

INTRODUCTION

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

This report includes records on both surface and ground water in the State. Specifically, it contains: Discharge records for 64 streamflow-gaging stations; discharge records provided by adjacent states for 1 streamflow-gaging station; annual maximum discharge at 17 crest-stage partial-record stations; stage records for 14 detention reservoirs; water-quality records for 8 stations; and water-level records for 11 observation wells. Locations of streamflow, detention reservoir, and water-quality stations are shown on figure 4. Locations of ground-water observation wells are shown on figure 5. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous sites. 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 West Virginia.

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

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

Publications similar to this report are published annually by the Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as U.S. Geological Survey Water-Data Report WV-05-1. For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. Additional information, including current prices, for ordering specific reports may be obtained from the Water Science Center Director at the address given on the back of the title page or by telephone (304) 347-5130.

COOPERATION

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

West Virginia Conservation Agency, Truman Wolfe, Director.

West Virginia Department of Environmental Protection, Stephanie Timmermeyer, Secretary.
Division of Water and Waste Management, Lisa McClung, Director.
Division of Mining and Reclamation, Randy Huffman, Director.

West Virginia Department of Health and Human Resources, Martha Yeager Walker, Secretary.
Office of Environmental Health Services, Barbara S. Taylor, Director.

West Virginia Department of Military Affairs and Public Safety, James W. Spears, Secretary through
West Virginia Division of Homeland Security and Emergency Management, Jimmy Gianato, Director.

West Virginia Department of Transportation, Danny Ellis, Acting Secretary.

West Virginia Division of Natural Resources, Frank Jezioro, Director.

City of Hurricane, West Virginia, Raymond Peak, Mayor.

Assistance with funds or services was given by the U.S. Army Corps of Engineers, National Park Service, Office of Surface Mining and Reclamation, and U.S. Environmental Protection Agency.

Assistance was also furnished by the National Weather Service of the U.S. Department of Commerce.

Organizations that provided data are acknowledged in station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

Monthly and annual mean discharges for the 2005 water year as compared to the median of mean monthly and yearly discharges for water years 1931-2003 for four streamflow stations in West Virginia are shown in figures 1 and 2. October through May monthly flows were generally greater than the median of monthly flows for 1931-2003. The year ended, however, with flows at or slightly below the median of 1931-2003 monthly flows for September. Mean, maximum, and minimum stream statistics for the 2005 water year for streamflow gaging stations in West Virginia are shown in table 1. Streamflow at stations in the Potomac and Monongahela River Basins was generally near long-term average. Streamflow at stations in the Kanawha River Basin was about 10-percent above average, and that of stations in the Big Sandy River Basin was about 20-percent above average. Baseflows of streams throughout the state were well maintained, and the minimum 7-day mean streamflows were significantly greater than the expected low at a 10-year recurrence interval. No peak flows exceeded the 5-year recurrence interval at any gaging station during the year.

Ground-Water Levels

The water year started with above normal ground-water levels in October everywhere within the State. Water levels in the previous year were typically near normal to well above normal. Except for the month of June in the central portion of the State and September in the Northern Panhandle, ground-water levels were normal to above normal statewide for the entire year. In the Eastern panhandle, water levels in Berkeley, Grant, and Jefferson Counties were slightly above normal during the months of October through January and April through July and near normal in the months of March, August, and September. In the southern part of the state, water levels were near normal in the months of January through June and slightly above normal in the months of October through December and August through September. In the western portion of the State, water levels in Wayne County were above normal from October through July and near normal in the months of August and September. In the northern panhandle in Brooke County, ground-water levels were above normal in the months of October through January and near normal the remainder of the year except for the months of June and September when water levels were below normal. In the central portion of the State in Webster and Pocahontas counties, ground-water levels were above normal in the months of October through December and near normal the remainder of the year except for the month of June when water levels were below normal. The major hurricanes that impacted the nation in 2005 did not appear to have significant impacts on ground-water levels in West Virginia.

Quality of Water

Surface water: Waites Run near Wardensville was sampled as part of the National Water Quality Assessment (NAWQA) of the Potomac River and Delmarva Peninsula Basins. This site, located in a relatively undisturbed forested basin, is used as a comparative reference condition for the Potomac/Delmarva study unit. More information on the NAWQA program is available in the Special Networks and Programs section of this report.

