Public Review Draft

Executive Order 13508

Progress Report

Strategy for Protecting and Restoring the Chesapeake Bay Watershed

March 5, 2012

FY2011

Developed by the Federal Leadership Committee for the Chesapeake Bay

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Overview

Executive Order 13508, signed by President Barack Obama in May 2009, renewed the federal commitment to protecting and restoring the health of the Chesapeake Bay and established the Federal Leadership Committee to develop and coordinate programs and activities designed to protect and restore the Chesapeake Bay. The Federal Leadership Committee is chaired by the U.S. Environmental Protection Agency and includes senior representatives from the Departments of Agriculture, Commerce, Defense, Homeland Security, Interior and Transportation.

In addition to the May 2010 release of the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed* and annual Action Plans, the Executive Order also requires the Federal Leadership Committee to produce an "Annual Progress Report reviewing indicators of environmental conditions in the Chesapeake Bay, assessing implementation of the Action Plan during the preceding fiscal year, and recommending steps to improve progress in restoring and protecting the Chesapeake Bay."

The first Action Plan was issued for Fiscal Year (FY) 2011, which ran October 1, 2010, through September 30, 2011 (available at http://executiveorder.chesapeakebay.net/file.axd?file=2010%2f9%2fChesapeake+EO+Action+Plan+FY2011.pdf). This Progress Report, which highlights FY 2011 accomplishments in improving the health of the Chesapeake Bay as well as the evolution of refined combined federal processes in this effort, is required annually by the Executive Order. **The report describes activities of federal agencies, many done in cooperation with state and local partners, to make progress toward the Executive Order goals and supporting strategies.** More detailed information about federal activities is available on the Chesapeake Bay Executive Order website at http://executiveorder.chesapeakebay.net/.

Following a parallel structure to the FY 2011 Action Plan, this summary of the FY 2011 Progress Report describes projects accomplished toward the goals to:

- **Restore clean water.**
- **Recover habitat.**
- **Sustain fish and wildlife.**
- **Conserve land and increase public access.**

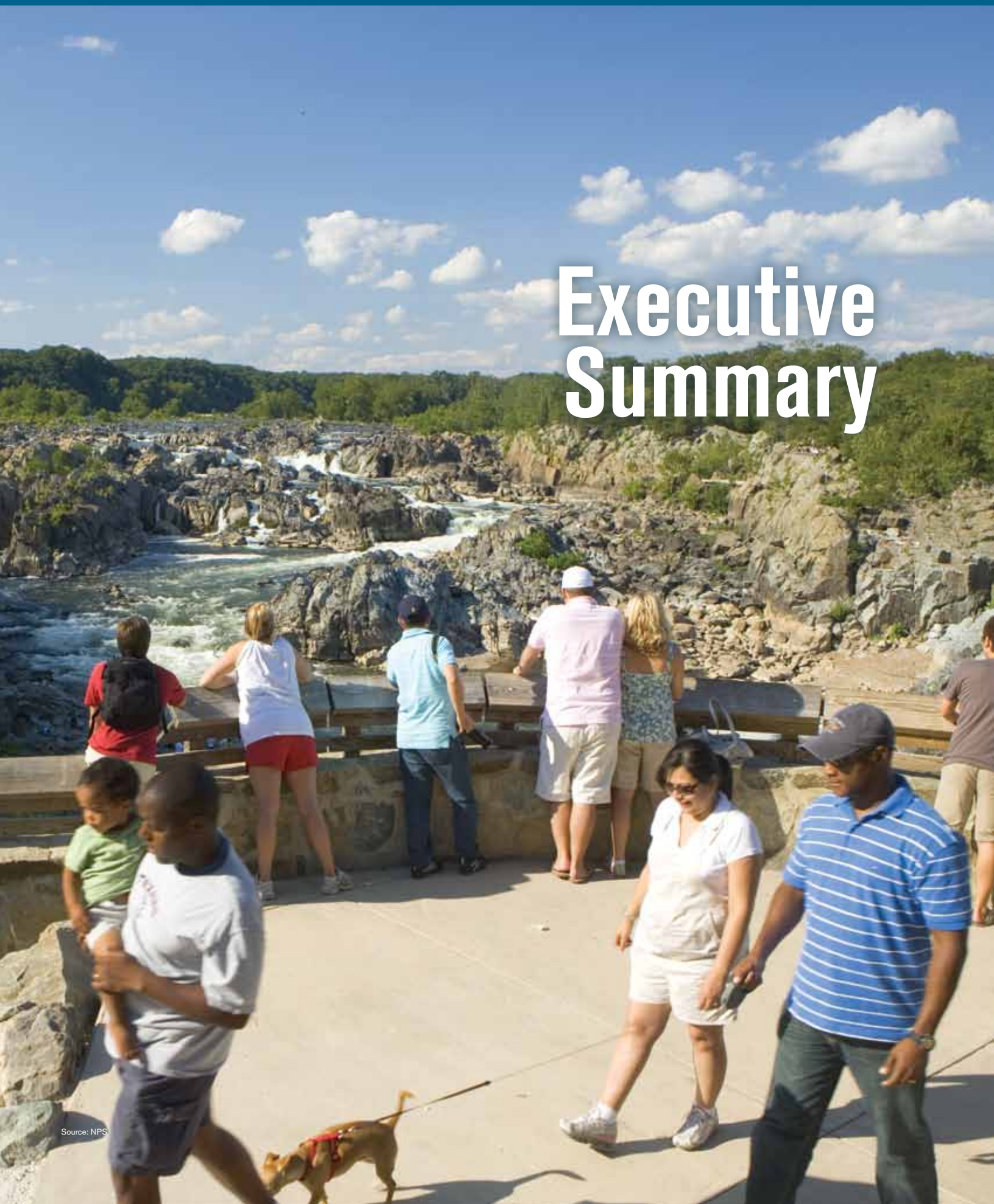
In addition, highlighted FY 2011 efforts are also noted for the four supporting strategy sections:

- **Expand citizen stewardship.**
- **Develop environmental markets.**
- **Respond to climate change.**
- **Strengthen science.**

For full details on FY 2011 accomplishments, please refer to the Chesapeake Bay Executive Order website.


Source: NPS

Executive Summary



Source: NPS

2011 was the first fiscal year of enhanced federal effort to protect and restore the Chesapeake Bay following the Strategy developed in response to the President's Executive Order (EO). The federal team has begun implementation of **the long-term strategy that will lead to clean water, recovered habitats, sustainable fisheries, abundant wildlife, and enhanced conservation of lands, including access by the public to the bay's many treasures.**

The FY 2011 Progress Report illustrates the value of federal agencies working together. Departments and agencies have teamed up to get more done—more effectively and more efficiently—drawing on the unique skills and assets of federal programs and people. The focus of the first year was on establishing the necessary infrastructure and mechanisms to implement on-the-ground actions over the long haul. While the tools are now in place to get the job done, the hard work to achieve goals and outcomes has just begun. The advancements reflected in this FY 2011 Progress Report are the result of work by multiple partners, including federal-state collaborations. While highlights of progress in each goal area are noted in this Executive Summary, the scope of work accomplished by the federal partners is much broader and is described more fully in other sections.

Restore Clean Water:

Effort in this goal area focuses on reducing nitrogen, phosphorus, sediment and other pollutants; improving the health of streams; and working with producers to apply new conservation practices on working agricultural lands in high priority watersheds.

- The Environmental Protection Agency and its jurisdictional and federal partners focused on **implementing the historic Chesapeake Bay Total Maximum Daily Load (TMDL)**. Partners began putting in place on-the-ground and in-the-water controls that achieve 11 percent of the sediment reduction goal, 8 percent of the nitrogen reduction goal and 1 percent of the phosphorus reduction goal. This work is ahead of schedule for all but phosphorus. These local actions—put in place with the help of farmers, home builders, watershed organizations and others—will eventually help meet water quality standards for dissolved oxygen, chlorophyll *a* and clarity.
- Essential for shifting efforts to the local level where the real work will happen, the bay jurisdictions drafted **Phase II Watershed Implementation Plans, which provide roadmaps for reaching required TMDL pollution reductions** by 2025. The jurisdictions and the federal partners also developed **short-term milestones to ensure all partners keep on an aggressive path** to achieving their required pollution reductions.

WORKING TOGETHER TO RESTORE HABITAT

Through the Chesapeake Bay Program's Fish Passage Workgroup, federal, state and local partners are working together to prioritize fish passage efforts in the Chesapeake Bay. The Nature Conservancy, working in concert with members of the Fish Passage Workgroup, is developing a geographic information system to support resource agencies within the Chesapeake Bay. This tool will assist the workgroup in strategically reconnecting fragmented aquatic habitats by removing or bypassing key barriers to fish passage thereby enhancing populations of fish including: diadromous fish, coldwater species and other species of concern. The project is focused on collecting and processing spatial data and using a consensus-based approach to develop a priority ranking for dam removals and fish passage projects.

The Fish Passage Workgroup will utilize this ranking to target dam removal projects that produce the greatest ecological gain for target species in the Chesapeake Bay. The prioritization tool will be completed by the end of FY 2012 for use in selection of future dam removal and fish passage projects.

The milestones spell out specific actions the partners will take over the next two years to reduce pollutants in the watershed.

- EPA, U.S. Geological Survey, and the states expanded the Chesapeake non-tidal water quality network to provide monitoring data to better assess progress toward the bay TMDL, and the National Oceanic and Atmospheric Administration (NOAA) enhanced efforts to monitor dissolved oxygen in the bay.
- EPA provided more than $20 million to the states and $5 million to local innovative and small watershed restoration actions.
- The U.S. Department of Agriculture's **Natural Resources Conservation Service treated more than 650,000 acres of working lands in priority watersheds with at least one conservation practice**. By providing technical and financial assistance to agricultural producers, NRCS achieved 16% of the agricultural conservation outcome of 4 million acres. These practices will help reduce the amount of sediment and nutrients entering the Chesapeake Bay.

Recover Habitat:

Partners are working to **bolster land and water habitats to support priority species and public benefits** by restoring tidal and non-tidal wetlands and enhancing the function of degraded wetlands; restoring riparian forest buffers; and restoring historical fish migratory routes.

- **148 stream miles were opened for fish passage** to benefit anadromous and resident species. This exceeded the annual target of 67 stream miles.
- Federal and state partners comprising the Chesapeake Bay Program Fish Passage Workgroup completed the Maryland portion of a fish passage prioritization for blockages in Maryland, Virginia and Pennsylvania. This tool will accelerate projects that enhance passage of target species and open large stretches of high-quality habitat.

Sustain Fish and Wildlife:

Federal departments and agencies are working to **sustain healthy populations of fish and wildlife**, which contribute to a resilient ecosystem and vibrant economy, and currently are focusing on native oysters, brook trout, blue crabs and black ducks.

- NOAA led the development of oyster restoration performance metrics that, for the first time in the Chesapeake Bay, set criteria for evaluating success of oyster restoration projects at both tributary and reef spatial scales. The metrics will be used to track progress toward the EO goal to restore oysters in 20 tributaries by 2025 and may be considered as a model for evaluating restoration success nationally. USACE, NOAA and Maryland have also initiated a targeted and intensive effort to restore oysters in Harris Creek, a Maryland oyster sanctuary. This collaborative effort serves as a bay-wide model for science-based, large-scale oyster restoration as we begin to move toward the 20 tributaries restored by the 2025 outcome.
- The 2011 Chesapeake Bay Blue Crab Stock Assessment was released by NOAA and is being used by the states to establish a new adult, female-specific, blue crab abundance target for the bay. The target will help maintain a sustainable stock of blue crabs and ensure a robust harvest over the long-term.
- The Eastern Brook Trout Joint Venture Science and Data Committee (which includes FWS and USGS) evaluated the health of brook trout in sub-watersheds within the Chesapeake Bay watershed and the FWS Coastal Program initiated brook trout restoration projects in Little Tuscarora Creek, Frederick, Maryland, and Mossy Creek, Augusta County, Virginia.


Source: NOAA

The Executive Order acknowledges that although the federal government should assume a strong leadership role in the restoration of the bay, success depends on a collaborative effort involving state and local governments, businesses, nongovernmental organizations and the region's residents.

- FWS, USGS, federal, state and nongovernmental partners initiated work to improve a regional black duck habitat model, to include a USGS-led quantitative assessment of how different black duck food sources provide different levels of energy. This information is necessary to assess the quality and spatial arrangement of available black duck habitat in Chesapeake Bay, and to prioritize and target restoration measures in coordination with the Atlantic Coast and Black Duck Joint Ventures. A 2011 mid-winter aerial survey was completed, and estimated the 2009-2011 rolling three-year average at 47,269 black ducks in the Chesapeake Bay.

Conserve Land and Increase Public Access: The federal partners are **protecting additional high-priority lands and adding public access sites** to the bay and its tributaries to enable boating, swimming and fishing.

- The Public Access Planning Team, led by the National Park Service, with representation from federal, state, local and nonprofit partners, worked to expand, assess demand, determine gaps, and identify opportunities for public access sites. This team **created and mapped approximately 1,100 existing public access sites throughout the Chesapeake Bay watershed**—the first time the entire watershed was inventoried.
- A web-based mapping tool was developed to **identify public access gaps and opportunities using input from the public**. The website received more than 14,000 hits in just 30 days, including more than 300 additional public access site suggestions. These suggestions will be included in a strategy for expanding public access that will be released in the first quarter of 2012.

Expand Citizen Stewardship:

- NPS coordinated a Chesapeake Conservation Corps Team comprised of state, federal, and nonprofit organizations to outline the issues, needs, and strategies to **ensure continued growth of youth conservation corps opportunities**. NPS's Chesapeake Bay Office hired two interns in partnership with the Student Conservation Association to support corps programming along the James River and strategy development in Maryland. Support was also provided to youth corps teams working in Virginia state parks, Maryland state and local parks, and in Baltimore in partnership with the Parks and People Foundation. Funds provided recreation, education and real-life work experiences on public lands for 60 youth.

Climate Change:

- Agencies focused on developing information, training and guidance relevant to specific locations and resources in the watershed, primarily addressing key habitats and smaller-scale efforts with individual communities. For example, NOAA released guidance documents on planning for climate change and worked with partners to apply the approaches. USGS and NOAA made progress on projecting the impacts of climate and land use change on resources and localities. USGS studied the changes in long-term stream flow in the bay watershed to assess potential impacts of land and climate change and worked with EPA and state partners to examine alternative future scenarios of population growth that may impact water quality.

Science:

- The Executive Order science activities are providing a new foundation for the Chesapeake Bay Program to apply an adaptive management framework to better prioritize, monitor, and evaluate management practices to achieve the restoration goals for fisheries, habitat, water quality and land conservation.
- As a whole, the agencies are improving the incorporation of science in deciding where and how to focus restoration and protection activities. For example, NOAA tributary habitat surveys are conducted to more precisely site oyster reefs, the U.S. Forest Service and U.S. Fish and Wildlife Service developed approaches to better target brook trout restoration, and NOAA and FWS developed tools with the jurisdictions to prioritize fish passage efforts.
- EPA and USGS worked with the states to expand water quality monitoring in the watershed and improve techniques to assess progress toward TMDL goals.
- NPS and USGS developed an initial prototype of a land conservation system that will be used by state and federal partners to prioritize locations for protecting lands.

