Adaptive Management

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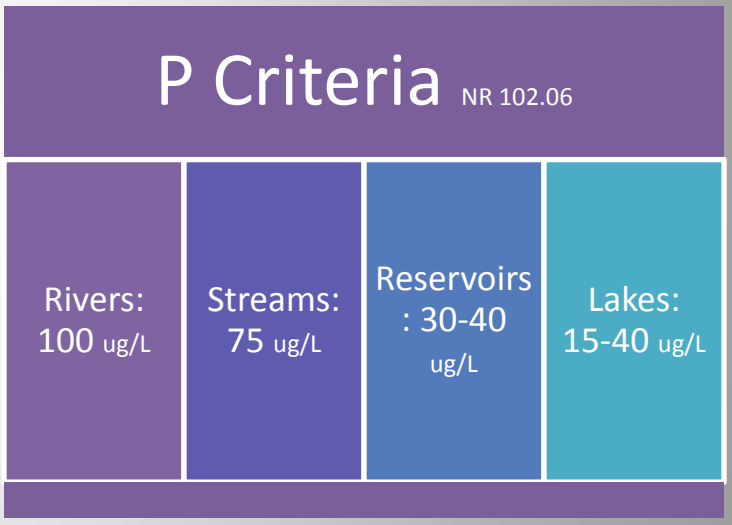
Adaptive Management Trick

What's the problem?

What is Adaptive Management?

- Compliance option focusing on water quality improvements
- Allows point sources to work with other sources of phosphorus in the watershed
- Goal: To reduce overall phosphorus loads so that **water quality criteria** can be attained
- NR 217.18, Wis. Adm. Code



Potential sources of phosphorus

Nonpoint Sources

Point Sources

A comparison…

	Adaptive Management	Water Quality Trading
Pollutants Covered	Phosphorus	All pollutants except BCCs
End Goals	Attaining the water quality criteria	Offset discharge to meet permit limit
Calculating Offsets	No trade ratios	Trade ratios apply
Timing of Load Reductions	Implemented throughout the permit term	Credits must be available by WQBEL effective date
In-stream Monitoring	Required	Not required
Effluent Monitoring	Required	Required
Documentation Required	General watershed information	Field-by-field documentation

Process

Step 1

- Determine eligibility
- Decide if Adaptive Management is right for you

Step 2

- Submit a preliminary request to WDNR
- Work with partners to develop the Adaptive Management plan

Step 3

- Submit Plan to WDNR
- Permit will be reissued/modified to include Adaptive Management requirements

Step 4

- Comply with permit requirements and implement Adaptive Management plan
- Up to 15 years

Step 1: Determine Eligibility & Interest

Eligibility Requirements

1. Phosphorus WQBEL=Criterion, or have a TMDL-derived WQBEL
2. Major upgrades needed to comply with limit
3. NPS dominated watershed
    - Visit http://dnr.wi.gov/, search “PRESTO”

Determining Interest:

- Willing to work with partners in the watershed
- Must be cost effective

Step 2: Develop the Plan

- How are you going to improve water quality???
- Similar to 9 Key Element plans or other watershed plans
  - Plans will be complex
  - Start early!
  - See 'Adaptive Management Handbook'
- Documentation needs:
  - Preliminary Request Form
    - DUE at preliminary facility plan step
  - Final Request Form and Plan
    - DUE at final facility plan step

Steps of the Plan

- Identify partners
- Describe the watershed and set load reduction goals
- Conduct a watershed inventory
- Identify where reductions will occur
- Describe management measures
- Estimate load reductions expected by permit term
- Measuring success
- Financial security
- Implementation schedule with milestones

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Table 15. OWPP CSAs, Management Measures, Reduction Amounts, and Cost Estimates.

Priority #	CSA #	Permit Term	General Land Use Category	Controlled Area (Ac)	Management Measure Description	Reductions (lbs. P/year)	Annual Cost
1	*58	1	Cropland, Feedlot	350	Sedimentation pond installation/maintenance; manure storage optimization; nutrient/pasture management; wetland restoration; additional buffer; grassed waterways; conservation tillage; cover crop.	300	$170,000
2	2	1	Cropland	20	Nutrient management; additional buffer; grassed waterways; conservation tillage; cover crop.	29	$870
3	3	1	Cropland	40	Nutrient management; additional buffer; grassed waterways; conservation tillage; cover crop.	58	$1,740

The City is beginning to collaborate with Jefferson County on a citizen-based monitoring program for the Rock River basin. This program could potentially be used to reduce the monitoring work on wastewater utility staff. Any monitoring personnel used through this program would be fully trained in the proper collection and preservation procedures.

