Executive Order 13508

Progress Report

Strategy for Protecting and Restoring the Chesapeake Bay Watershed

March 28, 2013

FY2012

Developed by the Federal Leadership Committee for the Chesapeake Bay

Cover photos courtesy of Chesapeake Bay Program

Introductory Letter

Fiscal Year 2012 was a year of significant progress toward restoring and protecting the Chesapeake Bay. Both in terms of tangible, on-the-ground and in-the-water accomplishments, as well as incorporating science into deliberations and determination of the next steps for future years. The team of federal agencies and partners working in response to the President's 2009 Executive Order has increased demonstrably the momentum toward achieving the vision of a healthy Bay.

As representatives of the federal agencies directed by the President to take up the charge in this effort, we are pleased to share with you a look back at work accomplished from October 1, 2011, through September 30, 2012. In reviewing the comprehensive list of accomplishments provided by each of the agencies, we note that many, if not most, of these accomplishments rely on partnerships, not only among federal agencies, but also with state and local agencies, academic institutions, nonprofit organizations, community groups, and individuals. While the federal effort often brings a substantial amount of resources to the table, these partnerships augment what is possible.

This network of partners will build on work accomplished in FY 2012 through efforts detailed in the FY 2013 Action Plan, released in December 2012, which is available on the Chesapeake Bay Executive Order website. We look forward to delivering an update on those planned milestones and activities to you next year.

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Executive Summary

Executive Order 13508, signed by President Obama in May 2009, mandated that federal agencies collaborate on development and implementation of the Strategy for Protecting and Restoring the Chesapeake Bay, released in May 2010. The federal agencies are also required to develop annual action plans and progress reports; these are released by the Federal Leadership Committee (FLC), which includes representatives from each of the federal agencies participating in this effort. The FLC 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.

To clearly communicate the extensive list of work done in FY 2012 , this Progress Report adopts a standard format for reporting accomplishments. For each Executive Order Goal (Restore Clean Water; Recover Habitat; Sustain Fish and Wildlife; and Expand Citizen Stewardship), the goal itself is stated, along with the outcomes and baseline conditions set for those areas. Then, for each outcome, after a brief narrative featuring highlights from FY 2012, milestone progress is reported in tabular form. Finally, a comprehensive bulleted list of accomplishments describes a range of activities completed by participating agencies and partners.

Updates are also included on objectives, progress toward outcome, two-year milestones and key accomplishments from FY 2012 for the supporting strategies: Expand Citizen Stewardship; Develop Environmental Markets; Respond to Climate Change, and Strengthen Science.

Selected highlights from the goals and supporting strategies are noted here; full details are included in the relevant sections in this report.

Restore Clean Water:

- Completed Phase II Watershed Implementation Programs (WIPs) and two-year milestones in partnership with Bay jurisdictions and federal agencies in support of the Chesapeake Bay Total Maximum Daily Load (TMDL).
- Expanded water-quality monitoring and analysis, including adding new non-tidal monitoring stations, maintaining existing tidal observation platforms, updating water-quality trends.
- Implemented conservation practices in priority watersheds, including new waste storage facilities to help farmers manage manure; planting new acreage of cover crops to reduce nutrient losses; and increasing ways to exclude livestock (and their resulting wastes) from streams.
- Released report on the extent and severity and potential biological effects of toxic contaminants in the Bay and its watershed.

Recover Habitat:

- Established the Working Lands for Wildlife Initiative, which combines technical expertise and financial assistance to combat the decline of needed habitat.
- Finalized and released a Chesapeake Forest Restoration Strategy that focuses on restoring forest cover in targeted areas of the landscape
- Opened 33.6 miles of stream habitat for diadromous fish as projects were completed in Virginia and Pennsylvania.

Sustain Fish and Wildlife:

- Planted 97 acres of oyster reefs in Harris Creek, out of 377 acres designated to be restored over the next few years in a plan developed by a collaborative, interagency team.
- Adopted female-specific population targets for blue crabs to be used by fishery resource managers in Bay jurisdictions.
- Worked with partners to make brook trout population data available so it can be used in land use planning and habitat restoration.

Conserve Land and Increase Public Access:

- Developed the ***Chesapeake Bay Watershed Public Access Plan*** to inform and guide expansion of Chesapeake watershed public access.
- Released **Landscope Chesapeake**, a decision tool to help identify priority areas for land conservation.
- Protected 1,360 acres at Department of Defense installations in the Bay watershed.

Supporting Strategies

- **Citizen Stewardship:** Released the Mid-Atlantic Elementary and Secondary Environmental Literacy Strategy, which will guide federal engagement in state environmental literacy planning and implementation.
- **Citizen Stewardship:** Launched the Star-Spangled Banner National Historic Trail and Byway (STSP), including developing map, guide, and interpretive signage.
- **Climate Change:** Updated and analyzed land cover for Chesapeake Bay watershed and its coastal counties; this information and analysis will be used to improve water quality models and assessment of land and climate change.
- **Strengthen Science:** Provided science on the potential effects on water quality and habitat resulting from the Conowingo Reservoir reaching its sediment storage capacity and worked with partners to develop sediment management options.

FY 2012 funding for the projects and activities described in this report are based on agency appropriations. In FY 2012, the amount that agencies utilized for Chesapeake Bay restoration and protection was over $460 million. A more detailed breakdown of the agency specific expenditures is included in the Implementation and Accountability section of this report.

Image courtesy of Chesapeake Bay Program

Goal Progress Highlights

Restore Clean Water

Goal: Reduce nitrogen, phosphorus, sediment and other pollutants to meet Bay water quality goals for dissolved oxygen, clarity, and 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 standards by 2025.

In FY 2012, a detailed methodology **was developed for measuring water quality improvement and based on that methodology, an updated baseline has been set.** The methodology takes into consideration all designated uses for all segments to meet water quality standards for dissolved oxygen, water clarity, and chlorophyll a in the tidal Chesapeake Bay. The methodology was developed using 2008-2010 criteria assessment data reported by the four tidal jurisdictions (Maryland, Virginia, Delaware and the District of Columbia). This methodology is conservative (i.e., if assessment procedures for a criterion are not in place, the segment is assumed to be impaired), uses the same assessment data that will be used by the states to delist impaired waters and ensures we report the best available measure of how much of the Bay tidal waters are achieving water quality standards. There are 92 segments in the Chesapeake Bay's tidal waters and each segment can have up to five designated uses and in some cases also numeric chlorophyll a criteria. Rather than reporting progress only when all designated uses are met in a segment, this methodology will report when a water quality standard is met for each of the designated uses in that segment. The EO Strategy baseline had reported that 89 of the 92 segments did not meet water quality standards. **The updated methodology reports on 289 designated-use segments, of which 28 currently meet water quality standards.**

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
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.	**Strategy Baseline:** 89 of the 92 segments of the Bay and its tidal waters are impaired. **Updated Baseline:** Out of 289 designated-use segments, 28 currently meet water quality standards.	Methodology has been developed and a baseline set. The methodology takes into consideration all designated uses for all segments to meet water quality standards for dissolved oxygen, water clarity, and chlorophyll *a* in the tidal Chesapeake Bay. The methodology was developed using 2008-2010 criteria assessment data reported by the Bay jurisdictions.	**Under Development.** 2012 information will not be available until summer 2013. Results at that time will be available on www.chesapeakebay.net
	For pollution reduction actions, the FY 2010 baseline is 0%. The universe is 100% goal achievement by December 31, 2025.	**FY 2013 target is 22.5 percent** of goal achieved for implementing nitrogen, phosphorus and sediment pollution reduction actions to achieve final TMDL allocations, as measured through the phase 5.3 watershed model. (cumulative from FY 2010 baseline)	**Ahead.** 2012 data currently unavailable for estimated pollutant load reductions. In 2011, percentage toward meeting 2025 goal: 21% for Nitrogen 19% for Phosphorus 30% for Sediment
		Reduce EPA's portion of air deposition load to tidal surface waters by an estimated 350,000 pounds during the 2012-2013 milestone period for a total of approximately 2.5 million pounds of nitrogen reductions from 2009 to 2013.	**On Track.** 2012 data not available at this time. In 2011, Atmospheric Deposition to Tidal Water was reduced 2.12 million pounds since 2009.

2012 Action Plan Key Accomplishments

- In FY 2012, **all seven Bay jurisdictions submitted draft Phase II WIPs,** and six submitted final Phase II WIPs. Based on the U.S. Environmental Protection Agency's (EPA) comprehensive evaluation and extensive negotiations, the final Phase II WIPs committed to additional strategies to restore local waters and the Chesapeake Bay and were the result of extensive coordination with federal and local partners within each jurisdiction. These locally-driven plans represent the strongest blueprints to guide real implementation in the Chesapeake Bay Watershed to date.
- In FY 2012, all seven Bay jurisdictions and several federal agencies **committed to specific actions to improve water quality** in 2012 and 2013. EPA carefully reviewed the pollution reduction and programmatic elements of jurisdictions' draft and final milestones and worked with them to improve these near-term commitments.

2012 Action Plan Key Accomplishments (cont.)

- **Provided $20.3 million in grants to the states** for implementation and regulatory and accountability actions in the watershed. (EPA)
- **Leveraged grant programs,** providing $10 million to the National Fish and Wildlife Foundation's (NFWF) Chesapeake Bay Stewardship Fund, including $4 million for local governments and $1 million for the Anacostia. (EPA)
- **Provided Clean Water Act (CWA) grants to Bay jurisdictions** totaling 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. Provided more than $3 million in grants to support state tidal and non-tidal monitoring programs. (EPA)
- **Completed a comprehensive work plan for offset and trading programs** in support of the Chesapeake Bay TMDL. The work plan calls for development of approximately one dozen technical memoranda in 2013-2014 in coordination with the states, Chesapeake Bay Program Trading and Offsets workgroup, and others. (EPA)
- 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.** For Federal fiscal year 2012, the preliminary results of compliance and enforcement activities are as follows. EPA's CWA/ National Pollutant Discharge Elimination System (NPDES) Enforcement program completed a total of 30 inspections at concentrated animal feeding operations (CAFOs). A total of 39 stormwater inspections were conducted and six inspections were conducted at waste water facility/permittees in the Bay watershed. Twenty-three Administrative Compliance Orders were issued requiring permittees to address permit violations that had an estimated value for complying action of $337,501. Seven administrative penalty orders were issued and 13 final penalty orders were executed with a total of $1,162,449 in penalties with a value of complying actions of $829,670. In addition, under the Clean Air Act, EPA conducted 24 inspections, entered into one judicial settlement, and issued eight enforcement actions in the Chesapeake Bay airshed. EPA also conducted a number of NPDES Permit Reviews —103 wastewater facilities and 8 MS4's. Of which, EPA objected to 1 wastewater permit and all 8 MS4's.
- **The U.S. Department of Defense (DoD) established Water Quality Programmatic Two-Year Milestones** for 2012–2013 by supporting jurisdictions' Phase II WIP development in FY 2012 and worked in FY 2012 to develop a Best Management Practice (BMP) Operation and Maintenance Policy by the end of CY 2013. **DoD completed BMP Opportunities Assessments and Stormwater Improvement Plans at installations throughout the Bay watershed** to improve the quality of stormwater runoff in support of the Chesapeake Bay TMDL.
- **EPA used new results from new nutrient U.S. Geological Survey (USGS) SPARROW models to refine priority agricultural watersheds.** EPA and the jurisdictions focused restoration funding into these priority areas because they provide the greatest potential benefit to reduce agricultural loads. National Resources Conservation Service (NRCS) had used previous USGS results to identify priority watersheds for focusing Chesapeake Bay Watershed Initiative from the 2008 Farm Bill.
- **EPA and USGS worked with Chesapeake Bay Program (CBP) partners to enhance monitoring and assessment** in support of watershed restoration by first, working with partners to expand non-tidal water quality network by adding 20 new sites, second, providing analysis of concentration trends that showed nutrients improving at a majority of sites in the Bay watershed, and third, continuing USGS monitoring and research of water quality in support of NRCS "showcase watersheds" and selected urban and suburban watersheds.
- **USGS developed new land use/cover data** used by EPA in the CBP watershed model to assess progress toward the Chesapeake Bay TMDL. Additionally, USGS synthesized reportable information on U.S. Department of

