

The statement of scope for this rule, SS# 006-17, was approved by the Governor on July 18, 2017, published in Register No. 739B on July 31, 2017, and approved by the Natural Resources Board on September 27, 2017. This rule was approved by the Governor on insert date.

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD RENUMBERING,  
AMENDING AND CREATING RULES

The Wisconsin Natural Resources Board proposes an order to renumber NR 102.06 (7); to amend NR 102.06 (4) (intro.); and to create NR 102.06 (7) (b) (Intro), 4., (Note for subd. 4.) and (Note 3 for sub. (7)) relating to establishment of site-specific phosphorus criteria for Lac Courte Oreilles, a lake in Sawyer County.

**WY-09-17**

**Analysis Prepared by the Department of Natural Resources**

**1. Statute Interpreted:** Section 281.15, Stats.

**2. Statutory Authority:** Section 281.15, Stats.

**3. Explanation of Agency Authority:** Section 281.15, Stats., provides the Department with authority to promulgate by rule water quality standards for surface waters or portions of surface waters in the state. Water quality standards consist of designated uses and water quality criteria that are protective of the designated use. The Department has promulgated statewide criteria for phosphorus for different types of surface waters in s. NR 102.06, Wis. Adm. Code. Department rules, specifically s. NR 102.06(7), Wis. Adm. Code, recognize that site-specific criteria may need to be adopted in place of the generally applicable criteria where site-specific data and analysis using scientifically defensible methods and sound scientific rationale demonstrate a different criterion is needed to protect the designated use of a specific surface water segment or waterbody. Section 281.15(2)(c), Stats., further states that the Department may establish criteria which are no more stringent than reasonably necessary to assure attainment of the designated uses for the waterbodies in question.

The Department is proposing rules to establish a phosphorus site-specific criterion for Lac Courte Oreilles because the Department agreed to begin this rulemaking effort as part of a court-approved stipulation filed on April 4, 2017: Dane County Case No. 16-CV-1564 (Admin. Agency Review 30607), *James Coors, et. al., v. Wisconsin Department of Natural Resources and Wisconsin State Cranberry Growers Association*. The parties to this case include James Coors on behalf of the Courte Oreilles Lakes Association, Inc. (COLA) and the Lac Courte Oreilles Band of Lake Superior Chippewa (the Tribe) (jointly, “Petitioners”), the Wisconsin Department of Natural Resources (the Department) and Natural Resources Board. The Wisconsin State Cranberry Growers Association was dismissed as a party in the stipulation.

In March 2016, the Petitioners submitted a petition to the Department for rulemaking, seeking a site-specific criterion for phosphorus in Lac Courte Oreilles. In May 2016, the Department denied the request for rulemaking for several reasons. Petitioners filed a petition for judicial review asking a court to review the Department’s decision not to promulgate a phosphorus site-specific criterion for the lake. Other issues were also raised in the petition. To resolve the matter, the Department of Justice, on behalf of the Department, entered into a court-approved stipulation filed on April 4, 2017. In the court-approved stipulation, the Department agreed to “propose a phosphorus SSC [site-specific criterion] for Lac Courte

Oreilles, inclusive of the East, Central, and West Basins and Stuckey Bay, Musky Bay, Chicago Bay, Brubaker Bay, Anchor Bay, and Northeast Bay, as authorized by Wis. Admin. Code s. NR 102.06(7).”

After reviewing the available data, including data and analysis submitted by the Petitioners and their consultants, the Department concluded that it could not legally and scientifically support a more stringent phosphorus criterion for Lac Courte Oreilles pursuant to Wis. Stat. s. 281.15(2) and s. NR 102.06(7), Wis. Adm. Code. Specifically, technical staff were unable to determine a correlation between phosphorus and oxygen levels in Lac Courte Oreilles. Staff instead recommended further research to more fully understand the reasons for oxygen depletion in the lake. Petitioners disagreed with the Department’s conclusion and filed a request with the circuit court to order the Department to propose a phosphorus site-specific criterion for Lac Courte Oreilles under the stipulation. On March 7, 2019, the court issued a decision directing the Department to propose a phosphorus site-specific criterion for Lac Courte Oreilles. *James Coors, et. al., v. Wisconsin Department of Natural Resources, et al.*, No. 16-CV-1564 (Wis. Dane Cnty. Cir. Court, Order Mar. 22, 2019). The Department’s subsequent motion for reconsideration was denied, and the Department has chosen to proceed with rulemaking rather than continue with litigation.

