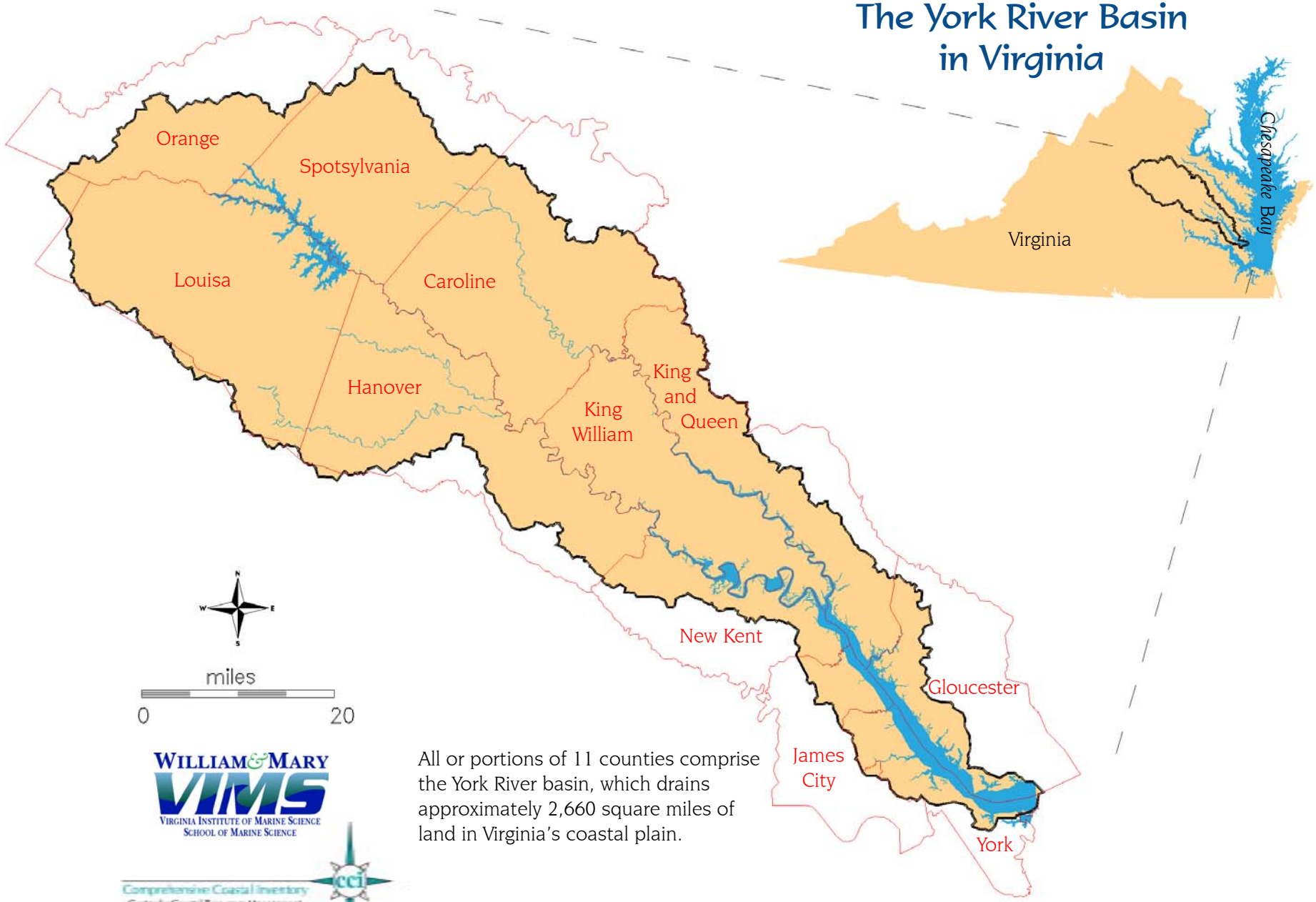

State of the
York
Watershed 2000

The York River Basin in Virginia



All or portions of 11 counties comprise the York River basin, which drains approximately 2,660 square miles of land in Virginia's coastal plain.

William & Mary VIMS
Virginia Institute of Marine Science
School of Marine Science

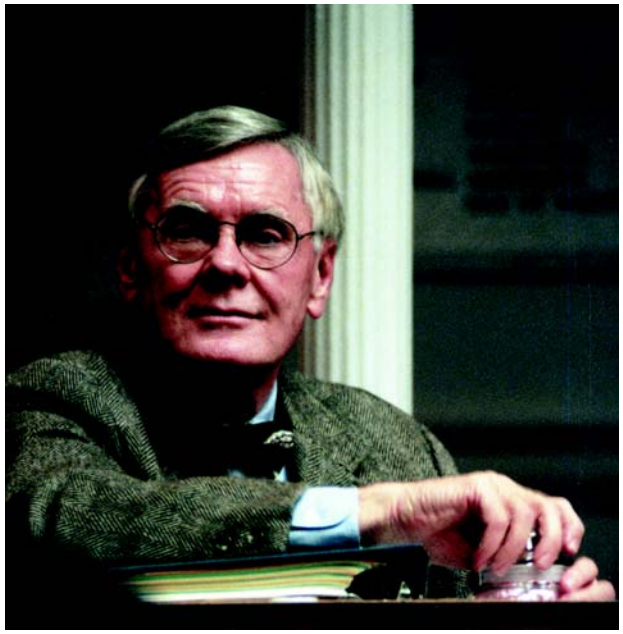
Comprehensive Coastal Inventory
Center for Coastal Resources Management
Virginia Institute of Marine Science

Cover photo: South Anna River

"Virginia's York River has long been counted among the most studied rivers in the Chesapeake Bay estuary. Indeed, few realize that the York is the only Bay tributary in Virginia whose drainage basin is formed entirely within the Coastal Plain and where, in the middle reaches, is found the highest point of tide in the entire Bay system.

Today, the York finds itself again the focus of attention, much as it did two hundred years ago in the final victory at Yorktown, concluding our nation's War of Independence. This time, however, the excitement is the result of much innovative resource management and planning, and includes a healthy dose of forward thinking, a growing "roll up your sleeves and get to work" attitude, and a new public work ethic rapidly spreading across the basin, inspired by the York Watershed Council.

The council, a unique consortia comprised of soil and water conservation districts, community grassroots organizations, and local governments advised by the Commonwealth's natural resource agencies and the Virginia Institute of Marine Science, celebrates with the release of this report five productive years of pioneering service. The council's impressive track record speaks volumes in exemplifying what was envisioned by the Chesapeake Bay Commission in 1998 in developing the Chesapeake Bay Program's Community Watershed Initiative. Today's complex and interconnected natural resource management challenges require innovative and integrated solutions, and the York Watershed Council is meeting that challenge head-on at every turn.

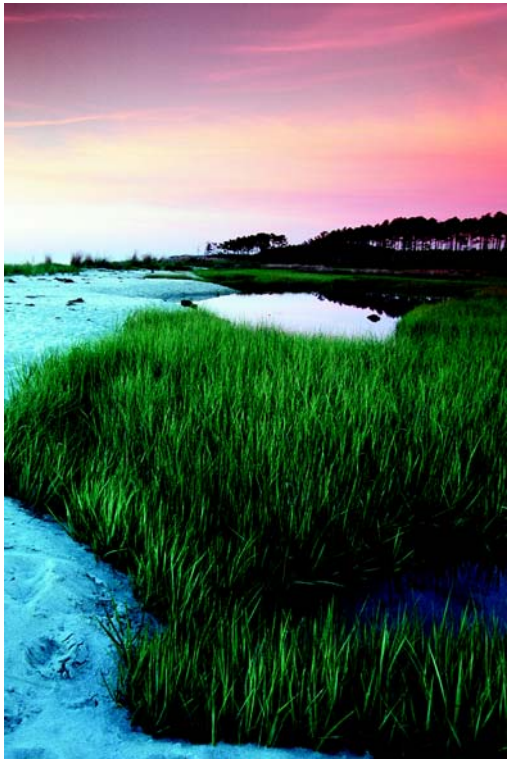


This report summarizes much of what the council has learned about the York River, specifically by focusing detailed attention on the tell-tale signs in the landscape through which the York River flows. The report's first section describes the York River system and its physical watershed. Beginning on page 10, section two addresses what we now know about the system's water quality and impacts upon the York's living resources. Section three (page 24) speaks to the challenges and opportunities we face in stewarding the river basin in the years ahead.

The good news here is that the York is wonderfully resilient, healthy, and productive, especially when compared with other, more populated and burdened East Coast rivers. The somewhat more sobering news is that we are beginning to see early flash points of distress, much along the order of faint stress cracks in fine porcelain. Fortunately, council leaders are out in front again, evaluating management strategies to make an early repair or a timely restoration. Across the nation, partnerships such as the York Watershed Council are showing us the way to a new era; to a future where comprehensive watershed planning and integrated resource management, coupled with community-based, bottom-up management strategies and actions inspire and empower citizens to improve their neighborhoods, their communities, and their own sense of well being."

