



**Chesapeake Bay Program**  
A Watershed Partnership

# Background

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On June 28, 2000, the Chesapeake Executive Council signed *Chesapeake 2000* – a new and far-reaching agreement that now guides Maryland, Pennsylvania, Virginia, the District of Columbia, the Chesapeake Bay Commission and the U.S. Environmental Protection Agency in their combined efforts to restore and protect the Chesapeake Bay.

As part of that agreement, Bay Program partners agreed to work with the headwater states of Delaware, New York and West Virginia to set new, aggressive nutrient and sediment reduction goals that will provide the water quality necessary for the Bay's plants and animals to thrive.

This process builds on previous nutrient reduction goals, but instead of measuring improvement against broad percentage reduction goals, the Program must now meet goals based specifically on the needs of the Bay's plants and animals.

## Frequently Asked Questions About Restoring Chesapeake Bay Water Quality

### What makes this initiative so unique?

This cooperative effort has resulted in nutrient reduction goals that are much more protective than those agreed to in the past. Bay Program partners have agreed to base their success on the attainment of water quality standards, not simply pollution load reductions. For the first time, partners have developed criteria that take into account the varying needs of different plants and animals and the various conditions found throughout the Bay. For example, to drive new, aggressive sediment reductions, Bay Program partners also agreed to increase bay grass restoration goals from 114,000 to 185,000 acres baywide. All of these accomplishments were made due to cooperative efforts among the partners and stakeholders from throughout the Bay watershed and for the first time ever, the headwater states of Delaware, New York and West Virginia have been involved in these negotiations.

### How much will it cost to bring back Chesapeake Bay?

Since the signing of the *Chesapeake 2000* agreement, several Bay organizations have explored possible funding sources for the restoration of the Bay.

Released in late 2002, the Chesapeake Bay Commission's "Cost of a Clean Bay" report estimates that approximately \$18.7 billion is needed to meet commitments set forth in *Chesapeake 2000*. The report estimates it will cost \$11.5 billion to achieve the water quality improvements necessary to bring back the Bay's aquatic plants and animals to levels seen in the 1950s. Most recently, the Commission has led an effort to develop a strategy that aims to obtain funds from a variety of sources including federal, state, local and private sources.

### What kind of economic benefit will result from restoring the Chesapeake Bay?

In 1989, the value of the Bay was estimated at \$678 billion. Since Bay restoration efforts will provide positive economic benefits for the regional economy, economists believe the Bay's value will increase. For example, cleaner, less polluted water may add more commercial fisheries and eco-tourism dollars to Bay state economies. Likewise, expanded underwater grass beds and improved dissolved oxygen levels may improve regional revenues by enhancing hunting, fishing and other recreational opportunities. Property values in certain areas may also increase as problem waterbodies are restored.

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The Chesapeake Bay Program is restoring the Bay through a partnership among the U.S. Environmental Protection Agency representing the federal government, the State of Maryland, the Commonwealth of Pennsylvania, the Commonwealth of Virginia, the District of Columbia, the Chesapeake Bay Commission, and participating citizen advisory groups.



### **How did you conclude that your nutrient reduction goals will be protective of living resources?**

The new nutrient reduction goals are the result of nearly three years of work by researchers from federal and state governments, universities and conservation organizations from across the Chesapeake Bay watershed. The best science available tells us that meeting the new nutrient reduction goals will provide the water quality necessary to protect living resources. Bay scientists confirmed this through a series of computer model runs that simulate future water quality conditions resulting from possible management practices implemented throughout the watershed. Science drove the development of these criteria, not political or financial limitations.

### **How were costs considered in setting new Bay restoration goals?**

While the economy changes over time, the need to protect the future of the Bay does not. We need to develop plans today that lay the groundwork for future restoration efforts. We cannot base plans that will take place over the next decade solely on today's economic conditions.

Financial limitations were not taken into account when the first Bay nutrient reduction goal was set in 1987, yet with the needs understood, resources became available and technological improvements enabled Bay Program partners to make significant strides in our nutrient reduction efforts.

Additionally, over the next decade we expect improvements in current pollution reduction technologies and the development of new technologies to offset some of the estimated costs of restoring the Bay.

### **How will technology benefit Chesapeake Bay restoration?**

When coordinated Bay restoration efforts began in the 1980s, no one imagined the positive impact improved technology would have on the Bay. What many considered unattainable then, has become the standard today. Today's wastewater treatment plants, for example, have the ability to remove two to three times as much nitrogen as we thought would ever be possible in 1987. While we can't count on technology to be the sole savior of the Bay, we can count on bold nutrient reduction goals to help drive tomorrow's technological improvements. New technologies will continue to develop over time and allow us to better meet our future goals.

### **How does the new nutrient reduction goal differ from the original 40% goal set in 1987?**

The reductions are now based on a better understanding of the needs of the Bay's living resources

being called for now are much greater than the original reductions called for when the partners agreed to a 40% reduction in nutrient loads to the Bay between 1985 and 2000.

Between 1985 and 2000, total annual nitrogen loads delivered to the Bay have been reduced by 53 million pounds. The new goal will require Bay Program partners to reduce nutrient loads by an additional 110 million pounds per year by 2010.

