From: Chris Bedwell <chris@chrisbedwell.com>
Sent: Wednesday, February 22, 2023 8:34 AM
To: DNR WY Waterbody Assessments
Cc: Chris Bedwell; Hans Holmberg
Subject: FW: DNR Seeks Comments On Updated Surface Water Assessment Guidance
Attachments: COLA Comments_2024 WisCALM_2023_0220.docx

Importance: High

Hello Ashley,
I would like to submit the attached comments on behalf of Courte Oreilles Lakes Association, Inc., with input from LimnoTech.

Please confirm receipt.

Thank you,
Christine Bedwell
COLA President
612-810-1949

Comments can be sent to DNRWYWaterbodyAssessments@wisconsin.gov or via mail to Ashley Beranek, DNR, Bureau of Water Quality, 101 S. Webster St. WQ/3 Madison, WI 53707

2024 WisCALM Review and Comments

Submitted by Courte Oreilles Lakes Association (COLA), with input from LimnoTech

February 20, 2023

Comment #1: Section 6.1.7, 1st paragraph, 4th sentence: "Some lakes that are enriched with nutrients will not show evidence of impairment in their ambient water dissolved phosphorus or chlorophyll-a concentrations."

This sentence refers to dissolved phosphorus. WisCALM does not use dissolved phosphorus measurements to assess impairment. We suggest "dissolved" be deleted.

Comment #2: 6.1.8 Oxythermal Habitat: This section currently reads "For two-story fishery lakes, the oxythermal layer thickness criteria specified in section 6.6 6.6 Oxythermal Habitat also applies as a phosphorus response indicator. Elevated phosphorus can lead to oxygen depletion in lakes and reduce the habitat necessary for coldwater fish. Although phosphorus may not be the only factor affecting oxythermal habitat, if the oxythermal habitat requirement is not met in a waterbody with elevated TP levels, it is inappropriate to determine that the waterbody is not experiencing stress due to phosphorus, and not list it as impaired for TP, unless further studies indicate otherwise."

We suggest it be revised as follows so that the last sentence reads in the affirmative: For two-story fishery lakes, the oxythermal layer thickness criteria specified in section 6.6 Oxythermal Habitat also applies as a phosphorus response indicator. Elevated phosphorus can lead to oxygen depletion in lakes and reduce the habitat necessary for coldwater fish. Although phosphorus may not be the only factor affecting oxythermal habitat, if the oxythermal habitat requirement is not met in a waterbody with elevated TP levels, it is appropriate to determine that the waterbody is experiencing stress due to phosphorus, and list it as impaired for TP, unless existing studies indicate otherwise.

From: Drake, Wendy (she/her/hers) <drake.wendy@epa.gov>
Sent: Friday, February 24, 2023 4:13 PM
To: Beranek, Ashley E - DNR
Cc: Keclik, Donna
Subject: 2024 WisCALM comments
Attachments: 2024_WisCALM_Comments_2024-02-24.docx

Good afternoon, Ashley.

Attached are EPA's comments on the 2024 WisCALM. Please let me know if you have any questions or would like to discuss.

Thanks,

Wendy Drake
(312) 886-6705

Comments on Wisconsin's 2024 WisCALM
February 24, 2023

1. p. 14—Section 3.3 Quality Assurance and Laboratory Analysis: Regarding the sentence, "For targeted, or special, monitoring studies which are frequently used to discern impairment prior to listing a waterbody, quality assurance protocols, such as field blanks, duplicates or spikes, are incorporated *as funds allow*," does this mean that WDNR conducts targeted/special monitoring studies as funds allow or that WDNR follows quality assurance protocols (e.g., analyzing field blanks, duplicates, or spikes) for targeted/special monitoring studies as funds allow?

2. p. 17—Section 4.1.3 Representative Data: Regarding this sentence in the "Extreme Weather Years" paragraph: "As a very general guideline, an extreme weather year may be defined as a year where precipitation, flow, stage/elevation, and/or temperature are above the 90th or below the 10th percentile of the *annual averages* within the period of record," what is the time period used to determine "annual averages," and are annual averages updated for each listing cycle or are they based on a static baseline?

3. p. 31—Table 11: In the Individual Metrics row and Warm F-IBI column, see typo in "j) % simple lithophils."

4. p. 39—Section 6.1.8: Oxythermal Habitat: Remove repeat reference to section 6.6 in first sentence.

5. p. 52—Section 7.2.1 Chlorophyll-a (Algal blooms) (Lakes, Reservoirs, Impounded Flowing Waters): Regarding the sentence, "However, excessive nutrient loading (*particularly phosphorus*) can cause algae populations to grow rapidly under certain environmental conditions and form "blooms" that can impact water quality and pose health risks to people, pets, and livestock," has WDNR started considering whether nitrogen is affecting algal blooms in WI?

6. p. 58—Section 8.1 Blue-green Algal Toxin Health Risks (Harmful Algal Blooms): EPA encourages WDNR to leverage other monitoring data, including satellite data from NOAA (e.g., Cyanobacteria Assessment Network or CyAN) and other sources, as other resources to meet water quality goals and inform development of monitoring programs.

7. p. 59—8.2 PFOS and PFOA: Regarding the asterisk for the PFOS threshold of 8 ng/L in Table 33. Wisconsin DNR surface water criteria for PFOS and PFOA, Wisconsin does not have a use designation for "waters that cannot naturally support fish and do not have downstream waters that support fish," nor has Wisconsin identified any waterbodies as such. Therefore, EPA interprets the PFOS criterion as currently applying to all waterbodies in Wisconsin. To remove the PFOS criterion from a waterbody, Wisconsin would need to conduct a Use Attainability Analysis, consistent with 40 CFR § 131.10(g), to document that the waterbody cannot naturally support fish and is not upstream of waters that support fish and submit that use revision to EPA for review and approval before it may be used as the basis of determining that the PFOS criterion does not apply to that water body.

8. p. 61—Section 8.5.1 Cyanobacteria (Blue-green Algae) Toxins: Has WDNR considered using EPA's 2015 health advisory levels for cyanotoxins in drinking water

(https://www.epa.gov/cyanohabs/epa-drinking-water-health-advisories-cyanotoxins) instead of the 1998 WHO provisional drinking water guideline value?

From: Paul La Liberte <paul.lalib@charter.net>
Sent: Thursday, February 23, 2023 10:16 AM
To: DNR WY Waterbody Assessments
Subject: WisCALM
Attachments: WGF comment on WisCALM 2024.pdf

Please accept these comments from Wisconsins Green Fire:

Paul La Liberte

WISCONSIN'S greenfire
VOICES FOR CONSERVATION

To: Ashley Beranek, WIDNR

From: Paul La Liberte paul.laliberte@wigreenfire.org

Subject: Comments to DNR on draft 2024 WisCALM guidance

February 23, 2023,

About Wisconsin's Green Fire: *Wisconsin's Green Fire- Voices for Conservation* (WGF) supports the conservation legacy of Wisconsin by promoting science-based management of its natural resources. Our members represent extensive experience in natural resource management, environmental law and policy, scientific research, and education. Our members have backgrounds in government, non- governmental organizations, universities and colleges and the private sector.

