August 20, 2004

STATEMENT OF
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CHESAPEAKE BAY FOUNDATION
BEFORE THE
COMMITTEE ON GOVERNMENT REFORM
HEARING ON "SAFEGUARDING THE CHESAPEAKE BAY"

Summary

The Chesapeake Bay is dying as a result of pollution, and progress in reducing pollution has been insignificant in terms of improving the Bay's health. For more than 20 years, Bay scientists have known that nitrogen and phosphorus pollution are the largest obstacles to the restoration of local rivers, streams, and the Bay, and today science has developed a road map for restoration.

That road map was developed through the use of a computer model, one of the most advanced ecosystem models in the world, which allows scientists to assess pollution sources from across the watershed, test hypotheses, and evaluate the potential impact of management options.

The Chesapeake Bay Foundation (CBF) applauds the science behind the modeling effort but believes that to evaluate the health of the Bay, it is essential to judge progress with monitoring data. In fact, in most of the Bay and its tributaries the data show no improvement or declining trends.

The lack of progress stems directly from a lack of sufficient funding and adequate accountability. Commitments made are routinely broken. For example Tributary Strategies, which map actions necessary to reduce pollution, are years late and remain incomplete. To date, the strategies don't outline how they will be monitored, who is responsible, milestones to measure progress, or funding sources. The Bay states and EPA have also been delinquent in implementing or enforcing the Clean Water Act by not requiring permit discharge limits for nitrogen and phosphorus pollution.

Finally, to reduce pollution and restore the Chesapeake Bay, substantially greater investments will be needed from federal, state, and local governments as well as the private sector.

CHESAPEAKE BAY FOUNDATION
Save the Bay

State of the Bay

One of the most common questions CBF receives from the public is "How is the Bay doing?" In order to answer this seemingly easy but complex question, CBF developed an annual State of the Bay Report, which examines 13 of the most critical indicators to the Bay's health. To create the State of the Bay Report, CBF scientists examine the best available current and historical information for indicators in three categories: pollution, habitat, and fisheries. Although we seek advice from other Bay scientists, ultimately the best professional judgment of CBF scientists determines the value assigned each factor. While no single number can fully convey everything that is occurring in the Bay, CBF's State of the Bay Report does present an overall representation and some historical context.

The current state of the Bay is measured against the healthiest Chesapeake we can describe--the rich and balanced Bay that Captain John Smith described in his exploration narratives of the early 1600s, supplemented by accounts of other early seventeenth-century visitors and some sophisticated scientific detective work. Smith explored the Chesapeake when clear water revealed meadows of underwater grasses, oyster reefs so prodigious they posed threats to navigation, and abundant fish. The Bay that John Smith saw rates 100 and is our benchmark. While CBF recognizes that a Bay of 100 is impossible in this modern age, a Bay at 40 could be achieved in the short term if current commitments are kept, and a Bay of 70 could be possible in the long term.

In 2003, the CBF State of the Bay index was 27, which represented the first decline in the index since CBF first released the report in 1998. CBF estimates that the State of the Bay reached its lowest point in the early 1980s, and improved slightly since that time, but that the Bay is still existing only at approximately one-quarter of its full potential. Many scientists outside CBF have supported this overall conclusion of the Bay's health.

The single most important commitment made in the Chesapeake 2000 Agreement by all of the Bay jurisdictions and the federal government was to reduce nutrient and sediment pollution sufficiently "to remove the Bay and the tidal portions of its tributaries from the list of impaired waters under the Clean Water Act." To guide this effort, Bay scientists have developed a very innovative and scientifically based approach to define conditions specific to each tributary and habitat of the Bay for three key water quality factors: dissolved oxygen, algae abundance, and water clarity. These three factors will be the most crucial in meeting the Bay's water quality goals and are the ultimate measure of progress for Bay restoration.

Like animals on land, nearly all of the Chesapeake Bay's aquatic life, from worms and crabs on the bottom, to perch and striped bass above and underwater grasses in between, depend on oxygen to survive. Low dissolved oxygen (DO) levels, called hypoxia, can impair growth and reproduction and stress living resources, making them vulnerable to disease. Water with no oxygen, called anoxic, will kill most aquatic animals.