Nutrient and sediment samples were collected at four sites in the West Virginia portion of the Potomac River Basin; Patterson Creek near Headsville, South Branch Potomac River near Springfield, Cacapon River near Great Cacapon, and Opequon Creek near Martinsburg. Monthly samples were collected at each site from June through September 2005.

Temperature, specific conductance, pH, and dissolved oxygen concentration were continuously recorded at two sites in the Monongahela River Basin, West Fork River below Stonewall Jackson Dam near Weston beginning July 13 and West Fork River at Enterprise beginning August 8. Temperature, specific conductance, and pH were continuously recorded at South Branch Potomac River near Moorefield in the Potomac River Basin beginning May 19.

Ground water: Thirty wells are sampled in cooperation with the West Virginia Department of Environmental Protection, Division of Water and Waste Management, to ascertain the characteristics and quality of water in the state's major aquifers. In 2005, year two of the second five-year cycle of major river basin sampling, ambient ground water was sampled in the following basins: Cacapon River, West Fork, Dunkard Creek, Upper Ohio South, Lower Ohio, Upper Guyandotte River, and Twelvepole Creek Basins. An additional 30 wells were sampled in cooperation with the West Virginia Department of Environmental Protection, Division of Water and Waste Management and the West Virginia Department of Health and Human Resources, Bureau of Public Health to determine the occurrence and distribution of methane and other dissolved gasses. Sites were distributed throughout West Virginia based on historic data and data gaps. Detailed information on methane and dissolved gas sampling were published in *Dissolved-Gas Concentrations in Ground Water in West Virginia, 1997-2005* (White and Mathes, 2006), available online at <http://pubs.water.usgs.gov/ds156/>; and in *Methane in West Virginia Ground Water* (Mathes and White, 2006) available online at <http://pubs.usgs.gov/fs/2006/3011/>.

