



Phosphorus Regulation Update

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2010 Government
Affairs Seminar





WDNR Phosphorus Technical Workgroup (PTW)

- **Formed: 1990 Final Report: 1997**
- **Identify surface water phosphorus concentrations that would impair water quality.**
- **Basis for water quality criteria**



PTW Conclusions/Recommendations

- **Scientifically defensible stand alone statewide P criteria could not be developed**
- **Determination of undesirable P related impacts should be made on a site specific basis**



PTW Conclusions/Recommendations

- P as a trigger for further evaluation
- Impairment based on P plus other factors (e.g. DO, chlorophyll a)
- **Effective land based P management is critical**



Chapter NR 217

- Promulgated in 1992
- Established effluent limitations for point sources
- 1 mg/l with provisions for an alternative limit
- Limits don't apply to small dischargers (< 150 lbs/mo)

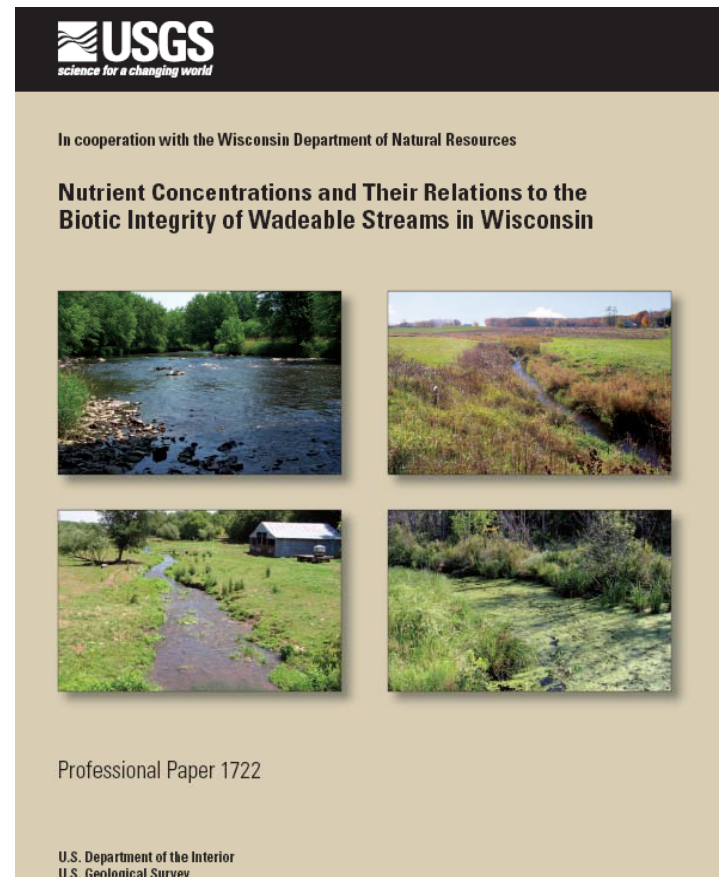


EPA Ecoregional P Criteria

- Draft criteria issued in 2000
- Intended as guidance
- States could use as a starting point for developing P criteria
- **0.01 – 0.033 mg/l** for streams

Current DNR Phosphorus Criteria Development Effort

- Data collection effort:
2001-2003
- Published reports:
 - 2006-wadeable
streams
 - 2008-nonwadeable
rivers





P Advisory Committee

- **AC formed in 2007**
- **8 meetings over 20 month period**
- **Numeric criteria and implementation:**
 - **NR 102-numeric P limits**
 - **NR 106-WQBEL's and implementation language
(may be moved to NR 217)**



Possible Timing

- **March 2010: Request NRB hearing authorization**
- **April/May 2010: Public hearings**
- **August 2010: NRB approval of final rule**



