

# Lake Erie Protection & Restoration Plan 2008



## LEPR 2008

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# **TABLE OF CONTENTS**

Acronyms .....	v
Introduction .....	vii
Land Use and Lake Erie – LEPR 2000 .....	xiii
Priority: Nonpoint Source Pollution .....	1
Priority: Invasive Species .....	9
Priority: Coastal Health .....	13
Priority: Areas of Concern .....	19
Priority: Toxic Pollutants .....	25
Priority: Habitat & Species .....	29
Priority: Indicators and Information .....	33
Priority: Sustainable Development .....	37
Priority: Water Withdrawals .....	49
Priority: Climate Change .....	51
Public Comments .....	57



## Acronyms

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AOC	Area of Concern
BGWP	Balanced Growth Watershed Plan
BIGP	Boating Infrastructure Grant Program
BLLUP	Best Local Land Use Practice
BMP	Best Management Practice
BOW	Boating on Ohio's Waterways
CAFF	Concentrated Animal Feeding Facilities
CBF	Cooperative Boating Facilities
CELCP	Coastal and Estuarine Land Conservation Program
CGLG	Council of Great Lakes Governors
GLRC	Great Lakes Regional Collaboration
CSO	Combined Sewer Overflow
CVA	Clean Vessel Act
CZARA	Coastal Zone Act Reauthorization Amendments
DRP	Dissolved Reactive Phosphorus
GIS	Geographic Information Systems
GLLA	Great Lakes Legacy Act
GLRC	Great Lakes Regional Collaboration
HSTS	Home Sewage Treatment System
IJC	International Joint Commission
LaMP	Lakewide Management Plan
LEPR	Lake Erie Protection & Restoration Plan
LEQI	Lake Erie Quality Index
LESEMP	Lake Erie Shore Erosion Management Plan
LTCP	Long Term Control Plan
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
ODA	Ohio Department of Agriculture
ODH	Ohio Department of Health
ODNR	Ohio Department of Natural Resources
ODOD	Ohio Department of Development
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency (Ohio EPA)

OLEC	Ohio Lake Erie Commission
PAH	Polyaromatic Hydrocarbons
PCA	Priority Conservation Area
PCB	Polychlorinated Biphenyls
PDA	Priority Development Area
RAP	Remedial Action Plan
SFOSTS	Small Flow On-Site Sewage Treatment System
SWCD	Soil and Water Conservation District
SWMP	Storm Water Management Plan
TRI	Toxic Release Inventory
USEPA	United States Environmental Protection Agency
VHS	Viral Hemorrhagicsepticemia Virus
WAP	Watershed Action Plan

## Introduction

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Lake Erie has been a historically significant resource that drew many people to settle northern Ohio as it provided water for drinking and industry, shipping of commodities, commercial fishing, and waterborne transportation which brought many of our ancestors to Ohio. However, it has also served the role of waste disposal. Low lying wetlands were filled with waste garbage, debris, and hazardous waste, burning dumps marked the landscape, and across the shoreline sewage and industrial waste ran untreated into the Lake and its tributaries.

Most of us know the story of the dead Lake Erie, the burning Cuyahoga and its recovery in the past 35 years. But we also know that much remains to be done to realize the full potential that the Lake has to offer. The economic significance of the Lake to Ohio cannot be understated as an important source of water, transportation, recreation and tourism. In addition, the Lake provides identity and quality of life opportunities that will allow northern Ohio to attract the labor force of the future who can choose where they wish to live based upon amenities. Lake Erie is truly a vital and precious asset that will shape the future of Ohio just as it has shaped the past.

Recent studies have shown that while the overall restoration of the Great Lakes could cost \$26 billion, this expenditure would yield over \$50 billion in long term economic benefits and between

### Ohio Lake Erie Commission

The Ohio Lake Erie Commission is made up of the directors of the Ohio Departments of Agriculture, Development, Health, Natural Resources and Transportation, as well as the Ohio Environmental Protection Agency.

The mission of the Ohio Lake Erie Commission is to preserve Lake Erie's natural resources, protect the ecological quality of its watershed, and to promote economic development on the North Coast. This is accomplished through implementation of policies and programs of state government pertaining to such matters as water quality, habitat, recreation and tourism and resource management within the Lake Erie basin. These policies are implemented directly by the Ohio Lake Erie Commission and by its member state agencies. A significant role of the Commission is to ensure the coordination of policies and programs of state government pertaining to water quality, toxic substances, and coastal resource management. The Commission also oversees the Lake Erie Protection Fund which provides grants to public sector, academic and non-profit organizations for the protection and restoration of Lake Erie resources. Education and promotion of the importance of Lake Erie is the goal of the Commission public outreach activities.

\$30 and \$50 billion in short term benefits. These studies have also shown that there would be a direct benefit of \$2.1 to \$3.7 billion to the Cleveland area alone.<sup>1</sup>

The State of Ohio cannot wait for others to act if we are to realize this potential. This *Lake Erie Protection & Restoration Plan 2008* outlines actions that the Ohio Lake Erie Commission and its member agencies will take towards restoration of Lake Erie and its watershed.

### Lake Erie Quality Index: State of the Lake Report

In 1998 and again in 2004, the Ohio Lake Erie Commission released the *Lake Erie Quality Index: State of the Lake Report*. As its name implies, this document provided a baseline evaluation of the Lake's condition. Periodic updating of the *Index* allows the Commission to measure the effectiveness of our collective efforts to improve the Lake's quality. The *Lake Erie Quality Index* is an effort to gather available data to measure the status or quality of the Lake Erie ecosystem, establish specific goals and devise scoring systems to communicate the current condition of the Lake to the citizens of Ohio.

The good news is that Lake Erie and its surrounding Ohio watersheds have improved significantly since the dark days of the 1960s and 1970s when the Lake was a national embarrassment for Ohio. The *Lake Erie Quality Index*, released by the Ohio Lake Erie Commission most recently in 2004, evaluated 11 separate indicators of Lake Erie quality. Positive trends were seen in many environmental, economic, and recreational indicator scores.

However, water quality has begun to decline again after having previously improved. The investment of hundreds of millions of dollars in sewage treatment plant upgrades, adoption of pollution prevention technologies and improvements in industrial wastewater treatment have resulted in reaching our reduction goals for most point source pollutants. The adoption of many best management practices greatly reduced runoff from nonpoint sources. However, recent increases in soluble phosphorus apparently combined with the affects of the zebra and quagga mussel invasions have resulted in an increase in algal blooms and related declines in water clarity and quality. Noxious algae blooms have reappeared in the Western Basin and the so called "dead zone" or area of low to zero oxygen levels has been expanding in the Central Basin as well. Some related slippage in tourism was also noted. The bottom line is that the present condition of the Lake Erie watershed is not satisfactory for Ohio's future.

#### Lake Erie Quality Index 2004:

<i>Ambient Water Quality</i>	<i>Fair</i>
<i>Human Exposure Risks</i>	<i>Good</i>
<i>Pollution Sources</i>	<i>Fair</i>
<i>Aquatic Habitat</i>	<i>Fair</i>
<i>Land Use</i>	<i>No Score</i>
<i>Biological</i>	<i>Fair</i>
<i>Coastal Recreation</i>	<i>Good</i>
<i>Boating</i>	<i>Good</i>
<i>Fishing</i>	<i>Good</i>
<i>Beaches</i>	<i>Good</i>
<i>Economy</i>	<i>Fair</i>

<sup>1</sup> [http://www.healthylakes.org/site\\_upload/upload/America\\_s\\_North\\_Coast\\_Report\\_07.pdf](http://www.healthylakes.org/site_upload/upload/America_s_North_Coast_Report_07.pdf) and [www.glc.org/glinvestment](http://www.glc.org/glinvestment)

## Lake Erie Protection & Restoration Plan

The *Index* does not address what the State of Ohio, along with all its other private and public partners, needs to do to achieve the established environmental, recreational and economic goals.

The Commission previously spelled out what needed to be done in the *Lake Erie Protection & Restoration Plan* (LEPR), released in 2000. This *Plan* identified 84 action steps that the Ohio Lake Erie Commission would take to protect and restore Lake Erie. As the third and final progress report on that *Plan* demonstrates, a number of those actions have been completed, and most of the remainder are embodied in ongoing programs of the Ohio Lake Erie Commission agencies. However, after eight years, the 2000 *Plan* needs to be significantly updated to reflect newly emerging issues, the changing Lake Erie conditions, as well as the unified Great Lakes approach embodied in the Great Lakes Regional Collaboration.

## Great Lakes Regional Collaboration Strategy

In October 2003, Governors of the Great Lakes States released nine priorities for preserving and restoring the Great Lakes. This led to the establishment of the federally initiated Great Lakes Regional Collaboration which brought together 1,500 individuals in a year-long effort to identify the most important steps needed to restore the Lakes. The *Great Lakes Regional Collaboration Strategy to Protect and Restore the Great Lakes* was released in

### Lake Erie Quality Index Facts:

- *Since the original European settlement of the Ohio Lake Erie watershed, over 90% of our Lake Erie marshlands have been filled or converted to some other use.*
- *None of our 12 major Lake Erie tributaries' shoreline areas are rated "excellent" by the Qualitative Habitat Evaluation Index (QHEI) - and only one is considered in "good" condition. On the other hand, five rated only "fair" and six received a ranking of "poor."*
- *Of the 11,649 square miles comprising the Ohio Lake Erie watershed, over 78% has been altered from its original state - only 22% remains relatively intact as forest cover or wetlands, posing severe challenges for sustaining a healthy ecosystem.*
- *On average, some 1.1 million tons of sediment are transported every year down Ohio's four largest tributaries (Maumee, Sandusky, Cuyahoga and Grand Rivers). This is three times the desired load calculated in the Lake Erie Quality Index as essential to reduce detrimental sediment loading impacts.*
- *Although vastly improved from the 1960s and 1970s, our Lake Erie beaches are still under a "No Swimming" advisory some 20% of the summer due to nearshore bacterial contamination.*
- *The Lake Erie nearshore areas cannot support healthy biological communities across the shoreline. Of 23 areas assessed by the Index of Biotic Integrity (IBI), none are rated as "excellent," three are "good," fifteen rate "fair" and five receive a rating of "poor."*

December 2005. The Collaboration Strategy is based on eight of the nine Governors' priorities. The remaining priority –reducing the impacts of water withdrawals was addressed separately through the Great Lakes Charter Annex Initiative.