**4. Related Statutes or Rules:** Section NR 102.06, Wis. Adm. Code contains statewide criteria for phosphorus. Additionally, three proposed rules related to phosphorus site-specific criteria are currently undergoing public comment:

- Rule WT-17-12 would establish a standardized process for developing site-specific criteria when appropriate for individual waterbodies.
- Rule WY-23-13 contains phosphorus response indicators such as algae and aquatic plant metrics that are also referenced within Rule WT-17-12 to be used as part of the site-specific criteria development process. - Rule WY-23-13 would also establish statewide “oxythermal” criteria (criteria combining dissolved oxygen concentrations and temperature) to protect two-story fishery lakes throughout the state.
- Rule WY-09-18 would establish site-specific criteria for three individual lakes in the Wisconsin River Basin.

**5. Plain Language Analysis:** This rule proposes two alternatives for a phosphorus site-specific criterion for Lac Courte Oreilles, a lake in Sawyer County. The lake straddles both State land and Tribal lands of the Lac Courte Oreilles Band of Lake Superior Chippewa. Lac Courte Oreilles is a state-classified Outstanding Resource Water and one of a small number of “two-story fishery” lakes in Wisconsin that support a coldwater fishery within its deep basins. The three main basins of Lac Courte Oreilles support cisco and whitefish. The lake also has several small bays and a larger bay called Musky Bay, which are shallow and do not support coldwater fish.

There have been fish kills of cisco and whitefish in the main basins of the lake that all parties agree are likely due to reductions in the oxythermal layer of the lake during late summer. The oxythermal layer is the layer of water that is both cold enough and has enough dissolved oxygen to support coldwater fish. The two-story fishery portion of the lake is currently listed on the state’s impaired waters list as impaired for dissolved oxygen, with the cause of impairment listed as unknown. Petitioners and their consultant requested a site-specific criterion for phosphorus because they concluded that the levels of phosphorus in the lake are a driving factor in the reductions in the oxythermal layer.

Pursuant to s. NR 102.06(7), Wis. Adm. Code, and s. 281.15, Stats., the Department has the authority to develop a site-specific criterion in place of the generally applicable phosphorus criteria in ch. NR 102.06, Wis. Adm. Code, if site-specific, scientifically defensible data and analysis demonstrate a different criterion is protective of the designated use of the specific surface waterbody and the site-specific criterion is no more stringent than reasonably necessary to protect the designated use. The applicable statewide phosphorus criterion for two-story fishery lakes is 15 µg/L under s. NR 102.06(4)(b)1. The

Petitioners initially requested a site-specific criterion of 10 µg/L for the entire lake, including Musky Bay and other small bays. The Department considers Musky Bay and all other small bays to be part of the lake. The Department's sampling and waterbody assessment protocol requires samples to be taken at the deepest parts of the lake. If the sample results from the main basins exceed the criterion, the entire lake would be listed as impaired. Conversely, if the sample results do not exceed the criterion, then the entire lake would be meeting the criterion.

After completing a technical review of data and analysis for Lac Courte Oreilles, the Department concluded that the data did not demonstrate that the phosphorus concentrations in the main basins of Lac Courte Oreilles are correlated with the reduction in the oxythermal layer. This conclusion was reached after reviewing approximately thirty years of data, but of particular relevance it was noted that data collected on the lake from 1988 to 1996 showed that there have been oxygen problems in the basins even when the phosphorus concentrations are low (6-9 µg/L). After reaching this conclusion, the Department met with Petitioners on March 15, 2018, and Petitioners submitted a revised analysis that suggested setting the phosphorus criterion at 11.6 µg/L.