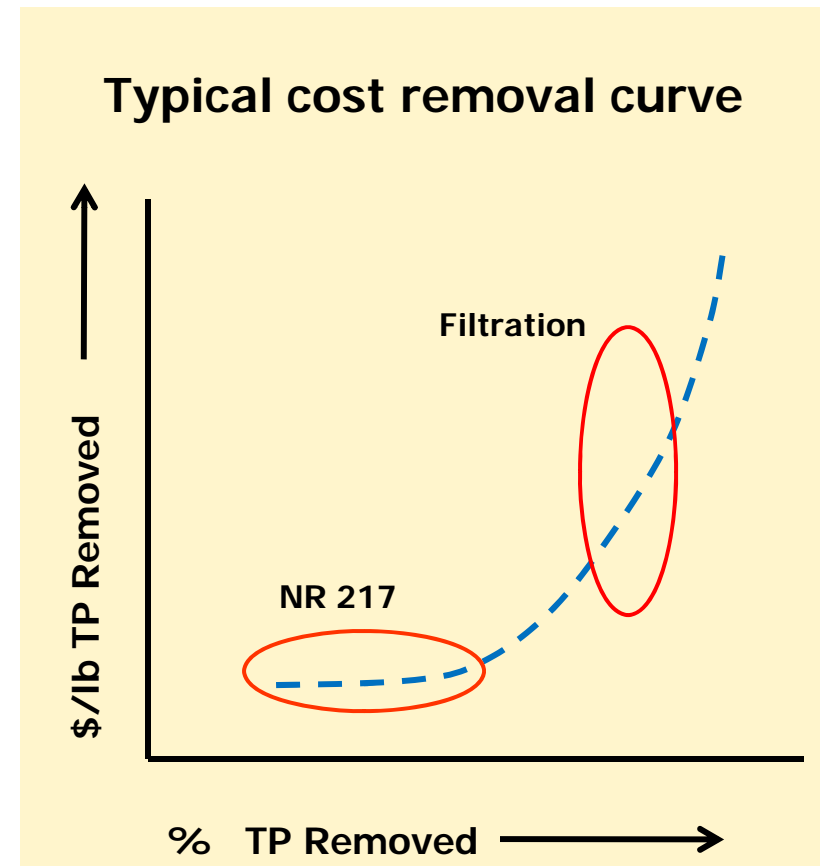
By the Numbers

	<u>Water Column Conc.</u>
WDNR-Rivers	0.10 mg/l
WDNR-Streams	0.075 mg/l
EPA Ecoregional criteria	0.01 – 0.033 mg/l

NR 217 effluent limit:	1.0 mg/l
Median effluent conc:	0.64 mg/l

Meeting the Proposed TP Criteria Will Come at a Significant Cost to POTWs

- ~150 to 160 facilities may be significantly impacted
- Filtration likely
- Significant capital and O&M costs.
- Minimum aggregate POTW cost in \$1 - \$2 billion dollars.





POTWs have already made significant reductions in phosphorus

(Madison MSD Example)

Pre NR 217 effluent conc.	4.0 mg/l
NR 217 effluent limit (Biological P removal)	1.5 mg/l (63% reduction)
Average effluent conc. (2007-2009)	0.33 mg/l (92% reduction)



Madison MSD Cost to Comply with NR 217 (BPR)

- Capital cost⁽¹⁾: \$3,800,000
- 20 year PW cost⁽¹⁾: \$8,460,000
- Additional lbs TP removed/Yr ⁽²⁾: 559,000

Marginal TP removal cost (\$/lb) over 20 years \$ 0.76

Current user charge rate for TP (\$/lb) \$1.98

⁽¹⁾ Adjusted to 2009 dollars

⁽²⁾ Based on design flow and loads

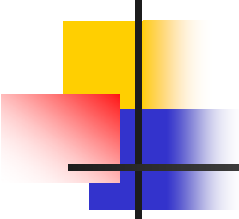


Madison MSD-Estimated Cost to Achieve 0.15 mg/l TP.

- Capital cost⁽¹⁾: \$85,000,000
- 20 year PW cost⁽¹⁾: \$95,000,000
- Additional lbs
TP removed/Yr ⁽²⁾: 28,000
- Average TP removal
cost (\$/lb) over 20 years \$170

⁽¹⁾ Planning level cost estimate prepared by Malcolm Pirnie

⁽²⁾ Based on design flow



Green Bay MSD-Estimated Cost to Achieve 0.10 mg/l TP – Green Bay Facility

- Capital cost⁽¹⁾: \$162,000,000
- 20 year PW cost⁽¹⁾: \$184,000,000
- Additional lbs
TP removed/Yr ⁽²⁾: 35,700
- Average TP removal
cost (\$/lb) over 20 years \$414

⁽¹⁾ Planning level cost estimate prepared by CH2M HILL

⁽²⁾ Based on peak hour design flow of 125.6 mgd



Some Important Implementation Considerations

- **Streamlined variance for lagoons, stabilization ponds and small dischargers**
- **Stream flow used in calculating WQBEL's**
- **Expression of limits/averaging period**
- **Alternate methods of calculating a WQBEL-
e.g. backcalculated from TMDL**