Thank you for the opportunity to comment on this draft document. This version of WisCALM includes nothing addressing nutrient impairments resulting in excessive filamentous algae or duckweeds growths in shallow aquatic systems. These impacts have been associated with nitrogen and were pointed out in comments from WGF and others on previous occasions, listed below. In the DNR Triennial Standards Review, finalized in 2021, development of a standard for nitrogen was:

1. Ranked by public respondents as the number one topic
2. Put into this category for future work:

> **Category B: Priorities for the upcoming cycle**
>
> These are topics that WDNR is prioritizing for work over the next three years. Topics in this group were high priorities based on input from staff, partners, and the public. WDNR expects that it will be feasible to begin work on these projects during the upcoming cycle based on WDNR resources (staff availability, funding, scientific knowledge). Work will begin as resources allow.

Specifically:

> **Nitrate/Nitrogen Criteria Development**: The EPA water quality criteria guidance requires all states to develop nitrogen criteria as well as phosphorus criteria. Currently, WDNR regulates nitrogen only as a toxic substance through implementation of surface water quality criteria for ammonia. However, nitrogen also acts as a nutrient for many plant species and can contribute to nuisance plant and algal growth in surface waters.

The result of these conditions may be depletions of dissolved oxygen or extreme pH conditions which are not supportive of a balanced fish and aquatic life community. Nitrogen can also contribute to harmful algal blooms that can release algal toxins, which can pose a health risk through recreational exposure. There are some studies indicating that nitrate can be harmful or toxic to aquatic life.

Rationale: Nitrogen/nitrate criteria development was ranked as the highest priority topic in the 2021- 2023 TSR. This topic has ranked highly in other TSRs, but previously WDNR did not feel that there was sufficient data to begin work. However, in summer 2020 EPA released draft recommendations for numeric nutrient criteria in lakes, and with these models WDNR now feels that there may be sufficient data to calculate a scientifically defensible water quality standard for nitrogen. WDNR plans to investigate whether EPA's models are appropriate for Wisconsin lakes, and will consider whether additional data should be collected for input into the models. As resources allow, WDNR may also assess whether these models could be used to develop numeric nitrogen criteria for flowing waters and/or whether to develop nitrate surface water quality criteria for the protection of human health.

Given this prioritization in the 2021 TSR, why is there no mention of work toward a standard for nitrogen and assessment of biological impacts in shallow water systems in WisCALM? Nitrogen is only mentioned in table 25 as a parameter sometimes useful in Best Professional Judgement situations. Filamentous algae and duckweed are not mentioned at all in WisCALM.

Past comments related to WisCALM *(and how they fared in the draft WisCALM 2024)*

December 2019 WGF comment on draft NR119: Provide better procedures for considering canopy effects when selecting of representative sites for viewing bucket method for assessing primary production. DNR response: guidance would not be put in WisCALM or in rules but rather in an SOP referenced in WisCALM. *(a reference to an SOP for viewing bucket appears in WisCALM. Guidance on how to consider canopy when selecting site not included)*

Winter 2019 WGF comment on WisCALM: Include benchmarks for backwater areas of Mississippi River, oxbow spring lakes and other similar environments. Specific methods were provided. DNR response: Currently insufficient data but will consider proposed metrics (*Section 12.3 Monitoring Strategies, Protocols, and Standard Operating Procedures contains no mention of procedures for monitoring backwaters or wetland environments)*

Winter 2019 Shawn Giblin Comment on WisCALM: Include standard for TSS. DNR response: future project *(listed on page 51 under "Other physical/chemical parameters in Table 25 can be used in best professional judgement assessment determinations" and on page 81 as a common justification for impaired waters listing. However, no guidance on how to collect data to add or remove TSS impairment listings.)*

Winter 2019 Shawn Giblin Comment on WisCALM: Switch from Fecal coliform standard to E coli standard. DNR response: Expected to be done by rule modification in 2020 and adoption in WisCALM in 2022. *(this has been done)*

Fall 2021 WGF comment on WisCALM: WGF again asked for changes in viewing bucket site selection procedures. Response from DNR was that action on this item was on hold awaiting adoption of biocriteria rule package. *(a reference to an SOP for viewing bucket appears in WisCALM. Guidance on how to consider canopy when selecting site not included)*

Fall 2021 WGF comment on WisCALM: Start gathering data in backwater environments to allow benchmark establishment. DNR response: Will consider adding it to future monitoring (*Section 12.3 Monitoring Strategies, Protocols, and Standard Operating Procedures contains no mention of procedures for monitoring backwaters or wetland environments)*

Fall 2021 WGF comment on WisCALM: Use procedures for detailed quantification of solar radiation when establishing benchmarks for stream eutrophication. *(Section 12.3 Monitoring Strategies, Protocols, and Standard Operating Procedures contains no mention of procedures for monitoring solar radiation)*

From: irishvoyageur@aol.com
Sent: Tuesday, February 21, 2023 1:11 PM
To: Beranek, Ashley E - DNR; DNR WY Waterbody Assessments
Subject: Comments on 2024 WisCalm Assessment Methods
Attachments: WisCalm Guidance Comments Sullivan Marshall Baumann Feb 28 2019.docx; Methods for evaluating filamentous algae & duckweeds.doc; Filamentous algae La Crosse Marsh JFS 5 1 2020.JPG; filamentous algae Lax Marsh 4 18 2021.JPG; Filamentous algae mat La Crosse Marsh JFS 5 15 2020.JPG

I would like to provide comments concerning the proposed assessment document for identifying impaired waters in Wisconsin (WisCalm 2024).

The document again fails to utilize assessment procedures for the identification of nutrient impairment problems associated with excessive growths of filamentous algae and duckweeds (free floating plants, FFPs) in shallow aquatic environments including riverine backwaters, floodplain lakes, and deepwater marshes (wetlands). Previous comments on this omission was submitted on the last assessment guidance prepared by the Department four years ago (attached memo, Feb 28th, 2019). I am resubmitting these comments since I believe they are still relevant. It should be noted that initial problems with FPPs were identified almost 15 years ago. Substantial information has been collected since then that demonstrates nutrient enrichment problems with phosphorus and/or nitrogen in shallow aquatic systems, particularly along the Mississippi River and lower Wisconsin River. Although the phosphorus criteria have been developed for surface waters in Wisconsin to address nutrient related problems, similar criteria for nitrogen remain to be developed.

I am including example photos of nutrient related impairments in the La Crosse Marsh associated with FFPs. Although the Department has developed assessment procedures for identifying nutrient impairment problems in rivers and lakes, similar assessment procedures for wetlands remain to be developed. I believe the assessment methods for FFPs can also be applied to deep and shallow water marshes.

