

**EPA's Review of the Wisconsin Department of Natural Resources
Request for Approval of Site-Specific Total Phosphorus Criteria
For Petenwell Lake, Castle Rock Lake, and Lake Wisconsin
Under Section 303(c) of the Clean Water Act
WQSTS # WI 2019-2058**

Date: July 9, 2020

I. Summary

A. Date received by EPA: June 10, 2020 (electronically; Attorney General certification letter received July 6, 2020)

B. Description of action

The Wisconsin Department of Natural Resources (WDNR) requested U.S. Environmental Protection Agency approval of site-specific criteria (SSC) for three reservoirs on the Wisconsin River: Petenwell Lake (located in Adams, Juneau, and Wood counties), Castle Rock Lake (located in Adams and Juneau counties), and Lake Wisconsin (located in Columbia and Sauk counties). Data indicate that the uses are protected at levels different from Wisconsin's existing total phosphorus (TP) criteria. Per federal regulations at Title 40 of the Code of Federal Regulations (40 CFR) § 131.5(a), EPA "is to review and to approve or disapprove State-adopted water quality standards," and therefore, WDNR submitted its adopted SSC to EPA.

WDNR submitted the following documents in support of the site-specific criteria:

- Transmittal letter from WDNR to EPA, dated June 10, 2020;
- Legal certification letter from Joshua A. Kaul, Wisconsin Attorney General, to EPA, dated July 2, 2020;
- Final Order of the Wisconsin Natural Resources Board related to WY-09-18 affecting NR 102.06;
- WDNR Natural Resources Board Agenda document for WY-09-18 containing responses to public comments and technical support document "Site-Specific Total Phosphorus Criteria for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin," dated September 2019;
- Promulgated rule language showing changes to NR 102.06 related to the SSC;
- Presentation on the SSC made by WDNR at the public hearing August 13, 2019;
- Technical support document "Site-Specific Total Phosphorus Criteria for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin," May 6, 2019 Draft;
- Memo from WDNR (Willhite) to EPA on aquatic life use and fishery status, dated September 13, 2019;
- Email from WDNR (Willhite) to EPA on chlorophyll *a* (chl-*a*) and phosphorus assessment period, dated September 10, 2019;
- Draft memo from WDNR (Kirsch) to EPA on aquatic life use and fishery status; dated September 5, 2019;
- Email from WDNR (Kirsch) to EPA on aquatic life use and fishery stats, dated August 30, 2019;

- Email from WDNR (Willhite) to EPA on intended recreational use protection;
- Report from WDNR: Comprehensive Fisheries Survey of Lake Wisconsin, Columbia County, Wisconsin 2012, May 2013;
- Report from WDNR: Comprehensive Fisheries Survey of Lake Wisconsin, Columbia County and Sauk County, Wisconsin 2017, April 2020;
- WDNR fisheries information sheets for electrofishing and fyke netting surveys, Castle Rock Lake, April-May, 2013;
- WDNR fisheries information sheets for electrofishing and fyke netting surveys, Petenwell Lake, March-April, 2016;
- Report from WDNR: Water Quality Standards Rule Packages Technical Support Document: Waterbody assessments, biocriteria, and phosphorus response [*sic*] indicators (Rule No. WY-23-13) V1. 6-17-2019.

C. Wisconsin's basis for the revisions

In 2010, Wisconsin adopted, and EPA approved, statewide TP criteria for lakes, reservoirs, rivers, and streams to protect aquatic life and recreational uses of these waterbodies. Under these criteria, Petenwell and Castle Rock lakes were classified as shallow lakes and received a TP criterion concentration of 40 ug/L. Lake Wisconsin was classified as an impounded flowing water and the applicable criterion was that applied to the Wisconsin River of 100 ug/L TP.