RESTORATION
SPOTLIGHT

Wastewater overhaul to cut pollution in West Virginia

In West Virginia's Eastern Panhandle, upgrades to the Moorefield Wastewater Treatment Plant will replace four existing plants with one new system, marking a significant milestone in the headwater state's efforts to curb pollution and improve water quality. Expected to go into operation this fall, the plant will significantly reduce nitrogen and phosphorus from West Virginia wastewater. As wastewater science engineering has improved and incentives for upgrading have grown, more plants have begun making changes. Plants like Moorefield expose wastewater to nutrient-hungry microbes that feed on nitrogen and phosphorous; the resulting sludge can be turned into compost rather than fodder for the local landfill. While the Moorefield plant will help curb pollution flowing into the Bay, it will first curb pollution in the South Branch of the Potomac River. "The South Branch of the Potomac is a unique place," said EPA's Rich Batiuk. "People fish there, they swim there. This new plant helps more than the Chesapeake Bay."
– Chesapeake Bay Program

Image courtesy of Chesapeake Bay Program

Agriculture (USDA) conservation practices by county and finalized an automated data aggregation protocol for reporting NRCS and Farm Service Agency (FSA) conservation practice data at the small watershed scale. This will be used to help verify implementation of practices in the Bay watershed.

- **USGS completed a groundwater model of the Delmarva Peninsula intended to help explain nitrogen trends on the Eastern Shore** and help understand lag time between implementation of practices and detection of a water quality response.
- In anticipation of Chesapeake Bay TMDL requirements, **DoD proactively completed stormwater assessments** at many installations in the Bay watershed including:
  - Initiation of the National Defense Center of Energy and Environment (NDCEE) Technology Transfer of Chesapeake Bay TMDL Watershed Best Management Practices project, which will assist DoD installations in responding to the Chesapeake Bay TMDL. Upon completion, the NDCEE project will result in a system of BMP Technologies and Methodologies available to transfer to all DoD installations within the Bay watershed.
  - Completion of BMP Opportunities Assessments at six DoD installations in the Bay watershed and awarding of contracts at five additional installations in the Bay watershed in FY 2012. Completion of Stormwater Improvement Plan projects at installations to meet Chesapeake Bay TMDL requirements.
- The National Oceanic and Atmospheric Administration (NOAA) continued providing real-time environmental monitoring data. The ten buoys in the Chesapeake Bay Interpretive Buoy System (CBIBS) array all operated consistently and reliably, providing real-time environmental monitoring data. Operations and maintenance of water quality sensors has been integrated with Maryland and Virginia, and agreements have been reached for CBIBS data to be entered into the states' shallow water monitoring quality control process. Details are available on the Interpretive Buoy System

website. The CoastWatch East Coast Node routinely distributed satellite remote sensing data products that provide information about chlorophyll a concentrations, total suspended matter, temperature, salinity, and turbidity for the Chesapeake Bay on the CoastWatch website.

Adaptive Management/ Steps to Improvement

- Translating pollution reduction allocations to a local scale in Phase II WIP process. (EPA)
- Working with the Chesapeake Bay Program on a midpoint assessment of the Chesapeake Bay TMDL, which will include updates to CBP tools, including models, to incorporate local data on implementation and land uses and the latest science on BMP effectiveness. (EPA, USGS, USDA)
- Financing for local implementation of the WIPs, especially stormwater. (EPA)

TOXIC CONTAMINANTS

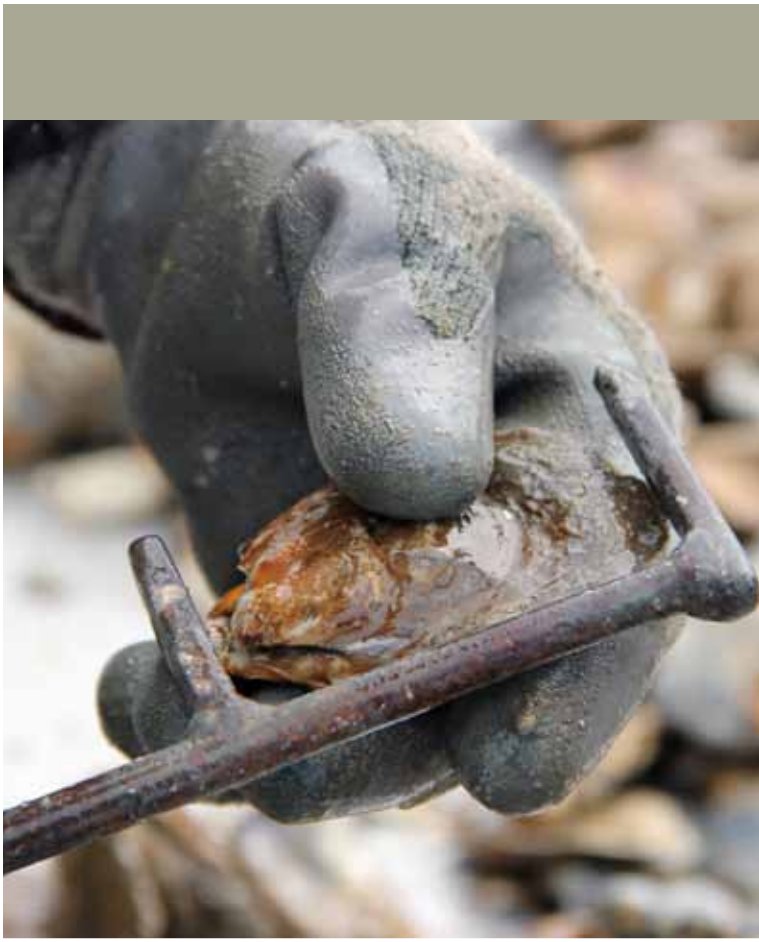
Work with state and local governments and stakeholders to significantly expand understanding of toxic pollutant contamination in the Bay and its watershed and to develop contaminant reduction outcomes by 2013 and strategies by 2015.

2012 Action Plan Key Accomplishments

EPA, USGS, and the U.S. Fish and Wildlife Service (FWS) worked with partners to summarize information for a **report on the extent and severity of toxic contaminants** and potential biological effects in the Bay and its watershed (released in January, 2013). The findings from the report will be used by CBP partners to consider whether to adopt new goals for reducing the effect of toxic contaminants on fish and wildlife and to develop plans for enhanced research and monitoring.

Adaptive Management/ Steps to Improvement

- Have the CBP Water Quality Goal Team work with partners to consider whether to adopt new goals for reducing the effect of toxic contaminants on fish and wildlife.
- Enhance research and monitoring of toxic contaminants where information was lacking to determine extent and severity.



Images courtesy of Chesapeake Bay Program

AGRICULTURAL CONSERVATION OUTCOME

Work with producers to apply new conservation practices on four 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 Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Agricultural Conservation: Work with producers to apply new conservation practices on four million acres of agricultural working lands in high priority watersheds by 2025 to improve water quality in the Chesapeake Bay and its tributaries.		Implement conservation practices that protect the watershed's soil and water resources while maintaining productive working lands.	USDA implemented conservation practices on more than 342,000 acres of high priority working lands in 2012. This is a total of approximately 999,000 acres* or 25% percent of USDA's 4 million acre goal for new conservation practices applied on agricultural working lands.

* The FY12 total includes approximately 5,000 acres not counted in previous reports.

2012 Action Plan Key Accomplishments

- In 2012, NRCS provided approximately **$62.9 million in financial assistance** along with technical assistance in the Chesapeake Bay watershed to help agricultural producers and forest landowners implement conservation **practices that will improve water quality and wildlife habitat in the watershed.**
- Through the **Chesapeake Bay Watershed Initiative (CBWI) and the Environmental Quality Incentives Program (EQIP)**, NRCS implemented more than 26,000 new conservation practices in the Chesapeake Bay Watershed including:
  - More than 300 new waste storage facilities to help farmers manage manure.
  - More than 80,000 acres of nutrient management to improve the rate, timing and method of nutrient application.
  - Nearly 3,600 acres of access control, successfully excluding livestock from streams.
  - Nearly 14,000 acres of no-till to reduce soil erosion and improve soil quality.
  - More than 90,000 acres of cover crop to reduce nutrient losses.
  - More than 38,000 feet of terraces to control soil erosion.
  - 20,000 acres of pest management to prevent and mitigate pest management risk.
  - 1.74 million feet of fencing to help control animal movement.
  - More than 800 new heavy use protection pads to provide a stable surface and protect and improve water quality.

- **NRCS funded 1,086 new CBWI contracts for $40.2 million in implementation practices** on 109,000 acres. Through EQIP, Agricultural Management Assistance, Wildlife Habitat Incentives Program and the Conservation Stewardship Program (CStP), an additional 927 contracts for nearly $23 million on 125-thousand acres were developed and will be used to implement additional conservation practices across the watershed in future years.
- **NRCS continued to support the three showcase watersheds** in Maryland, Pennsylvania, and Virginia – Conewago Creek watershed (Pa.), Upper Chester River watershed (Md.) and Smith Creek watershed (Va.). These projects were designed to demonstrate what can be accomplished by bringing people and groups together to solve natural resources problems in targeted areas. NRCS developed contracts on nearly 3,300 acres to assist producers in these watersheds to implement conservation practices. USGS also continued monitoring and research to assess baseline conditions to evaluate the effect of management practices on water quality improvements.
- **NRCS awarded Conservation Innovation Grants** (CIG) to entities in the Chesapeake Bay Watershed for projects that stimulate the development and adoption of innovative conservation approaches and technologies, including water quality credit trading and agricultural certainty. In 2012, NRCS offered a separate CIG effort for water quality trading market development and awarded five grants to entities in the Chesapeake Bay for approximately $2.35 million. NRCS also awarded a CIG grant for more than $600,000 to the Maryland Department of Agriculture to develop a certainty program.
- **NRCS announced the National Water Quality Initiative (NQWI)** to help producers in priority watersheds improve water quality and aquatic habitat in impaired streams. NRCS provided technical and financial assistance through EQIP to qualified landowners in Chesapeake Bay states for the implementation of conservation and management practices through a systems approach to control and trap nutrient and manure runoff.
- Continued to support partnership activity through Cooperative Conservation Partnership Initiative (CCPI) agreements and the showcase watersheds in Pennsylvania and Virginia. (NRCS)

Adaptive Management/ Steps to Improvement

- Continue to implement the Conservation Delivery Streamlining Initiative (CDSI) providing more personnel in the field making landowner contact and delivering conservation.
- Strategically leverage resources and reach out to partners and stakeholders to share expertise in solving conservation challenges.
- Better integrate science, assessment, and monitoring to evaluate performance.
- Identify creative and innovative ways to increase conservation participation among farmers and ranchers, including agricultural certainty programs and environmental markets.