### Ohio's Lake Erie Action List

*Ohio's Lake Erie Action List* identified those activities that were pursued by the member agencies of the Ohio Lake Erie Commission during 2006 and 2007. That timeframe recognized the *Great Lakes Regional Collaboration's* intent that implementation begin with defined actions that can be accomplished within one to two years. The actions on this list were to be accomplished with available funding from a variety of sources. In addition to representing Ohio's proactive initiative to implement the *Great Lakes Regional Collaboration Strategy*, *Ohio's Lake Erie Action List* also enhanced the State's ongoing work to protect and restore Lake Erie. *Ohio's Lake Erie Action List* reflected both the broad recommendations in the *Great Lakes Regional Collaboration Strategy* and the strategic direction of the *Lake Erie Protection & Restoration Plan*.

### Related Planning

There are several related planning efforts that have contributed to the improvement of Lake Erie and which are coordinated with the *Lake Erie Protection & Restoration Plan*. The State of Ohio has developed the Ohio Coastal Management Program outlining current state coastal legislation and management policies. Ohio has been a participant in the production of *Lakewide Management Plan* (LaMP) for Lake Erie waters to identify critical pollutants that impair beneficial uses and to develop recommendations, strategies, and policy options to restore these beneficial uses. Related efforts include the *Ohio Sea Grant Strategic Plan* and the *Western Lake Erie Basin Plan* developed by a consortium of federal and state agencies.

#### Land Use Change in the Lake Erie Watershed

- *Between 1960-1990, for every one percent increase in population, there was a corresponding five percent increase in the conversion of green space to urbanized land use.*
- *While Lake Erie may be one of the most beautiful places on earth, there are very few places where people can enjoy this wondrous Lake. Only 13% of its 312-mile Ohio shoreline is accessible to the public.*
- *From 1954-1992, over 50% of the cumulative available farmland in Ashtabula, Cuyahoga, Lake, Medina, Portage and Summit counties was taken out of cultivation and converted to industrial or residential use.*

### Lake Erie Protection & Restoration Plan 2008

It is important to put the *Lake Erie Protection & Restoration Plan* into context with all of the ongoing state efforts to enhance the Lake. The Ohio Lake Erie Commission agencies – along

with local communities, the federal government and numerous private efforts – have been continuously engaged in working to protect and restore Lake Erie. Nothing in this *Plan* is meant to minimize the importance of all these activities. The purpose of this *Plan* is solely to identify the strategic direction and the near term actions of the State of Ohio related to Lake Erie and its watershed. This *Plan* communicates what is being done and coordinates its action through the Ohio Lake Erie Commission. This *Plan* also provides a statement of what Ohio is doing to implement the *Great Lakes Regional Collaboration*. In 2014, we will update the *Lake Erie Quality Index* and the results of our action will be measured through that *Index*.

The *Plan* is organized into 10 Ohio priorities which includes the nine priorities established by the Great Lakes Governors plus the priority of “Climate Change” which was deemed of great significance to the Ohio Lake Erie Commission and worthy of being added.

A goal or goals have been established for each priority. Strategic Objectives which reflect those items to be accomplished through 2014 were then assigned to the goals and Actions toward these Strategic Objectives for fiscal years 2009-2011 were established. Many of these Actions will be dependent upon funding in the next Biennium Budget. This plan will help serve as direction for the state agencies as they prepare that budget request. Further action towards the Strategic Objectives in FY 2012-2013 will be determined through future updates of the LEPR.

Many of the goals and Strategic Objectives are not new but reflect ongoing activities from the *Lake Erie Protection & Restoration Plan* and *Ohio’s Lake Erie Action List*. This *Plan* will replace both of those previous documents. There are also new goals and new Strategic Objectives, which is reflective of the dynamic nature of Lake Erie and the need for us to address these changes. The *Plan* is summarized here as it outlines the highlights of Ohio’s activities related to Lake Erie. *Appendix A* contains many of the details that are summarized in this *Plan*.

This *Plan* should provide a road map for Ohio’s efforts related to Lake Erie until 2014. Periodic updates will be included along with the *Plan* at the Ohio Lake Erie Commission website: <http://lakeerie.ohio.gov>.

#### Organization of the LEPR 2008

*Priority – based on the GLRC priority areas, these broad topics help provide an organizational structure for the LEPR 2008.*

*Goal – a goal for progress within Ohio has been established for each priority. These goals may not be reached by 2014, but provide a strategic long term focus for state activities.*

*Great Lakes Perspective – a summary of each priority at the Great Lakes scale is provided for background.*

*Ohio’s Lake Erie Watershed – a summary of each priority within Ohio’s Lake Erie Watershed is provided for background.*

*Strategic Objective – provides for a clear goal for action by 2014 (unless otherwise noted). Not all of these goals will be met, but significant progress towards each is expected.*

*Actions – outline specific activities planned by the OLEC agencies over the next three fiscal years. Implementation of these activities is dependent upon funding through the state budget process for FY 2010-2011. A separate set of actions for 2012-2013 will further progress towards the Strategic Objectives.*



## Land Use and the Lake – LEPR 2000

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“During discussions with our stakeholders and in constructing the list of recommendations, a recurring theme resonated throughout our work.

The first point of that theme was the acknowledgment that the problems experienced in the Lake itself or in our streams and rivers were not caused just by local sources, but rather by the cumulative result of actions taken throughout the watershed. Simply stated, the quality of Lake Erie is a reflection of the quality of the entire watershed. Moreover, we are only fooling ourselves if we believe we can address the Lake in isolation, separating it from the influences of its drainage basin. We must truly consider the entire Lake Erie ecosystem in devising a plan to protect and restore our Lake and protect public health.

### Activities in the Ohio Lake Erie watershed should:

1. Maximize reinvestment in existing core urban areas, transportation, and infrastructure networks to enhance the economic viability of existing communities.
2. Minimize the conversion of green space and the loss of critical habitat areas, farmland, forest and open spaces.
3. Limit any net increase in the loading of pollutants or transfer of pollution loading from one medium to another.
4. To the extent feasible, protect and restore the natural hydrology of the watershed and flow characteristics of its streams, tributaries and wetlands.
5. Restore the physical habitat and chemical water quality of the watershed to protect and restore diverse and thriving plant and animal communities and preserve our rare and endangered species.
6. Encourage the inclusion of all economic and environmental factors into cost/benefit accounting in land use and development decisions.
7. Avoid development decisions which shift economic benefits or environmental burdens from one location to another.
8. Establish and maintain a safe, efficient and accessible transportation system that integrates highway, rail, air, transit, water and pedestrian networks to foster economic growth and personal travel.
9. Encourage that all new development and redevelopment initiatives address the need to protect and preserve access to historic, cultural and scenic resources.
10. Promote public access to and enjoyment of our natural resources for all Ohioans.

The second point was that the development of northern Ohio often occurred without fully understanding or anticipating the impact this development would have on the natural and social

environment. Too often, our land use and development decisions have accelerated erosion and nonpoint pollution, urban sprawl, abandonment of central cities, congestion of streets and highways, the loss of natural habitat and farmland, and degraded the health and diversity of plant and animal communities.

The final point and ultimate conclusion of our groups was that **we must fundamentally change the manner in which we make land use, energy use and development decisions in the Lake Erie watershed.** Our predisposition to view activities in isolation has resulted in a less than healthy Lake Erie ecosystem that cannot support healthy natural communities of aquatic plants and animals. Neither can it provide the full range and scope of benefits and enjoyment that we should expect from living along the shores of one of the five Great Lakes. What actually resulted from this planning effort was not so much a list of discrete and disparate recommendations for improvement. Rather, woven throughout the 84 recommendations are a set of basic philosophies or *“Guiding Principles”* for how we view ourselves in relation to the environment around us. These principles connect our desires for a healthy and sustainable environment, while at the same time stimulating a robust and competitive economy and ensuring a sustainable future for northern Ohio and its citizens.”<sup>2</sup>

**Reports by the Ohio Lake Erie Commission:**

1992 State of the Lake Report	Winter 1993
1998 State of the Lake Report	Summer 1998
Lake Erie Protection & Restoration Plan (2000)	Fall 2000
First Annual Progress Report, LEPR	Fall 2001
Second Progress Report, LEPR	Fall 2004
2004 State of the Lake Report	Fall 2004
Lake Erie Action List	Fall 2006
Third Progress Report, LEPR	Fall 2006
Lake Erie Protection & Restoration Plan (2008)	Fall 2008

All Reports produced by the Ohio Lake Erie Commission are available online at <http://lakeerie.ohio.gov>

<sup>2</sup> Lake Erie Protection & Restoration Plan 2000, p. 6-7

## Priority: Nonpoint Source Pollution

**Goal:** *Reduce nonpoint source loadings to Lake Erie tributaries.*

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### Great Lakes Perspective:

“Water pollution from nonpoint sources is a substantial contributor to the impairment of waters across the Great Lakes basin. Nonpoint source pollution is present throughout the basin, in many forms and with many interactions. The complexity of the pollutants and their presence in soil, water, and air make pollution abatement for nonpoint sources particularly difficult to address.”<sup>3</sup> Coastal Ohio, especially western Lake Erie has been identified as an area of severe impact from nonpoint source pollution within the Great Lakes basin.

Nonpoint source pollution can be divided into five stressors: nutrients, contaminants, pathogens, sedimentation, and altered flow regimes. These stressors enter the ecosystem through three primary pathways: surface runoff, groundwater infiltration, and atmospheric deposition.<sup>4</sup>

### Ohio’s Lake Erie Watershed:

Within Ohio, sediment continues to reign as the primary nonpoint pollutant of concern, followed closely by impairment from nutrients and habitat modification. A goal reduction of 33% from the 2007 baseline sediment loads has been set as a part of this *Plan*. As well, nutrient loading to Lake Erie, particularly dissolved reactive phosphorus (DRP), has emerged as another primary issue of concern. Ohio EPA organized a Phosphorus Task Force in 2007 to address DRP levels, making the completion of this group’s work and the implementation of their recommendations a primary strategy for reversing current trends. A suite of practices focused on the riparian corridor and upland areas targeting agricultural, rural residential, urban, coastal, and forest land use have been proposed or are currently being implemented in an effort to combat nonpoint source pollution in its many forms.

### 2014 Strategic Objectives:

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal for nonpoint source pollution reductions. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI).