All three reservoirs experience algal blooms and are listed on Wisconsin's impaired waters list as impaired for phosphorus; therefore, Wisconsin initiated the development of a Total Maximum Daily Load (TMDL) analysis to establish the amount of phosphorus reduction needed from different sectors to restore the uses of the reservoirs. During this analysis, the State determined that Petenwell and Castle Rock lakes produce less algae at a given TP concentration than is typically observed in shallow lakes across the state and that higher concentrations of TP (53 ug/L for Petenwell and 55 ug/L for Castle Rock) would protect against nuisance algal blooms and maintain a diverse fishery. For Lake Wisconsin, the TMDL analysis showed that even while meeting the 100 ug/L TP criterion (average summer concentration of TP is currently 98 ug/L), the reservoir experiences frequent and severe algal blooms and responds to phosphorus more like a lake, with longer residence times. The State therefore adopted a more stringent site-specific phosphorus criterion of 47 ug/L TP for Lake Wisconsin to protect the recreational and aquatic life uses.

The state statutory authority for adopting water quality criteria is established in Wis. Stat. s. 281.15:

- (1) The department shall promulgate rules setting standards of water quality to be applicable to the waters of the state, recognizing that different standards may be required for different waters or portions thereof. Water quality standards shall consist of the designated uses of the waters or portions thereof and the water quality criteria for those waters based upon the designated use. Water quality standards shall protect the public interest, which include the protection of the public health and welfare and the present and prospective future use of such waters for public and private water systems, propagation of fish and aquatic life and wildlife, domestic and recreational purposes and agricultural,

commercial, industrial and other legitimate uses. In all cases where the potential uses of water are in conflict, water quality standards shall be interpreted to protect the general public interest.

Wisconsin Administrative Code also specifically allows for the development of phosphorus site-specific criteria under Wis. Adm. Code s. NR 102.06(7):

NR 102.06 Phosphorus. (7) SITE-SPECIFIC CRITERIA. A criterion contained within this section may be modified by rule for a specific surface water segment or waterbody. A site-specific criterion may be adopted in place of the generally applicable criteria in this section where site-specific data and analysis using scientifically defensible methods and sound scientific rationale demonstrate a different criterion is protective of the designated use of the specific surface water segment or waterbody.

Wisconsin therefore determined it necessary to revise the phosphorus water quality criteria that apply to Petenwell Lake, Castle Rock Lake, and Lake Wisconsin.

WDNR accepted public comments between June 24, 2019 and August 20, 2019 on its proposal to adopt site-specific phosphorus criteria for the reservoirs and held a public hearing on August 13, 2019. The site-specific criteria were published in the Wisconsin Administrative Register on May 26, 2020 and took effect on June 1, 2020, and WDNR subsequently submitted the WQS for EPA review and approval.

II. EPA review of WDNR submittal

WQS requirements of CWA sections 101(a)(2) and 303(c)(2) are implemented through federal regulations contained in 40 CFR § 131. 40 CFR § 131.21 requires EPA to review and approve or disapprove state-adopted WQS, and 40 CFR § 131.5 outlines the criteria EPA is to use as the basis for deciding whether to approve or disapprove new or revised standards. 40 CFR § 131.6 outlines the minimum requirements of a WQS submission. Because there is overlap between EPA's review of whether a state's WQS submittal meets the minimum requirements of a WQS submission and whether the elements submitted are consistent with the requirements outlined in 40 CFR § 131.5, this review considers in tandem whether WDNR's submission is consistent with 40 CFR §§ 131.5 and 131.6.

A. Whether the State has adopted water uses which are consistent with the requirements of the Clean Water Act (40 CFR §§ 131.5(a)(1) and 131.6(a))

Section 101(a)(2) of the CWA states the national interim goal of achieving, by May 1, 1983, "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water" (hereafter collectively referred to as "the uses specified in section 101(a)(2)"), wherever attainable. Section 303 of the CWA requires states to adopt WQS for waters of the United States within their respective jurisdictions. Section 303(c) of the CWA requires, among other things, that states' WQS include the designated use or uses to be made of the waters and water quality criteria based upon such uses. Section 303(c)(2)(A) of

the CWA requires that WQS “protect the public health or welfare, enhance the quality of water and serve the purposes” of the CWA. EPA’s regulations at 40 CFR § 131.2 explain that:

“Serve the purposes of the Act” (as defined in sections 101(a)(2) and 303(c) of the Act) means that water quality standards should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value of *[sic]* public water supplies, propagation of fish, shellfish, and wildlife, recreation in and on the water, and agricultural, industrial, and other purposes including navigation.

