



August/September 1999



# The Army's Chesapeake Review

## State of the Bay

### Addressing Water Quality & Living Resources Trends through 1998

Rob Magnien, Maryland Department of Natural Resources, presented trends in water quality and living resource monitoring data to the Implementation Committee (IC) on July 1, 1999. The data presented were based on results from the June 10 and 11 meeting of the Data Analysis Work Group (DAWG). At the meeting, members of DAWG analyzed data spanning from the mid-1980s through 1998 from each major monitoring component Bay-wide. Dr. Magnien presented a general synopsis of the data by decade. In the 1980s, significant progress was made in reducing phosphorous in wastewater and in the water column in most tributaries, especially in the upper reaches. Submerged aquatic vegetation (SAV) began to rebound. During the 1990s, the Bay and its tributaries remained stable, even in light of increasing population and higher flows. Signs that non-point source controls were beginning to work in large rivers entering the Bay also became evident. Progress in the next decade will depend on the amount of nitrogen that can be reduced from wastewater and whether or not non-point source controls will yield the significant reductions in nitrogen and phosphorous that have been predicted.

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Shana Bullock

*Devlin Harris, VA DEQ, and Hank Hennigar, Fort Lee, discuss the impact of a recent storm on Bailey Creek.*

### Fort Lee Partners with the Virginia Department of Environmental Quality

By Angela McCorkle

In this era of downsizing and outsourcing at installations, partnerships are more important than ever. When two organizations join together, it fosters a clear sense of mission among all participants, and it promotes appropriate empowerment, delegation, and assumption of responsibility among stakeholders. Fort Lee and the Virginia Department of Environmental Quality (DEQ) have a history of working together on numerous projects. So when Mr. Hank Hennigar, a contractor who manages Fort Lee's Installation Restoration Program (IRP), wanted to conduct a baseline environmental survey for Bailey Creek, he ap-

proached the Virginia DEQ and the U.S. Army Corps of Engineers (USACE) on behalf of Fort Lee to partner again.

Bailey Creek originates in the main cantonment area of Fort Lee and travels approximately 2.8 miles to Fort Lee's boundary before it eventually empties into the James River, a major tributary of the Chesapeake Bay. Bailey Creek drains approximately 2,532 acres within Fort Lee and also receives most of the storm water runoff from the installation. The land surrounding Bailey Creek ranges from highly developed areas with large portions of impervious surfaces and rapid runoff to forested areas with little runoff.

Within Fort Lee, Bailey Creek has three distinct segments. The upper segment, or headwater of Bailey Creek, is heavily wooded and undeveloped with sluggish stream flow. The middle segment is characteristic of a stream in transition with increasing stream flow and velocity. Sediment loading, due to an in-

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## Fort Lee

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crease in storm water runoff into Bailey Creek, also increases in the middle segment. The lower segment receives large amounts of storm water runoff as it drains the main post.

The objective of the baseline survey was to determine the overall environmental quality of Bailey Creek through an assessment of landscape ecology, biological inventory, and the physical and chemical nature of the drainage basin. The study was performed in support of an investigation of several contaminated IRP sites within the Bailey Creek watershed. The study was designed to determine if the nearby IRP sites were affecting Bailey Creek and also to determine the effect of storm water runoff on Bailey Creek. The baseline survey evaluated the potential contamination at each IRP site and the cumulative effects of all the IRP sites.

In addition to determining the presence and extent of contamination of selected chemical components in the sediments and water column of Bailey Creek, the survey assessed the quality of indicator aquatic biological communities and aquatic plant and animal diversity and distribution. The baseline survey also looked at the drainage characteristics of the Bailey Creek watershed. A 24-hour, 2-inch rainfall was simulated, which showed that a similar rain event would significantly increase the stream flow in Bailey Creek, in part because of the heavily

developed, impervious areas on the installation. This model illustrated that significant amounts of runoff travel through Bailey Creek during rain events.

Under contract to Fort Lee, scientists at Virginia Commonwealth University conducted a biological assessment of Bailey Creek using the Rapid Bioassessment Protocols developed by the Environmental Protection Agency (EPA) for use in streams and rivers. The results of the assessment showed that the principal stressor of Bailey Creek was storm water runoff and high sediment loading. Recommendations from this study have been incorporated into the design of future construction projects.

Fort Lee's Natural Resources Department is building upon the Bailey Creek Baseline Environmental Survey and is currently working on securing funding to implement the recommendations identified in the report. Specific recommendations include reducing the impervious surface on the installation to reduce the amount of water entering Bailey Creek, and using best management practices to reduce the amount of sediment that enters Bailey Creek. To reduce the amount of storm water entering Bailey Creek, Fort Lee is taking steps to ensure that each new construction project has a plan to reduce runoff.

