST 66.70 OCT 4, 1977

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 in (165 mm). Prior to 1974, diameter reported as 8 in (200 mm). Depth 516 ft (157.3 m), cased to 45 ft (13.7 m), open hole 45 to 516 ft (13.7 to 157.3 m).

DATUM.--Altitude of land-surface datum is 1,100 ft (335 m) National Geodetic Vertical Datum of 1929. Prior to 1974, altitude reported as 940 ft (287 m). Measuring point: Top of casing, 1 ft (0.3 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 22.

PERIOD OF RECORD.--August 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 48.00 ft (14.63 m) below land-surface datum, June 22, 1972; lowest measured, 61.47 ft (18.74 m) below land-surface datum, Nov. 5, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	59.80	APR 19	58.42	JUL 12	58.37
MAR 15	57.84	MAY 31	58.15	AUG 25	60.05

390623077314201. Local number, 50W4C.

LOCATION.--Lat 39°06'23", long 77°31'42", Hydrologic Unit 02070008, east of 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 (150 mm), depth 535 ft (163 m), cased to 6 ft (1.8 m), open hole 6 to 535 ft (1.8 to 163 m).

DATUM.--Altitude of land-surface datum is 400 ft (122 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.0 ft (0.61 m) above land-surface datum.

PERIOD OF RECORD.--October 1977 to September 1978.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.73 ft (11.50 m) below land-surface datum, June 22, 1978; lowest measured, 48.31 ft (14.72 m) below land-surface datum, Nov. 3, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	47.48	FEB 8	42.30	MAY 10	38.28	AUG 22	40.87
NOV 3	48.31	MAR 21	40.33	JUN 22	37.73	SEP 18	42.34
JAN 4	45.25	APR 14	39.19	JUL 11	38.65		

LOUISA COUNTY

380217078133701. Local number, 45N1.

LOCATION.--Lat 38°02'17", long 78°13'43", Hydrologic Unit 02080106, near Thelma, 3 mi (5 km) 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 (150 mm), depth 56 ft (17.1 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 500 ft (152 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.95 ft (0.59 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.97 ft (3.65 m) below land-surface datum, Apr. 30, 1973; lowest, 34.24 ft (10.44 m) below land-surface datum, Oct. 15, 1966.

GROUND-WATER LEVELS

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LOUISA COUNTY--Continued

380217078133701--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	32.50	33.43	32.37	29.78	26.50	24.79	21.80	20.87	18.94	21.81	24.33	25.78
10	32.66	33.24	31.98	29.20	25.93	24.40	21.52	20.56	19.40	22.14	24.50	26.04
15	32.85	33.24	31.57	28.80	25.63	23.78	21.49	19.87	19.80	22.60	24.79	26.20
20	33.02	33.19	31.02	28.26	25.23	23.50	21.23	19.30	20.20	-	25.09	26.43
25	33.18	33.01	30.51	27.85	24.94	23.10	21.45	18.80	20.71	-	25.28	26.67
EOM	33.33	32.74	30.09	26.99	24.91	22.30	21.11	18.69	21.23	23.93	25.55	26.90

WTR YR 1978 HIGHEST 18.66 MAY 30, 1978 LOWEST 33.43 NOV 5, 1977

380045078111401. Local number, 45N4.

LOCATION.--Lat 38°00'45", long 78°11'14", Hydrologic Unit 02080106, near Thelma, 4 mi (6.4 km) southeast of Boswells Tavern east of U.S. Highway 15. Owner: Virginia Department of Correction.

AQUIFER.--Metamorphosed sedimentary and volcanic rocks of unknown age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in (150 mm), depth 200 ft (61.0 m), cased to 42 ft (12.8 m), open hole 42 to 200 ft (12.8 to 61.0 m).

DATUM.--Altitude of land-surface datum is 415 ft (127 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.30 ft (0.70 m) above land-surface datum.

PERIOD OF RECORD.--February 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.61 ft (3.23 m) below land-surface datum, May 26, 1978; lowest measured, 14.00 ft (4.27 m) below land-surface datum, Sept. 28, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, FEBRUARY 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 23, 1977	11.75	AUG 24, 1977	13.50	FEB 27, 1978	12.15
MAR 28, 1977	11.00	AUG 26, 1977	13.69	MAR 28, 1978	11.23
APR 28, 1977	11.52	SEP 28, 1977	14.00	APR 25, 1978	11.93
MAY 27, 1977	12.18	OCT 26, 1977	13.99	MAY 26, 1978	10.61
JUN 28, 1977	12.94	NOV 28, 1977	12.18	JUL 31, 1978	12.44
JUL 28, 1977	13.23	DEC 27, 1977	11.52	AUG 28, 1978	11.87
AUG 17, 1977	13.25	JAN 30, 1978	11.48	SEP 26, 1978	12.42

380231078132801. Local number, 45N5.

LOCATION.--Lat 38°02'31", long 78°13'28", Hydrologic Unit 02080106, near Thelma, 3 mi (5 km) southwest of Boswells Tavern on Tyler property near State Highway 640. Owner: Tyler.

AQUIFER.--Metamorphosed sedimentary and volcanic rocks of unknown age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in (150 mm), depth 14.15 ft (4.31 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 440 ft (134 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.35 ft (1.02 m) above land-surface datum.

PERIOD OF RECORD.--February 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.36 ft (0.11 m) below land-surface datum, Aug. 28, 1978; lowest measured, 6.81 ft (2.08 m) below land-surface datum, July 31, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, FEBRUARY 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 23, 1977	1.42	AUG 24, 1977	6.32	FEB 27, 1978	0.96
MAR 28, 1977	1.50	AUG 26, 1977	6.31	MAR 28, 1978	.60
APR 28, 1977	2.55	SEP 28, 1977	6.48	APR 25, 1978	1.84
MAY 27, 1977	5.25	OCT 26, 1977	6.16	MAY 26, 1978	2.11
JUN 28, 1977	5.58	NOV 28, 1977	1.02	JUL 31, 1978	6.81
JUL 28, 1977	6.07	DEC 27, 1977	1.49	AUG 28, 1978	.36
AUG 17, 1977	6.25	JAN 30, 1978	1.38	SEP 26, 1978	3.88

380236078132301. Local number, 45N6.

LOCATION.--Lat 38°02'36", long 78°13'23", Hydrologic Unit 02080106, near Thelma, 3 mi (5 km) southwest of Boswells Tavern on Tyler property near State Highway 640. Owner: Tyler.

AQUIFER.--Metamorphosed sedimentary and volcanic rocks of unknown age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in (150 mm), depth 11.75 ft (3.58 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 440 ft (134 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.20 ft (0.98 m) above land-surface datum.

PERIOD OF RECORD.--February 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.06 ft (0.63 m) below land-surface datum, July 31, 1978; lowest measured, 9.85 ft (3.00 m) below land-surface datum, Sept. 28, 1977.

GROUND-WATER LEVELS
LOUISA COUNTY--Continued

380236078132301--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, FEBRUARY 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 23, 1977	5.73	AUG 24, 1977	9.82	FEB 27, 1978	4.60
MAR 28, 1977	5.48	AUG 26, 1977	9.52	MAR 28, 1978	2.81
APR 28, 1977	6.29	SEP 28, 1977	9.85	APR 25, 1978	5.59
MAY 27, 1977	7.13	OCT 26, 1977	9.05	MAY 26, 1978	4.92
JUN 28, 1977	8.17	NOV 28, 1977	5.91	JUL 31, 1978	2.06
JUL 28, 1977	9.09	DEC 27, 1977	5.15	AUG 28, 1978	6.98
AUG 17, 1977	9.73	JAN 30, 1978	3.20	SEP 26, 1978	7.59

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 (150 mm), depth 132 ft (40.2 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 455 ft (139 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.6 ft (0.18 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 56.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 26.27 ft (8.01 m) below land-surface datum, May 18, 1973; lowest, 33.99 ft (10.36 m) below land-surface datum, Nov. 20, 27, 28, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	33.50	33.90	33.82	-	-	31.62	31.10	30.78	30.05	-	-	-
10	33.59	33.97	33.80	-	-	31.48	31.00	30.70	30.06	-	-	-
15	33.63	33.92	-	-	-	31.46	31.00	30.49	29.99	-	-	-
20	33.75	33.99	-	-	-	31.42	30.87	30.41	29.85	-	-	-
25	33.80	33.94	-	-	31.65	31.30	30.85	30.29	29.80	-	-	-
EOM	33.87	33.91	-	-	31.61	31.35	30.80	30.13	-	-	-	-

WTR YR 1978 HIGHEST 29.74 JUN 27, 1978 LOWEST 33.99 NOV 20, 27, 28, 1977

MIDDLESEX COUNTY

373809076342501. Local number, 58K1.

LOCATION.--Lat 37°38'09", long 76°34'25", Hydrologic Unit 02080104, in the town of Urbanna. Owner: Town of Urbanna.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in (150 mm), depth 552 ft (168.2 m), screen depth unknown.

DATUM.--Altitude of land-surface datum is 20 ft (6 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.8 ft (0.2 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 31.