W. Tayloe Murphy, Jr.

THE YORK AND ITS WATERSHED:
A Dynamic River System in Transition



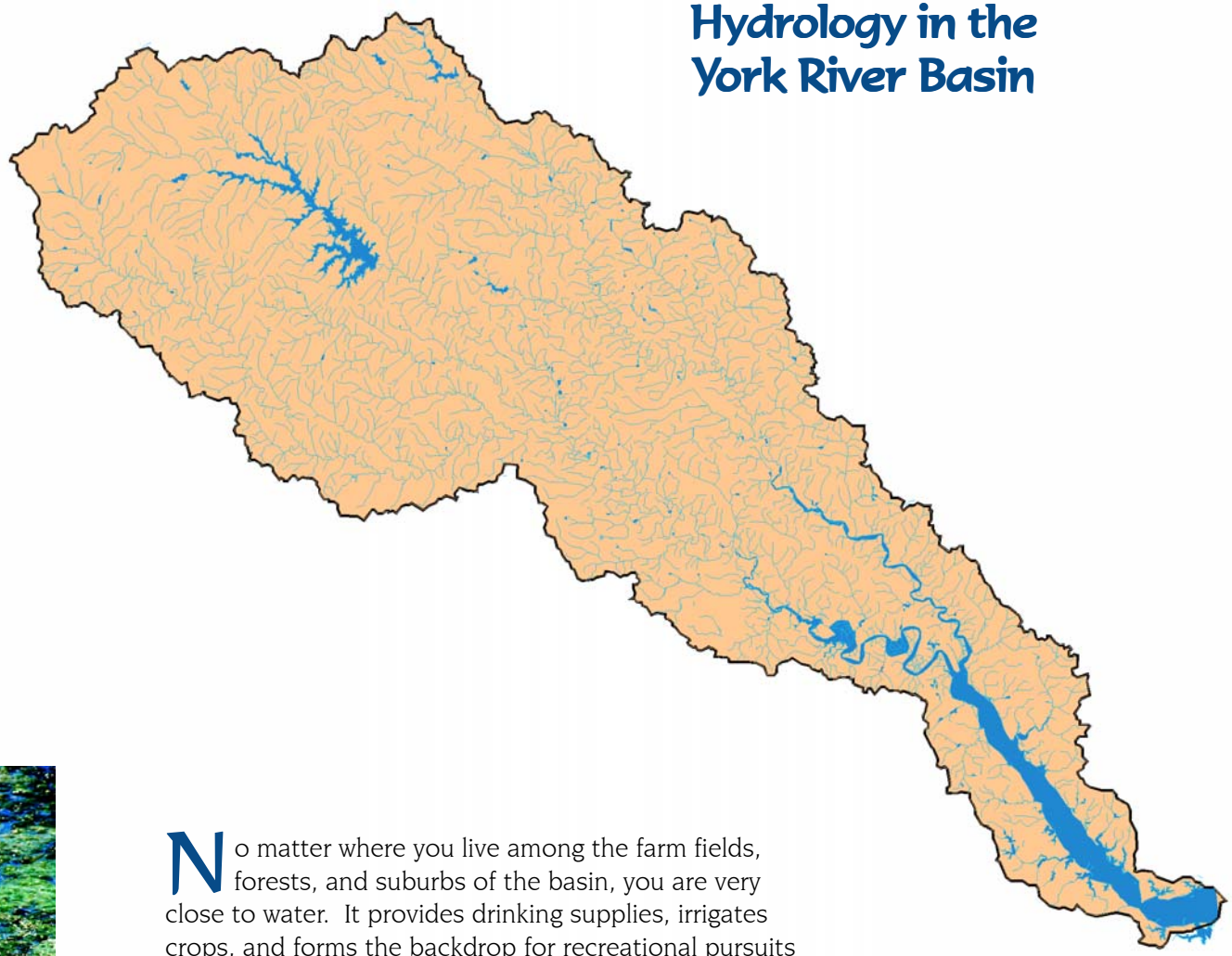
Climate in the York basin, as across much of Virginia's Coastal Plain province, is largely influenced by the whims of weather patterns moving across Chesapeake Bay. The York River watershed experiences temperatures ranging, on average, from 29° - 47°F during winter to 68° - 88°F in warm months. Spring breezes off the Chesapeake draw colorful sailboats to favored spots on Mobjack Bay and the lower York, while the hum of jonboat motors fills the air farther inland on the Mattaponi and Pamunkey rivers.

Rainfall across the watershed averages 45 inches per year, but recent years have blurred the notion of "average," due to long drought periods experienced in 1998 and 1999 and hurricane-type events tied to El Niño weather patterns in several of the past five years.

The waters that ripple, run, and race to form the York River at West Point are nothing if not robust. The map on the facing page shows the tremendous network of small, first-order creeks that join with larger, second- and third-order streams to become the major tributaries of the system: Matta, Po, and Ni (to form the Mattaponi); and North Anna, South Anna, and Little (to form the Pamunkey).

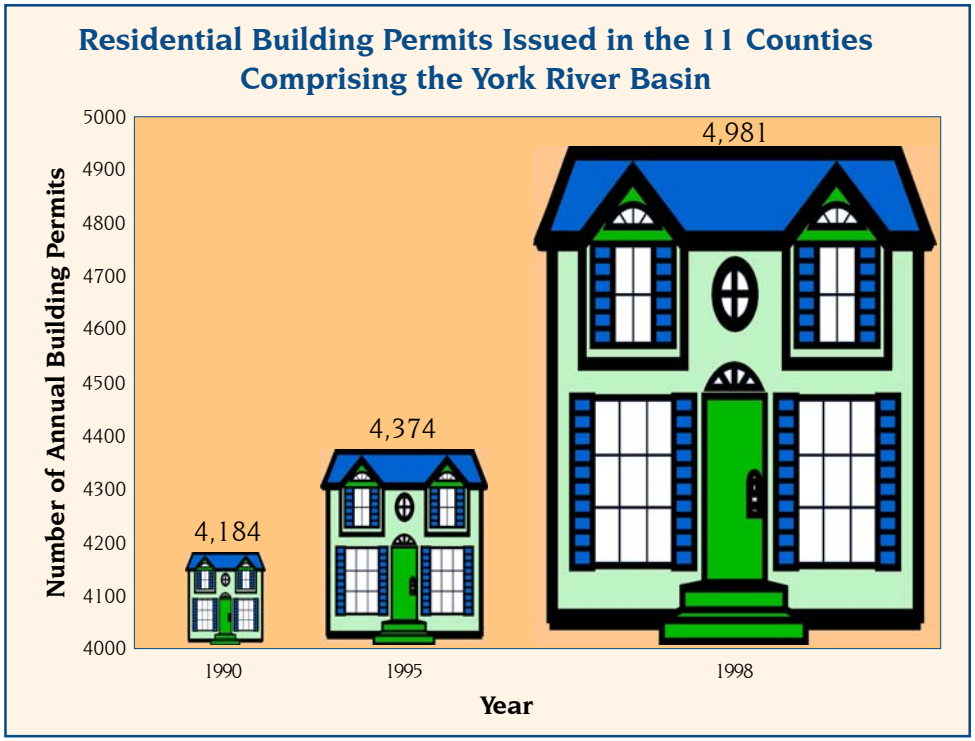
Cushioning this river imprint is a magnificent inventory of freshwater marshes and lowland, hardwood swamps that buffer the waterways from the effects of storms and human-induced disturbances to the land. Moving farther down the Mattaponi and Pamunkey, these areas are gradually replaced by saltwater marshes that fill in the wide meanders common to rivers of the Coastal Plain.

Hydrology in the York River Basin



No matter where you live among the farm fields, forests, and suburbs of the basin, you are very close to water. It provides drinking supplies, irrigates crops, and forms the backdrop for recreational pursuits while powering the industrial machinery of Bear Island Paper Company, two Virginia Power facilities, St. Laurent Paper Corporation, and the Amoco Oil Refinery.

During the years prior to colonial settlement, the York, Pamunkey, and Mattaponi rivers were the seasonal homes of Native Americans, who used the rivers as highways and food banks during hospitable weather, and traveled inland during colder months to live off the wild game, nuts, and berries of the deep, interior forests. Colonial settlement followed this model, with the first successful planters claiming large, riverfront parcels to transport their crops. The earliest parcels to be cleared were those shouldering the rivers — the riparian lands comprised of rich, mineral-laden soils courtesy of a receding Chesapeake Bay.

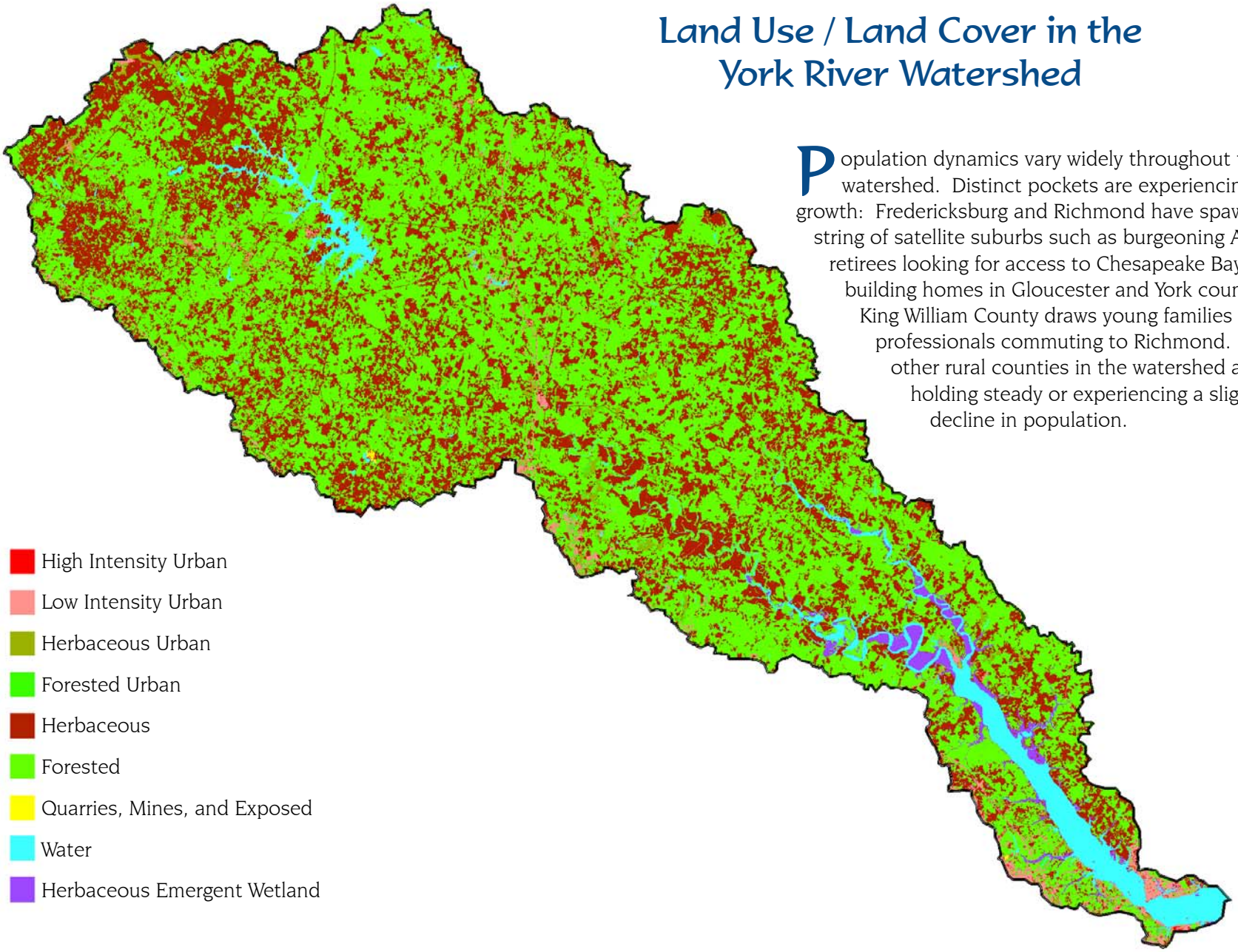


While these are not watershed-specific data, they do reveal the growth trend apparent in the counties that fall within the watershed boundaries. The most rapid growth in building permits between 1995 and 1998 occurred in Hanover and Spotsylvania counties.

Low elevation and thousands of acres of marshlands and wetlands helped preserve the character of the York River basin during the days of Richmond's development. Travel was difficult and roads, precarious at best. While rail construction in 1859 allowed the town of West Point to connect with Richmond, it was another 55 years before the first bridge was constructed across the Mattaponi River, connecting the town to the outstretched finger of land lying due north.