Over the last four decades, the volume of hypoxic and anoxic water in the Chesapeake Bay has more than tripled. Last year, dissolved oxygen was too low to support a healthy ecosystem in more than 40 percent of the mainstem of the Bay, stretching from south of Baltimore to the York River. This July, it was more than 35 percent of the Bay's mainstem.

Frighteningly, on average, dissolved oxygen levels in bottom areas of the Bay begin to decline in March, becoming hypoxic in May and not returning to healthy levels until October or November. This means that bottom areas of the Bay suffer from decreasing or low levels of dissolved oxygen for roughly ten months a year. In addition, data from both Maryland and Virginia show unhealthy levels of oxygen affecting many local rivers as well.

Bay Program monitoring and analysis show very little progress on dissolved oxygen and that in many places conditions have worsened. Ninety percent of the monitoring stations in the Bay and the tidal tributaries show no improvement or worsening of summer bottom dissolved oxygen levels or water clarity from 1985 to 2003. In addition, 82 percent of the monitoring stations showed no improvement or worsening of *chlorophyll a* (algae abundance) from 1985 to 2003. Nitrogen and Phosphorus pollution are the largest controllable factors influencing dissolved oxygen, algae abundance, and water clarity.

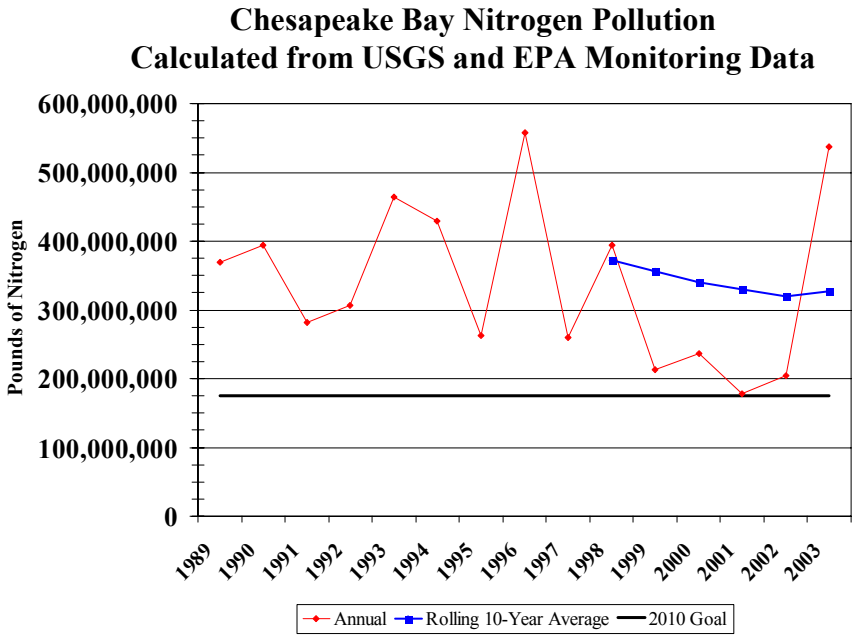
In 2003, CBF calculated total nitrogen and phosphorus loads to the Bay based to the maximum extent on monitoring data. Using the reported loads from USGS monitoring from above the fall line and EPA monitoring data for point sources below the fall line, CBF was able to account for 74 percent and 67 percent of the nitrogen and phosphorus loads, respectively, directly from monitoring data. CBF extrapolated the monitoring data to the total nutrient load using relationships documented in the Bay Program model.

