



Lake Erie LaMP Overview and Next Steps....

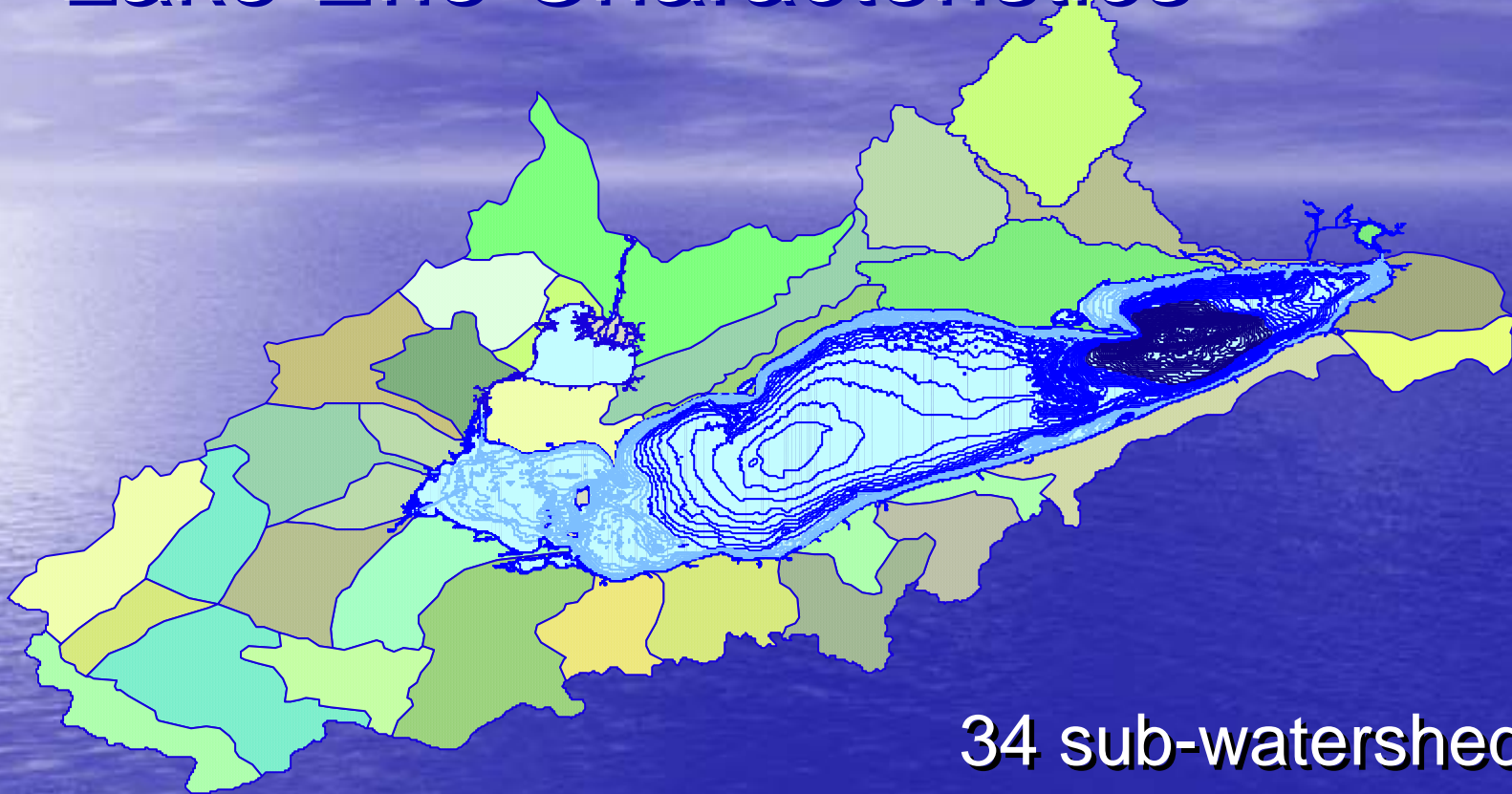
February 8, 2008
Jennifer Vincent, Acting Coordinator
Lakes Erie & Ontario LaMPs





- Great Lakes Water Quality Agreement Annex 2
- Canada-Ontario Agreement Annex 3
- Binational
- Federal, State and Provincial Agencies

