

TESTIMONY OF
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COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
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Good morning Chairman Cardin and members of the Subcommittee. I am Nick DiPasquale, the Director for the Environmental Protection Agency's Chesapeake Bay Program Office. Thank you for the opportunity to testify about the progress we are making—in collaboration with our state and local partners and other federal agencies—to restore the Chesapeake Bay watershed.

Today, I will provide you with an overview of the health of the Chesapeake Bay, the complex challenges and some of the progress we are making to protect and restore the watershed, and some of the key initiatives we are undertaking to protect and restore this vital resource including: the Chesapeake Bay Total Maximum Daily Load (TMDL) (also known as the pollution diet), President Obama's Chesapeake Bay Executive Order, and the development of a new Chesapeake Bay Program Partnership Agreement.

The Chesapeake Bay Program

This year we recognize the 30th anniversary of the Chesapeake Bay Program (CBP) Partnership. Established by Congress, the CBP is a comprehensive cooperative effort by federal, state, and local governments, non-governmental organizations, academics, and other entities that share the mission of restoring and protecting the Chesapeake Bay and its watershed. The Partnership includes the original

signatories to the Chesapeake Bay Agreements – Maryland, Pennsylvania, Virginia, the District of Columbia, the Chesapeake Bay Commission (a tri-state legislative assembly representing Maryland, Virginia and Pennsylvania), and the EPA on behalf of the federal government. The headwater states of Delaware, New York and West Virginia joined the Partnership through a water quality memorandum of understanding (MOU) in 2000 when the Partnership recognized the participation of those states was necessary to get the nutrient and sediment reductions necessary to meet water quality standards in the Bay watershed.

The CBP has a long history of partnerships, science and action that directs and conducts the restoration of the Chesapeake Bay watershed. The CBP brings together the intellectual and financial resources of various state, federal, academic and local watershed organizations to build and adopt policies that support a unified plan for Chesapeake Bay watershed restoration. The success of this large scale ecosystem restoration program and its many accomplishments and scientific developments are studied and used as a model throughout the United States and internationally.

The Chesapeake Bay Watershed

More than 100,000 streams and rivers thread through the Chesapeake Bay watershed which encompasses 64,000 square miles, parts of six states and the District of Columbia. It is home to more than 3,600 species of fish, plants and animals. Nearly 17 million people live in the watershed and approximately 150,000 new people move into the watershed each year. Everyone in the watershed lives within a few miles of one of these tributaries, which connect our communities to the Bay.

The Bay's enormous watershed drains into an estuary with a surface area of 4,500 square miles resulting in a land-to water ratio of 14 to 1—the largest ratio of any major estuary in the world. That large ratio is

one of the key factors in explaining why the drainage area has such a significant influence on the water quality in the Bay. The actions we take on the land have a significant impact on the health of our local rivers and streams, as well as the Bay.

As the largest estuary in North America, the Chesapeake is ecologically, economically and culturally critical to the region and the country. For more than 300 years, the Bay and its tributaries have sustained the region's economy and defined its traditions and culture. The Bay has accounted for over 500 million pounds on average of seafood harvested annually since 2000. There are nearly 18,000 local governments in the Bay watershed, including towns, cities, counties and townships. Approximately 84,000 farms are located in the Chesapeake Bay watershed and form a vital part of the watershed's economy and way of life.¹ The economic value of the Bay has been estimated at more than \$1 trillion² and two of the five largest Atlantic ports (Baltimore and Norfolk) are located in the Bay.

The Health of the Bay

The Chesapeake Bay is a complex, sensitive and dynamic ecosystem. During the last 30 years, actions taken by the CBP Partners, at the federal, state and local levels have made a significant and positive impact; however, increased impervious cover, changing environmental conditions, and other developments to support the growing population have lessened the impact of these achievements. Although the ecosystem generally remains in poor condition, the Bay's health has slowly improved in a number of areas and we are beginning to see signs of hope as a result of our continuing efforts and new initiatives.

