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Good afternoon Chairman Cardin, Ranking Member Boozman, and Members of the Subcommittee. I am pleased to appear before you today to discuss the water quality challenges posed by nutrient pollution and the promise that water quality trading holds for helping reduce nutrient pollution in more flexible and cost-effective ways. More specifically, my testimony today will outline the extent of our nation's nutrient pollution problem, identify opportunities for reducing nutrient pollution, describe EPA's policy on water quality trading, share examples of successful trading efforts, and detail several actions the EPA has taken to encourage trading to occur.

Our Nation's Nutrient Pollution Problem

Nutrient pollution – caused by elevated levels of nitrogen and phosphorus -- is a major threat to clean water. This has been extensively documented in the scientific literature and confirmed by monitoring data collected at federal, state, and local levels. States have identified more than 15,000 waters nationwide that have been degraded by excess levels of nutrients to the point that they do not meet state water quality standards. The EPA's most recent National Aquatic

Resource Surveys of aquatic health found that of the stressors assessed, nitrogen and phosphorus are the most pervasive in the Nation's small streams and lakes. Approximately 50 percent of streams and more than 40 percent of lake acres have high or medium levels of nutrients.

Contamination of coastal waters by nutrient pollution is also a widespread and growing problem. For example, a recent analysis of 647 U.S. coastal and estuarine ecosystems indicates that the percentage of systems with low oxygen levels or hypoxia (a common result of high nutrient levels) has increased dramatically since the 1960s and has become measurably worse even since the 1980s. The first national assessment of oxygen conditions in U.S. waters, conducted in the 1980s, found 38 percent of systems to have hypoxia. Updating the information using today's data finds that 307 of 647 ecosystems, or 47 percent, experience hypoxic conditions. Severe hypoxia can result in "dead zones," an occurrence that unfortunately is occurring in increasing scope and magnitude in many of the Nation's coastal waters. An increasingly widespread and persistent result of nutrient pollution is the proliferation of harmful algal blooms – a situation in which waters are choked with algae that produce toxins that threaten public health, aquatic life, food sources, and drinking water quality.

The sources of nitrogen and phosphorus pollution to a waterbody vary depending on activities surrounding and upstream of a particular waterbody. In general, nitrogen and phosphorus pollution in urban and suburban areas enter our waters from stormwater runoff and discharges from municipal wastewater treatment systems. In rural areas, stormwater runoff and discharges from municipal wastewater treatment systems can also be important contributors, but in these areas we find that waste from agricultural livestock activities and excess fertilizer from row crops can be more important contributors to nitrogen and phosphorus pollution to a waterbody.

Actions to Address the Nutrient Pollution Problem

The EPA and its State partners recognize the nation's significant nutrient pollution challenges. EPA is committed to finding collaborative solutions that protect and restore our waters and the health of the communities that depend on them. The growing and costly impacts of nutrient pollution on human health, recreation, tourism, business growth and expansion, and aquatic ecosystems demand a strengthened and far more coordinated framework of action if we are to succeed in the urgently needed job of reducing nitrogen and phosphorus loadings to our nation's waters.

To reaffirm the EPA's commitment to partner with states and collaborate with stakeholders to reduce nitrogen and phosphorus loadings to the Nation's waters, Acting Assistant Administrator Nancy Stoner sent direction to the EPA's ten Regional offices in March 2011. The memo, entitled *Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions*, lays out a framework for guiding the EPA's work with states and stakeholders to achieve nutrient reductions. The EPA recognizes that states need room to innovate and respond to local water quality needs, and that a one-size-fits-all solution to nitrogen and phosphorus pollution is neither desirable nor necessary.

This recommended nutrient reduction framework encourages states to set priorities for nutrient reductions and to take action to reduce nutrient loadings to their waters while work continues at the State level to develop numeric nutrient criteria in State Water Quality Standards where needed. The EPA has worked with states across the country to help them develop numeric nutrient criteria and EPA supports State efforts to set priorities and achieve near term load reductions to achieve our common goals. Nutrient reductions for point sources of pollution

can be achieved through National Pollutant Discharge Elimination System (NPDES) permits, which can be written to include permit limits that result in reduced nutrient discharges to affected waterbodies and therefore healthier waters.

For discharges to waters that states have determined are impaired as a result of nutrient pollution, Total Maximum Daily Loads (TMDLs) provide loading limits for point and non-point sources that, when implemented, will achieve water quality standards.

