

The Chesapeake Bay Watershed:

National Treasure, Regional Challenges

Introduction

The Chesapeake Bay is North America's largest estuary, home to 3,700 species of plant and animal life, including oysters, more than 200 species of fish, and the blue crab. The Bay has served as a rich natural resource for at least 10,000 years, sustaining Native Americans and, more recently, the European migrations that began in the sixteenth century. Today, the Bay's watershed is home to nearly 17 million people.

Since the 1970s, when initial studies indicated the Bay had serious water quality problems, management of the Chesapeake Bay has increasingly become a regional and national issue. The challenges facing the ecosystem are substantial and varied: toxic heavy metals and industrial chemicals from areas like the ports of Baltimore and on the James River, treated wastewater and land runoff from urban areas, agricultural runoff from the northern and inland reaches of the watershed, as well as broader concerns of overfishing and climate change. Population growth is also a major concern, as the watershed is growing by about 130,000 residents annually and is expected to include 2.6 million additional residents by 2020.

Managing such a complicated ecosystem would be difficult under any conditions. However, the Bay's watershed covers 64,000 square miles and also encompasses six states: Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia, as well as the District of Columbia. The core premise has been to collaboratively manage and conserve the Bay's resources and incorporate representatives from each of these states, as well as resource experts, watermen, environmental groups, industry representatives, residents and federal agencies.

The Chesapeake Bay restoration and conservation effort is arguably one of the most comprehensive environmental



The Chesapeake Bay from Space

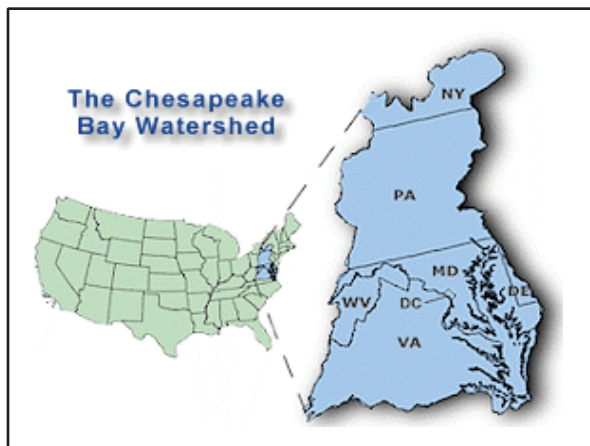
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management programs ever attempted. From the establishment of the Chesapeake Bay Commission in 1980 to the Chesapeake 2000 and subsequent guidelines, these voluntary management efforts have resulted in a series of multi-state, inter-agency agreements that attempt to equitably manage the Bay's resources and address stakeholders' disparate needs.

Chesapeake Bay Program Collaborative Responses

Maryland and Virginia established the **Chesapeake Bay Commission** in 1980 to help both states cooperatively manage their portions of the Chesapeake Bay. Pennsylvania joined the Commission in 1985. The Commission was the result of a 1978 study by the joint Maryland-Virginia Chesapeake Bay Legislative Advisory Commission, which had been convened to evaluate existing and proposed management resource structures for the Bay. After considering a range of cooperative management options, the Advisory Commission recommended the establishment of a bi-state Commission. The creation of the Chesapeake Bay Commission offered several advantages: it involved no federal statutory limitations, it highlighted state responsibility for the Bay, and it strengthened policy ties between the two states. The Commission was established with the following objectives:

- to assist the legislatures in evaluating and responding to mutual Bay concerns;
- to promote intergovernmental cooperation and coordination for resource planning;
- to promote uniformity of legislation where appropriate;
- to enhance the functions and powers of existing offices and agencies; and
- to recommend improvements in the management of Bay resources.



The Chesapeake Bay Watershed:

National Treasure, Regional Challenges

Since its creation, the Chesapeake Bay Commission has initiated a range of environmental protection and restoration efforts. The Commission has promoted policy initiatives in the areas of nutrient reduction, fisheries management, toxics remediation, pollution prevention, habitat restoration and land management. The Commission develops and sponsors legislation in each member state, works directly with federal agencies like the Environmental Protection Agency (EPA), and coordinates public meetings and education efforts. Recent projects include the 1996 establishment of the Bi-State Blue Crab Advisory Committee (BBCAC), which in 2001 and 2003 reported its proposed strategies to stabilize the Bay's blue crab population. Despite closing the BBCAC in 2003 due to budget shortfalls, the Commission published a Blue Crab report in 2005. The report found that the 2001 agreements to reduce the crab harvest have brought only erratic annual reductions and the actual number of blue crabs living in the Bay remains below long-term average. The most recent work has been guidance from the 2008 Farm Bill (see box) and the development of a Bay-wide Forest Conservation Directive.