But challenges remain, particularly where capabilities to protect and restore rely on funding.

- Significant funding is needed to begin the planning to restore wetlands at Barbados Island; those funds were not available in 2011.
- Implementation of oyster restoration and priority stream and wetland restoration and conservation projects depend on additional funding.

- Several tools and techniques to support water quality, fish and wildlife, habitat restoration and adaptation to climate change goals were not able to be funded.

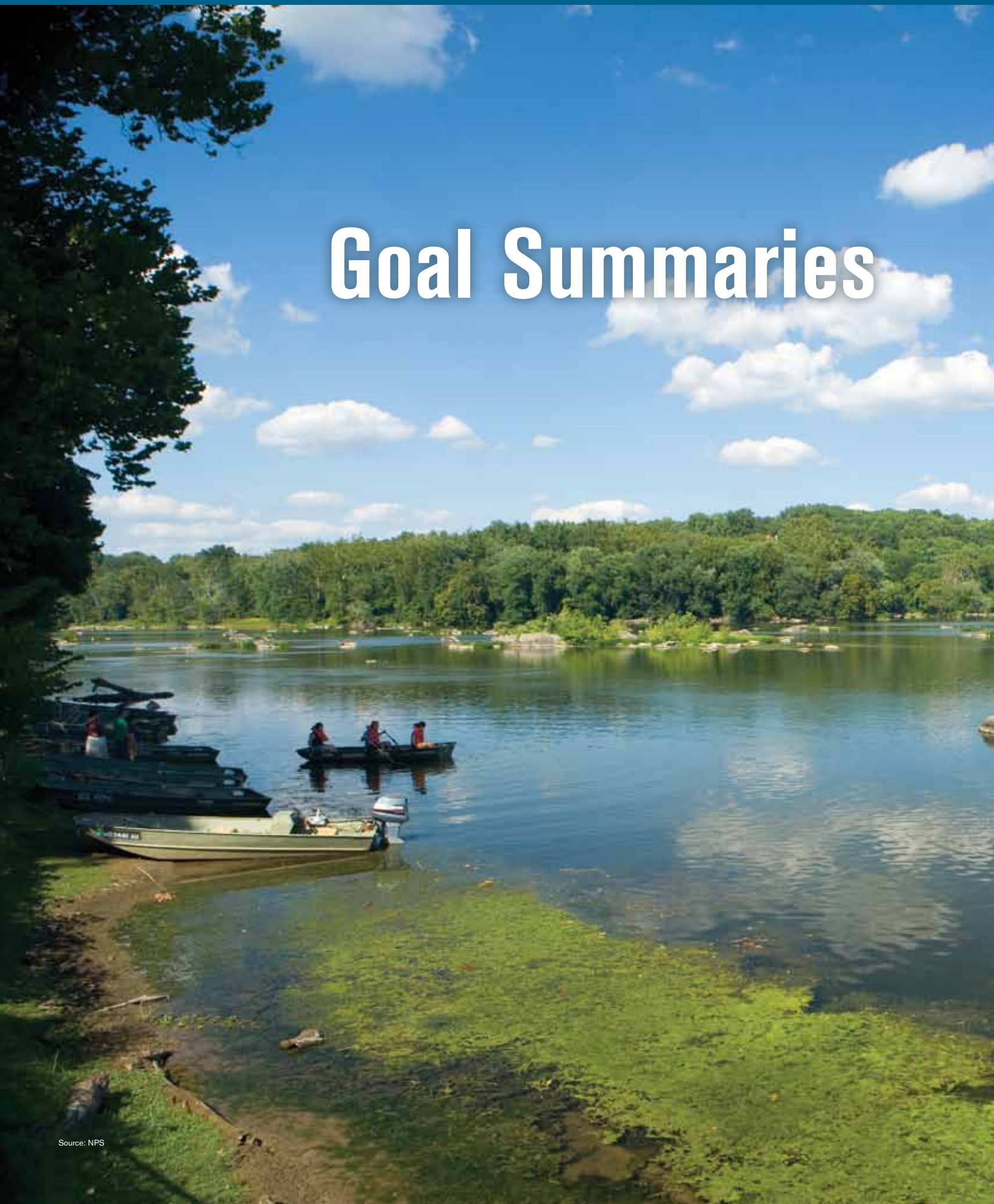
Overall, prospects for the future health of the bay are looking up, thanks to renewed commitment on the part of the federal government through the EO process. **This effort will be lengthy and sustained; setbacks along the way due to lack of funding, competing priorities and even weather conditions are inevitable—but not insurmountable**.

Experts and scientists at the involved federal agencies are determined to achieve the goals set forth in the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed*. To date, they have achieved measureable successes toward overall goals, and are thoughtfully plotting the way forward, using best science and collaborative decision making to ensure all involved resources are used in a well-planned manner. Collaboration among these agencies and with state and local governments, nongovernmental organizations, academia, community groups and individual citizens will allow the goals to be met.

After the first year of implementing the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed*, forward progress is evident, with more tangible protection and restoration poised for action.

Source: NPS

Goal Summaries



Source: NPS

Restore Clean Water Goal Summary

Goal: Reduce nutrients, sediment and other pollutants to meet Chesapeake Bay water quality goals for dissolved oxygen, clarity, chlorophyll *a* and toxic contaminants.

WATER QUALITY OUTCOME

Meet water quality standards for dissolved oxygen, clarity/underwater grasses and chlorophyll *a* in the bay and tidal tributaries by implementing 100 percent of pollution reduction actions for nitrogen, phosphorus and sediment no later than 2025, with 60 percent of segments attaining water quality standards by 2025.

Baseline condition

89 of the 92 segments of the bay and its tidal waters are impaired. For pollution reduction actions, the 2009 baseline is 0 percent. The universe is 100 percent goal achievement by December 31, 2025.

Progress toward achieving outcome

Water quality in the bay and its tributaries is poor overall. The most recent health and restoration information – data from 2010 – shows that only 22 percent of tidal waters had chlorophyll a concentrations that achieved goal levels; only 18 percent of tidal waters met or exceeded guidelines for water clarity; and only 38 percent of the bay and its tidal tributaries met Clean Water Act (CWA) standards for dissolved oxygen. Pollution reduction strategies to restore water quality are ongoing. **Currently, 1 percent of the goal has been achieved for phosphorus, and 8 percent and 11 percent of the goals are achieved for nitrogen and sediment, respectively.** Nevertheless, long-term trends indicate that management actions, such as pollution controls for improved wastewater treatment, practices to reduce nutrient runoff from farms and suburban lands, and efforts to curb erosion and runoff have reduced concentrations of nitrogen, phosphorus and sediment at many monitored locations in the watershed. While these reductions provide evidence of improving conditions in some upstream areas, additional reductions will be needed to have healthier streams and meet water quality goals for the bay.

> On December 29, 2010, the U.S. Environmental Protection Agency and its partners issued the bay Total Maximum Daily Load—the keystone of water quality restoration efforts in the Chesapeake Bay watershed.

2011 Action Plan key accomplishments

Chesapeake Bay Program (CBP) partners made unprecedented progress in 2011 in their efforts to protect and restore water quality in the Chesapeake Bay watershed. On December 29, 2010, the U.S. Environmental Protection Agency (EPA) and its partners issued the bay Total Maximum Daily Load (TMDL)—the keystone of water quality restoration efforts in the Chesapeake Bay watershed. The bay TMDL, or bay

pollution diet, is based on jurisdictions' Phase I Watershed Implementation Plans (WIPs), which identify the necessary reductions of nitrogen, phosphorus and sediment across the watershed, and set pollution limits necessary by state and by major river basin to meet water quality standards in the bay and its tidal waters. **The TMDL reflects a joint commitment by EPA and the bay jurisdictions to ensure that all controls, practices and actions needed to fully restore the bay and tidal rivers will be in place by 2025**. Accountability measures, including two-year milestones and a commitment to have at least 60 percent of the work completed by 2017, will help ensure progress.

Restoration and protection of the Chesapeake Bay watershed requires **a strong water quality monitoring program** to help inform decision makers to plan for future actions.

Throughout 2011, EPA worked with the jurisdictions to refine their plans and address implementation at the local level. In their Phase II WIPs, jurisdictions will work with local partners to help them understand their expected contribution to the overall commitment. To help develop these refined plans, EPA issued a *Phase II WIP Guide for Jurisdictions* in March 2011 and a separate *Guide for Federal Lands* in April 2011. **To inform the jurisdictions and help them determine their baseline loading estimates and develop their Phase II plans, federal agencies provided spatial data to the jurisdictions and provided technical assistance and contractor support directly to the jurisdictions**. Both the federal agencies and the jurisdictions also developed draft two-year milestones for key initiatives in October 2011; final milestones were submitted in early 2012. A *Guide for Two-Year Milestones* was issued in May 2011 to assist in their development.

The Action Plan, and the TMDL specifically, requires everyone and every sector to do their part—from states and municipalities to agriculture, homebuilders and individuals. EPA has made several programmatic changes to help facilitate its implementation. For example, to help identify and prioritize pollution reduction opportunities from agricultural lands, **EPA conducted a review of state animal feeding operations (non-concentrated animal feeding operations) to assess compliance with and effectiveness of state programs**. EPA also conducted a review of the jurisdictions' nutrient trading programs to determine the consistency of those programs with the TMDL and the CWA.

Similarly, **EPA is conducting a review of all significant wastewater discharge permits and all industrial and general municipal separate stormwater sewer systems and all construction general permits in the Chesapeake Bay watershed to ensure TMDL consistency**. EPA is taking actions where needed to ensure compliance. In 2011, EPA worked on a proposed stormwater rule that addresses stormwater discharges both nationally and in the Chesapeake Bay watershed; however, its publication has been delayed to provide additional time to complete the technical analyses to support the rule. EPA also continues its work on a proposed rule to more effectively address pollutant reductions from CAFOs. The proposed rule is expected by summer 2012.

EPA issued a new stormwater permit for the District of Columbia in October 2011 that


Source: Ben Fertig/IAN Image Library


Source: NPS


Source: NOAA

Recent progress toward collaborative restoration approaches in Maryland and Virginia emphasizing comprehensive tributary approaches to ecological restoration and long-term sustainability are promising.

encourages a number of green performance measures for preventing pollution from stormwater runoff. A key provision of the permit is a requirement for newly developed and redeveloped properties to retain 1.2 inches of rainfall on site through the use of green infrastructure controls like green roofs, rain gardens and trees planted along streets. In July 2011, EPA finalized a Cross-State Air Pollution Rule (Transport Rule) that requires 27 states to significantly improve air quality by reducing power plant emissions that contribute to ozone and/or fine particle pollution in other states. The Agency also issued proposed revisions to its Nitrogen and Sulfur Oxides Secondary National Air Quality Standards. These air pollutants can damage plant growth and have adverse impacts on soils, lakes and streams.

Restoration and protection of the Chesapeake Bay watershed requires a strong water quality monitoring program to help inform decision makers to plan for future actions. EPA worked with the U.S. Geological Survey (USGS), the states and the District of Columbia in 2011 to expand the CBP watershed monitoring network. Because funding to support additional monitoring stations was $1 million under budget, only 20 sites were added in 2011 with a focus on monitoring in smaller agricultural and urban watersheds. USGS also implemented enhanced monitoring and research in three small watersheds to better assess the effect of water quality practices. USGS began monitoring and research to assess baseline conditions in two U.S. Department of Agriculture Natural Resources Conservation Service showcase watersheds and an urban watershed to better evaluate the effect of management practices on water quality improvements. USGS also developed new urban and suburban land information and worked with EPA to incorporate it into the CBP watershed model to help states develop their Phase 2 WIPs.

Keeping track and monitoring progress is essential for improving coordination with state and federal partners, optimizing efficient use of

resources and managing adaptively. For example, the annual submerged aquatic vegetation (SAV) survey was completed by the Virginia Institute of Marine Science for 2010 data and was funded for FY 2011 by EPA. This survey is important in measuring attainment of water clarity standards under the bay TMDL. The final 2011 data are due to the CBP in February 2012 and additional data collection will begin again in May 2012.

In January 2011 the Bay Tracking and Accounting System (BayTAS), a platform to track progress on bay TMDL implementation, was completed. **BayTAS was developed by EPA and the bay jurisdictions to inform the partners and the public about on-the-ground and in-the-water progress**. It contains load and waste load allocations for total nitrogen, total phosphorus, and total sediment by jurisdiction, by segment in each jurisdiction, and by source sector. It also contains the 2009 baseline loadings data from the bay jurisdictions. BayTAS data are featured on the ChesapeakeStat website, which in 2011 was enhanced with accountability features and decision support information and tools to implement the CBP's adaptive management framework.

To deter non-compliance of regulated sources, motivate state programs, inform development of WIPs, and assess the effectiveness of state programs, EPA made great progress on implementing its Chesapeake Bay Compliance and Enforcement Strategy. In 2011, EPA inspected 208 Clean Air Act and Clean Water Act facilities in the bay watershed, and, entered into 6 civil judicial settlements and issued 62 administrative orders, including 1 emergency order, to sources contributing to the bay's impairment. These enforcement actions cover 116 facilities in 6 states and the District of Columbia and will reduce approximately 271 million pounds of sediment to the bay watershed annually once all required controls are fully implemented. Additionally, settling companies have agreed to invest more than an estimated $30.8 million in actions and equipment to reduce pollution to the bay and pay civil penalties of over $4.2 million.

As the focus of water quality implementation turns to the local level, funding to help implement that work becomes critical. EPA's Chesapeake Bay Implementation Grants and Chesapeake Bay Regulatory and Accountability Program provided $20.3 million to the states for programs that improve water quality in the watershed. **These funds are available to the jurisdictions to help with conservation implementation, technical assistance, tracking conservation and compliance/enforcement activities**. In addition, EPA's Innovative Nutrient and Sediment Reduction Grants Program, administered by the National Fish and Wildlife Foundation, provides **grants for innovative, cost-effective projects that reduce agricultural and urban nutrient and sediment pollution in local and bay waters**. This year, EPA awarded $3.2 million to 19 projects in the Chesapeake Bay through the Innovative Nutrient and Sediment Reduction Grants Program. In addition, EPA provided $1.8 million in grants through the Small Watersheds Grants Program.

In addition to these grants, **application of several base national funding programs helped augment state water quality improvement efforts in the watershed**, including an estimated $8.2 million in CWA Section 319 Nonpoint Source Program grants; an estimated $4.2 million in CWA Section 106 Water Pollution Control Program grants; and an estimated $160 million in EPA Clean Water State Revolving Fund loans. EPA also provided more than $3 million in grants to support state tidal and non-tidal monitoring programs.

The U.S. Department of Defense (DoD) continued to participate in federal, state and local stakeholder advisory groups and workgroups in each of the bay jurisdictions in the development of their Phase II WIPs. DoD has met with each of the bay jurisdictions to support development of their Phase II WIPs.

DoD completed and continues to complete opportunities assessments at major installations in the bay watershed. **DoD is identifying and assessing opportunities to strengthen stormwater management, including structural and non-structural best management practices (BMPs), erosion control, and infrastructure maintenance and repair opportunities**. The opportunities assessments will better enable installations to install stormwater management controls to reduce pollutant loadings, improve stormwater quality and meet TMDL requirements. BMPs to be implemented will be prioritized to achieve load reductions to comply with the bay TMDL requirements. Structural BMPs may include but are not limited to vegetated roofs, rooftop disconnection, bioretention, permeable pavement and constructed wetlands. Non-structural BMPs include vegetation management, reforestation and landscaping maintenance.