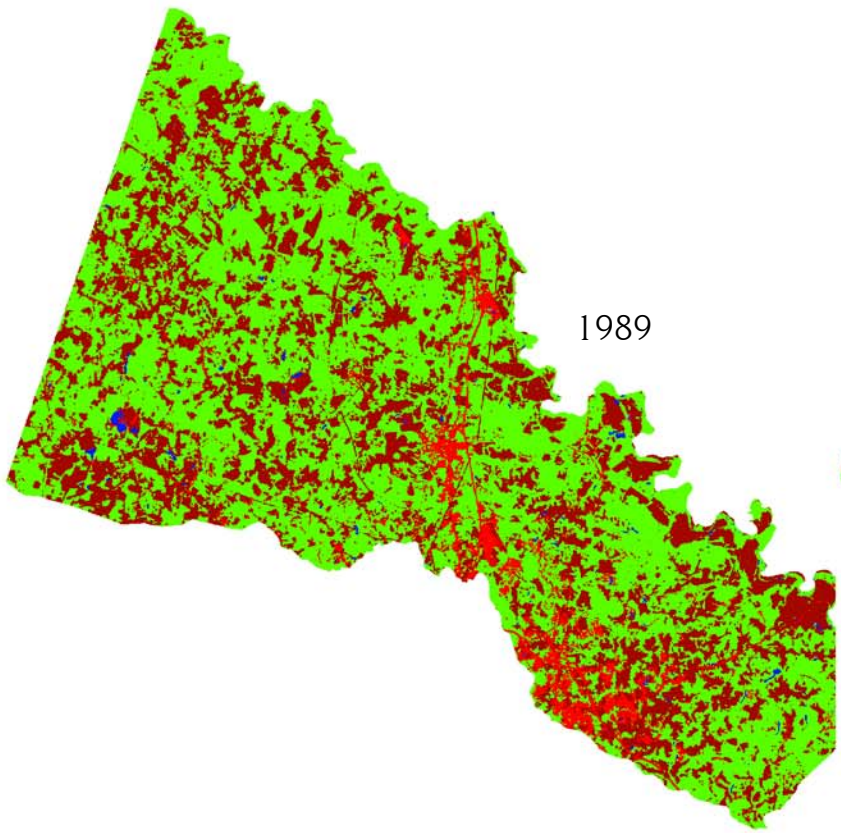
It is only through an understanding of this isolation from metropolitan centers that we can appreciate the stillness and beauty of the modern landscape of the York River watershed. Although tell-tale signs of suburbia are creeping along Route 1 and Interstate 95, much of the land in the basin is currently tied to agriculture and silviculture. A smaller number of farmers, however, now manage larger pieces of the land mosaic. The forces of modern economics have resulted in a growing base of residents who are not employed in land-based enterprises and who must therefore commute to jobs outside of the watershed.

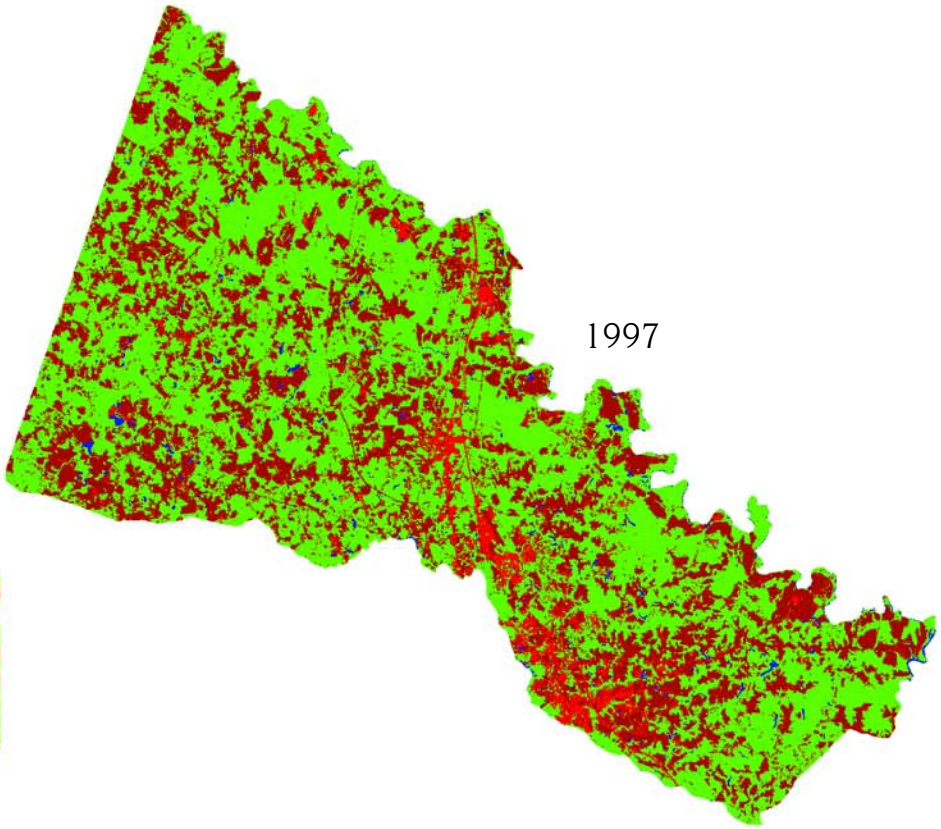
Land Use / Land Cover in the York River Watershed



Population dynamics vary widely throughout the watershed. Distinct pockets are experiencing rapid growth: Fredericksburg and Richmond have spawned a string of satellite suburbs such as burgeoning Ashland; retirees looking for access to Chesapeake Bay are building homes in Gloucester and York counties; King William County draws young families and professionals commuting to Richmond. Still, other rural counties in the watershed are holding steady or experiencing a slight decline in population.

Land Use Change in the Ashland Area of Hanover County



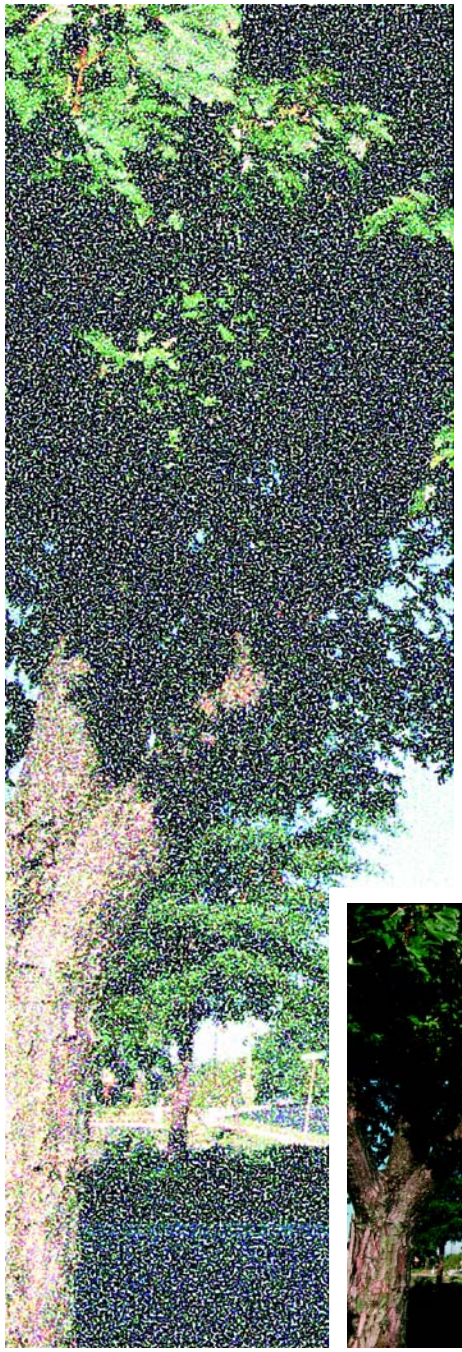


Legend

Land Use	Acres
Developed	19,086
Agriculture	97,261
Forest	185,753

Legend

Land Use	Acres	
Developed	20,387	(net gain)
Agriculture	95,026	(net loss)
Forest	183,142	(net loss)



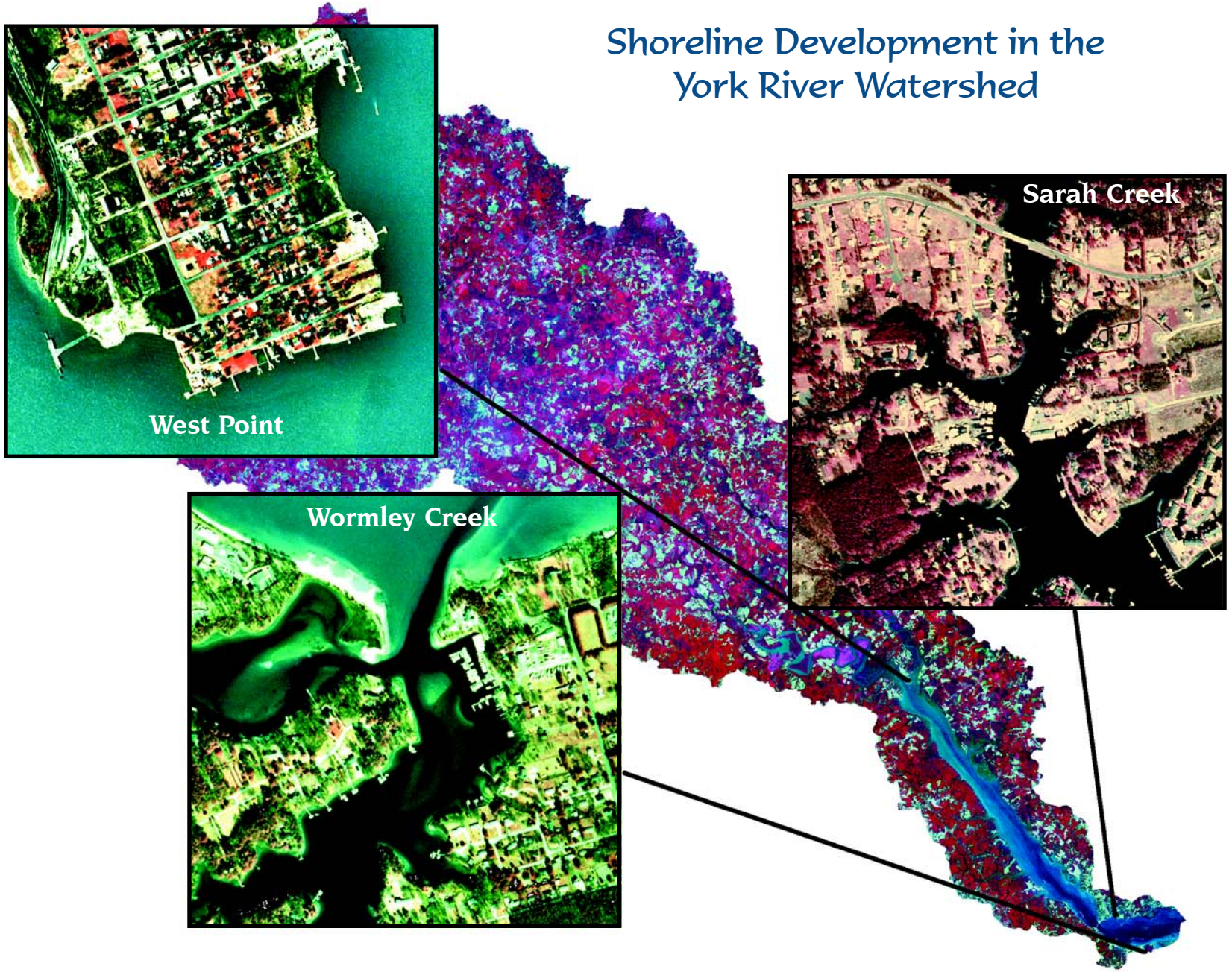
Parts of the upper and middle basin are undergoing significant change in land use, as both the traditions of forest harvesting and agricultural production yield to residential and commercial uses in direct response to population pressures. The shorelines of Lake Anna, for instance, are changing in many areas from woodland to cleared, residential lots. Changing land use can also be witnessed in areas of the basin where growth from adjacent watersheds creeps into the York. The Fredericksburg vicinity in Spotsylvania County, the I-95 and Route 1 corridors, and the rapidly growing town of Ashland are good examples. As the map on the facing page shows, development claimed over 1,300 acres between 1989 and 1997 in the subwatershed that surrounds the northern reaches of Ashland in Hanover County.

