Navigating Site-Specific Criteria Case Study: Wisconsin River Basin Total Maximum Daily Load

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Wisconsin Dept. of Natural Resources

2025 Annual Meeting
Madison, WI

Wisconsin River Basin TMDL for Total Phosphorus

* 21 Counties and 85 cities and villages

* Permitted Wastewater Facilities
  - 108 facilities

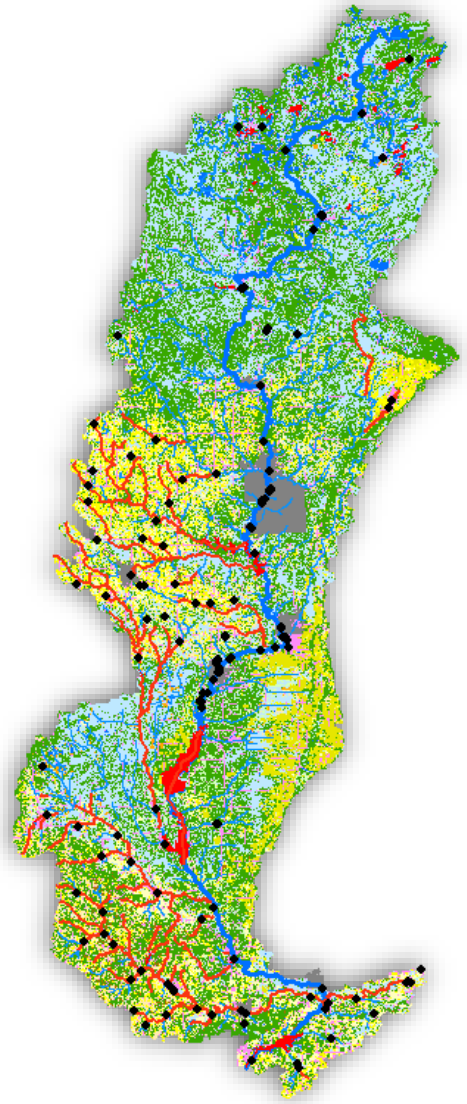
* Permitted MS4s
  - 14 municipalities

* 14 Citizen Groups

> 9,000 sq. miles

Land Cover

- Cash Grain
- Cranberries
- CRP
- Dairy
- Deciduous Forest
- Developed/Open Space
- Grassland Herbaceous
- Herbaceous Wetlands
- Open Water
- Pasture/Hay
- Potato/Vegetable
- Woody Wetlands



Water Quality Criteria and TMDLs:

Ohio Supreme Court Decides Ohio EPA TMDLs Must be Promulgated As Rules

- Fairfield County v. Nally Ohio did not have promulgated numeric criteria and had developed water quality "targets" for their TMDLs which were used to set allocations. The Ohio Supreme Court determined that the TMDL needed to be promulgated as a rule before allocations could be enforced through permits.

- The Ohio decision does not apply to WI; however, s. 281.15, Wis. Stat. requires WI TMDLs to be based on promulgated water quality standards and narrative or numeric criteria. As such, WI does not need to promulgate our TMDLs.

- In Wisconsin, site specific criteria (SSC) must be first promulgated by rule before TMDL allocations based on SSC can be approved and used in permits.

Wisconsin Statewide Numeric Phosphorus Criteria

Rivers

100 µg/L

Streams [1]

75 µg/L

Reservoirs

- Not Stratified = 40 µg/L
- Stratified = 30 µg/L

Inland Lakes[2]

Ranges from 15-30 µg/L

Great Lakes

- Lake Michigan = 7 µg/L
- Lake Superior = 5 µg/L

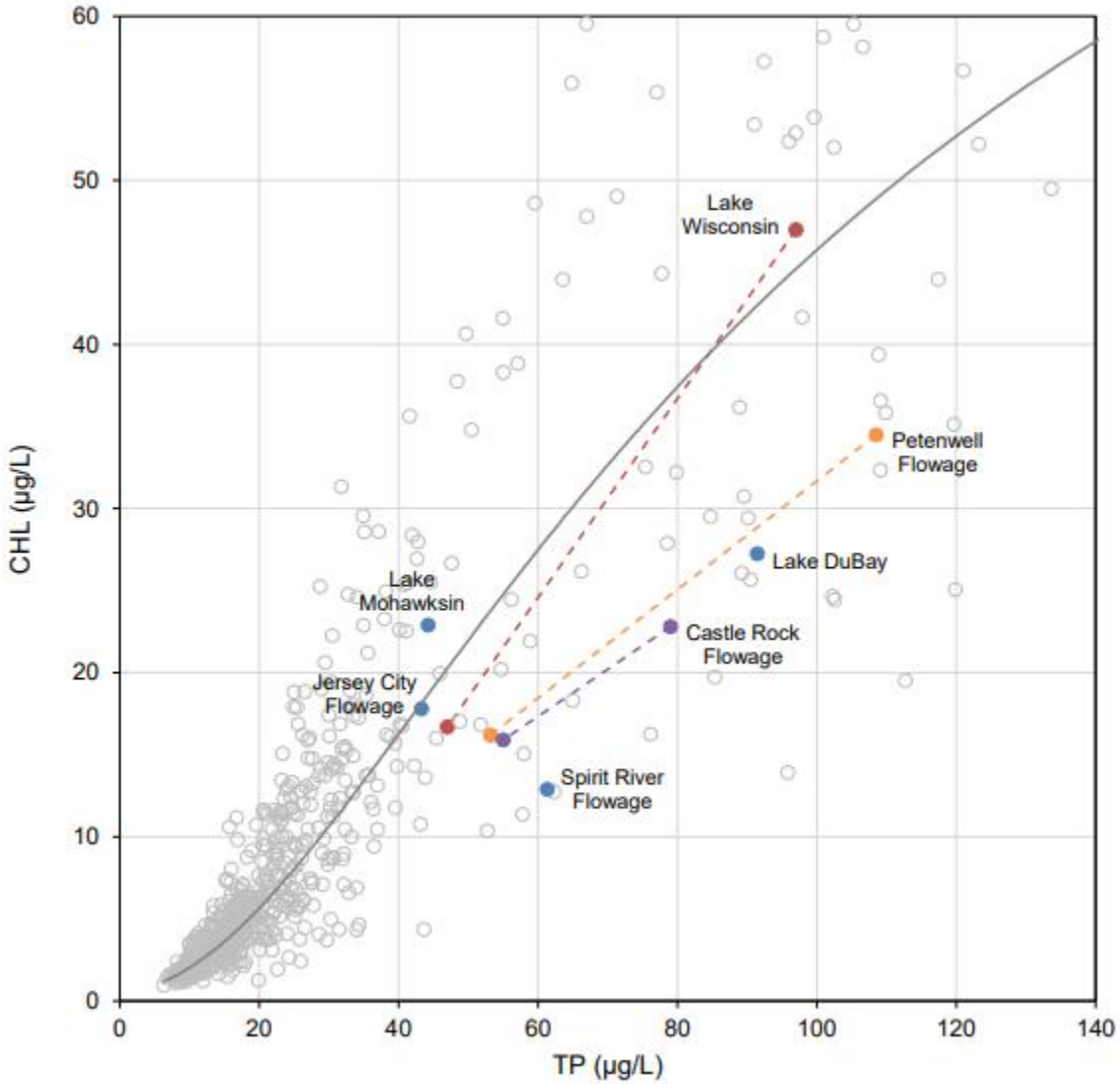
[1]All unidirectional flowing waters not in NR 102.06(3)(a). Excludes Ephemeral Streams.