EPA’s regulations at 40 CFR § 131 interpret and implement sections 101(a)(2) and 303(c)(2)(A) of the CWA through a requirement that WQS include the uses specified in section 101(a)(2) of the CWA, unless those uses have been shown to be unattainable. Wisconsin’s use designations for lakes and reservoirs are approved by EPA and provide for the uses specified in Section 101(a)(2). Wisconsin has retained the general fish and aquatic life and recreational uses for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin and so continues to have uses “which are consistent with the requirements of the CWA” for these waterbodies.

B. Whether the State has adopted criteria that protect the designated use based on sound scientific rationale consistent with §131.11 (40 CFR §§ 131.5(a)(2) and 131.6(c))

Federal regulations at 40 CFR § 131.11 require states to “adopt those water quality criteria that protect the designated use,” and specify that “criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use.”

Per 40 CFR § 131.11: “In establishing criteria, States should [e]stablish numerical values based on 304(a) Guidance; 304(a) Guidance modified to reflect site-specific conditions; or [o]ther scientifically defensible methods.” The federal regulation also states that “where numerical criteria cannot be established or to supplement numerical criteria,” states should “[e]stablish narrative criteria or criteria based upon biomonitoring methods.”

Wisconsin adopted statewide TP criteria for streams, rivers (specific waterbodies named in statute), shallow lakes, deep drainage lakes/reservoirs, deep seepage lakes, two-story fishery lakes, and the Great Lakes, which EPA approved in 2010. The river and stream criteria were developed based on field studies identifying TP concentrations at which adverse impacts occurred to fish and macroinvertebrate communities and are intended to prevent in-stream algal growth from phosphorus that could become detrimental to fish and aquatic life.¹ The lake and reservoir criteria were developed based on regional studies of fish populations and recreational use to protect fish and aquatic life and human use from detrimental effects of algal growth fueled by phosphorus.² Because different types of lake and reservoir ecosystems predictably respond differently to phosphorus, and because human perceptions of recreational suitability changes with lake or reservoir type, separate criteria were developed for different major lake types in Wisconsin.

¹ WDNR. 2010. Wisconsin Phosphorus Water Quality Standards Criteria: Technical Support Document. 37 pp.

² *Ibid.*

However, in adopting its TP criteria, WDNR also recognized that there could be specific situations in which data limitations or unique environmental conditions could make the statewide TP criteria not representative for a specific waterbody (e.g., two-story fishery lakes³). WDNR presented evidence that Petenwell Lake, Castle Rock Lake, and Lake Wisconsin reservoirs differ from other reservoirs in the state in ways that make them good candidates for alternate, site-specific criteria. Based on statistical relationships with field data, Petenwell and Castle Rock lakes are less sensitive to TP compared to other lakes and reservoirs in the state, producing less chl-a per unit of TP. Conversely, Lake Wisconsin is more sensitive to TP compared to other lakes and reservoirs in the state and produces more chl-a per unit TP. Based on model results, this difference is particularly pronounced during low-flow conditions. For example, at the lowest flows observed during the study period on which the SSC were based (2010-2013; 1,000-1,500 cfs in Petenwell/Castle Rock and 2,000-3,000 cfs in Lake Wisconsin), a modeled increase in TP from 60 to 120 µg/L in Lake Wisconsin would result in an increase in chl-a from about 30 to 90 µg/L, while this same TP increase in Petenwell and Castle Rock lakes would only increase chl-a from about 20 to 30 µg/L.

EPA determined that given these unique characteristics, it was appropriate for WDNR to establish alternate TP criteria to protect these reservoirs, rather than rely upon the statewide criteria generally applicable to other reservoirs and shallow lakes of their type. The remainder of this section evaluates the appropriateness of the criteria that WDNR adopted for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin.