John Sullivan
La Crosse, WI

From: Craig Summerfield <csummerfield@wmc.org>
Sent: Friday, February 24, 2023 7:29 PM
To: DNR WY Waterbody Assessments
Cc: Beranek, Ashley E - DNR; Manley, Scott; 'Patrick Stevens'; Jason Culotta
Subject: WMC-WPC-MWFPA Comments on Draft 2024 WisCALM
Attachments: WMC-WPC-MWFPA Comments on Draft WisCALM Guidance - 2023.2.24.pdf

The attached comments are submitted on behalf of Wisconsin Manufacturers & Commerce, Wisconsin Paper Council, and Midwest Food Products Association. The comments relate to the DNR's draft 2024 WisCALM guidance document.

Feel free to contact me with any questions.

Sincerely,

Craig Summerfield
Director of Environmental & Energy Policy
WMC

csummerfield@wmc.org
Work: 608.258.3400
Direct: 608.661.6910

501 E. Washington Ave.
Madison, WI 53703
www.wmc.org

TO: Ashley Beranek – WQ/3

FROM: Wisconsin Manufacturers & Commerce
Wisconsin Paper Council
Midwest Food Products Association

DATE: February 24, 2023

RE: Comments on draft Wisconsin 2024 Consolidated Assessment and Listing Methodology (WisCALM) for CWA Section 303(d) and 305(b) Integrated Reporting – Assessment Guidance for 2023-2024

Submitted via e-mail to DNRWYWaterbodyAssessments@wisconsin.gov

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These comments are submitted on behalf of Wisconsin Manufacturers and Commerce (WMC), Wisconsin Paper Council (WPC), and Midwest Food Products Association (MWFPA).

WPC is the premier trade association that advocates for the papermaking industry before regulatory bodies, and state and federal legislatures to achieve positive policy outcomes. WPC also works to educate the public about the social, environmental, and economic importance of paper, pulp, and forestry production in Wisconsin and throughout the Midwest.

The pulp and paper sector employs over 30,000 people in Wisconsin and has an annual payroll of $2.5 billion. Wisconsin is the number one paper-producing state in the United States, with the output of paper manufactured products estimated to be over $18 billion.

WMC is the largest general business association in Wisconsin, representing approximately 3,800 member companies of all sizes, and from every sector of the economy. Since 1911, our mission has been to make Wisconsin the most competitive state in the nation to do business. WMC members depend on fair, predictable environmental standards that do not unduly target or harm Wisconsin businesses.

MWFPA is a trade association founded in 1905 representing the food processing industry in the states of Wisconsin, Minnesota, and Illinois. MWPFA's purpose includes advocating on public policy issues including food safety, workforce, and environmental regulations.

I. Introduction

The Clean Water Act requires states to publish a list of all waters not meeting water quality standards, as well as an overall report on the surface water quality status of all waters in the state. These reports must be provided to the EPA every two years.

Corresponding with this update, the Wisconsin DNR typically publishes an update to "Wisconsin's Consolidated Assessment and Listing Methodology" (WisCALM). This guidance document, once implemented, is used by DNR staff to guide its assessment of water quality data.

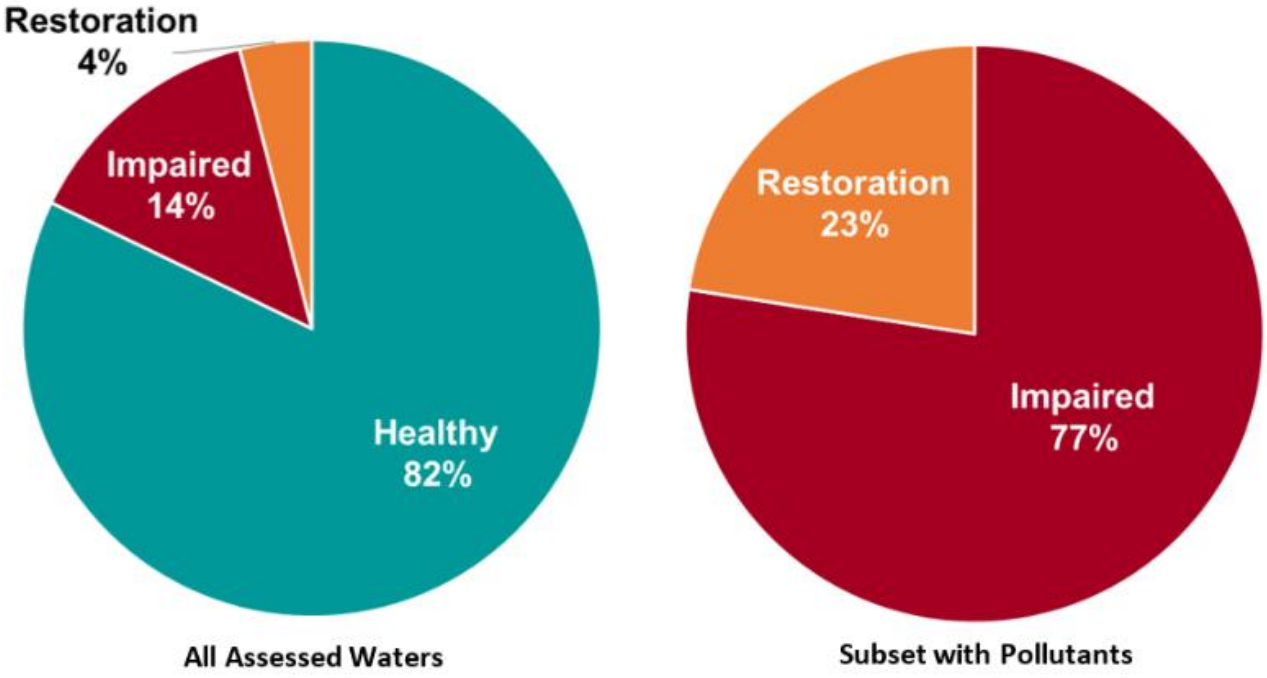
To begin, it should be noted that any regulatory changes by the DNR do not take place in a vacuum. Wisconsin's regulated community – including members of WMC, WPC, and MWFPA – contend with a myriad of state and federal water quality regulations. At this time, our members are contending with the implementation of new surface water quality regulations for PFOA and PFOS, a proposed antidegradation rulemaking that may make obtaining wastewater discharge permits more difficult, and several other burdensome regulations. Manufacturing is the backbone of Wisconsin's economy, and DNR staff should consider the impact of any new regulations on Wisconsin's papermakers, food processors, and other manufacturers.

It must also be stressed that a guidance document cannot impose any new requirements on the regulated community. As held by the Wisconsin Supreme Court, guidance documents "are not law, they do not have the force or effect of law, and they provide no authority for implementing or enforcing standards or conditions." *See SEIU v. Vos, 2020 WI 67 102.* Any new requirements on the regulated community found in this guidance document are unlawful, and the DNR must instead promulgate a rule.