The National Oceanic and Atmospheric Administration Chesapeake Bay Office continued to operate, maintain and use the Chesapeake Bay Interpretive Buoy System (CBIBS). CBIBS provided key real-time information on low salinity levels in the spring, the onset of hypoxia (dissolved oxygen) in the mainstem, and turbidity as a result of weather events in late summer. Working with partners across the CBP, NOAA laid the groundwork for CBIBS data to be more easily incorporated into bay water quality models and to allow CBIBS data to be integrated into routine water quality assessments.

NOAA invested in instruments that will allow more comprehensive and real-time CBIBS measurements above and around areas of the bay critical for oysters, blue crabs, striped bass and menhaden fisheries.

To maximize the utility of CBIBS, NOAA completed the backbone of the project and worked to ensure the continuous operation of the system. The tenth buoy was placed near the mouth of the bay, and components were acquired so a buoy could be quickly replaced in event of a failure, thus avoiding delays for repairs. NOAA invested in instruments that will allow more comprehensive and real-time CBIBS measurements above and around areas of the bay critical for oysters, blue crabs, striped bass and menhaden fisheries.

NOAA and partners in Maryland, Virginia and Delaware worked to advance the techniques for combining information from satellite observations of the bay and models of bay circulation to forecast harmful algal blooms. NOAA and the regional management community reviewed requirements for this type of forecast.

Scientists from across NOAA met with Chesapeake Bay scientists to discuss a **pilot project to create an operational ecological forecast similar to routine NOAA weather forecasts**. Participants in the discussion recommended hypoxia as the focus for the first pilot project. Over the next few years, NOAA will strive to move recently completed research and models into operational status.

In response to Hurricane Irene and Tropical Storm Lee, NOAA's CoastWatch East Coast Node brought new satellite data products to the Chesapeake Bay by distributing a new product that assesses sediment concentration in the bay. The daily images of the entire bay were a mainstay of the intense interagency response following these events.

USGS provided information on the amount of river flow entering the bay during these events and also estimated the amount of sediment scoured out of the Conowingo Reservoir.

Energy Independence and Security Act (EISA) 438 Progress: The Restoration Strategy for the Bay developed under the Executive Order commits each federal agency to adopt an agency specific policy to implement the stormwater requirements in section 438 of the EISA by December 2010. Of the nine Federal Leadership Committee agencies that committed to developing policies in the EO Strategy, two developed and issued a policy for EISA 438 by December 2010 (DoD and EPA). Six additional agencies have developed and issued a policy since December 2010. One of the departments indicates that policy development is in progress. Some evidence of implementation has been noted and several agencies have integrated EISA 438 into their updated strategic sustainability plans.

Agency	Policies Developed by December 2010 (EO Deadline)	Policies Developed in 2011	Policies Under Development
DHS		X	
DoD	X		
DOT			X
EPA	X		
FWS		X	
NOAA		X	
NPS		X	
USDA		X	
USGS		X	

STREAM RESTORATION OUTCOME

Improve the health of streams so that **70 percent of sampled streams throughout the Chesapeake watershed rate fair, good or excellent, as measured by the Index of Biotic Integrity, by 2025.**

Baseline condition

45 percent of sampled streams are rated fair, good or excellent.

Progress toward achieving outcome

The stream heath conditions are based on information collected by federal and state partners in the watershed between 2000 and 2008. Information was used from nearly 8,000 sites to determine that 45 percent were in fair, good or excellent condition and 55 percent of the sites were in very poor or poor condition.

EPA, working with the Interstate Commission on the Potomac River Basin, USGS and the states through the CBP monitoring team, improved the approach to summarize stream health. The health of streams was evaluated by the Chesapeake Bay Basin-wide Benthic Index of Biotic Integrity (or "Chessie B-IBI"), which was developed from benthic macroinvertebrate data collected across the entire Chesapeake Bay watershed. The improved methods that were used for rating the monitoring sites show average B-IBI ratings in the Chesapeake Bay watershed to be:

- 14 percent (1,100 sites) were in excellent condition.
- 13 percent (1,023 sites) were in good condition.
- 19 percent (1,461 sites) were in fair condition.
- 15 percent (1,195 sites) were in poor condition.
- 39 percent (3,107 sites) were in very poor condition.


Source: NOAA

Source: Jane Thomas/IAN Image Library


Source: Jane Thomas/IAN Image Library

Stormwater runoff affects places around the watershed. Improvements to the current stormwater program will have positive effects around the bay.

2011 Action Plan key accomplishments

The improved scientific approach to assess stream health provided new insights into the link between the watershed-wide B-IBI scores and land-based activities in individual watersheds.

- **The poorest stream index scores occur in highly urbanized watersheds, such as those in the Baltimore-Washington, D.C. metropolitan region**. Stream health is compromised in urban areas by extreme land disturbance and an abundance of paved surfaces. These stressors result in high levels of pollution, altered stream flow, and poor quantity and quality of streamside vegetation.
- Poor stream index scores in the Chesapeake Bay basin are **also present in areas with intense agricultural activity, such as the lower Eastern Shore and south central Pennsylvania**. Excess nutrients and sediment compromise stream health in these areas. The Upper West Branch of the Susquehanna River in Pennsylvania appears to be compromised by mining activity, which causes habitat alterations and toxic plumes that negatively impact benthic stream populations.
- **The highest (or best) stream index scores are typically found in minimally disturbed watersheds with low levels of pollution and stable in-stream and streamside habitats**. These watersheds tend to be clustered in forested areas of the Upper James and Potomac rivers and the West Branch of the Susquehanna River.

Additional accomplishments to implement stream restoration activities are discussed in the habitat section.

AGRICULTURAL CONSERVATION OUTCOME

Work with producers to **apply new conservation practices on 4 million acres of agricultural working lands in high priority watersheds by 2025** to improve water quality in the Chesapeake Bay and its tributaries.

Progress toward achieving outcome

USDA implemented conservation practices on more than 650,000 acres of working lands from May 2010 to September 2011. This is 16 percent towards USDA's 4 million acre goal for new conservation practices applied on agricultural working lands.

2011 Action Plan key accomplishments

Federal agencies also committed to applying 4 million acres of new conservation practices in high priority watersheds, identified by USDA, USGS and EPA as watersheds that deliver higher than average amounts of nitrogen and phosphorus to the bay. In 2011, USGS models provided new sediment results to NRCS as another tool to help focus conservation practices in priority watersheds. In order to address multiple resource concerns or to fully treat a particular resource concern, many of these acres of working lands were treated with multiple conservation practices.

Through the Chesapeake Bay Watershed Initiative (CBWI), NRCS implemented more than 11,500 new conservation practices in priority watersheds including:

- 124 new waste storage facilities to help farmers manage manure.
- 35,014 acres of nutrient management to improve the rate, timing and method of nutrient application.
- 1,132 acres of access control, successfully excluding livestock from streams on 102 farms.
- 18,560 acres of no-till to reduce soil erosion and improve soil quality.
- 44,938 acres of cover crop to reduce nutrient losses.
- 38,352 feet of terraces to control soil erosion.

Including other USDA Farm Bill Programs such as the Environmental Quality Incentives Program (EQIP), Agricultural Management Assistance (AMA) Program, and Wildlife Habitat Incentive Program (WHIP) as well as Conservation Technical Assistance (CTA), NRCS implemented 60,846 new conservation practices in the Chesapeake Bay watershed. In total, in priority watersheds and across the region, NRCS applied or constructed:

- 262 new waste storage facilities.
- 151,689 acres of nutrient management.
- 7,114 acres of access control.
- 121,573 acres of reduced tillage.
- 136,501 acres of cover crop.
- 65,317 feet of terraces.

NRCS funded 1,716 new CBWI contracts for $60 million. Over 92 percent of these contracts were in priority watersheds. The other contracts address critical resource concerns in other portions of the Chesapeake Bay watershed. An additional $10.5 million in CBWI funds were used to implement conservation practices funded in current and prior year contracts.

Through EQIP, WHIP, AMA, and the Conservation Stewardship Program (CStP), an additional 1,141 contracts for $23.2 million were developed and will be used to implement additional conservation practices across the watershed in future years.

NRCS also entered into partnerships with state agencies, conservation districts and nongovernmental organizations to deploy four teams of technical experts in Chesapeake Bay priority areas. These **Strategic Watershed**

Action Teams (SWATs) will help individual agricultural producers plan and/or implement conservation practices needed to address priority natural resource concerns.

This approach leverages additional resources and expertise from participating partners. NRCS has committed $3 million dollars to SWATs in the Chesapeake Bay watershed and partners provided approximately $1.6 million for the effort. Altogether, **SWATs make the equivalent of 46 staff years of technical expertise available over a three-year period to help accelerate outreach, conservation planning, practice implementation and follow-up in priority watersheds**.

NRCS funded six Cooperative Conservation Partnership Initiative (CCPI) proposals through CBWI. These partnership proposals included efforts to install soil erosion control practices, manage grazing lands, improve forestlands, establish cover crops, and reduce on-farm energy usage in Delaware, Maryland, New York, Virginia and Pennsylvania portions of the Chesapeake Bay watershed. **NRCS provided $3.5 million in financial assistance to Chesapeake Bay watershed farmers to assist with implementing conservation practices through CCPI in 2011**. In addition, NRCS continues to support prior year CCPI projects that focused on streambank fencing and advanced nutrient management.

Three water quality "showcase watersheds" were established in the Chesapeake Bay watershed in 2010: Conewago Creek watershed (Pennsylvania), Upper Chester River watershed (Maryland) and Smith Creek watershed (Virginia). These watershed projects were designed to demonstrate what can be accomplished by bringing people and groups together to solve natural resources problems in targeted areas. Outreach to agricultural producers was an important activity in all three

Source: Jane Thomas/IAN Image Library

showcase watersheds. The Upper Chester River and Conewago Creek watersheds exceeded their goals with 90 percent of the farmers in these watersheds personally contacted. The Smith Creek watershed organization has made personal contact with over 150 of the largest producers in the watershed. **Although these EO action goals have been met, showcase watershed projects will continue personal outreach efforts because these actions are leading to increased conservation participation**. USGS

The working farms, forests and natural areas around the tidal region of the bay are central to creating the Chesapeake's sense of place. These landscapes connect us to deep traditions and vital economic and ecological values.

began monitoring and research to assess baseline conditions in two USDA showcase watersheds (Smith Creek and Upper Chester River) to better evaluate the effect of management practices on water quality improvements.

TOXIC CONTAMINANTS OUTCOME

Work with state and local governments and stakeholders to **significantly expand understanding of toxic pollutant contamination in the bay and its watershed** and to develop contaminant reduction outcomes by 2013 and strategies by 2015.

Baseline condition

A baseline condition for toxic contaminants was not developed for the EO Strategy.

Progress toward achieving outcome

EPA, USGS, the U.S. Fish and Wildlife Service and NOAA began to summarize results from studies on impacts of chemical contaminants on fish and wildlife and the occurrence and sources of chemical contaminants. They will prepare a report on the seriousness of toxic contaminants in the bay and watershed. This report, due in November 2012, will be used by EPA and the states to better understand baseline conditions and develop new reduction goals for toxic contaminants in 2013.

2011 Action Plan key accomplishments

EPA and USGS organized a meeting of federal agencies and jurisdictions to discuss the information needed to better assess the extent and seriousness of toxic contaminants in the bay and its watershed. The meeting invitees included federal, state and academic partners. The meeting, held in October 2011, provided important information on the approach to prepare the summary report.

USGS worked to identify the parasites, bacterial and viral pathogens associated with fish mortalities and that occur with different types of land use. USGS worked with FWS to conduct limited sampling of fish health conditions and supporting modular analysis in the Potomac and Susquehanna basins. USGS expanded assessment of the effect of toxic contaminants by sampling both fish and wildlife in the Potomac basin. Findings from these studies will contribute to a report on the extent and seriousness of toxic contaminants in the bay watershed. However, USGS and FWS were not able to expand monitoring to determine the sources of toxic contaminants impacting the health of fish in the bay watershed, which will limit the ability of partners to develop contaminant reduction goals and strategies.

FWS scientists contacted state leads in Virginia, Maryland and the District of Columbia to obtain recent sediment and fish tissue contaminant data that will be used in the November 2012 report on the status of toxic contaminants in the bay. FWS also worked with USGS to complete sampling on the fish and osprey study of the effects of contaminants, including emerging chemicals. No action has been taken on the prescription drug disposal and take back program due to lack of funding.

Recover Habitat Goal Summary

Goal: Restore a network of land and water habitats to support priority species and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

Many habitats within the Chesapeake Bay watershed—including wetlands, forests, fields, streams, underwater grasses, islands, sand beaches and mudflats—have been degraded and no longer provide the robust ecosystem services bay species require. Restoration of these habitats is critical to support priority species and to afford other public benefits, including enhanced water quality, expanded recreational uses and improved scenic value throughout the watershed. FWS, NOAA, the U.S. Forest Service and NRCS are **working with local landowners and state partners to protect, restore and enhance wetlands, streams and forest buffers in the heart of prime habitat** for Eastern brook trout and American black duck, while abating nutrient loadings in a watershed targeted by EPA as needing improvements. Alignment of several agencies' priorities will yield multiple benefits for private landowners, water quality, key habitats and the species they support.

Much of the funding identified in the President's FY 2011 Budget as necessary to support actions under the Recover Habitat goal ($18.9 million) was not made available to the agencies responsible for completing actions identified in the FY 2011 Action Plan. As a result, it became necessary to make mid-course corrections that delayed, scaled back or eliminated implementation of certain actions or elements of actions. Examples of actions that could not be taken include USGS assessment (along with FWS and NOAA) of the impact of land change and sea-level rise on coastal lands and wetlands, and the U.S. Army Corps of Engineers Lower Susquehanna River Watershed Assessment (formerly referred to as "Sediment Behind the Dams" study), though USACE and Maryland were able to sign an agreement by the end of FY 2011.

To adapt to the reduced funding, the **agencies refined focus to align existing resources and base funds to support actions associated with shared**

NUTRIA ERADICATION

Nutria are invasive rodents that over-graze wetlands, compete with native species, and can cause erosion by tunneling into stream banks. In 1993 the Maryland Department of Natural Resources and FWS established the first multi-agency task force to investigate potential approaches to combat feral nutria populations. The task force worked to systematically attack the problem beginning with a pilot project led by the University of Maryland investigating the physiological and behavioral characteristics of nutria. USDA's Animal and Plant Health Inspection Service assessed the feasibility of eradicating nutria and applied eradication tools and strategies across coastal marshes in Dorchester, Talbot, Caroline, Somerset and Wicomico counties.

To date, all moderate to high-density populations have been reduced to near zero on 150,000 acres of wetlands. The partnership has expanded to include 26 agencies working together to obtain financial and other support for the project on a continuing basis. This partnership serves as a model for similar projects in the 15 other states impacted by nutria.

priorities and multiple benefits. For example, the FWS Partners for Fish and Wildlife Program partnered with NRCS to fund shared biologist positions in Maryland, Delaware and Pennsylvania. These biologists deliver technical assistance to agricultural landowners who wish to implement BMPs (such as riparian forest buffers) on their farms, resulting in direct, measurable benefits for fish, wildlife and water quality in headwater streams. In addition, FWS, USGS, NOAA and USACE advanced critical science activities to more effectively implement practices and monitor changes in habitat conditions across the watershed.