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<sup>3</sup> Great Lakes Regional Collaboration Strategy, p. 41

<sup>4</sup> Great Lakes Regional Collaboration Strategy, p. 41

Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

### **Reverse increasing nutrient loading to Lake Erie, especially Dissolved Reactive Phosphorus:**

Recent reviews of phosphorus loading to Lake Erie from Ohio tributaries have shown that trends in dissolved reactive phosphorus loading differ greatly from trends in particulate phosphorus loading. Nonpoint phosphorus control programs focused on reducing particulate phosphorus loading through erosion control measures and use of buffer strips to trap sediments. The tributary loading data illustrate the success of these programs in reducing particulate phosphorus. The reviews show that dissolved reactive phosphorus loading decreased even more rapidly than particulate phosphorus up through the mid-1990s. Since that time, however, dissolved reactive phosphorus loading has increased dramatically to the point where it now is approaching the same loads as in the late 1970s and early 1980s. Algal trends in Lake Erie appear to match the trends in dissolved reactive phosphorus loading much more closely than they match the trends in either total phosphorus or particulate phosphorus loading.<sup>5</sup>

#### FY 2009-2011 ACTIONS

- ✓ Complete the Phosphorus Task Force recommendations report. → OEPA
- ✓ Implementation of priority Phosphorus Task Force recommendations. → OEPA
- ✓ Adopt new water quality criteria for nutrients in 2009. → OEPA
- ✓ Incorporate an analysis of stream assimilative capacity in small agricultural catchments as part of Ohio EPA's TMDL protocols. → OEPA

### **Facilitate adoption of model regulations for storm water management and riparian and wetland setbacks by local jurisdictions:**

The Best Local Land Use Practices recommended by the Ohio Lake Erie Commission contain a wealth of information on how communities can update and adapt their land use and zoning codes to incorporate better storm water management, reduce impacts to waterways and watersheds, enhance the development environment, and provide for a higher quality of life.<sup>6</sup>

#### FY 2009-2011 ACTIONS

- ✓ Support education of communities on model regulations through the Ohio Lake Erie Commission's Lake Erie Balanced Growth Program. → OLEC, ODNR

<sup>5</sup> Lake Erie Phosphorus Task Force – Rationale Statement - <http://www.epa.state.oh.us/dsw/cafo/PTaskForce/RationaleforWorkGroupformation.pdf>

<sup>6</sup> Linking Land Use and Lake Erie – Best Local Land Use Practices – p. 4

### **Reduce agricultural sediment loading from the Lake Erie watershed by 33% from 2007 baseline:**

Nonpoint pollution is the primary cause of continued degradation of Lake Erie and its tributary streams. Additional efforts are necessary to address nonpoint pollutants, particularly from agriculture, streambank erosion, and construction site runoff. Sediment, the primary nonpoint pollutant in the Lake Erie basin, impacts streams, rivers, bays, and the Lake in numerous ways – both environmentally and economically.<sup>7</sup> The proposed 33% reduction continues the linear trend currently being achieved within the basin, according to data from the National Center for Water Quality Research. It is appropriate to maintain a goal that considers increasing stream flow patterns, more intense storm systems, and the ability of cleaner streams to pick up more materials from streambeds, thus limiting the total load reduction possible through upland practices. The 2007 Maumee load was 736,000 metric tons. If used as a proxy for the western basin, the Maumee target for 2014 would be 495,000 metric Tons.<sup>8</sup>

#### FY 2009-2011 ACTIONS

- ✓ Support development and implementation of Endorsed Watershed Action Plans for Lake Erie Tributaries. → ODNR
- ✓ Support development and implementation of Watershed Action Plans through Ohio Coastal Management Program grant programs. → ODNR
- ✓ Research the potential impact of groundwater flow on the overall effectiveness of buffers. → ODNR
- ✓ Support implementation of Lake Erie CREP. → ODNR

### **Implement approved management measures in Ohio's Coastal Nonpoint Pollution Control Program:**

The Coastal Nonpoint Program is framed around a set of "management measures," defined by NOAA as "economically achievable measures to control the addition of pollutants to our coastal waters." The management measures are grouped into five chapters of the *Coastal Nonpoint Program Plan* by source category: agricultural sources, urban areas, marinas and recreational boating, hydromodification, and wetlands and riparian areas. In addition to the management measures, each chapter includes discussion of the various programs, enforceable policies, and mechanisms currently available to implement the management measures. The Ohio Coastal Nonpoint Program will be considered a complete success when all of the management measures are implemented throughout Ohio's Lake Erie basin.<sup>9</sup>

#### FY 2009-2011 ACTIONS:

<sup>7</sup> Lake Erie Protection & Restoration Plan 2000 – p. 17

<sup>8</sup> Personal Communication with Dave Baker & John Crumrine, National Center for Water Quality Research by ODNR Staff.

<sup>9</sup> Ohio Coastal Nonpoint Pollution Control Program, Executive Summary – p. 4

- ✓ Prioritize implementation of endorsed Watershed Action Plans in reviewing Coastal Management Assistance Grant applications. → ODNR
- ✓ Implement the Irrigation Water Management Program in Lake County and Lake Erie Watershed. → ODNR
- ✓ Increase the number of pledged and certified Ohio Clean Marinas. → ODNR
- ✓ Increase the state and local funding support for the Ohio Watershed Coordinator Program in the Lake Erie Watershed, including support for development & implementation of Endorsed Watershed Action Plans. → ODNR

**Develop an implementation strategy for the 15 Coastal Nonpoint Pollution Control Program management measures not yet approved:**

The Coastal Nonpoint Pollution Control Program, which falls under Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), is jointly administered by NOAA and the US Environmental Protection Agency (USEPA). The Program establishes a set of management measures for states to use in controlling polluted runoff, rather than cleaning up already contaminated water. The measures are designed to control runoff from six main sources: forestry, agriculture, urban areas, marinas, hydromodification (shoreline and stream channel modification), and wetlands and vegetated shorelines, or riparian areas. These measures are backed by enforceable state policies and actions—state authorities that will ensure implementation of the program. All coastal and Great Lakes states and territories, which participate in the Coastal Zone Management Program are required to develop coastal nonpoint pollution control programs.<sup>10</sup>

FY 2009-2011 ACTIONS:

- ✓ Achieve full federal approval of *Ohio's Coastal Nonpoint Source Pollution Control Program Plan* by NOAA and USEPA. → ODNR

**Apply pesticides and fertilizers more efficiently:**

Misuse and abuse of pesticides and fertilizers can have an impact on the environment and human health. Management of these substances from purchase through proper disposal of the packaging is necessary to fully minimize the potential for unintended impacts. Licensing of dealers and applicators is an important ongoing part of this program. Additionally, the *Pesticide Clean Sweep Program* provides farmers with a free opportunity to safely dispose of unused chemicals.

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<sup>10</sup> The Coastal Nonpoint Pollution Control Program, NOAA, <http://coastalmanagement.noaa.gov/nonpoint/welcome.html>

FY 2009-2011 ACTIONS:

- ✓ Conduct outreach and education on the proper use of pesticides and fertilizers, soil testing and interpreting soil analysis. → ODNR
- ✓ Explore development of a Technician Development Program module on pesticide application to train SWCD technicians. → ODNR
- ✓ Work with farms that store more than 5,000 gallons of fertilizer to establish dike systems to ensure compliance with secondary containment requirements of 2007. → ODA
- ✓ Offer training and testing to ODA licensed pesticide dealers and applicators to assure safe use of pesticides and prevent mishandling and misuse. → ODA
- ✓ Partner with USEPA on "Pesticide Clean Sweep Program," to provide farmers with free opportunity to safely dispose of unused chemicals. → ODA
- ✓ Test well samples for pesticides throughout state, including karst areas of Lake Erie Watershed. → ODA

**Reduce nonpoint source pollution originating from animal feed lots:**

Concentrated Animal Feeding Facilities (CAFFs) have been increasing in the Lake Erie Basin, as the aggregate number of livestock, and total number of livestock farms, has decreased in the Lake Erie Basin since the mid-twentieth century. The economics of production has been driving the practice of housing larger and larger number of animals on a single farm. The increased concentration of animals results in larger amounts of animal waste to be managed on a single farm, which in turn creates public concern. Large facilities are currently regulated by the Ohio Department of Agriculture with delegation of wastewater regulatory authority pending USEPA approval. Smaller livestock farms receive oversight and assistance from Soil and Water Conservation Districts. In addition to regulating and managing current practices, the ODA is interested in promoting anaerobic digestion of the animal waste. This is a low or no oxygen process that decomposes the waste and creates methane gas, an alternative energy source.

FY 2009-2011 ACTIONS:

- ✓ Acquire NPDES permitting authority via coordination with USEPA. → ODA
- ✓ Promote adoption of anaerobic digester technology to utilize waste on livestock farms. → ODA
- ✓ Address livestock operations that are polluting or have a high potential to discharge to waters of the state. Investigate and resolve pollution complaints in the Lake Erie Basin. → ODNR, ODA

- ✓ Train soil and water conservation district technicians on animal waste management through the Technician Development Program. → ODNR
- ✓ Train livestock managers on proper management of livestock wastes through the Livestock Environmental Assurance Program. → ODNR

### **Ensure permitted municipal separate storm sewer system (MS4s) are fully implementing their Storm Water Management Programs (SWMPs):**

The Phase II Rule defines a small MS4 storm water management program as comprised of six minimum control measures that, when administered in concert, are expected to result in reduction of the discharge of pollutants into receiving water bodies. Operators of regulated small MS4s are required to design their programs to do the following: reduce the discharge of pollutants to the "maximum extent practicable" (MEP), protect water quality and satisfy the appropriate water quality requirements of the Clean Water Act. Implementation of the MEP standard will require the development and implementation of best management practices and the achievement of measurable goals to satisfy each of the six minimum control measures.<sup>11</sup>

#### FY 2009-2011 ACTIONS:

- ✓ Complete audits of the permitted MS4s in the Lake Erie basin by 2011. → OEPA
- ✓ Review and renew the Toledo MS4 permit by 2010. → OEPA
- ✓ Develop and propose unique construction general permits for the Grand, Chagrin and Old Woman Creek watersheds. → ODNR

### **Reestablish more natural flow regimes to Lake Erie tributaries:**

Habitat and flow alterations result from the manipulation of drainage. Common practices in agricultural areas include channelization, installation of subsurface tile systems, and removal of riparian vegetation. Riparian areas and wetlands provide free services to their watersheds, naturally control flooding, maintaining adequate low flow stream volumes, limiting erosion, and protecting water quality. In urban and urbanizing areas, increased impervious surfaces, the removal of riparian vegetation, channelization of streams, addition of impervious surfaces in stream channels, and piping streams all impact stream flow. Channelized streams are constructed to increase capacity, flow rate, and efficiency of upland drainage systems. A lower water table facilitates the use of land for building structures and the cultivation of fields. The removal of vegetation facilitates long-term maintenance or is simply done for perceived aesthetic benefits. Habitat lost from channelized streams and removal of vegetation directly impacts biological communities by limiting the complexity of living spaces available to aquatic organisms. Consequently, communities are not as diverse. Very efficient drainage systems keep water from ponding and slowly filtering through the soil, thus recharging groundwater and

<sup>11</sup> MS4 Program, Ohio EPA, <http://www.epa.state.oh.us/dsw/storm/ms4.html>

augmenting the stream at a lower volume and more sustained rate. The end result is flows that are flashy and streams that frequently become intermittent or dry.<sup>12</sup>

FY 2009-2011 ACTIONS:

- ✓ Train local communities regarding design of post-construction storm water practices → ODNR
- ✓ Evaluate criteria for storm water volume control to maintain pre-development flow regime → ODNR
- ✓ Develop and propose a new use designation in the Ohio water quality standards to address upland drainage needs that is consistent with Clean Water Act goals and provides an effective linkage to the BMP guide for rural drainage construction → OEPA

**Investigate approaches to remediation of harmful algal blooms (HABs):**

The presence of algal blooms in western Lake Erie tends to closely match trends in DRP levels within the Lake. However, there is not yet a complete understanding of the presence of HABs, nor is there a plan for how to address them. The presence of *lyngbya wollei*, *microcystis*, and other potentially harmful algal blooms is of concern due in large part to their potential impacts on wildlife, human health, and drinking water supplies. Additional research and action is needed to address HABs in Lake Erie.