Petitioners and the Department did not agree on whether there was sufficient technical information and legal justification for a site-specific criterion that was lower than the current standard. Petitioners requested that the circuit court order the Department to continue with rulemaking and propose a site-specific criterion for Lac Courte Oreilles. On March 7, 2019, the court issued a decision directing the Department to propose a phosphorus site-specific criterion for Lac Courte Oreilles pursuant to the stipulation. The Court stated: "We have a stipulation and an order. And I don't need to get into the science . . . I do know that the DNR agreed to the stipulation. . . . I have not heard any reason or justification that the DNR can't comply with it." *James Coors, et. al., v. Wisconsin Department of Natural Resources, et al.*, Dane County No. 16-CV-1564 (March 22, 2019 Transcript, pages 13-14.).

In view of the different opinions regarding whether a site-specific phosphorus criterion is necessary to protect the designated use of the lake and the legal standards for the adoption of a site-specific phosphorus criterion, the Department is seeking comment on two alternatives for a phosphorus criterion for the lake. The proposed alternatives below would apply only to Lac Courte Oreilles; the Department is not proposing any change to the statewide phosphorus criterion of 15 µg/L applied to other two-story fishery lakes.

**Main basins:** A brief description of the analyses supporting the two options for the main basins is provided in Section 8, below, and detailed technical documents are available with the materials for public review. Under each of the options below, the Department assesses compliance with the criterion through sampling near the deep points of the three main basins, consistent with protocols for assessment of all lakes in the state.

- **Option A: 10 µg/L total phosphorus**, to be applied at the East, Central, and West Basins. This is based on the Petitioners' scientific analysis that proposed a site-specific criterion of 10 µg/L total phosphorus to protect the lake's designated uses and fishery (LimnoTech. 2016. *Phosphorus Site-Specific Criteria Proposal for: Lac Courte Oreilles.*).

- **Option B – No change from current criterion:** 15 µg/L total phosphorus, to be applied at the East, Central, and West Basins. This option is to maintain the equivalent to the statewide phosphorus criterion of 15 µg/L for two-story fishery lakes, which currently applies to Lac Courte Oreilles. This is based on the Department's analysis concluding that existing scientific information does not justify development of a phosphorus site-specific criterion for this lake (WDNR. 2018. *Lac Courte Oreilles, Sawyer County: Phosphorus Site-Specific Criteria Analysis, WDNR Technical Support Document.*).

**Musky Bay and other small bays of the lake:** If Musky Bay and the small bays of the lake are treated consistently with how all lakes in the state are assessed for phosphorus, Musky Bay and the small bays along the main basins do not have a separate criterion and are not assessed separately, but are considered part of the lake as a whole. If the criterion for the main basins is not attained at any of the three basin deep points, then the lake as a whole, including the bays, would be listed as impaired.

**6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:**

40 CFR 131 Subparts A-C contain requirements for establishing state water quality standards.

40 CFR s. 131.4: States are responsible for establishing and revising water quality standards. U.S. EPA approves or disapproves standards under 40 CFR s. 131.5.

40 CFR 131.6: Water quality standards consist of designated uses and criteria to protect the designated uses.

40 CFR 131.11: States must adopt water quality criteria that protect designated uses. For waters with multiple uses, the criteria must protect the most sensitive use. 40 CFR 131.11(b)(1)(ii) authorizes states to adopt numeric water quality criteria that are “modified to reflect site-specific conditions.”

40 CFR 131.20: Revision of state water quality standards is subject to public participation procedures and U.S. EPA review and approval under 40 CFR 131.20.

**7. Comparison with Similar Rules in Adjacent States:** Wisconsin has numeric phosphorus criteria for lakes, reservoirs, rivers, streams, and impounded flowing waters. Wisconsin’s phosphorus criteria for lakes and reservoirs vary by lake type with values ranging from 15 to 40 µg/L. As described in Section 3, Wisconsin statutes provide authority to develop site-specific criteria, and s. NR 102.06(7), Wis. Adm. Code, recognizes that site-specific criteria may be developed for phosphorus.