Image courtesy of Chesapeake Bay Program

Recover Habitat

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.

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.

Image courtesy of Chesapeake Bay Program

MIDDLE CHESTER RIVER PARTNERSHIP

The Middle Chester River Watershed drains directly into the Chesapeake Bay and is critical for migratory waterfowl, other wetland-dependent wildlife, and people. Ducks Unlimited partnered with the Kent County government, Chester River Association, NRCS Kent County Soil and Water Conservation District, University of Maryland, Maryland Department of Agriculture, Washington College and the Chesapeake Bay Trust to form the Middle Chester River Partnership (MCRP). Their goal is to restore the Middle Chester River Watershed by implementing a multi-year, multi-aspect plan to address various factors contributing to the degradation of the watershed. MCRP uses a three-part initiative: (1) upgrading and replacing outdated septic systems, (2) promoting sustainable agricultural practices through the planting of buffers and the use of ecologically sound agricultural equipment, and (3) implementing wetland restoration projects, all of which will reduce excess nutrient runoff, improve wildlife habitat, and increase water quality within the watershed.

The target for the MCRP is to complete two wetland restoration projects per year over a three year period; two of these six are already complete. In 2011, the first MCRP restoration restored approximately two acres of marginally productive agricultural field into a shallow water wetland area. Native plant communities responded to the restored hydrological regime within a few months of the project's completion. The newly created emergent wetland serves as optimal resting and foraging habitat for wintering waterfowl. In April of 2012, another two acres were restored at the second restoration site just east of Chestertown, Md. The restored wetland was ripe with resources just in time for the 2012 fall migration of waterfowl along the Atlantic flyway.

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
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.	The National Wetlands Inventory estimates one million acres of tidal and non-tidal wetlands are available in the Chesapeake watershed for restoration or enhancement.	Restore 4,000 acres of wetlands every two years. Enhance 20,000 acres of degraded wetlands every two years.	**Ahead.** 2012 data not available at this time. In 2011, 3,775 acres of wetlands were restored (includes both restoration in agricultural areas and creation in urban areas).

2012 Action Plan Key Accomplishments

- In FY 2012 at Poplar Island, U.S. Army Corps of Engineers (USACE) **completed another wetland cell, opening it up to tidal flow**. The 35-acre cell was planted in spring/summer. This year marked the first time a collaborative team of federal and non-federal agencies, including FWS, Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (DNR) and NOAA, interconnected three completed cells to allow for more tidal flow and greater access for fish and wildlife species between the cells. The team also began channel grading in two 55-acre wetland cells.
- USACE continues to partner with the city of Virginia Beach to improve the quality of the surface water and other aspects of the ecosystem in the city's Lynnhaven River Watershed. In FY 2013, **USACE will complete the draft Lynnhaven Ecosystem Restoration Feasibility Study.**
- For both Montgomery and Prince George's Counties in the Anacostia River watershed, USACE is negotiating a feasibility study to evaluate aquatic habitat restoration opportunities, including stream restoration, wetland restoration/creation, and fish passage blockage removal.
- **USDA and U.S. Department of Interior (DOI) announced the Working Lands for Wildlife Initiative.** This partnership between NRCS and FWS uses technical expertise combined with financial assistance from NRCS programs, such as the WHIP and the Wetlands Reserve Program (WRP) to combat the decline of seven species whose decline can be reversed and will benefit other species with habitat needs.
- In partnership with FWS, Maryland DNR and other key partners and with grant support from the Town Creek Foundation, The Conservation Fund and Audubon Maryland-District of Columbia are **protecting the long-term persistence of extensive tidal marsh habitat in and around Blackwater National Wildlife Refuge and DNR's Fishing Bay Wildlife Management Area.** With funds awarded by the Wildlife Conservation Society's Climate Adaptation Fund, demonstration projects are being initiated to test techniques enabling salt marshes to adapt successfully to sea level rise. This project will serve as a model for long-term preservation of coastal habitats.
- The **FWS Partners for Fish and Wildlife program worked with private landowners to restore and enhance nearly 1,000 acres of wetlands in priority areas in Maryland and Delaware.** FWS' Partners for Fish and Wildlife and Coastal programs also have been working with the Delaware Forest Service and the Delaware Department of Natural Resources and Environmental Control (DNREC) to assess opportunities to reconnect wetlands and floodplains to channelized sections of the upper Nanticoke River and its tributaries. Allowing more frequent out-of-bank flows to interface with the floodplains will restore riverine functions such as carbon sequestration and sediment deposition which ultimately will improve

downstream water quality. To date, two projects have been completed and a third is in the design phase. When completed, combined acreage of the projects will exceed 150 acres.

- **NOAA continued funding studies in the Chesapeake Bay and Delaware Bay on the combined effects of shoreline hardening, watershed land use, and the invasive wetland plant *Phragmites* on habitat quality for fish.** In FY 2012, the Delaware Bay sampling along different shorelines was completed and results published. The results showed that the less disturbed Spartina shorelines (native marsh grass) had the greatest density of fish, followed by the beach shoreline. Riprap and bulkhead areas had the least fish density, and no species preferred the invasive Phragmites over the other shorelines. A similar project is now in progress in the Chesapeake Bay.

Adaptive Management/ Steps to Improvement

- Secure funding for the Wetland Reserve Program under the new Farm Bill; it will be critical to NRCS' continued capability to restore and enhance priority wetland habitats across the Chesapeake Bay watershed.

FOREST BUFFER OUTCOME

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

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Restore riparian forest buffers to 63 percent (181,440 miles) of the total riparian miles (stream bank and shoreline miles) in the bay watershed by 2025.	58 percent of 288,000 total riparian miles in the Bay watershed have forest buffers in place.	Restore 1,800 miles of riparian forest every two years (900 miles annually) in order to achieve the goal of restoring an additional 14,440 miles of riparian forest needed to reach 2025 outcome.	**Behind.** Restored 285 miles of new riparian forest buffer in 2012.

2012 Action Plan Key Accomplishments

- In 2012, **partners across the watershed restored 285 new miles of riparian forest buffers.** This contributes to a total of more than 7,760 forest buffer miles restored since 1996. Most have been planted on private agricultural lands through the USDA Conservation Reserve Enhancement Program (CREP), a voluntary cost-share program delivered through a partnership of federal, state, and local partners. Achievement of the EO outcome for 2025 will require restoring forest buffers at a rate of 900 miles per year – a dramatic increase over current implementation. Landowner enrollment in CREP and other buffer incentive programs has dropped significantly in recent years, due in part to current high commodity crop prices.
- U.S. Forest Service (USFS) worked with a wide range of partners to **complete a *Chesapeake Forest Restoration Strategy***, which will be used to accelerate and target restoration of riparian and upland forest in the watershed.

- To address ongoing challenges in buffer restoration, USDA and state forestry partners have been convening to strengthen collaboration on forest buffer goals. USFS supports this work and the ongoing forest buffer outreach and technical assistance through a number of grants to state forestry agencies and nongovernmental (NGO) partners who have effective means of outreach.
- USDA coordinators and partners in several of the Chesapeake Bay states (notably Maryland and Pennsylvania) busily contacted landowners who hold expiring riparian forest buffer contracts to inform them of the benefits of reenrollment. By agreeing to maintain their forest buffer for at least another 15 years, they will continue to receive rental payments. In 2012, 659 acres of forest buffer expired in Maryland alone.
- In 2012, USFS funding was leveraged with other partners through NFWF Chesapeake Bay grants to help with the forest buffer outcome. Examples of recent grantees include the ClearWater Conservancy, which has a comprehensive riparian improvement program underway at four degraded stream reaches in Pennsylvania, and the Center for Watershed Protection working with Clarke County, Virginia to demonstrate best practices for forest restoration as part of a watershed implementation plan.

Adaptive Management/ Steps to Improvement

- Work with partners in 2013 to draft a white paper on forest buffer progress, citing challenges and strategic recommendations to accelerate implementation. This will be used to inform and assist regional, state and local managers in creating strategies for increasing forest buffer implementation to meet TMDL targets, habitat needs, and other goals.
- Begin using the new Forest Restoration Strategy to direct program and project efforts in riparian forest buffer installation and other tree planting efforts.
- Sharpen focus on riparian forest buffer conservation by continuing to re-enroll Conservation Reserve Enhancement Program contracts and by using a new geographic tracking tool—the Land Image Analyst—to detect buffer loss.

PARTNERS COMPLETE CHESAPEAKE FOREST RESTORATION STRATEGY

Restoring forest cover across rural and urban landscapes is a critical, cost-effective way to meet multiple goals in the Chesapeake region: water quality, air quality, wildlife and fisheries habitat, and sustainable communities. In 2011-2012, USFS coordinated “strategy teams” with more than 60 representatives from across the watershed, to produce a Forest Restoration Strategy. These partner representatives included:

- Federal: USFS, NRCS, EPA , USGS, FWS, Office of Surface Mining Reclamation and Enforcement (OSM)
- State: State Forestry and other agencies from the 7 Chesapeake Bay jurisdictions
- Nongovernmental organizations such as Trout Unlimited, The American Chestnut Foundation, the Center for Watershed Protection, the Chesapeake Bay Trust, and university partners

Riparian forest buffers are the foremost example of targeting forest restoration to achieve multiple objectives, and these priority areas offer additional opportunity and benefit. The broad array of partners involved in developing the Strategy will continue to be involved in executing it in 2013 and beyond. The Strategy is available on the Chesapeake Bay Executive Order website.

Image courtesy of Chesapeake Bay Program

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, brook trout, and/or American eel.

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
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, brook trout, and/or American eel.	Approximately 1,924 stream miles in the Chesapeake Bay watershed have been opened and are accessible for fish migration.	Reopen 132 additional stream miles with the degree of restoration success measured by the presence of river herring, American shad, hickory shad, brook trout and/or American eel. To determine degree of project success, document the presence/absence of indicator species (river herring, American shad, hickory shad, brook trout and/or American eel) at 50% of fish passage projects completed. (FWS/NOAA)	**Ahead.** Opened 33.6 miles of stream habitat for diadromous fish species in 2012. The work group exceeded the two-year milestone for FY 2011-12 (132 miles) by opening a total of 181 miles of habitat for fish.

2012 Action Plan Key Accomplishments

- In partnership with Virginia and Pennsylvania, NOAA, FWS and other Fish Passage Workgroup partners **opened 33.6 miles of stream habitat for diadromous fish in 2012**, bringing the two-year progress to 181 miles opened, or 49 miles above the set milestone.
- **Developed a geographic information system to strategically identify key barriers for fish passage.** The Fish Passage Work Group has begun using this ranking to identify dam removal projects that would produce the greatest ecological gain for target fish species in the Chesapeake Bay.The Centreville Dam Removal Project, identified through the new Fish Passage Tool, was funded by American Rivers, NOAA, FWS and the Chesapeake Stewardship Fund as an example of targeting resources to high priority barrier removal projects. The Chesapeake Bay Fish Passage Tool is available online.
- **Completed design plans for the Harvell Dam Removal Project.** The project on the Appomattox River in Petersburg, Va. will restore access to 127 miles of spawning and rearing habitat for all four alosine species (American shad, hickory shad, blueback herring, and alewife), striped bass, and American eel. USACE implemented the Paint Branch Fish Passage Stream Restoration Project which is being completed in two phases along one mile of Paint Branch, in the Anacostia River watershed, in College Park, Md. Phase 1 was completed in 2012, providing fish passage past a sewer line obstruction using a step-pool like design of rocks and logs. Approximately seven miles of stream were opened to fish. In-stream structures, bank grading, and an ox-bow lake habitat were also constructed which have improved aquatic habitat and lessened sediment loads within the Anacostia River system. Phase 2,

scheduled to begin construction in 2013, will add additional in-stream structures and complete the reconnection of the stream to its floodplain along the mile-long project area.