Other notable Recover Habitat accomplishments were made within existing staff and resource capacity. For example, **the fish passage target for the year was exceeded, with more than 148 miles of newly opened habitat being made available to spawning anadromous fish**, based largely on execution of FY 2010 funding and continued leadership of the State Fish Passage Coordinators in Virginia, Maryland and Pennsylvania. A new model for targeting restorable wetlands based on shared priorities of FWS, NRCS, state natural resource agencies and nongovernmental organization partners is being piloted in Maryland, with the expectation that similar initiatives will be launched in other basin states beginning in spring 2012.

WETLANDS OUTCOME

Restore 30,000 acres of tidal and non-tidal wetlands and enhance the function of an additional 150,000 acres of degraded wetlands by 2025.

Baseline condition

The National Wetlands Inventory estimates that 1 million acres of tidal and non-tidal wetlands are available in the Chesapeake watershed for restoration or enhancement.

PROVIDING HABITAT FOR MIGRATORY FISH

Dams and other obstructions block the natural migration of fish to their historic spawning habitats. By removing physical obstacles and increasing river connectivity, key species like American shad, river herring and American eel are able to return to their spawning grounds. Dam removal also improves the quality of surrounding habitat by reducing river fragmentation, improves water quality and naturally distributes river bed load in channels and floodplains. Additional benefits from dam removal can also include increased recreational opportunities, reduced flooding and removal of safety hazards.

The Habitat Goal Implementation Team's Fish Passage Workgroup promotes projects involving the removal of dams or the creation of fishways when dam removal is not feasible. The EO established an outcome of 1,000 additional miles of stream habitat to be opened for fish passage by 2025, or 67 miles each year. In 2011, the Fish Passage Workgroup exceeded their annual target by opening more than 148 miles of stream habitat.

One significant project completed was the demolition of the Simkins Dam on the Patapsco River near Ellicott City, Maryland. This project is a critical component of what will be the largest river restoration in the state of Maryland and will establish a model for future dam removal efforts in the Chesapeake Bay. The primary objective of the Simkins Removal was to restore healthy habitat by opening 20 miles of habitat for diadromous fish species: alewife, blueback herring, hickory shad and American eel. Presently, American eel are found above the project site in depleted numbers, and as a result of this effort, we anticipate American eel occurring in greater abundance. Large-scale monitoring efforts are underway to record the return of key species to the watershed including measuring the abundance of American eel in the watershed post removal.

Progress toward achieving outcome
FWS, NRCS, NOAA and USACE worked with state and local partners to restore 600 acres of coastal marsh, and proposals to restore and protect 1,000 more acres were submitted for consideration under the National Coastal Wetland Conservation Grant Program and the North American Wetland Conservation Act Grant Program. Key contributions were made via the FWS Partners for Fish and Wildlife program, which restored and enhanced nearly 500 acres of non-tidal wetlands across the watershed, including 275 acres in priority areas in Maryland and Delaware, and through the NRCS Wetland Reserve Program, which enrolled 41 easements for 2,529 acres of wetlands.

2011 Action Plan key accomplishments
Federal agencies kicked off a multi-year effort to assess the effects of development in the watershed on habitat for seagrass and animal species that live in the bay. For example, NOAA is exploring the combined effects of shoreline hardening, watershed land use, and the invasive wetland plant *Phragmites* on habitat quality. These studies will relate the presence and condition of subtidal seagrasses and estuarine animals to dominant shoreline type (natural, riprap, bulkhead), watershed land use (dominated by forest, agriculture or developed land) and other factors, such as wave energy, sediment supply and water oxygen levels. USGS is a partner in the study by assessing changes in habitat conditions supporting waterfowl. Once relationships are determined among these multiple factors and the health of estuarine habitats and species, then predictions can be made about the effects of future watershed and shoreline development. This information will be used to help determine future restoration and management of Chesapeake shorelines. USGS and FWS conducted monitoring of sea-level rise at Blackwater National Wildlife Refuge to help target future wetland restoration projects in a manner that adapts to climate change.

ADAPTING TO CLIMATE CHANGE

Many of our natural and cultural treasures are threatened by climate-induced sea-level rise and land subsidence, particularly the Blackwater National Wildlife Refuge and surrounding marsh habitats. Blackwater National Wildlife Refuge is a 28,000 acre protected area at the heart of a complex mix of freshwater wetlands, estuarine tidal wetlands, open fields and mixed evergreen and deciduous forests in Dorchester County, Maryland. The refuge supports tens of thousands of migrating waterfowl as well as rare priority species, including black rail, seaside and salt marsh sparrow species, the federally endangered Delmarva fox squirrel, and the largest breeding population of bald eagles on America's Eastern seaboard north of Florida.

In partnership with FWS and other key partners, The Conservation Fund and Audubon Maryland-District of Columbia are protecting the long-term persistence of extensive marsh habitat in and around Blackwater National Wildlife Refuge. Partners are strategically assessing current conditions and predicted sea-level rise, developing comprehensive restoration and communication strategies, and initiating scalable demonstration projects that make adaptation a reality. This project will serve as a model for the long-term preservation of coastal marshes in other areas of the bay and the nation's coasts.


Source: USDA-NRCS


Source: Chesapeake Bay Program


Source: NPS

FWS will increase on-the-ground assistance for restoration and enhancement of non-tidal wetlands and associated upland buffers on private lands.

USACE hosted several field trips and events for the general public to Poplar Island. Over 2,689 visitors (students and the general public) participated in the tour. Additionally, in July, USACE hosted a field trip to Poplar Island as part of the National Conference for Ecosystem Restoration. This tour was designed to **educate other agencies and partners throughout the country on innovative ecosystem restoration techniques applied at Poplar Island**.

During the second week of June, a week-long volunteer planting event engaged the general public in planting the newest wetland cell at Poplar Island. By the summer, Poplar Island opened up 40 acres of wetland and tidal gut habitat to fish and natural tidal flow.

FOREST BUFFER OUTCOME

Restore riparian forest buffers to 63 percent, or 181,440 miles, of the total riparian miles (stream bank and shoreline miles) in the bay watershed by 2025.

Baseline condition

58 percent of the 288,000 total riparian miles in the bay watershed have forest buffers in place.

Progress toward achieving outcome

Since 1996, USFS has led the Chesapeake Bay partners in the riparian forest buffer restoration program. Together, program partners have restored an average of 466 miles of riparian forest buffers per year since 1996. In 2011, partners added 247 miles. **Achievement of the EO outcome will require a doubling of the average annual effort to over 900 miles per year -- and tripling the miles of restoration**

realized in 2011. Only in the year 2002 did partners restore that many miles; then, over 1,000 miles were documented. While an ideal amount of progress was not realized on-the-ground in 2011, considerable progress was made in improving outreach to landowners and by re-establishing federal priorities, setting the stage for an increased rate of riparian forest restoration in coming years.

2011 Action Plan key accomplishments

USFS spearheaded a new collaboration with the Farm Service Agency (FSA), NRCS and state forest agency partners focused on riparian forest buffers. A bay-wide leadership meeting of these agencies was held and the restoration and retention of riparian forest buffers was identified as a mutually beneficial and critical practice. A Chesapeake USDA-forestry team formed and identified specific actions to accelerate forest buffer implementation in each state as a result of the leadership meeting.

To improve riparian forest buffer outreach this year, USFS worked with NRCS and state partners to cost-share field positions in Maryland and West Virginia. In addition, new outreach materials and tools were produced that could be used by these new positions and others to more effectively place new forest buffers. For example, USGS and USFS developed a decision tool to help identify important forests for conservation in the watershed and developed techniques for improved mapping of riparian buffers. USFS continues to educate and provide technical support for the essential ongoing activities of a myriad of partners. One promising and relatively new audience for this work are the local governments who plan and decide on whether and where riparian forests are needed in their jurisdiction. Outputs from renewed collaborations, and exploring new incentives for riparian forest buffers will be part of the ongoing work of USFS in 2012. For example, **benefits of the fish passage work described below could be maximized by the planting of adjacent streamside forest buffers, which shade streams and cool the water for temperature-dependent species such as the Eastern brook trout.**

FISH PASSAGE OUTCOME

Restore historical fish migratory routes by opening 1,000 additional stream miles by 2025, with restoration success indicated by the presence of river herring, American shad and/or American eel.

Baseline condition

Approximately 1,924 stream miles in the Chesapeake Bay watershed have been opened and are accessible for fish migration.

Progress toward achieving outcome

This year, 148 stream miles were opened for fish passage, which is well ahead of the pace of 132 miles opened every two years needed to meet the 2025 target. In addition, federal and state partners comprising the CBP Fish Passage Workgroup completed the Maryland portion of a fish passage prioritization for the Chesapeake Bay. **FWS, NRCS and NOAA have committed to working with state and local partners to prioritize stream reaches for restoration of passage or flow, and to leverage funds to remove barriers, retrofit culverts, and install passage structures.**

2011 Action Plan key accomplishments

State and federal partners led by NOAA are working with The Nature Conservancy to complete the Virginia and Pennsylvania portions of the fish passage prioritization project in FY 2012. Enhanced monitoring of wide-ranging indicator species, such as river herring, American shad and American eel, was proposed in 2011, but funds were not appropriated to carry out this activity,

which is essential to documenting the ecological success of these efforts.

Additional Habitat Accomplishments

FWS, in partnership with The Potomac Conservancy and the Frederick County Division of Public Works, launched a collaborative effort to restore in-stream habitat and provide upstream brook trout passage in Clifford Branch, located in Frederick County, Maryland. Clifford Branch sustains a healthy brook trout population due to the fact that most of its watershed is forested and much of its base flow is derived from cold water springs. Plans call for removal of a dam that is no longer needed by the city, followed by placement of stream grade control structures using natural channel design methodology to promote stream stability, provide fish passage and improve aquatic habitat.

FWS developed a Stream Functions Pyramid, a five-level hierarchical framework that categorizes stream functions and the parameters that describe those functions. FWS also offers a training course at the National Conservation Training Center to assist practitioners in setting goals to ensure that the stream restoration design addresses the appropriate functions necessary for long term success.

NOAA initiated a habitat-oriented, marine spatial planning exercise designed to enhance Chesapeake Bay wide efforts to understand and prioritize locations for habitat protection and restoration. Discussions on the final scope of the effort are underway with state partners and collaborative work with NOAA, the states, and The Nature Conservancy will continue in FY 2012.

USACE defined the scope of the watershed feasibility study in the Upper Rappahannock River and refined studies supporting ecosystem restoration of the Lynnhaven River watershed, and for both projects developed a cost-sharing agreement with a non-federal partner.

STREAM RESTORATION

More than 100,000 miles of stream shape the landscape of the Chesapeake Bay watershed. Many diverse living resources such as aquatic insects, fish, turtles, frogs, toads and salamanders rely on healthy stream habitat. Increased development and other human activities have led to degradation of these vital habitats. FWS is developing tools to help restoration practitioners restore stream health and ecosystem functions.

The Stream Functional Framework identifies thresholds and methods of assessment for critical stream functions. The framework allows restoration practitioners to base project designs and evaluations on improvements to ecosystem functions.

Source: FWS

Sustain Fish and Wildlife Goal Summary

Goal: Sustain healthy populations of fish and wildlife, which contribute to a resilient ecosystem and vibrant economy.

OYSTER OUTCOME

Restore native oyster habitat and populations in 20 tributaries out of 35 to 40 candidate tributaries by 2025.

Baseline condition

There are several tributaries with ongoing restoration of oyster reef habitat; zero tributaries have been evaluated per the recently established oyster restoration performance metrics.

Progress toward achieving outcome

NOAA, as chair of the Sustainable Fisheries Goal Implementation Team, is working with states to facilitate recovery and management of living resources across the multiple bay jurisdictions. The Sustainable Fisheries Goal Implementation Team has adopted a set of oyster restoration performance metrics that, for the first time in the Chesapeake Bay, set criteria for evaluating success of oyster restoration projects at both tributary and reef spatial scales. The metrics will be immediately applied to existing and future restoration projects bay-wide.

USACE, NOAA and Maryland have initiated a targeted effort to restore oysters in Harris Creek, a Maryland oyster sanctuary. **This collaborative effort serves as a bay-wide model for science-based, large scale oyster restoration and contributes to the oyster outcome.** NOAA's Chesapeake Bay Office received funding support to implement water oyster restoration projects (spat-on shell planting in Maryland and reef ball additions in Maryland and Virginia) and to

OYSTERS

Oysters are great multitaskers: They provide habitat and are a valuable seafood product. NOAA, USACE-Baltimore and the State of Maryland collaborated to streamline shellfish aquaculture permitting in Maryland through development of a new regional general permit ("Regional General Permit-1") authorizing new commercial, research and educational bivalve shellfish aquaculture activities in waters within the State of Maryland, including the Chesapeake Bay and its tidal tributaries; and the Atlantic Coastal Bays and their tidal tributaries. The approval of this Regional General Permit-1 demonstrates good stewardship for the environment, supports economic opportunities for commercial shellfish aquaculture, and is a result of close collaboration and partnership among the federal agencies and the state of Maryland.

Source: NOAA

increase capacity for seafloor mapping to guide project site selection. Progress on these outcomes was on target for the year based on the support received.

BLUE CRAB OUTCOME

Maintain sustainable blue crab interim rebuilding target of 200 million adults (1+ years old) in 2011 and develop a new population target for 2012 through 2025.

Baseline condition

The 2010-2011 Blue Crab Advisory Report indicated the abundance of adult blue crabs was 254 million.

Progress toward achieving outcome

The 2011 Chesapeake Bay Blue Crab Stock Assessment was completed and is being used by the Sustainable Fisheries Goal Implementation Team to establish a new adult, female-specific blue crab abundance target. The target will help conserve a sustainable population of blue crabs over the long term. The stock assessment, an internationally peer-reviewed document that incorporates the latest science on blue crabs in the Chesapeake Bay, was released in August 2011. **It confirms that Chesapeake Bay blue crabs are becoming more abundant—likely due in part to new regulations focusing on building the female population implemented in 2008 by the three jurisdictions that oversee the bay's blue crab fishery.** The new assessment uses a sex-specific model and recommends working toward achieving a sustainable target population of 215 million female crabs and a total of 415 million adult crabs in the bay.

The Sustainable Fisheries Goal Implementation Team is also completing an invasive catfish policy to address potential risks posed to native species by blue and flathead catfish and to identify actions to reduce their populations and mitigate adverse ecological effects.

NOAA received funding in FY 2011 to improve Chesapeake Bay fisheries science and support interjurisdictional management efforts. Progress on these outcomes was on target for the year based on the support received.

BROOK TROUT OUTCOME

Restore naturally reproducing brook trout populations in headwater streams by improving 58 sub-watersheds from "reduced" classification (10–50 percent of habitat lost) to "healthy" (less than 10 percent of habitat lost) by 2025.

Baseline condition

The Eastern Brook Trout Joint Venture classified 388 of 1,294 sub-watersheds in Chesapeake Bay as 'reduced' for brook trout.