The **Chesapeake Bay Agreement**, signed in 1983, directly involved the federal government in the Bay's management for the first time. The Agreement also incorporated the Commonwealth of Virginia, the State of Maryland, the Commonwealth of Pennsylvania, the District of Columbia, the EPA, and the Chesapeake Bay Commission as signatories. In the Agreement, the signatories agreed to three actions: (1) establishment of

The Federal Farm Bill

In 2007, the Chesapeake Bay Commission in partnership with governors of Pennsylvania, Delaware, Maryland, Virginia, West Virginia, and the Mayor of the District of Columbia presented Congress with recommendations for allocating Farm Bill funds to support cost-effective agricultural practices for pollution reduction. Their priorities for Funding were:

- * Increasing flexibility in the delivery of federal funds
- * Reducing the financial risk of farming in the region
- * Increasing funding and technical assistance for conservation-related programs

In May, 2008, The Federal Farm Bill was reauthorized and directs \$188 million in new funding to support Bay watershed restoration over the next five years. This is close to double the roughly \$80 million a year now available to farmers in the watershed through multiple conservation programs administered by the U.S. Department of Agriculture.

a Chesapeake Executive Council (including the governors of the signatory states, the EPA administrator, the Chair of the Bay Commission, and the mayor of DC) to “assess and oversee the implementation of coordinated plans to improve and protect the water quality and living resources,” (2) establishment of a Council subcommittee to coordinate the development and evaluation of management plans, and (3) establishment of an EPA-based liaison office for Chesapeake Bay activities.

The Agreement also established the Chesapeake Bay Program partnership. Between 1983 and 1987, this program partnership focused primarily on estuarine research and restoration programs. In 1987, these research findings provided the foundation for a second Bay Agreement that, for the first time, outlined a series of specific goals, objectives and commitments for managing and restoring the Chesapeake Bay. For example, the 1987 Agreement update committed the signatories to achieving a 40 percent reduction of nitrogen and phosphorus entering the main stem of the Bay and to incorporating public input into decision-making processes.

The 1983 Chesapeake Bay Agreement, updated in 1987 and 1992, has provided a powerful, flexible framework for the three states, the District of Columbia, the federal government, and the Chesapeake Bay Commission to coordinate research and policy goals. Using the Chesapeake Bay Program partnership, these signatories first assessed the condition of the Bay's natural resources and then developed policy options. Over time, as research yielded new findings and new policy options were developed, the partnership was able to incorporate these options into the Agreement through amendments.

In June of 2000, the signatories to the Chesapeake Bay Agreement signed the **Chesapeake 2000** agreement. The agreement states that:

“In order to achieve our existing goals and meet the challenges that lie ahead, we must reaffirm our partnership and recommit to fulfilling the public responsibility we undertook almost decades ago. We must manage for the future. We must have a vision for our desired destiny and put programs in place that will secure it.”

This agreement builds on its predecessor in several important ways. Chesapeake 2000 focuses on five broad goals: living resource protection and management, vital habitat protection and restoration, water quality protection and restoration, sound land use and stewardship and community engagement. Additionally, the Chesapeake 2000 agreement establishes and reaffirms the following goals:

The Chesapeake Bay Watershed:

National Treasure, Regional Challenges

- achieve a tenfold increase in native oysters by 2010;
- identify and rank non-native, invasive aquatic and terrestrial species;
- by 2010, work with local governments, community groups, and watershed organizations to develop and implement locally supported watershed management plans in two-thirds of the Bay watershed;
- recommit to the existing goal of protecting and restoring 114,000 acres of submerged aquatic vegetation;
- achieve a no-net loss of existing wetlands acreage;
- continue efforts to achieve the 40 percent nutrient reduction goal agreed to in 1987; and
- restore 2,010 miles of riparian forest buffer areas by 2010.

These are collectively known as the **2010 goals**.

The Chesapeake 2000 agreement also made several new policy provisions. Under the agreement, government signatories must expand their use of clean vehicle technologies and fuels. Delaware, New York and West Virginia, Maryland, the District of Columbia and Virginia have signed the water quality section of the Chesapeake 2000 Agreement.

The CBP partners designed, developed, and began implementation of the first version of the **Chesapeake Action Plan (CAP)**. This was communicated in their July 2008 Report to Congress, Strengthening the

Potential TMDL (Total Maximum Daily Load) Cleanup Plans

The Clean Water Act requires states to survey waterways every two years and report those that fail to meet water quality standards to the EPA. This is known variously as the 303(d) list, the impaired waters list or the “dirty waters” list (not “fishable or swimmable” because of pollution). All jurisdictions in the watershed released their most current lists in 2008.