¹2007 Census of Agriculture reported 83,775 farms in the Chesapeake Bay region.

²*Saving a National Treasure: Financing the Cleanup of the Chesapeake Bay*, A Report to the Chesapeake Bay Executive Council, Chesapeake Bay Blue Ribbon Finance Panel, October 27, 2004

Still, many challenges remain. The Bay's water quality remains degraded. Too much nutrient and sediment pollution flows to the Bay and its streams, creeks and rivers. Data from 2010-2012 indicate that only 35 percent of the water volume of the Bay and its tidal tributaries met dissolved oxygen water quality standards during summer. In 2011, only 5 percent of the Bay's tidal waters met the water quality standard, and only 18 percent of the Bay's tidal waters had chlorophyll *a* concentrations that met standards.³ Climate change and sea level rise are significant ecological drivers that will likely impact fisheries, habitat, and the built environment. Even in the face these challenges, we are beginning to see improvement in water quality in certain sub-watersheds which is a trend we expect to see increase as more on-the-ground pollution reduction actions are implemented.

The status of the Bay's fish and shellfish populations is mixed, though they continue to be stressed by pollution, diseases, overharvesting, lack of food and loss of habitat. For example, oyster populations, which provide critical habitat for fish, remain at very low levels—less than one percent of historic levels. But, improved scientific understanding has helped us develop new performance metrics to better target, plan, implement and monitor tributary-scale oyster restoration projects and evaluate progress. Populations of striped bass, or rockfish, which rebounded from historic lows in the late 80's are still at risk due to disease and concerns remain about adequate food supply.

Overall, the Bay's habitats and lower food web remain far below what is needed to support thriving populations of aquatic life. In 2012, there were an estimated 48,191 acres of underwater grasses in the Chesapeake Bay, achieving only 26 percent of the Program's 185,000-acre goal and 45 percent of the

³ *Bay Barometer: Spotlight on Health and Restoration of Chesapeake Bay and Watershed*;
<http://www.chesapeakebay.net/track/health/bayhealth>

Bay and its tidal tributaries met the goal for having acceptable bottom habitat.⁴ However, while 2012 witnessed an overall loss of underwater grasses in the upper and middle Bay zones —most likely the effects of Hurricane Irene and Tropical Storm Lee in the fall of 2011—two areas showed notable resilience and expansion. First, although, the large grass bed at the head of the Bay on the Susquehanna Flats decreased in size, the grasses there remained robust and very dense. Second, grasses continued to increase in the main stem of the James River.

Chesapeake Bay TMDL/Pollution Diet

Among the many initiatives we are undertaking to help restore and protect this impaired watershed is the Chesapeake Bay Total Maximum Daily Load (TMDL), which some have referred to as a pollution diet. The action of using a TMDL, as authorized in section 303(d) of the Clean Water Act to address impaired waterbodies, is not a new or recent idea; it is merely the next step in this decades-long restoration partnership effort and is a tool to help improve the Bay.

In June 2000, when the CBP Partners signed the Chesapeake 2000 (C2K) agreement, they committed to meeting water quality standards in the tidal waters of the Bay by 2010. They recognized, however, that a TMDL would need to be developed if the actions identified in the agreement were not successful in achieving water quality standards in the main stem and tidal portions of the Bay.⁵ Despite progress in reducing pollution levels, the Partners were not successful in meeting water quality standards by 2010. The Bay continued to have degraded water quality, degraded habitats, and low populations of some fish and shellfish species.