Each partner contributed to the success of the study. The USACE, Baltimore District, provided an efficient contract vehicle, oversaw the project, and reviewed the work plan. The Virginia DEQ helped to identify sample locations, assisted with

design considerations, suggested survey organisms for the water study, provided information on similar studies, and helped develop the work plan. Devlin Harris, a Senior Environmental Engineer with the Federal Facilities Program at the Virginia DEQ, said, "the Bailey Creek Baseline Environmental Survey was a good way to get a base-wide ecological background study completed." Another important factor in this successful partnership was the work of Fluor Daniel GTI, the contractor that conducted the investigation. Fluor Daniel GTI collected and analyzed sediment, surface water, and biota samples from Bailey Creek and performed the non-aquatic survey and habitat assessment.

Successful partnerships are important in integrating an installation's environmental program. By teaming with federal, state, and private organizations, resources and technical expertise were brought together to make this project possible.

## State of the Bay Oyster Populations

Bill Goldsborough, from the Chesapeake Bay Foundation, presented the status of oyster populations and future oyster prospects in the Chesapeake Bay to the IC on August 12, 1999. Although current oyster populations are at or near 1 percent of historical levels, the outlook for them is good. The momentum in oyster restoration has been steadily increasing.

Approximately 20 successful reefs have been built in Virginia with documented oyster reproductive

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## **FAC Highlights** **Important FACTs**

The Federal Agencies Committee (FAC) met on June 22 and August 5, 1999, at the Chesapeake Bay Program Office (CBPO) in Annapolis, Maryland. The American Heritage Rivers Initiative was a topic at both meetings. Discussions relating to this initiative include the following:

- ◆ Potomac's American Heritage River program is looking for federal and private assistance to aid in projects including storm water management, gateways and scenic trails, poultry waste in the upper watershed, education efforts, and development of the Congress for the Potomac. Congress for the Potomac is a committee consisting of Friends of the Potomac, Potomac Heritage Partnership, Interstate Commission for the Potomac River Basin, and the Northern Virginia Planning District Commission.
- ◆ The FAC reviewed and discussed the Potomac American Heritage River Watershed Agreement. They agreed to allow Bill Matuszeski, the FAC chair, to sign the Agreement on behalf of the entire FAC.
- ◆ A web page has been established that contains information about the Upper Susquehanna/Lackawanna Watershed. The web page address is: [www.paheritageriver.org](http://www.paheritageriver.org).
- ◆ The Upper Susquehanna/Lackawanna Steering Committee has requested technical assistance and advice from the FAC, particularly in the area of acid mine drainage. Since the late 70s, the watershed has been dealing with the effects of improper mining practices.  
Other highlights from the FAC meetings include the following:
  - ◆ The Chesapeake Bay Program Office is working on updating the Chesapeake Bay and Susquehanna River Public Access

Guide. They asked each FAC member to check the map and update the information on their public access facilities.

- ◆ A meeting was held at the Council for Environmental Quality in June to identify a mechanism to implement wet weather pollution prevention on federal facilities in the Anacostia and Rock Creek watersheds.
- ◆ The U.S. Army Corp of Engineers and other state and federal officials are facilitating an investigation of five toxic hot spots and assisting in the clean up of 14 designated wetlands along the Elizabeth River.
- ◆ Mr. Brad Rock, U.S. Navy, and Mr. Robert Orwan, Pennsylvania Department of Environmental Protection, discussed the Pennsylvania Cooperative Multi-Site Agreement. This Agreement facilitates the cleanup and re-use of contaminated land by providing shared funding and encouraging innovative technologies. A similar program is being established in New Jersey.
- ◆ Dr. Livingston Marshall, Associate Professor with the Biology Department of Morgan State University in Baltimore, spoke to the FAC about developing a partnership with Minority Serving Institutions (MSIs) in the Chesapeake Bay watershed. This effort would encourage minority participation in marine and atmospheric sciences. Schools that partner in the effort include University of Maryland, Morgan State University, Delaware State University, Howard University, University of the District of Columbia, and Hampton University.
- ◆ Mr. Bill Matuszeski, Director of the CBPO, presented to the FAC the EPA Region III's presentation on indicators of sustainability. The presentation can be found on the internet at [www.chesapeakebay.net/indicatr/measure/indover.htm](http://www.chesapeakebay.net/indicatr/measure/indover.htm).

- ◆ The Nutrients/Toxics Reduction Workgroup is looking for three sites for federal facility assessments for this fall. Call Jerry Griswold at (410) 267-5754 with suggestions.

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## **Water Quality**

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Dr. Magnien went on to describe a more detailed overview of the findings:

- ◆ Flow is generally increasing, offsetting declines in concentrations of nitrogen, phosphorous, and sediment from major rivers.
- ◆ Improvements in nitrogen loading from wastewater have been modest, while phosphorous concentrations were nearly cut in half.
- ◆ Chlorophyll is declining in the upper Virginia tributaries, and the middle Chester and upper Pocomoke Rivers and increasing in the upper Potomac, lower Patuxent, Bush, and Choptank Rivers, the Eastern Bay, and Tangier and Pocomoke Sounds.
- ◆ Total suspended solids are increasing in the middle and lower Potomac and along the middle to lower Eastern Shore, causing a decrease in water clarity in these areas.
- ◆ SAV trends have tended to reflect water quality trends.
- ◆ Dissolved oxygen (DO) remains relatively unchanged.
- ◆ Sediment reductions, while beneficial to SAV, may slow progress for phytoplankton and DO because the increased clarity contributes to algal blooms.
- ◆ Benthic communities in areas with low DO are severely degraded, and there are signs of concern in planktonic communities throughout the Bay.

