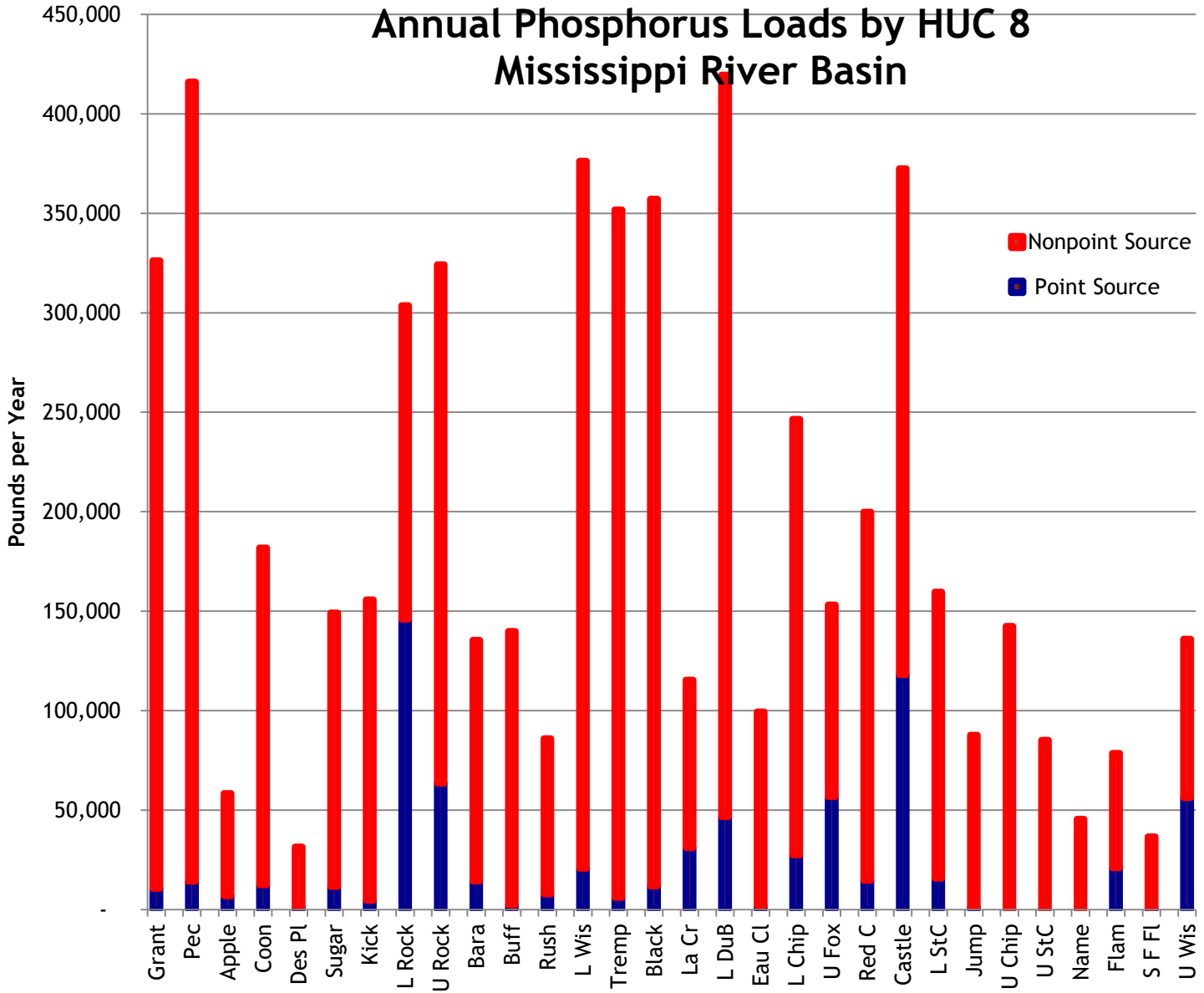


Relative Contribution of Phosphorus - HUC 8 Basins

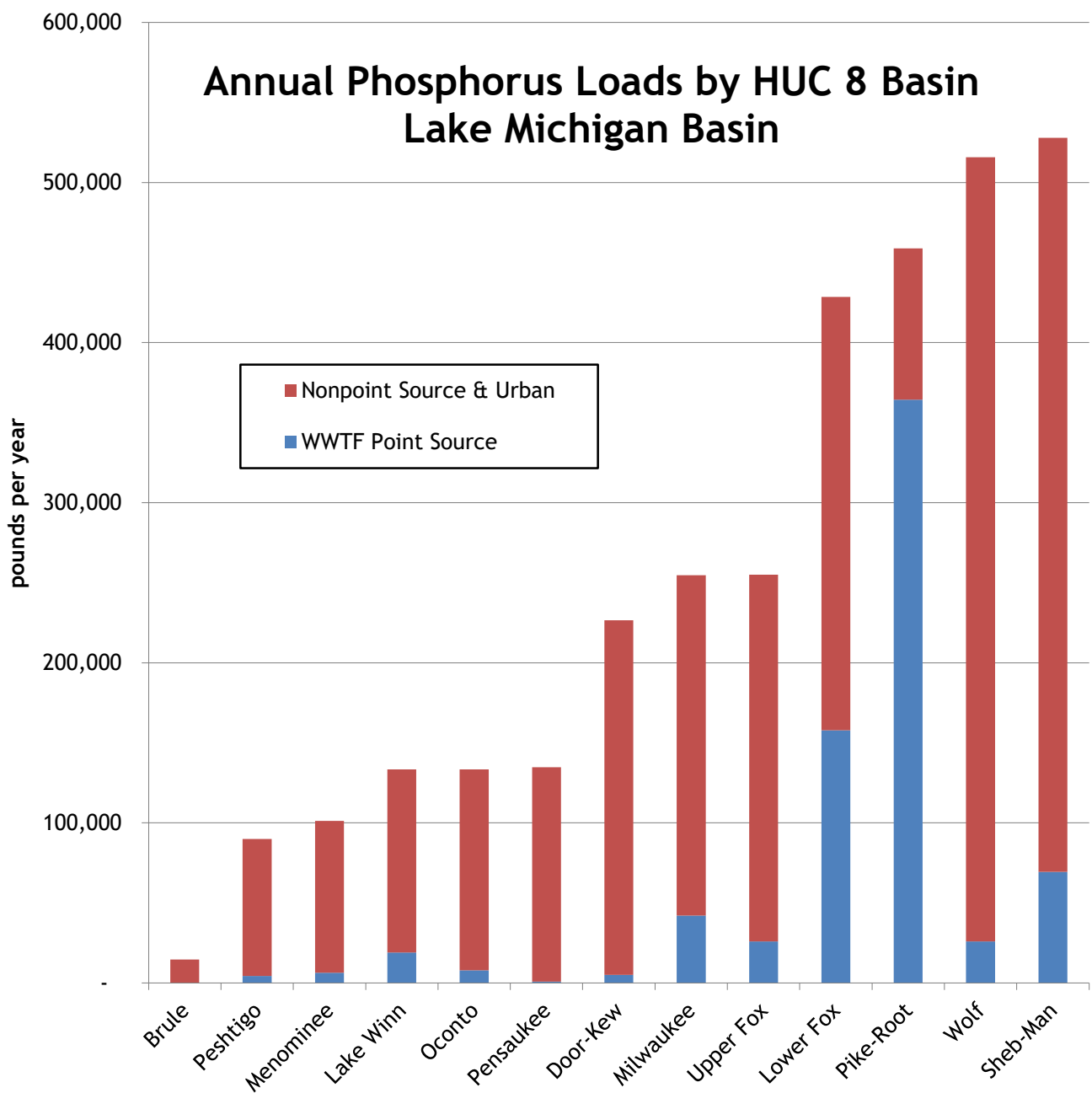
Nonpoint source and urban storm water estimates -
USGS SPARROW Model

Wastewater Plant - DNR from discharge monitoring reports
summarized by Jim Schmidt