⁴*Bay Barometer: Spotlight on Health and Restoration of Chesapeake Bay and Watershed;*
<http://www.chesapeakebay.net/track/health/bayhealth>

⁵ Chesapeake 2000 agreement page 5: http://www.chesapeakebay.net/content/publications/cbp_12081.pdf

Therefore, in October 2007, when it became apparent that water quality standards would not be met by 2010, the CBP state partners decided that they preferred to have the EPA work with them to establish a multi-state TMDL.⁶ After more than three years in development, with intense involvement from states, local governments and numerous stakeholders, the EPA issued the final Chesapeake Bay TMDL on December 29, 2010. It established the maximum amounts of nitrogen, phosphorus and sediment pollution the estuary can receive and still meet water quality standards. It also allocated those amounts among 92 geographic segments in the Bay watershed. The Bay TMDL relies significantly on state developed strategies to inform the allocations as well as the measures the EPA and the states adopted to ensure accountability for reducing pollution and meeting deadlines for progress.

The final TMDL is based on state-defined strategies called Phase I Watershed Implementation Plans (WIPs), along with input received through extensive outreach efforts across the watershed. The WIPs are the road maps for how and when, in partnership with federal and local governments, states will reduce pollution in order to achieve and maintain pollutant allocations under the Bay TMDL. In developing the TMDL, the plan was to have the pollutant allocations based on WIPs and to provide the jurisdictions with flexibility to let them lead the way in determining how to reduce pollution from specific source sectors (e.g. wastewater treatment, urban stormwater and agriculture).

Unlike previous efforts with a distant end line, the Partnership agreed that a series of two-year milestones be used to gauge progress and that a commitment to ensure all pollution control measures needed to fully restore the Bay and its tidal rivers are in place by 2025, with measures in place by 2017 that are expected to achieve at least 60 percent of the load reductions. The first set of milestones cover the period from 2012-2013 and I am pleased to say that all of the Bay jurisdictions are largely on track to

⁶ See PSC meeting minutes for October 1, 2007: http://archive.chesapeakebay.net/pubs/calendar/PSC_10-01-07_Minutes_1_9029.pdf

achieve the pollutant reduction commitment over that period. The TMDL is supported by rigorous accountability measures to ensure cleanup commitments are met, including short-and long-term benchmarks, a tracking and accountability system for jurisdiction activities, and federal contingency actions that can be employed if necessary to ensure progress. These accountability measures set the TMDL apart from past Bay restoration initiatives.

The CBP partners' commitments and continuing efforts to reduce nitrogen, phosphorus and sediment pollution are already being seen in the watershed. Simulations of pollution reducing efforts put in place between July 2009 and June 2012 estimate CBP partners have achieved 25 percent of nitrogen, 27 percent of phosphorus and 32 percent of sediment reductions needed by 2025. Specifically, nitrogen loads to the Bay from a base year of 2009 have decreased 18.5 million pounds to 264.1 million; Phosphorous loads to the Bay have decreased 1.3 million pounds to 18.0 million; and sediment loads to the Bay have decreased 431 million pounds to 8,244 million.⁷

Watershed Implementation Plans (WIPs)

Once the final TMDL was established, the EPA and the Partners turned their focus to implementation of Phase I WIPs and development of Phase II WIPs. Phase II WIPs are the Partners' plans outlining how they will work with their localities to translate the WIP and TMDL requirements to a local scale – where much of the restoration actions will occur. Because implementation of the TMDL is designed to be as flexible as possible, the EPA encouraged jurisdictions to develop Phase II WIPs to meet the TMDL allocations in the best way for their circumstances. Completion of the Phase II Watershed Implementation Plans by the jurisdictions in 2012 marked another step in the transition from planning to implementing the

⁷ CBP, Restoration Progress Update, April 30, 2013;
http://www.chesapeakebay.net/presscenter/release/bay_program_partners_continue_progress_to_stem_the_flow_of_pollutants

necessary practices to restore the health and economic engine of the Bay watershed's streams and rivers.

Looking to the future, the EPA established a checkpoint in the 2017 time period for assessing the progress of the effort at a midpoint and also expects jurisdictions to prepare Phase III WIPs in 2018 to provide additional detail of restoration actions beyond 2017 and ensure the 2025 restoration goals are met.