1. Proposed site-specific criteria for Wisconsin River reservoirs

Petenwell and Castle Rock lakes are classified as shallow (unstratified) drainage lakes and have a TP criterion of 40 µg/L as a summer mean concentration (June 1 – September 15). This TP criterion was largely based on research in Minnesota showing an increase in nuisance algal blooms in shallow lakes when TP exceeds 40 µg/L. Lake Wisconsin is classified as an impounded flowing water because its summer water residence time is less than 14 days and has a TP criterion of 100 µg/L, equal to the criterion of the inflowing Wisconsin River (Table 1).

Water quality monitoring data for the Petenwell and Castle Rock lakes demonstrates that the existing TP criteria are frequently exceeded, while TP concentrations in Lake Wisconsin are near and sometimes lower than the existing criteria (Table 1). Petenwell and Castle Rock lakes experience eutrophic conditions, with algal blooms causing periods of low dissolved oxygen in some parts of the reservoirs. As such, the reservoirs have been listed on Wisconsin's 303(d) impaired waters list since 1998. Lake Wisconsin also experiences nuisance algal blooms and concomitant eutrophic conditions. Lake Wisconsin has been on Wisconsin's 303(d) list since 2010.

With this knowledge WDNR chose to pursue SSC for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin. WDNR utilized multiple lines of evidence to develop the SSC focusing on the uniqueness of the reservoirs, fishery data, user perception data, monitoring data, and model projections for TP and chl-a when the reservoirs are attaining chl-a concentrations below

³ *Ibid.* p.28

nuisance conditions. The proposed criteria are 53 ug/L for Petenwell Lake, 55 ug/L for Castle Rock Lake, and 47 ug/L for Lake Wisconsin.

Although the reservoirs frequently exceed these total phosphorus thresholds, WDNR presented recent fishery and water quality monitoring data and modeling results showing that the general aquatic life and recreation uses were attained. WDNR, therefore, determined that for Petenwell and Castle Rock lakes less stringent criteria than the 2010 criteria would protect the aquatic life and recreation uses and that for Lake Wisconsin a more stringent TP criterion was necessary to protect these uses.

Table 1: Comparison of existing to proposed site-specific TP criteria and current ambient TP for the Wisconsin River reservoirs proposed for site-specific criteria.

Waterbody	Current TP criterion (ug/L)	Proposed TP criterion* (ug/L)	Average summer TP concentration (ug/L)
Petenwell Lake	40	53	109
Castle Rock Lake	40	55	79
Lake Wisconsin	100	47	98

2. Aquatic Life Use

a. Fishery Data

WDNR focused the majority of its analyses for developing the TP SSC on chl-a thresholds supporting recreational use. WDNR also provided additional fishery monitoring reports, data, and information to demonstrate that the TP SSC would also support the aquatic life use. WDNR provided an overview of the fish communities in the three reservoirs, fishery monitoring reports for Lake Wisconsin for 2012 and 2017, and electrofishing and fyke netting fishery catch summaries for Petenwell and Castle Rock lakes for 2016 and 2013, respectively. Although the fishery data provided by WDNR does not always overlap the years of water quality data used in the SSC analyses (2010-2013), the conditions in the reservoirs has not changed substantially with respect to not meeting the existing or proposed TP criteria since the SSC study, and the fishery information provided is representative of the timeframe of the SSC study and the current condition of the reservoirs. EPA reviewed the submitted fishery information and, as described below,

- (a) the fishery data provided by WDNR indicated healthy warmwater sport fish communities and showed that the reservoirs generally attained the default aquatic life use; and
- (b) the monitoring data and modelling results showed that the TP (and nuisance chl-a assessment levels) in 2010-2013 for the three reservoirs were above the site-specific thresholds; additionally, portions of both Petenwell Lake and Lake Wisconsin experience dissolved oxygen concentrations below the 5 mg/L threshold and the lakes are listed as impaired for dissolved oxygen; and

(c) because a diverse warmwater fishery is being maintained to support the general aquatic life use at a time when the water quality was worse than the site-specific thresholds adopted by WDNR, there is a sound scientific rationale to conclude that the general aquatic life use would also be protected if the water quality was equal to or better than those site-specific thresholds.