Progress toward achieving outcome

Much of the progress on the brook trout outcome has been in clarifying processes for the way forward. The Eastern Brook Trout Joint Venture Science and Data Committee (which includes FWS and USGS) used a model developed by the USFS to reassess brook trout populations at the catchment level across the Chesapeake portion of the range of this species. The model uses a core set of variables and water quality characteristics that, when combined with field-verified data and model predictions, describe the health of brook trout in sub-watersheds within the Chesapeake Bay watershed. The Eastern Brook Trout Joint Venture collects brook trout status and distribution data every five years. The most recent data, collected in 2011, are currently being analyzed.

Collaborative oyster restoration in Maryland and Virginia emphasizing comprehensive tributary approaches to ecological restoration is showing early signs of success.

2011 Action Plan key accomplishments

The FWS Coastal Program, Stream Habitat Assessment and Restoration, made progress on brook trout restoration projects in Little Tuscarora Creek, Frederick, Maryland, and Mossy Creek, Augusta County, Virginia. **USGS is conducting genetic studies to understand why brook trout populations vary in different habitat and population fragmentation scenarios.** FWS, in coordination with USFS, USGS and the Eastern Brook Trout Joint Venture, is working to establish a watershed-wide brook trout abundance metric based on the latest science. The agencies are also working with the Landscape Conservation Cooperatives to coordinate restoration activities and identify priority science needs.

USGS is working with FWS to assess factors affecting the health of—and causing die-offs of—other freshwater species in the Potomac and Susquehanna basins. These studies include assessing the effects of toxic contaminants on fish and wildlife. The federal agencies (USGS, FWS, EPA and NOAA) will use the information on toxic contaminants and will work with state partners to prepare a report (to be released in 2012) on the extent and seriousness of toxic contaminants in the bay and its watershed (part of the water quality goal).

BLACK DUCK OUTCOME

Restore a three-year average wintering black duck population in the Chesapeake Bay watershed of 100,000 birds by 2025.

Baseline condition

Recent mid-winter aerial surveys estimated the 2007-2009 rolling three-year average at 37,158 black ducks in the Chesapeake Bay.

Progress toward achieving outcome

Black duck status is currently being assessed using data collected in the Mid-Winter Waterfowl Survey, which is conducted in early January of each year. Mid-winter aerial surveys estimated the 2009-2011 rolling three-year average at 47,269 black ducks in the Chesapeake Bay. Federal, state and nongovernmental partners are planning a workshop for spring 2012 that will help define how the quantity of black ducks that winter in the watershed is a manifestation of the quality of bay habitats. To support that effort, USGS and other partners are working to improve a regional model that will include information from testing different foods on a captive colony of black ducks at Patuxent Wildlife Research Center to demonstrate how different foods provide different levels of energy. A numeric milestone—increasing forage on refuge lands by 3 percent every 2 years—is being used to assess performance on the black duck outcome. While the FWS was able to coordinate with the Atlantic Coast and Black Duck Joint Ventures and USGS to begin to assess the carrying capacity of priority coastal marshes for wintering black ducks, the information is very limited due to the lack of local modeling and research needed to better assess the problem.

USGS is working with FWS to assess factors affecting the health of—and causing die-offs of—other freshwater species in the Potomac and Susquehanna basins. These studies include assessing the effects of toxic contaminants on fish and wildlife.

Source: FWS

2011 Action Plan key accomplishments

FWS improved water management capability at the Shipyard Creek moist soil impoundment at Eastern Neck National Wildlife Refuge. Two small water-control structures were installed at the refuge to create two small impoundments for a total of approximately 9 to 10 acres. **Partners have completed plans for expanding the moist soil units and constructing the expansion of two pools at Blackwater National Wildlife Refuge.** This effort—slated to increase the refuge by approximately 50 acres—will begin in spring 2012. Significant supplemental funding is needed to begin the planning for restoring and stabilizing emergent wetlands at Barbados Island. Those funds were not available in 2011, but FWS is seeking funding for this restoration in 2012.

While much progress, in terms of both tangible outcomes and laying the groundwork for future successes, was made in 2011, further understanding of critical science gaps is contingent on additional funding. Similarly, implementation of oyster restoration, priority stream and wetland restoration and conservation projects depend on additional funding.

Conserve Land and Increase Public Access Goal Summary

Goal: Conserve landscapes treasured by citizens to maintain water quality and habitat; sustain working forests, farms and maritime communities; and conserve lands of cultural, indigenous and community value. Expand public access to the Bay and its tributaries through existing and new local, state and federal parks, refuges, reserves, trails and partner sites.

LAND CONSERVATION OUTCOME

Protect an additional 2 million acres of lands throughout the watershed currently identified as high conservation priorities at the federal, state or local level by 2025, including 695,000 acres of forest land of highest value for maintaining water quality.

Baseline condition

7.8 million acres protected watershed-wide.

Progress toward achieving outcome

As of 2010, 7.8 million acres are currently protected watershed wide. As the measure of progress toward this goal, the EO Strategy sets a definition of land conservation: **Protected lands means lands permanently protected from development, whether by purchase or donation, through a perpetual conservation or open space easement or fee ownership for their cultural, historical, ecological or agricultural value.** Beginning in 2011, state agencies will begin providing data to track progress toward the additional 2 million acre goal.

2011 Action Plan key accomplishments

Land conservation is actually carried out by a broad range of players – private landowners, local and regional land trusts, local governments, and state and federal agencies. While the first full picture of how progress towards the strategy goal will come later, there are still a few notable accomplishments. In 2010, a period that spans the first 7 months of the strategy, and the most recent period for which data are available, close to 100,000 acres of land were protected in Maryland, Pennsylvania and Virginia. For example, 800 acres along the Nanticoke River are now protected by FWS and the Conservation Fund.

In addition to carrying out direct land conservation, **the top priority for 2011 was development of the Chesapeake Land Conservation Priorities System**, a web- and GIS-based tool for facilitating collaboration among state, federal, local and nongovernmental organization partners and supporting sound conservation planning and decision making at all levels. USGS and the U.S. National Park Service have been working with an Action Team of federal, state and nonprofit organizations to develop the system. An initial working prototype has been developed, incorporating existing state, regional and federal data layers. The team is now working with NatureServe to explore potential collaboration with their LandScope America system to expand and integrate the capabilities

of the prototype. The goal is development of a fully functional system in 2012. **Once in use, the system will greatly facilitate collaborative conservation efforts through broadly shared information.** NPS and USGS worked with partners to develop this initial prototype land conservation system in order to foster strategic coordination across the watershed for multiple land use values, but the ability to gather and maintain data, and to make improvements to the system, is limited due to the 2011 appropriations. The system is considered a pilot by the U.S. Department of Interior (DOI) for other areas of the nation.

One example of using land conservation priority data involves the Captain John Smith Chesapeake National Historic Trail. In 2011, NPS began development of a strategy for identifying conservation priorities along the 3,000 mile trail, which follows the major rivers of the tidal Chesapeake. The strategy, to be completed in early 2012, will help guide partners in conserving resources that contribute to visitor experiences of the trail.

NPS is also collaborating with multiple partners to begin filling a key gap in conservation priorities – the identification of Indigenous Cultural Landscapes, lands associated with the historic lifestyle and settlement patterns of American Indian peoples at the time of European contact. In 2011, partners, including the State of Maryland and Commonwealth of Virginia, outlined an approach and criteria for identifying these landscapes and started pilot mapping projects. However, this effort requires additional resources to support broader mapping and technical assistance.

As directed by the EO Strategy, in 2011, NPS was to deliver coordinated community assistance for priority landscape identification, assessment and conservation. The President's Budget for FY 2011 requested $250,000 for this technical assistance, however funding was not appropriated for this program; therefore this technical assistance was not provided.

In addition, the President's Budget for FY 2011 requested $900 million for the Land and Water Conservation Fund, however the actual amount appropriated was $301 million; therefore, there was a significant decrease in the amount available for land conservation and assistance to the states in the watershed.

As directed by the EO Strategy, in 2011 the U.S. Department of Defense was to conserve priority landscapes around defense installations. **Working with partners through the DoD Readiness and Environmental Protection Initiative (REPI), DoD conserved 811 acres around installations in the Chesapeake Bay watershed.** REPI supports cost-sharing partnerships authorized by Congress, between the DoD Services, private conservation groups, and state and local governments to protect military test and training capabilities and conserve land. These win-win partnerships acquire easements or other interests in land from willing sellers to preserve compatible land uses and sustain wildlife habitat near installations and ranges where the military operates, tests and trains. Through these partnerships DoD will continue to be good stewards of the environment and good neighbors in communities across the country including the bay watershed. **The net result is conservation of natural resources, better land use planning, and longer-term benefits for communities, stakeholders and the military.**

Source: Paul Zeph, PA DEP

The DoD REPI Program Guide was revised in April 2011 by the Office of the Secretary of Defense (OSD) in cooperation with the DoD Services. The April 2011 REPI Program Guide revises REPI proposal submittal requirements and selection criteria (scoring). The revised selection criteria allow proposals to obtain "additional points" if the proposal will provide benefits to broader regional planning efforts including but not limited to the CBP or if the proposal incorporates innovation (e.g., provides some type of mitigation or crediting) or furthers OSD policy goals.

The U.S. Department of Transportation (DOT) assisted metropolitan transportation planning organizations and state departments of transportation with funding to support the metropolitan and statewide planning. The President's proposed budget for FY 2011 had requested funding specifically for livability programs that included integrated planning activities. Congress extended the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) surface transportation authorization, including funds for planning. However, Congress did not enact new authorizing legislation or appropriations that designated transportation funds for integrated planning activities. Nevertheless, DOT continued to coordinate activities that support livable communities and sustainable transportation through the Sustainable Communities Partnership. Congress appropriated funding for planning projects that have a significant impact on the nation, a region or a metropolitan area in the FY 2010 DOT discretionary program Transportation Investment Generating Economic Recovery (TIGER II). DOT and the U.S. Department of Housing and Urban Development worked together to jointly fund TIGER planning and HUD Sustainable Communities projects, including two planning projects in the Chesapeake Bay watershed. DOT funding for these two projects was obligated in FY 2011 and the projects are in the early implementation phase of development. Congress appropriated funds for TIGER III in FY 2011, but did not provide funds specifically for planning.

PUBLIC ACCESS OUTCOME

Increase public access to the bay and its tributaries by adding 300 new public access sites by 2025.

Baseline condition

761 public access sites providing access to the bay and its tributaries exist in the District of Columbia, Maryland, Pennsylvania and Virginia; data on existing access sites in New York, Delaware and West Virginia are to be collected in the future.

Progress toward achieving outcome

A public access site is defined as a location providing access to the water through a boat ramp, fishing pier, swimming area, or adjacent boardwalk or trail; water means the Chesapeake Bay and its tributaries.

Access to the water connects Americans with the outdoors. If a core Chesapeake restoration goal is to make the bay and its tributaries "fishable and swimmable," then increasing public access to the water is not only an end goal, but also an integral part of protecting and restoring the watershed. Historically, there has been general agreement that there have been approximately 760 public access sites providing access to the bay and its tributaries in the District of Columbia, Maryland, Pennsylvania and Virginia, however there has not been a consistently understood criteria to establish a baseline.

2011 Action Plan key accomplishments

Bay Program partners are committed to providing all citizens with boating, swimming and fishing access to the bay and its tributaries. Federal and state partners are working with local governments and watershed organizations to develop a system of public access sites on the bay and its tributaries.

For example, the Public Access Planning Action Team, led by NPS, with representation from federal, state, local and nonprofit partners responsible for and committed to public access development, has been working over the past year to develop a public access plan that will guide expansion, assess demand, determine gaps, and identify opportunities for public access sites in the Chesapeake Bay watershed.

First, the team, in collaboration with all watershed states and the District of Columbia, **created and mapped a consistent baseline inventory totaling approximately 1,100 existing public access sites throughout the Chesapeake Bay watershed.** This was the first time the entire watershed was inventoried for existing public access information. Next, a common language and methodology was developed to assure that planning and tracking of future site development is consistent among all partners. **In addition to four public workshops, a web-based mapping tool was developed to identify public access gaps and opportunities from the recreating public.** The website alone received over 14,000 hits in just 30 days and received over 300 additional public access site suggestions from the public. NPS staff and action team members met in November, to review and organize input received for inclusion in the strategy.

NPS has historically provided funding support for public access development through the Chesapeake Bay Gateways and Watertrails Network (CBGN). As directed by the EO Strategy, priority was given to public access site development projects. In response to the FY 2011 solicitation for CBGN financial assistance awards, 19 CBGN partners filed applications for funding assistance for public access development. These projects would develop 18 new public access sites and plan or design 9 more. With a total project value of $3.5 million, these proposals from New York, Pennsylvania, Maryland, Virginia, and the District of Columbia requested $1.6 million in NPS financial assistance. The President's Budget for FY 2011 requested $2 million for CBGN; however, Congress did not provide funding for this program. Consequently, NPS was unable to provide financial assistance awards to support this strategic goal. Pending available funding, these public access projects remain under consideration.

Strategy Summaries

Source: NOAA

Expand Citizen Stewardship Supporting Strategy Summary

Objective: Foster a dramatic increase in the number of citizen stewards of every age who support and carry out local conservation and restoration.

Progress toward achieving objective

An effective way to foster watershed stewardship is through education and service learning opportunities, especially for the millions of young people who live in the watershed. The long term health of the environment will depend on their interest and ability to protect nature. **CBP restoration partners continue to promote environmental education at elementary, middle and high schools, with a focus on providing meaningful watershed education experiences for all students before they graduate.** Federal, state and nonprofit organizations manage service learning and youth corps programs that **create opportunities for youth to develop critical work and leadership skills, while completing on-the-ground projects**. Metrics to measure citizen stewardship are in development.

2011 Action Plan key accomplishments

Conservation corps around the watershed support work on developing trails, improving public access, planting trees, removing invasive species, improving stormwater systems, restoring wildlife habitat, implementing education programs, and maintaining parks and trails. The activities have expanded participants' skills that will support their future employment opportunities. In an effort to expand existing conservation corps workforces that create jobs and carry out conservation and restoration projects in priority watersheds, **NPS is coordinating the Chesapeake Conservation Corps Action Team comprised of state, federal and nonprofit organizations in order to outline the issues, needs, strategies and measurable outcomes for growing youth conservation corps opportunities.** Funding information has been used to inform the development of a strategy that will articulate program resource needs and outline a series of approaches to connect these needs to available and potential funding sources.

Federal investment for youth conservation corps programming within the watershed totaled over $3 million [$2.8 million from NPS; $392,000 from FWS]. From these funds, the NPS Chesapeake Bay Office received $217,000 to support and expand youth corps programs, including resources from the Director's Youth Demonstration Project focused on underserved youth. With these funds, NPS' Chesapeake Bay Office hired two interns in partnership with the Student Conservation Association to support corps programming along the James River and strategy development in Maryland. Remaining funds supported youth corps teams working in Virginia State Parks, Maryland state and local parks, and in Baltimore in partnership with the Parks and People Foundation. **A total of sixty youth were provided recreation, education and real-life work experiences on public lands with these funds.** The Action Team is currently evaluating those efforts.

Source: MD Civic Justice Corps


Source: Chesapeake Bay Program


Source: NOAA

Providing opportunities for young people to work outdoors builds stewards for the future. Maryland's Civic Justice Corps (top photo) is a unique summer program for students to help conserve and restore state parks.