PERIOD OF RECORD.--May 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 44.33 ft (13.51 m) below land surface datum, May 16, 1970; lowest, 60.17 ft (18.34 m) below land-surface datum, Aug. 31, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	58.15	57.42	57.21	57.11	56.78	56.60	55.82	55.00	55.79	-	-	-
10	57.82	57.38	57.54	57.18	56.82	56.40	55.70	55.21	-	-	-	-
15	57.67	57.70	56.99	57.01	56.70	56.46	55.75	54.85	-	-	-	-
20	57.83	57.80	56.39	56.71	56.66	56.72	55.26	55.28	-	-	-	-
25	57.70	57.24	56.80	56.82	56.69	56.30	55.48	55.39	-	-	-	-
EOM	57.12	57.49	56.80	56.90	56.60	56.14	55.09	55.38	-	-	-	-

WTR YR 1978 HIGHEST 54.85 APR 27, MAY 15, 1978 LOWEST 58.15 OCT 5, 1977

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 (250 mm), depth 450 ft (137.2 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 1,970 ft (600 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.60 ft (0.49 m) below land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 19.

PERIOD OF RECORD.--May 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.07 ft (0.63 m) below land-surface datum, Mar. 20, 1975; lowest, 7.30 ft (2.23 m) below land-surface datum, Dec. 5, 1969.

GROUND-WATER LEVELS

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MONTGOMERY COUNTY--Continued

370812080261901--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	-	4.32	-	-	3.23	3.60	3.38	2.67	4.08	4.56	5.46	5.90
10	-	3.45	-	-	3.47	2.92	3.53	2.71	4.05	4.90	5.24	6.10
15	4.95	3.63	-	-	3.50	2.52	3.81	2.71	4.33	4.72	5.73	6.17
20	5.46	-	-	-	3.32	3.08	3.76	3.20	4.70	5.17	6.08	6.26
25	5.63	-	-	-	3.45	3.28	4.15	3.46	4.95	5.36	6.10	6.08
EOM	4.89	-	-	2.80	3.26	3.00	2.40	3.80	5.20	5.34	5.60	6.35

WTR YR 1978 HIGHEST 2.30 APR 28, 1978 LOWEST 6.35 SEP 30, 1978

NELSON COUNTY

374224078555601. Local number, 39K1.

LOCATION.--Lat 37°42'24", long 78°55'56", Hydrologic Unit 02080203, near Colleen. Owner: P. D. Payne.

AQUIFER.--Livingston (or Marshall?) formation of Precambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in (150 mm), depth 275 ft (83.8 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 785 ft (239 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1 ft (0.3 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 6.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 27.08 ft (8.25 m) below land-surface datum, June 29, 1973; lowest measured, 35.66 ft (10.87 m) below land-surface datum, Mar. 7, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	31.23	APR 19	31.96	JUL 11	32.55
MAR 13	31.60	MAY 26	30.76	AUG 21	31.46

NEW KENT COUNTY

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 to 4 in (150 to 100 mm), depth 626 ft (190.8 m), screen (slotted casing) 252 to 257 ft (76.8 to 78.3 m), 339 to 344 ft (103.3 to 104.9 m), 439 to 444 ft (133.8 to 135.3 m), 615 to 625 ft (187.5 to 190.5 m).

DATUM.--Altitude of land-surface datum is 10 ft (3 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.8 ft (0.2 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 17.

PERIOD OF RECORD.--March 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 30.24 ft (9.22 m) below land-surface datum, Apr. 10, 1969; lowest, 48.10 ft (14.66 m) below land-surface datum, Oct. 5, 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	48.10	47.81	47.25	47.52	-	-	47.69	47.49	47.88	-	-	-
10	48.10	47.72	-	-	-	-	47.71	47.55	47.89	-	-	-
15	47.91	47.42	47.28	47.12	-	-	47.75	47.35	48.00	-	-	-
20	47.90	47.50	46.95	46.99	-	47.66	47.60	-	48.05	-	-	-
25	48.07	47.30	47.18	47.28	-	47.63	47.73	-	47.93	-	-	-
EOM	47.70	47.45	47.35	47.32	-	47.56	47.57	47.79	47.95	-	-	-

WTR YR 1978 HIGHEST 46.95 DEC 20, 1977 LOWEST 48.10 OCT 5, 10, 1977

CITY OF NORFOLK

365223076122101. Local number, 61C1.

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 (150 mm), depth 970 ft (295.7 m), screened 900 to 960 ft (274.3 to 292.6 m).

DATUM.--Land-surface datum is 10.80 ft (3.29 m) National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 4.0 ft (1.2 m) above land-surface datum.

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.

PERIOD OF RECORD.--January 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 13.70 ft (4.18 m) below land-surface datum, Feb. 17, 1968; lowest, 45.05 ft (13.73 m) below land-surface datum, Aug. 30, 1978.

GROUND-WATER LEVELS

CITY OF NORFOLK--Continued

365223076122101--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	42.39	42.51	42.60	43.17	43.44	43.62	43.91	44.37	43.85	44.45	44.88	45.02
10	42.44	42.35	42.85	43.18	43.38	43.45	44.02	44.47	44.17	44.65	44.88	-
15	42.31	42.54	42.82	43.15	43.44	43.55	44.31	44.43	44.46	44.80	44.92	-
20	42.48	42.69	42.66	43.12	43.45	43.83	44.19	44.62	44.64	44.81	44.93	-
25	42.60	42.55	42.80	43.25	43.47	43.86	44.33	44.12	44.63	44.84	44.99	-
EOM	42.49	42.62	42.92	43.36	43.62	43.76	44.26	43.69	44.74	44.81	45.03	-

WTR YR 1978 HIGHEST 42.14 OCT 14, 1977 LOWEST 45.05 AUG 30, 1978

ORANGE COUNTY

381002078094201. Local number, 45Pl.

LOCATION.--Lat 38°10'02", long 78°09'42", Hydrologic Unit 02080106. Gordonsville. Owner: M. L. Johnson.

AQUIFER.--Phyllite of Evinston group of Cambrian or Precambrian age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 6 in (150 mm), depth 98 ft (29.9 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 480 ft (146 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.3 ft (0.1 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 30.

PERIOD OF RECORD.--February 1965 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.83 ft (3.61 m) below land-surface datum, Apr. 10, 1973; lowest, 35.90 ft (10.94 m) below land-surface datum, Jan. 31, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	33.00	34.19	26.50	23.55	19.60	20.28	17.29	17.78	19.42	23.55	24.85	23.90
10	33.22	32.16	25.89	22.12	20.14	20.02	18.07	15.72	20.60	23.73	25.23	24.38
15	33.49	30.60	25.42	21.10	21.04	17.56	19.28	14.67	21.47	24.01	25.20	24.76
20	33.70	30.05	23.56	19.75	20.89	17.65	19.80	14.62	22.00	24.42	25.61	25.37
25	33.89	28.77	22.51	19.62	20.20	18.36	20.88	16.25	22.54	24.57	25.72	25.77
EOM	34.10	27.66	23.25	18.93	20.18	16.55	18.00	18.12	22.96	24.93	25.07	26.22

WTR YR 1978 HIGHEST 14.34 MAY 17, 1978 LOWEST 34.19 NOV 4, 5, 1977

PRINCE GEORGE COUNTY

370221077234101. Local number, 51E1.

LOCATION.--Lat 37°02'21", long 77°23'41", Hydrologic Unit 03010201, Carson Elementary School, Carson. Owner: Prince George County School Board.

AQUIFER.--Sediments of Miocene age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in (100 mm), depth 126 ft (38.4 m), screen depth unknown.

DATUM.--Land-surface datum is 154.18 ft (46.99 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of iron beam, 2.00 ft (0.61 m) below land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 41.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 41.02 ft (12.50 m) below land-surface datum, Aug. 3, 1978; lowest measured, 59.30 ft (18.08 m) below land-surface datum, Jan. 7, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 30	49.29	MAR 15	49.23	MAY 22	49.15	AUG 3	41.02

PRINCE WILLIAM COUNTY

384930077420801. 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 (6.0 km) 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 (175 mm), depth 345 ft (105.2 m), cased to 20 ft (6.1 m), open hole 20 to 345 ft (6.1 to 105.2 m).

DATUM.--Altitude of land-surface datum is 383 ft (117 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.0 ft (0.61 m) above land-surface datum.

PERIOD OF RECORD.--October 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.59 ft (0.79 m) below land-surface datum, Mar. 19, 1975; lowest, 10.22 ft (3.12 m) below land-surface datum, Nov. 8, 9, 1968.

PRINCE WILLIAM COUNTY--Continued

384930077420801--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	8.48	7.47	5.03	-	6.23	5.23	4.61	4.93	5.58	6.33	7.09	6.33
10	8.47	5.78	5.53	-	5.89	4.98	4.80	4.75	5.82	6.31	6.93	6.66
15	8.39	5.41	5.54	-	5.51	4.01	5.30	3.74	-	6.51	4.78	6.60
20	8.51	6.02	4.07	-	5.30	4.43	4.92	3.78	5.99	6.86	5.27	6.69
25	8.47	5.59	4.47	-	5.24	4.73	5.09	4.51	6.18	6.95	5.69	6.62
EOM	8.08	5.59	5.13	-	5.21	4.07	4.86	5.15	6.38	7.04	6.15	6.81

WTR YR 1978 HIGHEST 2.97 MAY 16-17, 1978 LOWEST 8.55 OCT 23, 1977

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 (175 mm), depth 165 ft (50.3 m), cased to 10 ft (3.0 m), open hole 10 to 165 ft (3.0 to 50.3 m).