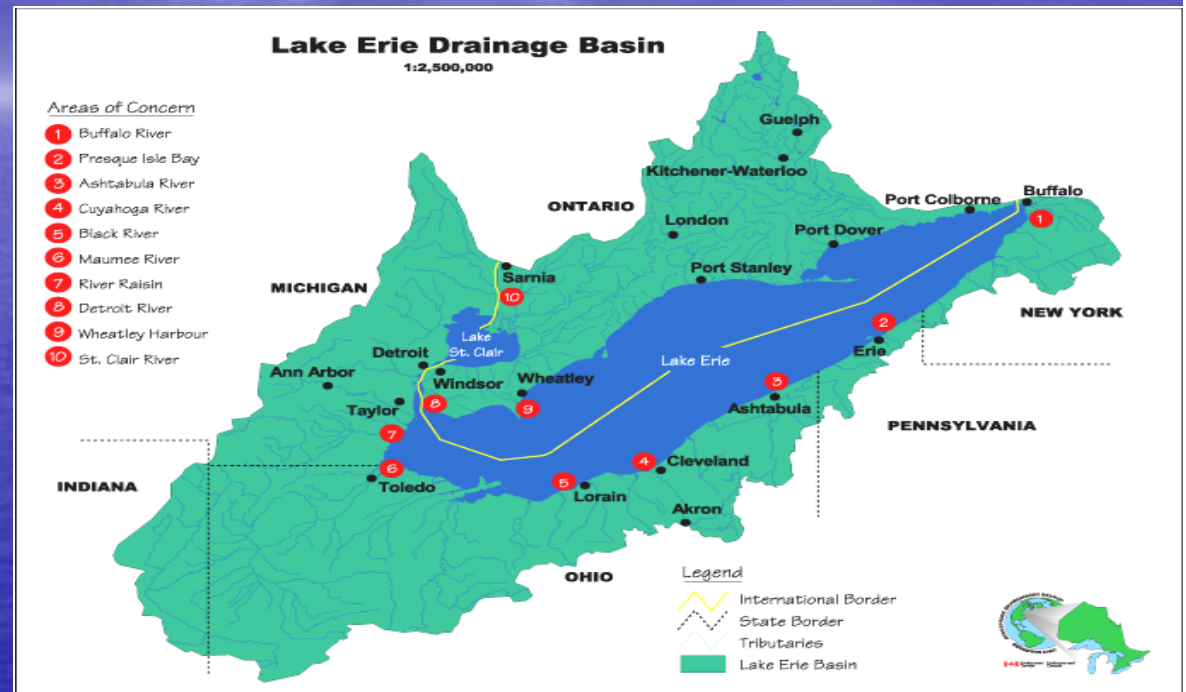
Lake Erie Characteristics



34 sub-watershed
Unique coastal zones
3 distinct lake basins

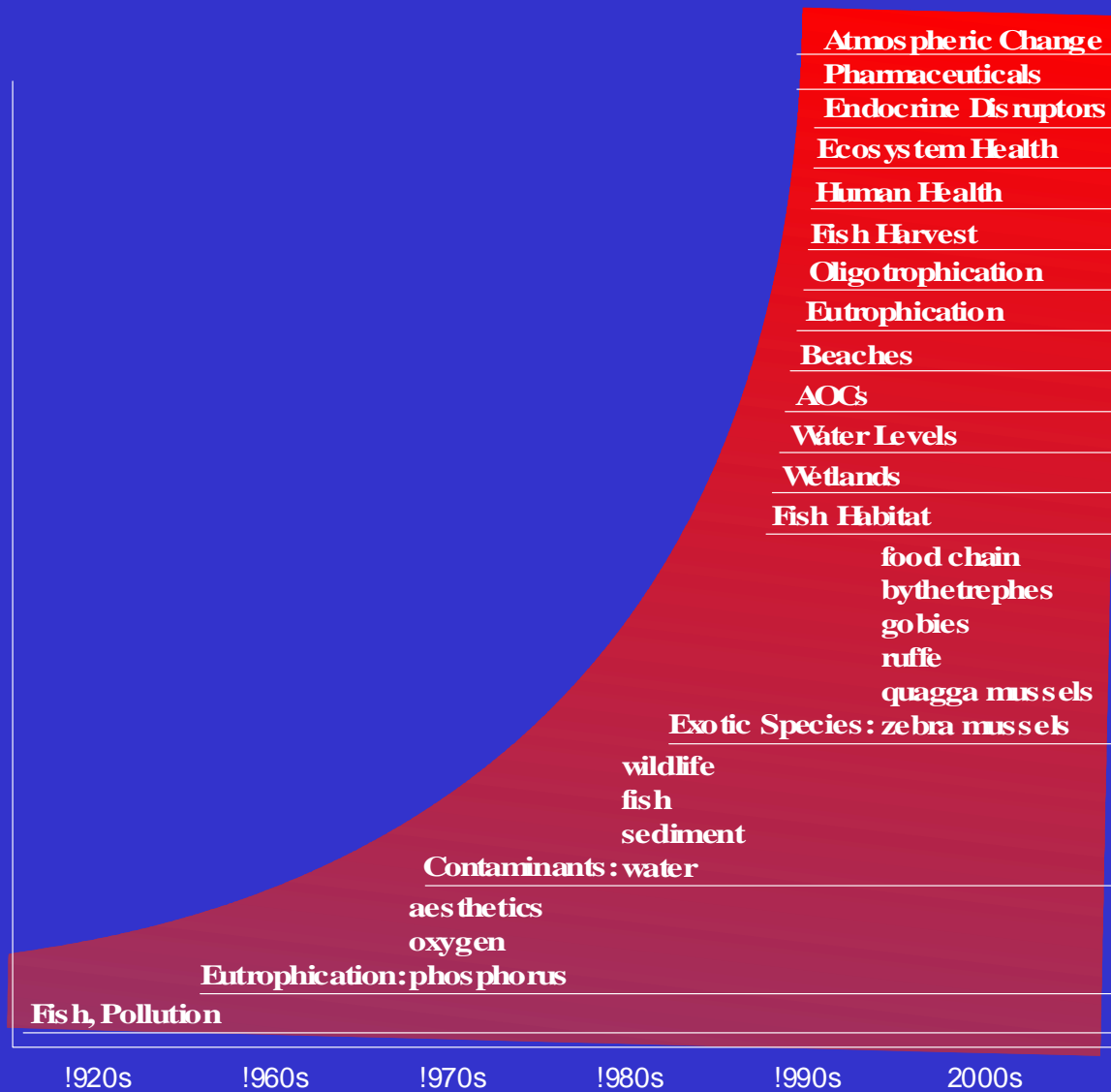
Lake Erie Characteristics (con't)

- 78,000 km²
- 11.6 million people
- 17 major cities
- 10 AOC's
- Drinking water -11 million
- World largest commercial freshwater fishery
- Most productive
- Highest Biodiversity



Influences Through Time

↑
Concerns



Time →

Lake Erie's Challenges....

- Unstable fish communities
- Changing nutrient status
- Disruptions in foodweb and energy flow
- Degraded habitats especially nearshore ,wetlands and tributaries
- Nearshore transparency
- Cladophora increases
- Botulism Outbreaks
- New species – Dresseinids mussels
Bythotrephes, Cercophagis, Gobies
- Native species - Diporiea, sculpins, mussels declines/extirpations
- Benthification –dressenids/gobies



Are Because Of...