Besides listing hundreds of miles of impaired rivers and other waterways, these reports show that virtually all of the Chesapeake and its tidal tributaries fail to meet water quality standards. The reports confirm that the region will not meet one of the keystone goals of the Chesapeake 2000 agreement: to reduce nutrient and sediment pollution enough by 2010 to “remove the Bay and the tidal portions of its tributaries from the list of

impaired waters under the Clean Water Act.”

That will mean the region must now do what it had long sought to avoid: develop cleanup plans, known as Total Maximum Daily Loads, for those waterways. Key parts of a TMDL include the establishment of the maximum amount of pollution that a body of water may receive and still meet its standards, with a margin of error. That “load” is then “allocated” to sources contributing to the problem, essentially setting a pollution limit for each source. When that source has a permit, the allocation is typically required to be part of the permit.

The Chesapeake Bay TMDL refers to a coordinated package of new TMDLs on local impaired stream segments in each of the states and introduces 35 new individual TMDLs into the state of Virginia. While there are many existing TMDLs in the watershed designed to protect local waters, these will focus exclusively on nitrogen, phosphorus and sediment loads. The Chesapeake Bay TMDL is the largest and most complex TMDL to date, establishing loadings across all 6 states and the District of Columbia, including the upstream states of Pennsylvania, New York and West Virginia, the estimated source of half of the nitrogen and over a quarter of the phosphorus in the Bay. The TMDL covers an area that includes 17 million people, 88,000 farms, 483 significant treatment plants, and thousands of other nonpoint sources.

The Chesapeake Bay Project’s Principal’s Staff Committee requested an accelerated timeline, and will assist the jurisdictions to establish individual TMDLs by the end of 2010. While this certainly suggests a renewed focus on the health of the Bay, in fact success if all goes well remains decades in the future. According to the EPA, jurisdictions “have committed to having pollution control measures in place no later than 2025 that will lead to the restoration of the Chesapeake Bay.” Such a protracted timeline causes critics to wonder if this is a case of too little, too late.

Management, Coordination, and Accountability of the Chesapeake Bay Program.

The CAP includes four primary components, each of which is described in the report to Congress: 1) a strategic framework that unifies CBP’s existing planning documents and clarifies how CBP partners will pursue the restoration and protection goals for the Bay and its watershed; 2) an activity integration plan with comprehensive, quality

The Chesapeake Bay Watershed:

National Treasure, Regional Challenges

assured data for 2007 that identifies and catalogues CBP partners' implementation activities and corresponding resources; 3) dashboards, which are high-level summaries of key information, such as clear status of progress, expected progress toward certain Chesapeake 2000 goals, summaries of actions; and 4) an adaptive management process that begins to identify how this information and analysis will provide critical input to CBP partners' actions, emphasis, and future priorities.

The Chesapeake Bay agreements and amendments published between 1983 and 2000 represent earnest attempts at voluntary state and federal policy coordination and regional resource management. The agreements acknowledge the variety and severity of challenges facing the Bay watershed; recognize the reality and implications of changing research and policies and accordingly incorporate flexibility into the documents; set long term objectives; and attempt to balance research and policy making. Above all, the agreements recognize the need for immediate and significant action. Unfortunately, on-the-ground results have been mixed, and the Bay remains severely impaired.

Commonwealth of Virginia Responses

The Virginia General Assembly enacted the Chesapeake Bay Preservation Act in 1988 in order to establish a cooperative nonpoint source pollution program between the state and the eighty-four local governments of Tidewater, Virginia. The Bay Act Program is designed to improve water quality in the Chesapeake Bay and its tributaries by requiring wise resource management practices in the use and development of environmentally sensitive lands. The Chesapeake Bay Local Assistance Board, which was created by the Act, is responsible for promulgating regulations that establish criteria for local Bay Act Programs.

In 2006, the General Assembly allocated \$270 million for point source pollution reduction and an additional \$40 million for non-point source pollution reduction—the single largest budget allocation for the Bay in Virginia's history. This substantial sum funded upgrades to existing sewage treatment plants and local Soil and Water Conservation District projects with hundreds of farms in the Chesapeake Bay watershed. Virginia state agencies have developed strategies to sustain Virginia's blue crab and oyster populations (see box). In 1998, the Virginia Riparian Buffer Initiative published a Riparian Buffer Implementation Plan that targeted the restoration of 610 miles of riparian forest buffers in Virginia by 2010

using a combination of incentives, conservation efforts, and education programs. This goal was met in 2002. In 2000, the state legislature developed the Virginia Pollution Abatement (VPA) General Permit Regulation for Poultry Waste Management to help address the issue of non-point source pollution in the Commonwealth.