FY 2009-2011 ACTIONS:

- ✓ Support research on causes and potential solutions to HABs including *microcystis* and *lyngbya wollei*. → OLEC
- ✓ Develop an interagency effort to identify, track, and report on blue-green algal blooms and issues related to potential algal toxin releases. → OEPA

**Develop state actions that will reduce open lake disposal and develop management plans for dredged material for all federal and state harbors:**

Annual dredging is necessary to maintain shipping channels at ports across Lake Erie's south shore. Open lake disposal moves these sediments and their associated pollutant loads into Lake Erie from the harbors. Approximately 1.25 million yd<sup>3</sup> of sediment must be dredged from the Port of Toledo each year, the most of any harbor in the Great Lakes. In addition to upland practices aimed at sediment control and erosion reduction in urban and agricultural areas, a strategy for the reduction, and eventual elimination of open lake disposal, and the best management of dredged materials is necessary to achieve the highest possible reduction of

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<sup>12</sup> Total Maximum Daily Loads for the Upper Sandusky River Watershed, p. 33

loading to Lake Erie. Developing a fiscally responsible solution for the use or disposal of dredged materials is a step towards the elimination of open lake disposal.

FY 2009-2011 ACTIONS:

- ✓ Develop and propose water quality criteria for the western basin that would result in a prohibition of open lake disposal in excess of 50,000 cubic yards by 2011. → OEPA
- ✓ Identify funding options for the State of Ohio to participate in a feasibility cost share agreement with the US Army Corps of Engineers for the analysis of a habitat restoration project that would utilize dredged materials from the Toledo Harbor to create new island habitat in the western basin. → OEPA
- ✓ Identify available permitting mechanisms to allow the Toledo Port Authority to pursue beneficial reuse of dredged materials from the Toledo Harbor. → OEPA
- ✓ Provide grant funding to develop a sand bypassing system at Geneva State Park. → ODNR
- ✓ Assist with evaluation of Dredged Material Management Plans at federally maintained harbors on Lake Erie. → ODNR

**Protect, restore, and enhance headwater streams :**

Headwater streams with a watershed area generally less than one square mile are termed primary headwater streams. Over 80% of stream miles in Ohio are composed of these primary headwater streams. Primary headwater streams are like the capillary system of a blood supply network – just as the health of the whole organism depends upon a functioning capillary system, the health of larger streams and rivers depend upon an intact primary headwater stream network.<sup>13</sup>

FY 2009-2011 ACTIONS:

- ✓ Develop a BMP guide for rural drainage construction and maintenance based on the work of the Rural Drainage Advisory Committee → ODNR
- ✓ Evaluate stream corridor setback recommendations based upon the stream beltway concept → ODNR
- ✓ Evaluate the ability of actively restored headwater streams to provide desired environmental services, e.g. channel stability, biological diversity, habitat, nutrient cycling, flood attenuation, and sediment removal → ODNR
- ✓ Provide technical support and guidance for local headwater stream protection and restoration projects → ODNR

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<sup>13</sup> The Importance and Benefits of Primary Headwater Streams, Fact Sheet, Ohio EPA

## Priority: Invasive Species

**Goal:** *Minimize the potential for invasive species to negatively affect native fauna and flora habitat.*

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### Great Lakes Perspective:

While there has been significant progress towards the restoration of the Great Lakes over the past three decades, the presence of invasive species threaten aquatic and terrestrial ecosystems across the region. High-profile invasions such as zebra mussels, purple loosestrife, and emerald ash borer have brought attention to this issue, but have done little to impact the rate at which new species are introduced. Once established, eradication of a new species is most certainly impossible. Vectors including ship ballasts, recreational boats, landscaping practices, and intentional introduction have all contributed to the proliferation of invasive fish, mussel, plant, bird, and insect species that have now impacted the Great Lakes.<sup>14</sup>

### Ohio's Lake Erie Watershed:

Within Ohio, both aquatic and terrestrial species continue to be of great concern. Round goby, zebra and quagga mussels, sea lamprey, purple loosestrife, garlic mustard, emerald ash borer, and phragmites are just a few of the more publicly visible species that now call the Lake Erie watershed home. These aggressive species out compete native species, creating monocultures which lack the diversity necessary to support the intricate food web that has evolved around Lake Erie's productive ecosystem. Beyond food web and habitat impacts, species such as mussels have impacts on the water column and nutrient cycling that scientists are still working to fully comprehend. A potential link between mussels and harmful algal blooms illustrates how these invasive species alter the dynamics of the system and further complicating attempts to manage and improve the quality of Lake Erie and its tributaries. The compounding impact of climate change will likely have additional impacts on the viability and distribution of invasive species into the future.

### 2014 Strategic Objectives:

The following Strategic Objectives have been identified to help move Ohio closer to its goal for addressing invasive species issues. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

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<sup>14</sup> Great Lakes Regional Collaboration Strategy, p. 17

**Eliminate the introduction of invasive species to the Lake Erie basin:**

The elimination of an invasive species from the Lake Erie ecosystem is nearly, if not completely, impossible. The single most powerful tool for combating the impacts of invasive species is to stop their introduction. Airborne species are likely the most difficult to manage. Terrestrial and aquatic species are almost exclusively moved through human actions. Ballast water management is a key technique to prevent foreign invasives that inadvertently are introduced through shipping. However, there is a need to manage all potential vectors for introduction.

FY 2009-2011 ACTIONS:

- ✓ Support of ballast water legislation on state and federal levels. → ODNR, OEPA
- ✓ Monitor potential spread of sirex wasp, which has been identified in neighboring states. → ODA

**Reduce the negative impacts caused by invasive species:**

Once an invasive species is present, its impacts are likely to be realized in a multitude of ways. Local, state, federal, and private entities will be faced with recreational, biological, and even industrial impacts from invasive species. Quarantine, suppression, and testing programs can assist in the management of invasives.

FY 2009-2011 ACTIONS:

- ✓ Provide funding to the Division of Natural Areas and Preserves to control invasive species at state nature preserves within the Coastal Management Area. → ODNR
- ✓ Implement programs for education, identification, and quarantine of emerald ash borer throughout the Lake Erie watershed. → ODA
- ✓ Implement gypsy moth suppression, detection and eradication efforts throughout watershed. → ODA
- ✓ Offer practitioner and producer viral hemorrhagic septicemia virus (VHS) laboratory testing, as well as fish necropsy training, to stem spread of VHS. → ODA

**Review Ohio's Comprehensive Management Plan for aquatic invasive species:**

Over ten years ago, Ohio developed a plan to coordinate management and communication efforts related to aquatic nuisance species (ANS) and to qualify for federal funding related to such under the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990. Since then, several new invasive species have entered the Lake Erie watershed or other Great Lakes, creating additional uncertainty and complexity around the potential impacts of ANS on the ecosystem. A review of the Ohio comprehensive management plan is needed to incorporate

these new invaders and to gather knowledge from research that has been completed on ANS impacts so as to appropriately direct future management efforts. As well, Ohio currently lacks a rapid response plan to deal with new or emerging ANS issues that might be contained with prompt action.

FY 2009-2011 ACTIONS:

- ✓ Revise current management plan by 2009. → ODNR
- ✓ Develop a Rapid Response Plan by 2010. → ODNR



## Priority: Coastal Health

**Goal:** *Eliminate the release of untreated and inadequately treated sewage to Lake Erie and its tributaries with special attention to human uses of the Lake and its beaches.*

**Goal:** *Develop and implement plans to restore beaches and shoreline habitat.*

**Goal:** *Provide safe, healthy, accessible coastal areas for all Ohioans.*

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### Great Lakes Perspective:

Contact with nearshore waters of the Great Lakes can pose a risk to human health. As a source of drinking water, recreational and commercial fisheries, and other recreational opportunities for millions of U.S. and Canadian residents, the nearshore waters of the Great Lakes should pose a *minimum* human health risk through direct contact. A goal of swimmable, fishable, drinkable (with conventional treatment) waters should be considered appropriate for all nearshore areas.<sup>15</sup>

### Ohio's Lake Erie Watershed:

Within Ohio, beach closures, coastal erosion problems, failing home septic systems, and combined sewer and sanitary sewer overflows impact the quality of nearshore areas. In addition to the direct negative impact on health and property, secondary impacts include reduced property values, lower tourism rates, and a persistent negative view of the value of the Great Lakes. Coastal areas provide the primary opportunity for most Ohioans and travelers to experience Lake Erie. Key aspect will be to eliminate human health threats from bacteria and assure safe and appropriate use of coastal property.

### 2014 Strategic Objectives:

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal for coastal health. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 Lake Erie Quality Index (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

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<sup>15</sup> Great Lakes Regional Collaboration Strategy, p. 29

**Reduce bacterial contamination (and other pollutants) coming from inadequate or non-functioning private home sewage treatment systems:**

The Ohio Department of Health estimates that 25% of existing on-lot systems are discharging raw sewage, making them a significant source of nutrient loadings and bacteria contamination in Lake Erie tributaries.<sup>16</sup> County health departments are typically responsible for finding and ordering the replacement of failing systems. These departments are often understaffed and rely on complaints filed by citizens to guide their efforts. The modernization of county records has begun in several counties across the basin, and will ultimately make enforcement more manageable, but much work is yet to be done.