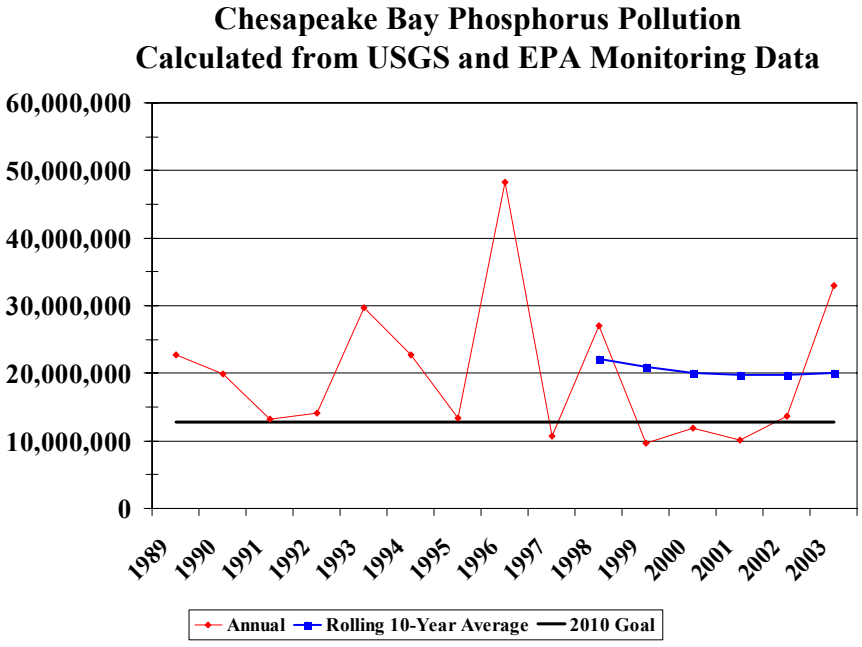
CBF's calculations show that the amount of nitrogen and phosphorus pollution entering the Bay each year varies considerably. Consequently, the Bay's health varies greatly from year to year as well. In years of low pollution, the Bay's levels of dissolved oxygen, water clarity, and algae improve and in years of high pollution those levels decline.

An example of the impact of that variability is the astounding 535 million pounds of nitrogen pollution flowing into the Chesapeake Bay in 2003, and 33 million pounds of phosphorus pollution. The model, looking at long-term averages, does not account for the variability and therefore does not reflect the damage caused by high amounts of pollution.

The most common way to examine the effects of management practices is to adjust for natural variability. When this is done using a rolling 10-year average, CBF's calculations show a decrease in average nitrogen and phosphorus load to the Bay between 1998 and 2002, with a slight increase in 2003. These trends are similar to the Bay Program model results and the USGS adjusted flow concentrations. The average total nitrogen load,

however, is 16 percent higher than that projected by the Bay Program model, an indication that more pollution reduction will be necessary.





Overall, the progress in reducing pollution has been insignificant in terms of improving the Bay's health. While averaged, flow-adjusted, or model results have shown that management actions are having an effect, they have not been implemented to the scale necessary to see substantial improvement in the Bay's health. All measures of Bay health and nutrient pollution reduction show that we have far to go to remove the Bay from the impaired waters list.

Limits to Progress

Two key factors have limited the progress in restoring the Bay's health: resources and accountability. Increases in both of these elements are critical in order to achieve the 2010 commitments in the Chesapeake 2000 Agreement.

Both the Chesapeake Bay Commission and EPA have analyzed the costs of achieving the water quality commitments of the Chesapeake 2000 Agreement. The EPA looked specifically at the cost of achieving the nutrient and sediment pollution reductions across each jurisdiction in the watershed and determined both capital costs and annual operating costs. Their analysis estimated that the total annual cost including both capital and operating costs would be $1.1 billion annually in order to achieve the water quality standards over a ten-year period (2001-2010).

The Chesapeake Bay Commission examined the cost of meeting all of the Chesapeake 2000 commitments for Virginia, Maryland, and Pennsylvania. It based its analysis on many of the same practice cost estimates and practice implementation levels as the EPA analysis. However the CBC also determined the 2003 level of funding already devoted to achieving the goals, thereby identifying a funding gap. The results showed that achieving the water quality commitments accounted for 63 percent of the total costs of Chesapeake 2000 and would require $11.5 billion over eight years (2003-2010). Current funding levels for nutrient and sediment reductions efforts would provide $2.1 billion, therefore an additional $9.4 billion, or four times the current funding levels, will be required to achieve the 2010 commitments.

There is no question that significantly greater resources will be required to restore the Bay's health. Maryland has already taken a substantial step through the establishment and funding of the Chesapeake Bay Restoration Fund that will provide approximately $1 billion for sewage plant upgrades, septic system improvements, and key agricultural practices. The Chesapeake Bay Watershed Blue Ribbon Finance Panel is examining strategies to close the remaining funding gap. When viewed in the broader context of the overall impact that the Chesapeake Bay has on the region and the nation, the required funding is quite small. The estimated cost of achieving the water quality commitments for the Bay amount to only 0.4 percent of median household income of the Bay watershed. Furthermore, the estimated cost is only 1.7 percent of the 1989 economic value of the Bay.