II. Most of Wisconsin Waters Have Good Water Quality

Wisconsin has a long history of protecting its waters, and most Wisconsin waters are healthy. In the *Wisconsin Quality Report to Congress 2022*, the Department of Natural Resources (DNR) reported that 82% of the waters assessed were healthy. In addition, for those waters that are impaired, 23% have a restoration plan in place.

Figure 1: Percentages of Healthy Waters & Impaired Waters w/Restoration Plan



**Source: Wisconsin's Water Quality Report to Congress 2022*

III. The DNR can only rely on promulgated water quality standards to list a waterbody as impaired.

As acknowledged in the draft WisCALM guidance, the DNR recently updated its relevant administrative code related to waterbody assessments and water quality standards. This rulemaking was WY-23-13, or Clearinghouse Rule 19-094. WMC and WPC raised a number of concerns with this rulemaking throughout the rulemaking process. A central concern we shared was the use of unlawful guidance as a basis to list a waterbody as "impaired" on the Section 303(d) list of the federal Clean Water Act. Under federal law, a waterbody listed on the Section 303(d) list requires a Total Maximum Daily Load (TMDL) analysis. A waterbody with an EPA-approved TMDL may impose new limits on permitted entities that discharge into a section 303(d)-impaired waterbody, including manufacturers.

Thankfully, the Legislature stepped in and requested important modifications to Clearinghouse Rule 19-094, and the DNR agreed to incorporate these changes. The relevant section of the rule is below, with the changes underlined:

> "(2) INDIVIDUAL WATERBODY ASSESSMENTS AND SECTION 303 (D) LIST. (a) The department shall identify and report on waters not meeting any applicable water quality standard <u>prescribed under statute or a promulgated rule</u> pursuant to section 303 (d) of the Clean Water Act, 33 USC 1313 (d), and 40 CFR 130.7 (b) and 130.10 (b) (2). The department shall assess individual waterbodies that have sufficient and readily available datasets, as specified in the department's water quality standards and assessment protocols, to determine whether a

> waterbody is attaining water quality standards. The department determines whether a waterbody's designated uses are supported by evaluating attainment of its water quality criteria and biological assessment thresholds. The department shall assess data collected from a waterbody against each applicable water quality standard or assessment threshold independently, unless a combined assessment procedure is specified in rule. The department shall report any waters not attaining applicable water quality standards to the U.S. EPA. Only water quality standards that have been promulgated via statute or rule may be considered for the purposes of listing a waterbody on the section 303 (d) list."

This change was approved by the Natural Resources Board, and ultimately incorporated into the current administrative code (See NR 102.51(2)). The change affirmed that the DNR can only utilize water quality standards that are lawfully enacted via statute or rule as a basis to list a waterbody as impaired under section 303(d) of the federal Clean Water Act. Moreover, the agency cannot use unlawful guidance to list a waterbody as impaired.

Moreover, NR 102.03(6) rule defines "Section 303 (d) list" as the following:

> "(6) "Section 303 (d) list" means a list of waters ***that do not attain water quality standards*** **(emphasis added)** and require a total maximum daily load analysis, as specified under section 303 (d) of the Clean Water Act, 33 USC 1313 (d)."

Thus, in the absence of a waterbody failing to obtain a promulgated water quality standard, the waterbody may not be listed on the section 303(d) list.

IV. Section 2.5.4 of the Proposed Guidance May Violate NR 102.

In response to the enactment of Clearinghouse Rule 19-094, the DNR included a new section in the draft WisCALM guidance titled "Water Quality Criteria vs Biological Assessment Thresholds," or Section 2.5.4. The section appears to provide two separate avenues for listing a waterbody as impaired, as described in the table below:

Table 1: DNR Description of Different Types of Impaired Water Listings

	Used to derive permit limits?	Parameter Examples	Shown on 303(d) list as	Actions toward improvement
Water Quality Criteria (describe the water itself)	Yes	Toxics, Nutrients, Sediment	"Pollutant"	- Permit limits - TMDLs
		DO, pH	"Observed effect" of degradation (aka "Impairment")	- Habitat restoration - Watershed work - Invasive species mgmt. - Site-specific criteria
Biological Assessment Thresholds (describe living things)	No	Plants, fish, insects, algae		

**Source: DNR draft WisCALM 2024 Guidance Document, pg. 12*

This section goes on to describe the differences between "water quality criteria" and "biological assessment thresholds." Some important passages are highlighted below:

> "…**Only water quality criteria for Pollutants are used to set discharge permit limits or to set targets for Total Maximum Daily Load (TMDL) analyses (Table 5) (emphasis added).**
> "Biological assessment thresholds describe the condition of the living things within the waterbody, such as plants, fish, aquatic insects, and algae. They are used to determine the health of an aquatic life community and whether designated uses are supported. Aquatic life communities may be impacted by pollutants or by other factors such as physical impacts (stream bank erosion, dams), invasive species, or climate change. Therefore, there are a wide range of actions that may be taken to address biological degradation, commonly including WISCONSIN DEPARTMENT OF NATURAL RESOURCES – WISCALM 2024 12 habitat restoration, watershed work, and invasive species management. **Whether biological assessment thresholds are codified or in guidance, or are narrative or numeric, they are not used for setting permit limits. Listings that result from biological assessments are "Observed Effects", also known as "Impairments," and do not determine permit limits or TMDL allocations (Table 5) (emphasis added).**
> "In cases where an observed effect has been documented but it is unclear whether a specific pollutant is one of the underlying causes (e.g. available data indicate pollutants are attaining their respective water quality criteria), the department would evaluate what stressors are affecting the waterbody before determining whether to list a specific pollutant as a cause."

First and foremost, our coalition agrees with the DNR's affirmation in the guidance that a "biological assessment threshold" cannot be used as a basis for establishing permit limits for regulated sources. Thus, we generally support the inclusion of the statement clarifying that "biological assessment thresholds…are not used for setting permit limits." If the DNR were to do otherwise, it would be a clear violation of NR 102.51(2), and therefore unlawful.

However, we are still concerned by the DNR's plan in relation to Section 303(d) listings. It appears the DNR intends to not only include on the Section 303(d) list waterbodies that fail to meet a promulgated water quality standard, but also waterbodies based on the results of a biological assessment.

Including biological assessments is inconsistent with the plain language of NR 102. As noted previously, NR 102.51(2) states that "only water quality standards that have been promulgated via statute or rule may be considered for the purposes of listing a waterbody on the section 303(d) list." In addition, NR 102.03(6) defines the "Section 303(d) list" as "a list of waters that do not attain water quality standards and require a total daily maximum load analysis." **Consequently, we request that DNR clarify in the WisCALM guidance that waterbodies will not be placed on the 303(d) list based upon biological assessments.**

There are also practical concerns about listing waterbodies on the 303(d) list when there is no exceedance of a promulgated water quality standard. Our coalition is concerned if a waterbody is listed on the section 303(d) list for reasons other than an exceedance of a water quality standard, an obligation will still be created for a TMDL. We note that under the DNR's prior practice, all impaired waterbodies on the state's 2022 section 303(d) Impaired Waters List were assigned a TMDL category of "low to high."