DATUM.--Altitude of land-surface datum is 420 ft (128 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1 ft (0.3 m) above land-surface datum.

PERIOD OF RECORD.--November 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.34 ft (2.24 m) below land-surface datum, Mar. 20, 1975; lowest, 12.28 ft (3.74 m) below land-surface datum, July 12, 13, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	-	-	8.15	-	-	9.35	9.13	9.53	9.77	-	10.14	-
10	-	-	8.77	-	-	9.29	9.08	9.37	9.83	10.09	-	10.30
15	-	-	8.91	-	-	8.67	9.36	8.36	10.11	10.48	-	-
20	-	9.09	7.80	-	-	8.42	9.21	7.79	10.39	10.75	-	-
25	-	8.83	-	-	9.32	8.71	9.42	8.62	10.41	10.95	-	-
EOM	-	8.56	-	-	9.13	8.19	9.55	9.38	10.35	10.82	-	-

WTR YR 1978 HIGHEST 7.44 DEC 12, 1977 LOWEST 11.17 OCT 4, 1977

383423077245901. Local number, 51S7.

LOCATION.--Lat 38°34'23", long 77°24'59", Hydrologic Unit 02070011, 0.7 mi (1.1 km) southeast of Belfair Cross-roads and 700 ft (213.4 m) north of State Highway 619. Owner: National Park Service.

AQUIFER.--Wissahickan formation of Paleozoic age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 6 in (150 mm), depth 490 ft (149.4 m), cased to 50 ft (15.2 m), open hole 50 to 490 ft (15.2 to 149.4 m).

DATUM.--Land-surface datum is 295 ft (90 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.0 ft (0.61 m) above land-surface datum.

PERIOD OF RECORD.--December 1977 to August 1978. Unpublished records available September 1973 to November 1975.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.53 ft (0.47 m) below land-surface datum, Mar. 16, 1978; lowest measured, 8.18 ft (2.49 m) below land-surface datum, Nov. 13, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 15	7.30	MAR 16	1.53	JUL 10	4.75
JAN 31	1.81	APR 25	2.76	AUG 28	6.68

383634077151301. Local number, 52S4.

LOCATION.--Lat 38°36'34", long 77°15'13", Hydrologic Unit 02070010, near Woodbridge. Owner: District of Columbia Department of Sanitary Engineering.

AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 10 in (250 mm), depth 186 ft (56.7 m), screened 156 to 176 ft (47.5 to 53.6 m).

DATUM.--Altitude of land-surface datum is 28 ft (9 m) National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 3.30 ft (1.01 m) above land-surface datum.

REMARKS.--Featherstone test well 1.

PERIOD OF RECORD.--June 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.17 ft (5.23 m) below land-surface datum, Apr. 28, 1973; lowest, 20.05 ft (6.11 m) below land-surface datum, June 30, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	19.12	18.64	18.85	18.91	18.74	18.75	18.41	-	18.32	18.25	-	-
10	18.79	18.24	19.24	18.83	18.74	18.78	-	-	18.44	18.33	-	-
15	18.78	19.00	18.97	18.78	18.40	18.31	-	-	18.62	-	-	-
20	19.17	19.19	18.42	18.72	18.41	18.65	-	-	18.48	-	-	-
25	18.97	18.89	18.57	18.70	18.67	18.60	-	18.26	18.47	-	-	-
EOM	18.59	19.15	18.79	18.93	18.70	18.40	-	18.23	18.50	-	-	-

WTR YR 1978 HIGHEST 17.92 DEC 21, 1977 LOWEST 19.35 DEC 12, 1977

PRINCE WILLIAM COUNTY--Continued

383634077151302. Local number, 52S5.

LOCATION.--Lat 38°36'34", long 77°15'13", Hydrologic Unit 02070010, near Woodbridge. Owner: District of Columbia Department of Sanitary Engineering.

AQUIFER.--Sand and gravel of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in (150 mm), depth 114 ft (34.7 m), screened 95 to 105 ft (29.0 to 32.0 m).

DATUM.--Altitude of land-surface datum is 28 ft (9 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.20 ft (0.67 m) above land-surface datum.

REMARKS.--Featherstone test well 2.

PERIOD OF RECORD.--July 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.49 ft (5.03 m) below land-surface datum, Feb. 18, 1976; lowest measured, 18.96 ft (5.78 m) below land-surface datum, July 1, 1969.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	17.72	DEC 15	17.74	APR 25	17.26	JUL 10	17.02
NOV 7	17.48	JAN 31	17.71	MAY 23	17.05	AUG 28	17.13
NOV 11	17.63	MAR 16	17.24				

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 (100 mm), depth 370 ft (112.8 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 2,170 ft (661 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf, 2.23 ft (0.68 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 59.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.00 ft (18.29 m) below land-surface datum, Mar. 18, 1973; lowest measured, 81.89 ft (24.96 m) below land-surface datum, Sept. 30, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 12	77.36	APR 24	77.80	JUL 10	76.28
MAR 13	65.49	MAY 30	75.80	AUG 21	69.78

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 (150 mm), depth 48 ft (14.6 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 917 ft (280 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.9 ft (0.27 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 8.

PERIOD OF RECORD.--August 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.97 ft (4.56 m) below land-surface datum, June 22, 1972; lowest measured, 23.15 ft (7.06 m) below land-surface datum, May 23, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 12	17.77	APR 24	17.31	JUL 10	17.61
MAR 13	16.57	MAY 30	17.51	AUG 21	17.98

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 (150 mm), depth 695 ft (211.8 m), length of casing unknown.

DATUM.--Altitude of land-surface datum is 745 ft (227 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.0 ft (0.6 m) above land-surface datum.

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 63.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.92 ft (4.85 m) below land-surface datum, July 8, 1972; lowest, 27.48 ft (8.38 m) below land-surface datum, Oct. 12, 1977.

GROUND-WATER LEVELS

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ROCKBRIDGE COUNTY--Continued

373758079271601--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	27.40	26.03	22.32	23.00	20.06	21.27	19.35	-	-	-	24.60	25.42
10	27.44	23.74	22.26	22.73	20.64	21.10	19.90	-	21.68	-	24.70	25.60
15	27.40	23.71	22.39	22.84	21.30	19.63	20.75	-	-	-	24.83	25.76
20	27.33	23.77	22.10	22.40	21.40	19.80	-	-	-	-	25.06	25.94
25	27.41	23.03	22.17	22.35	21.32	20.34	-	-	-	24.07	25.21	26.10
EOM	26.47	22.95	22.64	19.71	21.22	18.75	-	-	-	24.33	25.43	26.30

WTR YR 1978 HIGHEST 18.75 MAR 31, 1978 LOWEST 27.48 OCT 12, 1977

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 limestone of Late Cambrian age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in (150 mm), depth 310 ft (94.5 m), cased to 131 ft (39.9 m), open hole 131 to 310 ft (39.9 to 94.5 m).

DATUM.--Altitude of land-surface datum is 1,105 ft (337 m) National Geodetic Vertical Datum of 1929. Measuring point: Top edge of recorder shelf, 3.50 ft (1.07 m) above land-surface datum.

PERIOD OF RECORD.--August 1970 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 60.38 ft (18.40 m) below land-surface datum, Dec. 26, 1972; lowest, 87.18 ft (26.57 m) below land-surface datum, Oct. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	86.48	86.15	70.67	68.63	65.62	66.15	62.89	64.86	65.05	66.55	67.47	67.91
10	86.85	80.46	70.17	68.44	65.94	-	63.26	65.03	65.43	66.74	67.56	68.25
15	87.06	75.51	69.84	68.35	66.25	63.21	63.74	64.74	65.76	66.93	67.06	68.58
20	87.04	73.48	69.42	68.05	66.30	63.01	64.00	63.77	66.01	67.20	67.09	69.03
25	87.16	72.31	68.84	67.95	66.35	63.50	64.41	64.19	66.16	67.37	67.33	69.50
EOM	86.67	71.49	68.68	65.32	66.06	63.26	64.62	64.63	66.33	67.48	67.65	69.98

WTR YR 1978 HIGHEST 62.11 MAR 28, 29, 1978 LOWEST 87.18 OCT 26, 1977

SOUTHAMPTON COUNTY

364109077230701. Local number, 51B3.

LOCATION.--Lat 36°41'09", long 77°23'07", Hydrologic Unit 03010201, 150 ft (45.7 m) east of the intersection of State Highway 615 and U.S. 58, near Adams Grove. Owner: U.S. Geological Survey.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drill observation water well, diameter 4 in (100 mm), depth 175 ft (53.3 m), screened 165 to 175 ft (50.3 to 53.3 m).

DATUM.--Altitude of land-surface datum is 126 ft (38.4 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf, 3.20 ft (0.98 m) above land-surface datum.