To be successful, increased funding must be accompanied by increased accountability. Past performance relative to commitments to restore the Chesapeake Bay demonstrate that without strong leadership, those commitments will go unmet.

In the 1987 Chesapeake Bay Agreement the Executive Council (EC) committed to reverse the decline in the Bay's health and outlined goals and timelines. Specifically, the EC set a goal of reducing nitrogen and phosphorus pollution in the Chesapeake Bay by 40 percent by 2000. To achieve that pollution reduction and improve water quality, the 1987 Agreement outlined specific strategies, many which still have not been fully implemented:

Commitment	**Outcome**
➢ "Evaluate and institute, where appropriate, alternative technologies for point source pollution control, such as biological nutrient removal and land application of effluent to reduce pollution loads in a cost effective manner;	➢ Fifteen years later, two-thirds of the sewage treatment plants in the watershed did not use biological nutrient removal or any other technology to reduce nutrient pollution.
➢ "Establish and enforce pollutant limitations to ensure compliance with water quality laws;" and	➢ In 1998, the Bay and the tidal portions of its tributaries were formally designated as impaired by nutrient pollution under the federal Clean Water Act. EPA and the states have yet to implement, let alone enforce, nutrient pollution limitations as required by the Clean Water Act to reduce nitrogen pollution.
➢ "…develop, adopt and begin implementation of a basin-wide strategy to equitably achieve by the year 2000 at least a 40 percent reduction of nitrogen and phosphorous entering the mainstem of the Bay."	➢ As of today, the 40 percent goal is unmet Bay-wide.

CBF remains concerned over the lack of implementation of the new Chesapeake 2000 Agreement (C2K) and its commitments and timeframes. Concerning water quality, the agreement committed to:

Commitment	Outcome
➢ "By 2001, define the water quality conditions necessary to protect the Bay's aquatic living resources and then assign load reductions for nitrogen and phosphorus to each major tributary;"	➢ Not accomplished until 2003, two years behind schedule.
➢ "Using a process parallel to that established for nutrients, determine the sediment load reductions necessary to achieve water quality conditions and assign load reductions for sediment to each major tributary by 2001;"	➢ Not accomplished until 2003, two years behind schedule.
➢ "By 2002, complete a public process to develop and begin implementation of revised Tributary Strategies to achieve and maintain the assigned loading goals;" and	➢ Not completed; implementation won't begin until after December 2004, assuming the revised tributary strategies are completed according to the revised Bay Program goals.
➢ "By 2003, the jurisdictions would use their best efforts to adopt new or revised water quality standards consistent with the defined water quality conditions."	➢ Adoption of new or revised water quality standards have just begun and will not be complete until at least 2005.

The EPA and the Bay jurisdictions have also been delinquent in implementing and enforcing the Clean Water Act. The Clean Water Act requires that all sewage treatment plants and industrial discharges operate with permits that are sufficiently stringent to protect water quality. These permits, called National Pollution Discharge Elimination System (NPDES) permits, are to include specific, quantitative limitations for individual parameters such as toxic pollutants. NPDES permits are generally issued by state governments, with oversight and approval responsibilities retained by the U.S. Environmental Protection Agency.

CBF has concluded that the Clean Water Act requires that NPDES permits include specific limits for nitrogen and phosphorus pollution in Chesapeake Bay. However, only a handful of the hundreds of sewage treatment and industrial permits include such limits. The EPA Assistant Administrator for Water affirmed in a recent letter that NPDES permits must contain nitrogen and phosphorus limits sufficient to protect water quality.

The Clean Water Act also requires the states to identify waters that fail to meet established water quality parameters. This "impaired waters" list includes the Chesapeake Bay and the tidal portions of its tributaries as a result of excessive levels of nitrogen and phosphorus pollution. For impaired waters, the Act requires the development of a Total Maximum Daily Load (TMDL). A TMDL is a regulatory tool that identifies specific sources of pollution and sets forth a plan to remove the impairment caused by that pollution.