[2]Excludes wetlands and lakes less than 5 acres

Waterbodies most likely benefiting from Site-Specific Criteria (SSC)

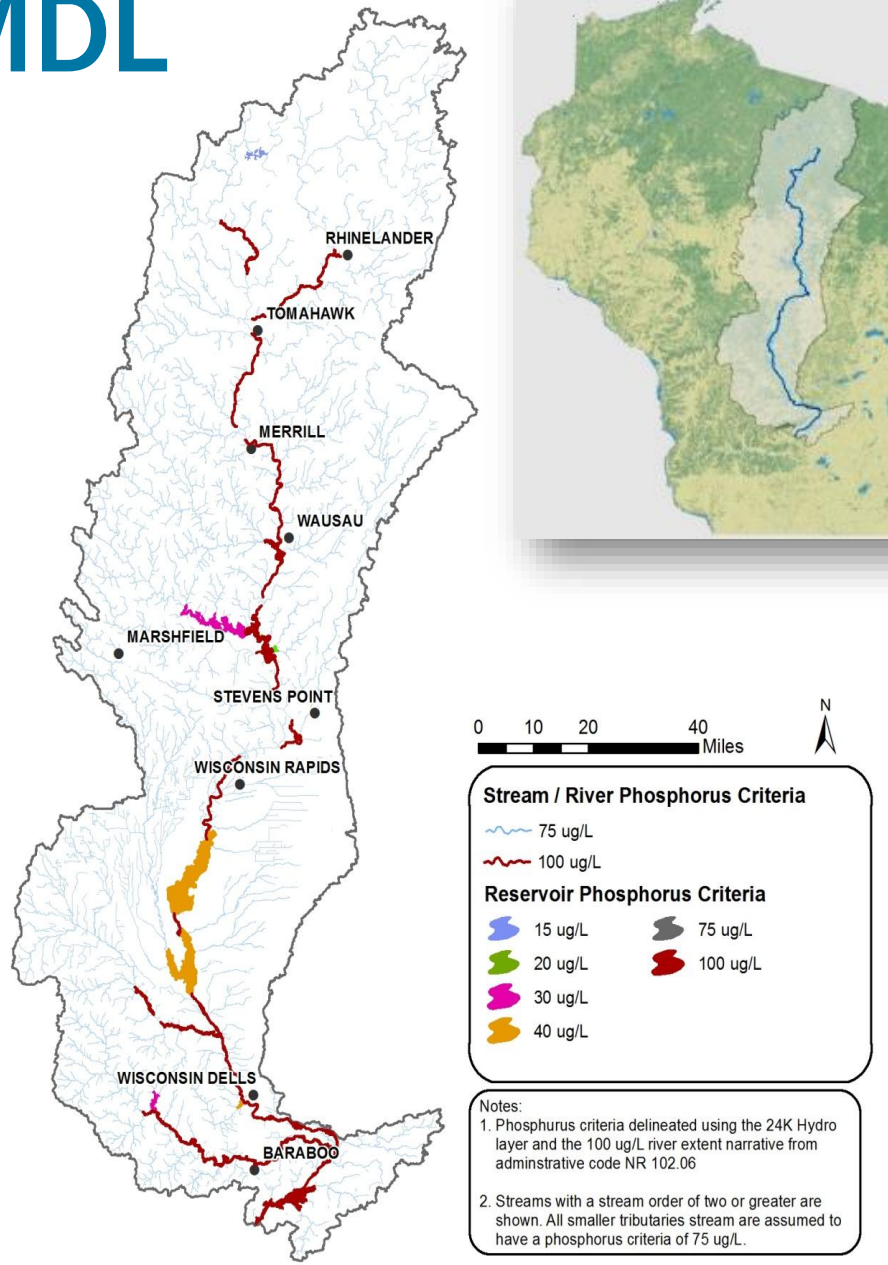
Reservoir vs Impounded flowing water: Based on a residence time of 14 days or more. Impounded flowing water gets the criterion of the river or stream.

Inland Lakes: Criterion varies based on stratification, seepage vs. drainage, and type of fishery.



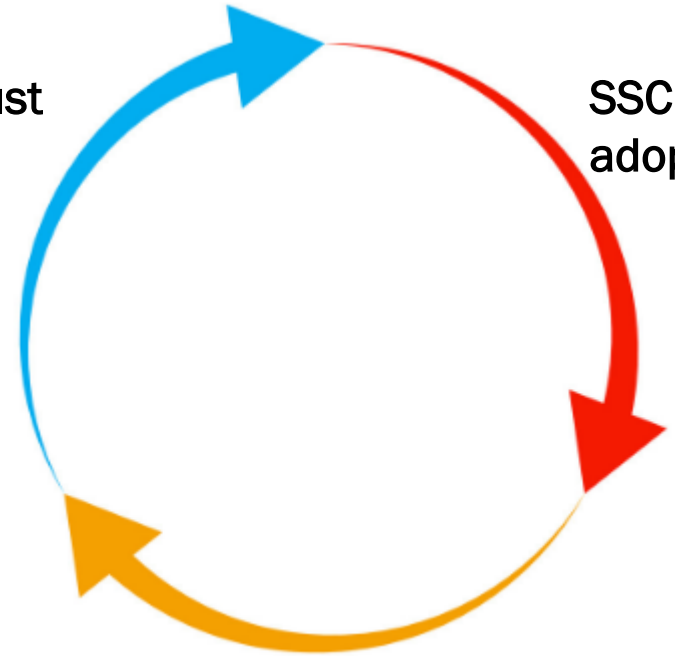
Wisconsin River Basin TMDL for Total Phosphorus

- TMDL allocations driven by local water quality and downstream reservoirs.
  - Big Eau Pleine Reservoir: 6,348 acres
  - Lake Du Bay: 4,649 acres
  - **Petenwell: 23,173 acres**
  - **Castle Rock: 12,981 acres**
  - **Lake Wisconsin: 7,197 acres**
- Site-specific criteria proposed for Castle Rock, Petenwell, and Lake Wisconsin.



Which comes first?

TMDLs must be set to meet the applicable criteria



SSC must be adopted by rule

SSC determination requires analysis such as that conducted during TMDL development

Effective Collaboration with US EPA Region 5

- DNR and US EPA talked early and often with both US EPA's TMDL and Water Quality Standards Programs.

- US EPA's Water Quality Standards Program requested that the TMDL come first.

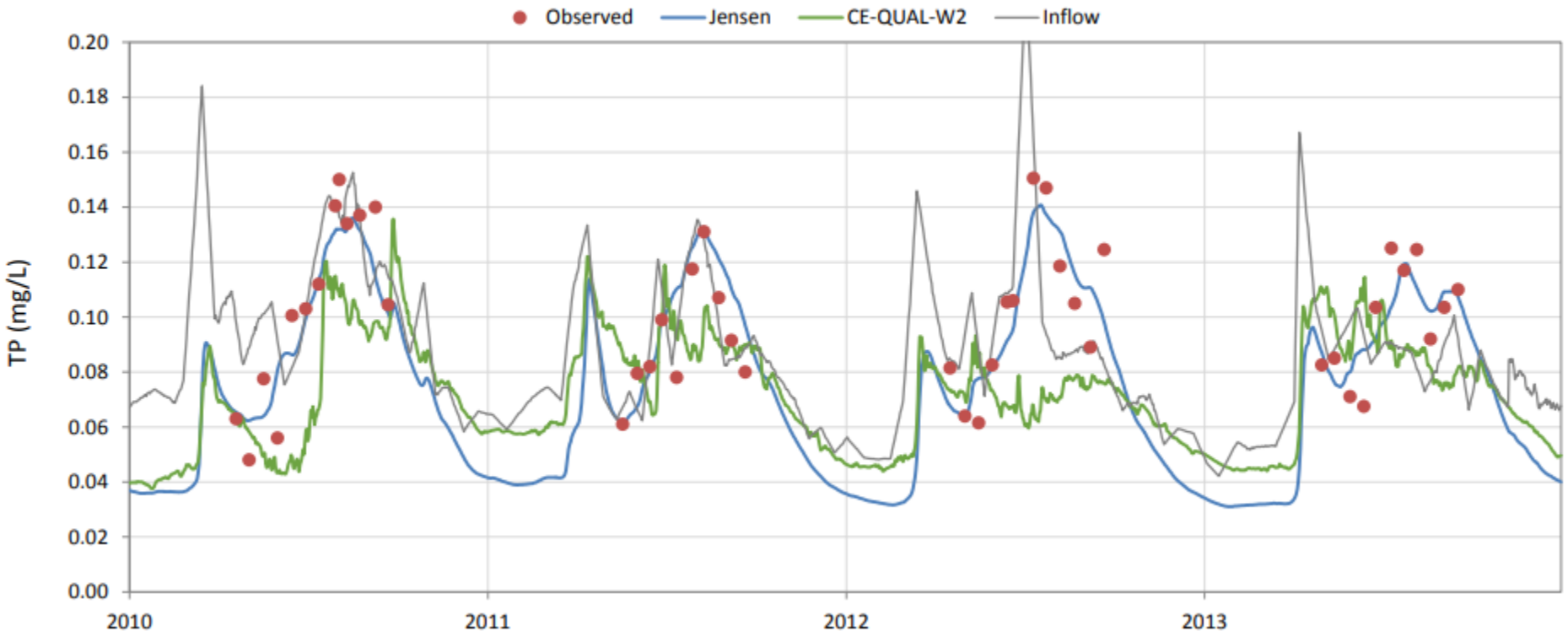
Effective Collaboration with US EPA Region 5