Information on the monitoring locations is summarized in the table below.

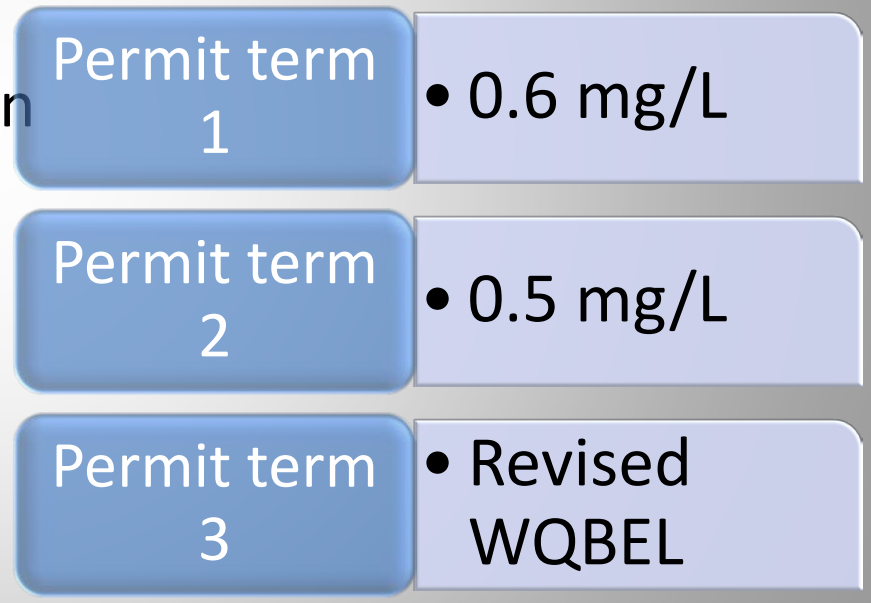
Table 16. AM Monitoring Overview

Monitoring Location					
Sample Point	**Sample Point Description**	**Latitude**	**Longitude**	**Parameters to be Collected**	**Sampling Frequency**
01	Hwy. 167	43.251229	-88.272887	TP	Monthly
0	Hubertus Rd.	43.221488	-88.289700	TP	Monthly
1	Flyn Creek Emerald Rd.	43.209365	-88.336630	TP	Monthly
2	Hwy. Q Monches	43.193608	-88.338054	TP	Monthly
3	Mason Creek CW	43.181144	-88.405995	TP	Monthly
4	Mason Creek No. Woods Dr.	43.160064	-88.380645	TP	Monthly
5	Oconomowoc River Hwy. 83	43.159970	-88.370098	TP	Monthly
6	Oconomowoc River Hwy. K	43.139345	-88.406940	TP	Monthly
7	Okauchee Dam (in) Oconomowoc Lake	43.108264	-88.454194	TP	Monthly
8	Oconomowoc Lake (out)	43.104390	-88.469026	TP	Monthly
9	Oconomowoc River Cemetery	43.112414	-88.488332	TP	Monthly

CSA #	County, Township	Lat, Long	General Land Use Category	Controlled Area (Ac)	Management Measure Description	Comments
56	Waukesha, Merton	43.181073, -88.362060	Cropland	15	Nutrient management; additional buffer; grassed waterways; conservation tillage; cover crop; wetland restoration.	Little Oconomowoc River is adjacent to the field on three sides; some vehicle tracks crossing the river.
57	Waukesha, Merton	43.179198, -88.369245	Cropland	5	Nutrient management; additional buffer; grassed waterway; conservation tillage; cover crop.	Signs of erosion into the adjacent stream.
58	Washington, Erin	43.241444, -88.363907	Cropland, Feedlot	350	Sedimentation pond installation/maintenance; manure storage optimization; nutrient/pasture management; wetland restoration; additional buffer; grassed waterways; conservation tillage; cover crop.	A large sedimentation pond would help the Erin Meadows farm and neighboring farms reduce runoff and be a source of irrigation water. The pond could also serve a nearby dairy and beef cattle farm located on both sides of the river. In addition, an existing sedimentation pond needs to be cleaned out for better performance. There are seven springs on this farm that could be developed with a grass waterway to create a new trout stream. The Washington County LWCD also indicates the need for wetland restoration, pasture management, and manure storage optimization at this site.
59	Washington, Erin	43.249216, -88.352284	Cropland	45	Nutrient management; additional buffer; check field contours; reroute drainage; grassed waterways; conservation tillage; cover crop.	Several fields surrounding a complicated drainage network; further site investigation necessary to determine most effective BMPs.

