

CALM

Community Action for Lake Michigan

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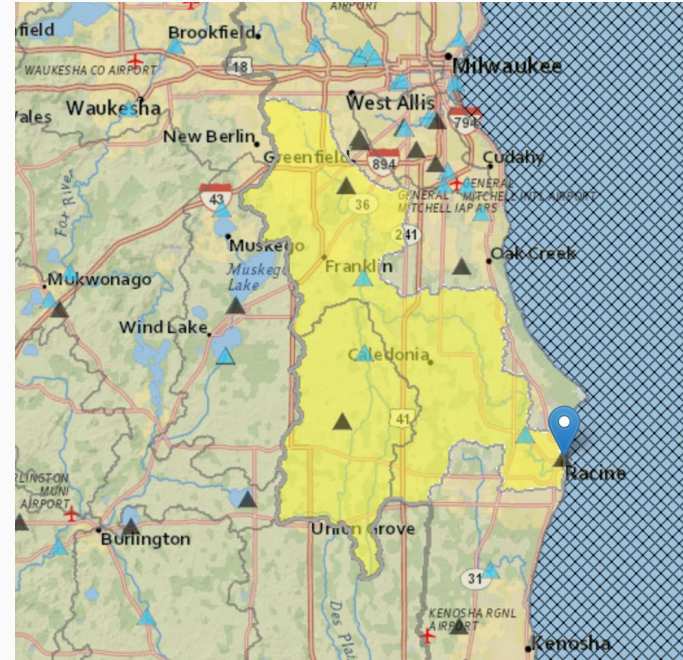
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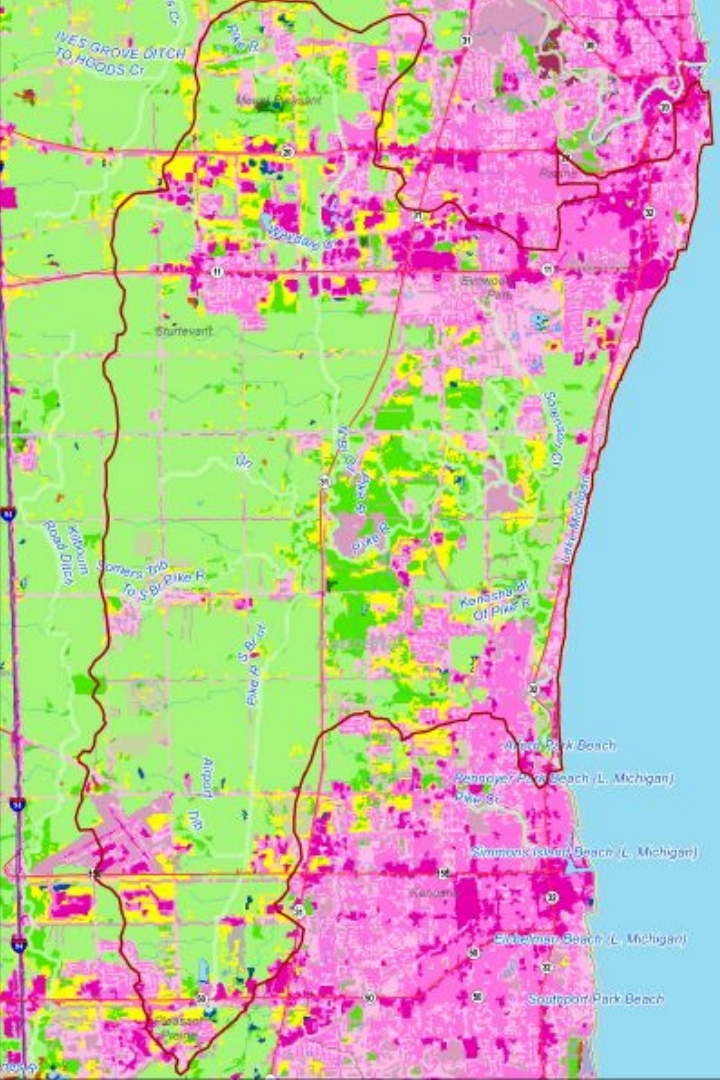
Mission Statement

CALM's mission is to ensure that the Root-Pike watershed meets water quality standards to a level that is safe for human use, while working towards restoring the watershed's coasts, preventing further digression, and preserving important ecosystems by 2035.

Root-Pike Water Basin Background

- Sub-watershed of Lake Michigan Water Basin
- Over 410 square miles in four counties
- Feeds into Lake Michigan
- Temperate climate zone
 - Well defined seasons
- 50% of the land in the watershed is used agriculturally, 30% of the land is urbanized
 - Led to somewhat degraded water quality





Map of Root-Pike Watershed Land Use Land Cover

History

- Lake Michigan Watershed has experienced extreme changes in a short amount of time
- Approx. 170 years ago the terrain consisted of lush forests and wetlands and water
 - Favorable terrain conditions led to the first attempts of settlement
- Native American villages sprouted in and around the watershed due to the proximity of supply water.
- First European settlement, “The Village of Pike River” formed in 1835

History Continued

- Pike River was one of the first rivers to be dammed & ditched for drainage and irrigation
- Extreme shoreline disruption seen throughout the rivers
 - Historical common practice of clearing land to the very edge of the rivers