In the lower reaches of the watershed, the town of West Point is referred to locally as the gateway to the Middle Peninsula. Recently, it has become the focus of efforts to improve regional traffic flow between the Richmond-Williamsburg area and the Northern Neck, specifically by the pending construction of two, high-volume replacement bridges over the Pamunkey and Mattaponi rivers at their confluence with the York. Also coming to West Point is a regional chip mill, to be located at a former wharf site and rail yard on the north bank of the Pamunkey. The added traffic from both trucks and barges servicing a high-volume manufacturer of product headed for foreign markets portends continued changes to the character of the town.

Coastal communities such as Gloucester, Yorktown, and James City counties are among the state's fastest growing areas, and infrastructure development to support that growth is quickening. Improvements to the Route 17 corridor and the recently upgraded Coleman Bridge have extended the range for commuters to Hampton Roads job markets. Similarly, current plans to enhance tourism in the City of Williamsburg are harbingers of more change to come.

The satellite images on the facing page reveal the extent of hardened shoreline and clustering of structures present in the lower York basin.

Shoreline Development in the York River Watershed



THE YORK AND ITS WATERSHED:
Environmental Indicators as Measures of Change Across the Basin

To the benefit of many, knowledge of the York River and its 2,660-square-mile watershed is considerable and continues to grow. This section captures a few of the highlights of what is known about the living resources in the basin, and speaks to the need for collective stewardship of those resources.

Environmental indicators for the basin are presented in three, tiered data groupings. The first data sets describe key structural or functional elements of the York system; the second describe currently identified water quality impacts to the system revealed through monitoring activities; and the third examine the results of those impacts upon the system's living resources.

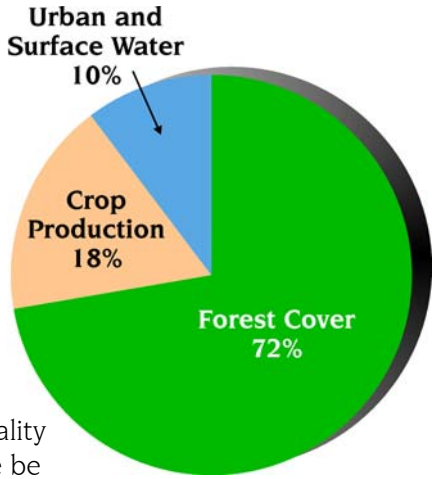
York Environmental Indicators

Land Use / Land Cover
Basin-wide Housing Starts
River Flows
Water Withdrawals and Discharges
Permitted Wetland Losses
Shoreline Hardening

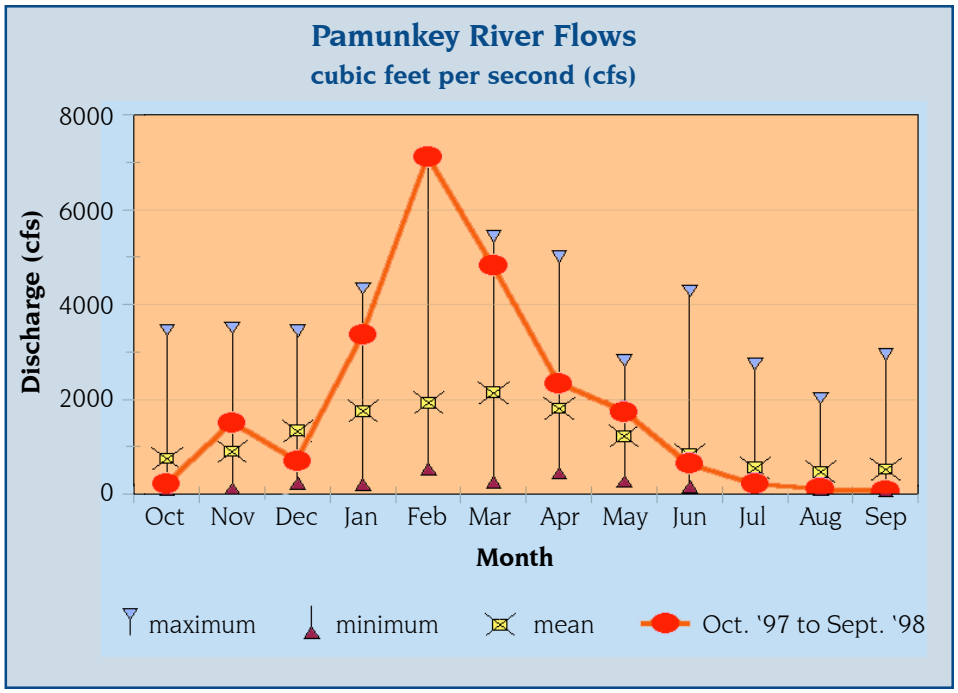
Water Quality Monitoring Data
Virginia 303d Impaired Streams

Juvenile Striped Bass Index
Juvenile Shad Index
Underwater Grasses (SAV)
Heritage Resources

Four unique, long-term research sites in the York administered by the Virginia Institute of Marine Science provide researchers the opportunity to observe and monitor temporal changes in exemplary plant communities. Virginia's Chesapeake Bay National Estuarine Research Reserve sites are located in the lower basin: the Goodwin Islands are on the Bay just beyond the river's mouth, the Catlett Islands are on the lower York's north shore, and Taskinas Creek is on the south shore of the middle York at York River State Park. Sweet Hall Marsh, located on the lower Pamunkey, is featured in the aerial photo on the next page.



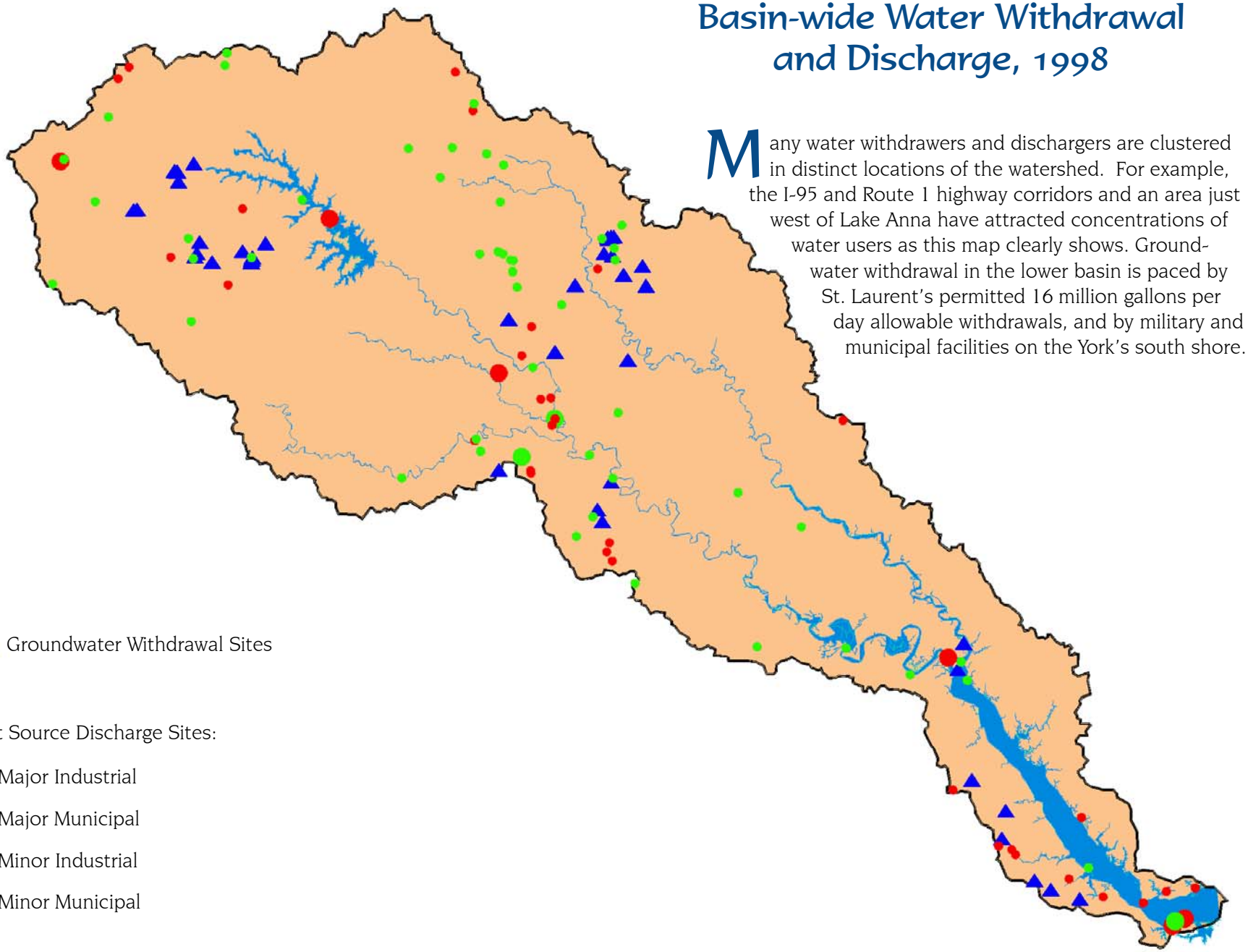
With nearly three-quarters of the basin in forest cover, the York watershed today boasts tremendous resiliency and buffering capacity. Clearly, the ongoing debates and decisions that will shape future land use will also drive the delivery of inputs from the land. Forest cover loss is one indicator that signals the potential for water quality degradation and should therefore be watched carefully over the coming years.