Minnesota has adopted phosphorus criteria for lakes, reservoirs, rivers and streams. Minnesota’s phosphorus criteria for lakes and reservoirs vary by ecoregion with values ranging from 12 to 90 µg/L. Minnesota allows specific water quality standards, referred to as site-specific criteria in Wisconsin, to be adopted when appropriate if information is available to derive standards based on a waterbody’s specific characteristics. This process is outlined in Minn. R. 7050.0220, 7050.0222, and 7052.0270. Site-specific standards must maintain and protect a waterbody’s beneficial uses. Several site-specific phosphorus criteria have been approved in Minnesota.

Illinois has adopted partial phosphorus criteria for lakes and reservoirs. Illinois’ phosphorus criteria for any lake or reservoir greater than 20 acres is set at 50 µg/L. Illinois does not have provisions for site-specific criteria.

Iowa, Indiana, Michigan and Ohio do not have statewide numeric phosphorus criteria. However, Michigan widely applies a method to derive appropriate site-specific phosphorus targets for waterbodies in the state. Ohio has a longstanding approach for developing site-specific phosphorus targets using a weight of evidence approach based on several eutrophication indicators. The targets set by Michigan and Ohio are applied in permits and Total Maximum Daily Load (TMDL) analyses.

Wisconsin, Minnesota, and Michigan are the main states in EPA Region 5 that have two-story fishery lakes supporting coldwater fish. Wisconsin’s phosphorus criterion for two-story fishery lakes with cisco, whitefish, or lake or stream trout is 15 µg/L. Minnesota has a specified criterion for lakes with lake trout (the most sensitive species) of 12 µg/L, and for lakes with stream trout of 20 µg/L, but does not specify separate criteria for lakes with cisco or whitefish. In Minnesota, a lake such as Lac Courte Oreilles,

which does not have lake or stream trout, would have a phosphorus criterion of either 30 or 40 µg/L under Minn. R. 7050.0222 (3) and (4). Therefore Wisconsin's statewide phosphorus criterion of 15 µg/L for Lac Courte Oreilles (Option B) is more stringent than Minnesota's comparable criteria of 30-40 µg/L for non-trout lakes. Option A (Petitioner's proposed site-specific criterion) would be even more stringent at 10 µg/L. Michigan does not have phosphorus targets specific to lakes with coldwater fish.

### **8. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings**

**Support the Regulatory Approach Chosen:** All parties agree that the impairment of the main basins is due to low dissolved oxygen impacting the coldwater two-story fishery. Parties differ on the extent to which phosphorus is or is not contributing to this impairment, and the appropriateness of promulgating a site-specific criterion for phosphorus for this specific lake. A brief summary of findings is provided below. The detailed supporting technical documents and analyses from both the Petitioner and the Department can be found on the Department's website for proposed permanent rules under Board Order WY-09-17: <https://dnr.wi.gov/news/input/ProposedPermanent.html>. Relevant court documents are also provided.

**Petitioners' analyses:** The technical analysis for a Lac Courte Oreilles site-specific criterion of 10 µg/L is within a report submitted by the Petitioners' consultant (LimnoTech, 2016. *Phosphorus Site-Specific Criteria Proposal for: Lac Courte Oreilles*). The Petitioners' recommendation was based on years of data collected by the Tribe's Conservation Department, the scientific literature, and other information and tools. The Petitioners cited a study published in 1991 by Steven Chapra and Raymond Canale that found a positive correlation between phosphorus concentrations and areal hypolimnetic oxygen demand (a measure of oxygen depletion) across a large number of lakes and a wide range of phosphorus concentrations. Petitioners used this relationship to infer what the hypolimnetic oxygen demand would be at lower phosphorus concentrations in Lac Courte Oreilles. Assuming this cross-lake relationship applies to within-lake dynamics on Lac Courte Oreilles, their analysis found a strong threshold at 6-8 µg /L total phosphorus with dramatic declines in oxygen demand and improvements in coldwater fish habitat. However, they proposed a more moderate site-specific criterion of 10 µg /L total phosphorus, which the Petitioners explained was a site-specific, scientifically defensible number based on reliable data and analysis, and necessary to protect the lake's designated uses.