- Exotics
- Contaminants (Mercury and PCBs)
- Nutrients and Sediment
- Habitat Loss / Alterations
- Resource Use
- Species Losses



Sourced from.....

Land use**

Nutrient inputs**

Biological contaminants**

Chemical contaminants

Natural Resource Use

Lake Erie Lakewide Management Plan

- Binational Program
 - Canada / US
- Mandated under GLWQA & Supported by COA

Original Scope

- Focus on reduction of critical pollutants in the open waters of the lakes
- Eliminate the contribution of critical pollutants to the impairment of beneficial uses



Revised Scope

Purpose:

Restore and maintain the Physical,
Chemical and Biological Integrity
of Lake Erie (GLWQA)

Goal:

Long-term sustainable management
of the Lake Erie ecosystem

LaMP Geographic Boundaries

- Focus of Assessment: Lake Erie proper including Huron-Erie Corridor, nearshore areas, embayments and river mouths
- Environmental Influence: May occur anywhere within the watershed or from outside
- Focus of Implementation: Lake Erie proper including Huron-Erie Corridor, nearshore areas, embayments and watersheds

The LaMP Program provides:

- a management tool for integrating programs (government and non-government) towards common objectives (The Plan)
- a focus for efforts on Lake Erie
- a forum for ongoing discussion, understanding and resolution
- a forum for ongoing discussion between governments and the public

Who Is Involved in the Lake Erie LaMP?

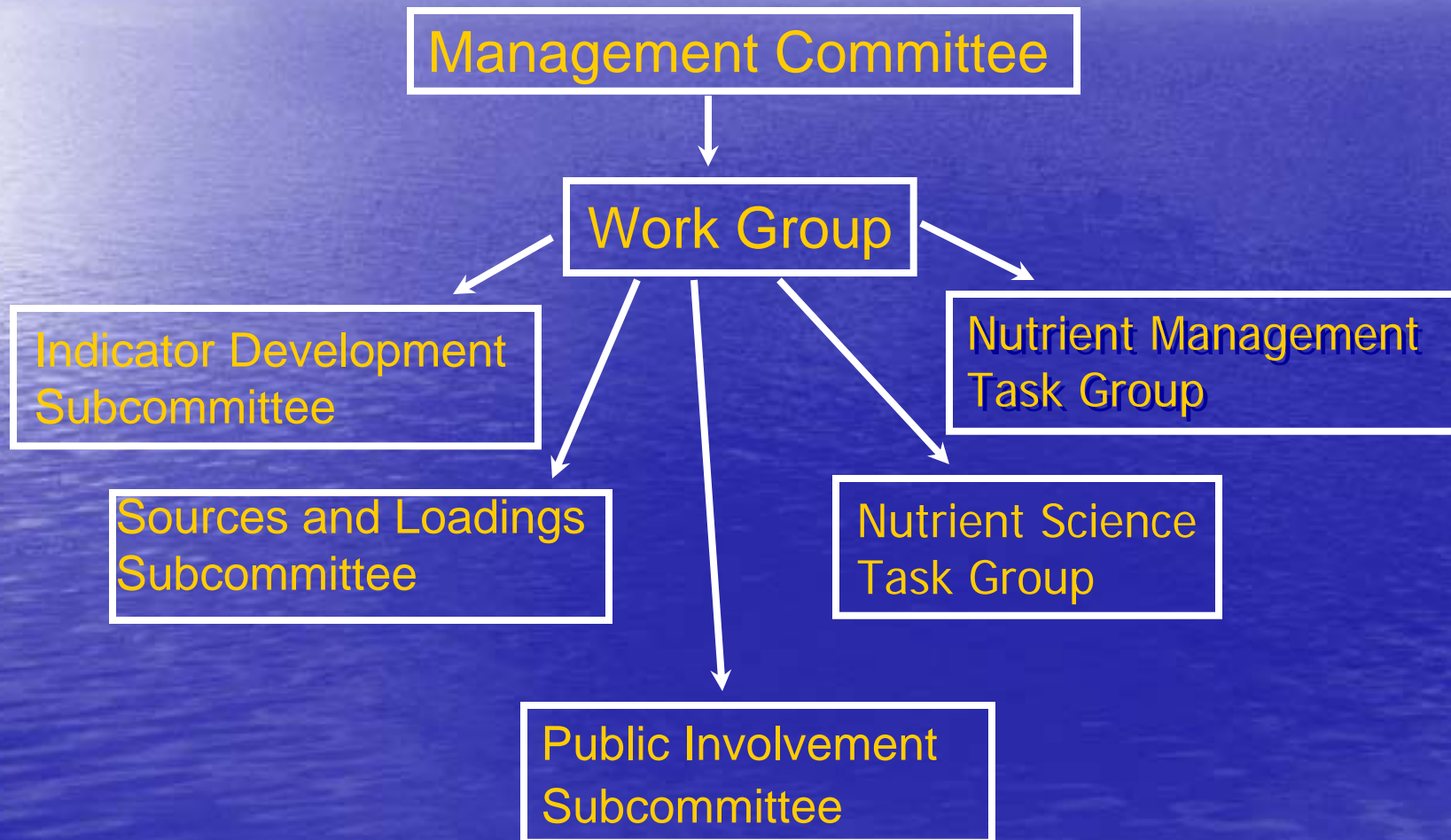
Representatives from:

- Federal Government Agencies
- Provincial Government Agencies
- State Government Agencies
- Non-government Organizations
- Unaffiliated Public



Organization Structure of the Lake Erie LaMP

Agency Framework



The Role of the Management Committee:

- Co-chaired by Environment Canada and US Environmental Protection Agency (EPA)
- Oversees development of the LaMP
- Makes all final decisions
- Assigns and issues charges to the Work Group
- Approves recommendations for short-term actions and long-term objectives
- Seeks within their agencies/governments funding and support for LaMP actions

The Role of the Work Group:

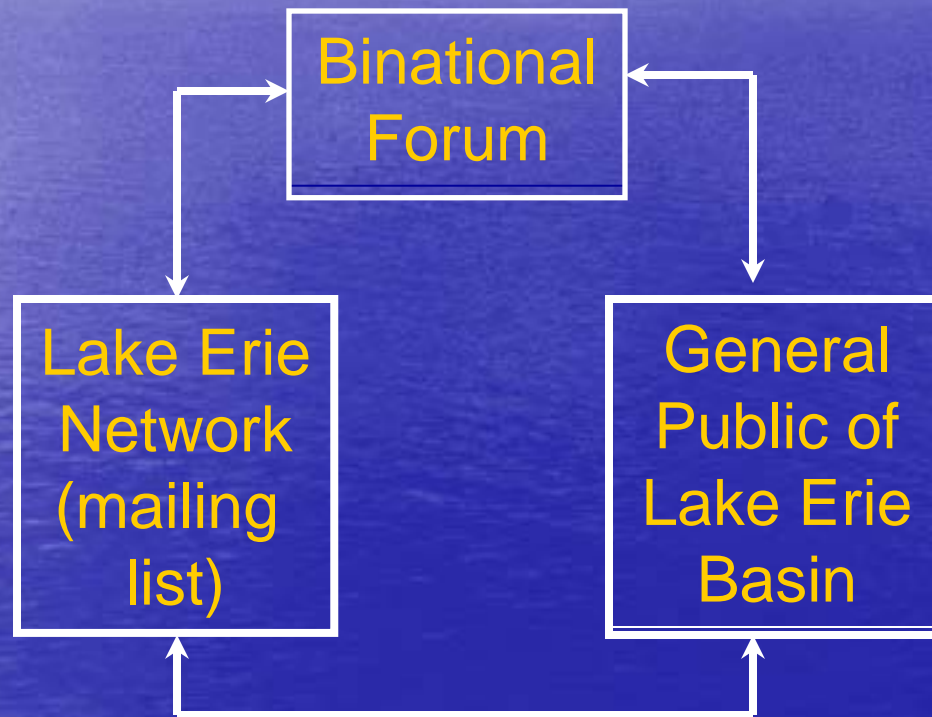
- Co-chaired by Environment Canada and US EPA
- Oversees preparation of background documents and tracks progress
- Identifies short-term actions and long-term objectives
- Establishes time-frames
- Sets goals, objectives and priorities for action
- Identifies environmental and programmatic indicators to measure success
- Oversees public participation process

Subcommittees & Task Groups of the Work Group are formed as needed to target key areas:

- Binational Nutrient Management Strategy (Science Task Group lead by EC-NWRI, Management Task Group lead by EC-GLB&LM)
- Sources and Loadings Ecosystem Indicators
- Public Involvement
- Beneficial Use Impairments
- Ecosystem Objectives
- Habitat Strategy

Organization Structure of the Lake Erie LaMP

Public Framework



Three Tiers of Public Involvement:

- Lake Erie Binational Forum
- Lake Erie Network
 - Mailing list of concerned citizens with an interest in Lake Erie, with a varying level of involvement
- General Public
 - Members of the public with little or no knowledge of Lake Erie

The Role of the Binational Public Forum:

- Increase stakeholder participation in the LaMP process
- Play a significant role in the LaMP process with real involvement and proactive initiatives
- Facilitate and/or participate in Forum sponsored LaMP-related activities at the local level where appropriate



Vision

Where all people recognizing the fundamental links among the health of the ecosystem and their individual action and economic well-being, work to minimize the human footprint in the Lake Erie Basin and beyond

Where native biodiversity and the health and function of natural communities are protected and restored to the greatest extent feasible

Where natural resources are managed to ensure that the integrity of existing communities are maintained and/or improved

Where natural resources are protected from known, preventable threats

Where human-modified landscapes provide functions that approximate natural ecosystem processes

Where land and water are managed such that the amount of material transported and the timing and volume of flows mimic natural cycles

Where environmental health continually improves due to the virtual elimination of toxic contaminants and remedial actions at formerly degraded sites.



Ecosystem Management Objectives

- Land Use
- Nutrients
- Natural Resource Use and Disturbance
- Chemical and Biological Contaminants
- Non-native Invasive Species



Indicators

| Indicator Category | Terrestrial | Streams | Coastal Wetlands | Nearshore | Offshore |
|--|-------------|---------|------------------|-----------|----------|
| PRESSURE INDICATORS | | | | | |
| Ecosystem Management Objectives : | | | | | |
| Natural Lands | | | | | |
| Nutrients | | | | | |
| Chemical Contamination | | | | | |
| Biological Contamination | | | | | |
| Resource Use and Disturbance | | | | | |
| Processes : | | | | | |
| Flow Disruption | | | | | |
| Energy Disruption | | | | | |
| Economic Disruption | | | | | |
| STATE INDICATORS | | | | | |
| Plant Cover | | | | | |
| Food Web Base | | | | | |
| Lower Food Web (benthic inverts) | | | | | |
| Lower Food Web (pelagic) | | | | | |
| Middle Food Web (fish) | | | | | |
| Upper Food Web (fish) | | | | | |
| Upper Food Web (herps/birds) | | | | | |

