



Status of Phosphorus/Hazardous Algae Blooms and Lessons from Canada

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Farm Interest in the Great Lakes



The water in the Great Lakes is a shared resource and every user must do his/her share to sustain it and the ecosystem



Farmers are big users of nutrients including phosphorus to grow food on land that drains excess waters into the Great Lakes



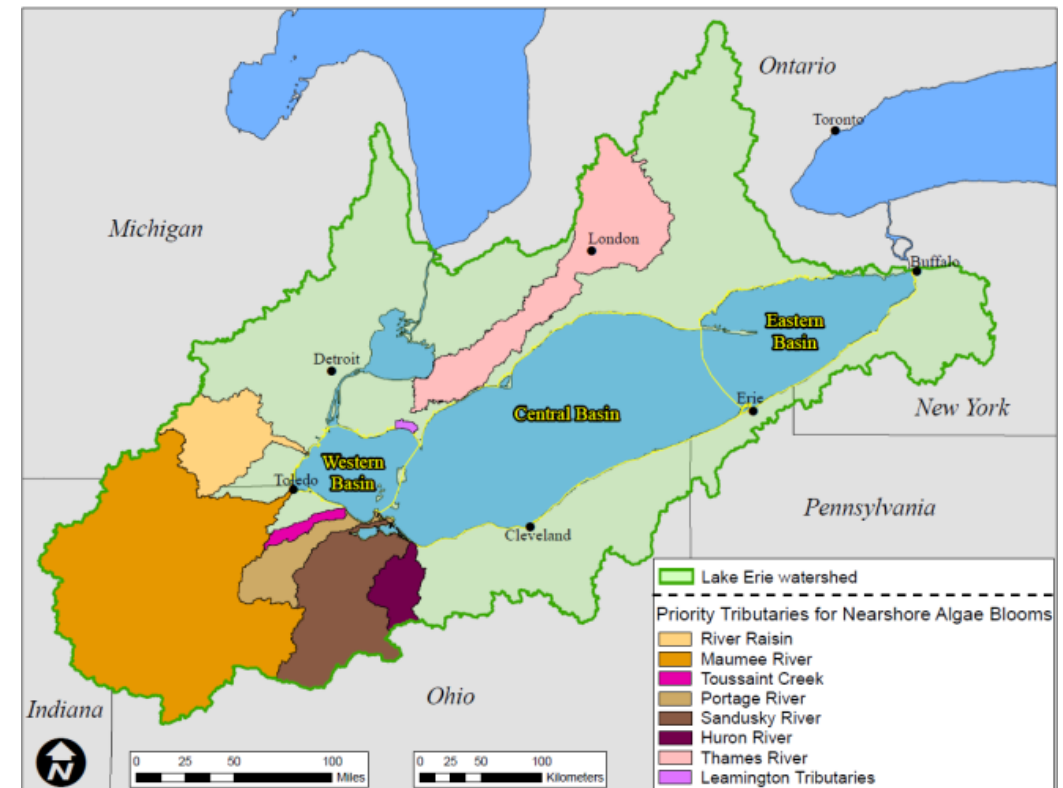
Understanding how phosphorus is lost, transport pathways and potential innovative solutions can result in tools for farmers to mitigate



Ultimately can we use technologies to mitigate small losses in the future? Is it feasible given very small losses per acre? Yes or No?

Agriculture's Approach

- Bi-national agreements focusing on Lake Erie and subsequent agreement between Canada and Ontario
 - 40% reduction in total phosphorus in western and central Lake Erie basin
 - 40% reduction in soluble phosphorus in priority watersheds such as the Thames River
 - Similar US actions
- Agriculture's approach
 - Livestock Nutrients: Timing Matters
 - BMPs
 - Cover crops
 - Less tillage
 - Crop rotation
 - 4R's Nutrient Stewardship
 - Drainage systems – Thames River PRC



Partnership for Action on Drainage Technologies

Cities Initiative & Cities of Chatham-Kent & London

Farm organizations – OFA & others

Drainage sector

Environmental and conservation groups

First Nation

Government Funding





Understanding Pathways

- Surface runoff to municipal drains (ditches)
- Surface to buried municipal drains on ag lands
- Field tile systems to municipal drains



Technologies and Products - Many Approaches Tested

- Technologies based on pumping and treatment
 - Electrolysis with biological treatment and recovery opportunity
 - Electrolysis of sorbent minerals to treat water under continuous flow
- Variety of materials
 - Iron based slag
 - Magnesium & calcium
 - Engineered products
 - Biochar
- Assessments underway and shared at Thames River PRC webinars
 - Next one in January 2021



Early Lessons Learned Since 2018



Agricultural P losses occur during winter and early spring



Total agricultural losses are less than 0.5 lbs per acre



P levels in our waters is very low (<0.5 ppm to 1 ppm)

Dissolved P levels are lower



Organizing non-point sources for treatment is costly



Promising technologies emerging



BMPs to manage ag waters & managing phosphorus

Regenerative agriculture

Future



Project expires in 2022



Decision on managing ag waters after it leaves the field? Yes/No?



Is it cost effective versus field BMPs?



BMPs will require more & consistent funding from society

THANK YOU & QUESTIONS?

For more information, please see project Website:

- www.thamesriverprc.com
- Twitter @thamesriverprc
- Sign up for Newsletter for regular updates

Interested in Continued Dialogue with Municipalities

- Charlie Lalonde at charles.lalonde73@gmail.com