In a later document, Petitioners submitted an alternative proposal which calculated a site-specific criterion of 11.6 µg/L. This value was derived from an analysis of current phosphorus concentrations within the lake (although the approach used to derive this average is different from the Department's standard methods for calculating in-lake concentrations).

**The Department's analyses:** The Department closely reviewed the analyses and data submitted by the Petitioners and conducted a thorough technical analysis of long-term data specific to Lac Courte Oreilles (WDNR, 2018. *Lac Courte Oreilles, Sawyer County: Phosphorus Site-Specific Criteria Analysis, WDNR Technical Support Document*. ; Letter from Wildeman to Westerberg, Response to Pines Bach re Informal Negotiation and Proposals for Phosphorus SSCs for Lac Courte Oreilles, *James Coors, et al. v. DNR and Natural Resources Board*, Dane County Case No. 16-CV-1564 (May 16, 2018)). From these analyses, the Department concluded that existing scientific information does not justify development of a phosphorus site-specific criterion for the main basins of the lake or for Musky Bay.

Habitat for coldwater fish can be limited by warming temperatures near the surface and by oxygen depletion in the deep, cold water. The Department evaluated five potential factors that may impact coldwater fish habitat and oxygen levels. Through this analysis, the Department determined that this lake does not fit the patterns observed in the lakes used to develop the formula used in the Petitioners' analysis, and factors other than phosphorus are likely impacting the oxythermal layer. The Department was unable to verify that phosphorus concentrations and related processes were negatively impacting the

oxythermal layer. Even when Lac Courte Oreille had phosphorus concentrations as low as 6-9 µg/L from 1988-96, oxygen depletion was similar to current levels. Because reducing total phosphorus to very low levels is not expected to achieve the designated uses, the Department has found insufficient technical support for a site-specific phosphorus criterion that is more restrictive than the current statewide standard in the main basins. The Department cannot set a more restrictive site-specific criterion unless scientifically defensible methods and analysis applied to site-specific data demonstrate that a different criterion is necessary to protect the designated use. Pursuant to s. 281.15(2), criteria must be set to be protective of a waterbody's designated use and criteria may be no more stringent than necessary to assure attainment of the use.

The Petitioners disagreed with the Department's scientific and legal conclusions.

**9. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:** The Department does not anticipate any compliance costs related to this rule. 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. Restrictions on pollutant loads to comply with water quality based effluent limitations or to comply with a federally approved TMDL only apply to point source discharges that require a WPDES permit. There are no point source discharges to this lake, so there will be no regulatory required reductions of phosphorus discharges and consequently no fiscal impacts from promulgating a site-specific criterion of 10 µg /L. There will also be no regulatory required reductions if the criterion remains at 15 µg /L. The phosphorus loads are from forested lands, agricultural lands, cranberry bogs and private residences (septic systems or holding tanks). All of these sources are nonpoint sources. Establishment of a site-specific criterion does not invoke any new regulatory requirements for nonpoint sources; therefore there will be no regulatory impacts on phosphorus sources that contribute phosphorus to the lake should the Department change the current criterion. The lake is already on the impaired waters list for dissolved oxygen impacts. Even if a TMDL is developed based on a more stringent phosphorus site-specific criterion of 10 µg/L, there will be no regulatory required reductions of phosphorus because all of the phosphorus sources are nonpoint sources.