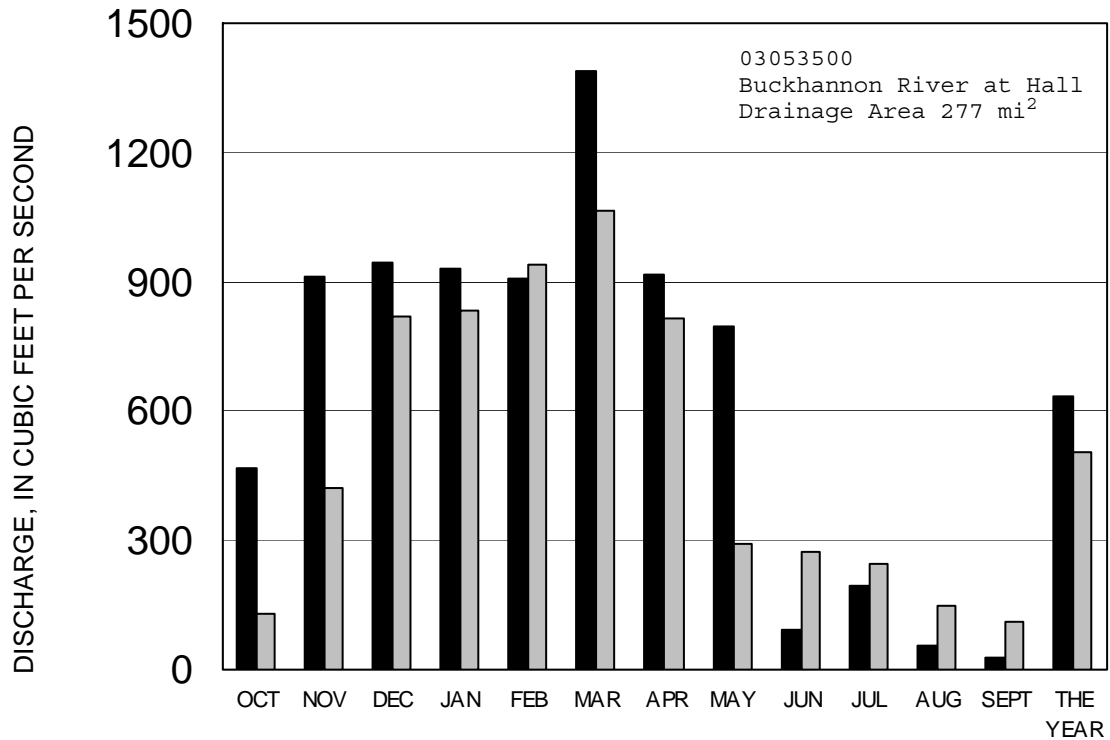
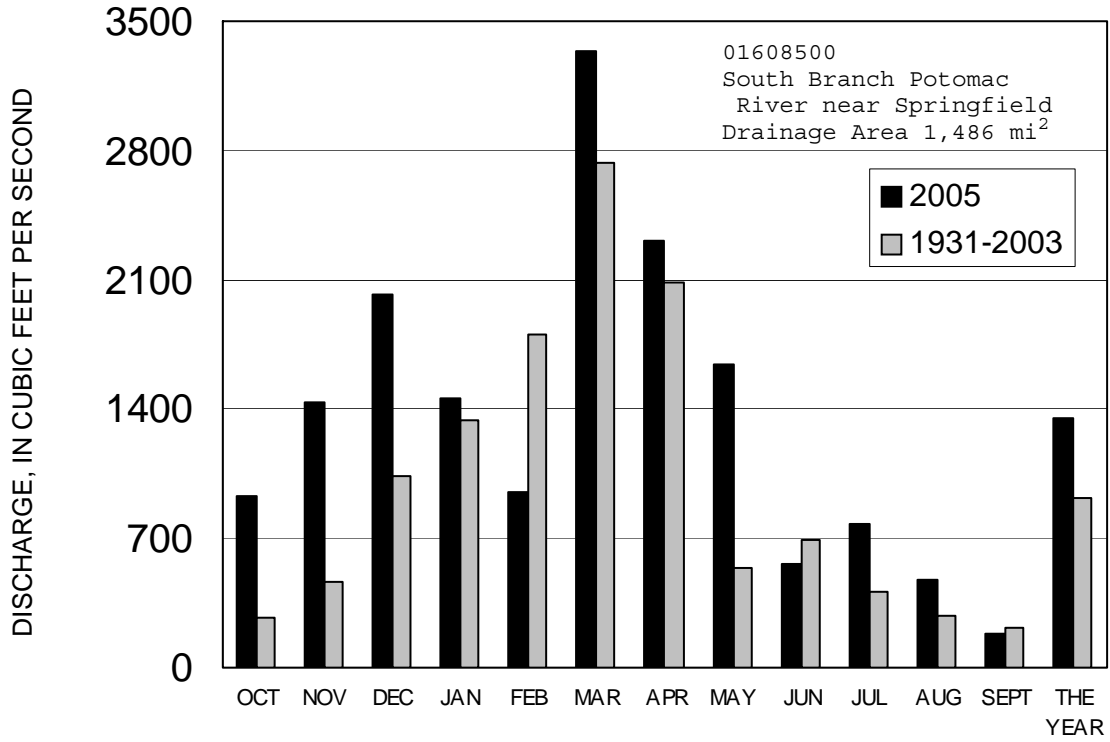


Figure 1. --Discharge at the South Branch Potomac River and the Buckhannon River index gaging stations during the 2005 water year compared to median discharge for the period 1931-2003.

