

National Park Service
New River Gorge National River
Bluestone National Scenic River
Gauley River National Recreation Area



Hitting Moving Targets in Rivers of Change: Water Quality Monitoring for West Virginia Riverine National Parks





Base from U.S. Geological Survey digital data, 1:2,000,000, 1992 and National Park Service digital data, 1:24,000, 1996

Park History

New River Gorge National River
1978

Bluestone National Scenic River
1988

Gauley River National Recreation Area
1988

**Figure 2. New River Gorge National River Water Quality
Sample Sites**

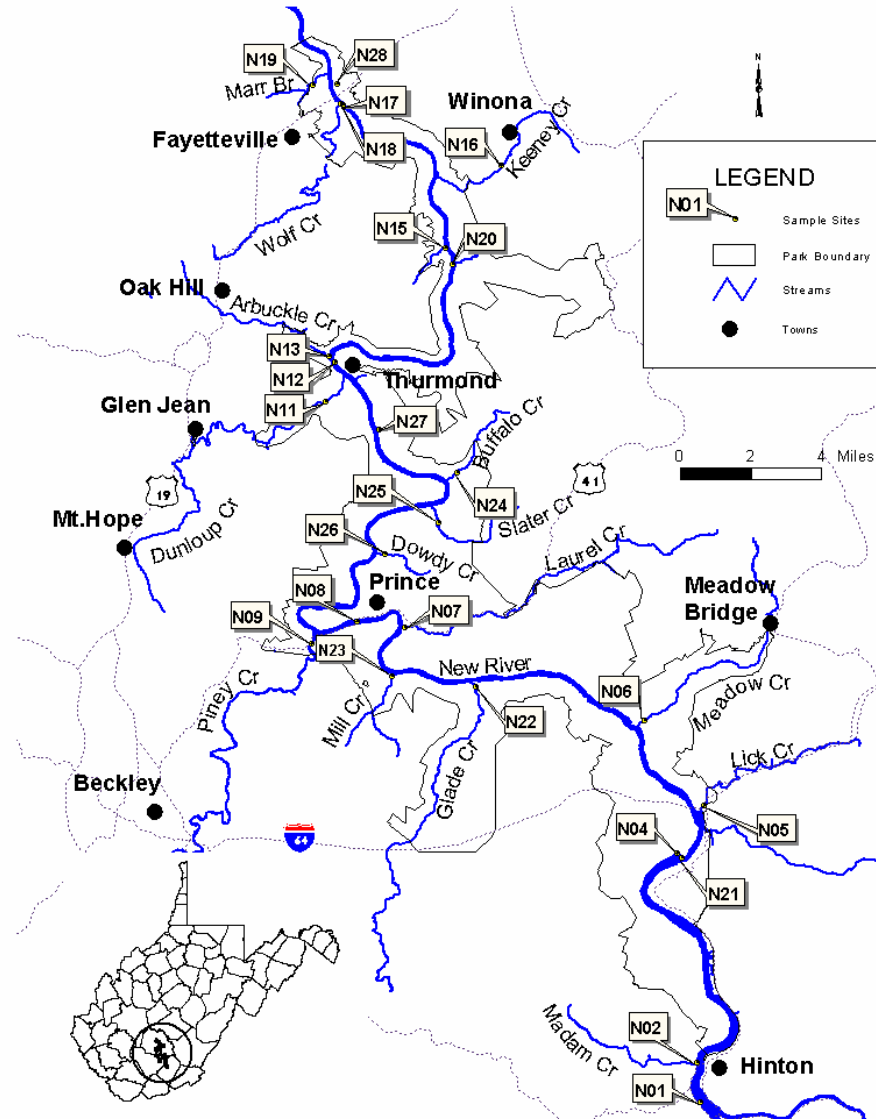
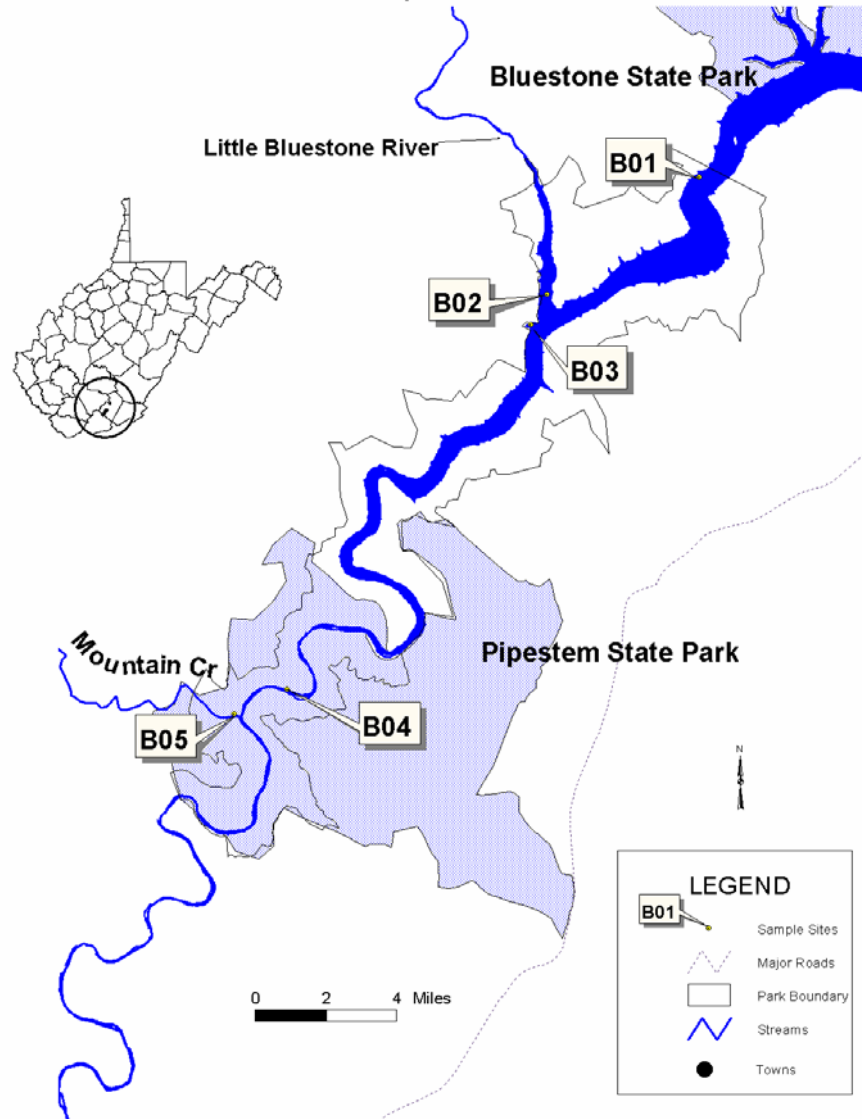
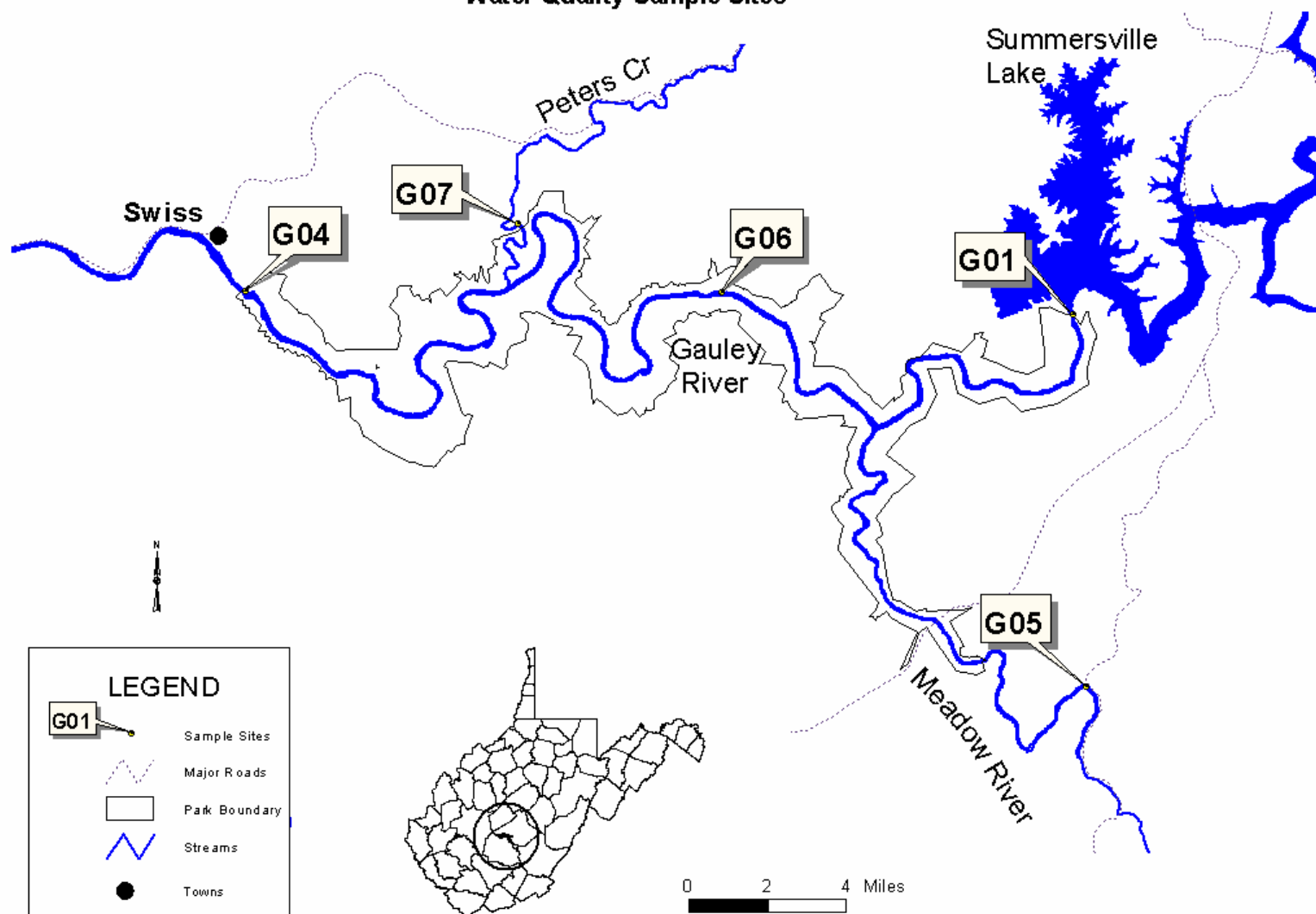