EPA's Trading Policy and Toolkit

An approach with significant potential to help reduce nutrient pollution – and the focus of today's hearing – is water quality trading. The EPA has for many years encouraged and supported the concept of water quality trading as an innovative approach for achieving water quality standards with flexibility and economic efficiency. Water quality trading allows one source to meet its regulatory obligations by using pollutant reductions created by another source that has lower pollution control costs. Trading capitalizes on economies of scale and the control cost differentials among and between sources. Sources that achieve greater-than-required nutrient reductions can generate “credits” that can be traded to other sources that cannot as easily, or cost-effectively, reduce nutrient loadings. Trading can occur between point sources, or between point and non-point sources, which are then usually implemented through enforceable state or federally issued permits. This approach works best in situations where there are multiple upstream sources of pollution that contribute to the impairment of a downstream waterbody, such as a large river, lake, bay, or coastal water. Under these circumstances, reducing pollutant loads in the downstream water could be achieved by reducing the pollution generated by upstream sources.

In 2003, the EPA published a Water Quality Trading Policy, which encouraged our state partners to include trading as a flexible compliance pathway for CWA-permitted entities.¹ As outlined in the Policy, the EPA reaffirmed its support for state implementation of water quality trading by states, interstate agencies, and tribes where trading:

- Achieves early reductions and progress towards water quality standards pending development of Total Maximum Daily Loads (TMDLs) established under the CWA for impaired waters;
- Reduces the cost of implementing TMDLs through greater efficiency and flexible approaches;
- Establishes economic incentives for voluntary pollutant reductions from point and nonpoint sources within a watershed;
- Reduces the cost of compliance with water quality-based requirements;
- Offsets new or increased discharges resulting from growth in order to maintain levels of water quality that support all designated uses;
- Achieves greater environmental benefits than those under existing regulatory programs;
- Secures long-term improvements in water quality through the purchase and retirement of credits by any entity; and/or
- Combines ecological services to achieve multiple environmental and economic benefits, such as wetland restoration or the implementation of management practices that improve water quality and habitat.

¹ This Policy is available at <http://water.epa.gov/type/watersheds/trading/finalpolicy2003.cfm>.

As outlined in the Policy, (1) water quality trading and other market-based programs should be consistent with the CWA, (2) water quality trading should occur within a watershed or a defined area for which a TMDL has been approved, (3) EPA believes that nutrients and sediment are the pollutants most amenable to trading, and (4) the baselines for generating pollution reduction credits should be derived from and consistent with water quality standards established by states or tribes under the CWA. EPA's policy does not support trading where it would harm local water quality. Trading programs should provide all communities and persons the same degree of protection from environmental and health hazards.

Under the CWA, typically only the holders of NPDES permits – known as “point sources” – are required to meet pollution limits. These permit-holders are required to control nutrient pollution if their permits require such limitations. For nutrients, such point sources can include wastewater treatment plants, industrial facilities, and municipalities covered by stormwater permits, and certain large animal agriculture operations defined as Confined Animal Feeding Operations (CAFOs). Diffuse runoff from sources such as agricultural fields – known as “non-point sources” – are generally not subject to these requirements applicable to point sources, but some states may impose controls on these sources. However, “pound-for-pound”, they may be able to achieve reduced nutrient pollution loads to a waterbody less expensively than what would be required of the point sources. In these cases, non-point sources may be good candidates to undertake nutrient pollution reduction projects and then sell the credits generated by these efforts to point sources. In these circumstances, the EPA believes that it is important that these non-point sources have a clear “baseline” for their pollution contributions (such as a defined load allocation in a TMDL or other appropriate baseline), and that the pollution

reductions that take place are clearly measured and documented. Point sources, as well, can generate credits for sale.

In addition to the agency's 2003 trading policy, the EPA has developed a toolkit for water quality trading that can help identify possible approaches that states, the regulated community, and other sources can use to encourage water quality trading.² This toolkit helps to clarify the EPA's expectations for water quality trading programs in order to reduce uncertainty and to provide the tools states need to set up their own trading programs. The EPA has supported states' trading efforts through grants, such as a 2009 grant for efforts in the Mississippi River Basin. The EPA has also held workshops on water quality trading, including a workshop in November 2012, and offers online training for states, tribes, and other interested parties on water quality trading. In the Chesapeake Bay Region, as a result of the comprehensive TMDL that was established in December 2010, EPA is working closely with several states as they develop or expand their trading programs to more efficiently achieve their nutrient reduction goals.