In summary, the DNR's acknowledgement that it cannot use biological assessment thresholds as a basis for permit limits is welcome. However, its plan for "two types of section 303(d) listings" injects uncertainty into the process and still appears to be unlawful. Thus, we urge the DNR to specify in the guidance that only water quality standards promulgated by statute or rule can be used to list a waterbody as impaired on the section 303(d) list.

V. The use of fish consumption advisories for listing on the 303(d) list appears unlawful.

Section 8.3 of the WisCALM guidance provides "Waterbodies may be designated as impaired on the 303(d) list based on the level of fish consumption advice…" Insofar as fish advisories are being used as regulatory purposes, such use is not authorized by law.

Initially, we note that the use of fish advisories as a basis for 303(d) listing purposes is inconsistent with the intended use of fish advisories. As the name suggests, fish advisories are intended to provide information to the public regarding the number of fish that are safe to consume over a given time period, given the amount of pollutants that are contained in the fish in a given waterbody. Fish advisories were not intended to be regulatory standards. As noted previously, by listing these waterbodies as impaired due to fish advisories, the advisories essentially become regulations because a listing creates a federal requirement for the DNR to create a TMDL on the waterbody. As mentioned above, the establishment of a TMDL may ultimately result in discharge limits being imposed on WPDES permittees.

The use of fish advisories as regulatory requirements is also inconsistent with state law. Wis. Stat. § 227.10(2m) provides that "no agency may implement or enforce any standard, requirement or threshold …unless that standard, requirement, or threshold is explicitly required or permitted by statute or by a rule that has been promulgated in accordance with [Wis. Stat. Ch. 227, Subchapter II]." The use of fish advisories to establish TMDLs has not been required or permitted by statute or rule. It is therefore unlawful for the DNR to use unpromulgated fish advisories as a regulatory requirement for purposes of a section 303(d) impairment listing.

VI. The draft guidance sets surface water criteria for PFOA and PFOS not found in statute or rule.

Two updates in the draft guidance relate to PFAS, specifically PFOA and PFOS. The first update, in Section 8.2 of the guidance, is summarized in the table below:

Table 2: Wisconsin DNR surface water criteria for PFOS and PFOA.

Indicator	Threshold (ng/L)	Minimum Data Requirement	Duration & Frequency
PFOS	8*	2 values within a 3-year period	>1 exceedance within a 3-year period
PFOA	95**		
* For all waters except those that cannot naturally support fish and do not have downstream waters that support fish. **Surface waters not designated as public drinking water supply. See 8.5.6 PFOA for drinking water criteria.			

**Source: DNR draft WisCALM Guidance Document, pg. 59*

In relation to the "threshold" column above, the table accurately describes the state's numeric criteria for PFOA and PFOS. These standards were established in WY-23-19, or Clearinghouse Rule 21-083. Per NR 102.04(8)(d)1., the state's relevant surface water quality standards are generally 8 ppt for PFOS, and 95 ppt for PFOA (subject to exceptions).

However, the draft guidance also establishes thresholds to list a waterbody as impaired, defined as two or more exceedances within a three-year period, provided the samples are collected at least 30 days apart. Such a standard is not found in administrative code, nor state statute. In addition, the DNR did even attempt to provide a peer-reviewed, scientific justification as to why making an impairment decision based on only two samples is appropriate.

The second PFAS update in the draft guidance is found in Section 8.5.6. This section notes the state criterion of 20 ppt for PFOA for surface waters used for drinking water. This standard was also established in CR 21-083.

However, the draft guidance again establishes a threshold of two or more exceedances within a three-year period to list a waterbody as impaired. Again, this standard is not found in administrative code, nor state statute.

Under s. 227.10(1), "each agency shall promulgate as a rule each statement of general policy and each interpretation of a statute which it specifically adopts to govern its enforcement or administration of that statute." The DNR has failed to promulgate a rule establishing the "two or more exceedances" threshold. Thus, this section of the guidance may be unlawful.

VII. Conclusion

Although we appreciate the DNR's assurance that "biological assessment thresholds" cannot trigger a TMDL or permit limits, our organizations still have several key concerns with the draft WisCALM 2024 guidance document. These concerns include the following:

- The DNR's plan to list waterbodies as impaired under Section 303(d) without utilizing water quality standards promulgated via statute or rule.
- The use of fish advisories to list a waterbody as impaired.
- Making impairment determinations for PFOA and PFOS based upon two samples, in the absence of a specific rule or statutory authority,

Before finalizing the draft WisCALM 2024 guidance, our coalition urges the Department to carefully review the proposed guidance to ensure compliance with ch. 227 of the statutes, as well as compliance with NR 102, as amended by the Joint Committee for the Review of Administrative Rules.

cc: Sen. Steve Nass, co-chair, Joint Committee for the Review of Administrative Rules
Rep. Adam Neylon, co-chair, Joint Committee for the Review of Administrative Rules

From: Edmond Packee <ecpackee@alaska.edu>
Sent: Monday, February 27, 2023 7:59 AM
To: Beranek, Ashley E - DNR
Subject: Comment till incomplete but here it is
Attachments: WISCONSIN SURFACE WATER ASSESSMENT UPDATE.docx