PERIOD OF RECORD.--July 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 54.21 ft (16.52 m) below land-surface datum, Apr. 30, 1978; lowest, 58.30 ft (17.77 m) below land-surface datum, Sept. 4-8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	-	-	56.08	55.48	54.86	55.05	54.67	54.48	55.01	55.66	55.80	-
10	-	56.46	56.02	55.39	54.89	54.88	54.77	54.36	55.03	55.88	-	-
15	-	56.42	55.88	55.16	54.97	54.55	54.89	54.37	55.16	56.00	-	-
20	-	56.39	55.74	54.87	54.96	54.74	54.85	54.60	55.40	55.81	-	-
25	-	56.30	55.53	54.76	55.01	54.85	54.90	54.73	55.45	55.87	-	-
EOM	-	56.23	55.48	54.74	55.07	54.48	54.21	54.86	55.45	55.79	-	-

WTR YR 1978 HIGHEST 54.21 APR 30, 1978 LOWEST 56.66 NOV 8, 1977

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 (250 mm), depth 344 ft (104.9 m), screen depth unknown.

DATUM.--Land-surface datum is 58.4 ft (17.8 m) 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 (4.57 m) below land-surface datum, 1907; lowest measured, 92.45 ft (28.18 m) below land-surface datum, July 11, 1978.

GROUND-WATER LEVELS

SOUTHAMPTON COUNTY--Continued

364706077072301.--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	91.32	JAN 23	91.38	MAY 18	91.65	JUL 11	92.45
NOV 8	91.80	MAR 14	91.20	25	91.92	AUG 9	92.36
DEC 20	91.85						

CITY OF SUFFOLK

363828076380501. Local number, 57B8.

LOCATION.--Lat 36°38'27", long 76°38'05", Hydrologic Unit 03010205, 0.3 mi (0.48 km) southwest of State Highway 664 and 0.8 mi (1.29 km) east of U.S. Highway 13. Owner: Soren F. Andresen.

AQUIFER.--Sand of Chesapeake group.

WELL CHARACTERISTICS.--Drilled flowing water well, diameter 2 in (50 mm), depth 65 ft (19.8 m), screened 50 to 65 ft (15.2 to 19.8 m).

DATUM.--Altitude of land-surface datum is 45 ft (13.7 m) National Geodetic Vertical Datum of 1929. Measuring point: At land-surface datum.

PERIOD OF RECORD.--November 1977 to September 1978.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.56 ft (1.69 m) above land-surface datum, Jan. 26, 1978; lowest measured, 2.07 ft (0.63 m) above land-surface datum, Sept. 28, 1978.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	4.05	JAN 26	5.56	APR 13	3.65	MAY 31	4.00	AUG 4	2.80	SEP 28	2.07
DEC 21	4.95	MAR 15	5.41	28	4.13	JUN 30	3.40	29	3.27		

NOTE.--Flowing well readings given are above land-surface datum.

363810076381001. Local number, 57B9.

LOCATION.--Lat 36°38'36", long 76°38'10", Hydrologic Unit 03010205, 0.2 mi (0.32 km) southwest of State Highway 664 and 0.7 mi (1.13 km) southeast of U.S. Highway 13. Owner: Soren Andresen.

AQUIFER.--Sand of Chesapeake group.

WELL CHARACTERISTICS.--Drilled flowing unused water well, diameter 1.25 in (32 mm), depth 85 ft (25.9 m), screened 70 to 85 ft (2.13 to 25.9 m).

DATUM.--Altitude of land-surface datum is 45 ft (13 m) National Geodetic Vertical Datum of 1929. Measuring point: At land-surface datum.

PERIOD OF RECORD.--November 1977 to September 1978.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.05 ft (1.54 m) above land-surface datum, Mar. 15, 1978; lowest measured, 1.40 ft (0.43 m) above land-surface datum, Sept. 28, 1978.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	3.86	JAN 26	5.03	APR 13	3.70	MAY 31	3.75	AUG 4	2.15	SEP 28	1.40
DEC 21	3.44	MAR 15	5.05	28	3.70	JUN 30	3.45	29	2.95		

NOTE.--Flowing well readings given are above land-surface datum.

363353076331701. Local number, 58A23.

LOCATION.--Lat 36°33'53", long 76°33'17", Hydrologic Unit 03010205, 200 ft (61.0 m) north of State Highway 678 and 400 ft (121.9 m) west of State Highway 604. Owner: Raymond R. Brinkley.

AQUIFER.--Sand of undifferentiated Paleocene age.

WELL CHARACTERISTICS.--Drilled used water well, diameter 4 in (100 mm) to 80 ft (24.4 m), 2 in (50 mm) from 80 to 420 ft (24.4 to 128.0 m), depth 420 ft (128.0 m), screened 410 to 420 ft (125.0 to 128.0 m).

DATUM.--Altitude of land-surface datum is 60 ft (18 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 0.67 ft (0.2 m) above land-surface datum.

REMARKS.--Water level affected by pumpage.

PERIOD OF RECORD.--November 1977 to September 1978.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.56 ft (9.92 m) below land-surface datum, May 31, 1978; lowest measured, 40.02 ft (12.20 m) below land-surface datum, Aug. 29, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 9	38.04	DEC 21	37.75	MAR 15	37.76	APR 27	38.48	JUN 30	37.98	AUG 29	40.02
16	38.02	JAN 26	37.54	APR 13	37.75	MAY 31	32.56	AUG 4	38.33	SEP 28	38.57

363928076332901. Local number, 58B13.

LOCATION.--Lat 36°39'28", long 76°33'29", Hydrologic Unit 03010205, 4 mi (6.5 km) south of Suffolk and east of State Highway 642. Owner: Melvin Brinkley.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 22 in (550 mm), depth 15 ft (4.6 m).

DATUM.--Altitude of land-surface datum is 40 ft (12 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf, 1.90 ft (0.58 m) above land-surface datum.

GROUND-WATER LEVELS

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CITY OF SUFFOLK--Continued

363928076332901--Continued

PERIOD OF RECORD.--August 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.51 ft (1.37 m) below land-surface datum, Mar. 11, 1978; lowest, 12.75 ft (3.89 m) below land-surface datum, Nov. 18, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	12.34	-	9.93	7.97	6.29	7.06	6.14	7.26	7.04	8.30	9.93	10.72
10	12.44	-	9.96	7.81	6.68	6.08	6.53	6.12	6.44	8.58	9.98	10.89
15	12.50	-	9.82	-	7.07	5.41	6.99	6.23	6.89	8.87	10.10	11.02
20	12.42	-	8.43	-	7.08	6.05	7.23	6.58	7.42	9.13	10.25	11.15
25	-	10.25	7.52	-	7.23	6.50	7.55	7.00	7.57	9.43	10.41	11.30
EOM	-	10.09	7.70	5.91	7.42	5.37	7.15	6.86	7.93	9.72	10.56	11.44

WTR YR 1978 HIGHEST 4.51 MAR 11, 1978 LOWEST 12.50 OCT 13, 14, 15, 16, 1977

363921076331601. Local number, 58B14.

LOCATION.--Lat 36°39'21", long 76°33'16", Hydrologic Unit 03010205, 4 mi (6.5 km) south of Suffolk and east of State Highway 642. Owner: Melvin Brinkley.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 22 in (550 mm), depth 9.30 ft (2.83 m).

DATUM.--Altitude of land-surface datum is 30 ft (9 m) National Geodetic Vertical Datum of 1929. Measuring point: Inside edge of casing, 2.5 ft (0.8 m) above land-surface datum. Measuring point previously reported as 2.7 ft (0.8 m) above land-surface datum.

PERIOD OF RECORD.--May 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.30 ft (0.09 m) below land-surface datum, Jan. 26, 1978; lowest measured, 5.72 ft (1.74 m) below land-surface datum, Oct. 5, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	5.72	DEC 21	0.45	APR 13	1.43	MAY 31	0.87	AUG 4	3.28	AUG 29	3.97
NOV 9	1.96	JAN 26	.30	25	.63	JUN 30	1.98	11	2.77	SEP 28	5.24
16	2.60	MAR 15	1.01								

363925076331701. Local number, 58B15.

LOCATION.--Lat 36°39'25", long 76°33'17", Hydrologic Unit 03010205, 4 mi (6.5 km) south of Suffolk off State Highway 642. Owner: Melvin Brinkley.

AQUIFER.--Sand of Pleistocene age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 22 in (550 mm), depth 12 ft (3.7 m).

DATUM.--Altitude of land-surface datum is 35 ft (11 m) National Geodetic Vertical Datum of 1929. Measuring point: Inside edge of casing, 1.4 ft (0.4 m) above land-surface datum.

PERIOD OF RECORD.--May 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.98 ft (0.30 m) below land-surface datum, Jan. 26, 1978; lowest measured, water level below bottom of casing, Oct. 5, 1977, and Sept. 28, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	(a)	DEC 21	1.45	MAR 15	1.97	APR 25	3.27	JUN 30	3.60	AUG 29	5.73
NOV 9	3.35	JAN 26	.98	APR 13	3.22	MAY 31	2.35	AUG 4	5.58	SEP 28	(a)

a Water level below bottom of well.

363902076331901. Local number, 58B48.

LOCATION.--Lat 36°39'02", long 76°33'19", Hydrologic Unit 03010205, 4 mi (6.4 km) south of Suffolk and east of State Highway 642. Owner: Melvin Brinkley.

AQUIFER.--Sand of Quaternary age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 24 in (600 mm), depth 7 ft (2.1 m).

DATUM.--Altitude of land-surface datum is 35 ft (11 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of inside edge of casing, 1.40 ft (0.43 m) above land-surface datum.

