Governance Challenges to Addressing Algal Blooms in the Great Lakes:

EPA-Great Lakes National Program Office Perspective

T. Kevin O’Donnell
NCER 2013
August 2, 2013
2011 Spring Phosphorus & Harmful Algal Blooms (HABs)

Maumee River @ Waterville, Ohio (March-June)

Lake Erie
October 9, 2011
2012 Spring Phosphorus & Harmful Algal Blooms (HABs)

Maumee River @ Waterville, Ohio (March-June)

Lake Erie
July 11, 2012
Year-to-Year Issue or Trend?

Western Lake Erie Basin Average HAB Area

Area (sq. km.)

Governance Challenges Highlighted in Today’s Presentation

• State of HAB Science
• From Planning to Implementation to Assessment
• Setting Realistic and Understandable Goals Going Forward
Synthesizing Available Science & Recommendations
International Joint Commission
Great Lakes Eutrophication Work Group

- Dreissenid to Nearshore Soluble Reactive Phosphorus Relationship

- 26 Studies
  - 12 indicate (+) relationship
  - 13 indicate (−) relationship
  - 1 indicate no relationship
Forecasting Lake Erie HABs

HAB Area vs.
Spring Maumee River Stream Flow @ Waterville, OH

Average Stream Flow (cfs)  Avg High CHL
Goverance Challenges Highlighted in Today’s Presentation

• State of HAB Science
• **From Planning to Implementation to Assessment**
• Setting Realistic and Understandable Goals Going Forward
Great Lakes Restoration Initiative (GLRI)

• Obama Administration Initiative
  – FY2010: $475 million
  – FY2011: $300 million
  – FY2012: $300 million
  – FY2013: $284 million
Collaborative GLRI Work Groups

PRIORITY WATERSHEDS

EPA
United States Environmental Protection Agency

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

US Army Corps of Engineers

County Conservation Departments
Area Conservation Groups
Participating Producers

CONSERVATION + MONITORING
Using Available Agency Expertise and Planning Tools

Assessment of the Effects of Conservation Practices on Cultivated Cropland in the Great Lakes Region

[Image of charts and graphs related to conservation practices and cropland]

[Map showing geographic data related to phosphorus levels]

[USGS and EPA logos]

U.S. Environmental Protection Agency  Great Lakes National Program Office
Feedback Used for Planning Actions & Needed Adaptations
GLRI Watershed/Water Quality Projects
FY2010-11

- All Other Great Lakes Watersheds
  $46 million (74%)
- Maumee River
  $8.6 million (14%)
- Saginaw River
  $3.4 million (5%)
- Genesee River
  $2.6 million (4%)
- Lower Fox River
  $1.6 million (3%)
GLRI Watershed/Water Quality Projects
FY2012

- All Other Great Lakes Watersheds: $12 million (50%)
- Maumee River: $5.4 million (22%)
- Saginaw River: $3.3 million (13%)
- Lower Fox River: $3.4 million (14%)
- Genesee River: $0.3 million (1%)
Use of Science in GLRI Efforts

Data dissemination

Data collection

Analysis and results

East River, Wisconsin
Daily Total Phosphorus Losses

![Graph showing daily total phosphorus losses in East River, Wisconsin, with data points for storm and baseflow events.]
Governance Challenges Highlighted in Today’s Presentation

- State of HAB Science
- From Planning to Implementation to Assessment
- **Setting Realistic and Understandable Goals Going Forward**
Previous Lake Erie Water Quality Goal Setting

• Total Phosphorus Target Load
  – Developed in 1978 as part of the Great Lakes Water Quality Agreement
  – 11,000 metric tons/year
  – Objective of year-round aerobic conditions in Central Lake Erie Basin
Annual loading of total phosphorus to Lake Erie by major source from 1967-2011.

(Data provided by Dr. David Dolan of the University of Wisconsin Green Bay (May 2013).

Graph prepared by Heidelberg NCWQR staff.)
Oxygen Depletion Rate in Lake Erie Central Basin

mg O₂/L/Month

Year


Depletion Rate

Approximate Target

Trend 1970-1989

Trend 1990-2011
Year-to-Year Issue or Trend?

Western Lake Erie Basin Average HAB Area

Area (sq. km.)

Year-to-Year Issue or Trend?
Questions?

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