Implementing Water Quality Trading

The CWA provides critical, front-line roles for authorized states and tribes to implement the day-to-day programs that protect and maintain the physical, chemical, and biological integrity of the nation's waters. The states take the lead (with oversight by EPA) in setting water quality standards for their waters and developing and implementing TMDLs to achieve those standards. For the 46 states and one territory authorized to implement the CWA's NPDES permitting program, the states also take the lead in writing permits to achieve those standards. In

² The EPA's Water Quality Trading Toolkit for Permit Writers is available at <http://water.epa.gov/type/watersheds/trading/WQTToolkit.cfm>.

the same way, states have the lead in establishing and administering water quality trading programs for their waters.

Water quality trading programs are in various stages of implementation across the country. Some examples of progress toward implementing trading include the following:

- EPA serves as the NPDES permitting authority in only four states (and Washington DC), one of which is Idaho. In anticipation of a phosphorus TMDL for the Lower Boise River, the EPA worked with the state environmental agency and watershed stakeholders to develop a water quality trading framework that would be implemented once the TMDL was approved. That TMDL is now being developed and will support the use of water quality trading as a tool to meet the new phosphorus limits at lower cost to the point sources.
- Connecticut's Long Island Sound Nitrogen Credit Exchange Program, established in 2002, is responsible for the largest number of water quality trades. The program has nearly achieved its 2014 nitrogen reduction goal by facilitating trading across 79 municipal wastewater plants within Connecticut that drain into Long Island Sound. According to the Program's 2010 progress report, 15.5 million nitrogen credits have been traded. Connecticut's program only involves permitted point sources – not non-point sources such as landowners.
- In 2005, Virginia launched a nutrient trading program for the rivers that drain into the Chesapeake Bay. In Virginia's program, permitted municipal point sources within each river basin may trade with each other, initially without including landowners. Once the point sources can no longer collectively satisfy their river-specific nutrient goals, they may then begin to purchase credits from landowners. Additionally, all

new nutrient loads, including those resulting from development, must be offset.

Virginia law allows for off-site nutrient credits to be used to compensate for the increased loads. To do so, new dischargers must purchase such credits from willing landowners with permanent nutrient reductions as defined by the Commonwealth. A private nutrient banking industry is beginning to form in Virginia as a result of this opportunity.

The EPA supports state flexibility in designing nutrient trading programs that are consistent with the CWA and that effectively and efficiently achieve water quality results for each state. Some states, for example, choose to include non-point sources in their trading programs (such as Virginia), while some have not (such as Connecticut). Some trades take place in impaired waters after a TMDL has been established, while others occur in impaired waters prior to TMDL development. Where NPDES permit-holders have water-quality based effluent limits for nutrients, there may be incentives to pursue water quality trading to achieve nutrient reductions in the most cost-effective way, while remaining consistent with CWA requirements. In the Chesapeake Bay, for example, states and permit-holders have clear pollutant reduction goals established by their allocations in the Bay TMDL and the Bay jurisdictions' watershed implementation plans. The Bay TMDL's waste-load allocations are implemented through NPDES permits and, therefore, NPDES dischargers with nutrient permit limits may have reason to pursue trading approaches that achieve those goals more efficiently. The EPA also believes that interstate trading can be an effective tool for achieving pollution reductions among states, and is interested to work with interested states to pursue such approaches and to ensure that they are consistent with the CWA.

The EPA provides a number of tools to help agricultural producers participate in trading programs, many of which are implemented in collaboration with the U.S. Department of Agriculture (USDA). At the national level, the agencies signed a Memorandum of Agreement in 2006 on water quality trading that helps guide the agencies' collaborative efforts. In 2012, USDA awarded Conservation Innovation Grants specifically focused on supporting water quality trading, and the EPA worked closely with USDA to support its efforts. The 2010 Strategy for Protecting and Restoring the Chesapeake Bay Watershed calls for USDA to be the lead agency, in collaboration with the EPA and other federal agencies, to help create environmental markets within the Chesapeake Bay watershed. The EPA looks forward to continuing its close collaboration with USDA, agricultural producers, states, and other stakeholders to encourage these trading efforts.

Conclusion

The threat posed by nutrients in the Nation's waters is one of the most serious water pollution problems faced by the EPA, the states, and local communities. As I have outlined, the EPA continues to support water quality trading as a tool for meeting CWA requirements in a more flexible and cost-effective way. The EPA is committed to working with our state, federal, and tribal partners, as well as farmers, businesses, communities, and other stakeholders, to identify ways to tackle nutrient pollution problem in a way that protects and restores waters, sustains the economy, and safeguards the well-being of all Americans who depend upon clean and safe water.

Thank you for the opportunity to testify before the Subcommittee today. I look forward to answering any questions you may have.