When fully implemented, the TMDL and WIPs will help support local communities that rely on clean water and healthy habitats by improving the thousands of local streams and rivers that feed into the Bay—protecting drinking water sources, improving recreational opportunities and supporting local economies.

President Obama's Chesapeake Bay Executive Order

On May 12, 2009, President Obama issued Executive Order 13508 on Chesapeake Bay Protection and Restoration which marked a new era of federal leadership, action and accountability. The Executive Order recognized that the efforts of the past 25 years were not making sufficient progress in restoring the Chesapeake Bay and its watershed, and that success would require the additional support and coordination of all government agencies to make necessary policy changes and initiate new actions “to protect and restore the health, heritage, natural resources, and social and economic value of the nation's largest estuarine ecosystem and the natural sustainability of its watershed.”

The Executive Order established a Federal Leadership Committee (FLC), chaired by the EPA Administrator, and includes senior representatives from the departments of Agriculture, Commerce, Defense, Homeland Security, Interior and Transportation. It acknowledges that although the federal

government should assume a strong leadership role in the restoration of the Bay, success depends on a collaborative effort involving state and local governments, businesses, non-government organizations and the region's residents.

Pursuant to the executive order, a new federal *Strategy* for the Chesapeake region was released in May 2010. The *Strategy* identifies the four most essential goals for a healthy ecosystem (Restore Clean Water, Recover Habitat, Sustain Fish and Wildlife and Conserve Land and Increase Public Access) and developed 12 key environmental outcomes that reflect progress toward these goals. The *Strategy* also includes four supporting strategies (Expand Citizen Stewardship, Develop Environmental Markets, Respond to Climate Change, and Strengthen Science), to help achieve the overall goals.

To increase accountability, federal agencies established milestones every two years for actions to make progress toward each of the *Strategy's* goals and outcomes. These support and complement the states' two-year Bay TMDL milestones.

Each year, the federal agencies are required to issue an Action Plan and a Progress Report, highlighting the extensive efforts undertaken to help protect and restore the health of the watershed. Highlights from the 2012 report include:

- Expanded water-quality monitoring and analysis by adding new non-tidal monitoring stations, maintaining existing tidal observation platforms, and updating water-quality trends.
- Planted nearly 100 acres of oyster reefs in Harris Creek (in Maryland's Talbot County).
- Opened 33.6 miles of stream habitat for migratory fish in Virginia and Pennsylvania.
- Implemented conservation practices on more than 342 thousand acres of high priority working lands.

- Developed a new Oyster Decision Support Tool by NOAA designed to help resource managers, restoration practitioners and others access the best and most up-to-date data to plan and track new restoration projects.
- Completed Bay TMDL Phase II Watershed Implementation Plans and two-year milestones.
- Protected more than 1300 acres of Department of Defense installations in the Bay watershed.
- Released the Mid-Atlantic Elementary and Secondary Environmental Literacy Strategy, which will guide federal engagement in state environmental literacy planning and implementation.
- Established a new blue crab abundance target of 215 million adult female crabs and male conservation targets based the best available science.

Chesapeake Bay Watershed Agreement

In 2011, both the Chesapeake Executive Council and the Federal Leadership Committee for the Chesapeake Bay acknowledged the need to look at potentially integrating the goals, outcomes and actions of the Chesapeake Bay Program (Chesapeake 2000) with those set forth in the 2010 *Chesapeake Bay Executive Order Strategy*. Most of the outcomes and commitments in the Chesapeake 2000 agreement have expired and there is now a need to update and refresh them in order to accelerate progress in achieving the water quality, living resource and goals of the program.

This new plan for collaboration across the Bay's political and geographical boundaries will clarify our vision, mission and values and establish shared goals and outcomes for the protection, restoration and stewardship of the Bay, its tributaries and the lands that surround them. The current draft agreement includes goals and outcomes for sustainable fisheries, habitat restoration, water quality, healthy watersheds, land conservation, public access, environmental literacy and local leadership. The agreement, now being drafted, is intended to encourage a forward-looking approach to conservation

and restoration, focusing on immediate results and recognizing our long-term effort must be sustained by and for future generations. It is intended that the new Chesapeake Bay Watershed Agreement will have more flexibility, increased accountability, greater participation by all partners, and be consistent with both Executive Order 13508 and the goals of the Chesapeake Bay *Strategy*.