Adaptive Management/ Steps to Improvement

- While the Chesapeake Fish Prioritization Tool is ready to identify priority fish barrier removal projects, implementation of such projects will be contingent on funding.

STREAM RESTORATION OUTCOME

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

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Stream Condition: Improve the health of streams so 70 percent of sampled streams throughout the Chesapeake watershed rate fair, good or excellent, as measured by the Index of Biotic Integrity, by 2025.	43 percent of sampled stream sites are rated fair, good or excellent. **Note:** the baseline was changed from 45 percent to 43 percent due to recent improvements in the methodology used to calculate status of stream health (based on information from 2000-2010).	50 percent of sampled stream sites are rated fair, good or excellent.	**Under Development.** While we have a method to assess the status of stream health, a companion method to look at change over time does not exist. The reasons are due to different collection techniques between states and the dates that samples are collected. During 2012, ICPRB, EPA, and the CBP monitoring team worked to develop a method to assess change in stream health over time. The method will be completed in 2013.

2012 Action Plan Key Accomplishments

- Stream health conditions were not updated in 2012 but were updated with the last two years' worth of data (2008-2010). A lag time in availability of sampling results makes this information generally available every other year. EPA, working with the states and the Interstate Commission on the Potomac River Basin through the CBP monitoring team, improved the approach to summarize condition of stream health and are currently working to find an approach to determine changes in stream health over time.
- A stream restoration workgroup, co-chaired by FWS and Maryland DNR, formed in 2012 under the CBP Habitat Goal Team to **facilitate information transfer on effective stream restoration techniques** among the states and to promote tools that assist practitioners in designing projects that will be successful in meeting intended project objectives.

- In September, the Potomac Conservancy, FWS, City of Frederick and Frederick County partnered on a project to remove a dam originally used to provide a source of drinking water. The facility no longer withdraws water; however, the dam still altered water levels and fish passage in Clifford Branch, a Potomac River tributary. Partners replaced the inlet structure and returned the 160 linear-foot stream channel to a stable state using Natural Channel Design stream restoration techniques and riparian plantings. This effort reconnected approximately three miles of brook trout habitat and significantly increased the amount of available aquatic habitat to help promote sustainable populations of brook trout and other resident fish and aquatic species. FWS will monitor for fish passage and stability for three years.

Adaptive Management/ Steps to Improvement

Maryland DNR and MDE, along with the Susquehanna River Basin Commission and The Nature Conservancy, entered into a 3-year, $1.376 million study with the Army Corps of Engineers in September, 2011 to evaluate management options for sediment built up behind Conowingo Dam.

- USACE completed the hydraulic and sediment transport models of inputs and outputs as part of the Lower Susquehanna River Watershed Assessment, as well as the data collection and surveys.
- USGS released a report showing increasing amount of sediment and phosphorus entering the Bay due to sediment filling in the Conowingo Reservoir. USGS worked with USACE to develop a sediment transport model for the Reservoir System.

GETTING SERIOUS ABOUT SEDIMENT: A LOOK BEHIND CONOWINGO DAM

In 2012, the Lower Susquehanna River Watershed Assessment study focused on information gathering, data collection and model development. For 2013, the focus will be on evaluating potential sediment management options and developing associated cost estimates. Options include, but are not limited to, the following:

- Reducing sediment yield from the watershed
- Bypassing sediment to improve vital fish and benthic habitat below the dam
- Modifying dam operations to let sediment pass through during non-critical times in storm and non-storm events
- Dredging – hydraulic and mechanical
- Enlarging storage capacity
- Innovative reuse (landfill cover, covering abandoned mines, etc.)

Sustain Fish and Wildlife

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.

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Restore native oyster habitat and populations in 20 tributaries out of 35 to 40 candidate tributaries by 2025.	There are several tributaries with ongoing restoration of oyster reef habitat; zero tributaries have been evaluated per the recently established oyster restoration performance metrics.	NOAA and USACE continued restoration in the Great Wicomico and Lynnhaven rivers and Harris Creek in 2012 and will begin focused planning and restoration in two to three additional Bay tributaries by 2013.	**On Track.** Selected Little Choptank River and Lafayette River as the next tributaries to restore. Drafted and finalized tributary plan for Harris Creek. Planted 97 acres of spat on shell in Harris Creek.

2012 Action Plan Key Accomplishments

- **Set definitions and targets for oyster restoration success, called "oyster metrics,"** including minimum oyster density and amount of area to restore, needed in order to implement the EO goal for oyster restoration. (USACE, NOAA)
- **Completed pre-restoration broad scale acoustic seafloor mapping in five Maryland tributaries.** Did pre-restoration fine scale acoustic seafloor mapping in Harris Creek. Did spatially-explicit pre-restoration oyster population assessments in Harris Creek and the Little Choptank River, to refine seeding and artificial substrate construction planning and to create restoration blueprints. (NOAA)
- Used the oyster metrics along with oyster habitat and demographic data in a GIS analysis to choose the areas to restore in Harris Creek on the lower Choptank River, which is an oyster sanctuary. The

product of this effort was a tributary restoration plan, with a "blueprint" map showing what restoration effort will be done where. This plan was finalized for Harris Creek in January, 2013. (USACE, NOAA)

- Working with state partners, **USACE funded 22 acres of new oyster substrate** (shell and rock), and NOAA provided funding to the Oyster Recovery Partnership and University of Maryland Center for Environmental Science for planting 97 acres of spat on shell. Thus, nearly 30 percent of the planting towards the newly established restoration goal for Harris Creek, 377 acres, was completed in FY 2012.
- **NOAA developed a mass-balanced Oyster Reef Ecosystem Model (OREM).** It is being used to develop simulations for exploring oyster ecosystem services.
- Collected data to assess attainment of oyster metrics for restored reefs at the Great Wicomico and Lynnhaven River oyster sanctuary reefs. Teams will continue to work towards constructing additional reefs to achieve restored tributaries. (USACE)
- USACE, NOAA, and Maryland partners worked together to streamline issuance of new aquaculture permits in Maryland by revising the Corps' General Permit for Shellfish Aquaculture. As a result, there are now **over 3,600 acres in over 310 shellfish aquaculture bottom leases** in Maryland, which will provide ecosystem services, jobs, and a safe sustainable source of domestic seafood.

Adaptive Management/ Steps to Improvement

- Find reliable, affordable, and environmentally and publicly suitable substrates to construct oyster habitat (addressing the problem of limited oyster shell for restoration).
- Resolve permitting issues associated with navigation concerns that currently preclude oyster restoration in waters shallower than nine feet in depth.

The ongoing oyster restoration in Harris Creek has been a model of collaboration among state, federal, non-governmental, and academic partners:

- Seafloor mapping data was collected by the Maryland Geological Survey and NOAA Chesapeake Bay Office.
- GIS analyses were performed by the NOAA Chesapeake Bay Office with contributions from USACE.
- Oyster population sampling was done by University of Maryland and the Oyster Recovery Partnership (ORP).
- Funding for substrate placement came from USACE and Maryland DNR, while funding for population surveys and spat on shell came from the NOAA Chesapeake Bay Office and DNR.
- DNR and USACE managed the placement of substrate, and DNR and ORP managed the planting of spat on shell.

BLUE CRAB OUTCOME

Maintain the 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.

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Maintain the 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.	The 2010-2011 Blue Crab Advisory Report indicated the abundance of adult blue crabs was 254 million. Adult female blue crab abundance was 97 million. This is below the female abundance target of 215 million crabs and above the threshold of 70 million crabs.	Implement the new female blue crab abundance and harvest reference points and develop male blue crab reference points.	**On Track.** New Female blue crab reference points were applied to the 2012 crabbing season, draft male blue crab targets have been recommended by the Chesapeake Bay Stock Assessment Committee and the 2012 Chesapeake Bay Blue Crab Advisory Report was completed.

2012 Action Plan Key Accomplishments

- Ecosystem-based management of blue crabs continued to advance in Chesapeake Bay in 2012. Highlights included **adoption of the first female-specific targets, and significant progress towards developing male-specific targets.** Approximately 97 million female age 1+ crabs were estimated to be present in the Bay at the start of the 2012 crabbing season. This number is below the new recommended target but above the new threshold (see Programmatic Milestones table for details).
- NOAA worked with state partners though the Sustainable Fisheries Goal Implementation Team to adopt the first sex-specific targets for female blue crab populations in the Chesapeake Bay. In order to ensure male abundance does not drop below a critical level relative to female abundance, threshold reference points are being developed for male crabs that would provide management with a trigger for male conservation.
- The Sustainable Fisheries GIT completed and adopted 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. The final policy is available online.

The Sustainable Fisheries Goal Implementation Team (GIT) of the Chesapeake Bay Program is composed of the state fisheries managers from around the Bay and chaired by the director of the NOAA Chesapeake Bay Office. The Sustainable Fisheries GIT draws together a diverse group of managers and scientists to improve management and recovery of oysters, blue crab, menhaden, striped bass and alosines. It focuses on advancing ecosystem-based fisheries management by using science to make informed fishery management decisions that cross state boundaries

- NOAA received funding in FY 2012 to improve Chesapeake Bay fisheries science and support interjurisdictional management efforts. Progress on these outcomes (including blue crab projects) was on target for the year based on the support received.

Adaptive Management/ Steps to Improvement

- Continue to improve harvest accountability, increasing both accuracy and timeliness.
- Continue to refine male conservation targets.

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.

NOTE: Based on work with STAR and the Brook Trout Action Team, the Chesapeake Bay Program is considering an amendment to the brook trout outcome that reflects new science and a revised restoration approach with the following language: "Restore naturally reproducing brook trout populations in Chesapeake headwater streams by increasing occupied patch area by 8 percent by 2025." This will be finalized in 2013.

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
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.	The Eastern Brook Trout Joint Venture (EBTJV) classified 388 of 1,294 sub-watersheds in Chesapeake Bay as 'reduced' for brook trout.	Improve 10 sub-watersheds every two years (NOTE: new science is being applied to adapt this milestone from the sub-watershed scale to the catchment scale)	**Under Development.** Brook Trout Action Team drafted new outcome as follows: "Enhance naturally reproducing brook trout populations by strengthening existing populations and increasing occupied patch area 8% by 2025."