**FY 2009-2011 ACTIONS:**

- ✓ Work with the Home Sewage Treatment System/Small Flow On-Site Sewage Treatment System (HSTS/SFOSTS) Study Commission to develop modifications to ORC Chapter 3718 if needed, and re-adopt OAC Chapter 3701-29 to ensure sewage systems provide proper treatment of sewage. → ODH
- ✓ Review/approve replacement discharging home sewage treatment systems that comply with the General NPDES permit. → ODH, OEPA
- ✓ Coordinate with Ohio EPA and local health districts on implementation of the requirements of the General NPDES permit for discharging replacement systems in the Lake Erie Basin. → ODH

**Eliminate combined sewer and sanitary sewer overflows according to each community's Long Term Control Plan (LTCPs):**

Combined sewer overflows (CSOs) are the primary source of untreated sewage discharges to Lake Erie. These discharges impact water quality and introduce bacteria that can present a public health threat. In the Lake Erie basin, 64 communities had or have CSOs. An estimated eight billion gallons of untreated sewage was discharged into Lake Erie and its tributaries in 2004 from 11 of the CSO communities. Below is a summary of CSOs within the Lake Erie basin during 2006 and 2007.<sup>17</sup>

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<sup>16</sup> Ohio Lake Erie Action List, p. 7

<sup>17</sup> Ohio Lake Erie Action List, p. 5

<b>Community</b>	<b>Jun-06<sup>18</sup></b>	<b>Sep-07<sup>19</sup></b>	<b>CSOs Removed</b>	<b>Community</b>	<b>Jun-06</b>	<b>Sep-07</b>	<b>CSOs Removed</b>
AKRON	38	38	0	LEIPSIC	1	1	0
AVON LAKE	14	10	4	LIMA	19	19	0
BLUFFTON	2	2	0	LUCKEY	4	4	0
BOWLING GREEN	1	1	0	MCCOMB	2	2	0
BUCYRUS	22	22	0	MONTPELIER	3	3	0
CLYDE	3	1	2	NAPOLEON	3	3	0
COLUMBUS GROVE	4	4	0	NEORS	126	126	0
CRESTLINE	1	1	0	NEW BOSTON	0	2	-2
DEFIANCE	44	44	0	NORTH			
DELPHOS	6	6	0	BALTIMORE	2	2	0
DELTA	9	9	0	NORWALK	3	4	-1
DESHLER	7	5	2	OAK HARBOR	9	9	0
DUNKIRK	6	6	0	OHIO CITY	2	2	0
ELYRIA	27	27	0	PANDORA	7	7	0
EUCLID	18	18	0	PAULDING	2	2	0
FAYETTE	15	19	-4	PAYNE	2	2	0
FINDLAY	18	18	0	PERRYSBURG	4	4	0
FOREST	3	3	0	PORT CLINTON	2	1	1
FOSTORIA	5	5	0	SANDUSKY	15	15	0
FREMONT	13	13	0	SWANTON	9	9	0
GIBSONBURG	3	3	0	TIFFIN	30	30	0
GREEN SPRINGS	1	1	0	TOLEDO	33	33	0
GREENWICH	10	10	0	UPPER			
HAMLER	6	0	6	SANDUSKY	1	1	0
HICKSVILLE	5	5	0	VAN WERT	6	6	0
LAKEWOOD	9	9	0	WAPAKONETA	3	3	0
				WAUSEON	4	4	0
				WILLARD	3	3	0
				WOODVILLE	17	17	0
				<b>TOTAL</b>	<b>602</b>	<b>594</b>	<b>8</b>

FY 2009-2011 ACTIONS:

- ✓ Ensure compliance with approved LTCPs through inspections, permit reviews, coordination with USEPA, and tracking of milestones defined in the LTCPs. → OEPA

<sup>18</sup> Ohio Lake Erie Action List, p. 6

<sup>19</sup> Ohio CSO Inventory, Ohio EPA – September 2007, p. 1-3

- ✓ Complete sewer separation and implement or have a plan in place to control overflows in accordance with an approved LTCP. → OEPA
- ✓ Communities will finalize and submit their LTCPs in 2008 and 2009. → OEPA
- ✓ Finalize LTCPs currently under negotiation with state and federal agencies. → OEPA
- ✓ Support monitoring of pharmaceuticals in Lake Erie and its tributaries. → OLEC

### **Finalize Lake Erie Shore Erosion Management Plan (LESEMP) and implement Pilot Study:**

Sand beaches once fronted many reaches of Ohio's North Coast. Today, beaches have diminished due to the cumulative and secondary impacts of shore structures and offshore disposal of sand dredged from harbors, both cutting off sand supply to the littoral system. In their place are numerous erosion control structures built to protect urban development. The variability of the Lake Erie Shore combined with the amount of urban development presents a unique coastal management challenge. The *Lake Erie Shore Erosion Management Plan* will provide communities and individual property owners with solutions that include: natural types of erosion control, structures that incorporate aquatic habitat enhancements, offshore sand source, sand dredged from harbors, beach nourishment, sand bypassing, BMP's for docks/piers, mitigation for loss of sand and aquatic habitat due to structures, and soft measures with small structural components where necessary.<sup>20</sup>

#### FY 2009-2011 ACTIONS:

- ✓ Publish final model guidance document for LESEMP. → ODNR
- ✓ Implement initial pilot study in Ashtabula County. → ODNR
- ✓ Initiate second pilot study based on lessons learned from Ashtabula County. → ODNR

### **Publish a Coastal Design Manual:**

The implementation of practices recommended by the *Lake Erie Shore Erosion Management Plan* will require training and assistance from the Office of Coastal Management. Written for engineers who will be implementing coastal practices, this document will provide the guidance they need when designing shoreline structures.

#### FY 2009-2011 ACTIONS:

- ✓ Develop Coastal Design Manual with assistance from a design consultant. → ODNR

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<sup>20</sup> Lake Erie Shore Erosion Management Plan, External Workgroup Handbook, p. 3-1.

- ✓ Host training sessions for contractors, design professionals, public officials and property owners on methods to restore beaches and shoreline habitat. → ODNR

### **Develop and promote coastal model ordinance as a part of the Balanced Growth Program:**

The Balanced Growth Task Force was charged with developing model legislation for local governments to voluntarily use to manage their land use issues. A model that provides local action for shoreline development while remaining consistent with state laws and Ohio's Coastal Management Program will need to be developed.

#### FY 2009-2011 ACTIONS:

- ✓ Develop model ordinance with input from stakeholder groups. → OLEC
- ✓ Incorporate coastal model ordinance into Best Local Land Use Practices Training Program. → OLEC

### **Provide accurate and timely information to the public on potential risks at Lake Erie bathing beaches:**

Swim advisories or closings issued by beach managers are based on standards for concentrations of fecal-indicator bacteria, such as *E. coli*. Results are reported more than 24 hours after a sample is collected as most bacteria testing require time for the test to be completed. Concentrations may change between the time of sampling and the reporting of results. The effect is that a beach may be closed on Wednesday because of Tuesday's *E. coli* count. Beachgoers on Tuesday were exposed to contamination levels high enough to warrant beach closure. Meanwhile, on Wednesday the levels may be low enough that the beach could be reopened, but this information will not be available until Thursday. Beaches are effectively closed the day after contamination levels are high. The development of a same-day predictive model has been in process through efforts funded by the Lake Erie Protection Fund.

Development and implementation of technologies that allow same day forecasting of bacteria levels will help beach managers protect the public health with a greater degree of accuracy, and in a more timely fashion.<sup>21</sup> The Ohio Nowcasting Beach Advisories are posted online at <http://www.ohionowcast.info/index.asp>.

#### FY 2009-2011 ACTIONS:

- ✓ Support the development and implementation of technologies and field studies to identify and trace sources of local bacterial contamination. → ODH, OEPA, ODNR, OLEC
- ✓ Support the development and implementation of same-day beach advisory systems. → ODNR, ODH

<sup>21</sup> Models for Predicting Recreational Water Quality at Lake Erie Beaches, USGS, p. 1



## Priority: Areas of Concern

**Goal:** *Delisting the Maumee, Black, Cuyahoga and Ashtabula Rivers from the list of Great Lakes Areas of Concern.*

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### Great Lakes Perspective:

In 1987, the U.S. and Canada committed to restoring the most degraded portions of the Great Lakes basin. Working through the International Joint Commission (IJC), the Great Lakes states and provinces designated 43 Areas of Concern (AOCs), including 26 in U.S. waters and five in binational waterways. AOCs were identified based on 14 types of impairment, reflecting human uses—such as eating fish, drinking water and swimming—and ecological impacts, such as loss of diversity in aquatic life and destruction of fish and wildlife habitat. The most common sources of impairment are contaminated sediments, sewage treatment plant discharges and combined sewer overflows, nonpoint source runoff, runoff from hazardous waste sites, and habitat degradation and destruction.<sup>22</sup>

### Ohio's Lake Erie Watershed:

Within Ohio, there are four Areas of Concern. They are the Maumee, Black, Cuyahoga, and Ashtabula Rivers. These are major tributaries to Lake Erie that suffer from various impairments resulting from past industrial use along their banks and other human activities. Locally based committees work with Ohio EPA to develop Remedial Action Plans (RAPs) that define the sources and causes of impairment and propose remedial actions. The RAP committees are comprised of state, federal and local agency representatives as well as local stakeholders. Once the committee has identified needed actions, those actions are taken collectively by the committee or implemented by the member agency/partner with the proper regulatory authority. Implementation is often based on the grants that the RAP committee or its individual partners are able to procure. Funding for RAP development and implementation comes from a variety of federal, state and local sources as well as private foundations and local fundraising efforts.<sup>23</sup>

### 2014 Strategic Objectives:

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<sup>22</sup> Great Lakes Regional Collaboration Strategy, p. 36

<sup>23</sup> Ohio Lake Erie Action List, p. 10

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal of delisting the Areas of Concern. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

**Work towards remediation (remove, seal, neutralize) of contaminated sediments within all AOC sites by 2025:**

Despite many improvements, Lake Erie and its tributaries still suffer from the past legacy of environmental neglect. Sediments deposited in the nearshore areas, streams, and rivers serve as a repository of wastes from our industrial past. Elevated levels of nutrients, metals, and industrial contaminants such as polychlorinated biphenyls (PCBs) and polyaromatic hydrocarbons (PAHs) are still present today. The contaminants contained in these sediments do not stay buried forever. Churning from floods and waves, the burrowing of bottom dwelling animals or the stirring from a propeller all serve to re-suspend these sediments in the water column. Here they may be absorbed in to plants and animals, and passed up the food chain.<sup>24</sup>

FY 2009-2011 ACTIONS:

- ✓ Support Great Lakes Legacy Act (GLLA)/Natural Resource Damages (NRD) contaminated sediment remediation in the Ottawa River. → OEPA
- ✓ Conduct additional sampling and evaluation on the Ottawa River necessary to prepare a dredging and disposal plan by 2009 for approval under GLLA. → OEPA
- ✓ Monitor post-dredging concentrations of contaminants in sediment in the Ashtabula River AOC to determine if Beneficial Use Impairment delisting targets for dredging and benthos have been met. → OEPA
- ✓ Evaluate the potential to remediate PAH- contaminated sediments in the Old Channel of the Cuyahoga River. → OEPA
- ✓ Conduct risk assessment in Duck and Otter Creek to determine if contaminated sediments qualify for GLLA funding. → OEPA

**Restore all beneficial uses in Ohio's Four Areas of Concern:**

Below is a consolidated table listing the impairment status of all the beneficial uses in each Ohio AOC. A beneficial use was listed as impaired if it was impaired anywhere within the boundaries of the AOC. Several of the RAPs have prepared more detailed assessments that further assign use impairment by tributary or stream segment within their AOC.