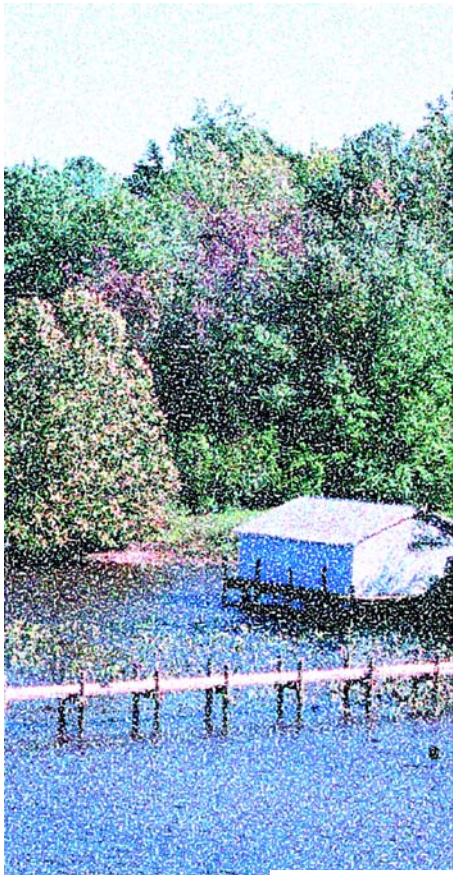


Water flows in the York system are highly variable and subject to great fluctuation across the seasonal pulses of precipitation events. This graph describes the water year of 1998 (Oct. 1, 1997 through Sept. 30, 1998) as one that fluctuated between mean (or average) and minimal (or below average) historic flows in the fall months, consistent with a protracted period of drought. Flows reached historic peak levels during the winter that followed, consistent with snowfall volume and associated storm events, only to return to extended drought conditions by mid-summer 1998.

Basin-wide Water Withdrawal and Discharge, 1998

Many water withdrawers and dischargers are clustered in distinct locations of the watershed. For example, the I-95 and Route 1 highway corridors and an area just west of Lake Anna have attracted concentrations of water users as this map clearly shows. Groundwater withdrawal in the lower basin is paced by St. Laurent's permitted 16 million gallons per day allowable withdrawals, and by military and municipal facilities on the York's south shore.





The waters of the York watershed are still described as among the cleanest and least impacted of the tributaries along the eastern seaboard. This generally reflects the vast amount of forest cover protecting the watershed.

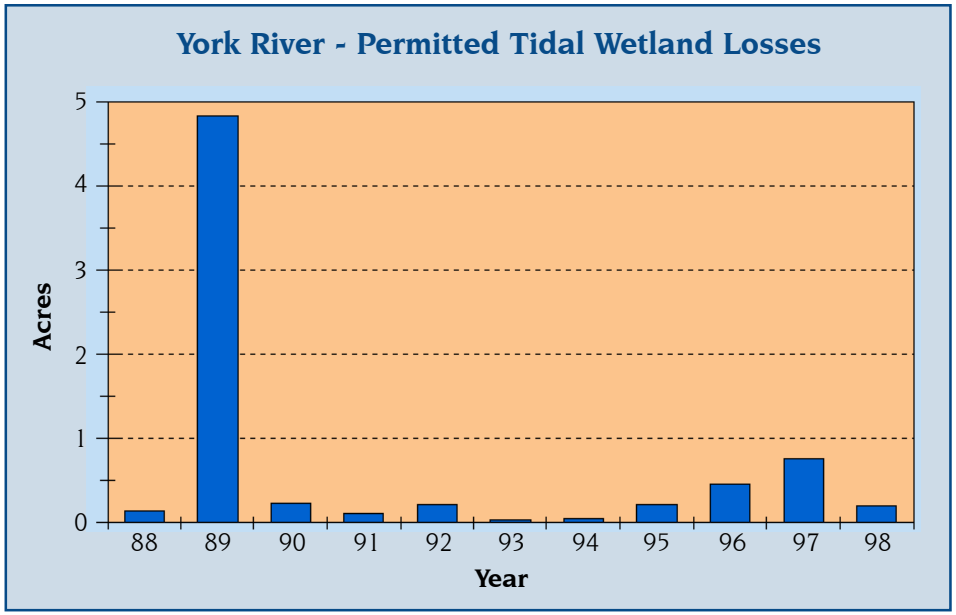
Withdrawals of surface and ground water, however, for industrial and commercial purposes as well as for drinking use, continue to pop up across the basin. In distinct ways, these withdrawals affect the Mattaponi and Pamunkey rivers.

Most of the drinking water used in the basin comes from underground aquifers and, in the case of the Mattaponi River, a great deal of it goes toward municipal use. Ironically, the quality of the Mattaponi surface waters has stimulated regional interest in its use and may ultimately undermine its current health. A controversial application by the City of Newport News seeks to withdraw up to 75 million gallons per day of that water to satisfy a projected need for raw water in the lower peninsula.

The middle and lower Pamunkey are of vital importance to agricultural irrigators.

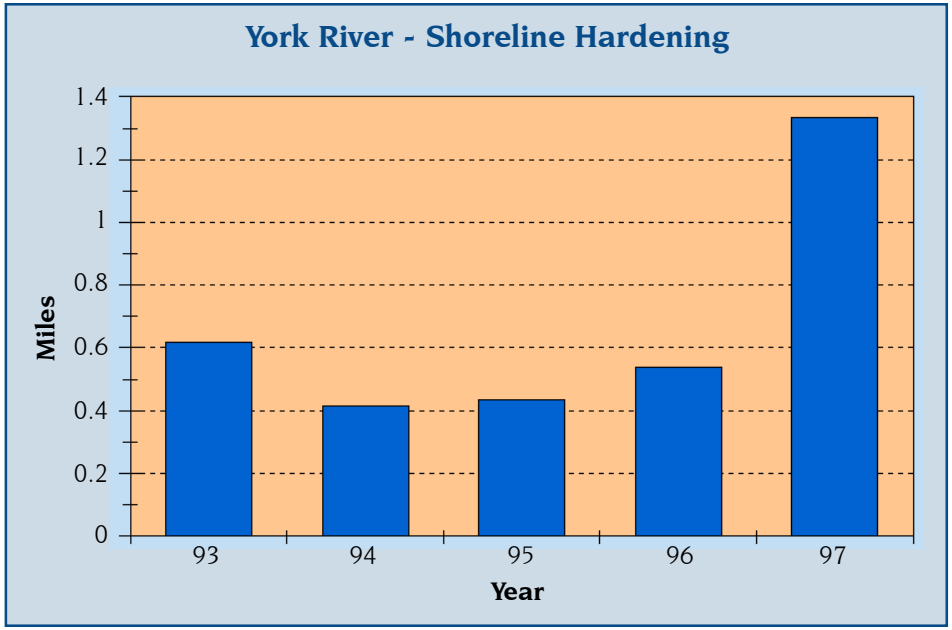
The far upper Pamunkey River features an impoundment of surface water known as Lake Anna that serves as a source of cooling water for Virginia Power's North Anna Nuclear Power Station and is a popular recreational area. Recurring and protracted, back-to-back drought periods in 1998 and 1999 prompted Virginia Power to consider seeking emergency regulatory relief from their permitted downstream release conditions for the Lake Anna facility. Only by virtue of last-minute, significant area rainfall was the requested emergency plan avoided.

The message is clear. The waters of the York River watershed are increasingly becoming subject to competing beneficial uses. The reality of finite supply and the management of use limits on that supply are issues that need to be addressed and reconciled across the basin and throughout the region.