Some Important Implementation Considerations

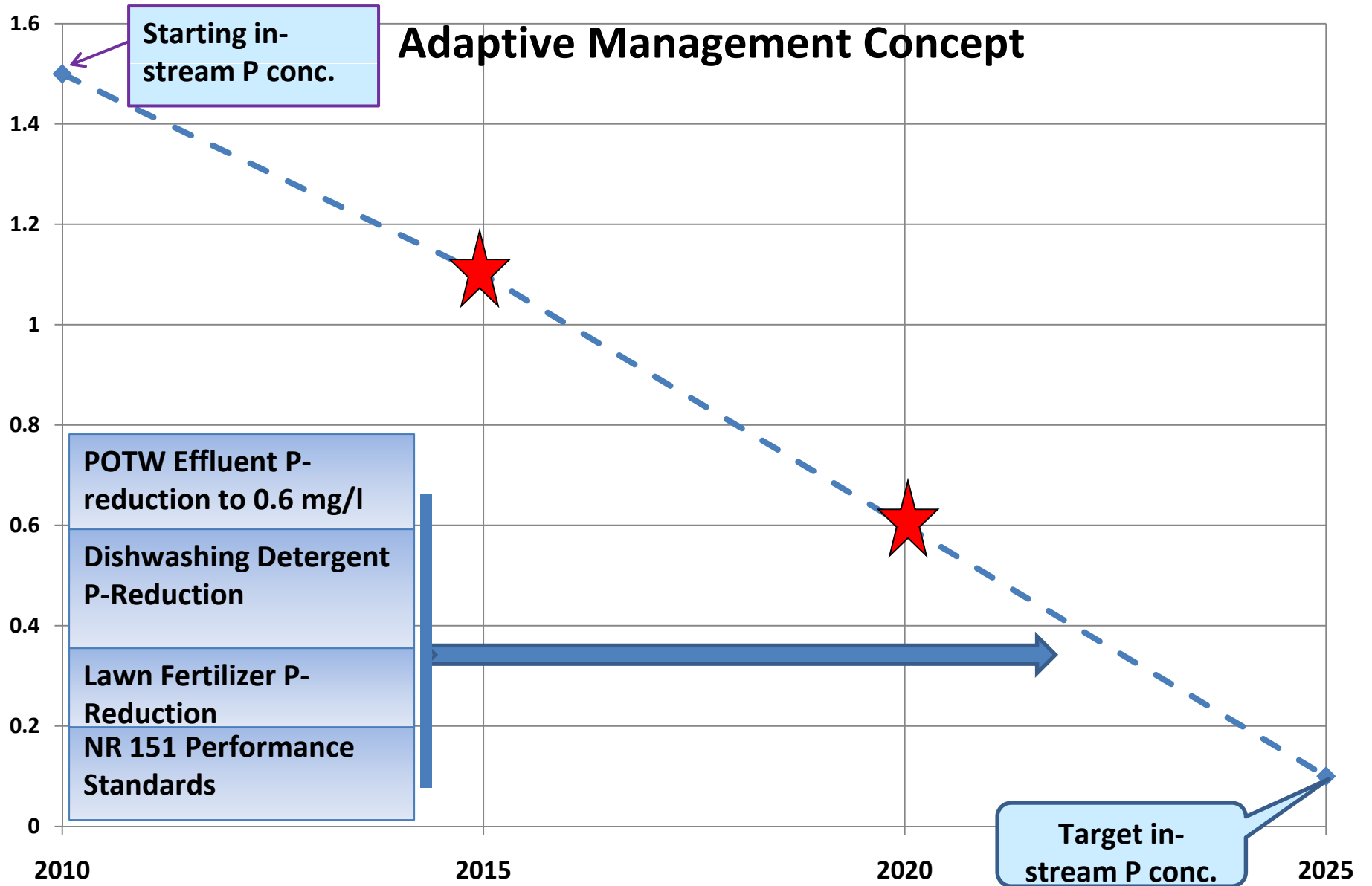
- **Effluent dominated streams-LAL exclusion**
- **Downstream impacts-how far, and how is an “impact” determined**
- **Adaptive management approach/restoration concept**



Adaptive Management Concept

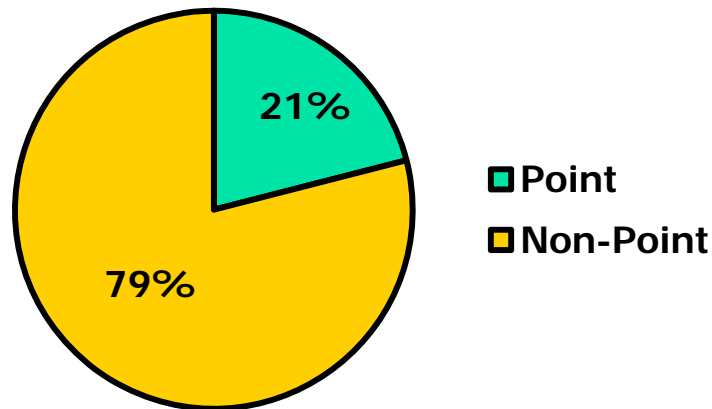
- **Compliance over extended time period**
- **Allows for an assessment of impacts from other P control efforts**
- **Interim milestones for POTWs and receiving water quality**
- **Watershed approach**

Adaptive Management Concept



NR 151 Runoff Management Rule

Rock River Basin Annual TP Contribution



2000 River Report
(POTWS at NR 217; Tillage and
nutrient management practices
unchanged)

- Ag performance standards including **Phosphorus Index**
- Voluntary unless cost share \$ provided
- Underfunded



TMDL's for Phosphorus

Lower Fox

- Effluent limit of 0.2 mg/l ?

Rock River

- Limits for POTWs still to be determined
- WQBEL based on TMDL waste load allocation



Other P Related Considerations

- **Need to move towards watershed based decisionmaking**
- **Need to develop a more robust trading framework**



Recent Development

- Environmental groups file Notice of Intent to Sue EPA Administrator
- Failure to promulgate numeric phosphorus and nitrogen criteria
- Likely outcome: compliance dates for criteria development by WDNR
- Failure to meet would result in EPA establishing criteria



Moving Forward

- **Stay informed**
- **Educate commissions, boards, elected officials**
- **Offer constructive comments during the public comment period**