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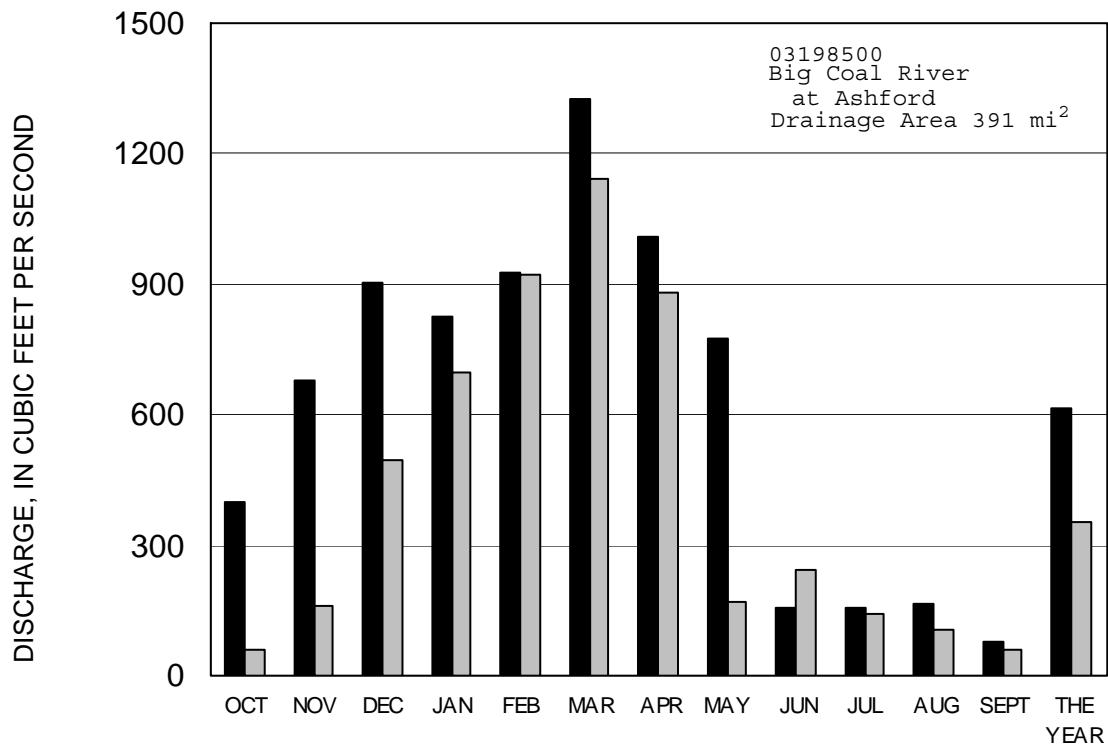
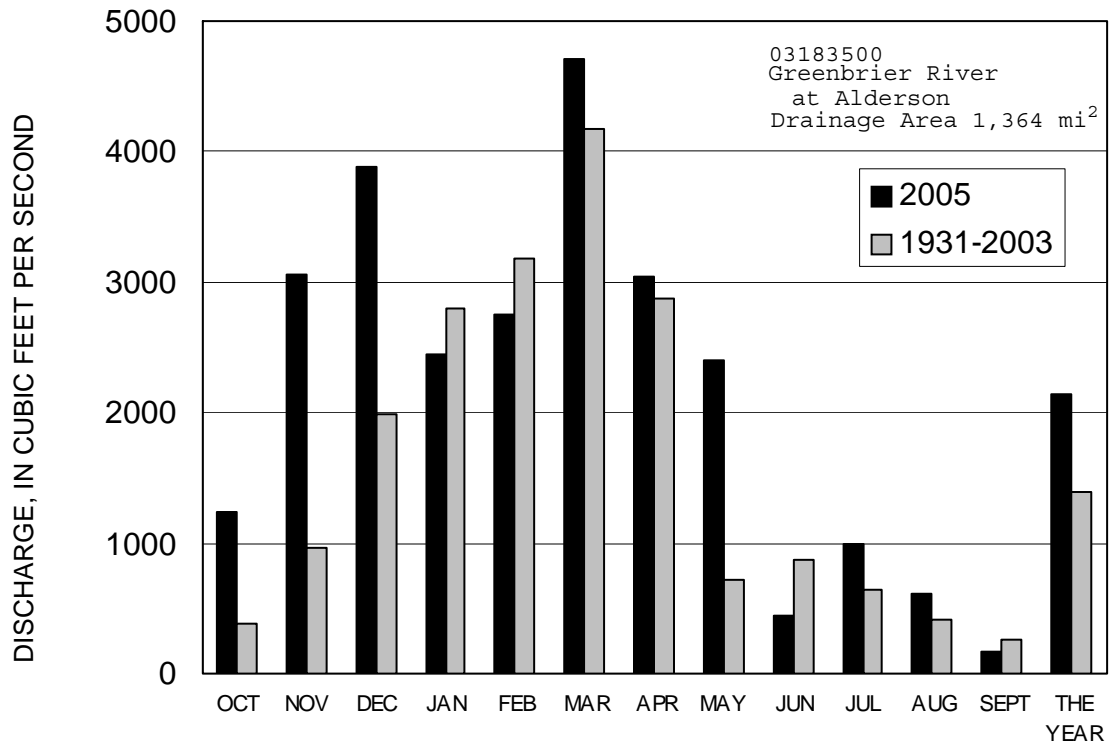


Figure 2. --Discharge at the Greenbrier River and the Big Coal River index gaging stations during the 2005 water year compared to median discharge for the period 1931-2003.