2012 Action Plan Key Accomplishments

- Applied the latest science to **development of a brook trout status indicator** that will be meaningful at a local implementation scale, including information on which sub-populations of brook trout are most resilient to rising stream temperatures resulting from climate change.
- Partnered with the Appalachian Landscape Conservation Cooperative to make brook trout population assessment data available to decision makers and restoration practitioners so they can apply data to land use planning activities and habitat restoration targeting.
- Produced a video message on the importance of land stewardship, including riparian forest buffers, to restoration of brook trout in Chesapeake headwater streams.
- The FWS Partners for Fish and Wildlife and Fisheries Programs in West Virginia made progress on brook trout restoration projects with Trout Unlimited and other partners in the South River, Virginia and Seneca Creek, Kitchen Creek, South Fork Potts Creek, Whitethorn Creek, Blackthorn Creek, Harlan Run, South Fork of the Potomac River, and Knapps Creek in West Virginia.
- **The Eastern Brook Trout Joint Venture (EBTJV) Science and Data Committee (which includes FWS and USGS) completed a new assessment of brook trout populations at the catchment scale across the southern range of this species.** When combined with field-verified data and model predictions, the model uses a core set of variables and water quality characteristics that describe the health of brook trout in catchments within the Chesapeake Bay watershed. The EBTJV updates the brook trout assessment every five years. The 2011 assessment is now being reviewed by the states for accuracy. A final product is anticipated to be available for the Chesapeake Bay watershed in 2013.

- **The EBTJV worked with the USFS and other partners to complete a climate change vulnerability analysis of all brook trout habitat at the catchment scale.** This product is also undergoing review by the states. Once finalized, the climate change metrics and catchment scale assessment will help partners prioritize and select restoration projects in the watershed. The Appalachian Landscape Conservation Cooperative is working with the EBTJV and other partners to develop a web-based visualization and prioritization tool that would allow managers to easily view and analyze this new assessment data and make real-time decisions to guide actions on the ground.
- Some of the next steps for the Chesapeake Bay Program were identified in a series of workshops. The first was held in September with USGS and partner scientists identifying brook trout research priorities. The second was held with the EBTJV partners in November and looked at newly available data and models that help prioritize restoration using the new "catchment level" assessment data and "patch" metric. This new approach directs restoration effort to areas that will see the greatest and most sustainable benefit to brook trout populations, and depends on continued FWS and USGS support for completion of the following priorities:
    - Finalize analysis of New York's portion of the data to allow for a comprehensive, Chesapeake Bay watershed-wide analysis of brook trout occupancy at the catchment scale.
    - Complete development of brook trout data collection templates and distribute to all states to facilitate more consistent data collection.
    - Collaborate with EBTJV, Appalachian Landscape Conservation Cooperative and James Madison University to seamlessly conduct assessments, manage, distribute and update data for the current and all future assessments.
    - Refine and further develop patch prioritization tool based on finer scale occupancy and abundance data.
    - Assess evolutionary and adaptive capabilities of brook trout population using genetic sampling approaches and measures that address adaptability.
    - Develop research that measures and assesses the impact of unconventional oil and gas development on the Marcellus and Utica shale formations.

Adaptive Management/ Steps to Improvement

- Identify the most resilient brook trout catchments and patches (low sensitivity and low exposure) from the climate change and temperature sensitivity study (Hudy et al) and develop an associated land protection plan for brook trout.
- Use the land use/cover data in combination with the catchment level occupancy data to identify areas where planting tree and shading non buffered riparian areas would have the greatest benefit for existing populations of native brook trout (this would also possibly increase patch size of some patches).
- Use fish blockage data in combination with climate resiliency data and patch data to increase patch size in most resilient areas by surgically removing in-stream blockages at key points.
- Use the brook trout habitat predictor data (land use/land cover) in combination with occupancy data at the catchment scale to find areas suitable for brook trout that currently do not have populations. Blockages could be removed or brook trout could be relocated to colonize these suitable cold water stream systems.
- Work with the NFWF under its Chesapeake Business Plan to target and fund projects that create the greatest and most sustainable benefits to brook trout populations.

BLACK DUCK OUTCOME

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

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Restore a three-year average wintering black duck population in the Chesapeake Bay watershed of 100,000 birds by 2025.	The 2007-2009 rolling three year average was 37,158 birds.	Create 3 percent more forage on refuge lands every two years.	**On Track.** The 2010-2012 rolling three year average rose to 52,177 birds.

2012 Action Plan Key Accomplishments

- Black duck status is assessed using data collected by the Mid-Winter Waterfowl Survey, conducted in early January of each year. Mid-winter aerial surveys estimated the 2010-2012 rolling three-year average at 52,177 black ducks in the Chesapeake Bay. Federal, state and NGO partners held a workshop in spring 2012 to begin to translate the number of ducks into acres of habitat needed to feed the wintering population in support of Atlantic flyway population goals for this species. To support that effort, USGS and other partners are finalizing 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.
- Meanwhile, FWS is working to increase forage on lands in the National Wildlife Refuge System in the watershed by three percent every two years. In 2012, FWS altered management of a 6.8-acre pool on Eastern Neck National Wildlife Refuge with the expectation that it will provide excellent habitat for wintering black ducks. Using productive black duck habitat found elsewhere on the refuge as a model, the new management approach should increase black duck utilization of the impoundment. Partners also completed plans for improving two moist soil units at Blackwater National Wildlife Refuge, totaling approximately 50 acres. Permits and most of the funding have now been secured. Work is expected to begin in the spring of 2013.
- **Conducted Mid-Winter Waterfowl Survey, which calculates the 2010-2012 average for black ducks wintering in the Chesapeake at 52,177 birds.**
- Collated vegetation layers available for Patuxent Wildlife Research Center, Chesapeake Marshlands National Wildlife Refuge complex, and Rappahannock NWR complex.
- Completed a stratified random sampling design for determining sampling locations for prey biomass and completed prey biomass sampling at the Marshlands Complex.
- Collated all black duck distribution data for the refuges listed above.
- Hatched out and trained captive black ducks for foraging trials.
- Initiated foraging trials to determine functional response curves (intake of prey at different densities over a given amount of time).

Adaptive Management/ Steps to Improvement

- FWS will coordinate more closely with the Atlantic Coast and Black Duck Joint Ventures and USGS in 2013 to assess the carrying capacity of Chesapeake coastal marshes for wintering black ducks.
- Current information is limited due to the lack of local modeling. Research is needed to better assess the problem. Further understanding of critical science gaps is contingent on additional funding.

Conserve Land and Increase Public Access

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 two 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.

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Protect an additional two 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.	7.8 million acres protected watershed-wide.	Protect an additional two million acres of land by 2025, an average of 133,333 acres annually.	**On Track.** As of the end of 2011, 8,013,132 acres of land have been permanently protected throughout the Chesapeake Bay watershed.

2012 Action Plan Key Accomplishments

- Collaborated with NatureServe to develop and release **Landscope Chesapeake**, a decision tool to help identify priority areas for land conservation. The tool reflects land conservation priorities of states and federal agencies and will be used to help identify areas were conservation would provide benefit for multiple partners. (NPS, USGS)
- Developed a **land conservation strategy** for the Captain John Smith Chesapeake National Historic Trail. (NPS)
- Developed the Rivers of the **Chesapeake Collaborative Conservation proposal** in response to the Secretary of the Interior's initiative for collaborative conservation planning to protect approximately 8,700 acres between BLM, FWS and NPS. The proposal concentrates on four initial focus areas in the Potomac, Rappahannock, James and Nanticoke River watersheds along which are over 17,000 acres in conservation opportunities. A fifth future focus area on the

Lower Susquehanna encompasses opportunities for significant additional conservation.

- Hosted the **Large Landscape Conservation Workshop** in August 2012, with over 50 partners representing non-profit organizations and local, state, and federal agencies to discuss large landscape conservation practices and innovations in the Chesapeake watershed. Objectives for the two-day session included discussions of current conservation strategies and achievements, identification of high level large landscape focus areas and mutual conservation goals across geographic and jurisdictional boundaries.
- Initiated an agreement with the University of Maryland Department of Anthropology to help further the identification and mapping of **Indigenous Cultural Landscapes** for conservation and/or interpretation along the Captain John Smith Chesapeake National Historic Trail, as well as to refine the criteria and methodology guiding such identification. The Indigenous Cultural Landscape team includes staff from the NPS and FWS, representatives from Chesapeake Bay states, and American Indians. (NPS)
- Worked with land conservation partners in the lower Susquehanna to support the permanent protection of approximately 3,000 acres through the **FERC relicensing of** the Holtwood facility. (NPS, FWS)
- DoD working through the Readiness and Environmental Protection Initiative (REPI), completed projects to conserve/protect 1,360 acres adjacent to two installations in the Bay watershed including:
    - NAS Patuxent River's Atlantic Test Range worked with partners including The Nature Conservancy and the Maryland DNR to place easements on three parcels protecting 620 acres in the Nanticoke River watershed.
    - Fort A.P. Hill's Partnership working alongside members including FWS, the Virginia Outdoors Foundation, the Northern Neck Land Conservancy, The Nature Conservancy, The Trust for Public Land and The Conservation Fund acted on two separate conservation targets protecting more than 740 acres. The National Trust for Historic Preservation presented its National Trust/Advisory Council on Historic Preservation Award for Federal Partnerships in Historic Preservation to the Army and Fort A.P. Hill for its work using the Army Innovative Mitigation Strategy to preserve a 500-acre easement protecting rural historic landscapes, a late prehistoric/John Smith-era Indian settlement and indigenous cultural landscapes within the Camden National Historic Landmark along the Rappahannock River. Co-recipients of this award were The Conservation Fund, the Rappahannock Tribe of Virginia, and the Virginia Department of Historic Resources/ Virginia State Historic Preservation Office.
- DOT assisted metropolitan transportation planning organizations and state departments of transportation with funding to support metropolitan and statewide transportation planning, and assisted transportation agencies in implementing sustainable transportation projects such as transit improvements, commuter rail improvements and projects that improve bicycling and walking.
    - Through the Partnership for Sustainable Communities, DOT, the Department of Housing and Urban Development and EPA provided grants to Ranson and Charles Town, West Virginia for sustainable community plans that integrate affordable housing, transportation, economic development and land use. The grants are helping these neighboring communities to plan and create more compact development and complete streets that serve all users-- pedestrians, bicyclists and vehicles --more safely. The funding came from the DOT TIGER II Planning Grant, HUD Challenge Planning Grant and EPA Brownfields Area-Wide Planning Grant programs.

Adaptive Management/ Steps to Improvement

- Continue to collaborate with non-profit organizations and local, state, and federal agencies on large landscape conservation practices and innovations in the Chesapeake Bay Watershed and begin to identify high level large landscape focus areas and mutual conservation goals across geographic and jurisdictional boundaries.

PUBLIC ACCESS OUTCOME

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

Progress Toward Meeting 2025 Outcome and Associated Milestones

2025 Outcome	Baseline	2012-2013 Milestone	2012 Progress
Increase public access to the Bay and its tributaries by adding 300 new public access sites by 2025.	**Strategy Baseline:** 761 public access sites providing access to the Bay and its tributaries exist in the District of Columbia, Maryland, Pennsylvania and Virginia (based on data available in 2010). **Revised Baseline:** 1,150 sites (based on 2013 *Chesapeake Bay Watershed Public Access Plan*)	Add 300 public access sites by 2025 by adding an average of 20 public access sites annually.	**On Track.** In 2012, 18 new public access sites were developed.