Measuring progress toward the five Lake Erie ecosystem management objectives

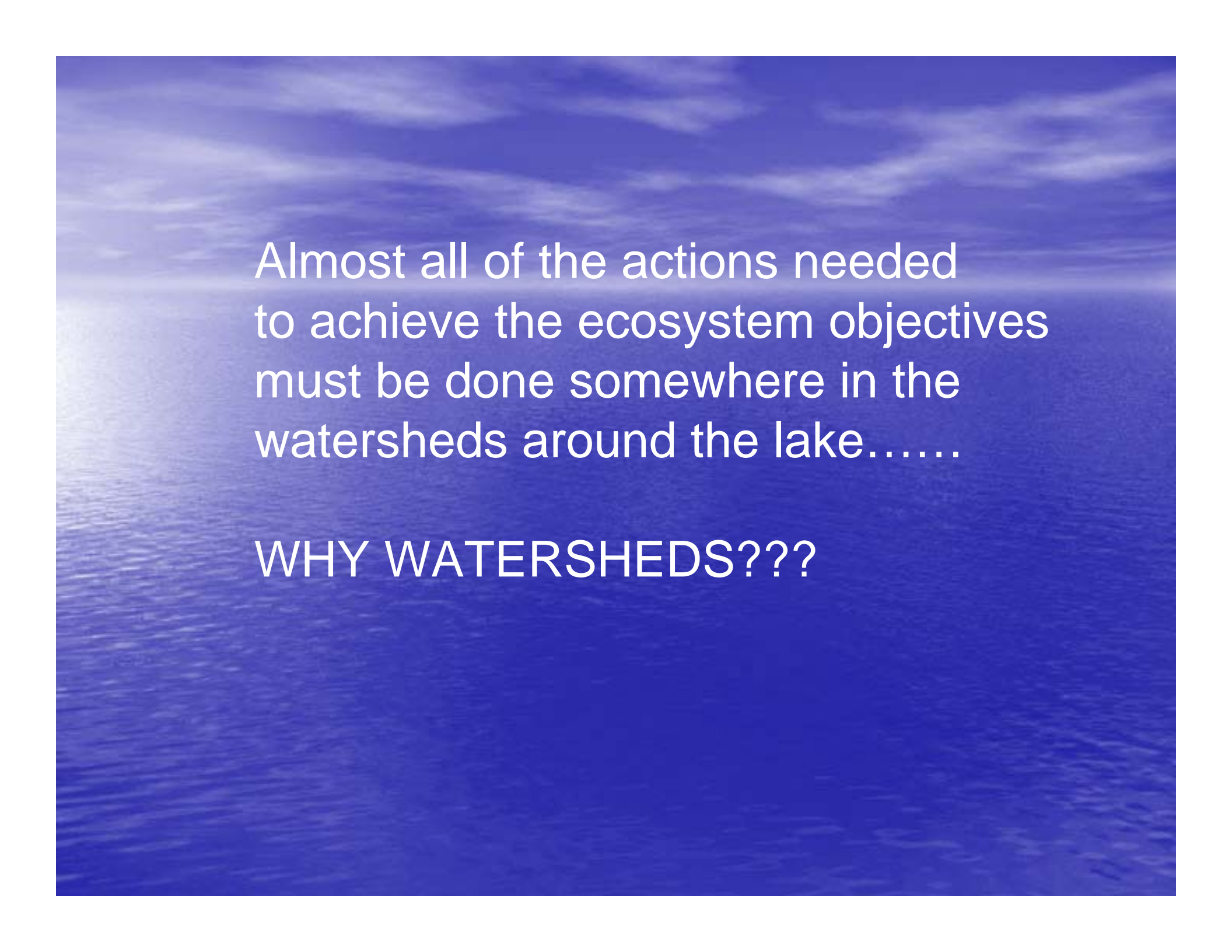
Measuring impacts on important ecosystem & economic processes

Measuring the current state of the various components of the Lake Erie ecosystem

Given the above ...

How does the Lake Management community implement actions to achieve vision for Lake Erie

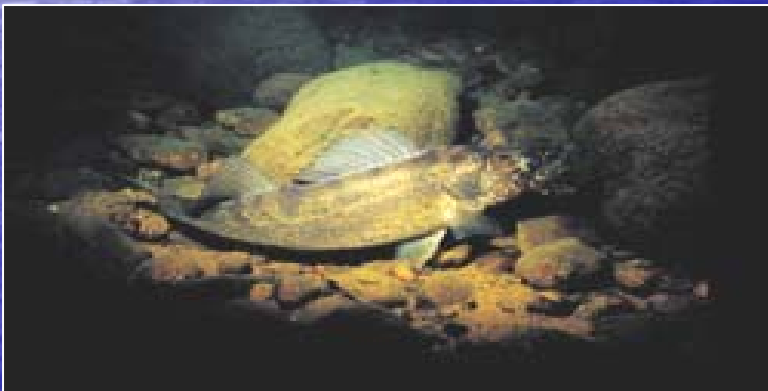




Almost all of the actions needed
to achieve the ecosystem objectives
must be done somewhere in the
watersheds around the lake.....

WHY WATERSHEDS???

WatershedsThe Good



- Link the land to the lake
- Affect nearshore WQ
- Discharge plumes important habitat feature
- Spawning, nursery and forage habitats for many lake-based fish and wildlife populations
- Estuarine/riverine wetlands essential to healthy lake aquatic communities
- Important component of international resource

Watershed: Indirect effects on Lake Erie



Excessive nutrients:

Cladophora and plankton blooms are common, and hypoxia in the central basin.

High levels of Suspended Solids:

Episodic - lethal conditions for aquatic life, reduced habitat quality, prevents macrophyte growth



Creates conditions for suitable for invasive species

Watershed: Direct Effects on Lake Erie



Temperature and Oxygen levels occasionally lethal

Dams preventing fish access, fragmenting river preventing movement of bedload



Wetlands loss & degradation

Channel alterations reduce habitat complexity

Actions needed to Achieve the Lake Erie Vision

- Restoration of functional landscapes and hydrological processes
- Reduce Non-point source inputs substantially
- Reduce Point Source – nutrients and PBTS
- Improve Habitat amount, complexity, linkages
- Fish and Wildlife populations rehabilitation
- Emerging issues science

How.....