The United States Policy Committee Guidance (2001) allows that stream segments or tributaries within an AOC can now be delisted incrementally. This is a positive step toward better tracking RAP progress, particularly in the larger AOCs. It also allows closer alignment

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<sup>24</sup> Lake Erie Protection & Restoration Plan 2000, p. 12

with the Ohio EPA approach to monitoring the attainment of water use designations as detailed in Section 3745-1 of the Ohio Administrative Code.<sup>25</sup>

<b>Beneficial Use Impairment</b>		<b>Ashtabula</b>	<b>Black</b>	<b>Cuyahoga</b>	<b>Maumee</b>
BUI 1:	Restrictions on Fish and Wildlife Consumption	Impaired	Impaired	Impaired	Impaired
BUI 2:	Tainting of Fish and Wildlife Flavor	Not Impaired	Not Impaired	Not Impaired	Not Impaired
BUI 3:	Degradation of Fish and Wildlife Populations	Impaired	Impaired	Impaired	Impaired
BUI 4:	Fish Tumors or Other Deformities	Impaired	In Recovery	Impaired	Impaired
BUI 5:	Bird or Animal Deformities or Reproductive Problems	Not Impaired	Not Impaired	Not Impaired	Not Impaired
BUI 6:	Degradation of Benthos	Impaired	Impaired	Impaired	Impaired
BUI 7:	Restrictions on Dredging Activities	Impaired	Impaired	Impaired	Impaired
BUI 8:	Eutrophication or Undesirable Algae	Not Impaired	Impaired	Impaired	Impaired
BUI 9:	Restrictions on Drinking Water Consumption or Taste & Odor Problems	Not Impaired	Not Impaired	Not Impaired	Not Impaired
BUI 10:	Beach Closings (Recreational Contact)	Not Impaired	Impaired	Impaired	Impaired
BUI 11:	Degradation of Aesthetics	Not Impaired	Impaired	Impaired	Impaired
BUI 12:	Added Costs to Agriculture or Industry	Not Impaired	Not Impaired	Not Impaired	Unknown
BUI 13:	Degradation of Phytoplankton and Zooplankton Populations	N/A	N/A	N/A	N/A
BUI 14:	Loss of Fish and Wildlife Habitat	Impaired	Impaired	Impaired	Impaired

FY 2009-2011 ACTIONS:

- ✓ Ashtabula River: Implement habitat mitigation project for GLLA sediment remediation project. → OEPA
- ✓ Ashtabula River: Prepare delisting plan. → OEPA
- ✓ Ashtabula River: Facilitate restoration of interim dredge disposal site to wetland and implement at least one additional habitat restoration project. → OEPA

<sup>25</sup> Delisting Targets for Ohio Areas of Concern, June 2005, p. 7-8.

- ✓ Ashtabula River: Conduct post-dredging biological community surveys to determine if delisting targets for fish and benthos have been met. → OEPA
- ✓ Black River: Complete lacustrine environmental plan and select projects for implementation of special environmental projects. → OEPA
- ✓ Black River: Implement at least one habitat restoration project outlined in the lacustrine environmental plan. → OEPA
- ✓ Black River: Pursue options for collecting data and assessing the status of the fish tumor BUI and any further restrictions on dredging. → OEPA
- ✓ Cuyahoga River: Install fish baskets/green bulkheads in ship channel and monitor success. → OEPA
- ✓ Cuyahoga River: Support selection of mitigation sites in the watershed through the wetland habitat restoration priority list. → OEPA
- ✓ Cuyahoga River: Implement projects based on the 2008 delisting plan. → OEPA
- ✓ Cuyahoga River: Support removal/modification of the St. Rt. 82 dam. → OEPA
- ✓ Maumee River: Mitigate impacts of Highland dam on Swan Creek without removal of dam. → OEPA
- ✓ Maumee River: Prepare inventory of habitat needs and restoration projects for Swan Creek and Ottawa River. → OEPA
- ✓ Maumee River: Complete preparation of Stage 2 plan. → OEPA
- ✓ Encourage outreach, education, and development of a sustainable funding mechanism for local RAP groups. → OEPA

**Align the plans and activities for Remedial Action Plans, Watershed Action Plans, and Balanced Growth Watershed Plans related to all four Areas of Concern as applicable.**

Although they each have a separate purpose, the development of Remedial Action Plans (RAP), Watershed Action Plans (WAP), and Balanced Growth Watershed Plans (BGWP) creates the potential for overlap, duplication, and parallel projects. Coordination at both the state and local level is necessary to ensure that when multiple plans are developed, they are created in the most cost effective, efficient method possible. Building later plans off the successes of earlier efforts and combining action plans to ensure multiple targets are met through implementation projects are just a few of the items at play when aligning these plans, which together can create a more complete implementation plan for the watershed.

FY 2009-2011 ACTIONS:

- ✓ Provide assistance to watershed groups to facilitate integration of planning activities and projects with WAP, BGWP, and RAP objectives. → OEPA, OLEC, ODNR
- ✓ Provide training for watershed coordinators to promote integration of local water resource information with all local planning. → ODNR



## Priority: Toxic Pollutants

**Goal:** *Reduce the loadings of persistent bioaccumulative toxics, in particular mercury, to Lake Erie.*

**Goal:** *Clean up brownfield sites to eliminate loading to Lake Erie and its tributaries.*

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### Great Lakes Perspective:

Despite a significant reduction in many persistent toxic substances during the past thirty years, they continue to be present at levels that pose threats to human and wildlife health, warrant fish consumption advisories in all five lakes, and disrupt a way of life for many in the basin. Toxics accumulate from nonpoint source runoff, atmospheric deposition, and industrial process, among other sources. Continuous cycling of these persistent substances within the Great Lakes system contributes to their long-term impacts. The recently documented presence of chemicals of emerging concern is creating an additional need for research on sources, transport, persistence, and impacts.<sup>26</sup>

### Ohio's Lake Erie Watershed:

Aquatic and land-based toxics issues impact the quality of the environment, human health, and economic growth. PCBs, PAHs, mercury, dioxins, and pesticides are among the many chemicals that have been released into the environment where they have been shown to cause harm to both wildlife and humans. Persistent Toxic Pollutants come from contaminated bottom sediments, industrial processes, nonpoint sources, loadings from atmospheric deposition and cycling of the contaminants. Persistent bioaccumulative toxics impact sport fish, creating advisories for fishermen across the basin. If we are to eliminate these problems, then the release of toxic chemicals must be reduced and eliminated where possible. Legacy sources such as brownfield, and contaminated bottom sediments must be cleaned up and continuing airborne deposition must be addressed. A comprehensive approach to addressing the social, economic, and environmental realities of Toxics is critical to a long-term resolution in many areas.

### 2014 Strategic Objectives:

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goals for reducing toxic pollutants. These objectives are meant to provide an ambitious

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<sup>26</sup> Great Lakes Regional Collaboration Strategy, p. 47

target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

**Reduce the concentration of toxic contamination in Lake Erie and its tributaries to eliminate fish consumption advisories for all species:**

Ohio has issued annual fish consumption advisories for 15 years to help Ohio anglers decide how to safely eat their catch. A statewide advisory of one meal per week for most fish remains in place due to mercury. Mercury poses the greatest risk for women of child-bearing age, pregnant and nursing mothers and children under age 15. Fish contaminated with high levels of mercury have been shown to cause neurological damage and impaired development of young children. The 2008 fish consumption advisory issued by Ohio EPA, the Ohio Department of Health, and Ohio Department of Natural Resources recognized lower chemical levels in several fish species, allowing them to be consumed more often. Lake Erie walleye 23 inches and larger were previously under a one-meal-a-month limit in the advisory. In 2008 this changed to once a week, which is consistent with the statewide advisory for all fish. Lake Erie channel catfish 16 inches and over were also been upgraded from “do not eat” to a limit of one meal every two months.<sup>27</sup>

FY 2009-2011 ACTIONS:

- ✓ Assess concentrations of PCB and mercury in fish tissue from the Ashtabula River AOC to reassess the need for precautionary do not eat advisory issued during the '06-'08 removal of contaminated sediments. → OEPA
- ✓ Collect in-lake fish tissue samples for analysis of mercury, PCBs and other metals and pesticides. → OEPA
- ✓ Collect fish tissue samples from the Lake Erie basin for analysis of mercury, PCBs and other metals and pesticides. → OEPA
- ✓ Issue sport fish consumption advisories based upon the results of tissue samples and data analyses. → OEPA

**Reduce loading of toxins and other pollutants from businesses and households:**

Ohio continues to rank among the top states nationally for toxic releases to the environment since the Toxic Release Inventory (TRI) was created in 1987. Ohio EPA has initiated several programs, including Tox-Minus to help reduce these releases through voluntary efforts. The goal of Tox-Minus is to move Ohio down the TRI listing, which will enhance Ohio’s image as an environmentally proactive and economically competitive state.<sup>28</sup>

FY 2009-2011 ACTIONS:

<sup>27</sup> Improved Fish Consumption Advisory For Some Lake Erie & Ohio River Species, OEPA Press Release, 02-29-2008.

<sup>28</sup> Ohio EPA – Tox-Minus Pollution Reduction Initiative - <http://www.epa.state.oh.us/ocapp/tox-minus.html>

- ✓ Work with the 14 companies in the Lake Erie basin that have voluntarily signed up for Ohio EPA's Tox-Minus program, a program that encourages companies to commit to take additional steps to reduce their emissions of chemicals under the Toxics Release Inventory. → OEPA
- ✓ Administer the Ohio EPA voluntary mercury switch removal program for auto salvage yards through 2009 (and beyond as resources allow) . → OEPA
- ✓ Participate in the Ohio Mercury Reduction Group, a consortium of local, state and federal government representatives. → OEPA
- ✓ Provide assistance on the implementation of the Ohio mercury ban on consumer products. → OEPA
- ✓ Determine the feasibility of options to implement the GLRC Mercury Phase Down Strategy in Ohio. → OEPA
- ✓ Review *Pollutant Minimization Plans* for NPDES permit holders with approved mercury variances during compliance evaluations and permit renewals. → OEPA
- ✓ Develop a web page for homeowners that explains the risks involved with pharmaceuticals and personal health care products entering waters of the state, a list of collection events in their area, and links to guidance on packaging and disposal when no other options exist. → OEPA
- ✓ Develop a guidance specific to medical facilities and how they are to properly manage their waste pharmaceuticals. → OEPA

**Monitor and quantify the deposition of toxic compounds into the Lake Erie watershed:** Section 313 of the Emergency Planning and Community Right-to-Know Act provides for the collection and public release of annual Toxic Release Inventory (TRI) reports regarding the release of toxic chemicals within the community. Since the first TRI reports were made available to the public in 1987, TRI has expanded to include information on waste generation, additional reportable chemicals and new industrial sectors (based on Standard Industrial Classification codes).<sup>29</sup> Tracking of releases through the TRI is the first step towards reduction of releases through voluntary programs, such as Tox-Minus.