NOAA worked with key agencies—including the U.S. Department of Education, EPA, National Science Foundation, National Aeronautics and Space Administration, and DOI—along with state and nongovernmental partners to develop a draft **Mid-Atlantic Elementary and Secondary Environmental Literacy Strategy** and a related inventory of federal programs. **The objective of the strategy is to ensure that federal programs and resources are coordinated, informed by state priorities, and fully available to and used by state partners to advance state efforts to develop and implement comprehensive environmental literacy strategies for pre-K–12 students.** It has four main goals related to students, educators, schools and the environmental education community. The document was released for informal public comment at the Mid-Atlantic Environmental Literacy Summit in November, an event that brought together national leaders and regional partners to discuss the interconnectedness of environmental education and two federal priorities: STEM—science, technology, engineering and math—and outdoor education as highlighted in America's Great Outdoors Initiative. The final strategy represents the first effort to fully align federal resources with state environmental literacy planning and implementation. It should be used as a model for similar efforts around the country and will be released in spring 2012.

Concurrent with the development of the Environmental Literacy Strategy was the initiation of several key efforts to fill critical gaps identified by partners. **The NOAA Environmental Science Training Center conducted an inaugural workshop series**

focused on the effects of climate change on the Chesapeake Bay. The Center focuses primarily on the often overlooked audience of environmental education professionals. This audience is important because of their direct role in providing environmental education content and experiences for tens of thousands of students and teachers in the region. NOAA, in coordination with the University of Maryland, Smithsonian Environmental Research Center, and others also began development of a regional STEM coalition to ensure that robust science education, related to the environment, is central to the environmental literacy efforts in the state of Maryland. This pilot program will be expanded as needed by other states.

Forestry for the Bay, a USFS program, has enrolled over 500 community woodland owners from throughout the Chesapeake Bay watershed. During this fiscal year the program has collaborated with a variety of partners to offer several landowner events and educational workshops in Pennsylvania, Maryland, Virginia, West Virginia and Delaware. In addition, a new multimedia page was added to the website to allow members to access natural resource related videos.

NPS' CBGN has historically provided support for citizen stewardship activities. Through the partnership system of parks, refuges, museums, historic sites and water trails spanning the watershed, CBGN helps the public access, enjoy, understand and appreciate the natural, cultural, historic and recreational resources and values of the Chesapeake and its rivers and engage in their stewardship. The President's Budget for FY 2011 requested $2 million for CBGN; however, Congress did not provide funding for this program. Consequently, in 2011, there was a decrease in funds available to support additional citizen stewardship activities.

Source: USDA-NRCS

Develop Environmental Markets Supporting Strategy Summary

Objective: Working collaboratively, USDA, EPA, bay states and other federal partners will develop environmental markets for the Chesapeake Bay, including the management infrastructure for measuring, reporting and verifying environmental performance for a suite of ecosystem services.

Progress toward achieving objective

The May 2010 *Strategy for Protecting and Restoring the Chesapeake Bay Watershed* identified environmental markets as an emerging, innovative tool for facilitating restoration of the Chesapeake Bay and its watershed. The strategy also called on federal agencies to develop the infrastructure for environmental markets in the Chesapeake Bay watershed.

Nutrient trading programs have been under development in the Chesapeake Bay for over a decade. Maryland, Pennsylvania, Virginia and West Virginia have all introduced some form of nutrient trading program in their state to provide wastewater treatment plants an additional option for meeting their nutrient load limits. **These programs show potential but have yet to go mainstream for a number of reasons, including limited regulatory drivers, lack of buyer and seller confidence, and unstructured financial systems. A concerted effort across the Chesapeake Bay watershed is necessary to jumpstart nutrient trading.**

USDA has led the formation of a team of more than 12 discrete federal agencies that are working together to develop protocols, tools, and guidance for water quality markets and other types of environmental markets. Team members include representatives from DOI, EPA, NOAA, FWS, DOT, Army, Navy, USACE, Council on Environmental Quality, USFS, NRCS and the USDA Office of Environmental Markets (OEM). **The interdepartmental Chesapeake Bay Environmental Markets Team (EMT) was established to facilitate collaboration among federal agencies in development of the infrastructure needed for enabling environmental markets to function effectively in the Chesapeake Bay watershed.** The EMT supports the missions of individual agencies charged with regulating environmental compliance in the Chesapeake Bay watershed as well as those supporting voluntary conservation.

The EMT is working together to build strong drivers of demand; a supply of quality credits; a transparent infrastructure; consistent standards and science-based tools to measure and verify environmental performance and define baselines; a platform for registering and tracking measurable environmental benefits over time; and cost-effective systems that bring buyers and sellers of benefits together.

2011 Action Plan key accomplishments

The EMT has met monthly since July 2010. In October 2010, the EMT established and adopted a charter for operation and a detailed work plan for 2011. In 2011, the EMT hosted a series of internal workshops for team members on the Chesapeake Bay TMDL, market infrastructure development, mitigation banking, conservation banking, and potential for marine markets.

In addition, the EMT produced a discussion paper outlining issues related to baseline eligibility requirements for water quality credits under the TMDL and submitted it to the FLC for approval. OEM is expanding its website to include an EMT section and will begin posting this paper and other EMT materials in 2012. In the interim, EMT-related materials can be obtained by contacting OEM directly.

The EMT compiled background information on verification protocols and began framework development for a credit registry. In partnership with the World Resources Institute (WRI), the EMT also hosted a stakeholder workshop in June 2011 to focus on registry structure and operation. A white paper on environmental registries was produced after this workshop.

The EMT is working closely with WRI to develop a water quality trading platform and a multi-state nutrient calculation tool for the Chesapeake Bay based on NRCS-developed, farm-scale models. Compilation of the soils, climatic and agronomic databases for the Nutrient Tracking Tool (NTT) for the District of Columbia and all states in the Chesapeake Bay was funded through a Cooperative Ecosystem Studies Unit grant from NRCS.

Federal agency missions and programs vary widely and create many opportunities to connect to market infrastructure. The ability to bring synergy and coordination to federal activities requires a better understanding of these roles and current responsibilities for the full suite of potential ecosystem services where existing markets and future market potential exists. In spring 2011, the EMT conducted a survey of federal agencies to capture this potential. The results and interpretation of the survey were distributed to the EMT in June 2011.

The Chesapeake Bay TMDL supports the development of environmental markets through its inclusion of EPA's expectation that all new or expanded loads of nutrients or sediment will be offset. Section 10 and Appendix S of the TMDL explain and identify the components EPA believes should be included in nutrient offset and trading programs. EPA also conducted a review of all of the bay jurisdictions' offset through credible and transparent programs and trading programs. The results of this program review were released in February 2012, and jurisdictions will be expected to reflect the findings of the review in their Phase II WIPs as appropriate.

Respond to Climate Change Supporting Strategy Summary

Objective: Minimize the vulnerability of the Chesapeake Bay watershed, including its habitats, public infrastructure and human communities, to adverse impacts from climate change.

Progress toward achieving objective

Agencies focused on developing information, training and guidance relevant to specific locations and resources in the watershed, primarily addressing key habitats and smaller-scale efforts with individual communities. A cohesive bay-wide effort with the states was not initiated because agencies' proposed Chesapeake Bay climate coordinators were not funded. However, important steps were taken to advance understanding of the potential effects of climate change in the watershed.

2011 Action Plan key accomplishments

Federal agencies made progress on projecting the impacts of climate and land use change on resources and localities, including:

- **Streams:** USGS studied the changes in long-term stream flow in the bay watershed to assess potential impacts of land and climate change. Land cover information for the Chesapeake Bay Land-Change Model was improved to better forecast changes in stream flow. The findings will be released in 2012.
- **Tidal marshes:** NOAA initiated a research effort led by the University of Maryland to investigate sediment and nutrient effects on tidal marshes in response to land use and climate change.
- **Forests:** USFS gave draft Northern Forest Futures reports to states to help them assess impacts of climate and land use change on forested landscapes.
- **Estuary sentinel sites:** NOAA worked with the Virginia and Maryland National Estuarine Research Reserve sites to develop an estuarine monitoring network and provide guidance for determining local water levels and linking to tidal datum.
- **Water quality:** USGS provided improved urban land-cover data to EPA that was used in the CBP watershed model. The USGS forecasts on changes in streamflow and land use will be used to better forecast potential future water quality conditions. EPA and USGS continue to work with the CBP's Scientific and Technical Advisory Committee and Pennsylvania State University to present related scenarios.
- **Counties:** NOAA is nearing completion on Coastal Change Analysis Program analysis for Maryland, Virginia and Delaware coastal counties.
- **Population:** EPA and USGS led a workshop that examined alternative future scenarios to discuss county-level population assessments. The outcomes will be used to help determine approaches to assess impacts on water quality.

CASE STUDY FOR

ADAPTING WETLAND RESTORATION TECHNIQUES

Progress on data and modeling for **considering climate effects on adapting restoration techniques** continued through interagency efforts at Poplar Island, Maryland, where dredged material from Chesapeake Bay navigation channels leading to the Port of Baltimore is being used to rebuild the island and restore more than 1,000 acres of diverse habitat. NOAA and USACE are providing data products to help guide the reconstruction in a manner that provides sustainable wildlife habitat for years to come. NOAA deployed satellite receivers at fixed locations on both the mainland and on the island. USGS continued monitoring of water birds to help assess success of the habitat restoration.

Thanks to this effort, the island's elevation and relative water levels can be monitored to a high level of accuracy. This information is critical in monitoring the effects of change, whether they stem from changes in land elevation or in water level, over time. NOAA also developed a finely resolved model of how water circulates around the island, which provides much needed data on environmental conditions that exist, and of what effect expansion of the island might have on future current patterns.

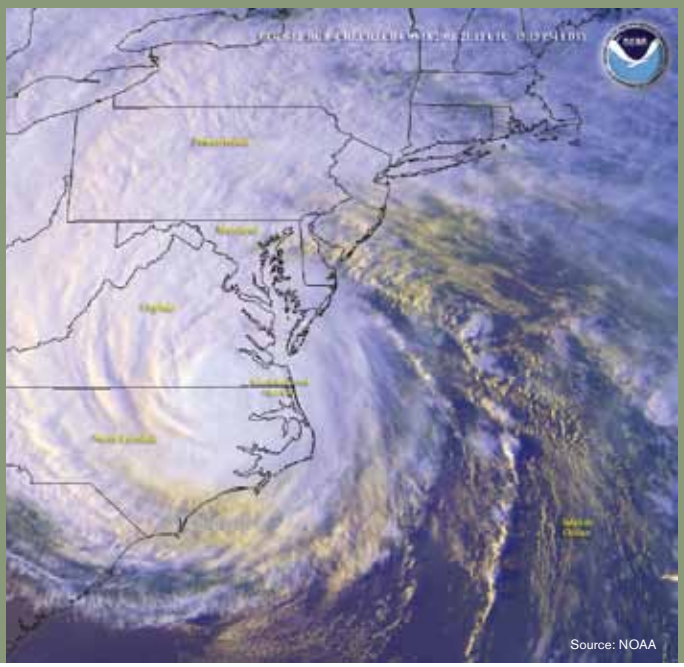
Source: Chesapeake Bay Program

Guidance and training was provided to states and local partners to assist managers with vulnerability assessments and related adaptive planning work, including:

- NOAA delivered "Roadmap for Adapting to Coastal Risk" training to the Metropolitan Washington Council of Governments.
- EPA supported training to Montgomery County, Maryland staff on a planning model to evaluate greenhouse gas implications of project design, using a large redevelopment site as a test case.
- NOAA facilitated sea level rise listening sessions in Hampton Roads, Virginia.
- NOAA produced draft guidance on "Sea Level Rise Impacts on Tidal Wetland Habitat Restoration" and worked with the Conservation Fund, Maryland, Virginia, National Geographic and other partners to complete an online sea level rise decision support tool (www.chesapeakeadaptation.org).

COORDINATING SCIENCE TO ASSESS EFFECTS OF EXTREME STORM EVENTS

USGS and NOAA monitored the storm surge during Hurricane Irene in late August 2011; this information supports better assessments of rising sea level on coastal areas. Shortly thereafter, historic rainfall from the remnants of Tropical Storm Lee affected the area, requiring a major release from the Conowingo Dam on the Susquehanna River, resulting in a sediment plume that entered the bay. USGS, NOAA and other agencies conducted water quality sampling during these events and tracked water quality using NOAA satellites and buoys. Work continues with EPA and the states to assess the effects of the events on the bay ecosystem.


Source: NOAA

While strides were made in some components of the climate supporting strategy, work to develop other planned tools and techniques to support water quality, fish and wildlife, and habitat restoration and adaptation goals were not able to be funded within the 2011 Congressional appropriation. Specifically, although climate adaptation work continued for some place-based efforts (e.g., Poplar Island, Blackwater Refuge), the USGS could not begin planned larger-scale assessments (with FWS and NOAA) of the impact of land change and sea-level rise on coastal wetlands and lands. This will limit the effectiveness of wetland restoration and protection of federal lands. Additionally, USGS could not work with USFS to expand modeling on the combined impact of land and climate change on stream conditions for brook trout. This will result in a lack of complete information on the factors affecting temperature changes, which could limit the effectiveness of restoration plans. Delays in budget availability also prevented NOAA from issuing planned grants for selected community vulnerability assessments.

Strengthen Science Supporting Strategy Summary

Objective: Strengthen science to support ecosystem-based adaptive management to more effectively prioritize, implement, monitor and evaluate the actions and policies needed, and to identify new threats to the health of the Chesapeake Bay and its watershed.

Progress toward achieving objective

Federal agencies worked with state and academic partners to strengthen science support for the CBP Goal Implementation Teams by using an adaptive-management approach to prioritize their critical science needs. The federal agencies are working with partners through the CBP Scientific Technical Assessment and Reporting (STAR) Team to address the needs of the Goal Teams and the EO outcomes.

2011 Action Plan key accomplishments

The CBP science activities are being transformed through applying an adaptive management framework to improve tools to prioritize management actions; establish a monitoring alliance to assess progress toward key outcomes; and focus research to evaluate effect of management practices. The federal agencies are working with state and academic partners to implement recommendations from a recent report on enhancing science activities through the CBP STAR team. **Federal agencies (led by EPA working with NOAA and USGS) worked with state partners to establish a Data Enterprise with an initial focus on improving how data can be connected, standardized, and used to assess progress on water quality and living marine resource management goals.** Monitoring of land cover, which supports all the EO goals, was improved and additional steps

USGS and NOAA will conduct science to address new threats to the Chesapeake Bay, including the impacts of climate change.

were taken to establish a Monitoring Alliance to better work with federal, state and local partners to provide coordinated monitoring to meet CBP needs. Additionally critical science activities were conducted to directly support each of the EO major goals and needs of the associated CBP Goal Teams. Selected highlights are listed below and further described in chapters of each EO goal.