Will call you shortly

WISCONSIN SURFACE WATER ASSESSMENT UPDATE

GENERAL COMMENTS

1. The overall effort is very good and comprehensive; my comments and suggestions follow.
2. I use Lac Courte Oreilles in Sawyer County because of my familiarity that dates back to the mid 1940s and early 1950s; such use does not mean my effort addresses only Lac Courte Oreilles—it is appropriate for all waters of Wisconsin.
3. Use of acronyms in advisory letter (e.g., for PFOS and PFOA) (WDNR 2023[1]) means "what" to the public from whom the WDNR is seeking comment. At least for first time use, use full name followed by acronym in parentheses or have a glossary. Another example is the use of the term "oxythermal" which needs to simply be defined in parentheses as "oxygen and temperature acting together".
4. Why a Friday end of business day for final submission?—who at WDNR is going to look at submissions on a weekend?—future deadline should be extended to start of business day on Monday morning.
5. Writing/reading level should be highschool graduate or second year college. Figures should be very clear and understandable.
6. "Water quality" throughout most WDNR and others documents is subjective and means different things to different people. WDNR must define "water quality" and set realistic parameters/limits. WDNR targets should not override nor ignore natural environmental conditions/controls and must recognize/address background/recent levels such as nutrients, turbidity,
7. Targets should be realistic for current times, e.g., phosphorus in Lac Courte Oreilles based on 1996 data (Barr Associates 1998)—more than 25 years ago and more than 25 years development changes from relatively few residences that were for dominantly seasonal use to more suburban-like with more three-season homes and full-time residents and now rentals.
8. Rewrite should include statement concerning poisonous shoreline plants such as poison hemlock (Annen 2007) (present in abundance on Lac Courte Oreilles shoreline/riparian zone 2022) and presence of invasive species (vegetative and animal).
9. The WDNR NEEDS A DIFFFERENT SCIENTIFIC APPROACH—ECOSYSTEM MANAGEMENT & TROPHIC MANAGEMENT –***SEE BELOW***.
10. In the case of Lac Courte Oreilles, Grindstone Lake, Windigo Lake, and Spring Lake and other lakes that are entirely within the Town of Bass Lake, Sawyer County, what right do non-elected individuals (excluding state agency employee) who are non-Wisconsin voters, non-Wisconsin income tax-payers, non-Wisconsin residents have to petition/demand/negotiate changes to Wisconsin laws, statues, and regulations.
11. With particular reference to Lac Courte Oreilles which is wholly within the Town of Bass Lake, Sawyer County, what right do residents (seasonal and full time) property-owners and visitors of the Town of Sand attempt to dictate management how resources are addressed within another Town, i.e., Town of Bass Lake. In the PSC 1955 decision, the Lac Courte Oreilles' lake level was based on a petition by the Town of Sand Lake. When will the WDNR recognize and address and include the Town of Bass Lake in the information-gathering and decision-making processes?
12. Furthermore, Town of Bass Lake, being a third tier of Wisconsin government should not be ignored by WDNR and organizations, such as lake associations. Township governments have much information that currently is not necessarily available for WDNR planning and decision-making
13. Lake property owners purchased their property "as is" when they bought it and that included native aquatic species and/or muck in the state-owned littoral zone (foreshore) and wetland species on lands immediately below the OHWM.
14. Lake associations frequently have biased opinions that are not in the best interests of the aquatic ecosystems or even adjacent property owners and by-pass
15. Many property owners are "city slickers" from various cities who purchased property on Lac Courte Oreilles and adjacent/nearby lakes and know/recognize little about lake characteristics/processes.
16. These "city slickers "and their allies, also, misinterpret and exaggerate facts and concepts. They often cherry- pick information to support their desired outcome and ignore that does not support their desires. For example,

WATER QUALITY

The WDNR needs to clearly and concisely define the term, "water quality" and do so in language that is understandable by the general public. The use of the term "water quality" is subjective and ambiguous (Lee et al. 1995). Water quality is rarely a measure of lake health, lake ecosystem health, or stream/river health. It is commonly "in the eye of the beholder". "Water quality can be thought of as a measure of the suitability of water for a particular use based on selected physical, chemical, and biological characteristics" (USGS Water Science School 2018[NOV]). "Water quality describes the condition of the water, including chemical, physical, and biological characteristics, usually with respect to its suitability for a particular purpose…" (Florida Keys National Marine Sanctuary n.d.). Wikipedia (n.d.) provides, for general public reading, the following: "Water quality refers to the chemical, physical, and biological characteristics of water based on the standards of its usage." Law Insider, Inc. (n.d.) (in REFERENCES—Long Form below) lists a plethora of definitions, mostly legal, for water quality many of which include references to human use

Water quality

Based on a review

I recommend that the term , "water quality" when used in the rewrite be defined objectively and then that it be used with specific reference to a particular use, i.e., water quality for swimming, water quality for boating, water quality for fish, etc.

WDNR (2023[1]) states that this year's updates include:

- Distinction between biological thresholds and water quality criteria,
- New biological metrics (macrophytes, algae),
- New phosphorus biological response indicators (macrophytes, algae, diatoms).

Dissolved Oxygen

ECOSYSTEM MANAGEMENT

ECOLOGICAL PROVINCES

Water quality is impacted by a combination of geological materials and major drainage systems. Water biota depend upon available sources, both current and historical.

Therefore, I suggest for aquatic ecosystems that the state be divided tentatively into 5 aquatic biogeoclimatic zones (tentatively named):

- Lake Superior,
- Lake Michigan,
- Chippewa River,
- Driftless Area, and
- Wisconsin River

These biogeoclimatic zones are based primarily on surficial geology and not vegetation.

TROPHIC STATE INDEX

Trophic state determination is an important aspect of lake surveys. Trophic state is not the same thing as water quality, but trophic state certainly is one aspect of water quality.

The Michigan Department of Environmental Quality classifies Michigan lakes on the basis of their primary biological productivity or trophic characteristics using the Carlson Trophic State Index (Fuller, Minnerick 2008).

PHYSICAL, NUTRIENT AND CHEMICAL CHARACTERISTICS OF LAKES

For each lake, the characteristics should be described. The characteristics should include all references—official WDNR values as well as well as other agencies, non-government organizations, published documents, and private statements. This reference to "all", will allow identification of sources of information used by many. Attached, following REFERNCES are two lake descriptions (Christner and Lac Courte Oreilles) that I have compiled for Couderay River above the Billy Boy Dam. These examples are incomplete.

Turbidty, objectively determined, should be included as a physical lake characteristic

REFERENCES—Long Form

Annen C. 2007. Poison hemlock. Madison, WI: Wisconsin Department of Natural Resources Invasive Species. https://dnr.wisconsin.gov/topic/Invasives/fact/PoisonHemlock.html [accessed 5 Feb 2023].

- *Conium maculatum*; not native to North America; invades range of habitats from roadsides, fields, stream banks, disturbed areas, riparian woodlands and floodplains; moist soil;,full sun to partially shaded

Carlson RE. 1977. A trophic state index for lakes. Limnology and Oceanography 22(2):361-369. https://www.nrc.gov/do [accessed 25 Feb 2023].

ChemScan. n.d. Orthophosphorus in water. Waukesha, WI: ChemScan, Inc. https://www.chemscan.com/ortho-phosphorous.html [accessed 4 Feb 2023].

"Total Phosphorous (TP) is the form of analysis typically cited as an effluent parameter for municipal and industrial wastewater treatment plants. Total Phosphorous in effluent is a measure of the remaining dissolved phosphate plus any insoluble phosphate carried over into the effluent in the form of precipitates or within microbes. Following digestion, all phosphorous is converted into dissolved phosphate for analysis. This is not, however, the form of analysis that is the most useful for process monitoring or control purposes because the Total Phosphorous analysis does not identify the original source of the effluent phosphorous. The most basic form of analysis for process control is reactive phosphorous (orthophosphate), which can indicate the amount of phosphorous that is available to participate in chemical reactions or biological activity. This concentration can be measured before and after chemical precipitation or biological assimilation and settling. Measurement of dissolved reactive phosphorous requires filtration of the sample at 0.45 micron prior to analysis."

Florida Keys National Marine Sanctuary. n.d. Key West, FL: National Oceanic & Atmospheric Administration Florida Keys National Marine Sanctuary https://floridakeys.noaa.gov/oce [accessed 25 Feb 2023].

Although scientific measurements are used to define water quality, it is not a simple thing to say 'that water is good' or 'that water is bad.' So the determination is typically made relative to the purpose of the water…" "Poor water quality can also pose a health risk for ecosystems."