Figure 1. Bluestone National Scenic River Water Quality
Sample Sites



**Figure 3. Gauley River National Recreation Area
Water Quality Sample Sites**



History of Water Quality Monitoring

NEW RIVER GORGE NATIONAL RIVER

- Wood, D. M. 1990a. New River Gorge National River water studies summary **1980 – 1986**.
- West Virginia Department of Natural Resources. 1988. New River Gorge National River fecal coliform study April – September **1987**.
- West Virginia Department of Natural Resources. 1989. New River Gorge National River fecal coliform study April – September **1987-1988**.
- Wood, D. M. 1990b. New River Gorge National River water quality study **1989**.
- Wood, D. M. 1990c. New River Gorge National River water quality study **1990**.
- Schmidt, D. and S. Hebner. 1991. New River Gorge National River fecal coliform study April – September **1990**.
- Hebner, S. W. 1991b. New River Gorge National River fecal coliform study April – September **1991**.
- Sullivan, R. J. 1993b. New River Gorge National River water quality monitoring program April – September **1992**.
- Gibson, S. 1993. Winter fecal coliform bacteria study New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area.
- Sullivan, R. J. 1993c. New River Gorge National River Bluestone National Scenic River and Gauley River National Recreation Area water quality monitoring program **1993** revised.
- Purvis, J. M. and L. Wilson. 1999. Hydrologic influences on fecal coliform bacteria in a tributary to New River Gorge National River.
- Wilson, L. and J. M. Purvis. 2000. Water quality monitoring program **1994 – 1997** New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area.
- Wilson, L. and J. M. Purvis. 2003. Water quality monitoring program **1998 – 2000** New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area
- Vandersall, K. L. Wilson and J. M. Purvis. 2004 (in prep). Water quality monitoring program **2001 – 2003** New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area

History of Water Quality Monitoring

BLUESTONE NATIONAL SCENIC RIVER and GAULEY RIVER NATIONAL RECREATION AREA

- Hebner, S. W. 1991a. Bluestone National Scenic River and Gauley River National Recreation Area fecal coliform study, April – September **1991**.
- Sullivan, R.J. 1993a. Bluestone National Scenic River and Gauley River National Recreation Area: water quality monitoring program, April – October **1992**.
- ✓ Gibson, S. 1993. Winter fecal coliform bacteria study New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area.
- ✓ Sullivan, R.J. 1993c. New River Gorge National River Bluestone National Scenic River and Gauley River National Recreation Area water quality monitoring program **1993** revised.
- ✓ Wilson, L. and J.M. Purvis. 2000. Water quality monitoring program **1994 – 1997** New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area.
- ✓ Wilson, L. and J. M. Purvis. 2003. Water quality monitoring program **1998 – 2000** New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area.
- ✓ Vandersall, K., L. Wilson and J.M. Purvis. 2004 (in prep). Water quality monitoring program **2001 – 2003** New River Gorge National River Bluestone National Scenic River Gauley River National Recreation Area.

Water Quality Issues

- Acid mine drainage not a problem
 - Low-sulfur “smokeless” coal
 - Streams well buffered (pH 7+ to 9)
- Sewage contamination THE issue
 - Failure of centralized systems
 - Many not on centralized systems
 - Failure of individual systems

Aspects of Sewage Pollution

- More pervasive in some streams
 - Streams with STPs HIGH during runoff
 - Streams without STPs chronically HIGH

Supplemental Studies

- USGS
 - NAWQA
 - Microbial Reconnaissance
 - Polycyclic Aromatic Hydrocarbons (PAHs)
 - Bacteria Source Tracking

Supplemental Studies

- NPS
 - Hydrologic Influences on Fecal Bacteria
 - 2001 Floods
 - Storm Event
 - Keeney Creek

Supplemental Studies

- Wolf Creek (PAN)
- Dunloup Creek (DCWA)
- EMAP (WV DEP)
- Superfund Site (EPA)
- Mid-Atlantic Highlands Assessment
- others

Incident Response

- Train derailments
 - coal
 - diesel
 - corn
- Toxic spills & releases
- Fish and invertebrate kills
 - pet flea shampoo

Other proposed studies

- Synthetic Streamflow
- Trace Elements
- Emerging Contaminants (PC&PP)
- Gauley River hydrology
- Biological Assessments
- Public Health Epidemiology

Technical Evaluation

- FY 2005
- Facilitator
- Outside Reviewers
 - NPS Regional Office (1)
 - NPS National Office (1)
 - WV DEP (1)
 - USGS (1)
 - Local government (1-3)
 - River users (1)
 - Other (1-3)