FY 2009-2011 ACTIONS:

- ✓ Assure the Toxic Release Inventory (TRI) data is reported for required facilities. → OEPA

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<sup>29</sup> Toxic Release Inventory – 2005 Annual Report - <http://www.epa.state.oh.us/dapc/tri/05tri/trirep05.pdf>

**Reduce deposition of airborne emissions in Lake Erie with an emphasis on mercury:**

Significant pathways for toxic pollutants to enter Lake Erie are through atmospheric deposition, contaminated runoff and discharge from wastewater treatment plants. These toxins then work their way through the food chain and accumulate in fish, wildlife and humans. Strict discharge limits have been instituted to reduce toxic discharges from treatment plants but there is still a need to cut down on air emissions and to remove toxic materials from the environment.

Mercury emissions from coal fired power plants as well as from the disposal of products such as thermometers and switches all need to be reduced or eliminated. Dioxins and furans result from the uncontrolled burning of household waste and must be addressed through enforcement of open burning laws. The Toxics Release Inventory identifies other toxics being released by industries and provides a guide for opportunities to reduce such releases.

FY 2009-2011 ACTIONS:

- ✓ Assure compliance for existing sources and new sources of air toxics emissions with the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations, air toxics requirements, and new Maximum Achievable Control Technology (MACT) standards. → OEPA

**Eliminate brownfield sites as sources of contamination:**

The industrial development of Ohio in the past 150 years resulted in the use of waterfront sites for industry and for waste disposal. The legacy of these sites is the migration of contaminants into the water and sediment. These brownfield sites must be remediated to remove or contain contaminants to prevent off site migration and risks associated with new uses of these valuable waterfront properties. It is essential for the state to encourage, support and assure monitoring of these brownfield site cleanups.

FY 2009-2011 ACTIONS:

- ✓ Track the number of brownfield sites restored in the Lake Erie watershed and the potential contaminants associated with them. → OEPA

## Priority: Habitat & Species

**Goal:** *Promote diversity of native flora and fauna by protecting and restoring habitat.*

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### Great Lakes Perspective:

The impact of human settlement is visible from nearly any place within the Great Lake basin. This has resulted in the degradation or complete loss of habitats, threatening the survival of the species they support. The loss of fish spawning habitat, disruption of sediment transport, altered lake levels, loss of floodplains and riparian corridors, landscape fragmentation, food web disruption, invasive species introductions, and the presence of nonpoint and point source pollutants are just a few of the key threats to the long-term viability of species indigenous to the basin. The impacts of these changes to the landscape and associated species affect human health, ecosystem diversity, natural processes and services, and the social and economic vitality of the region and nation. Great Lakes boating, fishing, hunting, and wildlife watching generate an estimated \$50 billion in economic activity annually.<sup>30</sup>

### Ohio's Lake Erie Watershed:

Within Ohio, the protection of a variety of habitat types is essential to the successful preservation of native flora and fauna. Wetland loss, especially coastal wetlands, impacts water quality and species diversity in Ohio, across the Great Lakes, and on an international scale. Coastal Lake Erie wetlands serve as rest stops for migrating avian species utilizing heavily traveled flyways that span across North and South America. Ohio's coastal wetlands also served as the last refuge for bald eagles during the late 1970's when their numbers hit an all-time low. Preservation, research, and restoration of critical habitats is the only pathway to preserving native species diversity.

### 2014 Strategic Objectives:

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal for addressing habitat and species issue. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

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<sup>30</sup> Great Lakes Regional Collaboration Strategy, p. 23

**Protect, enhance, and restore wetlands and their functionality and expand wetland acreage within the watershed, with a priority focus on coastal wetlands:**

To ensure that the State of Ohio suffers no net loss of wetlands, mitigation is required for unavoidable wetland impacts. Studies on the federal and state levels have demonstrated that many mitigation wetlands are not performing as anticipated. The protection of high quality wetlands is essential to maintaining the level of ecosystem diversity and storm water management benefits that they currently provide.<sup>31</sup> Expansion of wetland acreage is encouraged to offset impacts realized from impervious surface creation and habitat loss in many communities within the basin. Strategically located and properly designed wetland will provide a multitude of benefits.

FY 2009-2011 ACTIONS:

- ✓ Acquire and conserve significant coastal resources through the use of Ohio's Coastal & Estuarine Land Conservation Program. → ODNR
- ✓ Maumee Bay Wetland Restoration Project – Identify and secure grant funding. → ODNR
- ✓ Maumee Bay Wetland Restoration Project – Additional monitoring and modeling, final design, permitting and construction activities. → ODNR
- ✓ Lake Erie basin wetlands impacted by transportation projects should be mitigated within the Lake Erie basin, and kept within the same subwatershed where feasible. → ODOT

**Implement Ohio's Coastal & Estuarine Land Conservation Program Plan:**

The Coastal and Estuarine Land Conservation Program (CELCP) was established to protect coastal and estuarine lands considered important for their ecological, conservation, recreational, historical or aesthetic value or that are threatened by conversion from a natural or recreational state to other uses. The program provides federal funding for projects that ensure conservation of these areas for the benefit of future generations, and that can be effectively managed and protected. The CELCP was created by the Fiscal Year 2002 Appropriations Act for the Departments of Commerce, Justice and State. Future eligibility for federal CELCP funding is contingent upon a state's development of a plan for conservation of remaining open and natural areas. Through the Ohio Coastal Management Program, the Office of Coastal Management created such a plan for Ohio. This plan is awaiting federal approval.<sup>32</sup>

FY 2009-2011 ACTIONS:

- ✓ Work with NOAA to complete CELCP Plan and achieve necessary federal approval. → ODNR

<sup>31</sup> Ohio's Lake Erie Action List, p. 15

<sup>32</sup> Ohio's Office of Coastal Management website, CELCP Program

- ✓ Avoid or minimize impacts to CELP Plan sites in the development of new transportation projects. → ODOT

**Protect, enhance, and restore important Lake Erie basin habitats and species including; beaches, dunes, fish spawning areas, nearshore habitat, oak savannas, alvars, caves, riparian and instream habitat in channels, and streams that are subject to impacts from hydromodification (due to stream maintenance or dams):**

Significant degradation of Lake Erie, its coastline and tributaries has been caused by logging, navigation projects, power production, dam construction, shoreline development, agriculture, urban development, and waste disposal. The straightening and hardening of streams and the coastline have vastly impacted critical habitat areas. Implementing actions that impact the most important habitat types within the basin will help make the greatest strides towards improving ecosystem function.<sup>33</sup> Funding from four license plate programs (Lake Erie, Bald Eagle, Cardinal, and Scenic Rivers) have aided in the planning or direct implementation of habitat protection and restoration within the Lake Erie basin.

FY 2009-2011 ACTIONS:

- ✓ Complete shore erosion study at East Harbor State Park. → ODNR
- ✓ Implement shoreline protection at Grand Lake St. Mary's. → ODNR
- ✓ Develop and implement the Model Guidance Document for the *Lake Erie Shore Erosion Management Plan*. → ODNR
- ✓ Acquire and conserve significant coastal resources through the use of Ohio's Coastal & Estuarine Land Conservation Program. → ODNR

**Promote measures to reduce negative impacts of shore protection on coastal habitat:**

Sand beaches once fronted many reaches of Ohio's north coast. Today, beaches have diminished due to the cumulative and secondary impacts of shore structures and offshore disposal of sand dredged from harbors, both cutting off sand supply to the littoral system. In their place are numerous erosion control structures built to protect urban development. The variability of the Lake Erie Shore combined with the amount of urban development presents a unique coastal management challenge. The *Lake Erie Shore Erosion Management Plan* will provide communities and individual property owners with solutions that include: natural types of erosion control, structures that incorporate aquatic habitat enhancements, offshore sand source, sand dredged from harbors, beach nourishment, sand bypassing, BMP's for docks/piers, mitigation for loss of sand and aquatic habitat due to structures, and soft measures with small structural components where necessary.<sup>34</sup>

<sup>33</sup> Lake Erie Protection & Restoration Plan, 2000, p. 23

<sup>34</sup> Lake Erie Shore Erosion Management Plan, External Workgroup Handbook, p. 3-1.

FY 2009-2011 ACTIONS:

- ✓ Develop and implement the Model Guidance Document for the *Lake Erie Shore Erosion Management Plan*. → ODNR

**Restore habitat through the removal of non-beneficial dams. Modify beneficial dams with fish passage structures:**

The installation of dams creates a change in the upstream aquatic ecosystem due to a shift in the flow regime. The plant and animal species inherently found in dam pools vary significantly from those of flowing river systems. Impounded stream sections can receive a Modified Warmwater Habitat designation from Ohio EPA if the dam use warrants such a designation. Non-beneficial dams, such as those maintained for a recreational purpose, do not receive this alternate use designation. The impounded areas often fail to attain the designated Warm Water Habitat Aquatic Life use. Beneficial dams, such as those used for flood protection or as drinking water supply serve as barriers to fish passage. The implementation of fish passage structures provides access to upstream spawning areas among other beneficial outcomes.

FY 2009-2011 ACTIONS:

- ✓ Ensure the effective removal of the Ballville Dam on the Sandusky River. → ODNR
- ✓ Develop and implement a strategy for effective management measures related to water quality enhancements at dams or surface water impoundments within the Ohio Lake Erie Basin. → ODNR

## Priority: Indicators and Information

**Goal:** *Measure the effectiveness of efforts to improve and protect Lake Erie.*

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### Great Lakes Perspective:

The Great Lakes ecosystem is a dynamic and complex interaction of biological, chemical, and physical components that is not yet fully understood. The sensitivity of this system to human influence, however, is readily apparent. Protection and restoration of the Great Lakes ecosystem requires a well-documented, collaborative strategy, access to the best scientific information available, and coordinated action. This strategy must include an informed decision making process based on consistent methods to measure and monitor key indicators of the ecosystem's function.<sup>35</sup>

### Ohio's Lake Erie Watershed:

Lake Erie is a complex ecosystem that requires careful monitoring of ambient Lake conditions both in the offshore and nearshore areas for chemical and biological parameters. There is also a need for measurement of sediment contamination, pollutant loadings from tributaries, land use changes, pollutant contributions from agricultural and urban uses and the condition of the shoreline. Economic conditions, shipping, tourism and recreational activities are also important measurements to be tracked as we measure our impact on the Lake and its impact on the people of Ohio. Finally, it is important that program actions be measured as we track our progress and chart our future. All of this information must be collected regularly; consistently and organized and presented in a manner that makes it useable by decision makers and citizens. Lake Erie conditions change rapidly and it is essential that we track them closely as the Lake and its uses are critically sensitive to changes.