PERIOD OF RECORD.--May 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.20 ft (0.06 m) below land-surface datum, May 31, 1978; lowest measured, 6.49 ft (1.98 m) below land-surface datum, Aug. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, MAY 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 26, 1977	1.59	NOV 16, 1977	2.31	MAY 31, 1978	0.20
JUL 6, 1977	4.89	DEC 21, 1977	.35	JUN 30, 1978	2.68
JUL 21, 1977	6.22	JAN 26, 1978	.33	AUG 4, 1978	5.20
AUG 17, 1977	6.49	MAR 15, 1978	1.02	AUG 11, 1978	4.12
OCT 5, 1977	6.10	APR 13, 1978	2.42	AUG 29, 1978	6.06
NOV 9, 1977	1.79	APR 25, 1978	2.38	SEP 28, 1978	5.78

GROUND-WATER LEVELS

CITY OF SUFFOLK--Continued

364301076314801. Local number, 58B114.

LOCATION.--Lat 36°43'30", long 76°31'48", Hydrologic Unit 03010205, at the intersection of Jericho Lane and Jericho Ditch in the Great Dismal Swamp. Owner: U.S. Fish and Wildlife.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 4 in (100 mm) to 61.8 ft (18.8 m), 2 in (50 mm) from 61.8 to 569.9 ft (18.8 to 173.7 m), depth 569.9 ft (173.7 m), screened 559.9 to 569.9 ft (170.7 to 173.7 m).

DATUM.--Altitude of land-surface datum is 25 ft (7 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing, 0.7 ft (0.2 m) above land-surface datum.

PERIOD OF RECORD.--May 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 76.29 ft (23.25 m) below land-surface datum, May 21, 1976; lowest measured, 84.94 ft (25.89 m) below land-surface datum, Dec. 21, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	83.84	DEC 21	84.94	MAR 15	84.00	APR 25	83.80	JUN 30	83.80	AUG 29	83.87
NOV 9	84.47	JAN 26	84.41	APR 13	81.55	MAY 31	83.65	AUG 3	83.38	SEP 28	84.60
16	84.75										

364328076345201. Local number, 58B235.

LOCATION.--Lat 36°43'30", long 76°34'51", Hydrologic Unit 02080208, in the Planters Plant in the city of Suffolk.

Owner: Planters Peanuts.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 10 in (250 mm) to 254 ft (77.4 m), 8 in (200 mm) from 254 to 422 ft (77.4 to 128.6 m), 6 in (150 mm) from 422 to 561.6 ft (128.6 to 171.2 m), 561.6 to 570.0 ft (171.2 to 173.7 m), depth 570 ft (173.7 m), screened 530 to 561.6 ft (161.5 to 171.2 m).

DATUM.--Altitude of land-surface datum is 53 ft (16 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing, 2.50 ft (0.76 m) above land-surface datum.

PERIOD OF RECORD.--November 1977 to September 1978.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 125.67 ft (38.30 m) below land-surface datum, May 31, 1978; lowest measured, 129.12 ft (39.36 m) below land-surface datum, Nov. 16, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 9	128.57	DEC 21	128.29	MAR 15	126.41	APR 27	125.87	JUN 30	126.40	AUG 29	126.31
16	129.12	JAN 26	127.56	APR 13	125.87	MAY 31	125.67	AUG 3	126.95	SEP 28	127.75

SURREY COUNTY

370408076460101. Local number, 56E1.

LOCATION.--Lat 37°04'08", long 76°40'10", Hydrologic Unit 03010202, on State Highway 617, 3.2 mi (5.1 km) southwest of Bacons Castle. Owner: Buster E. Cox.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled unused water well, diameter 18 in (450 mm) to 360 ft (109.7 m), 8 in (200 mm) from 333.5 to 705 ft (101.7 to 214.9 m), depth 705 ft (214.9 m), screened 401 to 411 ft (122.2 to 125.3 m), 431 to 441 ft (131.4 to 134.4 m), 463 to 473 (141.1 to 144.2 m), 495 to 505 ft (150.9 to 153.9 m), 540 to 555 ft (164.6 to 169.2 m), 700 to 705 ft (213.4 to 214.9 m).

DATUM.--Altitude of land-surface datum is 93 ft (28 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top edge of recorder shelf, 3.6 ft (1.1 m) above land-surface datum.

PERIOD OF RECORD.--March 1942, April 1969 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 73.52 ft (22.41 m) below land-surface datum, Mar. 10, 1942; lowest, 141.19 ft (43.03 m) below land-surface datum, Sept. 30, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	139.23	139.00	139.11	139.33	139.44	139.39	139.33	139.15	139.33	140.02	140.30	140.82
10	139.22	138.85	139.32	139.32	139.36	139.24	139.31	139.16	139.42	140.06	140.33	140.96
15	139.06	138.98	139.26	139.32	139.41	139.28	139.36	139.12	139.58	140.17	140.41	141.05
20	139.17	139.16	139.21	139.19	139.35	139.37	139.24	139.27	139.69	140.20	140.56	141.13
25	139.28	139.11	139.11	139.26	139.32	139.43	139.35	139.32	139.75	140.30	140.63	141.07
EOM	139.13	139.18	139.23	139.40	139.41	139.27	139.17	139.31	139.84	140.35	140.72	141.19

WTR YR 1978 HIGHEST 138.80 NOV 7, 1977 LOWEST 141.19 SEP 30, 1978

WESTMORELAND COUNTY

381010077021901. Local number, 54P3.

LOCATION.--Lat 38°10'10", long 77°02'19", Hydrologic Unit 02080104, west of State Highway 637 near Oak Grove.

Owner: U.S. Geological Survey.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 4 in (100 mm), depth 1,349 ft (411.2 m), screened from 1,338 to 1,343 ft (407.8 to 409.3 m).

DATUM.--Altitude of land-surface datum is 185 ft (56 m) National Geodetic Vertical Datum of 1929. Measuring point:

Top of casing, 2.97 ft (0.91 m) above land-surface datum. Measuring point changed from 2.92 ft (0.89 m) above land-surface datum May 24, 1977.

PERIOD OF RECORD.--June 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 167.05 ft (50.92 m) below land-surface datum, June 23, 1976; lowest measured, 169.67 ft (51.72 m) below land-surface datum, Aug. 28, 1978.

GROUND-WATER LEVELS

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WESTMORELAND COUNTY--Continued

381010077021901--Continued

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	168.96	DEC 27	168.76	APR 25	168.89
26	169.07	FEB 1	168.76	JUL 13	169.43
NOV 28	168.87	MAR 16	168.80	AUG 28	169.67

381110076550501. Local number, 55P5.

LOCATION.--Lat 38°11'10", long 76°55'05", Hydrologic Unit 02070011, behind craft shop at George Washington birth-place. Owner: National Park Service.

AQUIFER.--Sand of undifferentiated Cretaceous age.

WELL CHARACTERISTICS.--Drilled observation water well, diameter 6 in (150 mm), depth 471 ft (143.6 m), screened 451 to 466 ft (137.5 to 142.0 m).

DATUM.--Altitude of land-surface datum is 24 ft (7 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder shelf, 3.0 ft (0.9 m) above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 25.36 ft (7.73 m) below land-surface datum, Dec. 1, 1974; lowest, 32.59 ft (9.93 m) below land-surface datum, Sept. 26, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	31.23	30.87	31.05	31.34	31.36	31.55	31.68	31.11	31.55	-	-	32.43
10	31.07	30.72	31.62	31.50	31.19	31.47	31.60	-	31.73	-	-	32.26
15	31.04	31.22	31.08	31.08	31.10	31.28	31.65	-	31.88	31.88	-	32.31
20	31.23	31.39	30.53	30.86	31.14	31.71	31.21	31.36	-	-	-	32.39
25	31.19	30.94	-	31.17	31.34	31.58	31.57	31.55	-	-	-	-
EOM	30.70	31.36	31.14	31.51	31.50	-	-	31.53	-	31.96	32.42	32.40

WTR YR 1978 HIGHEST 29.92 DEC 21, 1977 LOWEST 32.59 SEP 26, 1978

381132076551001. Local number, 55P9.

LOCATION.--Lat 38°11'32", long 76°55'10", Hydrologic Unit 02080104, 0.6 mi (0.97 km) north of the end of State Highway 204, off of State Highway 3. Owner: National Park Service.

AQUIFER.--Sand of Quaternary age.

WELL CHARACTERISTICS.--Dug unused water well, diameter 36 in (900 mm), depth 22.6 ft (6.9 m).

DATUM.--Altitude of land-surface datum is 17 ft (5.2 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of concrete lip on casing, 1.65 ft (0.50 m) above land-surface datum.

PERIOD OF RECORD.--July 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.23 ft (0.07 m) below land-surface datum, Mar. 16, 1978; lowest measured, 9.67 ft (2.95 m) below land-surface datum, Nov. 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, JULY 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUL 28, 1977	7.35	NOV 7, 1977	9.67	MAR 16, 1978	0.23
AUG 15, 1977	8.15	NOV 28, 1977	9.06	APR 25, 1978	.85
AUG 26, 1977	8.51	DEC 27, 1977	.75	JUL 13, 1978	3.84
OCT 3, 1977	9.33	FEB 1, 1978	.63	AUG 28, 1978	6.45

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 (100 mm) to 189 ft (57.6 m), 2 in (50 mm) from 189 to 641 ft (57.6 to 195.4 m), depth 641 ft (195.4 m), screened 608 to 628 ft (185.3 to 191.4 m).