b. Protectiveness of thresholds for aquatic life

As described in the fishery reports and data submitted by WDNR, Petenwell Lake, Castle Rock Lake, and Lake Wisconsin support diverse warmwater sport fish communities indicative of the general aquatic life use designation. Fyke netting and electrofishing surveys of Castle Rock Lake in 2013 found abundant black crappie, largemouth bass, bluegill, walleye, and yellow perch populations that were at or near general recommendations for size distributions for healthy fisheries.⁴ Muskellunge and northern pike were also collected in abundance, and pumpkinseed, smallmouth bass, rock bass, and white crappie were collected in smaller numbers. Fyke netting and electrofishing surveys in Petenwell Lake in 2016 found abundant populations of black crappie, bluegill, muskellunge, northern pike, walleye, and yellow perch, with northern pike, walleye, and yellow perch populations in particular meeting general recommendations for size structure⁵. Smallmouth bass, largemouth bass, pumpkinseed, and white crappie were also collected in smaller numbers. The Lake Wisconsin 2012 comprehensive fisheries survey found walleye and sauger to be abundant and with size structure that support an excellent fishery. Bluegill, black crappie, and yellow perch were also abundant and grew faster than the state average. Smallmouth bass were also abundant in Lake Wisconsin, and a healthy naturally reproducing lake sturgeon population provided a month-long hook and line fishery each September (although harvest is very low). The condition of the fishery in the 2017 comprehensive monitoring report was largely similar to that reported in the 2012 report.

Water quality data from the SSC technical support document can be used to assess the protectiveness of WDNR's site-specific thresholds for the reservoirs for aquatic life. The summer mean TP for the reservoirs was 109 ug/L for Petenwell Lake, 79 ug/L for Castle Rock Lake, and 98 ug/L for Lake Wisconsin from 2010-2013, which are higher than the TP threshold value adopted by WDNR for the reservoirs (Table 1). Since this time, the reservoirs have remained on Wisconsin's impaired waters list for TP, and TP concentrations have remained similar to the 2010-2013 period, especially in relation to the existing statewide criteria. Data more recent than 2013 is only sparsely available for the reservoirs; however, TP concentrations from two stations in Petenwell Lake in 2014-2015 averaged 78 ug/L (range: 11.5 – 164 ug/L; Station IDs 293147, 013134; data accessed via WI Surface Water Data viewer at <https://dnrm.wi.gov/H5/?viewer=SWDV>), and concentrations from four stations in Lake Wisconsin in 2014-2015 averaged 84 ug/L (range: 64.9 – 94.7 ug/L; Station IDs 10042253, 113077, 10028900, 573125). No recent data were available for Castle Rock Lake. Based on this information, the actual water quality conditions measured in 2010-2013, and indeed, based on

⁴ Willis, D.W., B.R. Murphy, and C.S. Guy. 1993. Stock density indices: development, use, and limitations. *Reviews in Fisheries Science* 1:203-222.

⁵ *Ibid.*

impaired waters lists and what recent data are available, for the last two decades, were worse than the site-specific thresholds established by WDNR for the three reservoirs.

The fact that a diverse warmwater sportfish community was supported during these periods, even though the water quality was worse than the site-specific thresholds established by WDNR for the three reservoirs, means that the site-specific thresholds are protective general aquatic life designated use: i.e., if the water quality that was attained in 2010-2013 was sufficient to attain the designated use, then attaining the more stringent site-specific thresholds would also be protective of the designated use.

Additionally, although the nuisance algal bloom targets used to develop the TP SSC (discussed below) were not tied specifically to the protection of aquatic life, based on the modeling results, the SSC will generate substantial reductions in algal biomass, which is the main contributor to the dissolved oxygen impairments in Petenwell Lake and Lake Wisconsin. As WDNR states in their memo, “[u]nder the recommended SSC, CHL-a conditions remain below 30 ug/L and never reach [...] levels that create a risk for cyanobacterial toxins or nuisance [...] algal levels that could precipitate periods of low dissolved oxygen.” In comparison, current chl-a concentrations regularly exceed 50 ug/L in all three reservoirs, and Petenwell and Castle Rock lakes often exhibit chl-a concentrations >100 ug/L. Chl-a concentrations below 30 ug/L also agree with the 27 ug/L chl-a concentration selected in the technical support document for the 2019 statewide biocriteria rulemaking as protective of aquatic life,⁶ which was based on work done for Minnesota’s lake eutrophication criteria demonstrating how fishery productivity.⁷ Such a substantial reduction in TP and algal bloom conditions will likely maintain and improve conditions for aquatic life in these reservoirs.