2012 Action Plan Key Accomplishments

- Developed the **Chesapeake Bay Watershed Public Access Plan** to inform and guide expansion of Chesapeake watershed public access. The plan was prepared in collaboration with a "Public Access Planning Action Team" composed of staff involved in public access planning and implementation at each of the Chesapeake watershed states, the District of Columbia, and NPS. (NPS)
- Designated **four connecting trails** as components of the Captain John Smith **Chesapeake National** Historic Trail (CAJO), adding the Susquehanna River from **Conowingo Dam** to Cooperstown, N.Y., the Chester River, the Upper Nanticoke, and the Upper James River from Richmond to Iron Gate, Va. – a total of nearly 900 miles. (NPS)
- Dedicated the **Chester River Water Trail** and the Sassafras River Water Trail. From the headwaters in Delaware to the river's mouth between Kent Island and Rock Hall, Md., the Chester River Water Trail encompasses more than 100 miles of waterways, a variety of ecosystems, and over 10,000 years of human history. (NPS)
- Worked with the state of Maryland and local interests to further the governor's proposal to request to the Secretary of Interior designation of the **Harriet Tubman National Monument** on the eastern shore.
- Funded **thirteen public access projects** in the watershed and worked with partners to develop four others for a total of 17 projects totaling over $870,000. (NPS)

Adaptive Management/ Steps to Improvement

- Implement the Chesapeake Bay Public Access Plan and continue to coordinate and collaborate with partners to leverage funds to increase public access in the Chesapeake Bay region.

Image courtesy of Chesapeake Bay Program

Supporting Strategy Progress Highlights

Expand Citizen Stewardship Supporting Strategy

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

2012 Action Plan Key Accomplishments

- Released the federal ***Mid Atlantic Elementary and Secondary Environmental Literacy Strategy*** to coordinate and guide the federal engagement in state environmental literacy planning and implementation. (NOAA)
- Completed a **series of workshops** focused on research-based best practices in the field of environmental education and their applicability to the Meaningful Watershed Educational Experience goal, metrics, and indicators. (NOAA)
- Published final **Chesapeake Youth Corps Strategy**. (NPS)
- Developed **Chesapeake Youth Corps intern program** and awarded funds to four youth corps organizations for **summer youth crews** to develop public access and other projects along the Captain John Smith Chesapeake Trail and Star-Spangled Banner National Historic Trail and Byway. (NPS)
- **Launched Star-Spangled Banner National Historic Trail and Byway.** Developed map and guide and a history/travel guide to the Star-Spangled Banner National Historic Trail and Byway. (NPS and DOT's Federal Highway Administration)
- Worked with partners to publish print and electronic media guides to recreation, cultural heritage, and natural area opportunities throughout the watershed including national trails, national and state parks, national wildlife refuges, and historic areas, including developing the **Chesapeake Explorer mobile application** and publication of **Bay Journeys**. (NPS)
- Released "**Chesapeake Explorer**," the official NPS mobile application designed to help visitors discover and enjoy fun and inspiring places and activities in the Chesapeake region. Chesapeake Explorer aggregates information about national parks, state parks, Chesapeake Bay Gateways and Watertrails Network sites, and sites along CAJO, STSP, and Potomac Heritage National Scenic Trail (POHE). It also provides information about the locations, hours, activities and fees of these places.
- **Installed interpretive and orientation signage** along the entire length of the land portion of the Star-Spangled Banner National Historic Trail and Byway. Twenty-five orientation kiosks were installed in Maryland to orient visitors to the War of 1812 in the Chesapeake. Twenty-five interpretive waysides were installed to describe a significant 1812 event

at the site. (NPS and DOT's Federal Highway Administration)

- Launched the **War of 1812 Virtual Resource Center**. The Resource Center is an easy to use, on-line tool that provides teachers, students and families one place to go to find lesson plans, video clips, primary source documents and trip planning ideas. The project was completed in partnership with Fort McHenry National Monument and Historic Shrine and Maryland Public Television.
- The **Forestry for the Bay** program – a partnership of USFS, Alliance for the Chesapeake Bay, and Bay states – has enrolled over 660 active members and has collaborated with partners to engage 1000+ woodland owners in educational workshops and outreach events during 2012. In addition, a new interactive mapping tool has been added to the members' website along with a free smart phone application that allows users to collect field data to upload to their map.

Adaptive Management/ Steps to Improvement

- Continue to convene federal, state and NGO partners to expand existing conservation corps that create jobs and carry out conservation and restoration projects in priority watersheds, creating a broader Chesapeake Youth Corps.
- Continue to build long-term local partnerships for engaging communities and citizens along national trails.
- Collaborate with partners to develop a suite of research-based best practices for environmental education related to students, teachers and schools.

Images courtesy of Chesapeake Bay Program

Develop Environmental Markets Supporting Strategy

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.

2012 Action Plan Key Accomplishments

- The interdepartmental Chesapeake Bay Environmental Markets Team (EMT) hosted several workshops to **advance development and implementation of infrastructure and policies for environmental markets.** Topics included providing environmental services through agriculture, developing biodiversity markets, tool development for water quality markets, and integrating conservation and environmental markets, among others. In addition, the EMT finalized discussion papers on credit registries and verification protocols. These papers and other EMT materials are available on the OEM website.
- EMT members **provided technical and financial support for the 2012 Conservation Banking Training Course,** and continue to facilitate development and expansion of conservation and mitigation banking markets in the Chesapeake Bay.
- USACE agreements with NOAA Fisheries and DOT's Federal Highway Administration, **supported existing agreements with EPA and FWS to expand and modify the Regulatory In lieu fee and Bank Information Tracking System** (RIBITS) providing a transparent credit trading reporting infrastructure for all federally approved mitigation and conservation banks.
- **Phase I of the USDA-funded economic study on the Chesapeake Bay TMDL cost to Agriculture was completed.** The study focuses on the cost-effectiveness of BMPs, ranking of practices by cost-effectiveness and development of algorithms for distributing BMP adoption across space and time. Phase II of the economic study is scheduled to be completed in 2013, and will characterize the economic implications of nutrient credit trading and other policy approaches (e.g., USDA working lands and land retirement programs, compliance programs) to reducing agriculture's nutrient discharge into the Chesapeake Bay Watershed.

Respond to Climate Change Supporting Strategy

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

2012 Action Plan Key Accomplishments

Science and Monitoring

- NOAA and USGS collaborated to **update 2011 land cover information for the coastal plain region of the watershed.**
  - NOAA updated 2011 C-CAP (Coastal Change Analysis Program) land cover analysis for the Chesapeake Bay coastal counties has been analyzed, and will be distributed soon (along with 1992, 1996, 2001, and 2006 analyses) through NOAA's Digital Coast.
  - USGS updated 2010 land-use information for the Bay watershed using 2010 Census and road data. The information was used by EPA for the CBP watershed model.
  - These updates provide comprehensive coverage of land cover change from the 1980's through 2010.This information along with information on climate change will be used to support efforts to assess potential effects on water quality and other CBP goals.
- The **USGS used the updated land cover/ use data to continue improvement of the Chesapeake Land-Change Model.** USGS and EPA will use the model to help assess potential effects of land and climate change on streamflow to the Bay and to better understand implications for nutrient and sediment loads. The USGS also released a report on streamflow changes over the past 80 years to improve understanding of relation to nutrient and sediment loading.
- NOAA is providing funding to inventory LiDAR data for Maryland, Virginia and other Mid-Atlantic states, as well as condition the data, so it can be used for the Sea Level Rise and Coastal Flooding Impacts Viewer. Completion is expected in 2013.
- In September, representatives from federal, state and local governments, academia, and non-governmental organizations convened the first NOAA Sentinel Sites Cooperative workshop to develop a plan for establishing a sentinel site network within the Chesapeake Bay, in an effort to downscale sea level rise projections on a scale commensurate with state and local management decisions. A follow up workshop was held in December, to refine the scope and method of execution for accomplishing goals and objectives outlined in the Cooperative's draft Implementation Plan.

Tools, Training and Guidance

- Maryland Sea Grant partnered with other Sea Grant programs in a state/national climate survey. This provided a state-wide needs assessment for Maryland.
- In September, NOAA partnered with EPA, the Water Research Foundation, the Water Environmental Research Foundation, Concurrent Technologies Corporation and NOBLIS to hold a workshop/case study on "Adaptation Strategies and Information Needs in Response to Extreme Events: Virginia Tidewater Case Study."

- The Vulnerability Support System (VASS) research study conducted under NOAA support reached a successful conclusion and has a new openly accessible web page. The page enables users to validate personal experiences and lessons learned by searching and analyzing several decades-long county records of severe storms, for selected counties.
- NOAA's Coastal Zone Management Program (CZM) supported several local efforts in Virginia to foster coastal resilience through improved awareness of sea level rise and climate-related coastal hazards. For 2012, the results of these efforts included: (1) Providing counties in the Hampton Roads area with data and estimates to assess the vulnerability of their natural and built environments to sea level rise, storm surges, and other coastal hazards; and (2) Holding a public workshop to educate local citizens and elected officials in Accomack and Northampton counties about impacts from sea level rise. Planning staff are working with the NOAA Coastal Services Center to develop coastal vulnerability models for the Eastern Shore.

Images courtesy of Chesapeake Bay Program

Strengthen Science Supporting Strategy

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.

2012 Action Plan Key Accomplishments

Federal agencies worked with state and academic partners first to provide critical science to support the needs of the Goal Teams and the Executive Order (EO) outcomes, and second to enhance management of the growing amount of environmental information through the Data Enterprise. The agencies also provided new understanding of important issues, such the sediment loads from the Conowingo Dam, that will be considered by the CBP as they refine goals in 2013.

Selected highlights are listed below and further described in chapters of each Executive Order Goal and associated Goal Team. The science activities were through the CBP Scientific Technical Assessment and Reporting (STAR) Team to ensure efficient efforts to support the CBP Goal Teams.

Water Quality

- **EPA, USGS, and FWS worked with partners to summarize information on the extent and severity of toxic contaminants in the Bay and its watershed** and a report was released in January, 2013.
- **EPA used results from new USGS SPARROW Nutrient models to revise the priority agricultural watersheds.**
- **EPA, NOAA, and USGS worked with CBP partners to enhance monitoring and assessment in support of watershed restoration.**
- **USGS completed a groundwater model of the Delmarva Peninsula intended to help explain nitrogen trends on the Eastern Shore** and help understand lag time between implementation of practices and detection of a water quality response.
- **The USGS and NOAA developed new land use/cover data** that was used by EPA in the CBP watershed model in order to assess progress toward the Chesapeake Bay TMDL.

Fish and Wildlife

- **NOAA, USACE, and state partners developed definitions and targets for oyster restoration success, called "oyster metrics,"** including the minimum oyster density and the amount of area to restore, needed in order to implement the Executive Order Goal for oyster restoration.
- **NOAA completed acoustic seafloor mapping in five Maryland tributaries, including detailed mapping in Harris Creek, to support oyster restoration planning.** NOAA also continued to improve Chesapeake Bay fisheries science and support interjurisdictional management efforts through the Fisheries Goal Team.
- **FWS, USFS, and USGS worked with the Eastern Brook Trout Joint Venture Science and Data Committee to complete a new assessment of brook trout populations at the catchment scale across the southern range of this species.** The findings will be used to help revise the approach for tracking progress toward the Brook Trout outcome. USGS worked with FWS

to assess factors causing die-offs and affecting the health of freshwater species in the Potomac and Susquehanna basins including assessment of the effect of endocrine-disrupting compounds, on fish and wildlife. Selected results were part of toxic contaminants report.

