Adaptive Management

Phosphorus Criteria (NR 102.06)
Rivers: 100 ug/L
Streams: 75 ug/L
Reservoirs: 30 - 40 ug/L
Lakes: 15 - 40 ug/L

TOOLS FOR DETERMINING ELIGIBILITY

- Use the DNR Surface Water Data Viewer mapping tool to see if the P concentration in your receiving water is exceeding the criteria http://dnr.wi.gov/topic/surfacewater/swdv/
- Use the PRESTO modeling tool to find the average annual P loads from point sources and NPS in your basin (NPS loads must exceed point source loads to be eligible) http://dnr.wi.gov/topic/surfacewater/presto.html

PRESTO Pollutant Load Ratio Estimation Tool

ACRONYMS

AM: adaptive management

BMPs: best management practices

DNR: Wisconsin Department of Natural Resources

NPS: nonpoint source

P: phosphorus

TMDL: total maximum daily load

WPDES: Wisconsin Pollutant Discharge Elimination System

WQBEL: water quality based effluent limit

WQT: water quality trading

What is Adaptive Management (AM)?

ADAPTIVE MANAGEMENT IS...

- A voluntary compliance option for point source facilities to comply with phosphorus limits in NR 217
- A watershed approach to control phosphorus (P), where a point source facility funds management measures at other point or nonpoint sources
- An adaptive process to work towards water quality improvements
- Based on achieving the applicable water quality criteria in the receiving water
- Often flexible for the permittee — many different approaches could achieve the desired result
- A strategy built on partnerships between point source facilities and other landowners, municipalities, private and public entities

ADAPTIVE MANAGEMENT IS NOT...

- Water quality trading (a.k.a. pollutant trading)
- The appropriate solution for all point source facilities

Adaptive Management vs. Water Quality Trading (WQT)

Both AM and WQT are designed to be used when it is economically preferable to control nonpoint sources or other point sources of P compared with upgrading a particular point source facility (to achieve overall P reduction). However, there are some key differences in how the two compliance options are implemented.

1. **End Goals** — WQT focuses on compliance with a discharge *limit*; AM focuses on compliance with P *criterion* (an in-stream concentration).
2. **Implementation Area** — WQT typically only allows strategies upstream of the point source; AM includes reduction strategies in a watershed.
3. **Offsets** — Calculation of WQT offsets requires trade ratios and margins of safety; AM does not.
4. **Timing** — WQT credits must be generated prior to permit issuance; AM allows permittees to reduce effluent P over time.
5. **Monitoring** — AM requires in-stream monitoring and annual reports; WQT does not.
6. **Eligibility** — Eligibility requirements differ for AM and WQT.

WHO IS ELIGIBLE?

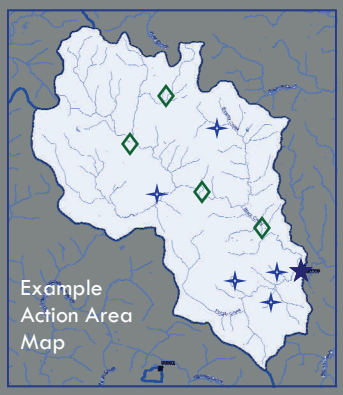
Facilities must meet the following conditions to be eligible for AM:

1. The P concentration in the receiving water exceeds the applicable water quality criterion.
2. The amount of phosphorus coming from nonpoint* sources (NPS) in the watershed exceeds the P loading from point sources or NPS must be controlled to comply with the P criteria.
3. Filtration or equivalent technology is required to meet the WQBEL.

*For the purposes of AM, municipal separate storm sewer systems (MS4s) are considered a NPS.

Adaptive Management Plan

Once eligibility is confirmed, and DNR approves AM as the chosen compliance strategy, an AM Plan must be prepared by the permittee and approved by DNR.



- AM Applicant's Facility
- Agricultural BMP
- Other BMP

NINE REQUIREMENTS TO DEVELOP A SUCCESSFUL PLAN:

	REQUIRED ELEMENTS	DESCRIPTION
1	Identify Partners	Potential partner can include other point sources, county land and water conservation departments, local municipalities, funding partners, DNR, etc.
2	Describe the Watershed & Set Load Reduction Goals	Describe the adaptive management action area including the counties in the watershed, available water quality data, number of reaches, hydraulic retention time, etc.
3	Conduct a Watershed Inventory	Gather current and historic land use and water quality data to identify potential opportunities in the watershed
4	Identify Where Reductions Will Occur	Create an "action area" map including locations of your facility, proposed reduction strategies, monitoring, and potential future strategies (where applicable)
5	Describe Management Measures	Identify strategies for reducing P, with installation and maintenance activities; see examples below
6	Estimate Load Reductions Expected from Strategies	Employ models (SNAP-PLUS, SWAT, SLAMM, SPARROW, etc.) to estimate expected P load reductions
7	Measuring Success	Collect effluent and in-stream samples; using the monitoring results with modeling, show the expected water quality improvements and BMP effectiveness
8	Financial Security	Show how project costs will be funded (costs may include installation, maintenance, and monitoring of BMPs; outreach and education)
9	Implementation Schedule and Milestones	Provide a detailed implementation schedule to be put into your permit; annual reporting to DNR is required

Example Management Measures

Any best management practice (BMP) which is proven to reduce phosphorus in runoff can be considered in an AM strategy.

Urban
- Grass swales
- Infiltration practices
- Porous pavement
- Retention/detention basins
- Sand filters

Agricultural
- Use of cover crops
- Contour farming
- Buffer strips
- No-till practices
- Grazing land protection
- Nutrient management

Other
- Stream bank stabilization
- Wetland restoration
- Constructed wetlands

WHAT IS INCLUDED IN A WPDES PERMIT?

The following components of an AM plan are included in the facility's WPDES permit, and are enforceable. The facility is assigned a final WQBEL and interim (effluent) limits, which get more stringent each permit term.

- Interim limits*
  - First permit term: 0.6 mg/L
  - Second permit term: 0.5 mg/L
  - Third permit term: final WQBEL (varies by facility)
- Compliance schedules for achieving interim and final limits, if necessary
- Actions proposed in AM plan
- Monitoring requirements
- Annual reporting requirements

*Permit includes 6-month and 1-month average interim limits; final WQBEL can be recalculated if water quality improved

FOR MORE INFORMATION

- Visit the DNR phosphorus website: http://dnr.wi.gov/topic/surfacewater/phosphorus.html
- Review DNR phosphorus implementation guidance
- Send questions to the email address dnrphosphorus@wisconsin.gov
- View informational webinars
- See Ch. NR 217.18 Wis. Admin. Code

WISCONSIN DEPT. OF NATURAL RESOURCES

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