## **IC Highlights Meeting Announcements**

The Implementation Committee (IC) met on July 1 and August 12, 1999, at the Chesapeake Bay Program Office (CBPO) in Annapolis, Maryland. Announcements and highlights from this meeting include:

- ◆ The members of the Principal Staff Committee attended a retreat in June. They discussed new issues to cover in the Chesapeake 2000 Agreement, including oyster restoration, growth management, land conservation, and sediment reduction.
- ◆ Mr. Lewis Linker and Mr. Rich Batiuk, CBPO, discussed the Chesapeake Bay Modeling Program. The Modeling Subcommittee is attempting to refine the water quality model by increasing segmentation in the Maryland region of the Bay and by using new load inputs from the refined watershed model. The future modeling strategy will include enabling local governments to make water quality decisions in a watershed, integrating water quality and multi-species management, and incorporating next-generation air models.
- ◆ The Environmental Protection Agency and Virginia Tech recently completed a study on the feasibility and cost of biological nutrient removal (BNR) implementation at waste water treatment plants. The results showed that average costs ranged from 48 cents per pound of nitrogen removed in Virginia to \$2.49 per pound of nitrogen removed in New York, with costs in Maryland and Pennsylvania falling somewhere in between. However, significant cost savings would be realized from reduced energy costs, reduced chemical use, and reduced waste sludge disposal.
- ◆ Bob Summers, Maryland Department of the Environment, gave a summary of findings from the Toxics Point Source Forum that was held earlier this year. The forum included representatives from government agencies, private industry, and environmental organizations. The forum decided that the following areas should be addressed in the Chesapeake 2000 Agreement: partnerships, closing the loop on recyclables, using waste from one industry as input for another industry, and a basin-specific strategy for toxics reduction.
- ◆ The Chesapeake Bay Program and the U.S. Forest Service are sponsoring the conference "Balancing the Landscape—Retaining Forests in the Chesapeake Bay Watershed" on November 17-19, 1999 at Loews Annapolis Hotel in Annapolis, Maryland. Call 1-800-662-CRIS for additional information.
- ◆ Paul Swartz, Executive Director of the Susquehanna River Basin Commission, presented the effects that the drought has had on the Susquehanna River. Parts of the river are showing the lowest stream flows in the past 110 years. These low flow conditions in the Susquehanna River are illustrated in the high salinity levels in the upper Chesapeake Bay. For more information see [www.srbc.net](http://www.srbc.net).
- ◆ Tom Simpson, with the Maryland Department of Agriculture, presented the Nutrient Cap Issue and Policy Group Report to the IC and discussed the nutrient cap strategy for the year 2000. Jurisdictions in the signatory states will be encouraged to coordinate with neighboring jurisdictions to develop strategies to maintain the cap by January 1, 2001.
- ◆ Bill Matuszeski, Director of the CBPO, presented a synopsis of the August 4, 1999, meeting on developing total maximum daily loads for the entire Bay watershed. The group is refining a timeline for

the process, and plans to present its development approach to EPA to ensure that the CBP and national programs are on the same track.

- ◆ Rick Cooksey, U.S. Forest Service, and Mary Heinrich, American Farmland Trust, discussed the importance of including forest and farmland restoration goals in the Chesapeake 2000 Agreement. Both lands are being severely threatened by expanding development, which is to blame for many of the problems facing the Bay watershed. Mr. Cooksey and Ms. Heinrich proposed mapping forest and farmland (or "green" areas) together in the Chesapeake Bay watershed.

## **Oyster Populations**

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success. The State of Maryland has established sanctuaries and restored benthic habitat. A recent publication, "Chesapeake Bay Oyster Restoration: Consensus of a Meeting of Scientific Experts," offers detailed instruction on restoring oysters in the Bay watershed. For a copy of this document, contact the Chesapeake Bay Research Consortium at (410) 798-1567.

There has also been an increase in volunteers, with approximately 5,000 volunteers Bay-wide. It is too early to tell if this increasing public support will translate into increased funding. Estimates by the Chesapeake Bay Foundation conclude that approximately \$10 million for the next 10 years is needed to effectively restore enough structural habitat for oysters in the Chesapeake Bay.

Mr. Goldsborough suggested that another commitment to oyster restoration be included in the Chesapeake 2000 Agreement. He recommended that 10 percent, or approximately 50,000 acres, of natural oyster bars be protected. The prior Agreement asked that each state designate 5,000 acres for oyster sanctuary by the year 2000, a goal that has been achieved.