### **Why are current water quality criteria changing?**

Previously, water quality criteria for dissolved oxygen were based on the assumption that all areas in the Bay were identical and did not take into account the natural variability found in the Bay's waters. Because conditions throughout the Bay differ based on depth, salinity and season, uniform baywide criteria do not take into account the varying needs of different plants and animals.

As a result, the water quality criteria have been revised to account for the natural variability in conditions found throughout the Bay. The Bay criteria differ from one region of the Bay to another, as determined by the plants and animals residing in that area. Future state water quality standards will need to be revised to incorporate the new water quality criteria.

### **How does changing water quality standards improve Chesapeake Bay water quality?**

This effort is about adopting an innovative approach that will lead to new water quality standards tailored to the specific needs of plants and animals in all of the Bay's different habitats.

To be more protective in areas most critical to migratory fish, such as striped bass or rockfish, new standards will incorporate dissolved oxygen criteria that are higher than those currently in state standard. Science shows that rockfish, during the spring spawning season, need higher levels of oxygen than the current 5 mg/l. The new standards will reflect those needs and call for 6 mg/l during the spring season in areas critical to spawning rockfish.

In the Bay's deeper habitats, the new water quality criteria for oxygen are lower than those currently on the books, but higher than existing water quality conditions. The new criteria will remain protective of the species that reside in those areas, and new water quality standards - which better reflect natural conditions - offer a science-based approach to better target nutrient reduction decisions.

### **Will bay grasses improve as a result of the changes in water quality criteria?**

The resurgence of bay grass habitat is critical to the future health of Chesapeake Bay. Water quality restoration goals are being specifically tailored to the needs of underwater bay grasses. Currently about 85,000 acres of Bay bottom are covered by underwater grasses. Under this new process, Bay Program partners aim to expand that to 185,000 acres.

In addition to revising the water quality criteria for dissolved oxygen, the Bay Program has developed new criteria for water clarity. The states will be applying these new criteria to develop standards that will be protective of underwater bay grasses in shallow water habitats.

In order to improve water clarity for bay grasses, additional reductions in nutrient and sediment pollution are needed. For the first time, Bay Program partners have set a baywide goal for reducing the amount of sediment flowing into the Bay and its rivers. Large-scale sediment reductions, when combined with the new nutrient reduction allocations, will accelerate the resurgence of underwater bay grasses, as well as improve the quality of local streams and rivers.

Sediment goals have been set for upland areas and will be supplemented by additional reductions from shoreline areas. Shoreline sediment reduction goals will be developed as part of each state's local tributary strategy process and will increase the resurgence of local underwater grass beds.

### **How long does it take for the Bay to respond once management practices are put in place?**

Some types of management practices will result in rapid improvements in Bay water quality while others may take years or even decades to have an effect. When nutrient reduction technology becomes operational at a water treatment facility, there are immediate reductions in the nutrient pollution loads that affect Bay water quality. On the other hand, most land-based management practices do not result in immediate reductions of nutrient and sediment pollution loads to the Bay. For some practices, noticeable improvement may be seen within a few years, for others, it may take a decade or more.

Improvements in Bay water quality also depend on the location of the management practices. Reductions from management practices in the upper reaches of the watershed will take longer to have an impact than those that occur closer to the Bay's waters. The Bay is a complex ecosystem that must be allowed time to respond.

### **Will these new goals remove the Bay from the list of impaired waters?**

Based on current science, the nutrient reduction goals are expected to result in achieving the new dissolved oxygen criteria in all portions of the Bay except for one – a portion of the deep water between Kent Island and the Patuxent River – which encompasses only about four percent of the Bay's volume. In this area oxygen levels may occasionally exceed the criteria in deep waters during the summer. If this occurs, or if any portion of the Bay does not meet water quality standards in 2010, then a TMDL will need to be developed for that part of the Bay by 2011.

Since the states will have already developed localized tributary strategies to reduce nutrient and sediment loads, a great deal of progress toward achieving a TMDL will have been made. However, additional work may involve modifications to the strategies.

### **Since EPA is only publishing guidance, how can the public be assured that the states will follow it?**

It is very important that the public be involved in the development of state water quality standards. The states will be soliciting public comment. It is important that the public becomes familiar with the EPA guidance so they can be sure that it is being followed. Additionally, in 2005 EPA will be reviewing the proposed standards and will decide whether or not to approve them.

### **Has this process involved the citizens of the Bay region?**

Yes. We received hundreds of comments during the public reviews of the water quality criteria. Many more opportunities for public review and involvement will occur during the upcoming years as the states develop water quality standards and tributary strategies to achieve nutrient and sediment reduction goals.

### **How does this Baywide goal affect my local river?**

In addition to the baywide pollution reduction goals, river – or tributary – specific reduction goals have been set in order to meet water quality standards in localized areas throughout the Bay. Tributary strategies will be developed that will be tailored to meeting the specific pollution reductions needed to attain water quality standards in specific locations throughout the entire Bay.

Achieving these basinwide reduction goals will result in improved water quality for the thousands of rivers and streams that eventually flow into the Bay.