Managing Adaptively to Address Emerging Issues

The Partnership continues to address complex issues that can affect actions necessary to restore the Chesapeake Bay watershed. Examples include: accounting for the potential consequences of impervious development and continuing climate change; accounting for innovative, new technologies; factoring in new understanding of the Susquehanna River dams' influence on nutrient and sediment pollutant loads; invasive species; understanding and recognizing year-to-year variability of rainfall-driven nutrient and sediment loads and their impact on Bay water quality; and taking full advantage of living resources as natural filters. This is part and parcel of the adaptive management commitment of the Partnership to consider new knowledge and updates in information which can best inform our watershed restoration strategies and management.

In recent years, the Partnership has begun using a decision framework to fully integrate an adaptive management process into Chesapeake Bay restoration. For example, the Partnership will provide input on and review changes in decision-support tools, such as the models and methods used to assess progress, and weigh the effects of these proposed changes against the impacts to meeting the ultimate goal of achieving water quality standards. After all, the health of the Bay's waters is what ultimately tells us if our restoration efforts are working.

Further, the Partnership will consider the need for updates to the current TMDL and WIPs to address any needed modifications informed by the changes to the decision-support tools, as well as jurisdictions' implementation experience to date. The EPA's expectations for the scope and content of the Phase III WIPs may vary by jurisdiction depending on their implementation progress through 2017. The Partnership will carefully consider scientific, technical, financial, social, political and other implementation factors during this review. Using this review, the jurisdictions will make necessary adjustments to their WIPs during Phase III to achieve the 2025 goal.

Recovery and Resilience

As we approach the 30th anniversary of the CBP Partnership, we are witnessing clear signs —from local streams and small watersheds to the deep waters of the Bay itself—of continuing recovery across the Chesapeake Bay ecosystem and throughout the surrounding six-state watershed.

Through the collective efforts of CBP Partners and stakeholders, we are making clear progress in reducing pollution from wastewater treatment plants, urban areas and agricultural lands and the Bay is showing signs of recovery. Long-term trends of nutrients in our waters are on the decline. We have made strong progress in restoring rockfish, we have better managed crab populations, and we have seen restored grass beds survive and new ones emerge despite heavy rains and sediment-laden runoff.

The Chesapeake Bay Program's analysis of recent data on the health of the Chesapeake Bay and its watershed shows an ecosystem that is resilient, even as it remains impaired and as population continues to increase. The Bay Program's "*Bay Barometer: Spotlight on Health and Restoration of Chesapeake Bay and Watershed*," as released in January 2013, offers a science-based snapshot of current watershed-wide progress toward a healthy Bay ecosystem.

For example, data from water-quality monitoring shows a multi-decade trend suggesting that pollution-reduction efforts, such as improved controls at wastewater treatment plants, technologies that decrease atmospheric deposition and practices to reduce nutrients and sediment from farms and suburban lands, are improving water-quality conditions in many areas of the watershed.

Data showing trends through 2011 indicate that over the past 25 years there have been decreasing nutrient and sediment concentrations indicating improving conditions in local streams and rivers. Nitrogen and phosphorus concentrations have decreased at almost 70 percent of the 31 long-term monitoring sites within the Bay watershed. Sediment has decreased at about 30 percent of the sites. And this progress is occurring in the face of continued land development in the Bay watershed.