DATUM.--Altitude of land-surface datum is 149 ft (45 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.2 ft (0.4 m) above land-surface datum. Top of casing previously reported as 1 ft (0.3 m).

REMARKS.--Records furnished by the Virginia State Water Control Board as observation well 16.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 133.47 ft (40.68 m) below land-surface datum, Aug. 28, 1967; lowest, 152.97 ft (46.63 m) below land-surface datum, Dec. 15, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	152.19	152.06	151.99	151.60	150.96	151.15	151.10	150.80	150.96	152.04	152.45	-
10	152.10	151.80	152.00	151.57	151.04	150.99	151.05	150.73	151.25	151.86	152.23	-
15	152.11	152.02	152.10	151.53	151.17	151.21	151.38	150.56	151.55	151.93	152.19	-
20	151.81	152.29	151.68	151.36	151.17	151.30	151.11	150.81	151.71	152.44	152.48	-
25	152.07	151.82	151.78	151.45	151.19	151.40	150.96	151.03	151.86	152.66	-	-
EOM	151.98	151.89	151.71	151.67	151.13	151.23	150.95	151.02	152.35	152.33	-	-

WTR YR 1978 HIGHEST 150.56 MAR 11, MAY 15, 1978 LOWEST 152.66 JUL 25, 1978

GROUND-WATER LEVELS

WYTHE COUNTY

365557080535801. Local number, 23D1.

LOCATION.--Lat 36°55'57", long 80°53'58", Hydrologic Unit 05050001, at Wytheville National Fish Hatchery, on State Highway 629, 1.0 mi (1.6 km) southwest of Grahams Forge. Owner: U.S. Fish and Wildlife Service.

AQUIFER.--Rome formation of Lower Cambrian age.

WELL CHARACTERISTICS.--Drilled used water well; diameter 8 in (200 m), depth 400 ft (121.9 m), cased to 116 ft (35.4 m), open hole 116 to 400 ft (35.4 to 121.9 m).

DATUM.--Altitude of land-surface datum is 1,975 ft (602 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of half-inch pipe at land-surface datum.

PERIOD OF RECORD.--September 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.38 ft (0.12 m) below land-surface datum, Apr. 19, 1978; lowest measured, 5.47 ft (1.67 m) below land-surface datum, May 6, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 2	2.61	JAN 31	1.32	APR 19	0.38	JUL 19	2.39

QUALITY OF GROUND WATER

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WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

LOCAL IDENT- I- FIER	STATION NUMBER	DATE OF SAMPLE	TOTAL DEPTH OF WELL (FT)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	
USGS	VA.SWCB										
ALBEMARLE COUNTY											
43M1	375955078245001	78-09-07	74	95	6.0	15.0	20	39	0	11	
FAIRFAX COUNTY											
51V-12H	129-180	385424077255301	78-05-10	290	600	--	14.0	10	270	98	72
51V-13B		385743077252301	78-05-10	150	160	--	15.0	10	67	0	14
52V-14D	129-235	385646077214801	78-05-02	605	98	--	13.5	10	35	0	8.0
LOUDOUN COUNTY											
50W-13B	153-308	390551077342301	78-05-18	145	200	--	13.0	20	87	13	25
WYTHE COUNTY											
WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976											
23D1	198-19	365557080535801	76-09-07	400	215	--	13.0	0	120	8	22
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977											
23D1	198-19	365557080535801	77-01-31	400	205	--	11.5	0	120	8	22
			77-05-06	400	--	--	13.0	0	120	12	21
			77-07-26	400	--	--	14.5	5	120	14	22
WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978											
23D1	198-19	365557080535801	77-11-02	400	--	--	13.0	0	120	2	22
			78-01-31	400	220	7.0	12.0	10	120	8	23
			78-04-19	400	210	7.4	13.0	5	120	2	22
			78-07-19	400	220	7.9	15.5	10	120	13	23

QUALITY OF GROUND WATER

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

LOCAL IDENT- I- FIER	DATE OF SAMPLE	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 (MG/L AS HCO3)	CAR- BONATE (MG/L AS CO3)	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)
USGS	VA.SWCB									
ALBEMARLE COUNTY										
43M1		78-09-07	2.8	5.2	.4	53	0	1.1	1.6	.1 18
FAIRFAX COUNTY										
51V-12H	129-180	78-05-10	22	25	1.2	210	--	150	5.1	.1 24
51V-13B		78-05-10	7.7	6.2	.9	98	--	2.4	4.8	.1 31
52V-14D	129-235	78-05-02	3.7	8.2	.6	53	--	2.9	1.8	.1 38
LOUDOUN COUNTY										
50W-13B	153-308	78-05-18	6.0	2.7	1.4	91	--	1.9	2.9	.0 12
WYTHE COUNTY										
WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976										
23D1	198-19	76-09-07	16	.6	1.4	138	--	2.6	.9	.1 8.7
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977										
23D1	198-19	77-01-31	16	.9	1.6	138	--	2.8	.3	.1 8.5
		77-05-06	16	.4	1.8	130	--	2.6	1.2	.1 8.9
		77-07-26	16	.6	1.4	130	--	2.6	.8	.1 9.0
WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978										
23D1	198-19	77-11-02	15	.5	1.7	140	--	2.5	1.2	.1 8.6
		78-01-31	16	.5	1.6	140	0	3.3	1.5	.1 9.0
		78-04-19	15	.7	1.7	140	0	3.2	1.6	.1 8.8
		78-07-19	15	.6	1.5	130	0	2.1	.8	.1 8.9

QUALITY OF GROUND WATER

399

WATER QUALITY DATA, WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978

LOCAL IDENT- I- FIER	DATE OF SAMPLE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	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, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	PHOS- PHATE, ORTHO, DIS- SOLVED (MG/L AS PO4)	IRON, DIS- SOLVED (UG/L AS FE)
USGS	VA.SWCB									
ALBEMARLE COUNTY										
43M1	78-09-07	69	66	.00	.00	.00	.00	.04	.12	10
FAIRFAX COUNTY										
51V-12H	129-180	78-05-10	394	404	.21	.90	.02	.23	.00	40
51V-13B		78-05-10	136	116	.07	.30	.00	.07	.01	30
52V-14D	129-235	78-05-02	84	90	.04	.20	.00	.04	.09	20
LOUDOUN COUNTY										
50W-13B	153-308	78-05-18	126	111	3.1	14	.00	3.1	.03	10
WYTHE COUNTY										
WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976										
23D1	198-19	76-09-07	114	120	.01	.00	.00	.01	.00	20
WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977										
23D1	198-19	77-01-31	112	121	.19	.80	.00	.19	.01	10
		77-05-06	123	117	.20	.90	.00	.20	.02	10
		77-07-26	119	117	.18	.80	.00	.18	.01	50
WATER YEAR OCTOBER 1977 TO SEPTEMBER 1978										
23D1	198-19	77-11-02	108	122	.19	.80	.00	.19	.03	0
		78-01-31	112	125	.19	.80	.00	.19	.01	20
		78-04-19	123	123	.21	.90	.00	.21	.02	0
		78-07-19	104	117	.18	.80	.00	.18	.01	20