Separate and apart from the proposed rule, the Department supports additional work to evaluate and determine the contribution of various stressors affecting Lac Courte Oreilles, including phosphorus, to determine how meaningful improvements can be made in the resource. Studies on the extent to which substances within the lake's sediment contribute to oxygen depletion are a recommended next step. The Department plans to continue working with COLA, the Lac Courte Oreilles Tribe, and other interested stakeholders in the future on such efforts. The Department has provided support to the lake through multiple lake grants over time, which is a continued option for funding research and implementation. The Department is also continuing with its rulemaking effort to propose oxythermal criteria for two-story fishery lakes statewide.

**10. Effect on Small Business (initial regulatory flexibility analysis):** The Department has determined the rule will have no fiscal impact on small businesses. Promulgation of a site-specific criterion for the lake will not impose additional pollution reduction requirements for WPDES permittees or nonpoint sources. Small businesses within the watershed could take voluntary measures to reduce phosphorus inputs to the lake if desired, but that can be done without a phosphorus site-specific criterion for the lake.

**11. Agency Contact Person:** Kristi Minahan, Wisconsin Department of Natural Resources, Bureau of Water Quality WY/3, P.O. Box 7921, Madison, WI 53707-7921; [Kristi.Minahan@Wisconsin.gov](mailto:Kristi.Minahan@Wisconsin.gov), 608-266-7055

**12. Place where comments are to be submitted and deadline for submission:**

Written comments may be submitted at the public hearings, by regular mail, or by email to:

Kristi Minahan  
Wisconsin Department of Natural Resources  
Bureau of Water Quality WY/3  
101 S. Webster St.  
P.O. Box 7921  
Madison, WI 53707-7921  
Kristi.Minahan@Wisconsin.gov

Written comments may also be submitted to the Department at  
[DNRAAdministrativeRulesComments@wisconsin.gov](mailto:DNRAAdministrativeRulesComments@wisconsin.gov).

A hearing will be held on November 8, 2019 at 10:00 a.m. at Bass Lake Town Hall, 14412W County Highway K, Hayward, WI 54843

The comment submission deadline is November 12, 2019.

The proposed rule below is consistent with Option A for the main basins of the lake. Option B would require no rule change.

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**SECTION 1. NR 102.06 (4) (intro.) is amended to read:**

Except as provided in ~~sub. (1)~~ subs. (6) and (7), to protect fish and aquatic life uses established in s. NR 102.04 (3) and recreational uses established in s. NR 102.04 (5), total phosphorus criteria are established for reservoirs and lakes as follows:

**SECTION 2. NR 102.06 (7) is renumbered NR 102.06 (7) (a).**

**SECTION 3. NR 102.06 (7) (b) (Intro), 4., (Note for subd. 4.) and (Note 3 for sub. (7)) are created to read: [Note to LRB: Board Order WY-09-18 creates (7) (b) 1. to 3.]**

**NR 102.06 (7) (b)** Site specific criteria apply to the following waterbodies to protect fish and aquatic life uses and recreational uses:

4. For Lac Courte Oreilles, a stratified two-story fishery lake, the total phosphorus criterion is 10 µg/L. Attainment of the criterion is determined by taking samples at or near the deepest points of the lake's two-story fishery basins: East, Central, and West Basins.

**Note for subd. 4.:** The Musky Bay portion and other bays of Lac Courte Oreilles do not have, and have not historically had, two-story fishery habitat. However, if the criterion for Lac Courte Oreilles

is not attained at any of the three deep points, then the lake as a whole, including Musky Bay and other small bays, would be listed as impaired.

*[Note to LRB: Insert “**Note for subd. 4**” before existing sub. (7) notes. Use the prefix “**Note for subd. 4**”.]*

**Note 3 for sub. (7):** To determine whether a phosphorus criterion is achieved, samples are taken near the deepest part of a waterbody. A waterbody’s phosphorus criterion is not applicable to samples taken in bays.

*[Note to LRB: Insert “**Note 3 for sub. (7)**” after existing sub. (7) notes.]*

**SECTION 4. EFFECTIVE DATE.** This rule takes effect on the first day of the month following publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

**SECTION 5. BOARD ADOPTION.** This rule was approved and adopted by the State of Wisconsin Natural Resources Board on [DATE].