Recover Habitat

- The **federal agencies addressed the potential effects on water quality and habitat as the Conowingo Reservoir reaches its sediment storage capacity.** The USGS provided an analysis that found an increase in sediment and phosphorus loads into the Bay from the Susquehanna River due to the Conowingo reservoir nearing its sediment storage capacity. USACE is working with FWS, Maryland, Pennsylvania, and other partners through the Lower Susquehanna River Watershed Assessment to develop options for sediment management and habitat improvements.
- The **CBP Fish Passage Work Group was successful in opening 33.6 miles of habitat for diadromous fish species in FY 2012**, and The Nature Conservancy worked with them to complete an online geographic information system to strategically identify and rank key barriers for fish passage.

Land Conservation

- **The NPS and USGS collaborated with NatureServe to develop and release Chesapeake Landscope, a decision tool to help identify priority areas for land conservation.** The USGS updated the conserved lands database to help improve tracking toward the 2 million-acre goal.

Data Enterprise and Monitoring Alliance

EPA worked with partners to implement the Data Enterprise with a focus on management of the increasing amount of data associated with expansion of the CBP non-tidal monitoring network. EPA worked with USGS and the states to develop new automated data management capabilities for the non-tidal water-quality network. Efforts to implement the Monitoring Alliance included compiling 2011 land cover information (USGS and NOAA), and CBPO monitoring team working with selected partners on opportunities for more water-quality monitoring

Adaptive Management/ Steps to Improvement

- Have the CBP Goal Teams refine their science needs as partnership outcomes are revised and work through STAR and federal agencies to plan supporting science activities.

Implementation and Accountability Supporting Strategy

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.

2012 Action Plan Key Accomplishments

- **All agencies developed 2-year milestone targets** for each outcome for 2012 through 2013 in January 2012. Progress on these milestones is highlighted throughout this report.
- The Executive Order calls on the FLC to develop annual action plans based on the President's budget and annual progress reports showing the progress made the previous fiscal year. **The FY 2013 action plan was released to the public December 18, 2012. A more detailed report of progress on each action is available online at http://executiveorder.chesapeakebay.net/.** This report fulfills the requirements for the FY 2012 Progress Report.
- To ensure federal actions are coordinated with state actions to restore and protect the Chesapeake Bay, **the FLC and the Chesapeake Executive Council agreed to a four-stage process for aligning the Executive Order with the goals of the CBP partnership.** This four-stage process focuses on using the CBP organizational structure to help coordinate the various goals, outcomes, and commitments through previously established Goal Implementation Teams that include representation of Bay jurisdictions and federal agencies. The four-stage process includes a focus on improving efficiency of the governance and organization.
- Key to the four-stage process is the development of a **decision framework incorporating the principles of adaptive management** into the CBP's strategic development and decision making processes.
- In FY 2012, the focus for **improvement of Chesapeake*Stat* as a decision support tool** has been on two key areas, the first is the enhancement of the TMDL tracker to support the water quality goal, and the second is the development of the geographic tools to enable collaboration across goals and agencies within particular geographic areas.
- For the latter, Chesapeake*Stat* was used to identify other **factors influencing the ability to restore oysters to Harris Creek** on the Eastern Shore of Maryland. Factors identified included actions that could be taken by other Goal Implementation Teams of the Chesapeake Bay Program (such as the Water Quality Goal Implementation Team) or by individual agencies in the partnership to help ensure success of the oyster restoration efforts.

FY 2012 Agency Funding

FY 2012 **funding for the projects and activities described in this report** are based on agency appropriations and outlays. In FY 2012 the amount that agencies utilized for Chesapeake Bay restoration and protection was over $460 million. A more detailed breakdown of the agency specific funding is included in the table below.

The FY 2012 Action Plan estimated $419 million for Chesapeake Bay restoration. However, the total did not include: 1) $3.8 million of EPA funding for the Implementation and Accountability activities; and 2) $37 million for Farm Service Agency programs. Those figures are included below and will be included in future Action Plan expenditure summary tables. The new total for FY2012 was $460 million.

Department/Agency	FY 2012
USDA Total	$158,569,000
Farm Service Agency*	$37,081,000
NRCS	$119,828,000
Office of Chief Economist	$350,000
USFS	$1,310,000
U.S. Department of Commerce / NOAA	$9,208,425
DoD Total	$84,827,963
Services	$64,619,963
USACE	$20,208,000
DOI Total	$23,906,000
FWS	$10,146,000
NPS	$6,411,000
USGS	$7,349,000
EPA	$184,010,730
Total	**$460,522,118**

* Farm Service Agency FY 2012 financial assistance figures of over $37 million were not included in the 2012 Executive Order Action Plan.

Images courtesy of Chesapeake Bay Program

Image courtesy of Chesapeake Bay Program

Conclusions

Thanks to concrete efforts by all the Chesapeake Bay Partners, the federal agencies not only accomplished tangible restoration projects during FY12 but continued to set and refine plans for future years, including establishing methods for adapting plans as additional science is incorporated into the collective knowledge. Accomplishments made by the federal team in 2012 built on groundwork from 2011. Fiscal year 2011 was the first year for which federal government agencies operated following an Action Plan guiding Executive Order-related work; much of the work in 2011 was designed to build a foundation and detail the way forward for future successes.

In 2012, the federal agencies turned much of their energy into action on these plans, creating tangible and often visible progress toward restoration and protection of the Chesapeake Bay. In addition to direct federal actions and restoration work, federal grants enabled other organizations to implement programs to increase water quality through stormwater improvements and agricultural practices. A plan for the largest oyster restoration project ever in the Chesapeake Bay moved from planning to implementation. Comprehensive surveys of Chesapeake Bay species, like the black duck, were accomplished. Thousands of acres were protected from future development.

Development and adaptation of plans continued in 2012, with the goal of using the best available science to guide the way forward for the Bay and to make most effective use of federal resource through coordination and collaboration. Two-year milestones for water quality were established, setting clear expectations for the short term results. A strategy for watershed forests defined how forest cover should be restored. A geographic information system is now being used to strategically identify key barriers to fish passage, helping experts identify and prioritize dam removal projects. Scientists set targets for oyster restoration through a set of metrics. Educators defined how federal agencies should collaborate with states for environmental literacy planning and implementation.

With science and expertise applied to restoration and policy, and with adaptive management being utilized for decision-making, prospects for improvements in the Bay's health are strong.

A more detailed report of progress on each action is available online at http://executiveorder.chesapeakebay.net/. This report fulfills the requirements for the FY 2012 Progress Report.

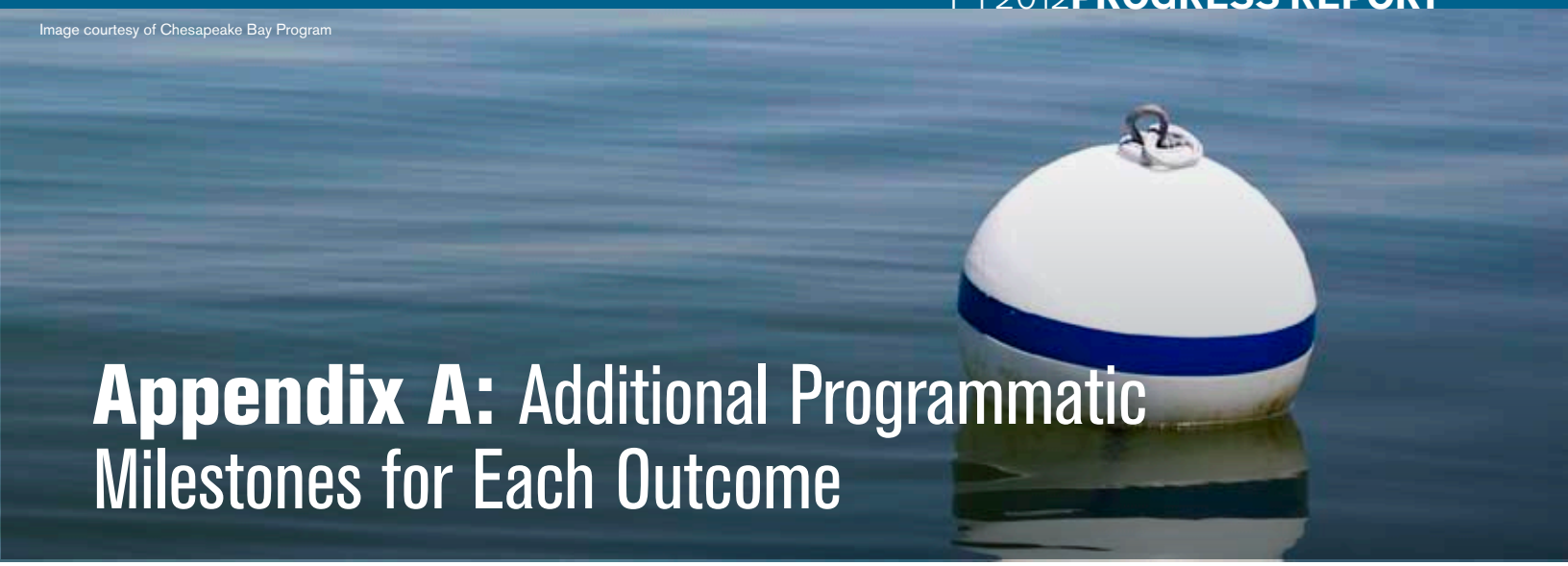


Image courtesy of Chesapeake Bay Program

Appendix A: Additional Programmatic Milestones for Each Outcome

ADDITIONAL PROGRAMMATIC MILESTONES PROGRESS

Target Date	Programmatic Milestone	2012 Progress
Restore Water Quality		
	TMDL/WIPs	
January 2012 – February 2012	Evaluated and announced federal and jurisdictional 2012-2013 two-year milestones. (EPA)	**Complete**
January 2012 – June 2012	Evaluate draft and final Phase 2 WIPs. (EPA)	**Complete**
June 2012	Assess progress made to implement the May 2009 – December 2011 two-year milestones. (EPA)	**Complete**
2012	Participated in jurisdictions' Phase 2 WIP processes: provided DoD installation information to jurisdictions and disseminated jurisdiction information throughout DoD to support the most effective implementation of future WIP requirements. (DoD)	**Complete**
2013	Develop and implement a Best Management Practices Operation and Maintenance Policy for each Service. (DoD)	**On Track**
May 2013	Provide mid-term evaluation of 2012 milestones progress to jurisdictions. (EPA)	**On Track**

Target Date	Programmatic Milestone	2012 Progress
AGRICULTURE		
2012	Evaluate revisions to the national CAFO rule. (EPA)	**Postponed to 2013**
2012	Develop and implement tracking, reporting, and verification mechanisms for voluntary conservation practices and other best management practices installed on agricultural lands. (EPA/USDA co-lead)	**On Track.** EPA and NRCS drafted report on approaches for how to track and verify non-cost share agricultural practices; feeding into BMP verification framework development in 2013.
2012	Update the Conservation Effects Assessment Project (CEAP) Cropland Report for the bay region; increase the spatial resolution of the model results and account for changes in conservation adoption since 2006. (USDA)	**On Track.** Spring/Summer 2013 release date.
2012	Direct up to $5 million to stimulate innovative conservation approaches, including the development of ecosystem markets in the watershed. (USDA)	**Complete**
October 2012	Release the Conservation Delivery Streamlining Initiative's Conservation Desktop and Client Gateway for national use; integrate resource concerns, selected inventory and analysis tools, electronic signature, and geospatial information into conservation planning tools. (USDA)	**Postponed to 2013**
ATMOSPHERIC – RULES, DEPOSITION, ALLOCATIONS		
	Significantly reduce nitrogen deposition to the bay and watershed by 2020. (EPA)	
2012	• NOx and SOx Secondary National Ambient Air Quality Standards finalized. (EPA)	**Complete**
2012	• New air deposition modeling for the Chesapeake Bay watershed incorporating the most recent finalized rules with significant NOx reductions. (EPA)	**Complete**
2012	• EPA/DOT 2017–2025 Model Year Light-Duty Vehicle GHG Emissions and CAFÉ Standards final rule. (EPA/DOT)	**Complete**
2012/2013	• Tier 3 Light-Duty Vehicle Emission and Fuel Standards final rule (criteria and toxic pollutants). (EPA)	**On Track**
STORMWATER		
2012	Evaluate revisions to the national stormwater rule.	**Postponed to 2013**
ONSITE (SEPTIC) SYSTEMS		
June 2013	Develop a model state program with general recommendations for activities to reduce pollution from onsite (septic) systems.	**On Track.** Draft out for public comment/review, on track for meeting the target date.