In addition, Virginia's Tributary Strategy Initiative was developed to meet Virginia's bay Program commitment to a 40% reduction in controllable stream and river sediment loads. Stakeholders like farmers, business and citizen groups developed management strategies and goals for their

A Closer Look:

Virginia's Oyster Management Strategy

Throughout the twentieth century, oysters were the most heavily harvested animal in the Chesapeake Bay. In Maryland and Virginia's Bay waters, the oyster population also had to contend with substantial loss of reef habitat, pollution and disease. In the early 1900s, annual oyster catches in Virginia exceeded 9 million bushels. In contrast, total landings for the 1997-98 season were just 14,295 bushels, only 1% of catch levels even 35 years ago. The oyster, a keystone species which serves as a natural water filter, has accordingly been targeted by each of the succeeding Bay agreements between 1983 and 2000 for urgent policy and research action.

In Virginia, the Virginia Department of Environmental Quality's Coastal Zone Management Program and the Virginia Marine Resources Commission launched the Virginia Oyster Heritage Program in March 1999. Building on recent efforts, the Program was created to bring more partners into reef restoration efforts in the Commonwealth, provide greater financial resources for reef construction, and to take a new approach to earlier reef building efforts by establishing three-dimensional reefs surrounded by enhanced harvest areas. The Program also includes funding for ongoing reef monitoring research, volunteer training, and educational materials. The Virginia Oyster Heritage Program exemplifies how each signatory to the Bay agreements can pursue targeted, inter-agency strategies to reach regional goals. Between 2001 and 2003 Virginia CZM invested over \$1.5 million in the Virginia Oyster Heritage Program, a public-private partnership initiated by the Program. This partnership constructed over 80 sanctuary reefs and 1000 acres of harvest area in Virginia's coastal waters.

The Chesapeake Bay Watershed:

National Treasure, Regional Challenges

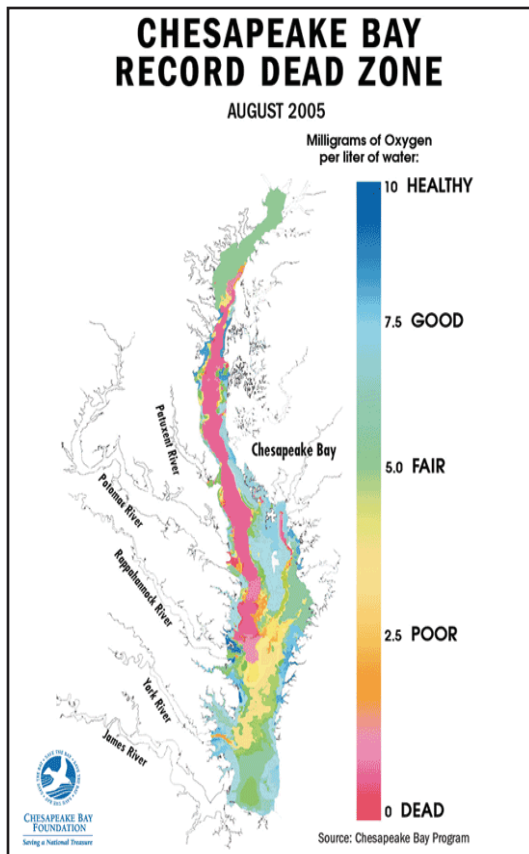


Image courtesy of the Chesapeake Bay Foundation

respective watersheds. In January 2005, the office of the Secretary of Natural Resources released the final Nutrient and Sediment Reduction Tributary Strategy for Virginia's Chesapeake Bay Basins.

The Rocky Road to Recovery

Despite over 20 years of attention and activity thus far at the state, regional and federal level on behalf of the Chesapeake Bay Watershed, current and past efforts have proven insufficient to address the challenges facing the Bay.