These lines of evidence support the conclusion that the proposed SSC for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin are protective of the aquatic life use.

3. Recreational Use

In its technical support document for the SSC, WDNR modeled daily chl-a concentrations based on monitoring data from 2010-2013 and then used empirical mass balance lake models (the Jensen model for Petenwell and Castle Rock lakes and the BATHTUB model for Lake Wisconsin) to estimate the TP loads and concentrations necessary to meet recreational chl-a targets. The chl-a target WDNR used to determine when recreational use is protected was based on maintaining 70th percentile chl-a <20 ug/L during summer (July 15 – September 15), which is equivalent to maintaining a frequency of nuisance algal blooms (>20 ug/L chl-a) to ≤30% of summer. The 20 ug/L chl-a concentration “nuisance” or “moderate” algae target was defined in Wisconsin’s original 2010 lake TP criteria based on previous work in Minnesota⁸ showing that at in the range of approximately 15-40 ug/L chl-a recreational users perceived swimming

⁶ WDNR. 2019. Water Quality Standards Rule Packages Technical Support Document: Waterbody assessments, biocriteria, and phosphorus response [sic] indicators (Rule No. WY-23-13) V1. 6-17-2019. pp. 26-28.

⁷ Heiskary, S. & B. Wilson. 2008. Minnesota's approach to lake nutrient criteria development. *Lake and Reservoir Management* 24(3):282-297.

⁸ Heiskary, S.A. and W.W. Walker Jr. 1988. Developing phosphorus criteria for Minnesota Lakes. *Lake and Reservoir Management*. 4:1-9.

impairment to have occurred but would still swim in the waterbody. This was approved by EPA in 2010. Analyses supporting the 2019 phosphorus and biocriteria rulemaking efforts using Wisconsin-specific data confirmed the suitability of the 20 ug/L chl-a threshold.⁹ The ≤30% of summer days frequency target has been used in WDNR’s methodology for assessing and listing waterbodies since 2014 and reflects the goals of the original TP criteria. The original 2010 TP criteria did not clearly define the intended level of protection (in terms of % summer frequency of 20 ug/L chl-a) of the recreational use from nuisance algae for shallow lakes.¹⁰ Efforts toward the 2019 statewide phosphorus and biocriteria rulemaking (although not adopted by Wisconsin) provided an opportunity to explore new data on recreational use protection for shallow lakes, which are more challenging in terms of defining protective conditions due to their more productive nature and natural occurrences of algal blooms.¹¹ Based on a dataset of 32 shallow reference lakes (sum of agricultural and urban land use categories <5% and screened for other impacts), 75% of shallow reference lakes have moderate algae levels (>20 ug/L chl-a) less than 27% of the time. Thus, even in relatively undisturbed condition, shallow lakes experience moderate algal blooms approximately 30% of the time, and WDNR articulated the appropriate level of protection for shallow lakes as maintaining a frequency of nuisance algal blooms (>20 ug/L chl-a) to ≤30% of summer days.¹²

With this target in mind, WDNR used the chl-a statistical model and the empirical mass balance models to reduce TP loads until the nuisance chl-a target was met and set the site-specific TP criteria to match the TP load that achieved the chl-a target. Based on the model results, during the chl-a summer assessment period (July 15-September 15) the proposed TP SSC would result in chl-a concentrations >20 ug/L for 30% of the summer. In some year considered in the SSC models, chl-a concentrations peak before the chl-a assessment period in Petenwell and Castle Rock lakes. However, when examined over the longer TP summer assessment period which encompasses more of the potential peak bloom period (June 1 – September 15), the TP SSC would result in chl-a concentrations > 20 ug/L for 24% and 25% of the summer in Petenwell and Castle Rock lakes, respectively.