Key points stressed by US EPA Region 5 Water Quality Standards Program:

- SSC must protect all applicable designated uses:
  - Fish and Aquatic Life
  - Recreation
  - Public Health

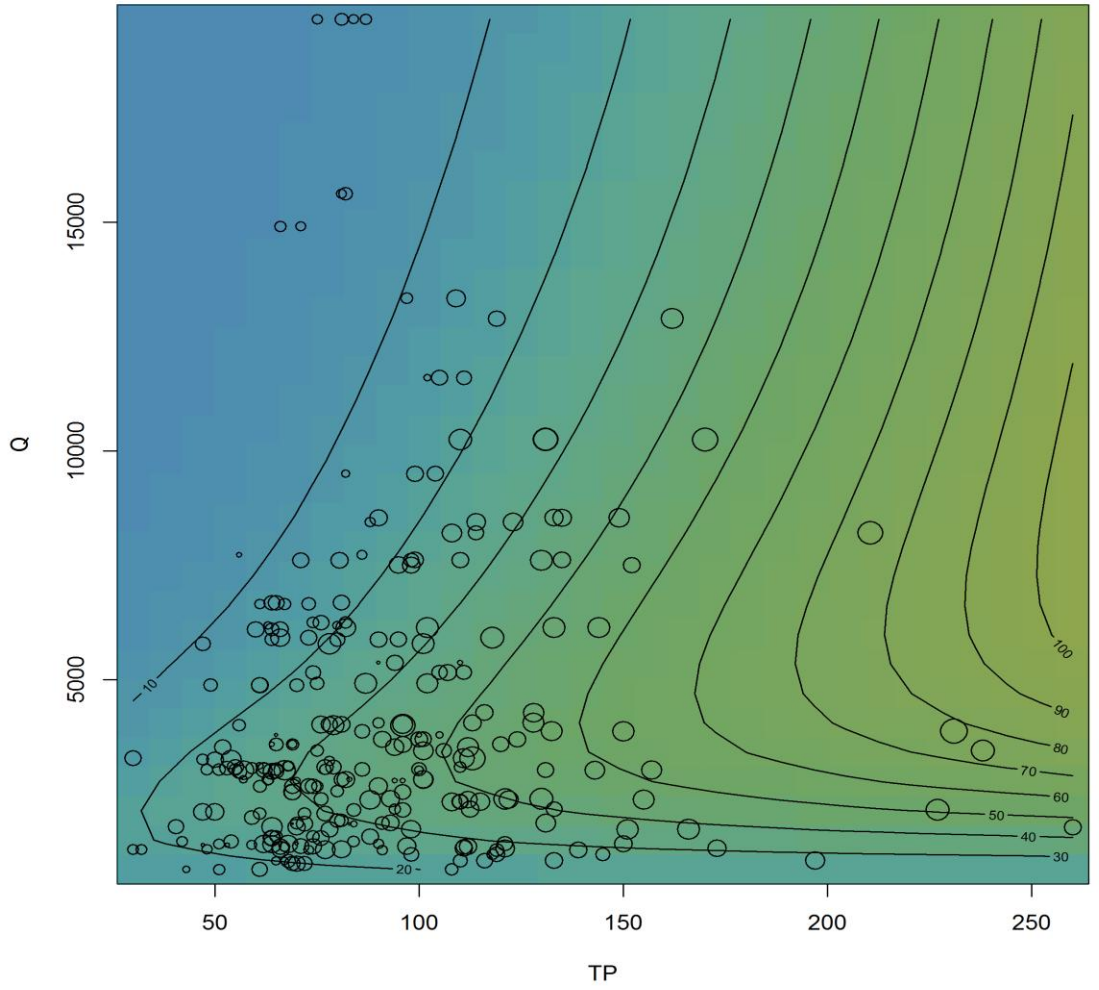
- Adequate data and supporting material to document decisions:
  - Clearly define the purpose of the SSC
  - Clearly define the thresholds used
  - Outline process and discuss monitoring/modeling results
  - SSC can be an iterative process

SSC Development and Analysis



Technical Analysis and Support

- The SSC analysis was based on four years of monitoring data collected on each of the three reservoirs.
- Statistical models and regression techniques were used to estimate algae concentrations based on total phosphorus concentrations.
- Additional water quality and reservoir modeling was conducted (CE QUAL-W2 and Jensen models) and is detailed in Appendices H and M of the TMDL report.



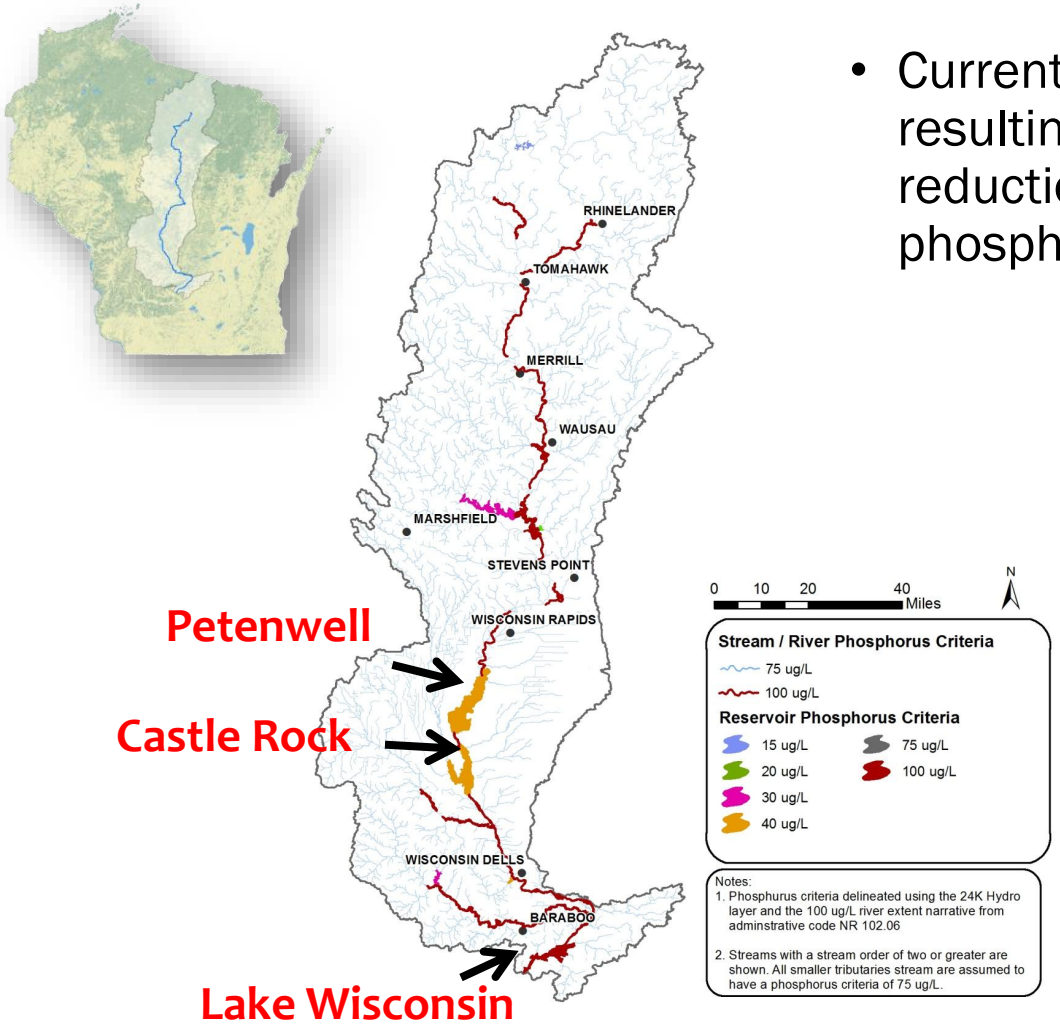
Technical Analysis and Support

- Variability in algal concentrations was plotted against nutrient concentrations, time of year, lake inflows and outflows, and water temperature to examine correlations.