Table 1.--Mean, maximum, and minimum stream statistics for water year 2005 at selected stations in West Virginia.

[7Q₁₀: 7-day minimum mean streamflow for 10-year recurrence interval; R: regulated period only; ---: unknown or not applicable.]

Station number	Station name	Drainage Area (mi ²)	Years of Discharge Record	-----MEAN-----		-----MAXIMUM-----			-----MINIMUM-----		
				Daily Streamflow (ft ³ /s)	Percent of Average	Peak Stage (ft)	Peak Discharge (ft ³ /s)	Recurrence Interval (Years) (a)	7-day Mean Streamflow (ft ³ /s)	7Q ₁₀ Streamflow (ft ³ /s) (b)	
<u>POTOMAC RIVER BASIN</u>											
01595200	Stony River nr Mount Storm	48.7	44	91.3	92	6.65	1,680	Mar 29	---	4.3	---
01604500	Patterson Creek nr Headsville	211	68	182	105	9.83	4,150	Mar 29	2	6.9	2.91
01605500	South Branch Potomac R at Franklin	179	58	187	106	5.77	3,720	Mar 28	<2	38	25.6
01606000	NF South Branch Potomac River at Cabins	335	31	440	108	8.51	5,840	Mar 28	<2	17	6.97
01606500	South Branch Potomac River nr Petersburg	676	77	838	112	11.17	12,700	Mar 28	2	89	53.8
01607500	SF South Branch Potomac R at Brandywine	103	62	101	96	4.56	1,500	Mar 28	<2	7.7	2.64
01608000	SF South Branch Potomac R nr Moorefield	277	74	226	96	6.29	3,530	Mar 29	<2	17	9.09
01608070	South Branch Potomac River near Moorefield	1,241	---	---	---	15.80	---	Mar 29	---	---	---
01608500	South Branch Potomac River nr Springfield	1,486	81	1,347	99	14.99	21,400	Mar 29	<2	136	73.5
01611500	Cacapon River nr Great Cacapon	675	82	567	95	10.21	9,090	Mar 29	<2	68	39.2
01614000	Back Creek nr Jones Springs	235	41	221	112	12.76	6,560	Mar 29	<2	6.8	4.73
01616500	Opequon Creek nr Martinsburg	273	58	259	105	12.02	5,030	Mar 29	<2	65	35.8
01636500	Shenandoah River at Millville	3,022	90	2,802	101	8.57	16,300	Mar 30	<2	595	357
<u>MONONGAHELA RIVER BASIN</u>											
03050000	Tygart Valley River near Dailey	185	78	366	102	10.79	5,860	Mar 24	<2	3.7	1.07
03050500	Tygart Valley River nr Elkins	271	---	---	---	11.81	---	Mar 24	---	---	---
03051000	Tygart Valley River at Belington	406	98	835	101	11.61	7,130	Mar 25	<2	3.5	3.81
03052000	Middle Fork River at Audra	148	54	373	105	7.52	3,520	Mar 08	<2	1.8	0.62
03052500	Sand Run nr Buckhannon	14.3	59	28.0	100	4.54	421	Mar 08	<2	0.10	0.02
03052450	Buckhannon River at Buckhannon	217	---	---	---	16.47	---	Mar 24	---	---	---
03053500	Buckhannon River at Hall	277	90	636	105	8.87	3,920	Mar 08	<2	4.7	2.75
03054500	Tygart Valley River at Philippi	914	65	1,990	104	12.91	15,200	Mar 08	<2	14	11.5
03056250	Three Fork Creek nr Grafton	96.8	21	178	98	11.70	4,070	Jan 12	<2	1.2	0.83
03057000	Tygart Valley River at Colfax	1,363	---	---	---	12.66	---	Jan 12	---	---	---
03057300	West Fork River at Walkersville	28.8	---	---	---	10.36	---	Mar 28	---	---	---
03058500	West Fork River at Butcherville	181	---	---	---	5.01	---	Mar 28	---	---	---
03058975	West Fork River nr Mount Clare	368	---	---	---	9.00	---	Aug 30	---	---	---
03061000	West Fork River at Enterprise	759	R33	1,160	R97	14.03	12,500	Jan 05	---	56	---
03061500	Buffalo Creek at Barrackville	116	82	189	112	12.26	6,980	Jan 05	5	4.9	0.98
03062500	Deckers Creek at Morgantown	63.2	26	105	100	3.03	723	Jan 06	<2	2.4	---
03065000	Dry Fork at Hendricks	349	63	756	96	6.87	9,400	Mar 29	<2	22	11.2

Table 1.--Mean, maximum, and minimum stream statistics for water year 2005 at selected stations in West Virginia--Continued.