- Work with existing watershed planning programs
 - Source Water Protection Groups/Focalerie
- Breakdown into components that watersheds groups can identify and relate to
- Link to open lake with Watershed & Coastal Management Plans
- Be specific as possible by setting targets identifying areas of interest, geographic focus eg. Grand River ON
- Recognition of implementation partners through institutional structures such as COA or separate agreements



Achieving the Lake Erie LaMP Vision

How continued.....

Key Initiatives (2007-2010)

Lake Erie LaMP 2008

Binational Nutrient Management Strategy

Cdn Habitat Assessments & Management Plans

- Lower Grand River
- Rondeau Bay
- Long Point Bay
- Lower Thames River (below London)
- Big Creek
- Coastal Wetlands: central & eastern basin
- Leamington South-east Shoreline Plan

Continue to develop Lake Erie LaMP Indicators

Engage Lake Erie Municipalities

Cooperative Monitoring Program 2009

Review LaMP structure

Lake Erie Binational Nutrient Management Plan

Goal: Achieve the LaMP Nutrient Ecosystem Management Objective.

Nutrient inputs from both point and non-point sources are managed to ensure that ambient concentrations are within bounds of sustainable watershed management and consistent with the Lake Erie Vision.

Why start with nutrients?

- In-lake concentrations of phosphorus have been on the rise
- Extensive *Microcystis* blooms and *Cladophora* growth are back rivaling those of the 1970s
- Hypoxia and anoxia in the central basin is more extensive and occurring earlier in the summer than previously

It's in the news.....

GREEN ALGAE BLOOM LIKELY IN 2 WEEKS

August 5, 2006 Toledo Blade (OH)

RE-EMERGENCE OF ALGAE THREATENS WATER QUALITY

July 9, 2005 Toledo Blade (OH)

HEALED ONCE, LAKE ERIE IN RELAPSE AS 'DEAD ZONES' DEVELOP

October 18, 2002 Chicago Tribune (IL)

TOXIC ALGAE RETURN TO LAKE ERIE

June 3, 1999 CNN.com

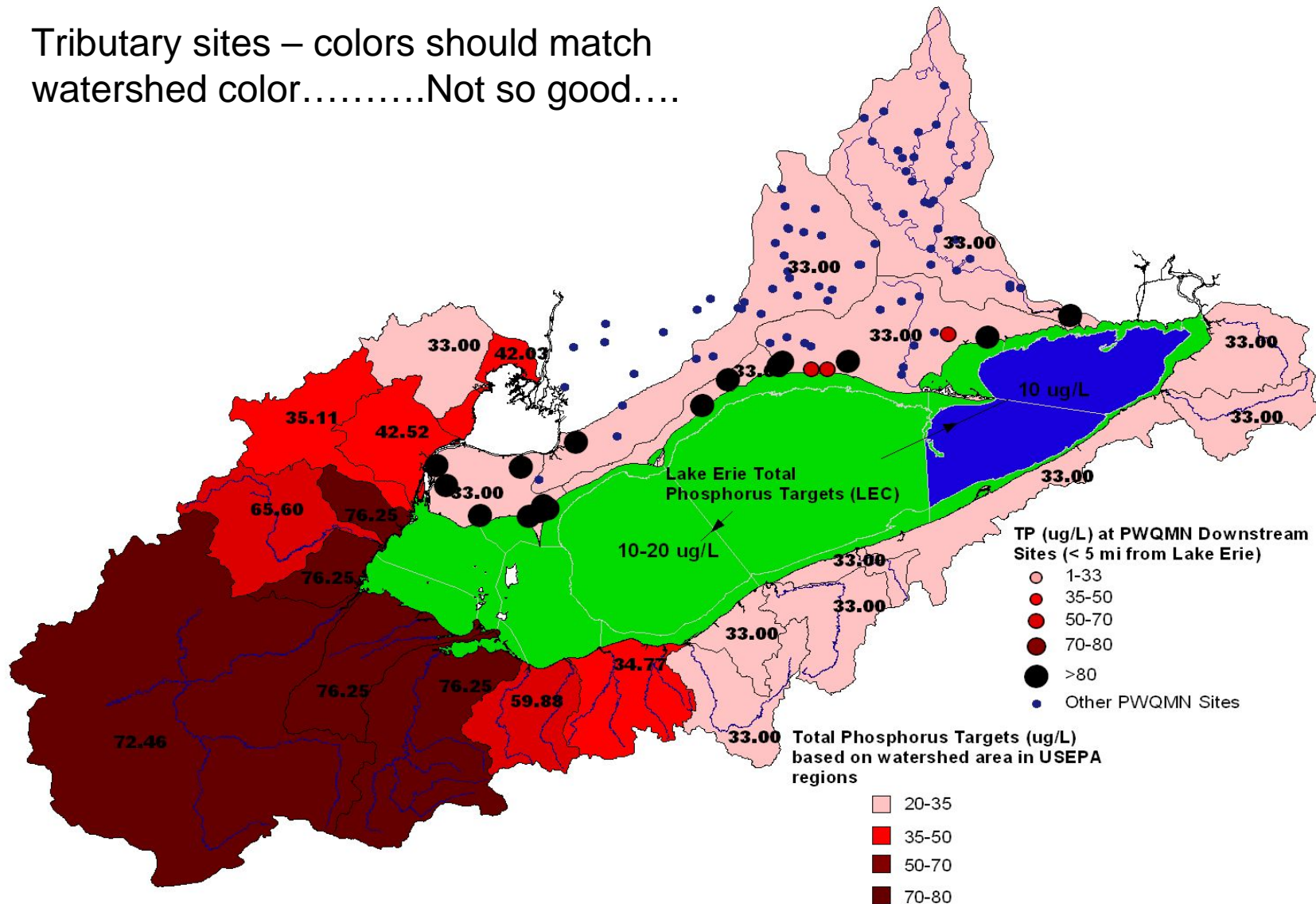
SCIENTISTS WARN OF LAKE ERIE ALGAE

August 31, 1998, Erie Times-News (PA)