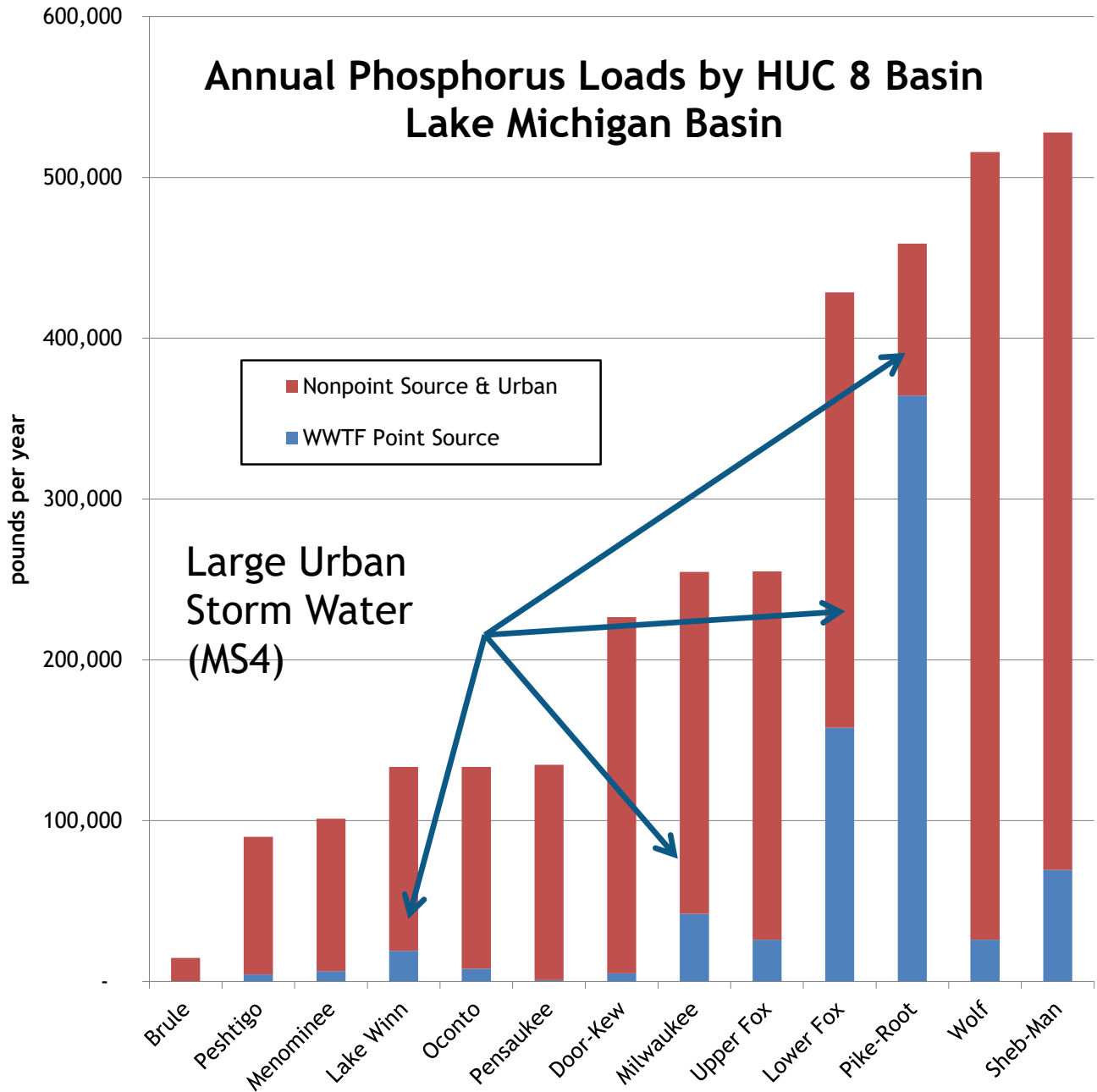
Annual Phosphorus Loads by HUC 8 Mississippi River Basin



Annual Phosphorus Loads by HUC 8 Basin Lake Michigan Basin



Annual Phosphorus Loads by HUC 8 Basin Lake Michigan Basin



Water Quality Standards

Numeric

Narrative

Narrative

- Statement that describes conditions not protective of designated uses
 - Often used for suspended sediment (TSS) in TMDLs
- Needs interpretation to be used as goal, i.e. assigning numeric amount
- OR, simply removing impairment

Numeric

- Dissolved oxygen - not often used for nonpoint sources
- Total phosphorus
 - 5 concentrations for different types of lakes
 - Concentrations for Great Lake
 - 75 ug/L for streams (0.075 mg/L)
 - 100 ug/L for identified rivers (0.100 mg/L)
- Potential site-specific values (in future)

Determining Level of Control Needed

Using phosphorus and phosphorus water quality standards as example

Often going beyond performance standards and prohibitions and MS4 requirements

Total Maximum Daily Load (TMDL) Analyses

- Reduced load (mass) on a daily, and monthly or annual basis that will meet water quality standards
- Identifies wasteload allocations (WLA) for each point sources
 - Wastewater treatment facilities
 - CAFOs
 - Municipal Separate Storm Sewer Systems (MS4s)
- Identifies a load allocation (LA) for nonpoint sources as a group