[7Q₁₀: 7-day minimum mean streamflow for 10-year recurrence interval; R: regulated period only; ---: unknown or not applicable.]

Station number	Station name	Drainage Area (mi ²)	Years of Discharge Record	-----MEAN-----		-----MAXIMUM-----			-----MINIMUM-----		
				Daily Streamflow (ft ³ /s)	Percent of Average	Peak Stage (ft)	Peak Discharge (ft ³ /s)	Date	Recurrence Interval (Years) (a)	7-day Mean Streamflow (ft ³ /s)	7Q ₁₀ Streamflow (ft ³ /s) (b)
<u>MONONGAHELA RIVER BASIN--Continued</u>											
03065400	Blackwater River nr Davis	54.7	14	122	77	5.72	1,270	Mar 29	---	5.0	---
03066000	Blackwater River at Davis	85.9	84	191	94	7.59	2,140	Mar 29	<2	7.5	4.79
03067510	Shavers Fork nr Cheat Bridge	60.2	4	168	86	13.38	5,360	Mar 28	---	7.3	---
03068800	Shavers Fork below Bowden	151	16	427	96	10.74	13,400	Mar 28	---	15	---
03069500	Cheat River nr Parsons	722	92	1,758	101	11.73	24,800	Mar 29	2	54	33.5
03069870	Cheat River at HWY 50 near Rowlesburg	912	8	2,395	92	12.17	25,700	Mar 29	---	60	---
03070500	Big Sandy Creek at Rockville	200	92	440	105	12.42	8,470	Jan 12	<2	6.0	2.88
<u>WHEELING CREEK BASIN</u>											
03110830	Kings Cr at Weirton	49.0	4	76.1	110	6.12	2,520	Jan 06	---	1.9	---
03112000	Wheeling Creek at Elm Grove	281	65	486	142	7.84	9,190	Jan 06	2	6.1	0.60
<u>LITTLE KANAWHA RIVER BASIN</u>											
03151400	Little Kanawha River nr Wildcat	112	30	218	95	8.45	2,340	Mar 08	<2	1.4	---
03151600	Little Kanawha River at Burnsville	248	---	---	---	8.52	---	Mar 08	---	---	---
03152000	Little Kanawha River at Glensville	387	---	---	---	15.71	---	Aug 30	---	---	---
03153500	Little Kanawha River at Grantsville	913	---	---	---	28.39	---	Aug 30	---	---	---
03154000	West Fork Little Kanawha River at Rocksedale	205	---	---	---	19.07	---	May 20	---	---	---
03155000	Little Kanawha River at Palestine	1,516	R38	2,267	R101	23.50	18,100	Aug 30	---	60	---
<u>KANAWHA RIVER BASIN</u>											
03179000	Bluestone River nr Pipestem	395	55	596	125	9.14	4,510	Dec 10	<2	39	12.6
03180500	Greenbrier River at Durbin	133	62	296	111	5.63	3,990	Mar 24	<2	13	2.27
03182500	Greenbrier River at Buckeye	540	76	931	104	10.99	14,100	Mar 28	<2	40	14.5
03183500	Greenbrier River at Alderson	1,364	110	2,146	107	11.14	23,700	Mar 29	<2	82	48.0
03184000	Greenbrier River at Hilldale	1,619	69	2,474	107	13.60	26,000	Mar 29	<2	86	51.5
03184500	New River at Hinton	6,256	---	---	---	8.28	---	Mar 29	---	---	---
03185000	Piney Creek at Raleigh	52.7	33	77.7	119	4.05	742	Dec 01	<2	5.3	0.64
03185400	New River at Thurmond	6,687	R24	10,310	R115	16.75	60,700	Mar 29	---	1460	---
03186500	Williams River at Dyer	128	76	350	104	10.01	8,050	Mar 28	2	8.7	2.21
03187000	Gauley River at Camden-on-Gauley	236	---	---	---	12.80	---	Mar 28	---	---	---
03187500	Cranberry River nr Richwood	80.4	46	249	106	8.37	5,360	Mar 28	2	5.0	3.47
03189100	Gauley River near Craigs ville	529	20	1,472	103	18.10	20,100	Mar 28	<2	39	24.5
03189600	Gauley River below Summersville Dam	806	---	---	---	18.07	---	Apr 30	---	---	---
03190400	Meadow River nr Mt. Lookout	365	36	796	108	8.51	5,380	Apr 30	<2	29	5.52