- Additional modeling and statistical analysis was conducted examining the drivers of algae formation.

- Results:
  - Castle Rock and Petenwell produce less algae at a higher phosphorus concentration.
  - Lake Wisconsin requires a lower phosphorus concentration.

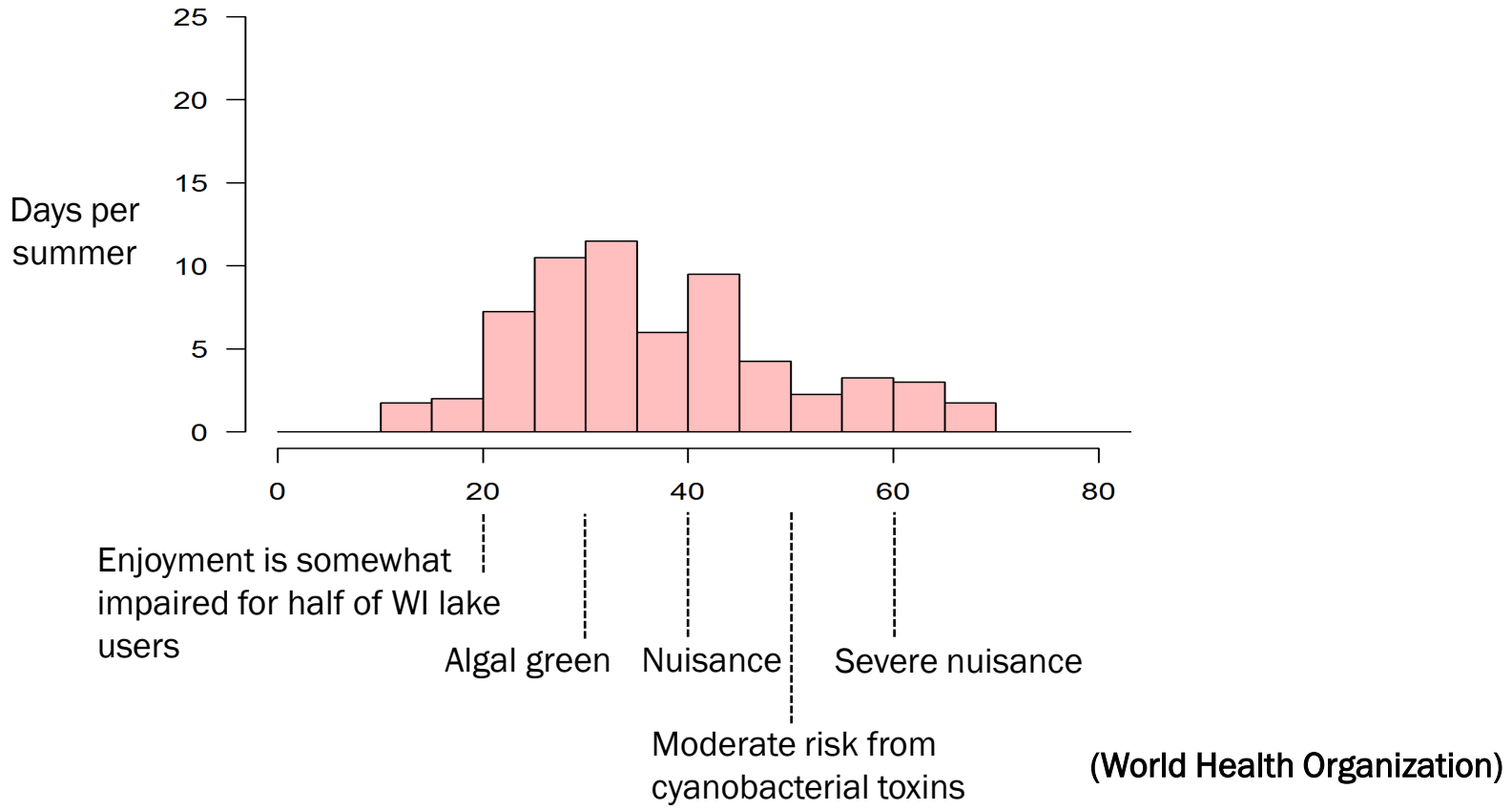
Recommended SSC



- Currently, the reservoirs average 100 µg/L of total phosphorus resulting in excessive algae blooms. Adoption of the SSC still requires reductions in existing phosphorus loads and is NOT increasing phosphorus loading over current rates.

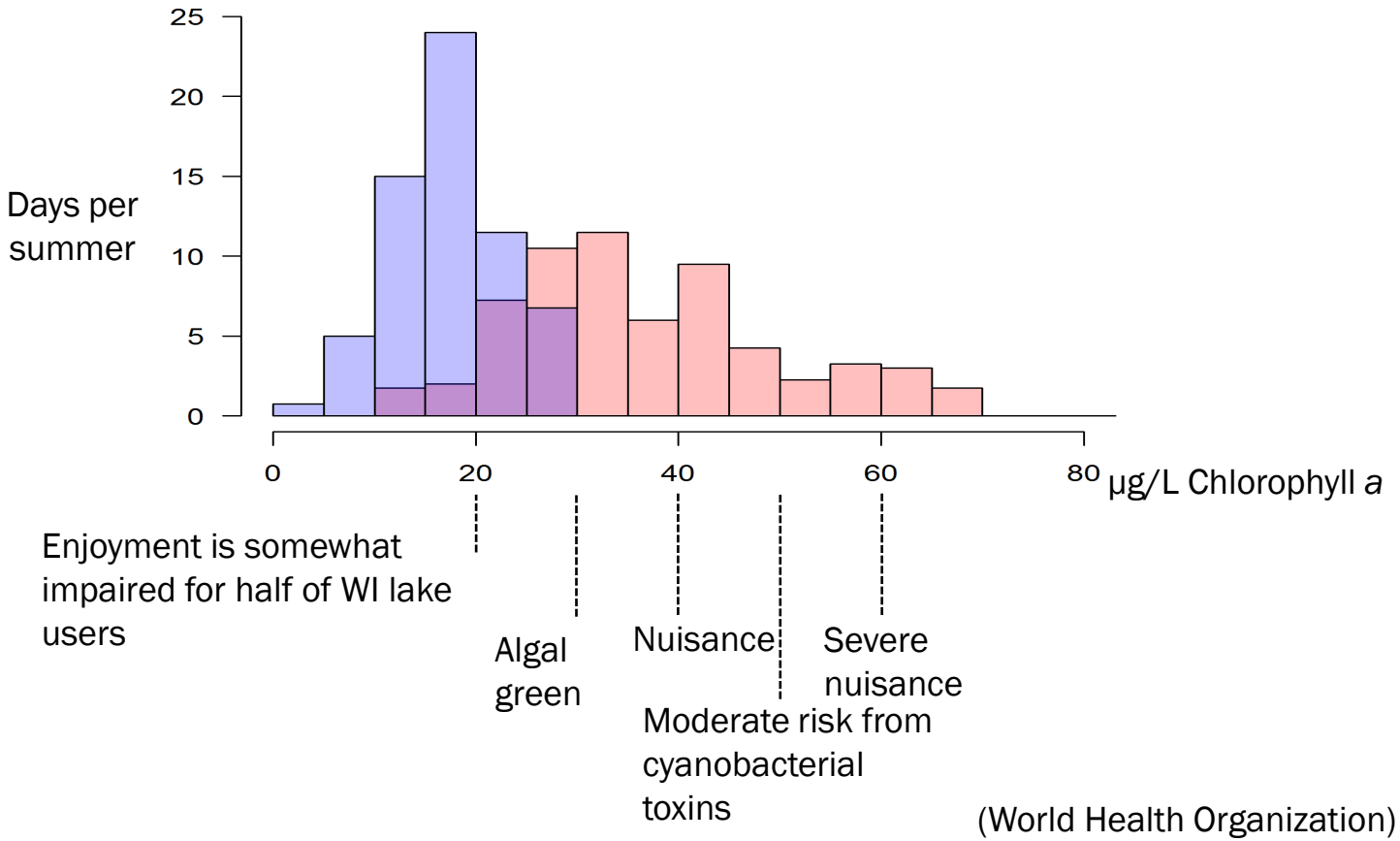
Reservoir	Existing TP Criterion (µg/L)	Recommended Site-Specific TP Criterion (µg/L)
Petenwell	40	53
Castle Rock	40	55
Lake Wisconsin	100	47