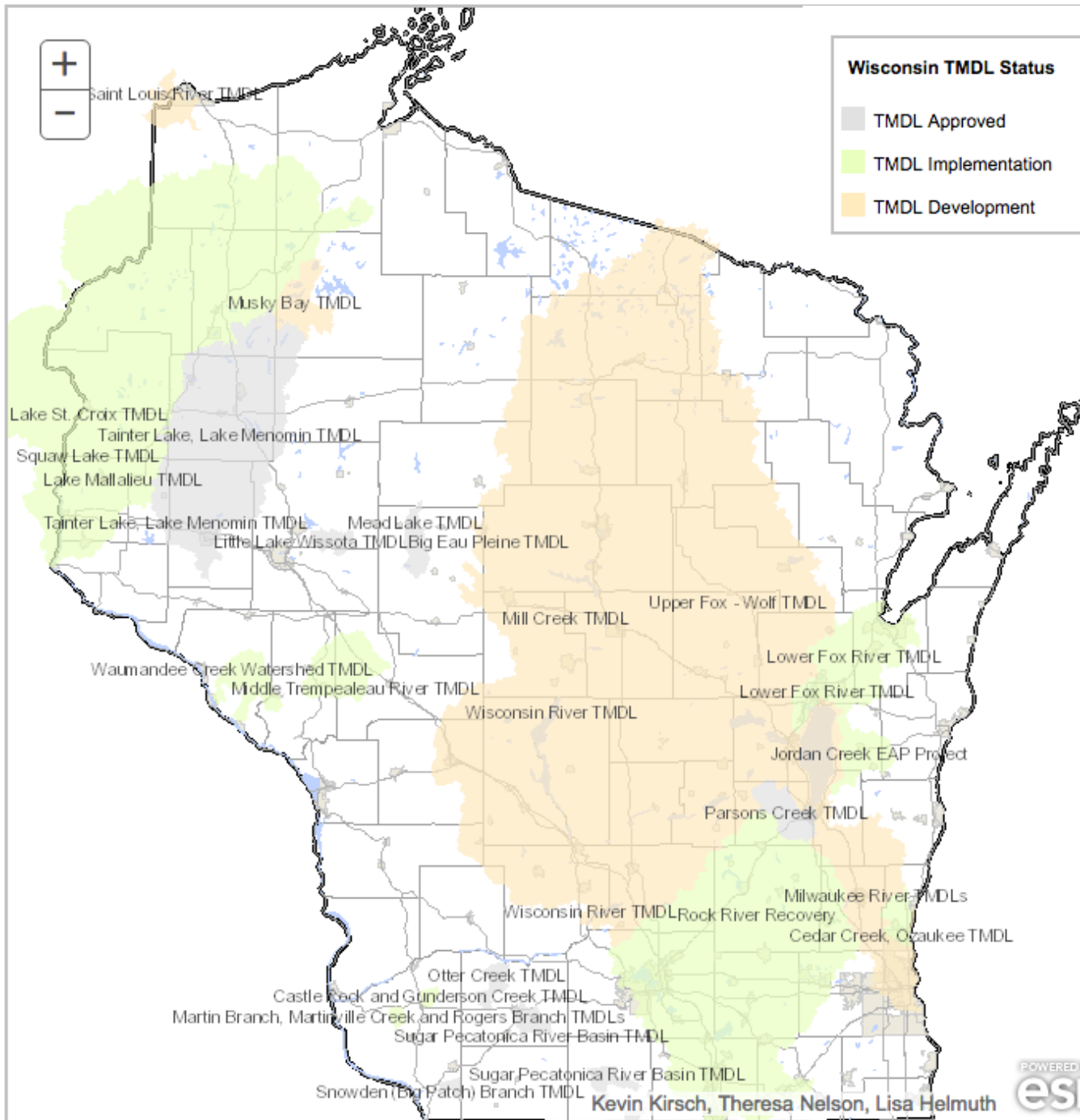
TMDL (Continued)

- TMDLs must be approved by EPA
- Often need an implementation plan to translate load allocation into something that can be used in day-to-day implementation for agricultural nonpoint sources



Wisconsin TMDL Status

- TMDL Approved
- TMDL Implementation
- TMDL Development



Kevin Kirsch, Theresa Nelson, Lisa Helmuth



Other Processes

- National initiatives
 - Gulf of Mexico Hypoxia Action Plan
 - 45% reduction for nitrogen loads - all sources combined
 - 45% reduction for phosphorus loads - all sources combined
- Lake Management Plans
- 9 Key Element Plans (often part of TMDL implementation)

TMDL WQ Models

- Range from simple to complex
- Most relate % load reduction to % reduction in concentration in lake or stream
 - Not necessarily 1:1
- Generally, the greater the % reduction in concentration needed, the greater the % reduction in load needed

Example

- *Phosphorus WQS criteria:*
 - *75 ug/L for streams*
 - *100 ug/L for rivers*
- If stream is currently 75 to 90 ug/L, likely a 15 to 25% load reduction is needed
- If stream is currently 150 ug/L or more, likely more than 60% load reduction needed

Linking to Today's Discussion

- 10% to 20% load reduction P
 - Possibly achieved through implementing performance standard and prohibitions
 - MS4 base requirements
- 50% to 80% load reduction P
 - Implementing performance standards and prohibitions
 - Plus
 - Much lower P Index values
 - Lower soil test P values
 - Riparian filter strips and buffers