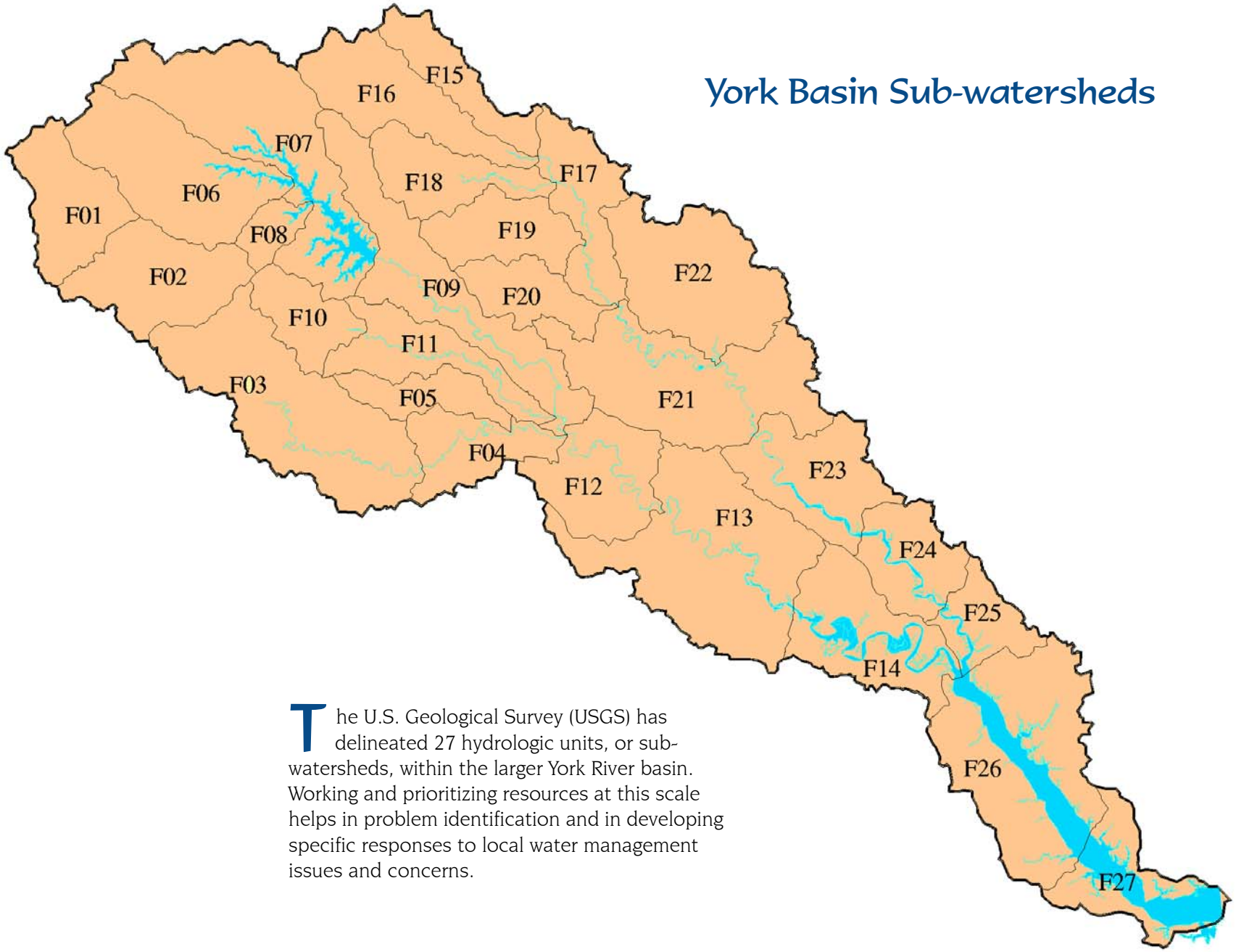


Virginia is permitting wetland losses across the Commonwealth and the York basin is no exception. This 10-year graph clearly demonstrates how, following a pre-regulatory "permit rush" in 1989 generally associated with passage of the Chesapeake Bay Preservation Act and with a brief slowdown in 1993 and 1994, permitted wetland losses continue across the York basin. In the past ten years, significant acres of both tidal and nontidal wetlands have been lost in the basin. Whether making room for houses or reservoirs, boat docks or roadways, the result is the same: loss of critical habitat for amphibians, reptiles, migrating songbirds, young fish and invertebrates, and loss of resilient buffers that offset powerful surges moving up the Chesapeake during storms.

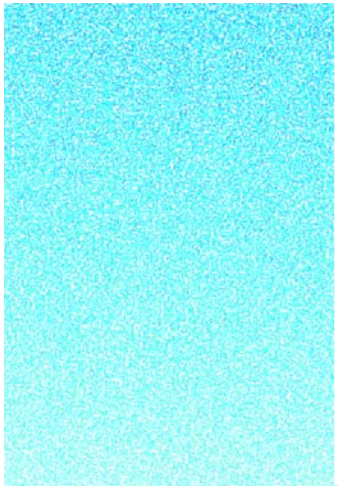
As development continues along the shores of the York, more and more of the land/water interface is subject to hardening by the construction of bulkheads or through the placement of riprap stone or boulders along the water line to protect against erosion. This graph suggests that a resurgence of hardening and armoring activity is again underway in the York, as evidenced by a record level of activity as recent as 1997.



York Basin Sub-watersheds



The U.S. Geological Survey (USGS) has delineated 27 hydrologic units, or sub-watersheds, within the larger York River basin. Working and prioritizing resources at this scale helps in problem identification and in developing specific responses to local water management issues and concerns.



Volunteers in the York watershed recently completed an innovative two-year monitoring effort in which they sampled select local stream and lake locations for relative contributions of total nitrogen, total phosphorus, and total suspended solids. Water sampling sites were chosen according to a sub-watershed matrix, shown on the facing page, developed by the USGS. By choosing locations at the lower reaches of each sub-watershed unit, volunteers were able to capture surface water inputs that were representative of that sub-basin's unique upstream attributes (including land use, area size, and geology).

Water samples were collected under a rigorous protocol on a quarterly basis, with sampling events occurring at each of 27 stations within an eight-hour window of time, yielding a real-time data "snapshot" across the basin. Publicly accessible sampling stations, such as bridge crossings, were favored in the sampling plan as places where future, follow-up monitoring could occur. The experimental monitoring effort was completed in June 1999.

Preliminary analysis of the sub-basin data sets confirms that each subwatershed contributes a unique "signature" of relative concentrations of total nitrogen, total phosphorus, and suspended solids. Furthermore, those variations are generally not captured or reflected in downstream monitoring activities currently conducted by the Commonwealth and the Chesapeake Bay Program. The data suggest that with localized monitoring, more accurate and targeted management responses can be crafted, resulting in improved Best Management Practices program delivery and accountability.

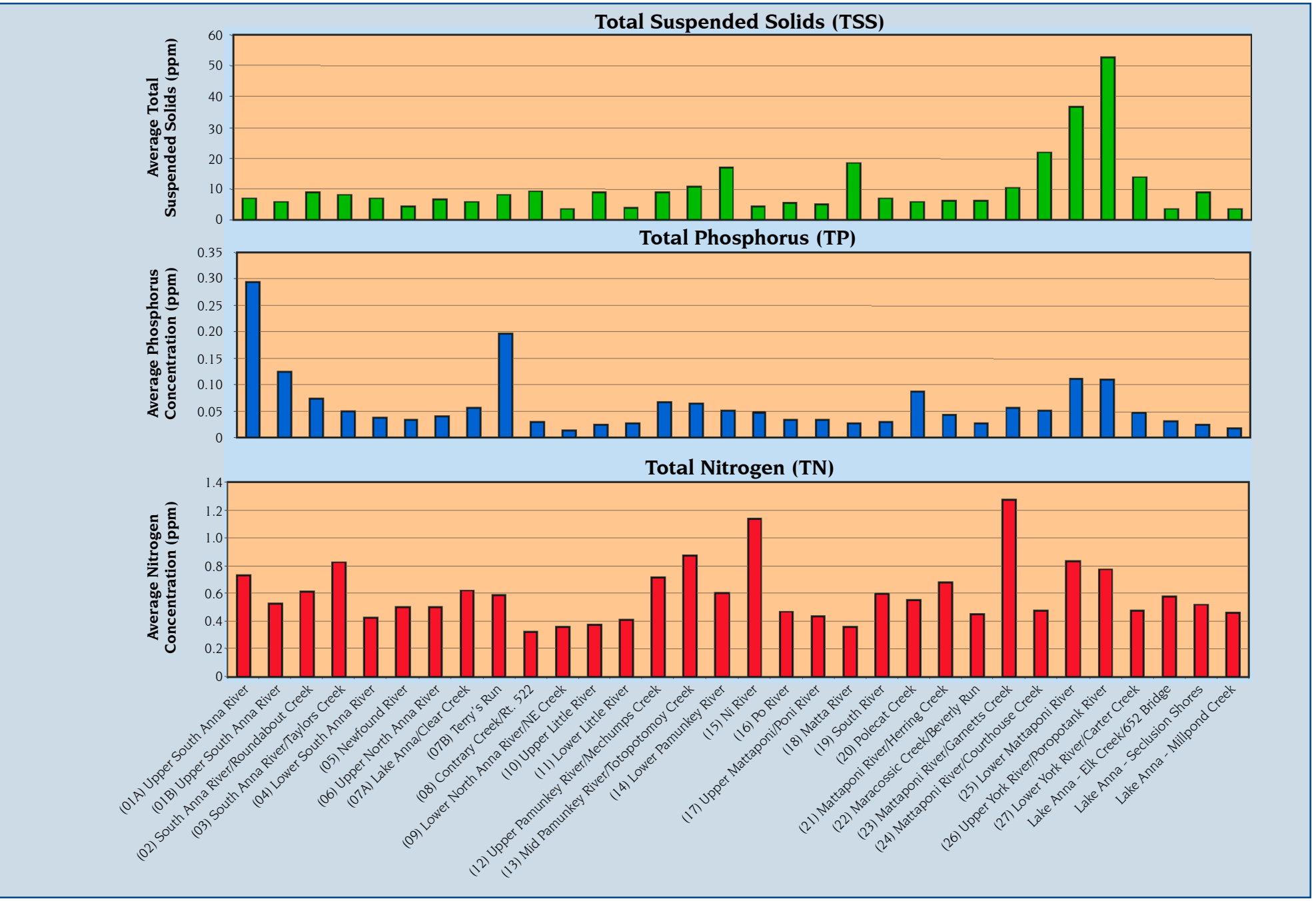
Refinements are still needed. A more detailed analysis must be undertaken to accurately compare sub-basin inputs on a relative contribution basis. This might involve calculating net drainages and specific land-use distinctions within sub-basins in conjunction with precipitation and flow records from USGS.

The set of three graphs to the right describes the relative concentrations of total suspended solids, total phosphorus, and total nitrogen. The samples were drawn from each of the basin's 27 sub-watersheds, beginning with the far upstream F-01, the Upper South Anna River and shown here at the far left side of the graph, and ending with F-27, the Lower York River/Carter Creek near the right end of the graph. (At the very far right are data from three experimental, below-surface sample stations on Lake Anna in the upper basin.) The colored bars in each graph represent the average total sample values recorded at each monitoring station during the period September 1997 through June 1999.

In the top graph, total suspended solids are represented in green bars that describe sample values between 5 and 55 parts per million (ppm), or milligrams per liter (mpl). The highest relative concentrations of total suspended solids, or TSS, at 35 and 55 parts per million, occurred in the York's F-25 and F-26 lower watersheds, consistent with monitoring data collected by Chesapeake Bay Program managers in Virginia.