PARAM. CODE	NEW TERMINOLOGY -- FIRST LINE OLD TERMINOLOGY -- SECOND LINE
00623	NITROGEN, AMMONIA PLUS ORGANIC, DISSOLVED (MG/L AS N)
00623	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)
00624	NITROGEN, AMMONIA PLUS ORGANIC, SUSPENDED TOTAL (MG/L AS N)
00624	NITROGEN, KJELDAHL, SUSPENDED (MG/L AS N)
00625	NITROGEN, AMMONIA PLUS ORGANIC, TOTAL (MG/L AS N)
00625	NITROGEN, KJELDAHL, TOTAL (MG/L AS N)
00626	NITROGEN, AMMONIA PLUS ORGANIC, TOTAL IN BOTTOM MATERIAL, DRY WT (MG/KG AS N)
00626	NITROGEN, KJELDAHL, TOTAL IN BOTTOM MATERIAL, DRY WT (MG/KG AS N)
00683	CARBON, ORGANIC, SUSPENDED TOTAL (MG/L AS C)
00683	CARBON, ORGANIC, SUSPENDED (MG/L AS C)
00688	CARBON, INORGANIC, SUSPENDED TOTAL (MG/L AS C)
00688	CARBON, INORGANIC, SUSPENDED (MG/L AS C)
00689	CARBON, ORGANIC, SUSPENDED TOTAL (MG/L AS C)
00689	CARBON, ORGANIC, SUSPENDED (MG/L AS C)
00694	CARBON, INORGANIC PLUS ORGANIC, SUSPENDED TOTAL (MG/L AS C)
00694	CARBON, INORGANIC PLUS ORGANIC, SUSPENDED (MG/L AS C)
00916	CALCIUM, TOTAL RECOVERABLE (MG/L AS CA)
00916	CALCIUM, TOTAL (MG/L AS CA)
00926	MAGNESIUM, SUSPENDED RECOVERABLE (MG/L AS MG)
00926	MAGNESIUM, SUSPENDED (MG/L AS MG)
00927	MAGNESIUM, TOTAL RECOVERABLE (MG/L AS MG)
00927	MAGNESIUM, TOTAL (MG/L AS MG)
01001	ARSENIC, SUSPENDED TOTAL (UG/L AS AS)
01001	ARSENIC, SUSPENDED (UG/L AS AS)
01006	BARIUM, SUSPENDED RECOVERABLE (UG/L AS BA)
01006	BARIUM, SUSPENDED (UG/L AS BA)
01007	BARIUM, TOTAL RECOVERABLE (UG/L AS BA)
01007	BARIUM, TOTAL (UG/L AS BA)
01008	BARIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS BA)
01008	BARIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS BA)
01011	BERYLLIUM, SUSPENDED RECOVERABLE (UG/L AS BE)
01011	BERYLLIUM, SUSPENDED (UG/L AS BE)
01012	BERYLLIUM, TOTAL RECOVERABLE (UG/L AS BE)
01012	BERYLLIUM, TOTAL (UG/L AS BE)
01013	BERYLLIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS BE)
01013	BERYLLIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS BE)
01016	BISMUTH, SUSPENDED TOTAL (UG/L AS BI)
01016	BISMUTH, SUSPENDED (UG/L AS BI)
01021	BORON, SUSPENDED RECOVERABLE (UG/L AS B)
01021	BORON, SUSPENDED (UG/L AS B)
01022	BORON, TOTAL RECOVERABLE (UG/L AS B)
01022	BORON, TOTAL (UG/L AS B)
01023	BORON, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS B)
01023	BORON, TOTAL IN BOTTOM MATERIAL (UG/G AS B)
01026	CADMIUM, SUSPENDED RECOVERABLE (UG/L AS CD)
01026	CADMIUM, SUSPENDED (UG/L AS CD)
01027	CADMIUM, TOTAL RECOVERABLE (UG/L AS CD)
01027	CADMIUM, TOTAL (UG/L AS CD)
01028	CADMIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CD)
01028	CADMIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS CD)
01029	CHROMIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CR)
01029	CHROMIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS CR)
01031	CHROMIUM, SUSPENDED RECOVERABLE (UG/L AS CR)
01031	CHROMIUM, SUSPENDED (UG/L AS CR)
01034	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR)
01034	CHROMIUM, TOTAL (UG/L AS CR)

PARM. CODE	NEW TERMINOLOGY -- FIRST LINE OLD TERMINOLOGY -- SECOND LINE
01093	ZINC, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS ZN)
01093	ZINC, TOTAL IN BOTTOM MATERIAL (UG/G AS ZN)
01096	ANTIMONY, SUSPENDED TOTAL (UG/L AS SB)
01096	ANTIMONY, SUSPENDED (UG/L AS SB)
01101	TIN, SUSPENDED RECOVERABLE (UG/L AS SN)
01101	TIN, SUSPENDED (UG/L AS SN)
01102	TIN, TOTAL RECOVERABLE (UG/L AS SN)
01102	TIN, TOTAL (UG/L AS SN)
01105	ALUMINUM, TOTAL RECOVERABLE (UG/L AS AL)
01105	ALUMINUM, TOTAL (UG/L AS AL)
01107	ALUMINUM, SUSPENDED RECOVERABLE (UG/L AS AL)
01107	ALUMINUM, SUSPENDED (UG/L AS AL)
01108	ALUMINUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS AL)
01108	ALUMINUM, TOTAL IN BOTTOM MATERIAL (UG/G AS AL)
01116	CESIUM, SUSPENDED TOTAL (UG/L AS CS)
01116	CESIUM, SUSPENDED (UG/L AS CS)
01121	GALLIUM, SUSPENDED TOTAL (UG/L AS GA)
01121	GALLIUM, SUSPENDED (UG/L AS GA)
01126	GERMANIUM, SUSPENDED TOTAL (UG/L AS GE)
01126	GERMANIUM, SUSPENDED (UG/L AS GE)
01131	LITHIUM, SUSPENDED RECOVERABLE (UG/L AS LI)
01131	LITHIUM, SUSPENDED (UG/L AS LI)
01132	LITHIUM, TOTAL RECOVERABLE (UG/L AS LI)
01132	LITHIUM, TOTAL (UG/L AS LI)
01136	RUBIDIUM, SUSPENDED TOTAL (UG/L AS RB)
01136	RUBIDIUM, SUSPENDED (UG/L AS RB)
01146	SELENIUM, SUSPENDED TOTAL (UG/L AS SE)
01146	SELENIUM, SUSPENDED (UG/L AS SE)
01151	TITANIUM, SUSPENDED TOTAL (UG/L AS TI)
01151	TITANIUM, SUSPENDED (UG/L AS TI)
01161	ZIRCONIUM, SUSPENDED TOTAL (UG/L AS ZR)
01161	ZIRCONIUM, SUSPENDED (UG/L AS ZR)
01170	IRON, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS FE)
01170	IRON, TOTAL IN BOTTOM MATERIAL (UG/G AS FE)
01505	ALPHA, SUSPENDED TOTAL (PCI/L)
01505	ALPHA, SUSPENDED (PCI/L)
01506	ALPHA, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
01506	ALPHA, SUSPENDED, COUNTING ERROR (PCI/L)
01516	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (PCI/L AS U NATURAL)
01516	GROSS ALPHA RADIOACTIVITY, SUSPENDED (PCI/L AS U NATURAL)
01517	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (PCI/G AS U NATURAL)
01517	GROSS ALPHA RADIOACTIVITY, SUSPENDED (PCI/G AS U NATURAL)
01518	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (UG/G AS U NATURAL)
01518	GROSS ALPHA RADIOACTIVITY, SUSPENDED (UG/G AS U NATURAL)
03505	BETA, SUSPENDED TOTAL (PCI/L)
03505	BETA, SUSPENDED (PCI/L)
03506	BETA, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
03506	BETA, SUSPENDED, COUNTING ERROR (PCI/L)
03516	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/L AS CS-137)
03516	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/L AS CS-137)
03517	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/G AS SR/YT-90)
03517	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/G AS SR/YT-90)

PARM. CODE	NEW TERMINOLOGY -- FIRST LINE OLD TERMINOLOGY -- SECOND LINE
01036	COBALT, SUSPENDED RECOVERABLE (UG/L AS CO)
01036	COBALT, SUSPENDED (UG/L AS CO)
01037	COBALT, TOTAL RECOVERABLE (UG/L AS CO)
01037	COBALT, TOTAL (UG/L AS CO)
01038	COBALT, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CO)
01038	COBALT, TOTAL IN BOTTOM MATERIAL (UG/G AS CO)
01041	COPPER, SUSPENDED RECOVERABLE (UG/L AS CU)
01041	COPPER, SUSPENDED (UG/L AS CU)
01042	COPPER, TOTAL RECOVERABLE (UG/L AS CU)
01042	COPPER, TOTAL (UG/L AS CU)
01043	COPPER, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS CU)
01043	COPPER, TOTAL IN BOTTOM MATERIAL (UG/G AS CU)
01044	IRON, SUSPENDED RECOVERABLE (UG/L AS FE)
01044	IRON, SUSPENDED (UG/L AS FE)
01045	IRON, TOTAL RECOVERABLE (UG/L AS FE)
01045	IRON, TOTAL (UG/L AS FE)
01050	LEAD, SUSPENDED RECOVERABLE (UG/L AS PB)
01050	LEAD, SUSPENDED (UG/L AS PB)
01051	LEAD, TOTAL RECOVERABLE (UG/L AS PB)
01051	LEAD, TOTAL (UG/L AS PB)
01052	LEAD, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS PB)
01052	LEAD, TOTAL IN BOTTOM MATERIAL (UG/G AS PB)
01053	MANGANESE, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS MN)
01053	MANGANESE, TOTAL IN BOTTOM MATERIAL (UG/G AS MN)
01054	MANGANESE, SUSPENDED RECOVERABLE (UG/L AS MN)
01054	MANGANESE, SUSPENDED (UG/L AS MN)
01055	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN)
01055	MANGANESE, TOTAL (UG/L AS MN)
01061	MOLYBDENUM, SUSPENDED RECOVERABLE (UG/L AS MO)
01061	MOLYBDENUM, SUSPENDED (UG/L AS MO)
01062	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO)
01062	MOLYBDENUM, TOTAL (UG/L AS MO)
01063	MOLYBDENUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS MO)
01063	MOLYBDENUM, TOTAL IN BOTTOM MATERIAL (UG/G AS MO)
01066	NICKEL, SUSPENDED RECOVERABLE (UG/L AS NI)
01066	NICKEL, SUSPENDED (UG/L AS NI)
01067	NICKEL, TOTAL RECOVERABLE (UG/L AS NI)
01067	NICKEL, TOTAL (UG/L AS NI)
01068	NICKEL, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS NI)
01068	NICKEL, TOTAL IN BOTTOM MATERIAL (UG/G AS NI)
01076	SILVER, SUSPENDED RECOVERABLE (UG/L AS AG)
01076	SILVER, SUSPENDED (UG/L AS AG)
01077	SILVER, TOTAL RECOVERABLE (UG/L AS AG)
01077	SILVER, TOTAL (UG/L AS AG)
01078	SILVER, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS AG)
01078	SILVER, TOTAL IN BOTTOM MATERIAL (UG/G AS AG)
01081	STRONTIUM, SUSPENDED RECOVERABLE (UG/L AS SR)
01081	STRONTIUM, SUSPENDED (UG/L AS SR)
01082	STRONTIUM, TOTAL RECOVERABLE (UG/L AS SR)
01082	STRONTIUM, TOTAL (UG/L AS SR)
01083	STRONTIUM, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS SR)
01083	STRONTIUM, TOTAL IN BOTTOM MATERIAL (UG/G AS SR)
01086	VANADIUM, SUSPENDED TOTAL (UG/L AS V)
01086	VANADIUM, SUSPENDED (UG/L AS V)
01091	ZINC, SUSPENDED RECOVERABLE (UG/L AS ZN)
01091	ZINC, SUSPENDED (UG/L AS ZN)
01092	ZINC, TOTAL RECOVERABLE (UG/L AS ZN)
01092	ZINC, TOTAL (UG/L AS ZN)

