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Subcommittee on Water Resources and Environment

Regarding

Nutrient Pollution Reduction and Control – The Essential State Role

Good morning, Chairman Gibbs and Members of the Subcommittee.

My name is Coleen Sullins, testifying today on behalf of the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), where I serve on the Board of Directors. I am responsible for North Carolina's Division of Water Quality in the State's Department of Environment and Natural Resources. I have more than 25 years of experience in implementing Clean Water Act (CWA) programs in multiple states and in local government. Today I am testifying on behalf of ASIWPCA and not the state of North Carolina, although I will use several North Carolina examples to illustrate our points.

Celebrating its 50th Anniversary this year, ASIWPCA is the national voice of state, interstate, and territorial officials (hereinafter "states") responsible for implementation of programs that protect surface waters across the nation. ASIWPCA's membership consists of the state and interstate officials who administer the CWA programs. ASIWPCA's members work closely with the U.S. Environmental Protection Agency (EPA) as the co-regulators responsible for implementing this

critical statute. We offer technical and program support, increase state capacity, initiate dialogue, share information and resources, and, particularly relevant to our testimony today, ensure that states retain important flexibility to implement federal programs and initiatives in a way that makes good sense and yields the most beneficial environmental results possible.

The CWA has allowed us to successfully reduce many sources of pollution to our nation's waters. However, ASIWPCA's members are seeking ways to reduce the presence in our waters of two pollutants that present unique challenges – nitrogen and phosphorus (together, "nutrients"). Today, nutrient pollution is a leading cause of water quality impairments across the nation, and causes adverse impacts for drinking water sources, aesthetics, recreational uses and aquatic life (such as nuisance algae growth, dissolved oxygen reductions, and pH increases). EPA's database indicates that 21 percent of all listed impairments are nutrient related. EPA's database also shows that 18 percent of approved Total Maximum Daily Loads (TMDLs) have been developed to address nutrient impairments. So one thing I would like you to take away today is the realization that states are taking action to address this very complicated and important issue. I will provide additional examples later in my testimony.

Why is nutrient pollution control so difficult? Because our traditional approach to controlling a pollutant is to identify the level at which that pollutant is "too toxic" to the environment, and then set water quality-based numeric and/or narrative standards to keep that pollutant below the toxic level. Nutrients are different. There isn't a consistent, definitive level at which we can say across an entire state – or even across a waterbody or watershed – that this level is "too much." Nitrogen and phosphorus are widely variable, naturally occurring, ubiquitous, and frankly, are necessary components of healthy ecosystems. Ecosystems can be healthy under a wide variety of nutrient levels. Just as the amount of calories a person needs changes based on the individual's height, weight, metabolism, percent of body fat, exercise habits, etc.; an ecosystem's need for nitrogen/phosphorus depends on many factors. The extent to which nutrients' adverse effects (for example, algae growth, pH increases, drinking water taste and odor problems, and in extreme cases, fish kills) occur within a waterbody depends on a wide range of other critical factors such as sunlight, optimal stream substrate, stream flow, temperature and background water chemistry—factors that are very site-specific. Therefore, states have found that nutrient levels that may cause impairments in one stream under one set of conditions will not have the same negative impact in a different stream.

Since nutrient impacts are dependent on the presence of other factors, many states are finding that a "weight of evidence" approach is needed to identify waters that may be undesirably affected by high levels of nutrients or to determine that nutrients are the key to biological impairment. States are generally doing this on a watershed-specific basis. For example, if high levels of nutrients are present in a water body where high chlorophyll a, high light levels, low nighttime dissolved oxygen levels, and daytime oxygen saturation above 100 percent are observed - state biologists may conclude that the biological impairments noted are due to the influence of excessive, anthropogenic nutrients. In contrast, some streams may exhibit high nutrient levels that have no deleterious impacts on the stream's biology.

Simply stated, a single number for nitrogen or phosphorus is not often an accurate indicator of adverse ecological or water quality effects. That is why we need to work with EPA to develop a flexible approach to controlling nutrients in the environment.

I need to touch here on another complicating factor. Under the CWA, states only have direct authority over point sources, leaving most states in a position to only incentivize and encourage nonpoint source reductions (for example, from agriculture). In many watersheds, nonpoint sources may account for a large percentage of nutrient loads. Therefore expenditures aimed at achieving reductions from the end of the pipe may produce little overall gain, where nonpoint sources contribute the bulk of the nitrogen and phosphorus.

In North Carolina we have performed in-depth analyses of our estuarine areas and multiple significant reservoirs in the state that are impaired by nutrients. What we have found, in almost all situations, is that the nonpoint sources contribute greater than 70 percent of the nutrients to those impaired waters. The exceptions to the rule are typically more urbanized watersheds and smaller isolated areas such as a cove in a lake with a direct discharge of wastewater and a small watershed feeding the cove. Our General Assembly has recognized this issue and has directed, through specific statutory requirements, that all sources of pollutants (point source and nonpoint source), jointly share the responsibility of reducing the pollutants in a fair, reasonable, and proportionate manner.

In North Carolina we have an abundance of water, from our fabulous mountain waterfalls to our beautiful slow-moving swamp waters of the eastern coast. Our Albemarle Pamlico Sound is second

in size only to the Chesapeake Bay. If you have kayaked the Nantahala Falls, taken a spin on the Falls Reservoir, or canoed alongside the alligators and herons on the Black River, you know that these systems are quite distinct and their ability to assimilate nutrients is different. Therefore, any strategy to address nutrients in those systems must reflect these differences.