How much reduction in algae can we expect in Castle Rock and Petenwell (Current)

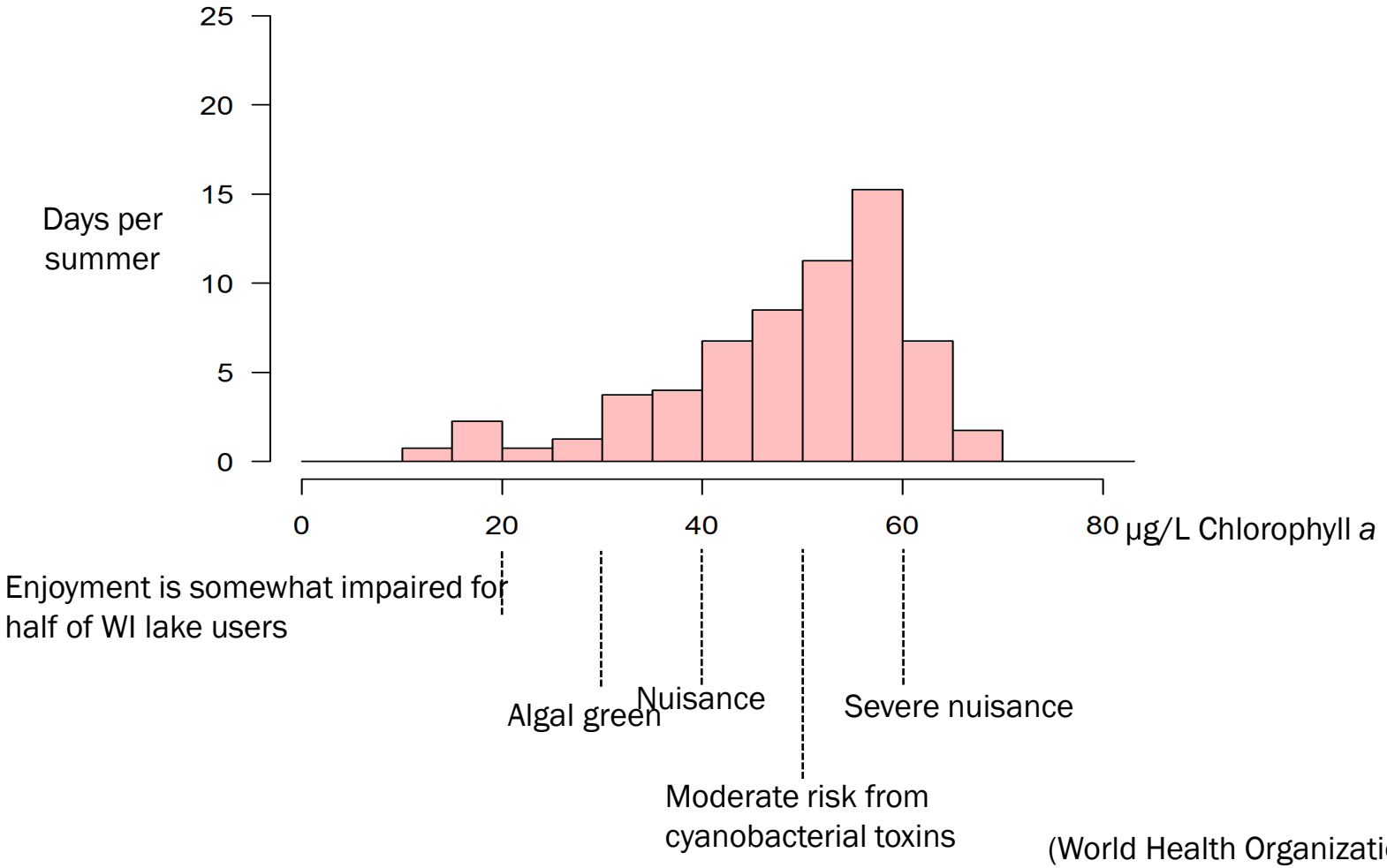


(World Health Organization)

How much reduction in algae can we expect in Castle Rock and Petenwell (Under SCC)