Based on this information, the proposed SSC for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin are protective of the recreational use.

4. Scientific approach

As stated above, federal regulations specify that “criteria must be based on sound scientific rationale” (40 CFR §§ 131.5(a)(2), 131.11(a)) and that, if not based on 304(a) or modified-304(a) Guidance, numeric criteria must be based on “[o]ther scientifically defensible methods” (40 CFR § 131.11(b)).

⁹ WDNR. 2019. pp. 16-20.

¹⁰ WDNR. 2019. p.22: “Wisconsin’s statewide phosphorus criteria Technical Support Document does not specify the frequency of moderate algae levels appropriate for shallow lakes nor does Wisconsin have user perception surveys to determine a publicly ‘acceptable’ frequency of moderate algae for shallow lakes.”

¹¹ U.S. EPA. 2000. Nutrient Criteria Technical Guidance Manual: Lakes and Reservoirs. First Edition.

¹² WDNR. 2019. pp. 22-26.

As already indicated, the main approaches WDNR used to develop the SSC were empirical mass balance models linking TP load, TP concentration, and chl-a concentration. These models were parameterized using data from the Wisconsin River reservoirs and used to predict the TP concentration at which recreational chlorophyll targets would be met. Although EPA guidance for lake nutrient criteria¹³ focuses on reference condition approaches and does not reflect advances in limnology in the last two decades, the use of then-current mass balance models for setting nutrient criteria is discussed as a scientifically sound approach.¹⁴ Such models are particularly suited for site-specific criteria development because of the ability to incorporate local conditions that may influence nutrient responses.¹⁵ Similar modeling approaches have been used for site-specific nutrient criteria in Minnesota.

WDNR also used fishery survey data to determine if healthy fisheries, as indicators of the aquatic life designated use, were being supported and could be expected to be supported under the SSC. Assessment of fishery data in relation to trophic state and nutrient concentrations is also a standard approach to developing nutrient criteria and determining protectiveness of the aquatic life use.¹⁶

Therefore, EPA concludes that the TP SSC for Castle Rock Lake, Petenwell Lake, and Lake Wisconsin were developed based on sound scientific rationale.

C. 40 CFR §§ 131.5(a)(3), 131.6(d), 131.5(a)(4), 131.5(a)(5), 131.5(a)(7), 131.6(f), and 131.5(a)(8) are not relevant in considering whether to approve WDNR’s site-specific criteria for the Wisconsin River reservoirs.

For the following reasons, the above regulatory requirements are not relevant to EPA’s review of WDNR’s adoption of site-specific criteria for three Wisconsin River reservoirs:

- WDNR’s adoption of the site-specific criteria for these Wisconsin River reservoirs does not modify Wisconsin’s existing antidegradation policy or antidegradation methods.
- WDNR has not adopted a WQS variance for these reservoirs.
- WDNR’s adoption of its site-specific criteria for these Wisconsin River reservoirs does not modify Wisconsin’s rules regarding the use of schedules of compliance.
- WDNR’s WQS for these Wisconsin River reservoirs include all 101(a)(2) uses.
- These Wisconsin River reservoirs are not within the Great Lakes basin.

¹³ U.S. EPA. 2000. Nutrient Criteria Technical Guidance Manual. Lakes and Reservoirs. First Edition. EPA-822-B00-001. U.S. EPA Office of Water, Office of Science and Technology. Washington, DC 20460.

¹⁴ Ibid. pp. 1-15; 2-8 – 2-11; 6-1; Chapter 9; Lake Pepin BATHTUB example p. 9-21; etc..

¹⁵ U.S. EPA. No date. Technical Support Document for U.S. EPA’s Final Rule for Numeric Criteria for Nitrogen/Phosphorus Pollution in Florida’s Inland Surface Fresh Waters.

¹⁶ U.S. EPA. 2000. Ibid. pp.7-10 – 7-11.