In addition to the variation in the natural systems, nutrient control and management calls for a rich mosaic of solutions. States are using a variety of CWA tools to achieve nutrient reductions. Beyond nitrogen and phosphorus standards and TMDLs, these tools include individual permit limits, wastewater treatment plant optimization, best management practices (BMPs), nutrient trading, control of other water quality parameters such as sediment, voluntary nutrient coalitions, and other innovative approaches. As a result of these approaches, a variety of nutrient accountability frameworks exist.

States understand the appeal of a single water quality standard for nitrogen or phosphorus in implementation. However, this approach does not acknowledge the need for a more flexible system, which allows nutrient standards to work effectively in the wide number of applications in which they are used by permitting authorities (for example, NPDES permit effluent limits, calculation of TMDLs). EPA's Office of Water recently acknowledged our reality in a March 16, 2011 memorandum to the Regional Administrators stating that "States need room to innovate and respond to local water quality needs, so a one-size fits all solution to nitrogen and phosphorus pollution is neither desirable nor necessary." The states are concerned, however, that this memorandum still establishes the expectation of numeric nitrogen and phosphorus standards.

I'd like to offer a few more examples from North Carolina. My fellow witnesses will offer other approaches from other parts of the country. North Carolina has proactively adopted and maintained a suite of both numeric (such as: chlorophyll a, dissolved oxygen, pH) and narrative nutrient criteria (such as: aesthetic and nuisance condition evaluations) for many years. For more than two decades the State has implemented a statewide chlorophyll a water quality standard (a measure of the amount of algae) for all surface waters in North Carolina. Examples of additional statewide initiatives include the phosphate detergent ban in the late 1980s and the required monitoring of nitrogen and phosphorus in effluent discharges from wastewater treatment plants. These actions resulted in a statewide reduction of phosphorus, plus an understanding of the level of

contribution from point sources. Other strategies we have deployed have been tailored to specific waterbodies.

- In the early 1980s we instituted a nutrient management strategy that implemented mandatory controls on wastewater facilities for the Chowan River and voluntary nonpoint source controls. The Agricultural Cost Share Program for Nonpoint Source Pollution Control was set up to assist meeting the nonpoint source nutrient reductions needed in the Chowan River and by 1989 it had been expanded to addressing agricultural nonpoint source pollution statewide. The primary purpose of the program is water quality protection and restoration. The program provides appropriated cost share funds as well as technical support to land owners and users for designing, constructing and implementing best management practices (BMPs) that achieve the greatest water quality benefit. When funds are available, the program provides farmers with 75% of the average cost of implementing approved BMPs. The program is carried out through the Soil and Water Conservation Districts. The Chowan River has subsequently recovered and is no longer impaired.
- In the 1990s management strategies were put into place for the Tar Pamlico and Neuse River estuaries. These strategies include nutrient trading as well as mandatory controls for all sources.
- Around this same timeframe North and South Carolina worked together to monitor a shared reservoir, Lake Wylie, to address the eutrophication issues in the lake. The collaborative process involved joint monitoring activities, determination of management needs, and implementation of control strategies to reduce the nutrients. The driving forces of the impairment in the Lake Wylie situation were the wastewater treatment plants. The control strategies that were implemented have resulted in significant improvements in water quality in the Lake, such that it is no longer impaired.
- In the latter part of the 1990s a pre-emptive strategy was developed for a new reservoir (the Randleman Reservoir) to prevent nutrient impairment upon construction of and damming of the river. The reservoir has only recently been impounded, but we were able to implement the control strategies in advance of the impoundment.
- We have also recently adopted strategies to address Jordan Reservoir and Falls Lake Reservoir (implementation has *just* begun). These strategies were years in the development with active stakeholder participation. Both strategies are estimated individually to cost in the range of $900 million to $1 billion to implement. On-going monitoring and reassessment are part of the regulations that were put into place in

recognition of the significant costs to all sources. The watersheds of these reservoirs account for less than 5% of the land area of the state.

- Permit-specific limits have been developed for a number of wastewater facilities that are not within any of the above mentioned waterbodies, but where limitations were necessary to prevent impairment or to address impairment in a site specific area. Potential or actual impairments were identified by looking to our water quality standards: levels of chlorophyll a, dissolved oxygen, pH, the presence of nuisance species or, in extreme cases, fish kills.

Each of these aforementioned strategies was developed based on the individual characteristics of the waterbody concerned. The Chesapeake Bay strategy developed by EPA, in conjuntion with states, shares similarities with some of the strategies that we have developed in North Carolina. We are also working with our Environmental Management Commission on the best methodology to assure protection of all waters of the state from all major nutrient sources through a prevention-based approach.

In conclusion: states share the Administration and Congress's concerns about nutrients *and* have adopted a variety of approaches, including narrative standards, response standards, weight of evidence approaches and, in some cases, nitrogen and phosphorus standards. In my own state, we have developed a variety of approaches because the nutrient issues are dependent on many site-specific issues. State economies, already under stress, are facing additional losses if we don't continue to reduce nutrient impairments in waterbodies. In addition, we agree with EPA that it is imperative to prevent additional nutrient impairments from developing, as it is much more economical to prevent impairments than it is to restore a system once it is impaired. In closing, we concur with EPA's memorandum – states need room to innovate and respond to local water quality needs and we believe that the states have shown the initiative to do so. We encourage EPA to continue to work with states to develop and implement the most appropriate tools for nutrient reduction and control, and to allow states the flexibility that is crucial to effectively address this important water quality challenge. The right tool is not always a number.

Mr. Chairman, members of the committee, thank you for this opportunity to share ASIWPCA's thoughts on the importance of the state's role in nutrient pollution reduction and control.