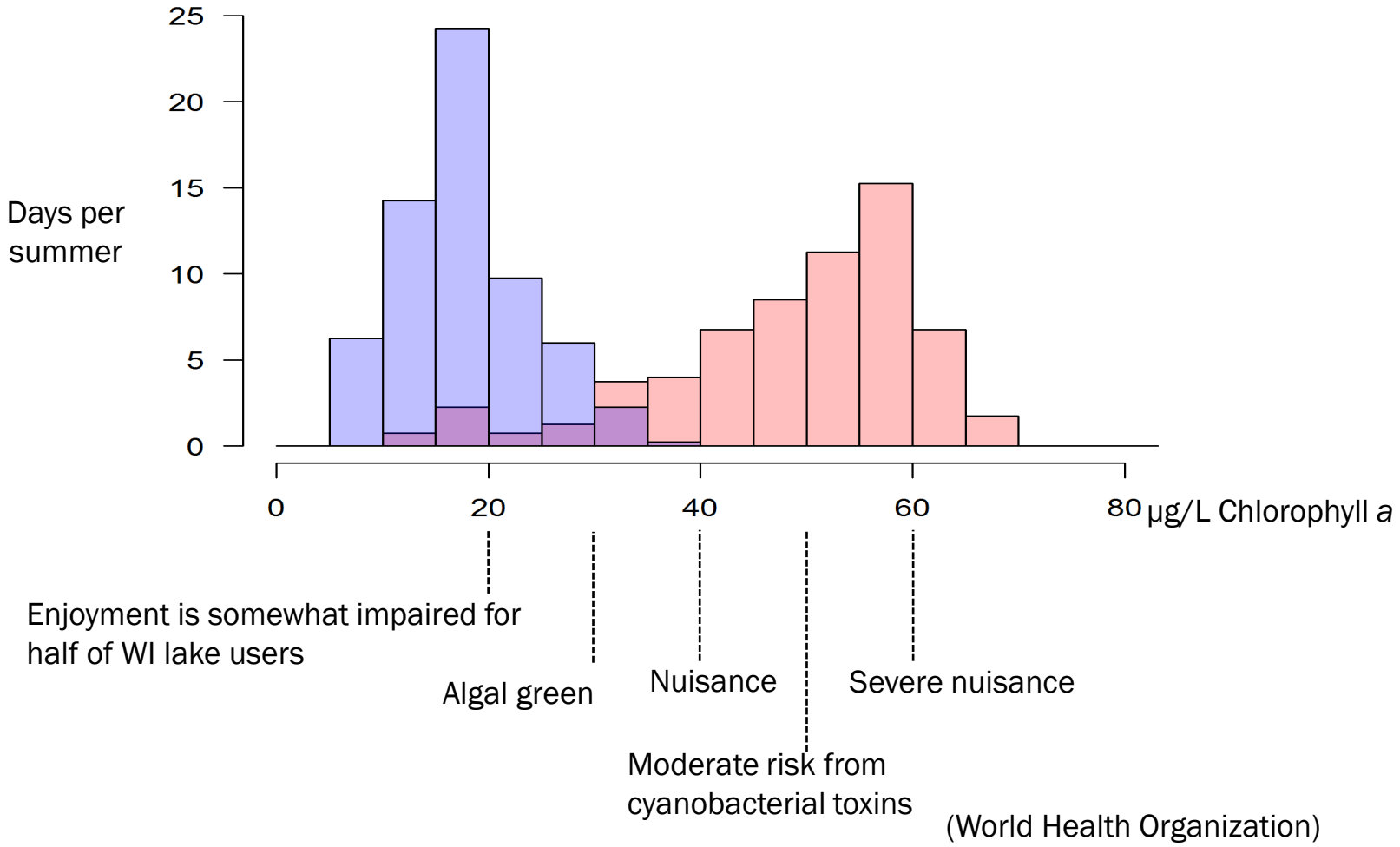


How much reduction in algae can we expect in Lake Wisconsin (Current)



(World Health Organization)

How much reduction in algae can we expect in Lake Wisconsin (Under SSC)



TMDL and Supporting SSC Documentation

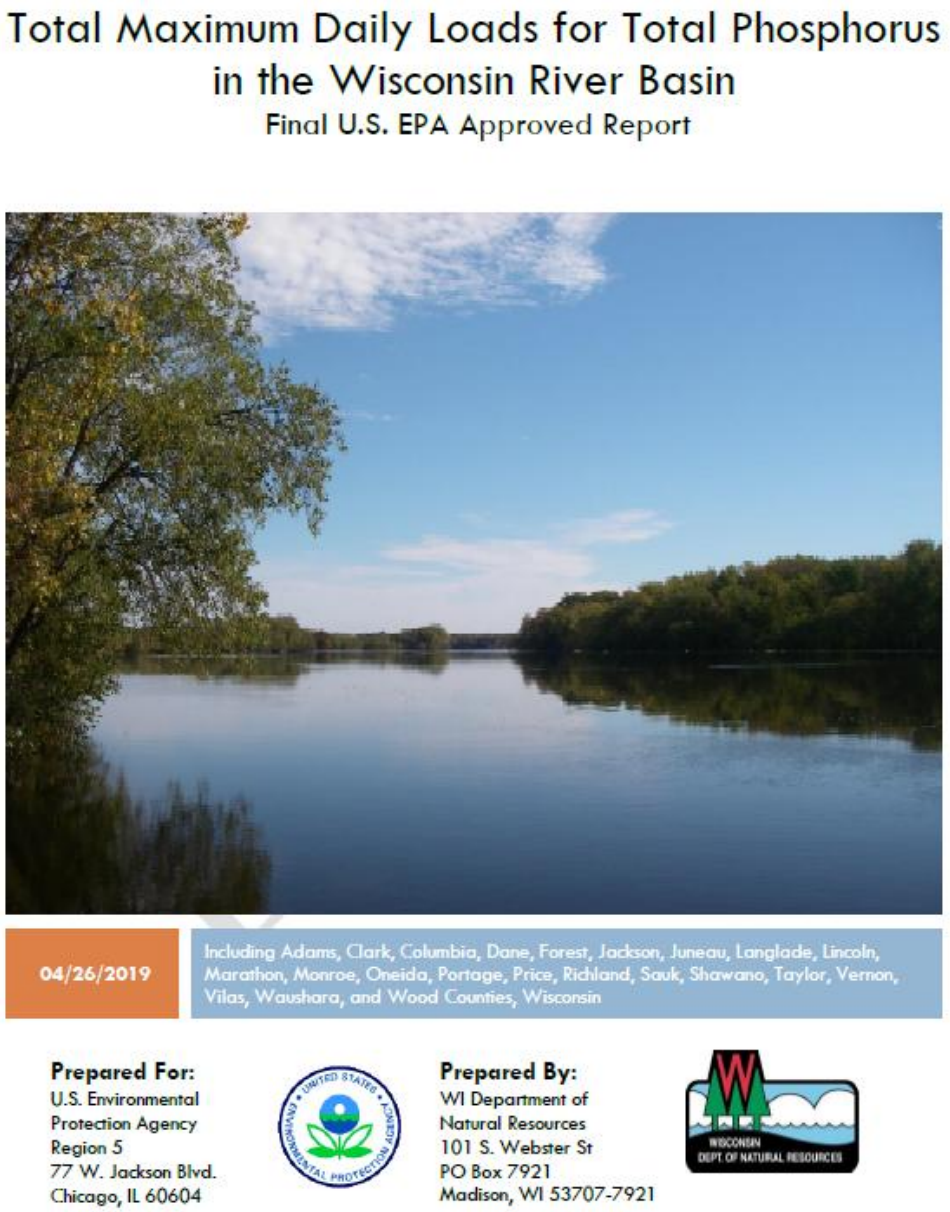
- Appendix C: Site-Specific Criteria Analysis (32 pages)
- Appendix H: Total Phosphorus Loading Capacity of Petenwell and Castle Rock Flowages (30 pages)
- Appendix M: CE-QUAL-W2 Reservoir Model (93 pages)

Report downloads:

https://dnr.wi.gov/topic/tmdls/wisconsinriver/

Technical Support Documents for SSC rule process:

https://dnr.wi.gov/news/input/ProposedPermanent.html



Wisconsin River TMDL: US EPA Decision Document

This TMDL Decision Document does not opine upon the proposed criteria; the proposed criteria will be reviewed by the EPA Water Quality Standards program and will be decided upon under its authority. The proposed allocations contained in Appendix K of the TMDL were reviewed to determine if they are adequate to attain and maintain the proposed site-specific criteria. **Only if the EPA Water Quality Standards program approves the currently proposed site-specific criteria, and those approved site-specific criteria are as seen in Table 6 of this Decision Document, will the allocations in Appendix K become applicable.** If the EPA-approved site-specific criteria are not the same as in Table 6 of this Decision Document, then the allocations in Appendix K of the TMDL are not applicable and will need to be revised to ensure the loadings will attain and maintain the approved water quality standards. If revised criteria are not approved by the EPA, then the allocations in Appendix J will remain in effect.

TMDL had two sets of allocations: Current Criteria and Recommended SSC

- Appendix J – Allocations based on Current Criteria

Table J-1. Annual Total Phosphorus Allocations by Reach for Current Criteria.