D. Whether the State has followed applicable legal procedures for revising or adopting standards (40 CFR §§ 131.5(a)(6) and 131.6(e))

In a legal certification statement dated July 2, 2020 and received by EPA on July 6, 2020, Joshua L. Kaul, Wisconsin Attorney General, certified that the revised WQS “were duly adopted pursuant to State law.” Furthermore, as stated above, WDNR accepted public comments on its proposal to adopt site-specific criteria for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin for the first public notice period between June 24, 2019 and August 20, 2019.

Conclusion

For the reasons described above, EPA concludes that Wisconsin’s site-specific criteria for total phosphorus for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin are consistent with the requirements of the CWA and 40 CFR § 131.

III. Endangered Species Act (ESA) Requirements

Consistent with section 7 of the ESA and federal regulations at 50 CFR Part 402, EPA is required to consult with the U.S. Fish and Wildlife Service (FWS) and/or National Oceanic and Atmospheric Administration (NOAA) Fisheries on any action taken by EPA that may affect federally-listed threatened or endangered species or their designated critical habitat.

On March 19, 2020, EPA consulted the FWS Midwest Region’s Section 7 Consultation website (www.fws.gov/midwest/endangered/section7/s7process/index.html) for a list of endangered and threatened species present in Adams, Columbia, Juneau, Sauk, and Wood counties, Wisconsin. Based on this list, the northern long-eared bat, Higgins eye pearly mussel, sheepsnose, eastern massasauga, whooping crane, gray wolf, Karner blue butterfly, Kirtland’s warbler, rusty patched bumble bee, Mead’s milkweed, prairie bush clover, and northern monkshood are the listed species potentially present in the action area of the site-specific criteria. The FWS website lists no critical habitat in these counties.

EPA determined that its approval of the site-specific phosphorus criteria for Petenwell Lake, Castle Rock Lake, and Lake Wisconsin **may affect, but is not likely to adversely affect**, the northern long-eared bat, Higgins eye pearly mussel, sheepsnose, and eastern massasauga, and will have no effect on the whooping crane, gray wolf, Karner blue butterfly, Kirtland’s warbler, rusty patched bumble bee, Mead’s milkweed, prairie bush clover, and northern monkshood. EPA drafted a biological evaluation and transmitted it to FWS on July 7, 2020.

Section 7(a)(2) requires that federal agencies, in consultation with the Services, ensure that federal actions are not likely to jeopardize the existence of federally-listed species or result in the adverse modification of designated critical habitat of such species. Upon initiation of consultation, section 7(d) of the ESA prohibits irreversible or irretrievable commitments of resources that have the effect of foreclosing the formulation or implementation of reasonable and prudent alternatives which would not violate section 7(a)(2) of the ESA.

EPA’s approval decision does not foreclose either the formulation by the Services, or the implementation by EPA, of any alternatives that might be determined, in the consultation, to be

needed to comply with section 7(a)(2). EPA retains the full range of options available under section 303(c) for ensuring WQS are environmentally protective. EPA can, for example, work with WDNR to ensure that the Agency revises its WQS as needed to ensure listed species are protected or initiate rulemaking to promulgate federal WQS to supersede Wisconsin's WQS.

IV. Tribal Consultation Requirements

On May 4, 2011, EPA issued the "EPA Policy on Consultation and Coordination with Indian Tribes" to address Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments." The EPA Tribal Consultation Policy states that "EPA's policy is to consult on a government-to-government basis with federally recognized tribes when EPA actions and decisions may affect tribal interests." EPA reviewed the location of tribal lands near the proposed phosphorus SSC. Because the Ho Chunk Nation has reservation lands located near all three reservoirs, EPA determined that Ho Chunk Nation may have potential interest in the proposed SSC. On May 1, 2020, EPA sent a letter outlining the proposed SSC and offering government-to-government consultation to the President of the Ho Chunk Nation. The consultation letter further clarified that if EPA did not receive a response within 30 days of receiving the letter, EPA would conclude that the Tribe did not wish to engage in consultation and EPA could therefore move forward with a decision. EPA received no response from the Tribe regarding any impacts to tribal interests and moved forward to approve the SSC.