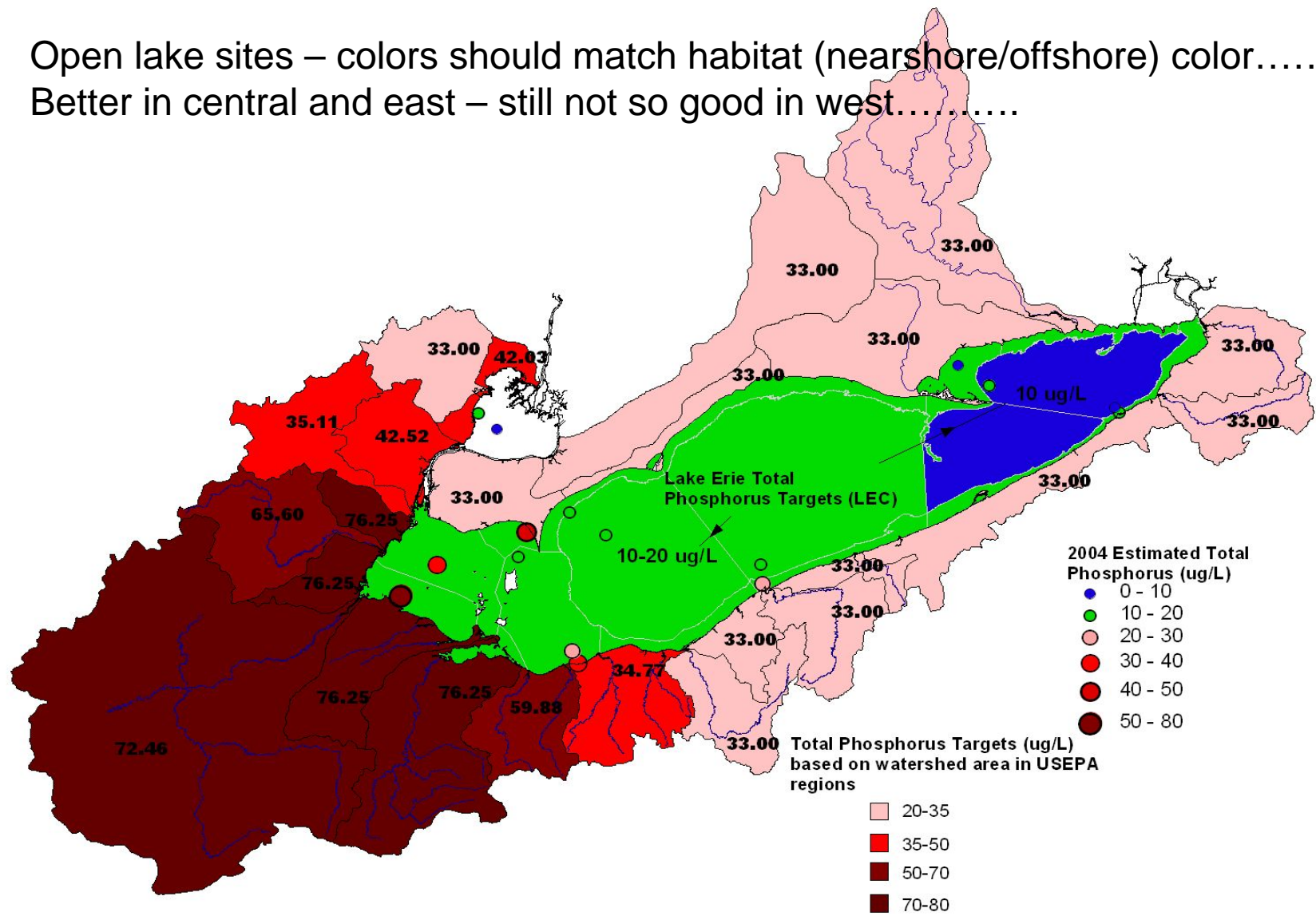
Tributaries (PWQMN data).....

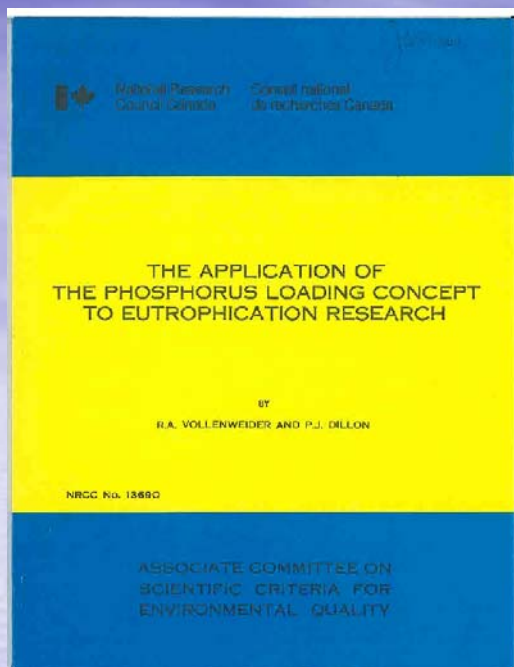
Tributary sites – colors should match watershed color.....Not so good....