Reach	Loading Capacity (lbs./year)	Reserve Capacity (lbs./year)	Load Allocation (lbs./year)	Background (lbs./year)	Agricultural Nonpoint (lbs./year)	Non-Permitted Urban (lbs./year)	Wasteload Allocation (lbs./year)	General Permits (lbs./year)	Permitted MS4 (lbs./year)	Individual WW Permits (lbs./year)
1	5,618	241	5,208	626	2,896	1,686	169	169	0	0
2	4,096	179	3,896	486	3,230	180	20	20	0	0
3	2,487	98	2,351	489	1,485	378	38	38	0	0
4	2,424	111	2,160	168	1,711	281	153	28	0	125
5	3,398	157	2,732	209	1,980	543	509	54	455	0
6	5,641	216	5,382	1,273	3,885	224	43	43	0	0
7	3,766	144	3,584	849	2,639	95	39	39	0	0
8	1,804	75	1,696	278	1,282	136	33	33	0	0

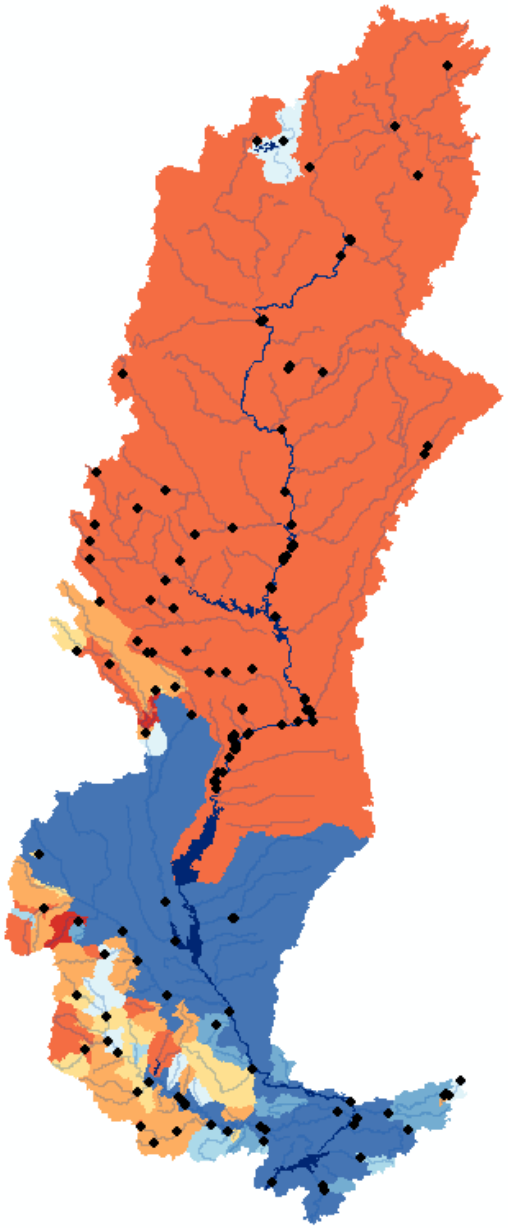
- Appendix K – Allocations based on Recommended SSC

Table K-1. Annual Total Phosphorus Allocations by Reach for Proposed Site-Specific Criteria.

Reach	Loading Capacity (lbs./year)	Reserve Capacity (lbs./year)	Load Allocation (lbs./year)	Background (lbs./year)	Agricultural Nonpoint (lbs./year)	Non-Permitted Urban (lbs./year)	Wasteload Allocation (lbs./year)	General Permits (lbs./year)	Permitted MS4 (lbs./year)	Individual WW Permits (lbs./year)
1	2,561	88	2,304	626	1,060	617	169	169	0	0
2	2,000	75	1,904	486	1,344	75	20	20	0	0
3	1,245	36	1,171	489	544	138	38	38	0	0
4	1,012	41	897	168	626	103	74	28	0	46
5	1,411	57	1,133	209	725	199	221	54	167	0
6	4,331	151	4,138	1,273	2,709	156	43	43	0	0

Percent Reduction Maps

Current Criteria

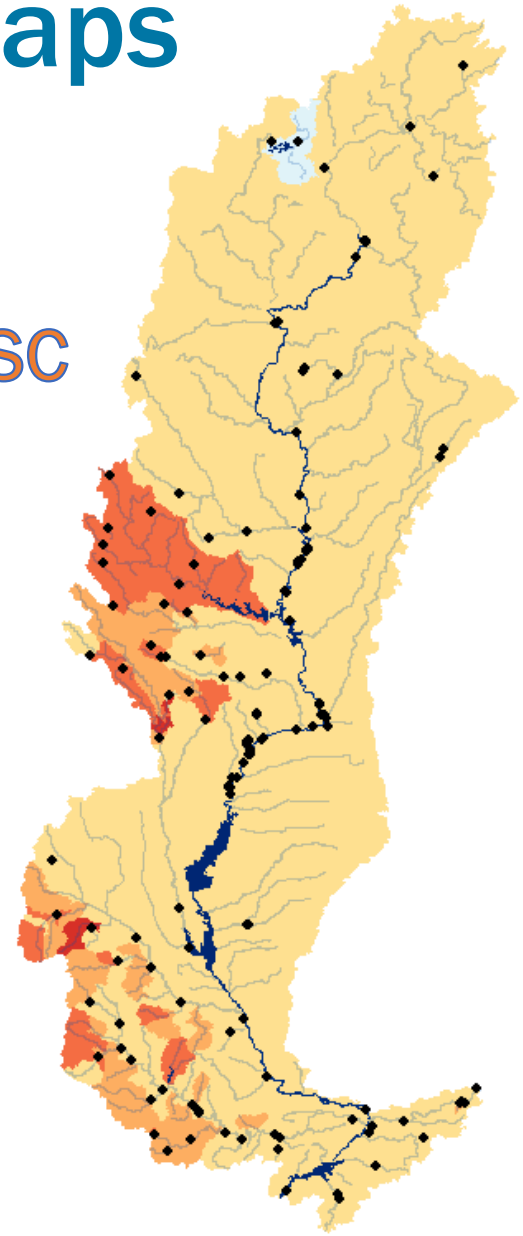


Percent Reduction

- 0%
- 1 - 25%
- 25.1 - 50%
- 50.1 - 60%
- 60.1 - 70%
- 70.1 - 80%
- 80.1 - 90%
- 90.1 - 93%

Outfalls

SSC



Meeting with Permittees

- Prepared TMDL based effluent limits for all facilities under both current criteria and SCC.
- Met individually with facilities that would have more stringent TMDL based effluent limits under the SSC.
- Worked through DNR compliance staff to continue developing plans to meet TMDL derived effluent limits but also make contingency plans for SSC based limits.

Which comes Next?

Legal and Administrative Rule Process

PHASE I – Scope Statement Approval

1. Scope statement completed and approved by the Secretary.

2. Scope statement submitted to DOA.

3. Scope statement submitted to and approved by the Governor.

4. Approved scope statement submitted to LRB, JCRAR, and NRB.

5. LRB publishes the scope statement in the Register. **Scope statement 30-month expiration starts on day of publication.**

6. Yellow Sheet submitted to reserve time on the NRB agenda for approval of scope statement, conditional approval of the notice of public hearing and the notice of submittal of the proposed rule to the Legislative Council (notices), and approval of preliminary public hearing.

7. Department may be directed to hold preliminary a public hearing on scope statement. Notify NRB Liaison by email if preliminary hearing is requested. If JCRAR does not request preliminary public hearing, move onto step 12.

8. Green S
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9. NRB me
preliminar

10. Notice
hearing pu
Register a
external w
calendar.

11. Prelim
Comment

12. Green
to request
statement and notices.

13. NRB meeting to approve scope statement and notices.

PHASE II – Rule Preparation

14. Proposed rule language prepared in board order format.

PHASE III – Economic Impact Analysis

15. Fiscal estimate and economic

prepared and submitted to NRB for 15-day passive review.

20. Rule documents submitted to the Legislative Council.

21. Notice of public hearing published in the Register and posted on DNR external website and hearings calendar.

22. Public hearing on proposed rule held at least 10 days after publication in the Register. Public

proposed rule.

27. NRB meeting for adoption of final rule.

28. Final rule submitted to and approved by the Governor.

PHASE VI – Legislative Review

29. Report to Legislature and Notices prepared and submitted to Assembly and Senate Chief Clerks. Rule must be submitted for legislative review before the scope statement 30-month expiration date.