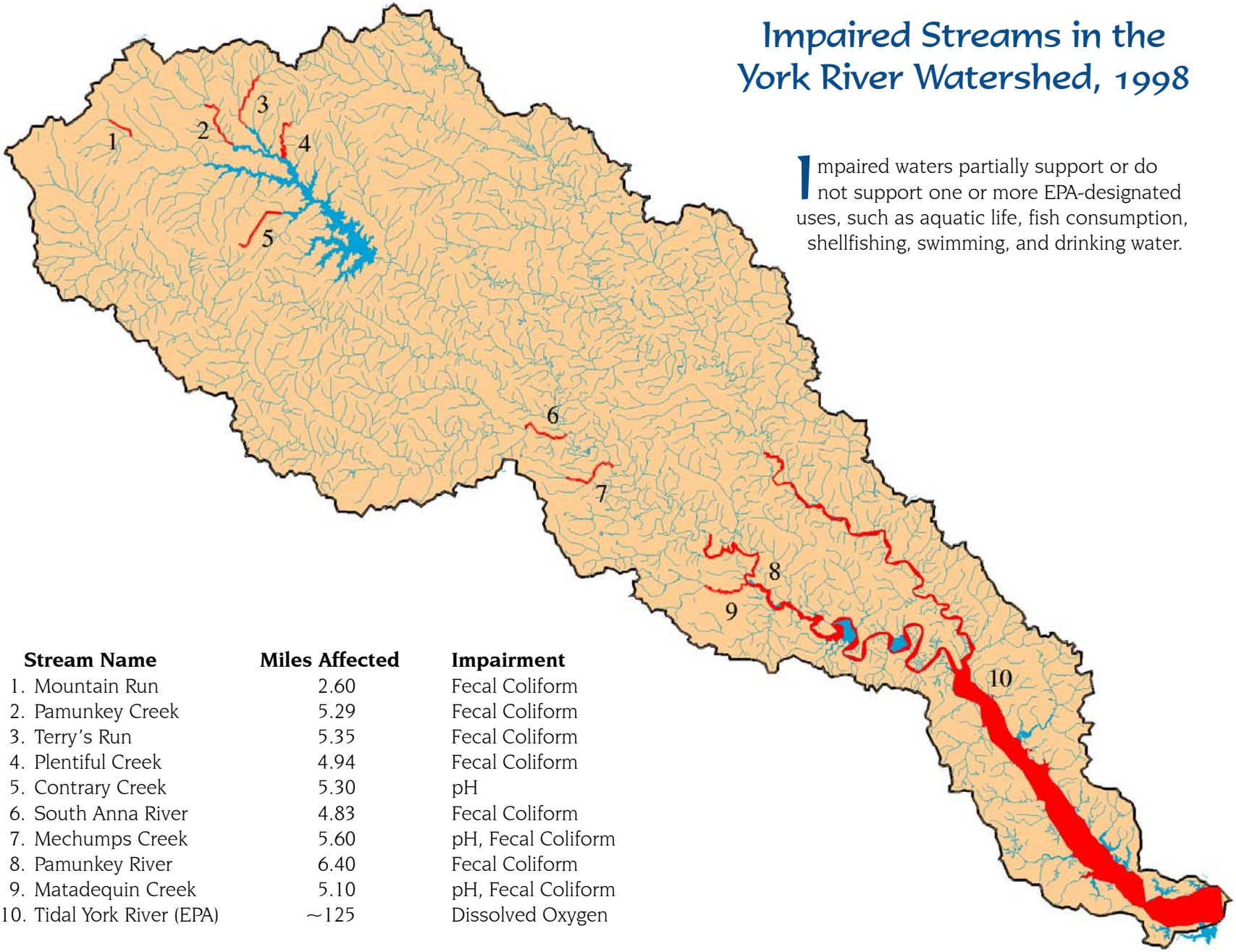
In the middle graph, total phosphorus concentrations are represented in blue bars that describe modest sample values averaging between .02 and .29 parts per million (ppm), or milligrams per liter (mpl). Sub-watersheds F-01, the Upper South Anna River, and F-07B, Terry's Run, exhibit the highest relative concentrations of total phosphorus, or TP, notable for the proximity of both drainages to Lake Anna in the upper basin, and specifically consistent with Virginia DEQ's 1998 impaired stream designation for Terry's Run.

In the bottom graph, total nitrogen, or TN, concentrations range from a low of .3 to a high of 1.3 parts per million (ppm) or milligrams per liter (mpl), and are represented by red bars across the sub-basins. In this graph the middle Pamunkey River basins and the lower middle Mattaponi River and upper York River basins exhibit the highest concentration groupings for total nitrogen. The high degree of variability of total nitrogen samples across the basin points to the need for site-specific and sub-basin-specific strategies to effectively control widespread and disparate nitrogen contributions.

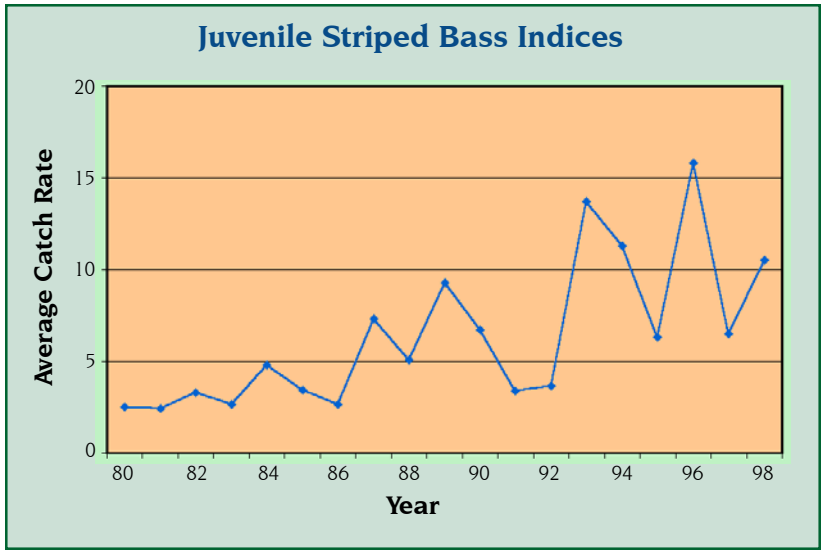

Total Suspended Solids (TSS)
Average Total Suspended Solids (ppm)
60
50
40
30
20
10
0
Total Phosphorus (TP)
Average Phosphorus Concentration (ppm)
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0
Total Nitrogen (TN)
Average Nitrogen Concentration (ppm)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
(01A) Upper South Anna River
(01B) Upper South Anna River
(02) South Anna River/Roundabout Creek
(03) South Anna River/Taylors Creek
(04) Lower South Anna River
(05) Newfound River
(06) Upper North Anna River
(07A) Lake Anna/Clear Creek
(07B) Terry's Run
(08) Contrary Creek/Rt. 522
(09) Lower North Anna River/NE Creek
(10) Upper Little River
(11) Lower Little River
(12) Upper Pamunkey River/Mechumps Creek
(13) Mid Pamunkey River/Totopotomoy Creek
(14) Lower Pamunkey River
(15) Ni River
(16) Po River
(17) Upper Mattaponi/Poni River
(18) Matta River
(19) South River
(20) Polecat Creek
(21) Mattaponi River/Herring Creek
(22) Maracossic Creek/Beverly Run
(23) Mattaponi River/Garnetts Creek
(24) Mattaponi River/Courthouse Creek
(25) Lower Mattaponi River
(26) Upper York River/Poropotank River
(27) Lower York River/Carter Creek
Lake Anna - Elk Creek/652 Bridge
Lake Anna - Seclusion Shores
Lake Anna - Millpond Creek

Impaired Streams in the York River Watershed, 1998

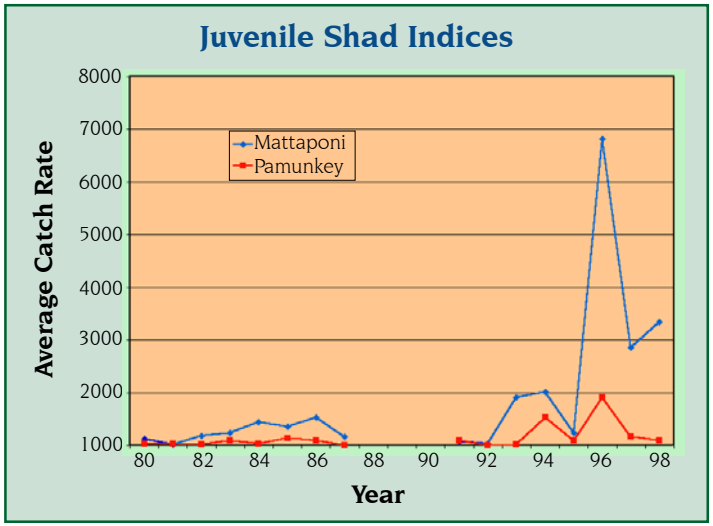
Impaired waters partially support or do not support one or more EPA-designated uses, such as aquatic life, fish consumption, shellfishing, swimming, and drinking water.



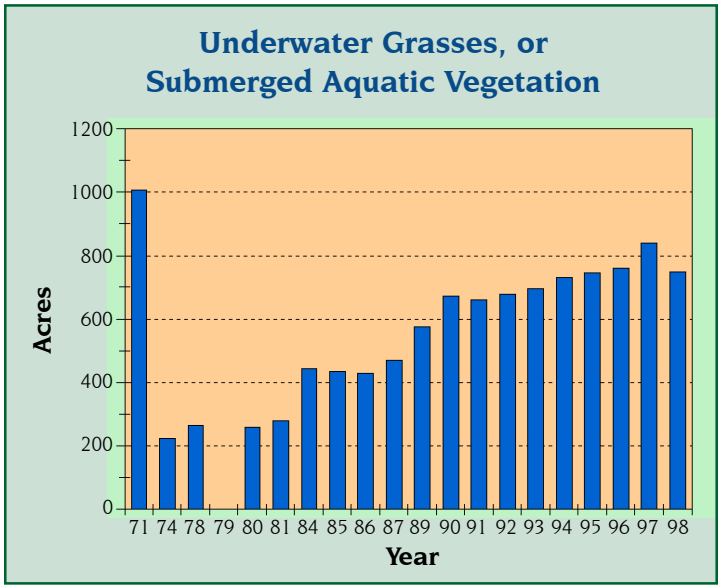
Stream Name	Miles Affected	Impairment
1. Mountain Run	2.60	Fecal Coliform
2. Pamunkey Creek	5.29	Fecal Coliform
3. Terry's Run	5.35	Fecal Coliform
4. Plentiful Creek	4.94	Fecal Coliform
5. Contrary Creek	5.30	pH
6. South Anna River	4.83	Fecal Coliform
7. Mechumps Creek	5.60	pH, Fecal Coliform
8. Pamunkey River	6.40	Fecal Coliform
9. Matadequin Creek	5.10	pH, Fecal Coliform
10. Tidal York River (EPA)	~125	Dissolved Oxygen



This graph, describing a nearly 20-year record of trawl survey data, suggests that after an extended period of extremely low population levels for juvenile striped bass, a significant and noteworthy rebound of this valued species is occurring throughout the York River system. Catch limits and season restrictions have been in place in recent years as part of an Atlantic Coast recovery and management plan.



This long-term graph describes steady and meaningful improvements in the juvenile American and hickory shad index for both the Mattaponi and Pamunkey rivers. Fish hatchery operations on both rivers have been expanded by both the Pamunkey and Mattaponi tribal governments in recent years, and a moratorium on the taking of shad remains in place for the year 2000. Current research efforts are underway to better determine the optimum spawning range and river conditions for shad.



This nearly 30-year-period graph clearly shows how underwater grasses in the York watershed have made steady gains in recovery since their early '70s peak in population, measured in acres of abundance. The slow but steady recovery, with occasional dips due to weather influences, suggests that while progress continues, it is subject to setbacks after periods of abnormally high, spring "freshet" rains.

Heritage Resources: Rare and Endangered Flora and Fauna, 1998

Found in the York River basin, the species below rank high on Virginia's list of threatened or endangered heritage resources and are also globally significant in their rarity.