Fuller LM, Minnerick RJ. 2008[1]. State and regional water-quality characteristics and trophic conditions of Michigan's inland lakes, 2001–2005. U.S. Geological Survey Scientific Investigations Report 2008–5188. https://pubs.usgs.gov/sir/2008/5188/pdf/sir2008-5188_web.pdf [accessed 20 Feb 2023}.

ABSTRACT

"Michigan Department of Environmental Quality classifies Michigan lakes on the basis of their primary biological productivity or trophic characteristics using the Carlson Trophic State Index. Trophic evaluations based on data collected from 2001 through 2005 indicate 17 percent of the lakes are oligotrophic, 53 percent are mesotrophic, 22 percent are eutrophic, 4 percent are hypereutrophic, and less than 5 percent are classified into transition classes between each major class. Although the distribution of lakes throughout Michigan or between Omernik level III ecoregions is not uniform, about 85 percent of the lakes classified as oligotrophic are in the Northern Lakes and Forests (50) or North Central Hardwoods (51) ecoregions. Nearly 28 percent of all the lakes in each of these two ecoregions were classified as oligotrophic."

"Historical trophic-state classes were compared to the current (2001 through 2005) trophic-state classes. Approximately 72 percent of lakes remained in the same trophic-state class, 11 percent moved up a partial or full class (indicating a decrease in water clarity) and 18 percent moved down a partial or full class (indicating an increase in water clarity)."

Law Insider, Inc. n.d. Water quality definition. San Francisco, CA: Law Insider, Inc. https://www.lawinsider.com/dictionary/water-quality [accessed 25 Feb 2023].

Water quality means the physical characteristics of water within shoreline jurisdiction, including water quantity, hydrological, physical, chemical, aesthetic, recreation-related, and biological characteristics.

Water quality means those characteristics of stormwater runoff from a land disturbing activity that relate to the chemical, physical, biological, or radiological integrity of water

Water quality means the chemical, physical and biological condition of water.

Water quality criteria are based on scientific and technical information that is used as an objective means of assessing the quality required for a particular use.

Water quality means characteristics that are related to the physical, chemical, biological, and/or radiological integrity of stormwater.

Water quality means the physical, chemical and biological characteristics of water with respect to its suitability for a particular use.

Water quality means the physical characteristics of water within shoreline jurisdiction, including water quantity, hydrological, physical, chemical, aesthetic, recreation-related, and biological characteristics.

Water quality means accessed water which is safe for consumption for the purpose for which it is supplied as per norms set by Bureau of Indian Standards.

Water quality means the physical, chemical and biological characteristics of surface or ground waters.

Water quality means the chemical, physical, biological and radiological characteristics of a water body.

Water quality means the physical, chemical, and biological characteristics of water with respect to its suitability for a particular use. For the purposes of these Standards, water quality shall be assessed in terms of chemical composition, biological integrity, and physical habitat.

Water quality means physical, chemical, and biological characteristics of water which determine diversity, stability, and productivity of the climax biotic community or affect human health.

Water quality means the physical characteristics of water within shoreline [?].

Water quality means the biological, chemical, physical, and radiological integrity of a body of water.

Water quality means those characteristics of storm water runoff that relate to the physical, chemical, biological or radiological integrity of water.

Water quality means the chemical, physical, hydrological, aesthetic, recreation-related, and [biological characteristics of water].

Water quality means water quality as defined by the United States ("U.S" or "federal") Environmental Protection Agency and Ohio Environmental Protection Agency and compliance with the federal Safe Drinking Water Act and applicable regulations.

Water quality means the measure of physical, chemical and biological characteristics of water as compared to Oregon's water quality standards and criteria set out in rules of the Oregon Department of Environmental Quality and applicable state law.

Water quality means the measure of physical, chemical and biological characteristics of water as [?].

Water quality means the chemical, physical, hydrological, aesthetic, recreation-related, and biological characteristics of water.

Water quality means the characteristics of water, including flow or amount and related, physical, chemical, aesthetic, recreation-related, and biological characteristics.

Water quality means the chemical, physical, radiological, biological, taste and/or odor characteristics of water with respect to its suitability for a particular purpose.

Water quality means the characteristics of water which define its use in terms of physical, chemical, biological, bacteriological or radiological characteristics by which the acceptability of water is evaluated.

Water quality means the physical characteristics of water within [?].

Water quality. Except as set forth in SCHEDULE 3.41 hereto, the quality of the drinking water supplied by the Company and the Subsidiaries to their respective customers is in compliance with the maximum contaminant levels for primary contaminants established by the Safe Drinking Water Act, as amended, the U.S. Environmental Protection Agency, DEH (for North Carolina only), and VDH (for Virginia only), in

Water quality means compatibility of quality standard of water, expressed in physics, chemical and biological comprehensive characters.

Water quality means the physical characteristics of water within shoreline jurisdiction, including water.

Water quality means the physical characteristics of water within shoreline jurisdiction, including water quantity, hydrological, physical, chemical, aesthetic, recreation-related, and biological characteristics.

Water quality means the chemical, physical and biological characteristics of water in respect to its suitability for a particular purpose. The same water may be of good quality for one purpose or use, and bad or poor for another, depending upon its characteristics and the requirements for the particular use.

Water quality means the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose or other designated beneficial use.

Water quality means the ecological and chemical status of any waterway, as defined by the Water Framework Directive.

Water quality means the chemical, physical, biological, and cultural characteristics of a waterbody.

Water quality means the characteristics of water which define its use in terms of physical, chemical and biological contents; hence the quality of water for domestic use is different from industrial use.

Water quality means the physical characteristics of water within shoreline 1 jurisdiction, including water quantity and hydrological, physical, chemical, 2 aesthetic, recreation-related, and biological

characteristics. Where used in this 3 SMP, the term water quantity refers only to development and uses regulated under 4 this SMP and affecting water quantity such as impermeable surfaces and 5 stormwater handling practices. Water quantity, for purposes of this SMP, does 6 not mean the withdrawal of groundwater or diversion of surface water pursuant to 7 RCW 90.03.250 through 90.03.340. 8

Water quality means the chemical, physical, biological, and cultural characteristics of a water body or segment of a water body.

Water quality means the chemical, physical, biological, bacteriological, radiological and other properties and characteristics of water affecting its beneficial use.

Water quality means the characteristics of water, including flow or amount and related [?]

Water quality means those characteristics of storm water runoff that relate to the physical, chemical, biological orradiological integrity of water.

Water quantity shall mean those characteristics of §24-705 Scope of Responsibility. 1. The provisions of this ordinance shall apply throughout Chatham County and to drainage systems maintained by intergovernmental agreement between Chatham County and municipal jurisdictions. 2. The Director or designee shall be responsible for the coordination and enforcement of the provisions of this ordinance. 3. The Department shall be responsible for the conservation, management, extension and improvement of the MS4, includingactivities necessary to control storm water runoff and activities necessary to carry out storm water management programs included in Chatham County's NPDES storm water permit. 4. The application of this ordinance and the provisions expressed herein shall be the minimum storm water management requirements and shall not be deemed a limitation or repeal of any other local requirements authorized by State statute. Other storm water project improvements, as defined under Georgia Law, may be required. §24-706 Powers of the Department. 1. The Department shall have the power to administer and enforce all regulations and procedures adopted to implement this ordinance, including the right to maintain an action or procedure in any court of competent jurisdiction to compel compliance with or restrain any violation of this ordinance. 2. The Department can [?]