Restore Water Quality

- EPA and USGS worked with states and the District of Columbia to **add 20 new water quality monitoring sites in the watershed** to help assess progress toward the TMDL. USGS also began monitoring and research to assess baseline conditions in two NRCS showcase watersheds and an urban watershed and will work with NRCS and EPA to better evaluate the effect of management practices on water quality improvements.
- USGS developed **new urban and suburban land information** and worked with EPA to incorporate it into the CBP watershed model to help states develop their Phase 2 WIPs. New sediment results from the USGS model were provided to NRCS to help them focus conservation practices in their priority watersheds. USGS completed new nutrient models and is working with EPA and NRCS and the jurisdictions to help them use the results to focus locations of practices for progress toward the TMDL and implementing phase 2 of the WIPs.
- EPA, USGS, FWS and NOAA began work with the jurisdictions to prepare a summary report of the impact of toxic contaminants on the bay and its watershed. This report will include information from USGS and FWS monitoring to determine the impact of toxic contaminants on fish and wildlife in the bay watershed.

Fish and Wildlife

- To advance native oyster restoration science, NOAA made careful investments in 2011 to **maximize the speed and detail of seafloor mapping** for this purpose. NOAA applied the latest in seafloor mapping techniques to establish a baseline for the bottom habitat in key locations. When combined with changes in oyster populations, water quality, and abundance of other organisms living in and around restoration sites that will be measured in 2012, an evaluation of restoration progress can be performed.
- FWS, in coordination with USFS, USGS and the Eastern Brook Trout Joint Venture, made progress to **establish science-based metrics to assess population recovery in priority sub-watersheds**.
- FWS is coordinating with the Atlantic Coast Joint Venture, Black Duck Joint Venture and USGS to **assess the carrying capacity of priority coastal marshes for wintering black ducks.**
- USGS worked with FWS to **assess factors causing die-offs and affecting the health of freshwater species** in the Potomac and Susquehanna basins. These studies included assessing the impact of toxic contaminants that will be used for a summary report in 2012 (also supports water quality goal).

Recover Habitat

- NOAA began a multi-year effort to **assess the impacts of watershed and shoreline development** on habitat quality for seagrasses and estuarine species. This effort was initiated to inform future shoreline habitat decisions and USGS is contributing to the effort by assessing habitat importance for water birds.
- NOAA made progress in data delivery in 2011 through use of the **Digital Coast**, an innovative information resource that **combines geospatial data with tools, training and other information**. Digital Coast goes beyond data discovery and access and provides the means to more effectively use information in decision making. In 2011, information on elevation, shoreline and land cover for the Chesapeake Bay were added through discussions with bay partners.
- EPA, USGS and the states **improved techniques to assess stream health** that will used as the initial conditions to track progress toward the associated EO outcome to restore streams.
- FWS is developing a **Stream Functional Framework that will identify critical stream functions** to be assessed as part of stream restoration or mitigation, as well as methods to assess functions.
- FWS, in partnership with EPA's Wetland Division, **developed a Natural Channel Design review checklist**, so that stream practitioners and regulators can review stream restoration designs using a consistent methodology.

A spectrum of scientific data from experts at a number of agencies is needed to support decision-making around the bay.

Conserve Land

- NPS and USGS led the Land Conservation Priorities System Action Team comprised of federal, state and nonprofit organizations to **develop a targeting system to support sound conservation planning and decision making**. An initial prototype land conservation priorities system has been developed based on the team's goals. Most recently, the team has met with NatureServe to explore potential connections with their LandScope system that could be used to expand the capabilities of the Action Team's prototype.

While progress was made on the science activities, USGS, NOAA and EPA have been limited in their ability to transform science support for the EO goals through applying an adaptive-management framework. A monitoring alliance, which would better coordinate programs of federal and state partners, was limited to improving land-change information and could not be expanded to meet the needs for the EO goals and CBP partnership. Federal agencies (led by EPA working with NOAA and USGS) began to establish a Data Enterprise, with an initial focus on water quality, but could not address improving data sharing for the other EO goals.

Implementation and Accountability Supporting Strategy Summary

Objective: The EO recognizes the federal government alone cannot achieve the goals and outcomes needed to restore and protect the Chesapeake Bay and its watershed without significant collaboration with state and local governments, nongovernmental organizations and citizens.

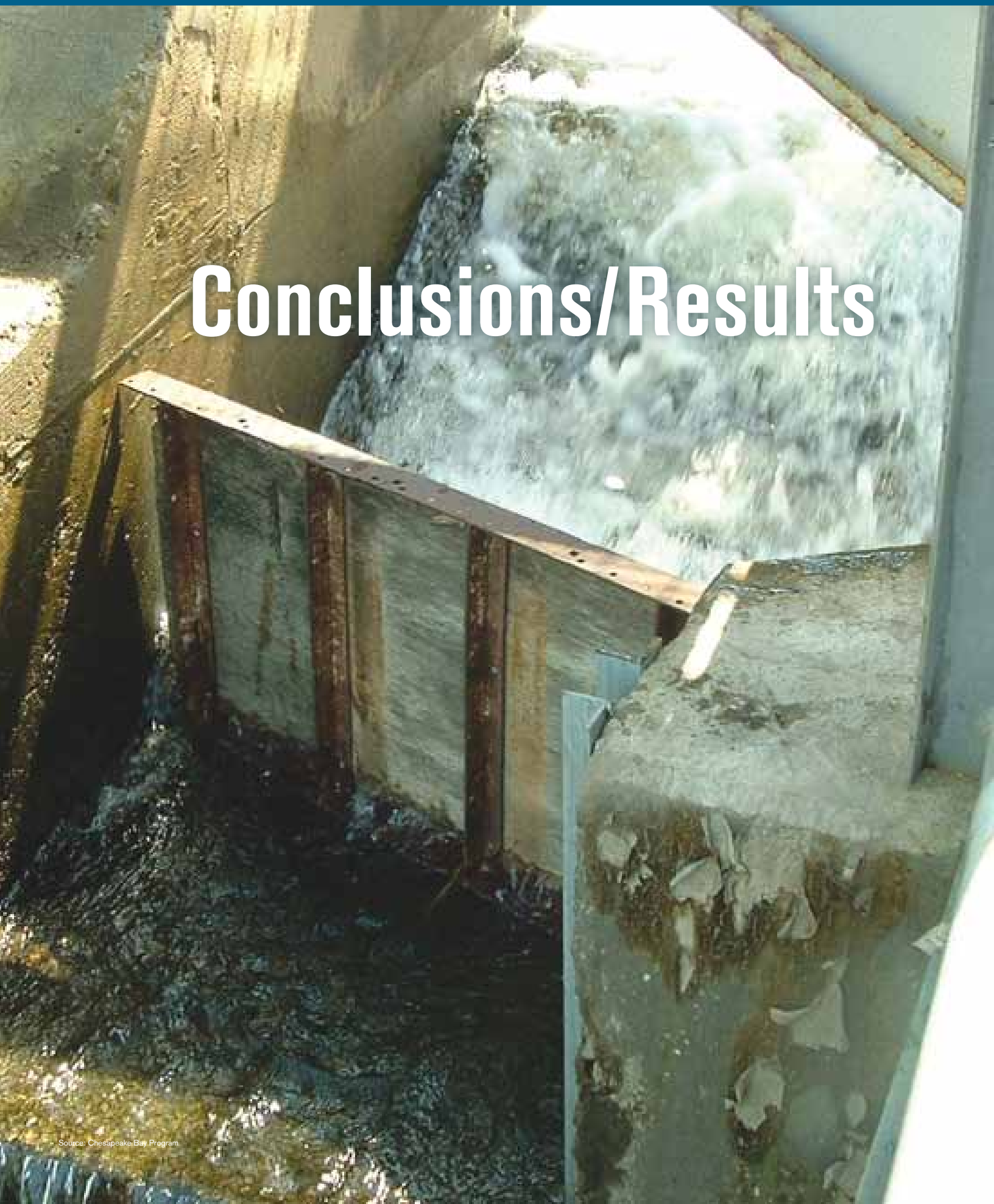
2011 Action Plan key accomplishments

The FLC recognized the periodic need to convene to ensure ongoing collaboration among the federal agencies to carry out implementation responsibilities under this EO. Further, the EO recognized that the federal government cannot achieve the goals and outcomes needed to restore and protect the Chesapeake Bay and its watershed without significant collaboration with state and local governments, nongovernmental organizations and the citizens living in the watershed. The EO Strategy found that much of the structure necessary for this collaboration was largely in place in the CBP partnership, and that it was necessary to clearly define the role of the CBP in implementation of this strategy.

The FLC and the CBP's Executive Council convened a joint action team to develop recommendations for aligning EO Strategy goals and outcomes with those goals and commitments of the CBP. In the summer of 2011, the FLC and the Chesapeake Executive Council adopted a four stage process in which the goals, actions, and priorities of the EO and the CBP will be coordinated through the CBP partnership. This coordination began immediately after adoption of this process through the CBP's Goal Implementation Teams and will be concluded no later than the Chesapeake Executive Council meeting in 2013. This first stage relies on the use of an adaptive management decision support framework adopted by the CBP in May 2011 and on ChesapeakeStat as a tool to help the CBP manage the decision support framework and identify issues and actions that are important in achieving multiple goals.

The FLC also developed the first round of draft two-year milestones for all goals, outcomes and supporting strategies articulated in the EO Strategy. These milestones became final in January 2012 and cover the period of 2012 through the end of 2013.

Conclusions/Results



Source: Chesapeake Bay Program

Federal agencies collaborated in FY 2011 to advance the environmental health of the Chesapeake Bay and to develop and refine infrastructure and processes to support future efforts toward achieving commitments in the four goal areas and four supporting strategy sections. Progress on both fronts was commensurate with the combined federal effort's funding and resources and reflected the fact that, while efforts have been ongoing for many years, this was the first year in which this revitalized and restructured effort was in place. While significant progress was made in achieving environmental goals, setting the stage for a sustained effort to maintain a healthy bay was a major hallmark of FY 2011 combined federal work.

FY 2011, the first year in which federal government agencies operated following an Action Plan to work toward goals of the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed*, was in large part a year of building and refreshing infrastructure that will enable future successes.

- Three water quality "showcase watersheds" were established to show what can be accomplished to solve natural resource problems in targeted areas, highlighted in FY 2011 by outreach to agricultural producers.
- As a result of a meeting among the Farm Service Agency, Natural Resources Conservation Service and forest agency partners, a Chesapeake U.S. Department of Agriculture/Forestry Team formed and identified specific actions to accelerate forest buffer implementation.
- The Chesapeake Bay Program Fish Passage Workgroup completed the Maryland portion of a fish passage prioritization for the Chesapeake Bay.
- The U.S. Geological Survey, National Park Service, and an action team of other federal agencies, state governments and nonprofits developed a working prototype of the Chesapeake Land Conservation Priorities System, a web- and GIS-based tool for supporting sound conservation planning and decision making at all levels and considered a pilot by the U.S. Department of Interior for other areas of the nation.
- NPS is coordinating the Chesapeake Conservation Corps Action Team comprising state, federal and nonprofit organizations to outline the issues, needs, strategies and outcomes for growing youth conservation corps opportunities.
- The U.S. Environmental Protection Agency, USGS and the states expanded the Chesapeake non-tidal water quality network to provide monitoring data to better assess progress toward the bay Total Maximum Daily Load (TMDL).
- EPA and its partners issued the unprecedented bay TMDL on December 29, 2010, and bay jurisdictions have drafted more detailed Phase 2 Watershed Implementation Plans (WIPs) as a roadmap for reaching the TMDL allocations by 2025. In addition, both federal and bay jurisdictional partners have drafted short-term two-year milestones to ensure that all partners keep on the very aggressive path to achieving the allocations (finals of the Phase 2 WIPs and the two-year milestones will be completed in FY 2012).

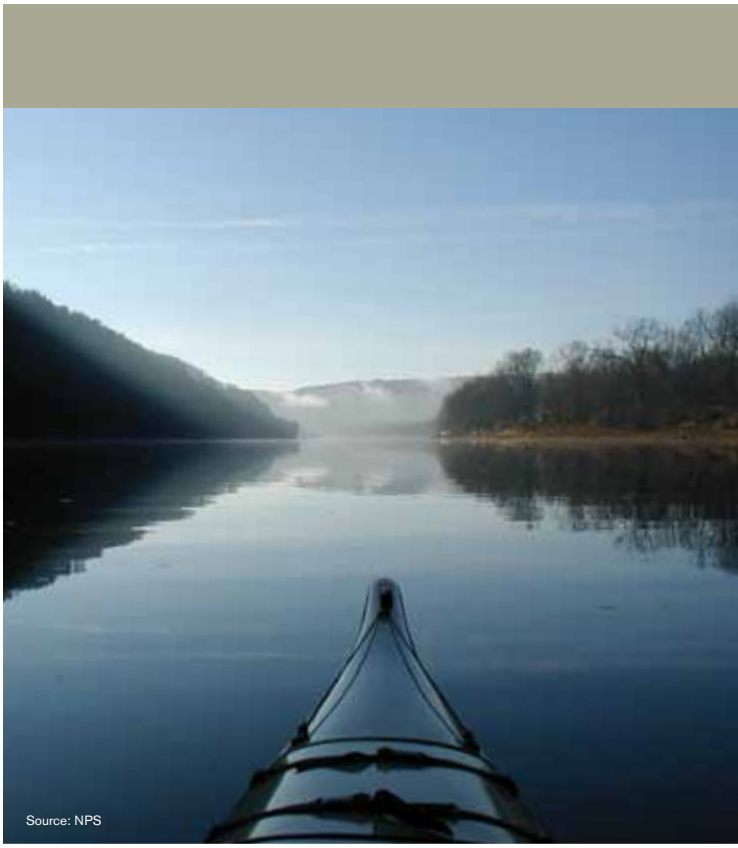
While much of FY 2011 focused on setting the road map for the way forward, significant progress toward overall *Strategy for Protecting and Restoring the Chesapeake Bay Watershed* goals was achieved.

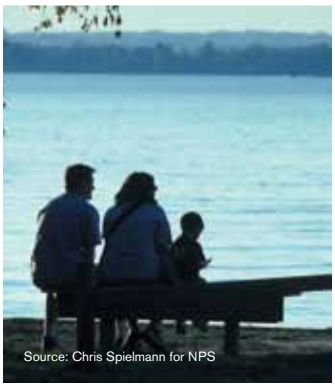
- NRCS treated more than 650,000 acres of agricultural working lands in priority watersheds with at least one conservation practice.
- Projects to restore 600 acres of coastal marsh were implemented, and 148 stream miles were opened to fish passage.

- Science delivered needed information—for example, the National Oceanic and Atmospheric Administration Chesapeake Bay Interpretive Buoy System (CBIBS) provided real-time information on low-salinity events in the spring; the onset of hypoxia in the mainstem of the bay over the summer; and monitored high turbidity levels resulting from late-summer weather events (Hurricane Irene; remnants of Tropical Storm Lee). USGS provided analysis showing nutrient levels in the watershed are decreasing, which shows progress toward TMDL goals.
- The U.S. Fish and Wildlife Service improved water management capability at Eastern Neck Wildlife Refuge by installing two water control structures, creating two impoundments for a total of 9-10 acres.
- Forestry for the Bay collaborated with partners to offer landowner events and educational workshops in Pennsylvania, Maryland, Virginia, West Virginia and Delaware, and added a new page to their website that features natural resource-related videos.
- EPA inspected 208 Clean Air Act and Clean Water Act facilities in the bay watershed, entered into 6 civil judicial settlements and issued 62 administrative orders covering 116 facilities in 6 states and the District of Columbia. These actions are expected to reduce approximately 271 million pounds of sediment to the bay watershed annually once implemented.