Target Date	Programmatic Milestone	2012 Progress
TOXIC CONTAMINANTS		
November 2012	Issue a report summarizing the extent and seriousness of toxic contaminants in the bay and its watershed that will include an assessment of progress on the Chesapeake Bay Basinwide Toxins Reduction and Prevention Strategy. (USGS/FWS/EPA co-lead)	**Complete**
December 2013	Work with DOI (FWS/USGS), the bay states, the District of Columbia and stakeholders to develop toxic contaminant reduction goals. (EPA)	**On Track.** Working with CBP Water Quality Goal Team to consider adoption of new goals during 2013.
OVERSIGHT AND ENFORCEMENT		
December 2012	Permit and Enforcement Oversight – Stormwater, Wastewater, Agriculture, Trading/Offsets, Air. • Review Chesapeake Bay states' technical standards for nutrient management to ensure that they meet CAFO regulations. (EPA)	**Complete**
December 2012 and 2013	• NPDES Permit Reviews – Report annually on number of permits reviewed and objections. (EPA)	**On Track.** EPA reviewed permits for 103 wastewater facilities and 8 MS4's; Objected to 1 wastewater permit and all 8 MS4's.
December 2012 and 2013	• Inspections and Case Development – Report annually on results and/or status. (EPA)	**On Track.** For more detailed information, Refer to 2012 Action Plan Key Accomplishments on Page 6.
MONITORING AND SCIENCE SUPPORT		
December 2012	Implemented year two expansion (20 sites) of the non-tidal monitoring network to support TMDL. (EPA/USGS co-lead) Evaluate water quality changes and progress to adjust management actions in support of the TMDL/WIPs and milestone progress evaluation. (EPA/USGS/NOAA co-lead)	**Complete.** All sites implemented but several additional sites were identified for future consideration.
December 2012	• USGS will issue an annual update of nutrient and sediment trends based on the CBP non-tidal monitoring network and apply a new technique to assess progress toward reductions. (EPA)	**Complete.** USGS updated watershed trends and issued report on new trend in load technique
December 2012	• EPA and NOAA will provide annual updates of trends in estuary monitoring data to assess progress toward water quality standards, including using NOAA CBIBS data. (EPA)	**Under Development**

Target Date	Programmatic Milestone	2012 Progress
EPA GRANT SUPPORT TO STATES AND THE DISTRICT OF COLUMBIA		
2012/2013	Provide financial support to jurisdictions by maintaining funding, as authorized, through EPA's assistance programs including CWA Section 319, SRF, CBIG and CBRAP.	**On Track**
Recover Habitat		
WETLANDS OUTCOME		
December 2012	Restored, planted and opened 35 acres of wetland and tidal gut habitat to fish and natural tidal flow, allowed inflow of dredged material and began designs for expansion of the Poplar Island project. (USACE)	**Complete**
December 2012	Completed the cost estimate update for the Mid Chesapeake Bay Ecosystem Restoration project, Dorchester County, Maryland. (USACE)	**Complete**
December 2013	Engage wildlife and natural resource agencies in strategic wetland action teams in interested Bay states by 2013. (FWS)	**On Track**
FOREST BUFFER OUTCOME		
December 2012	Complete a strategy to accelerate forest restoration in priority areas. (USFS) Release a tool for improved monitoring of riparian forest buffers. (USFS and USGS)	**Complete.** Land Image Analyst Tool to be released 2013.
FISH PASSAGE OUTCOME		
September 2012	Completed a Bay-wide fish passage prioritization tool for blockages in Maryland, Virginia and Pennsylvania. Priority status given to projects which open larger stretches of high quality habitats and projects which enhance passage of target fish species. (FWS/NOAA)	**Complete**
September 2012	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, brook trout and/or American eel.	**On Track.** NOAA, FWS, the states of Pa., Va. and Md. and other Fish Passage Workgroup partners opened 33.6 miles of stream habitat for diadromous fish in 2012.

Target Date	Programmatic Milestone	2012 Progress
STREAM RESTORATION OUTCOME		
December 2012	Organized and chaired the Sixth Mid-Atlantic Stream Restoration conference, bringing together stream professionals from academia, government and the private sector to explore the science, engineering and policy of restoring stream functions. (FWS)	**Complete**
June 2012	Finalize project management plans with Montgomery County, MD and Prince George's County, MD to study the implementation of habitat restoration projects. (USACE)	**On Track.** Expected February 2013
December 2012	Sign cost-sharing agreement(s) for the initiation of a watershed feasibility study in the upper Rappahannock River to address multiple aspects of EO 13508. Investigations under this study authority are likely to include sediment, stream bank erosion, water supply issues and fish passage. (USACE)	**On Track**
December 2013	Draft feasibility study to provide for restoration of 94 acres of SAV, 38 acres of wetlands, 32 acres of reef habitat and 22 acres for reintroduction of the bay scallop in the Lynnhaven River watershed. (USACE)	**On Track**
December 2012	Conduct bathymetric surveys, collect and analyze sediment data, conduct detailed literature searches, assemble water quality data, and prepare a hydraulic modeling report for the Lower Susquehanna River watershed. (USACE, USGS)	**Complete**
December 2013	Execute cost-sharing agreements with Montgomery County, Md. and Prince George's County, Md. to study the implementation of habitat restoration projects. Negotiate the scope of a feasibility study to evaluate aquatic habitat restoration opportunities, including stream restoration, wetland restoration/creation, and fish passage blockage removal for both the Montgomery and Prince George's Counties in the Anacostia River watershed. (USACE)	**On Track.** Expected April 2013

Target Date	Programmatic Milestone	2012 Progress
Sustain Fish and Wildlife		
OYSTER OUTCOME		
December 2012	The Fisheries GIT will continue to adopt and apply oyster restoration performance metrics to existing projects in the Great Wicomico and Lynnhaven rivers. These metrics will be used to guide new tributary restoration planning and monitoring. (NOAA/USACE).	**Complete.** Metrics adopted and used.
December 2012	Complete native oyster protection and restoration strategy, including a collaborative and agreed upon federal-state list of priority tributaries that target four to six tributaries for restoration and lay out steps for expanding aquaculture and evaluating sustainability of the wild fishery. The collaborative strategy will outline a phased approach for developing tributary scale restoration plans, reef construction, monitoring and performance evaluation. (NOAA)	**On Track.** Five tributaries have been selected for restoration, and one tributary plan is done (Harris Creek).
December 2012	Completed USACE Native Oyster Restoration Master Plan. (USACE)	**Complete**
December 2012	Complete Bay-wide Oyster Stock Assessment. (NOAA)	**On Track.** Expected in 2014
BLUE CRAB OUTCOME		
December 2012	New Bay-wide abundance and exploitation targets and thresholds for blue crabs recommended by the Chesapeake Bay Stock Assessment Committee and adopted by the states. (NOAA)	**Complete**
December 2012	Assessed extent to which the population is sustainable (i.e., between the abundance and exploitation targets and thresholds) by preparing and delivering the Blue Crab Advisory Report annually (2012 and 2013) and convening the Fisheries GIT to discuss the report and adapt management approaches when necessary. (NOAA)	**Complete**
BROOK TROUT OUTCOME		
December 2012	Complete watershed-wide stream segment rankings for brook trout restoration under climate change. (USFS)	**On Track.** Completion pending analysis of New York portion of data
December 2012	Hosted working session of Chesapeake Bay Subcommittee of EBTJV Science and Data Committee to recommend catchment-level metric, restoration targets and monitoring options. (FWS, USGS)	**Complete**
BLACK DUCK OUTCOME		
December 2012	In spring 2012, hosted strategic decision making workshop to engage experts in translating number of wintering ducks to energetic carrying capacity of Bay habitats. (FWS, USGS)	**Complete**

Target Date	Programmatic Milestone	2012 Progress
Conserve Land and Increase Public Access		
LAND CONSERVATION OUTCOME		
December 2012	Completed initial build-out of the Land Conservation Priority Mapping Tool. (NPS and USGS)	**Complete**
December 2012	Complete strategy to reduce the loss of working lands. (USFS)	**On Track.** Convened 40 working land partners to get input on Strategy. Expected completion in 2013.
PUBLIC ACCESS OUTCOME		
December 2012	Finalize public access plan. (NPS)	**Complete**
Expand Citizen Stewardship Supporting Strategy		
November 2011	NOAA convened a Mid-Atlantic Environmental Literacy Summit to focus on the intersection of science education and environmental literacy priorities, and solicited state input on the draft federal K-12 Environmental Literacy Strategy. (NOAA)	**Complete**
November 2012	Worked with the Chesapeake Bay Trust to build capacity for environmental education in the region, including supporting a workshop focused on incorporating best practices into metrics and self-assessment tools to support environmental education. (EPA)	**Complete**
December 2012	Chesapeake Conservation Corps strategy finalized. (NPS)	**Complete**
Respond to Climate Change Supporting Strategy		
December 2013	Complete improvements to Chesapeake Land Change Model (version 3) to enhance assessments of the combined impact of climate and land change on the bay and its watershed. Results from the model will also be used to assess vulnerability of conserved lands to future development. (USGS)	**On Track.** The USGS continued improvement of land change model (next version due Dec, 2013) and provided new land cover for EPA watershed model.

Target Date	Programmatic Milestone	2012 Progress
Stregthen Science Supporting Strategy		
December 2012	Implemented the CBP decision framework through interaction with all GITs. Summarize the information in *ChesapeakeStat* (EPA) and work to provide the science needed to help support this adaptive management process. (USGS, NOAA and EPA)	**Complete.** CBP Goal Teams used the decision framework to propose refinements to CBP goals.
July 2013	As part of the Chesapeake Monitoring Alliance activities, engage local jurisdictions and NGOs on partnerships to expand the use of their water quality monitoring to assess conditions in the bay and its watershed. (EPA) Integrate federal and state dissolved oxygen data across tidal, non-tidal and main stem monitoring data through the Data Enterprise to advance understanding of hypoxia and progress toward water-quality standards. (EPA, USGS, NOAA)	**On Track.** New water-quality non-tidal data procedures being finalized.
December 2013	Implement the Chesapeake Monitoring Alliance by producing more recent land cover (2011 data) for the bay watershed that can be used to support the implementation of EO goals. (USGS)	**On Track.** NOAA and USGS collaborated to update 2011 land cover for coastal and watershed areas. Will be finalized in 2013.