APPENDIX

PARM. CODE	NEW TERMINOLOGY -- FIRST LINE OLD TERMINOLOGY -- SECOND LINE
03518	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/G AS CS-137)
03518	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/G AS CS-137)
07010	TRITIUM, SUSPENDED TOTAL (PCI/L)
07010	TRITIUM, SUSPENDED (PCI/L)
07011	TRITIUM, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07011	TRITIUM, SUSPENDED, COUNTING ERROR (PCI/L)
07014	TRITIUM, SUSPENDED TOTAL, COUNTING ERROR (TRITIUM UNITS)
07014	TRITIUM, SUSPENDED, COUNTING ERROR (TRITIUM UNITS)
07016	TRITIUM, SUSPENDED TOTAL (TRITIUM UNITS)
07016	TRITIUM, SUSPENDED (TRITIUM UNITS)
07052	CALCIUM 45, SUSPENDED TOTAL (PCI/L)
07052	CALCIUM 45, SUSPENDED (PCI/L)
07053	CALCIUM 45, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07053	CALCIUM 45, SUSPENDED, COUNTING ERROR (PCI/L)
07062	IRON 59, SUSPENDED TOTAL (PCI/L)
07062	IRON 59, SUSPENDED (PCI/L)
07063	IRON 59, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07063	IRON 59, SUSPENDED, COUNTING ERROR (PCI/L)
07082	RHODAMINE WT, SUSPENDED TOTAL (UG/L)
07082	RHODAMINE WT, SUSPENDED (UG/L)
07102	SELENIUM 75, SUSPENDED TOTAL (PCI/L)
07102	SELENIUM 75, SUSPENDED (PCI/L)
07103	SELENIUM 75, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07103	SELENIUM 75, SUSPENDED, COUNTING ERROR (PCI/L)
07122	SILVER 110, SUSPENDED TOTAL (PCI/L)
07122	SILVER 110, SUSPENDED (PCI/L)
07123	SILVER 110, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07123	SILVER 110, SUSPENDED, COUNTING ERROR (PCI/L)
07142	SULFUR 35, SUSPENDED TOTAL (PCI/L)
07142	SULFUR 35, SUSPENDED (PCI/L)
07143	SULFUR 35, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
07143	SULFUR 35, SUSPENDED, COUNTING ERROR (PCI/L)
09505	RADIUM 226, SUSPENDED TOTAL (PCI/L)
09505	RADIUM 226, SUSPENDED (PCI/L)
13505	STRONTIUM 90, SUSPENDED TOTAL (PCI/L)
13505	STRONTIUM 90, SUSPENDED (PCI/L)
13506	STRONTIUM 90, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
13506	STRONTIUM 90, SUSPENDED, COUNTING ERROR (PCI/L)
22705	URANIUM, NATURAL, SUSPENDED TOTAL (UG/L AS U NATURAL)
22705	URANIUM, NATURAL, SUSPENDED (UG/L AS U NATURAL)
28404	CESIUM 137, SUSPENDED TOTAL (PCI/L)
28404	CESIUM 137, SUSPENDED (PCI/L)
28405	CESIUM 137, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
28405	CESIUM 137, SUSPENDED, COUNTING ERROR (PCI/L)
28412	CESIUM 134, SUSPENDED TOTAL (PCI/L)
28412	CESIUM 134, SUSPENDED (PCI/L)
28413	CESIUM 134, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
28413	CESIUM 134, SUSPENDED, COUNTING ERROR (PCI/L)
29633	SCANDIUM 46, SUSPENDED TOTAL (PCI/L)
29633	SCANDIUM 46, SUSPENDED (PCI/L)
29634	SCANDIUM 46, SUSPENDED TOTAL, COUNTING ERROR (PCI/L)
29634	SCANDIUM 46, SUSPENDED, COUNTING ERROR (PCI/L)
39332	ALDRIN, SUSPENDED TOTAL (UG/L)
39332	ALDRIN, SUSPENDED (UG/L)
39342	LINDANE, SUSPENDED TOTAL (UG/L)
39342	LINDANE, SUSPENDED (UG/L)
39353	CHLORDANE, SUSPENDED TOTAL (UG/L)
39353	CHLORDANE, SUSPENDED (UG/L)

PARM. CODE	NEW TERMINOLOGY -- FIRST LINE OLD TERMINOLOGY -- SECOND LINE
39362	DDD, SUSPENDED TOTAL (UG/L)
39362	DDD, SUSPENDED (UG/L)
39367	DDE, SUSPENDED TOTAL (UG/L)
39367	DDE, SUSPENDED (UG/L)
39372	DDT, SUSPENDED TOTAL (UG/L)
39372	DDT, SUSPENDED (UG/L)
39382	DIELDRIN, SUSPENDED TOTAL (UG/L)
39382	DIELDRIN, SUSPENDED (UG/L)
39392	ENDRIN, SUSPENDED TOTAL (UG/L)
39392	ENDRIN, SUSPENDED (UG/L)
39402	TOXAPHENE, SUSPENDED TOTAL (UG/L)
39402	TOXAPHENE, SUSPENDED (UG/L)
39412	HEPTACHLOR, SUSPENDED TOTAL (UG/L)
39412	HEPTACHLOR, SUSPENDED (UG/L)
39422	HEPTACHLOR EPOXIDE, SUSPENDED TOTAL (UG/L)
39422	HEPTACHLOR EPOXIDE, SUSPENDED (UG/L)
39432	ISODRIN, SUSPENDED TOTAL (UG/L)
39432	ISODRIN, SUSPENDED (UG/L)
39502	AROCLOR, SUSPENDED TOTAL, 1248 PCB SERIES (UG/L)
39502	AROCLOR, SUSPENDED, 1248 PCB SERIES (UG/L)
39506	AROCLOR, SUSPENDED TOTAL, 1254 PCB SERIES (UG/L)
39506	AROCLOR, SUSPENDED, 1254 PCB SERIES (UG/L)
39510	AROCLOR, SUSPENDED TOTAL, 1260 PCB SERIES (UG/L)
39510	AROCLOR, SUSPENDED, 1260 PCB SERIES (UG/L)
39518	PCB, SUSPENDED TOTAL (UG/L)
39518	PCB, SUSPENDED (UG/L)
39533	MALATHION, SUSPENDED TOTAL (UG/L)
39533	MALATHION, SUSPENDED (UG/L)
39543	PARATHION, SUSPENDED TOTAL (UG/L)
39543	PARATHION, SUSPENDED (UG/L)
39573	DIAZINON, SUSPENDED TOTAL (UG/L)
39573	DIAZINON, SUSPENDED (UG/L)
39603	METHYL PARATHION, SUSPENDED TOTAL (UG/L)
39603	METHYL PARATHION, SUSPENDED (UG/L)
39733	2,4-D, SUSPENDED TOTAL (UG/L)
39733	2,4-D, SUSPENDED (UG/L)
39743	2,4,5-T, SUSPENDED TOTAL (UG/L)
39743	2,4,5-T, SUSPENDED (UG/L)
39757	MIREX, SUSPENDED TOTAL (UG/L)
39757	MIREX, SUSPENDED (UG/L)
39763	SILVEX, SUSPENDED TOTAL (UG/L)
39763	SILVEX, SUSPENDED (UG/L)
70299	SOLIDS, RESIDUE AT 110 DEG. C, SUSPENDED TOTAL (MG/L)
70299	SOLIDS, RESIDUE AT 110 DEG. C, SUSPENDED (MG/L)
71895	MERCURY, SUSPENDED RECOVERABLE (UG/L AS HG)
71895	MERCURY, SUSPENDED (UG/L AS HG)
71900	MERCURY, TOTAL RECOVERABLE (UG/L AS HG)
71900	MERCURY, TOTAL (UG/L AS HG)
71921	MERCURY, RECOVERABLE FROM BOTTOM MATERIAL (UG/G AS HG)
71921	MERCURY, TOTAL IN BOTTOM MATERIAL (UG/G AS HG)
80040	GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (UG/L AS U NATURAL)
80040	GROSS ALPHA RADIOACTIVITY, SUSPENDED (UG/L AS U NATURAL)
80060	GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/L AS SR/YT-90)
80060	GROSS BETA RADIOACTIVITY, SUSPENDED (PCI/L AS SR/YT-90)

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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

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