In 2000, the EPA agreed to let Bay watershed states work together voluntarily to remove the Bay from the "impaired waters" list by 2010, rather than imposing Clean Water Act mandates for the development of a TMDL. Three and a half years later, not one state in the watershed is on track to reduce nitrogen and phosphorus pollution to the levels necessary to remove the impairments.

As a result of the EPA and the Bay jurisdiction's failure to implement and enforce the Clean Water Act, CBF filed a petition to compel EPA to comply with the requirements of the Clean Water Act (copy attached). CBF's petition outlines a far-reaching series of remedies for the EPA to assure compliance with the Clean Water Act's requirements, including:

- New, enforceable permit limitations for nitrogen and phosphorus at sewage treatment plants and industrial discharges, consistent with the goals of C2K;
- New, technology-based standards for sewage treatment plants and industrial discharges that reflect modern, affordable techniques for controlling pollution (EPA has not revised its sewage technology standards since 1984);
- Development of a regulatory TMDL for the Chesapeake and impaired tributaries before allowing the states to issue permits for new or expanded sources of nitrogen and phosphorus pollution; and,
- Assuring that at least 25 percent of federal grant money be directed toward reducing nitrogen and phosphorus pollution from sewage treatment plants.

In response to many of the issues raised in CBF's petition, EPA recently announced a draft proposed permitting strategy for sewage and industrial treatment plants in the Bay watershed that purports to require nutrient pollution limits in the permits. However, this "new" approach in fact fails to specify any new measures or commitments that the states must implement now to address their nutrient reduction obligations under the Clean Water Act. In fact, it actually allows them to backslide from current requirements of the Act until finalization of new state standards for the Bay and its tributaries, even though those standards are already two years late.

Needed Actions

In order to achieve the 2010 commitments for the Chesapeake Bay, actions to increase resources and accountability must be taken immediately for each of the major sources of nutrient pollution: point sources, agriculture, stormwater, and air pollution.

Point sources – EPA and the Bay jurisdictions must enforce the Clean Water Act and immediately require that permit limits for nitrogen and phosphorus discharges be included in permits for sewage treatment plants and industrial facilities. Maryland has already established a mechanism to increase funding for sewage treatment upgrades. Virginia and Pennsylvania must now follow suit and the federal government must increase its share of the needed funding.

Agriculture – Both federal and state funding for agricultural practices must increase to provide $250 million annually to assist farmers in the Bay watershed. The next federal Farm Bill provides an opportunity to create a funding structure that will continue to support America's farmers but also comply with new global trade rules by rewarding good environmental performance. Public subsidies of agricultural operations should ensure that water quality goals are met.

Stormwater – A portion of public funds supporting new development and roads should be dedicated to addressing the nutrient and sediment pollution associated with those sources, and the development community should internalize initial stormwater management costs as well, across the watershed. The new federal transportation bill (TEA-LU in the House of Representatives and SAFETEA in the Senate) should dedicate 2 percent of the surface transportation program funds to addressing stormwater pollution from highways.

Air Pollution – EPA and the Bay jurisdictions must fully utilize and implement the Clean Air Act to achieve reductions in nitrogen deposition in the Bay watershed. Specifically, the EPA and the Bay jurisdiction should stop delaying compliance with previous one-hour standards under State Implementation Plans. EPA must also enforce new source reviews consistent with the Clean Air Act to curb the amount of nitrogen pollution deposited in the Bay from mid-west power plants, and should promulgate new requirements for year-round Nox controls for those facilities.

Conclusions

The Bay's living resources and the people who depend on them for a living continue to suffer as a result of the lack of significant progress in restoring the Bay's health. The Chesapeake Bay restoration effort has the best science of any major aquatic ecosystem in the world identifying what the problems are, what solutions are needed, and mapping out a strategy for attainment. However, the resources and accountability have been insufficient to produce any significant progress in restoring the Bay. EPA and the Bay jurisdictions must enforce and implement the already existing laws that are intended to clean up our waters. Substantially greater investments must also be made to protect and enhance the value of the Chesapeake to local communities, the region, and the nation.