Amphibians

Ambystoma mabeei	Mabee's Salamander
Ambystoma tirinum	Tiger's Salamander

Birds

Aimophila aestivalis	Bachman's Sparrow
Falco peregrinus	Peregrine Falcon
Haliaeetus leucocephalus	Bald Eagle

Vascular Plants

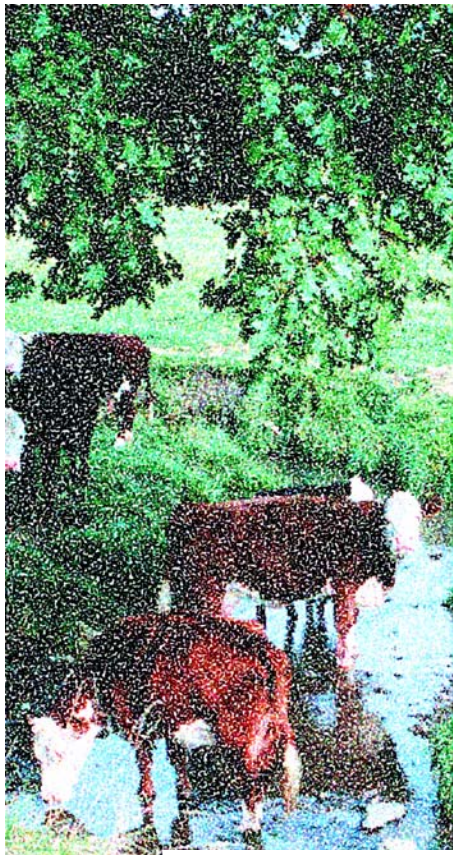
Aeschynomene virginica	Sensitive Joint-Vetch
Bacopa innominata	Tropical Water-Hyssop
Isotria medeoloides	Small Whorled Pagonia

Aeschynomeme virginica

The "Rapid Stream Assessment" is a promising new tool being pioneered by the York Watershed Council in communities across the York basin to more closely evaluate identified water quality problems. Referred to as stream walks, rapid assessments involve physical surveys of streams and creeks to observe and carefully record noteworthy features, habitat conditions, and flow inhibitors. Site-specific problems such as insufficient stream buffers, fish passage blockages, or outfall pipes are readily identified. The assessments are conducted under the guidance of trained supervisors, and volunteers use accepted protocol and methods to gather field data.

The primary goal of the rapid stream assessment is to better ascertain, if possible, what is causing an identified stream impairment or significant degradation of water quality, according to what can be observed and recorded in the field. An important secondary goal is to provide a background set of credible data and recorded observations that can be used by landowners in establishing management recommendations to localities. A third goal is to locate and accurately describe alternative monitoring stations that might prove to be of future use in tracking progress and measuring accountability.

Assessment teams led by the York Watershed Council surveyed three 5-mile stream segments in 1998 and 1999. Two of these segments were listed on Virginia's 303d "Dirty Waters" Report — Terry's Run near Lake Anna, and Mechumps Creek near Ashland. A third tidal creek, Wormley Creek near Yorktown, was also assessed to field test a revised protocol judged to be more appropriate for coastal creeks and streams.



Noteworthy observations from the three assessments included, among many others: in the upper and middle basin the presence of livestock in two streams unrestrained by protective fencing; numerous beaver dam impoundments; occurrences of heavy gravel deposition; some channelization immediately downstream of bridge abutments; and extensive reaches of exposed or poorly vegetated stream banks. In the lower basin, observations included failing bulkhead systems, shoaling, sedimentation, the presence of invasive and opportunistic flora, surface water slicks from boats and shipping, extensive shellfish condemnation sites, and unstable shoreline impacted by storm events.

Following a series of meetings with landowners convened in the fall of 1999 to review all observations and findings, citizens in each of the three sub-basins elected to work with York Watershed Council leaders to establish management recommendations and long-term goals for the affected streams and creeks. Future plans for the council include more stream assessments for impaired York water bodies, and continued training for volunteers in this community-based initiative.

THE YORK AND ITS WATERSHED:
Future Management Challenges

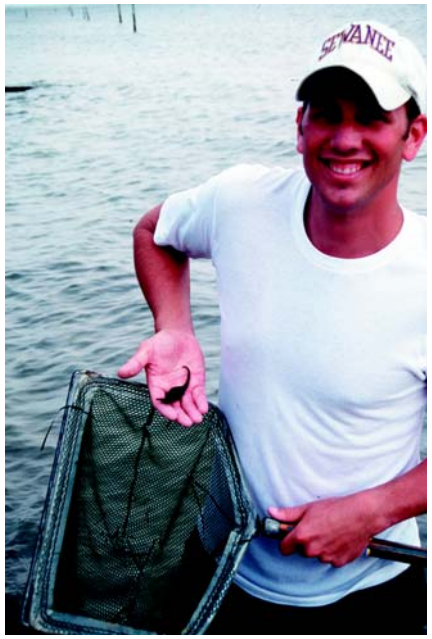
The York watershed still has the capacity to sustain multiple uses, but the resources of the system are not unlimited. Decisions about land use, water use, waste disposal, shoreline management, and even recreational activities are beginning to affect one another. Maintaining a system that can support bountiful living resources and contribute in immeasurable ways to our quality of life while supporting a healthy, land-based economy will require thoughtful and informed choices.

Capacity

Policies must be crafted that determine minimum instream flow needs for the river. Such would ensure that adequate and reasonable levels of flow required to sustain the full complement of life forms are forever protected. To effectively manage water supply, the resource needs of current and future users within the basin need to be compiled. In tandem with this, a better understanding of the variability in supply generated by the watershed is needed.

Daily Loadings

Looking to the future, resolution of the complex issues associated with EPA's emerging and proposed rules for "total maximum daily loads" (TMDLs) will not come easily or quickly. The acronym TMDL identifies the threshold of a given contaminant or polluting substance that a particular water body can assimilate and still support living resources. Because this approach places defined limits on allowable contributions of specific pollutants and contaminants, the new TMDL program has the potential to dramatically affect how Virginia manages the development of its watersheds. As in the case of the York's emerging strategy to reduce nutrients, the inescapable fact is that there are finite limits to what the river can assimilate and, therefore, limits on what form and magnitude development of the watershed must take.



In the end, the future of the York River basin requires new thinking and a new management paradigm: an approach that accommodates and stimulates bottom-up management initiatives and meaningful community involvement. This approach, coupled with flexibility and innovation on the part of the state, particularly in expanding currently successful partnerships such as those within the Chesapeake Bay Program, will provide the framework for more creative and effective local solutions. Ultimately, such partnerships will produce a vital, integrated approach to managing the York River and its watershed. For the Commonwealth, this translates into improved communication with and outreach to local communities as they prioritize water quality issues at the sub-watershed level across the entire York basin.

History demonstrates beyond question that rapid, unplanned, and poorly managed development is the single greatest threat to the environmental vitality of a watershed. The task falls to each of us in the York watershed to play a role in shaping an imaginative and fresh public policy that ensures a productive, resilient watershed for generations to follow.

Printed on recycled paper.

For every citizen living in the York basin—whether you're a student, a small business owner, a commuter, a retiree, or just a civic-minded interested party—there's an important role for you to play. We need and welcome your help:

- ***Join the York Watershed Council Today!***
  Keep abreast of important developments in the York watershed as they happen, and stay informed with our new newsletter, issued three times per year. Topics and features include: meetings calendar, community leader profiles, issue-specific articles and reports, a "road map" for issues involvement, local and regional volunteer opportunities, and more.

- ***BayScape Your Garden, Lawn and Landscape.***
  Find out about *BayScapes* training workshops and learn how to develop and maintain an environmentally sound yard and garden. Receive timely publications and notices; visit nearby demonstration gardens, and participate as a volunteer in planting and installing nearby public *BayScapes* gardens. Participate in our new *BayScapes* Certificate Program.

- ***Conduct Stream Assessments Near Home and Across the Basin.***
  Train to become a member of one of the many "stream teams" being assembled in the watershed to conduct stream assessments in your community. Learn first-hand about the health of your stream and opportunities for wildlife habitat restoration.

- ***Volunteer Your Time as a Trained Water Quality Monitor, or Help Us Build a New 100-Mile Water Trail From the Bay to the Tidal Headwaters.***
  Become proficient in understanding the complexity of water quality and associated impacts upon living resources and managing for water quality right in your own backyard. Learn how to manage data and records. We'll put you on the rivers building water trail rest stops, interpretive kiosks, finger piers, and new wilderness camping facilities for family overnighters.

- ***Practice Oyster Gardening in the Lower York.***
  In the shallows and tributaries of the lower York, become an oyster gardener and help the Commonwealth restore this critical shellfish to abundance once again.

The York Watershed Council

Founding Organizations & Institutions

Center for Coastal Resource Management (VIMS)
Lake Anna Citizens Advisory Committee
Mattaponi and Pamunkey Rivers Association (MPRA)
York Chapter, Chesapeake Bay Foundation

Founding Soil and Water Conservation Districts

Colonial Soil and Water Conservation District
Culpeper Soil and Water Conservation District
Hanover-Caroline Soil and Water Conservation District
Thomas Jefferson Soil and Water Conservation District
(Louisa Field Office)
Three Rivers Soil and Water Conservation District
Tidewater Soil and Water Conservation District (Lead District)
Tri-County/City Soil and Water Conservation District

Advisory and Supporting Resource Management Agencies

Alliance for the Chesapeake Bay
Chesapeake Bay Local Assistance Department
Chesapeake Bay Program Office; EPA Region III
Virginia Association of Soil and Water Conservation Districts
Virginia Cooperative Extension
Virginia Department of Conservation and Recreation
VaDCR; Division of Natural Heritage Resources
VaDCR; Division of Soil and Water Conservation
Virginia Department of Environmental Quality
Virginia Department of Game and Inland Fisheries
Virginia Department of Historic Resources

Visit and bookmark our Web Site: www.Yorkwatershed.org
For more information about the Council and its programs contact:
York Project Coordinator, 804-769-0841

Credits

Project Development and Research
Billy Mills, Carl Hershner, Sally Mills, Wanda Cohen

Writing and Editing
Sally Mills, Billy Mills

Photography
Cover photograph and all interior photos,
unless otherwise noted, ©Dwight Dyke;
Aerial of Lake Anna on page 14 by Virginia Power;
Students on dock on page 17, man holding net on page 24,
and group on beach on inside back cover, by Bill Jenkins.

Design and Layout
Susan Stein

GIS Maps
Marcia Berman, Julie Herman, Julie Glover, Harry Berquist

Data / Graphs
Carl Hershner, Donna Bilkovich, Becky Thomas

The project development team would like to thank the many volunteers who participated in the water quality monitoring and stream assessment activities over the past two years. Without their unfailing commitment, this report would not be possible. Our appreciation also is extended to the Virginia Environmental Endowment, who funded the two-year monitoring project in the basin, and to the Virginia Department of Environmental Quality, for analysis of the water samples.

The York Watershed Council extends its appreciation to the many generous cooperating local and regional governments, planning district commissions, private organizations, dedicated volunteers and individuals in communities across the York basin who have assisted the Council in accomplishing its mission to date.

Funding for this report was made possible by generous grants from the Virginia Environmental Endowment and Virginia Power.