Governance

- Great Lakes Water Quality Agreement
 - Us & Canada cwork to identify issues and find solutions
- Lake Michigan Lakewide Action Management Plans
 - Major groups focused on increasing water quality within The Great Lakes
- Smaller scale watershed groups
 - Root-Pike Watershed Initiative Network (Root-Pike WIN)

Root-Pike WIN

- Cooperative effort with Wisconsin Department of Natural Resources
 - 401c3 non-profit
- Educational programs, monitoring projects and river restoration
- EPA-approved nine key Pike-River Plan
 - Nine highlighted issues including
 - Phosphorus and nitrogen from farming
 - E. Coli and pathogens from agriculture and storm water run-off
 - Chlorides from road salts
 - Invasive and non-native species

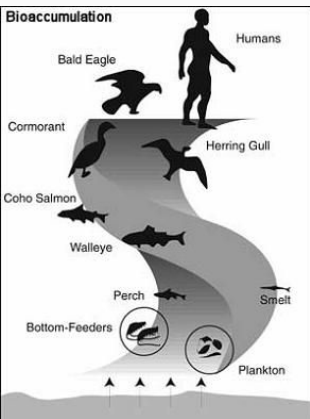
Problems

- 1.) Pollution
- 2.) Erosion
- 3.) Invasive Species

PCBs & E coli

● PCBs

- Banned in 1979, currently residuals from past usage
- Health risks: neurological disorder, reproductive toxicity, endocrine disruption, cancer, and deformity
- Spread to surrounding communities easily because of high transportability
- PCBs are bioaccumulative, able to form strong bonds with soil and sediment, highly transportable, and resistant to biodegradation



- High transportability makes PCBs threat to surrounding communities
- Transitions from sediment to water to air
- Fishing industry is threatened because of PCB contaminated fish
- Hurts the economy

● E coli

- Harmful gut bacteria, often found in untreated sewer water
- Health risks: severe abdominal illness, especially in young or elderly people
- Overflow from storm and waste-water
- Concern for recreational beach use



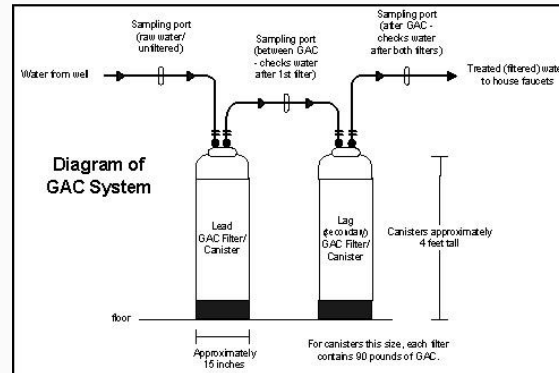
Problem 1: Solutions

- **PCBs**

- PCBs have high sorption to soil/sediment matrix
- Dredging contaminated soil and storing at confined disposal facility
- GAC filtration systems can help reduce PCBs levels in contaminated water

- **E coli**

- 15 year study shows levels are high but currently declining
- Invasive species of mussels is partly responsible for decline in E coli populations, more on that later
- Investing in wastewater and stormwater treatment
- Sand grooming and gull reduction, helpful at local beaches but not larger areas
- Most issues are at beaches



Problem 2: Streambank, Streambed, and Shoreline Erosion

Issue: Shoreline Erosion

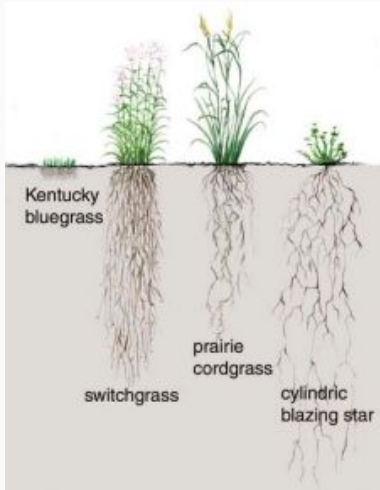
- Attributed to rising waters, channelization, and stream bank construction
- Decreases shorelines integrity
- Sediment deposits downstream
- Displaces and harms aquatic environments
- Reduces water quality



Problem 2: Solutions

Solution 1: Bioengineering

- Log placement/removal
- Long rooted plants
- Temporary rock placement (riprap)



Solution 2: Buffer Strips

- Strips of vegetation on either side of waterway
- Improve water quality
- Offer Stream Protection
- Enhance habitat
 - Source of food, nesting, shelter

**Public Outreach and
Government enforcement**

Solution 3: Restoration

- Sediment management
 - Gravel reinstatement
- Natural restoration
 - Natural Meander Pattern



Problem 3: Invasive Species

Issue:

Non-native plant and animal species invade the ecosystems of the watershed. This leads to a decrease in biodiversity, depleted water quality, unnatural wetland/coastline structure, and native species death.



Solutions:

- Implement and uphold pesticide/ molluscicide usage to manage aquatic species
- Poison and manually remove plants by professionals for large scale issues, and by community members for small scale infiltration
- Continue to search for best management practices
- Uphold preventative measures for other potential invaders
- Reintroduce/ aid native species in population growth
- Inform and incentivize public involvement
- Maintain or improve population levels



CALM Goals & Conclusions

Goals:

- Improve water quality
 - Implement filtration infrastructure and sediment dredging
- Restore stream banks and prevent erosion
 - Bioengineering and restoration
- Prevent invasive species and boost livelihood of native species
- Implement solution by 2035
- Comply with Root-Pike WIN
- Encourage public outreach