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				Daily Streamflow (ft ³ /s)	Percent of Average	Peak Stage (ft)	Peak Discharge (ft ³ /s)	Recurrence Interval (Years) (a)	7-day Mean Streamflow (ft ³ /s)	7Q ₁₀ Streamflow (ft ³ /s) (b)	
<u>KANAWHA RIVER BASIN--Continued</u>											
03191500	Peters Creek nr Lockwood	40.2	33	82.0	126	8.07	707	Feb 21	<2	4.2	0.07
03192000	Gauley River above Belva	1,317	R41	3,118	R108	11.97	22,900	May 01	---	259	---
03193000	Kanawha River at Kanawha Falls	8,371	R67	13,940	R114	15.42	81,400	Mar 29	---	2520	---
03194700	Elk River below Webster Springs	266	45	635	91	10.06	10,400	Mar 24	<2	16	13.5
03195500	Elk River at Sutton	542	---	---	---	19.59	---	Mar 25	---	---	---
03196600	Elk River near Frametown	751	---	---	---	8.79	---	Mar 25	---	---	---
03196800	Elk River at Clay	992	---	---	---	9.51	---	Mar 25	---	---	---
03197000	Elk River at Queen Shoals	1,145	R47	2,199	R102	9.98	9,440	Mar 09	---	146	---
03197990	Kanawha River at Charleston	10,448	R66	18,110	R118	27.81	86,300	Mar 30	---	3070	---
03198350	Clear Fork at Whitesville	62.8	9	101	113	14.48	838	Apr 30	---	6.8	---
03198500	Big Coal River at Ashford	391	83	615	116	10.22	5,550	Apr 30	<2	48	5.91
03200500	Coal River at Tornado	862	47	1,369	112	19.47	16,200	Apr 30	<2	110	26.7
03201405	Hurricane Creek at Hurricane	26.8	8	43.1	117	14.38	1,820	Jul 27	---	0.96	---
<u>GUYANDOTTE RIVER BASIN</u>											
03202400	Guyandotte River nr Baileysville	306	37	470	110	6.92	2,850	Dec 01	<2	61	---
03202750	Clear Fork at Clear Fork	126	31	212	109	7.41	2,430	Dec 01	<2	13	---
03202915	Guyandotte River below R.D. Bailey Dam	535	---	---	---	9.39	---	Jul 24	---	---	---
03203000	Guyandotte River at Man	758	---	---	---	10.74	---	Dec 01	---	---	---
03203600	Guyandotte River at Logan	833	R26	1,287	R113	12.20	6,970	May 01	---	129	---
03204000	Guyandotte River at Branchland	1,224	---	---	---	22.11	---	Apr 30	---	---	---
<u>TWELVEPOLE CREEK BASIN</u>											
03206600	East Fork Twelvepole Creek nr Dunlow	38.5	41	53.6	103	12.73	2,350	Apr 30	5	0.86	---
03206790	EF Twelvepole Creek below East Lynn Dam	138	---	---	---	10.61	---	Dec 02	---	---	---
03207020	Twelvepole Creek below Wayne	291	---	---	---	17.75	---	Apr 30	---	---	---
<u>BIG SANDY RIVER BASIN</u>											
03212750	Tug Fork at Welch	174	17	251	120	6.98	1,310	Dec 09	<2	58	---
03212980	Dry Fork at Beartown	209	17	282	121	7.77	3,230	Dec 09	<2	29	---
03213500	Panther Creek nr Panther	31.0	42	40.7	115	5.55	504	Dec 01	<2	1.6	0.15
03213700	Tug Fork at Williamson	936	38	1,321	116	14.84	8,090	Dec 10	<2	156	---
03214500	Tug Fork at Kermit	1,280	28	1,778	119	25.03	15,300	Apr 30	<2	207	41.1

a. Based on U.S. Geological Survey Water-Resources Investigations Report 00-4080.

b. Based on U.S. Geological Survey Scientific Investigations Report 2006-5002.

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