Step 3: Reissuing the Permit

- Interim limits
  - Compliance schedule(s) are available, if necessary
- Select actions proposed in plan
- Monitoring
  - In-stream & effluent
- Annual reporting
  - Status update
  - Report successes/needs
  - Propose amendments to plan



2.2.1.2 Total Phosphorus Interim Limit, Averaging Periods and Compliance Determination

The adaptive management total phosphorus interim limit of 0.6 mg/L goes into effect beginning the period from May 1, 2019 through October 31, 2019. The averaging periods are May through October and November through April. Compliance with the 6-month average limit is evaluated at the end of each 6 month period on April 30 and October 31 annually.

2.2.1.3 Phosphorus Limitation(s)

The City of Lodi has requested and the Department has approved a plan to implement a watershed adaptive management approach under s. NR 217.18, Wis. Adm. Code, as a means for Lodi to achieve compliance with the phosphorus water quality standard in s. NR 102.06, Wis. Adm. Code. The phosphorus limitations and conditions in this permit reflect the approved adaptive management plan WQT-2016-0003. The permittee shall implement Adaptive Management (AM) Plan No. WQT-2016-0003 to achieve compliance with the phosphorus water quality standards specified in s. NR 102.06, Wis. Adm. Code. Failure to implement terms and conditions of this section is a violation of this permit. The permittee shall design and implement the actions identified in AM Plan No. WQT-2016-0003 in accordance with the goals and measures identified in the approved plan. If total phosphorus loadings within the Spring Creek action area, as identified in WQT-2016-0003, are not reduced by at least 68 pounds per year by December 31, 2021, the watershed adaptive management option may not be available to the permittee upon permit reissuance.

Pursuant to s. NR 217.18(3)(e)2, Wis. Adm. Code, the adaptive management interim limitation is 0.6 mg/L, expressed as a six-month average. Additionally, a 1.0 mg/L limitation expressed as a monthly average is required. For information purposes, the final calculated water quality based effluent limitations for phosphorus are a six-month seasonal average limitation of 0.075 mg/L (0.38 lbs/day) and a monthly average limitation of 0.22 mg/L based on current in-stream phosphorus data. These limitations may be recalculated based on changes in the in-stream data at the time of permit reissuance.

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2.2.1.4 Adaptive Management Reopener Clause

Per NR 217.18(3)(g), Wis. Adm. Code, the Department may terminate the adaptive management option for a permittee through permit modification or at permit reissuance and require compliance with a phosphorus effluent limitation calculated under s. NR 217.13, Wis. Adm. Code, or a US EPA approved TMDL based on any of the following reasons:

1. Failure to implement the adaptive management actions in accordance with the approved adaptive management plan and compliance schedule established in the permit.
2. New information becomes available that changes the Department's determinations made under s. NR 217.18(2), Wis. Adm. Code.
3. Circumstances beyond the permittee's control have made compliance with the applicable phosphorus criterion in s. NR 102.06, Wis. Adm. Code, pursuant to the plan's goals and measures infeasible.
4. A determination by the Department that sufficient reductions have not been achieved to timely reduce the amount of total phosphorus to meet the criteria in s. NR 102.06, Wis. Adm. Code.

Step 4: Implementation

Lessons Learned (To Date)

- Adaptive management is an adaptive process
- Takes a lot of planning time
  - Develop and effectively work with partners
  - Establish baseline & collect data
  - Work with partners to develop a successful strategy
- Turns “us vs. them” into “we”
- Great option for some permittees, but not everyone

Advantages of Adaptive Management

- Timeframe
  - Pollution reductions occur throughout the permit term
  - Adaptive management has a 10-15 year project life
- Flexibility
  - Can adjust plan as you gain more experience
  - Flexibility in quantifying offset requirements and interim success
  - Can always switch to a different option if AM doesn't work, including trading
- Potentially fewer offsets required
  - Trade ratios, delivery ratios, credit thresholds not required

Comparison of the MDV to AM/WQT

Similarities

- Target phosphorus reductions at a lower cost
- Point and nonpoint sources work together to achieve phosphorus reductions
- Requires work within the watershed

Differences

- Financial investments through variances are investing in time, not infrastructure
- Temporary vs. permanent
- Geographic scopes where reductions can occur are different
- Permit conditions and expectations

Questions?