Evidence of the benefits of nutrient and sediment reductions was presented in a study published in November 2011 by researchers from Johns Hopkins University and the University of Maryland Center for Environmental Science. Examining 60 years of Chesapeake Bay water-quality data, the research team found the size of mid- to late-summer low to no oxygen areas, called “dead zones,” leveled off in the Bay’s deep channels during the 1980s and has been declining ever since. This is the same time the Chesapeake Bay Program formed and federal and state agencies set the Bay’s first numeric pollution reduction goals.

Some pollution reduction practices are showing impressive short term effects also. Wastewater treatment plant upgrades in Baltimore’s Back River Estuary resulted in estuarine water quality improvements within three years as measured by changes in chlorophyll *a*. Similar improvements, in addition to a resurgence of healthy underwater grass species, have been noted in the Potomac River

Estuary from reductions in phosphorus and nitrogen concentrations and toxic cyanobacteria at Washington, DC's Blue Plains wastewater treatment plant.

Many of the improvements to local waterways are already being seen – and will continue to be seen at the local level more frequently. We are seeing more and more stories of the recovery and restoration of free flowing creeks and rivers, tidal embayments, and small watersheds – waterbodies of importance to local communities as sources of swimming, boating, fishing, wildlife watching or other forms of recreation, aesthetic beauty, economic growth, ecosystem services, drinking water, or other benefits. The recovery of these waterbodies located in communities and small watersheds people call home are the direct result of local actions by neighbors, homeowners, farmers, municipalities, and many others working at the local level.

Each of these local stories give us new insights into how to better restore the next creek, river, oyster bed or watershed, how long until we should expect to see a positive water quality response downstream, and what trajectory the restoration of other rivers and embayments will take and what signs should we be watching out for.

Another sign of recovery is the stabilization of blue crab populations. Perhaps no species is more closely associated with the Chesapeake Bay than the blue crab. Led by the Chesapeake Bay Stock Assessment Committee and NOAA's Chesapeake Bay Office, a 2011 benchmark assessment recommended establishing a threshold number of 70 million female spawning-age crabs and replacing the interim target of 200 million male and female spawning-age crabs with a target of 215 million female spawning-age crabs. At the start of the 2013 crabbing season, approximately 147 million female crabs over age 1 were estimated in the Bay. This number is below the recommended target but still above the new

threshold and within the range of values observed for the 13 year period prior to implementation of the female-specific regulations being put in place in 2008.

Many of these local successes could not have been achieved without the coordinated and collaborative work of the CBP Partners, state and local governments, and all sectors. For example, through the TMDL, Bay states are putting in place practices for reducing nutrient and sediment loads from urban lands, including measures to control urban runoff through enhanced storm flow capture and greening initiatives, and the creation of stormwater utilities to finance the necessary stormwater controls. Many wastewater treatment plants have made significant progress in reducing nutrient loads down to the limits of technology.

We also recognize that the agricultural sector has done much to reduce nutrient and sediment loadings in the Bay watershed. Agriculture continues to reduce nutrient pollution through practices such as planting cover crops that reduce nutrient losses from cropland and the use of phytase in chicken feed which puts more phosphorus in the bird and less in the manure. Recent USDA Natural Resources Conservation Service assessments of the effects of conservation practices on cultivated cropland in the Chesapeake Bay region shows that conservation works. Both nitrogen and phosphorus loadings from agriculture have declined since 1985.⁸ It also concluded that more needs to be done.

With the continued efforts of all sectors, these actions will help ensure we maintain our restoration progress.

CONCLUSION

⁸ http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1042076.pdf

In closing, I want to reiterate that while we have made great progress, significant additional reductions from all sectors are needed to meet water quality standards in the Bay and in local waterways. Despite the many signs of progress, the job is far from complete and major water quality and ecosystem challenges remain. There is much work that remains to be done.

The Environmental Protection Agency and the Chesapeake Bay Partnership remain committed to working with all stakeholders to achieve a healthy Chesapeake Bay watershed. Working together, we can achieve thriving communities, productive and profitable farms and restored waters. As partners, we can make this happen.

Thank you for the opportunity to testify today, I am pleased to answer any questions.