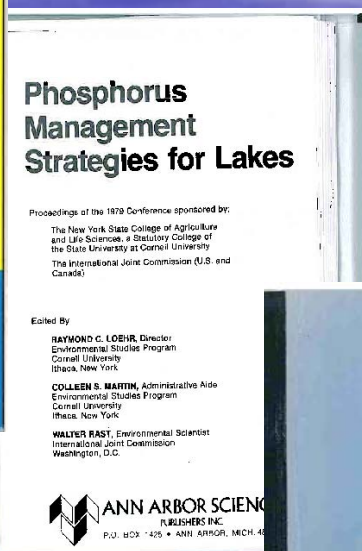
Nearshore & Open Lake (GLFC data).....

Open lake sites – colors should match habitat (nearshore/offshore) color.....
Better in central and east – still not so good in west.....

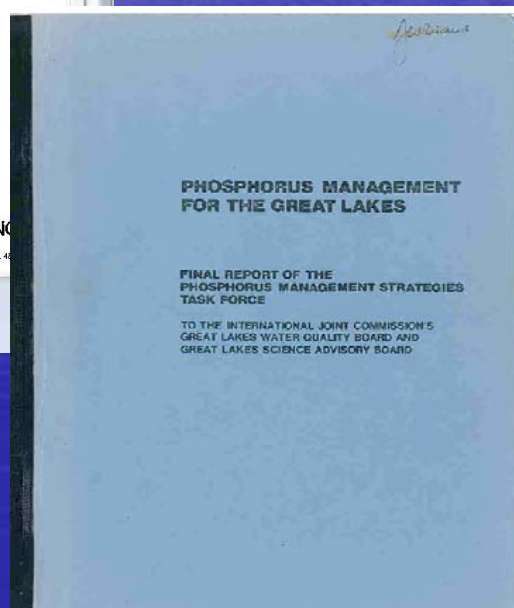




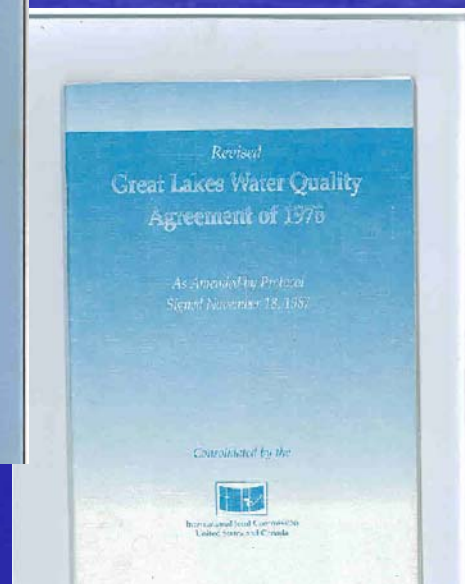
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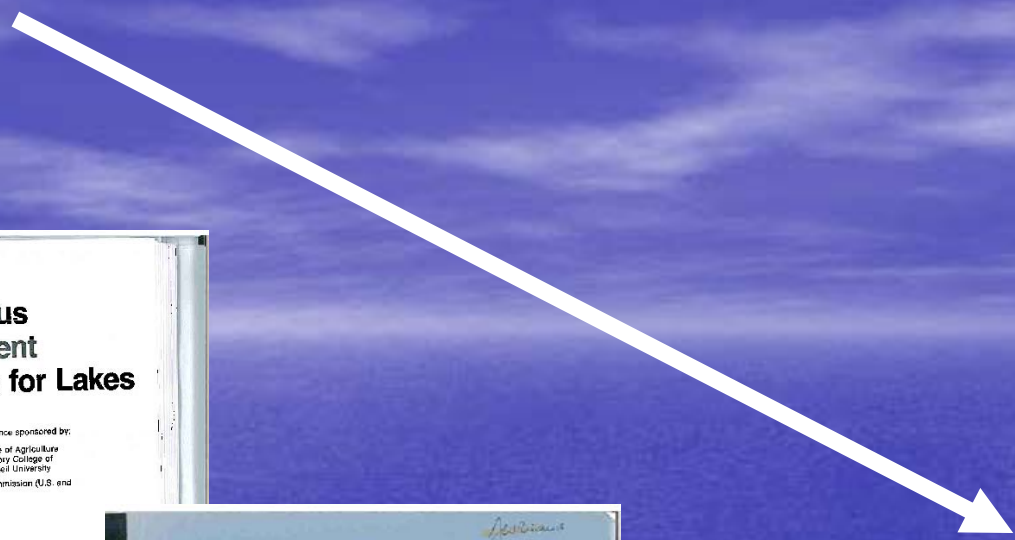
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1980



1987



Recent Scientific Studies

- 2004 Lake Erie Cooperative Monitoring Year (EC/GLNPO lead)
- 2005 International Field Year for Lake Erie (NOAA lead)
- 2006 Review of the Great Lakes Water Quality Agreement: The final report of Review Working Group D (phosphorus and non-point sources: Annex 3 and 13) to the Annex Review Committee.
- 2007 Detroit River Phosphorus Loadings Study: EC-WQMS
- 2007 Canadian Nearshore Dynamics Study: lead by MOE-EMRB and EC-NWRI.
- 2007 SRP stability study (Heidelberg College)
- 2007 University of Michigan Monitoring Project (Don Scavia)
- 2007 LEMN Phosphorus Group meeting (August 30)
- Etcetera....

Binational Nutrient Management Strategy



- State of Knowledge Report on Lake Erie Nutrients
- Binational Nutrient Management Plan
- Implementation/Commitment Plan
- Communications & Outreach Plan

Challenges to Implementation

- Communicating the LaMP message to watershed organizations and governments
- Sustained funding and program support for implementation, science and monitoring
- Incorporating LaMP goals and objectives into local land use, watershed, and coastal planning
- “Social marketing” to achieve a sustainable Lake Erie