In October 2005, the **U.S. Government Accountability Office (GAO)** issued the report, *Chesapeake Bay Program: Improved Strategies are Needed to Better Assess, Report and Manage Restoration Progress*. The GAO report recommended that CBPO:

- complete efforts to develop and implement an integrated assessment approach;
- revise its reporting approach to improve effectiveness and credibility; and
- develop a comprehensive, coordinated

The Chesapeake Bay Dead Zone

Each summer, scientists track the size of the Chesapeake Bay's "dead zone," the area in which dissolved oxygen drops below 0.2 milligrams/liter of water. The graphic at left illustrates the dissolved oxygen thresholds for key Bay species--most cannot survive even at levels above the 0.2 mg/l "dead zone." The largest dead zone on record occurred during July of 1993, but the summer of 2003 was another record-setter because of heavy rains that led to more sedimentation and nutrient-loading in Bay tributaries. Similar patterns of above-average rainfall in 2005 washed significant suburban wastewater and farmland fertilizer into the bay, producing algae blooms and crippling fisheries. Summer 2006 saw a decrease in the size of the dead zone, which is likely due to lower rainfall. As of August, 2006, 125 square miles of the Bay had ≤ 0.2 mg/l of dissolved oxygen.

implementation strategy that takes into account available resources.

In December 2007, Congress passed the Consolidated Appropriations Act of 2008. The Act's Explanatory Statement directed EPA to:

- immediately implement all of the recommendations of the 2005 GAO Report;
- submit a report to Congress and to GAO, with supporting evidence, that demonstrates the GAO recommendations have been implemented; and
- develop a Chesapeake Action Plan (CAP) for the remaining years of the Chesapeake 2000 agreement that contains specified components (i.e., realistic annual targets, actual activities, amount and source of funding, process to track and measure progress).

Also in December 2007, the Chesapeake Executive Council publicly acknowledged that they would fail to meet their cornerstone cleanup goals by 2010, but asserted that they would have policies in place by the end of 2010 that would lead to a clean Bay. They declined to specify a timeline (Blankenship, 2008). However, acknowledging the enormity of the problem, Virginia Governor Tim Kaine, as Chairman of the Commission, established two year milestones for each state to serve as guideposts to the cleanup effort. While these are established at the state level, the EPA is developing federal consequences should a state fail to meet its milestones. These milestones were publicly released in May, 2009.

The Obama Administration has indicated an intention to

The Chesapeake Bay Watershed:

National Treasure, Regional Challenges

strengthen the federal role in the Bay cleanup effort. Also in May, 2009, President Obama signed an Executive Order requiring the EPA and five additional cabinet agencies to report jointly on what more can be done. These reports were released September 10, 2009. The Order indicates that the EPA will work more closely with other agencies and take a stronger stance on the states' responsibilities for regional water pollution. The Executive Order expressly states that "agencies may begin implementing core elements of restoration and protection programs and strategies as soon as possible" (CBF, May, 2009). As of September, there is a proposal in the Senate to amend the Clean Water Act to put the Executive order into law and strengthen governmental powers to regulate runoff (Baltimore Sun, September, 2009). The Chesapeake Bay Foundation, which had sued the EPA in January, claiming they were neglecting their legal duty to restore the Bay, announced it would hold off on the lawsuit for the moment, allowing the Obama Administration time to act (Baltimore Sun, October, 2009).

Conclusions

On several counts, the Chesapeake Bay Agreements illustrate a successful approach to regional resource management. The Chesapeake Bay Program represents a considerable effort toward collaborative problem solving. Over the past three decades, the signatories have committed substantial resources and expertise to collect data and develop policy actions. The agreements have consistently recognized that each signatory, while ascribing to common goals and timelines, must retain substantial autonomy over the policies necessary to attain those goals. However, the CBP appears to be facing a losing battle. It has become clear that the challenges the signatories and the Chesapeake Bay Program itself face remain considerable, and threaten to dwarf all efforts made to this point. It remains to be seen whether still-stronger policies and a revised Chesapeake 2000 is enough to meet these challenges.

Despite a past history of failure, the future of the Chesapeake Bay cleanup gives some reason for hope. The Obama Administration's attention to the problems in the bay offers tentative promise to Bay advocates. In Virginia, citizens, activists and lawmakers continue to lobby for a dedicated source of funding for Bay clean-up and restoration programs. Until then, annual general funds allocations like the \$270 million dedicated in 2007 will hopefully be put to its best use improving water quality in all of Virginia's tributaries to the Bay.

Resources:

- Chesapeake Bay Program, www.chesapeakebay.net
- Chesapeake Bay Commission, www.chesbay.state.va.us
- Maryland Department of the Environment, www.mde.state.md.us
- Virginia Department of Environmental Quality, www.deq.state.va.us/bay
- U.S. EPA Region III Chesapeake Bay Program Office, www.epa.gov/region03/chesapeake
- Chesapeake Bay Foundation, www.cbf.org
- DCR Division of Chesapeake Bay Local Assistance, www.cblad.virginia.gov