30. Rule referred to and reviewed by Standing Committees.

31. Rule referred to and reviewed by JCRAR.

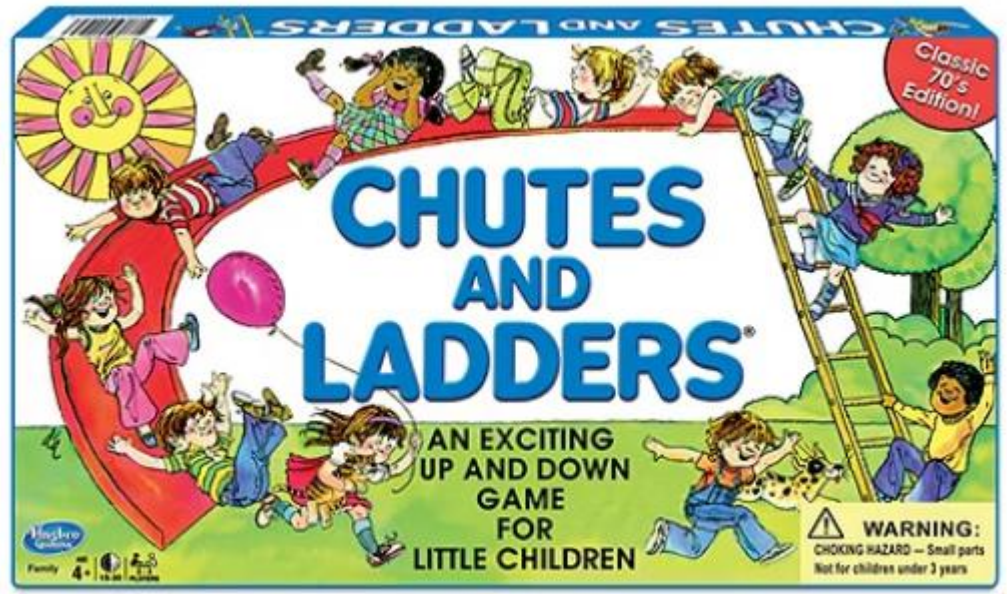
PHASE VII – Promulgation

32. Final Rule signed by the Secretary.

33. Final Rule filed with LRB.

34. Rule proof received by LRB and reviewed by program.

35. Final rule published in the Register. Rule becomes effective the first day of the month following publication.



Step 31:
Wisconsin Joint Committee for Review of Administrative Rules

Senator Nass (Co-Chair)

Representative Neylon (Co-Chair)

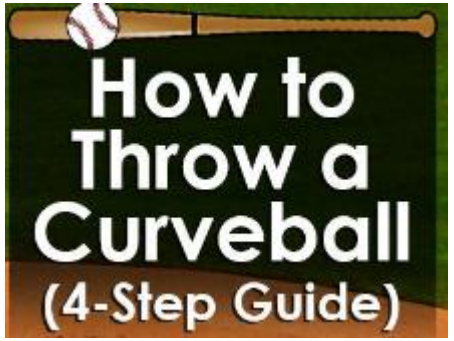
Committee Clerk

Nathan Cobb

Joe Zapf

Legislative Council Staff

Scott Grosz



(1) The Department failed to include compliance costs for all facilities.

(2) The Department needs to ensure compliance costs do not exceed $10 million over any 2-year period without annualizing capital costs.

(3) The Department did not fully address several components of the economic impact analysis including alternatives to implementing this rule.

"It's unfortunate that the more and less stringent criteria are in the same rule package. We would easily approve the less stringent criteria."

DATE: April 10, 2020 FILE REF: Wisconsin River SSC Rule Dev

TO: Senator Nass and Representative Ballweg

FROM: Adrian Stocks, Director of the Bureau of Water Quality

SUBJECT: Department of Natural Resource's Supplemental EIA Material Addressing JCRAR Comments Regarding the EIA for CR 19-083

The Department of Natural Resources (Department) would like to submit supplemental material to address written comments submitted by JCRAR via e-mail to the Department and verbal comments from our conversation on April 1, 2020 regarding the Economic Impact Analysis (EIA) for CR 19-083. The Department submitted a memo dated March 31, 2020 to JCRAR to address comments raised by JCRAR. After clarifying discussions with JCRAR on April 1, 2020, it is the Department's understanding that JCRAR seeks additional information and clarification on three key issues for the proposed rule package.

Compliance Costs not to Exceed $10 million Over any 2-year Period

Table 5. Anticipated permit reissuance years (shaded cells), and years when construction will be experienced (C), and years when operation and maintenance costs will be experienced (O&M).

Facility Name	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Goetz Companies Inc (Portage Petro Travel P)			C	O&M	O&M	O&M	O&M	O&M	O&M	O&M	O&M
La Valle Wastewater Treatment Facility							C		O&M	O&M	O&M
Lyndon Station Wastewater Treatment Facility							O&M	O&M	O&M	O&M	O&M
Necedah Wastewater Treatment Facility								C	O&M	O&M	O&M
New Lisbon Wastewater Treatment Facility						O&M	O&M	O&M	O&M	O&M	O&M
North Freedom Wastewater Treatment Facility							C		O&M	O&M	O&M
O'Dell's Bay Sanitary District No. 1								C		O&M	O&M
Portage Wastewater Treatment Facility			O&M	O&M	O&M	O&M	O&M	O&M	O&M	O&M	O&M
Reedsburg Wastewater Treatment Facility					O&M	O&M	O&M	O&M	O&M	O&M	O&M
Rock Springs Wastewater Treatment Facility							C		O&M	O&M	O&M
Grande Cheese Corp Wyocena				C	O&M	O&M	O&M	O&M	O&M	O&M	O&M
Lakeside Foods Inc. – Reedsburg				C		O&M	O&M	O&M	O&M	O&M	O&M

Compliance Costs not to Exceed $10 million Over any 2-year Period

Table 1. Summary of Maximum 2-Year Compliance Costs

Years	Maximum 2-Year Compliance Cost
2020-2021	$ 843,669
2021-2022	$ 1,619,675
2022-2023	$ **7,636,545**
2023-2024	$ 7,172,678
2024-2025	$ 798,308
2025-2026	$ 4,267,431
2026-2027	$ 4,659,416
2027-2028	$ 1,455,177
2028-2029	$ 1,164,433
2029-2030	$ 1,185,393

Table 2. Permittee information.

Facility Name	Permit Number	TMDL Permit [1]	Expiration date
Goetz Companies Inc (Portage Petro Travel P)	0035998		30-Jun-21
La Valle Wastewater Treatment Facility	0028878	X	31-Dec-23
Lyndon Station Wastewater Treatment Facility	0060488	X [2]	30-Jun-20
Necedah Wastewater Treatment Facility	0020133	X	30-Sep-24
New Lisbon Wastewater Treatment Facility	0020699	X	30-Sep-24
North Freedom Wastewater Treatment Facility	0028011	X	31-Dec-23
O'Dell's Bay Sanitary District No. 1	0036536	X	31-Dec-24
Portage Wastewater Treatment Facility	0020427		30-Sep-21
Reedsburg Wastewater Treatment Facility	0020371	X	30-Jun-23
Rock Springs Wastewater Treatment Facility	0029041	X	31-Dec-23
Grande Cheese Corp Wyocena	0051764		30-Jun-22
Lakeside Foods Inc. - Reedsburg	0057738		31-Mar-17

1. *Permit has already been issued with limits consistent with current criteria and Appendix K of the Wisconsin River TMDL.*
2. *Assume permit reissued on schedule (1 July 2020) and prior approval CR 19-083.*

Alternatives to Implementing the Rule

- Without promulgation of the SSC, facilities identified as having a cost savings through the implementation of SSC derived effluent limits will instead incur the costs associated with implementation of effluent under current criteria.

- Without promulgation of SSC for Lake Wisconsin, US EPA may object to the TMDL based effluent limits for over 30 facilities.

- Without promulgation of the SSC, Wisconsin will still be required to prepare a TMDL for Lake Wisconsin that meets water quality standards creating regulatory uncertainty.

Strategies for Resource Limitations

- Drafting one TMDL for both existing and proposed SSC criteria.
- Internal collaboration throughout the TMDL and SSC process.
- Collaboration with US EPA throughout the process.

This was a significant effort

Water quality monitoring initiated in 2009
TMDL development initiated in 2014
TMDL approved by US EPA in 2019
SSC approved by US EPA in 2020

CONNECT WITH US

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/WIDNRTV

"WILD WISCONSIN:
OFF THE RECORD"