Water quality means the measure of physical, chemical and biological [?]

Water quality means the chemical, physical and biological condition of water. "waters" includes — [?]

Water quality means the physical characteristics of water within shoreline jurisdiction, including water quantity and hydrological, physical, chemical, aesthetic, recreation-related, and biological characteristics. Where used in this SMP, the term water quantity refers only to development and uses regulated under this SMP and affecting water quantity such as impermeable surfaces and stormwater handling practices.

Water quantity, for purposes of this SMP, does not mean the withdrawal of groundwater or diversion of surface water pursuant to RCW 90.03.250 through 90.03.340.

Water quality means the chemical, physical, biological, and cultural characteristics of a water body or segment of a water body.

Water quality means the chemical, physical, biological, bacteriological, radiological and other properties and characteristics of water affecting its beneficial use.

Water quality means the characteristics of water, including flow or amount and related [?]

Water quality means those characteristics of storm water runoff that relate to the physical, chemical, biological orradiological integrity of water.

Water quality shall mean those characteristics of §24-705 Scope of Responsibility. 1. The provisions of this ordinance shall apply throughout Chatham County and to drainage systems maintained by intergovernmental agreement between Chatham County and municipal jurisdictions. 2. The Director or designee shall be responsible for the coordination and enforcement of the provisions of this ordinance. 3. The Department shall be responsible for the conservation, management, extension and improvement of

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Water quality means the measure of physical, chemical and biological [?]

Water quality means the chemical, physical and biological condition of water. "waters" includes — Sample 1 1 Save Copy

Water quality means the chemical, physical, radiological and biological characteristics of water with respect to its suitability for beneficial uses.

Water quality means the chemical, physical, and biological characteristics of the State's water resources.

Water quality means water the quality whereof is appropriate as per standards issued by the Commission for the purpose for which it is supplied or used;

Water quality means the physical, chemical, biological, and aesthetic properties

Water quality means the chemical, physical and biological Condition of water.

Lee GF, Jones-Lee A, Rast W. 1995. Alternative approaches for trophic state classification for water quality management. Part I: Suitability of existing trophic state classification systems . El Macero, CA: G.Fred Lee & Associates. http://www.gfredlee.com/trophic.htm [accessed 22 Oct 2019].

NALMS. n.d. A trophic state index. Madison, WI: North American Lake Management Society. https://www.nalms.org/secchidipin/monitoring-methods/trophic-state-equations/# [accessed 25 Feb 2023].

USGS Water Science School. 2018^{NOV}. Water quality information by topic; Overview. Washington, DC: U.S. Geological Survey. https://www.usgs.gov/special-topics/water-science-school/science/water-quality-information-topic#overview [accessed 13 Feb 2023].

"Water quality can be thought of as a measure of the suitability of water for a particular use based on selected physical, chemical, and biological characteristics."

"All water is of a certain "quality" (and you can't tell by just looking), but what does "water quality" really mean?"

WDNR. 2023[1]. DNR seeks comments on updated surface water assessment. Madison, WI: Wisconsin Department of Natursl Resources. https://dnr.wisconsin.gov/newsroom/release/65761 [accessed 4 Feb 2023].

WDNR "seeking public comment on guidance that helps water management specialists evaluate the status of the state's surface water quality.

Wisconsin Consolidated Assessment and Listing Methodology, (WCALM, provides guidance to assess surface water quality using standards set by the Clean Water Act and Wisconsin State statute; methodology is updated for each biennial surface water assessment cycle, and the current guidance is being updated for the 2024 cycle.

This year's updates include:

- Distinction between biological thresholds and water quality criteria
- New biological metrics (macrophytes, algae)
- New phosphorus biological response indicators (macrophytes, algae, diatoms)
- New oxythermal standards for Two-Story Fishery Lakes
- New water quality criteria for PFOS and PFOA.

"Assessing water bodies against water quality standards and identifying impaired waters that don't meet standards is part of the overarching federal Clean Water Act framework for restoring impaired waters. Under the Clean Water Act, states are required to monitor and assess their waters to determine if they meet water quality standards and support the designated uses they are intended to provide."

"Wisconsin's surface water quality is good and improving in many areas," said Ashley Beranek, DNR Water Resources Management Specialist. "By updating the technical guidance and maintaining the impaired waters list, the state works to address water quality issues through targeted improvement plans."

WDNR. 2023[2]. Wisconsin's Consolidated Assessment and Listing Methodolgy (WCALM). Madison, WI: Wisconsin Department of Natursl Resources. [accessed 4 Feb 2023].

Wisconsin lakes and streams managed to ensure that water quality condition meets state and federal standards. Water quality standards (WQS) are the foundation of Wisconsin's water quality management program and serve to define goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect water quality from pollutants.

APPENDICES

LAKE CHARACTERISTICS

Christner Lake: Town of Bass Lake

Waterbody WBIC ID:	1840800
Lat. & Long.:	Latitude 45.958398930°; Longitude, -91.39769880°.
Surface Elevation:	1306 feet (AnyplaceAmerica n.d.[CHRL])
	1306 feet (approx.) (mytopo n.d[CHR])
	1305 feet (TopoQuest 2019[CHR])
	1306 feet (text) (Topozone n.d.[CHR])
	1391 feet (on topo map) (Topozone n.d.[CHR])
RFE:	
Surface Area:	36 acres (WDNR n.d.[CHR1])
	36 acres (WDNR n.d.[CHR2])
	35.95 acres (WDNR 2022[WSHED])
	36 acres (Lake-Link 2020[CHR])
	34 acres (WDNR Bureau of Fisheries and Habitat Management 2009)
	34 acres (LakePlace.com. 2021)
	34 acres (Northwest Regional Planning Commission 2015)
Littoral Zone:	10% (based on maximum depth)
Under 3 Feet:	
Maximum Depth:	16 feet (Northwest Regional Planning Commission 2015)
	16 feet (WDNR n.d.[CHR]
	16 feet (WDNR n.d.[CHR2])
	16 feet (Wisconsin Gazetteer 2021[CHR])
	16 feet (Lake-Link 2020[CHR])
	16 feet (Fishidy (2020 [CHR])
Mean Depth:	
Volume:	
Shore Miles:	
Littoral Zone:	100% (max. depth less than 20 feet)
Lake Type:	Seepage (WDNR Bureau of Fisheries and Habitat Management 2009)
	Seepage (Northwest Regional Planning Commission 2015)
	Seepage (WDNR n.d.[CHR2])
Bottom:	Sand = 90%, gravel = 1%, rock = 2%, muck = 7% (WDNR n.d.[CHR2])

[Comments truncated here; pages 9 - 15 are appendices]