Many of the FY 2011 highlights featured collaboration among federal agencies, eliminating duplication of effort, enabling best use of federal resources, and allowing each agency to bring its specific skills to bear on a given project—meaning that the total is more than the sum of its parts.

- USGS and FWS together are assessing factors affecting the health of freshwater fish


Source: NPS


Source: Chris Spielmann for NPS


Source: NPS

Access to the water connects Americans with the outdoors. If a core Chesapeake restoration goal is to make the bay and its tributaries "fishable and swimmable," then increasing public access to the water is not only an end goal, but also a necessary step to get there.

in the Potomac and Susquehanna basins, and working with EPA and NOAA to summarize the impact of toxic contaminants on the health of fish and wildlife.

- The Sustainable Fisheries Goal Implementation Team, led by NOAA and including representation from a variety of federal and state agencies, nongovernmental organizations and other stakeholders, is applying the most up-to-date science toward fisheries management issues including oyster restoration and the blue crab population.
- USDA led the formation of a team including more than 12 federal agencies working together to develop protocols, tools and guidance for water quality markets and other types of environmental markets.
- A NOAA-led team, including the U.S. Department of Education, EPA, National Science Foundation, National Aeronautics and Space Administration, DOI, and state and nongovernmental partners, developed a draft Mid-Atlantic Elementary and Secondary Environmental Literacy Strategy, designed to help state partners advance their environmental literacy efforts.
- The U.S. Army Corps of Engineers and NOAA collaborated on providing data products to help guide reconstruction of Poplar Island in a way that provides sustainable wildlife habitat for years to come.
- EPA convened a workgroup for federal facilities to coordinate the actions that will achieve the federal share of pollution reductions needed for the TMDL. The Federal Facilities Workgroup has representatives from 10 federal departments or agencies that own land and facilities in the watershed. The workgroup met regularly to share information and discuss progress in working with the bay jurisdictions on the WIPs.

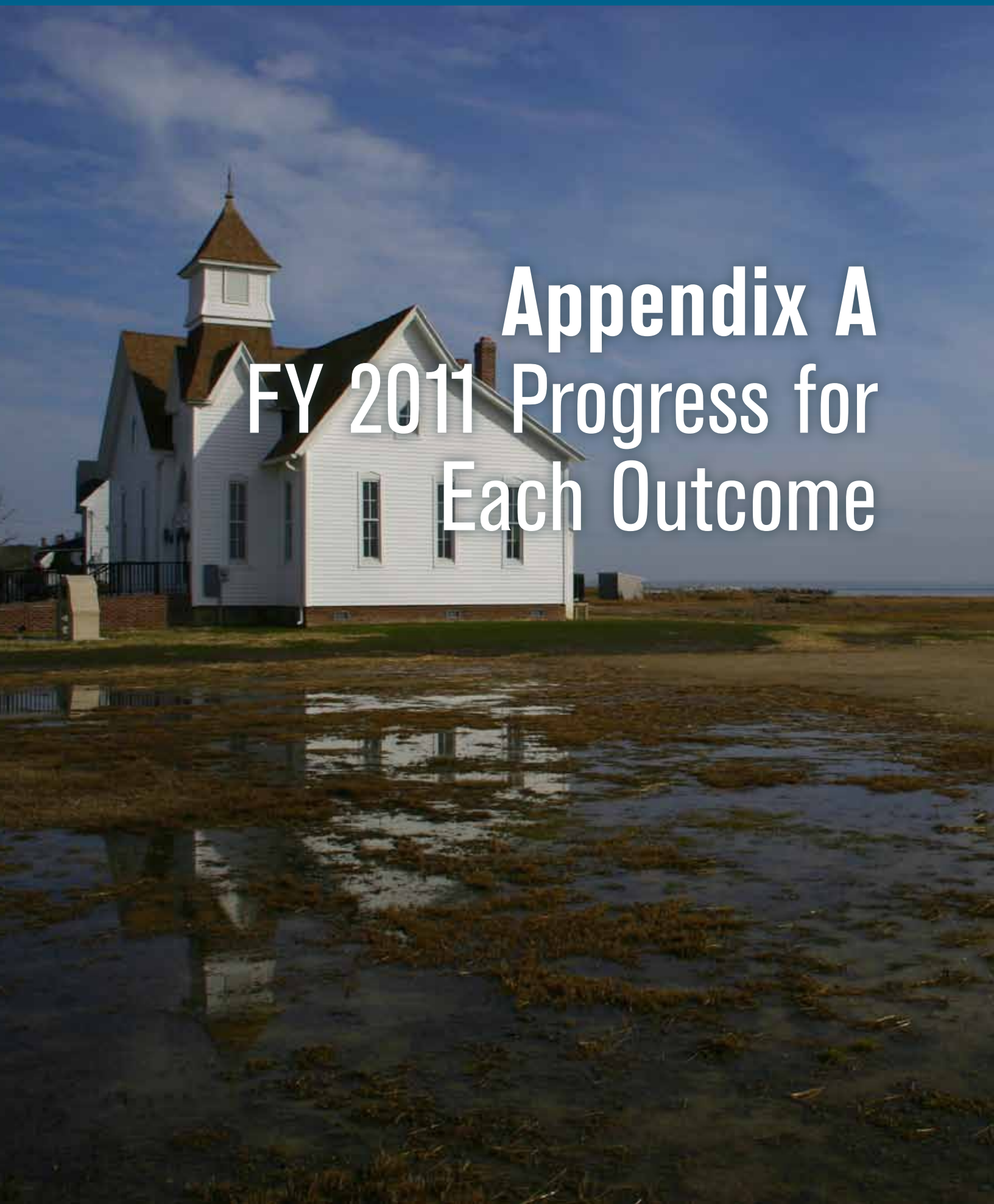
But challenges remain, particularly where capabilities to protect and restore rely on funding.

- Significant funding is needed to begin the planning to restore wetlands at Barbados Island; those funds were not available in 2011.
- Implementation of oyster restoration and priority stream and wetland restoration and conservation projects depend on additional funding.
- Several tools and techniques to support water quality, fish and wildlife, habitat restoration and adaptation to climate change goals were not able to be funded.

Overall, prospects for the future health of the bay are looking up, thanks to renewed commitment on the part of the federal government through the EO process. **This effort will be lengthy and sustained; setbacks along the way due to lack of funding, competing priorities and even weather conditions are inevitable—but not insurmountable.**

Experts and scientists at the involved federal agencies are determined to achieve the goals set forth in the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed*. To date, they have achieved measureable successes toward overall goals, and are thoughtfully plotting the way forward, using best science and collaborative decision making to ensure all involved resources are used in a well-planned manner. Collaboration among these agencies and with state and local governments, nongovernmental organizations, academia, community groups and individual citizens will allow the goals to be met.

After the first year of implementing the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed*, forward progress is evident, with more tangible protection and restoration poised for action.



Appendix A
FY 2011 Progress for Each Outcome

2025 EO Outcomes	Progress in FY 2011	Explanation/Status
Restore Water Quality		
Tidal Waters: Meet water quality standards for dissolved oxygen, clarity/ underwater grasses and chlorophyll *a* in the bay and tidal tributaries by implementing 100 percent of pollution reduction actions for nitrogen, phosphorus and sediment no later than 2025, with 60 percent of segments attaining water quality standards by 2025. ***2009 Baseline Condition:*** *89 of the 92 segments of the bay and its tidal waters are impaired.* *For pollution reduction actions, the 2009 baseline is 0 percent. The universe is 100 percent goal achievement by December 31, 2025.*	2011 data are currently unavailable for estimated pollutant load reductions. In 2010, percentage toward meeting 2025 goal: Nitrogen: 8 percent Phosphorus: 1 percent Sediment: 11 percent Would need an average rate of 7.5 percent per year for nitrogen, phosphorus and sediment to meet 2025 outcome.	**Ahead** for meeting nitrogen and sediment goals, **Behind** in meeting phosphorus goal.
	# of Segments: Under Development	Methodology is currently being developed to measure this
Stream Condition: Improve the health of streams so that 70 percent of sampled streams throughout the Chesapeake watershed rate fair, good or excellent, as measured by the Index of Biotic Integrity, by 2025. ***Baseline Condition:*** *45 percent of sampled streams are rated fair, good or excellent.*	Under Development	A new technique is being developed by December 2013 to assess changes in stream health.
Agricultural Conservation: Work with producers to apply new conservation practices on 4 million acres of agricultural working lands in high-priority watersheds by 2025 to improve water quality in the Chesapeake Bay and its tributaries. ***Baseline Condition:*** *The baseline condition was set at zero in May 2010 to begin counting new conservation practices.*	From May 2010 to September 2011, NRCS treated more than **650,000 acres** of working lands in priority watersheds with at least one conservation practice.	**Ahead:** Apply new conservation practices on an average of 270,000 acres per year to meet the 2025 outcome.

2025 EO Outcomes	Progress in FY 2011	Explanation/Status
Toxic Contaminants Outcome: Work with state and local governments and stakeholders to significantly expand understanding of toxic pollutant contamination in the bay and its watershed and to develop contaminant reduction outcomes by 2013 and strategies by 2015. ***Baseline Condition:*** *A baseline condition for toxic contaminants was not developed for the EO Strategy.*	NA	No environmental outcome is currently available for this area.
Recover Habitat		
Wetlands Outcome: Restore 30,000 acres of tidal and non-tidal wetlands and enhance the function of an additional 150,000 acres of degraded wetlands by 2025. ***Baseline Condition:*** *The National Wetlands Inventory estimates that in 2009, 1 million acres of tidal and non-tidal wetlands were available in the Chesapeake watershed for restoration or enhancement.*	Data for 2011 for wetland acreage restored and enhanced are not yet available. An ESTIMATE from the most recent 3 year averages (2008-2010) for wetland acreage restored is 1,107 acres and enhanced is 8,088 acres across the watershed as reported in the Bay Barometer. We expect similar progress in FY 2011.	Wetland restoration and enhancement data will be collected from partners in late winter 2012.
Forest Buffer Outcome: Restore riparian forest buffers to 63 percent, or 181,440 miles, of the total riparian miles (stream bank and shoreline miles) in the bay watershed by 2025. ***2009 Baseline Condition:*** *58 percent of the 288,000 (167,040 miles) riparian miles in the bay watershed have forest buffers in place, leaving 14,400 miles to restore by 2025.*	Partners added **247 miles**, making the cumulative miles since 2010, **584.5 miles**.	**Behind:** The average baywide restoration should be 900 miles per year. Since the EO Strategy, Chesapeake Bay Program partners have averaged 292.3 miles per year. There are many competing priorities for the management of riparian land. We are working with NRCS and FSA to help prioritize the riparian forest buffer practice over other options.

2025 EO Outcomes	Progress in FY 2011	Explanation/Status
Fish Passage Outcome: Restore historical fish migratory routes by opening 1,000 additional stream miles by 2025, with restoration success indicated by the presence of river herring, American shad and/or American eel. ***Baseline Condition:*** *As of 2009, approximately 1,924 stream miles in the Chesapeake Bay watershed have been opened and are accessible for fish migration.*	148 stream miles were opened for fish passage, 114 of those miles are accessible from the mainstem of the bay.	**Ahead:** In order to meet the outcome an average of 67 stream miles per year must be opened during the period of 2011-2025.
Sustain Fish and Wildlife		
Oyster Outcome: Restore native oyster habitat and populations in 20 tributaries out of 35 to 40 candidate tributaries by 2025. ***Baseline Condition:*** *There are several tributaries with ongoing restoration of oyster reef habitat; zero tributaries have been evaluated per the recently established oyster restoration performance metrics.*	Under Development Harris Creek (an oyster sanctuary in Maryland) has been targeted by Maryland Department of Natural Resources, USACE and NOAA for intensive tributary scale restoration. Performance metrics were established to evaluate restoration success and progress.	Harris Creek is the first of the twenty tributaries selected. Site selection is underway and reef construction and seeding is expected spring to summer 2012. NOAA, USACE and the states are also identifying four to six priority tributaries for restoration.
Blue Crab Outcome: Maintain sustainable blue crab interim rebuilding target of 200 million adults (1+ years old) in 2011 and develop a new population target for 2012 through 2025. ***Baseline Condition:*** *The 2010-2011 Blue Crab Advisory Report indicated the abundance of adult blue crabs was 254 million.*	The 2010-2011 Blue Crab Advisory Report indicated the abundance of adult blue crabs was 254 million exceeding the current rebuilding target. The 2011 Blue Crab Stock Assessment was completed and served as the scientific basis used by the Chesapeake Bay Stock Assessment Committee to recommend a new female-specific target for 2012.	**Ahead:** A new (female-specific) target has been recommended by the Chesapeake Bay Stock Assessment Committee for adoption in 2012.

2025 EO Outcomes	Progress in FY 2011	Explanation/Status
Brook Trout Outcome: Restore naturally reproducing brook trout populations in headwater streams by improving 58 sub-watersheds from "reduced" classification (10-50 percent of habitat lost) to "healthy" (less than 10 percent of habitat lost) by 2025. ***Baseline Condition:*** *The Eastern Brook Trout Joint Venture classified 388 of 1,294 sub-watersheds in Chesapeake Bay as "reduced" for brook trout.*	Under Development	2011 data have not yet been assessed. Will be available for the 2012 Progress Report. Data collected every 5 years.
Black Duck Outcome: Restore a three-year average wintering black duck population in the Chesapeake Bay watershed of 100,000 birds by 2025. ***Baseline Condition:*** *Recent mid-winter aerial surveys estimated the 2007-2009 rolling three-year average at 37,158 black ducks in the Chesapeake Bay.*	The 2009-2011 rolling three-year average was estimated to be **47,269** black ducks in the Chesapeake Bay.	**On Target:** We need a sustained increase of at least 5,000 birds per year over 12 years in order to get to 100,000 by 2025, and while the 3 year average jumped by twice that, it was likely due to weather patterns rather than increased habitat availability here; i.e., heavy ice in the Northeast portion of the Mid-Atlantic flyway early last winter, which pushed birds down in to the Chesapeake prior to the Mid-Winter survey being flown.

2025 EO Outcomes	Progress in FY 2011	Explanation/Status
Conserve Land and Increase Public Access		
Land Conservation Outcome: Protect an additional 2 million acres of lands throughout the watershed currently identified as high conservation priorities at the federal, state or local level by 2025, including 695,000 acres of forest land of highest value for maintaining water quality. ***Baseline Condition:*** *7.8 million acres protected watershed-wide.*	NPS and USGS, in partnership with NatureServe, began process to develop system that will track acres conserved. System to be completed in 2012 and will be used to track future annual acres conserved.	Beginning in 2012, state agencies will begin providing data to track progress toward the additional 2 million acre goal.
Public Access Outcome: Increase public access to the bay and its tributaries by adding 300 new public access sites by 2025. ***Baseline Condition:*** *761 public access sites providing access to the bay and its tributaries exist in the District of Columbia, Maryland, Pennsylvania and Virginia; data on existing access sites in New York, Delaware and West Virginia are to be collected in the future.*	In 2011, NPS conducted assessment to update public access baseline. Final Public Access Plan to be released in 2012 will contain new baseline. Future increases will be measured against this new revised baseline.	Methods for measurement are currently being developed. Will be available in 2012.