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Assembly Committee on Environment

Clearinghouse Rule 19-083

Site-specific phosphorus water quality criteria

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Good morning Chairman Kitchens and members of the Committee. My name is Marcia Willhite, and I am a Section Chief in the Water Quality Bureau with the Wisconsin Department of Natural Resources. Thank you for the opportunity to testify on Clearinghouse Rule 19-083, relating to site-specific water quality standards for phosphorus applicable to Castle Rock Lake, Petenwell Lake, and Lake Wisconsin in the Wisconsin River basin.

Under the Clean Water Act, as well as Wisconsin statutes and administrative code, DNR has the responsibility to establish—by rule—water quality standards for rivers, lakes and streams. The Department has established statewide water quality standards, or criteria, for phosphorus for different types of surface waters. Department rules recognize that site-specific criteria (SSC), in other words, site-specific standards, may need to be adopted in place of the statewide standard for that type of waterbody. This would be triggered when site-specific data, and analysis using scientifically defensible methods and sound scientific rationale, demonstrate that a different water quality standard is needed to protect the designated use of the specific surface water segment or waterbody. Through a total maximum daily load analysis (TMDL) conducted on the Wisconsin River Basin, the Department determined that the statewide criteria for the Petenwell and Castle Rock Lakes were overprotective, and the statewide criterion for Lake Wisconsin was not sufficiently protective to achieve the recreational and aquatic life uses.

Petenwell and Castle Rock Lakes are the largest reservoirs on the Wisconsin River. These reservoirs are included on Wisconsin's impaired waters list and are listed as impaired for phosphorus. High levels of phosphorus have led to excessive algae on the lakes, which interferes with recreation and aquatic life. To address the impairment, the Department has developed TMDLs for discharges of total phosphorus throughout the Wisconsin River Basin.

For Petenwell and Castle Rock Lakes, the TMDL analysis found that the applicable statewide phosphorus criteria of 40 µg/L are more stringent than necessary to address the algae problem. The existing phosphorus criterion of 40 µg/L for Petenwell and Castle Rock is based on research on Minnesota lakes that showed that an increase in algal blooms occurs in shallow lakes when total phosphorus exceeds 40 µg/L. However, analysis of water quality monitoring data from Petenwell and Castle Rock lakes conducted during the development of the TMDL indicates that these two reservoirs produce less algae at a given phosphorus concentration than is typically observed in shallow lakes across the state. Wisconsin Statute states that water quality criteria shall be no more stringent than necessary to protect the designated use. With that in mind and based on the analysis conducted during the TMDL for

the Wisconsin River Basin, the Department has proposed a phosphorus SSC of 55 µg/L for Castle Rock Lake and an SSC of 53 µg/L for Petenwell Lake.

The situation for Lake Wisconsin is the opposite. Lake Wisconsin is classified as an impounded flowing water because its summer water residence time is less than 14 days, so the phosphorus water quality standard that applies to the lake is the same as the inflowing river (100 µg/L). However, the current summer mean phosphorus concentration in Lake Wisconsin is 98 µg/L, and at this concentration, the lake has frequent and severe algal blooms. The applicable criterion of 100 µg/L for Lake Wisconsin, which allows frequent nuisance algal blooms, is therefore not protective of recreational uses. A more restrictive phosphorus SSC is needed. DNR believes that although the retention time of phosphorus in the lake is short — similar to a river—Lake Wisconsin responds to phosphorus loading in the same manner as a lake. Based on the analysis conducted during development of the TMDL, the Department is recommending a phosphorus SSC for Lake Wisconsin of 47 µg/L. The Department believes the proposed criterion of 47 µg/L will support the designated recreational and aquatic life uses and will therefore satisfy the state statutory requirement and federal regulatory requirements.

Water quality criteria are established to protect designated uses of surface waters and are used in calculating limitations that apply to point source discharges covered by Wisconsin Pollutant Discharge Elimination System (WPDES) permits. Limitations on pollutant loads established in TMDLs are designed to meet the established water quality standards. These pollutant load limits are required to be included in WPDES permits under state and federal regulations. Adoption of the recommended SSC will impact allocations resulting from the TMDL and thus have an economic impact, both through changes in direct compliance costs and the positive indirect economic benefits associated with improvements in water quality. Adoption of recommended SSC for these waterbodies will have differing impacts among the 109 regulated dischargers. Some will see an increased cost of compliance, estimated at about $1 million total, annually, for 12 facilities. 24 facilities are estimated to save a total of $11.5 million per year. The estimated compliance costs reflect wastewater treatment capital and operation and maintenance costs at a regulated facility. If the regulated facility chooses to comply with new permit limits through water quality trading or adaptive management, costs may be lower than estimated. We also assume a 20-year period for compliance cost and benefit estimations. The indirect positive economic benefits associated with improvements in water quality are not factored into the costs. Also not included is the cost savings to non-point sources of less stringent reductions under the TMDL based on less stringent phosphorus SSC.

In summary, the phosphorus levels in Castle Rock Lake, Petenwell Lake, and Lake Wisconsin are all presently too high (all average around 100 ug/L of phosphorus) and all three lakes have algae problems. DNR's scientific analysis shows that phosphorus in Castle Rock and Petenwell does not have to be reduced all the way to the current statewide phosphorus standard of 40 ug/L to solve the algae problems. If we can get Castle Rock down to 55 ug/L and Petenwell down to 53 ug/L, we expect to see greatly reduced algae levels. For Lake Wisconsin, phosphorus needs to be reduced below the current standard (down to 47 ug/L) in order to solve its algae problem. Establishing these scientifically defensible new site-specific standards will set appropriate restoration targets for these lakes.

On behalf of the Bureau of Water Quality, I would like to thank you for your time today. I would be happy to answer any questions you may have.