The *State of the Lake Report – Lake Erie Quality Index (LEQI)* summarizes this information and is meant to provide a report to the citizens of Ohio regarding the current state of Lake Erie, as well as provide managers with the information they need to adjust state actions meant to improve both the ecology and the economy of the basin. The LEQI is comprised of a series of 11 separate indicators, which are scored based on 32 metrics. It is periodically updated with the next update scheduled for 2014. The 2014 update is the basis for the 2014 Strategic Objectives found within this document. The Ohio Lake Erie Commission agencies will work towards the

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<sup>35</sup> Great Lakes Regional Collaboration Strategy, p. 53

Strategic Objectives contained in this *Lake Erie Protection & Restoration Plan* and then measure the results in 2014.

### **2014 Strategic Objectives:**

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal for Indicators and Information. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

#### **Monitor long-term trends in Lake Erie nearshore water quality parameters:**

Ohio EPA has begun to develop an Ohio Lake Erie monitoring program. While USEPA monitors the water of the open lake, there is currently no monitoring done in the nearshore waters or along the shoreline. Ohio EPA is working with USEPA and others to develop a program that will cover gaps and provide a baseline for the status of the nearshore.

##### FY 2009-2011 ACTIONS:

- ✓ Develop an Ohio monitoring program, with input from multiple agencies, for the nearshore, with 2009 goal start date. → OEPA

#### **Issue a State of the Lake Report every 10 years using the Lake Erie Quality Index:**

The *State of the Lake Report* (Lake Erie Quality Index) is compiled and released every 10 years. The next planned update will be released in 2014. This LEPR 2008 is the first step towards improving indicators measured as a part of the LEQI.

##### FY 2009-2011 ACTIONS:

- ✓ Review need for additional or revised metrics for LEQI in preparation for 2014 State of the Lake Report. → OLEC

#### **Obtain baseline data and fill in data gaps for sediment loads, phosphorus loads (esp. DRP), wetland acreage, shoreline hardening, persistent bioaccumulative chemicals, land use, impervious surface, and other important and measurable attributes of Lake Erie:**

Baseline data is necessary for establishing the beneficial impacts of implementation programs, to determine the most cost effective programs. Data must be collected on a wide variety of topics to create an accurate picture of the health of Lake Erie. This data is often needed for models that can be used to predict the level of response of the Lake to natural and human induced changes. The data gaps that exist need to be identified and met so that we can develop a more complete and accurate understanding of the Lake.

FY 2009-2011 ACTIONS:

- ✓ Obtain and submit information for the NOAA Coastal Zone Management Act Performance Measure System. → ODNR

**Expansion of citizen stewardship programs, including volunteer monitoring, throughout the watershed:**

Limitations in agency staff and equipment resources for monitoring coupled with the sheer magnitude of the task make the use of citizens and non-government entities key to establishing thorough water quality monitoring programs. The “credible data law” (ORC 6111.50 to 6111.56) enacted in Ohio in 2003 set the standard for data collection practices. Providing training on the proper development and implementation of a monitoring program is essential to growing a network of non-governmental sampling organizations which can assist state and federal efforts to monitor water quality over time.

FY 2009-2011 ACTIONS:

- ✓ Support the implementation of volunteer water quality monitoring training and programs that meet OEPA’s credible data requirements. → ODNR



## Priority: Sustainable Development

- Goal:** *Practice and promote sustainable practices that protect the natural resources of the Lake Erie basin and make them available for current and future generations to enjoy.*
  - Goal:** *Ensure that urban areas are sustainable, minimize impacts to the Lake Erie ecosystem, and improve the quality of life within watershed communities.*
  - Goal:** *Responsibly utilize Lake Erie resources and maximize recreational opportunities.*
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### Great Lakes Perspective:

Sustainable development is an approach to achieving balance between economic, societal, and ecological needs that has not been fully integrated into all aspects of the use, development, restoration, and conservation of Great Lakes resources. Sustainability works from the bottom-up, and is rooted in the actions and decisions by individuals, private enterprises and local communities. State and federal governments play important roles in promoting sustainable behavior through guidance, outreach, and support to enhance the capacity of local communities, as well as policy and funding decisions.<sup>36</sup>

### Ohio's Lake Erie Watershed:

Within Ohio, the proper use of land and resources is at the heart of sustainable development. As urban land area continues to grow more rapidly than populations, inefficiencies and waste become more apparent and more common. These are often realized in the form of higher individual tax burdens, reduced quality of infrastructure and government services, and the loss of a sense of place. The development of vehicle-based communities that limit the potential for alternative methods of transportation, including pedestrian walkways and mass transit, compound the issue. Through efforts such as the Lake Erie Balanced Growth Program, communities can begin to determine the best locations and designs for both conservation and development practices, while securing state support for implementation efforts. Fishing, boating, tourism, recreational facilities development, and commercial shipping are other areas where the responsible use of resources must be considered. The proper use of the Lake and its resources will allow for their enjoyment both now and into the future.

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<sup>36</sup> Great Lakes Regional Collaboration Strategy, p. 59

### 2014 Strategic Objectives:

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal for sustainable development. These objectives are meant to provide an ambitious target that will be evaluated as a part of the *2014 Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

#### **Support local watershed balanced growth planning and implementation by aligning state programs with endorsed local balanced growth plans:**

A Watershed Balanced Growth Plan is a locally driven and voluntary process. Through the use of incentives for participation and implementation, the state can assist local communities in the implementation of an endorsed Balanced Growth Plan. To coordinate efforts to provide incentives, the state has developed a *Lake Erie Balanced Growth Strategy* that describes how state programs, policies, and incentives will be aligned with local efforts to focus development efforts in PDAs and promote successful conservation efforts in PCAs. The fundamental principal to guide the actions of state agencies is that if local governments can agree on areas where development is to be encouraged (PDAs) and areas which are to be conserved (PCAs), the State of Ohio will support those decisions by aligning State programs to support those decisions and conversely will not utilize State programs to violate these locally based decisions.<sup>37</sup>

#### FY 2009-2011 ACTIONS:

- ✓ Assist in the development and endorsement of Watershed Balanced Growth Plans. → OLEC
- ✓ Include implementation of comprehensive community plans, watershed balanced growth plans, and implementation of endorsed watershed action plans as the three priorities in FY 09 for Coastal Management Assistance Grants. → OLEC, ODNR
- ✓ Develop effective state support and incentives for local governments to effectively guide land use change. → OLEC, OEPA, ODA, ODNR, ODH, ODOD, ODOT
- ✓ Identify and develop new tools to provide financial and legal support for balanced growth planning by local governments. → OLEC
- ✓ Emphasize urban redevelopment opportunities as a part of balanced growth planning with particular emphasis on the waterfront. → OLEC

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<sup>37</sup> Lake Erie Balanced Growth Strategy, December 12, 2007, p. 3

- ✓ Create a broadly supported vision of Lake Erie as an economic engine for Ohio by building upon current assets and taking advantage of new opportunities. → OLEC

#### **Assist local government adoption of Best Local Land Use Practices (BLLUPs):**

The Balanced Growth Panel decided to develop models and basic standards for best land use practices that could be adopted by local governments voluntarily and would be encouraged through incentives (funding, awards, etc.). Recommendations for model land use regulations and guidance that have been developed can be used by Ohio local governments to implement land use plans that will be more protective of the Lake Erie watershed while at the same time providing clear direction for continued development. The implementation of an annual education program is necessary to educate local professionals on the proper use of these practices, to avoid unintended outcomes and achieve maximum benefit.<sup>38</sup>

#### FY 2009-2011 ACTIONS:

- ✓ Provide training and technical assistance to agencies, watershed groups, and communities on the BLLUPs. → OLEC

#### **Integrate economic, environmental, and social impacts into all State of Ohio land-use planning and investments:**

The State of Ohio will operate on a \$27 billion budget in fiscal year 2009.<sup>39</sup> Including a consideration of the economic, environmental, and social impacts of state expenditures as they relate to land-use planning and capital investments can have a significant impact on the future landscape of many communities. The thoughtful expenditure of transportation, preservation, and redevelopment funds are just a few of the ways the State of Ohio can help positively shape the future of Ohio's communities.

#### FY 2009-2011 ACTIONS:

- ✓ Develop, improve, and administer the Coastal Internet Map Site. → ODNR
- ✓ Distribute educational tools, including the Ohio Coastal Atlas. → ODNR
- ✓ Support transportation projects which are proposed in accordance with land use plans developed to protect the Lake Erie watershed. → ODOT
- ✓ Continue work towards the development of an Office of Maritime. This office will coordinate with OLEC to assist with protection and restoration of the Lake Erie basin through implementation of relevant LEPR 2008 objectives. → ODOT

<sup>38</sup> Linking Land Use and Lake Erie: Best Local Land Use Practices, p. 3

<sup>39</sup> Executive Budget, Fiscal Year 2008-09, Briefing Document for Governor Ted Strickland's Budget, p. 3

**Preserve and protect valuable farmland for future agricultural uses:**

Because agriculture is a land-based industry, land is one of the most valuable resources to maintain the sector and all its related benefits. As a critical piece of the State of Ohio's economy, the protection of valuable farmland areas is important for maintaining agriculture as a viable industry. Current agricultural easement funding is derived almost exclusively from Clean Ohio bonds. The renewal of these bonds and the development of a second easement program will allow for greater protection of locally significant farmlands.

FY 2009-2011 ACTIONS:

- ✓ Seek continuation of funding from Clean Ohio bonds for Agricultural Easement Purchase Program (AEPP), which has preserved over 23,000 acres to date. → ODA
- ✓ Create a second agricultural easement program, which will supplement the successes of AEPP by focusing on the attributes of farm operations which are more prevalent in the Lake Erie watershed, including specific bioregions or microclimates. → ODA

**Protect and restore ecologically and culturally significant coastal properties:**

Since the original European settlement of Ohio's Lake Erie basin, over 90% of Lake Erie's marshlands have been filled or converted to some other use. This speaks to a portion of the 11,649 square miles that constitute the basin, of which, 78% has been altered from its original state.<sup>40</sup> The protection of ecologically and culturally significant properties can allow locals to maintain the sense of place that brought them or their ancestors to Ohio's north coast initially.

FY 2009-2011 ACTIONS:

- ✓ Organize *Coastweeks*, the *International Coastal Cleanup*, and other litter removal activities. → OLEC, ODNR
- ✓ Obtain federal approval of *Ohio's Coastal & Estuarine Land Conservation Program (CELCP)* Plan to maintain access to federal funding. → ODNR

**Explore and address the issue of floating homes and their moorings on Lake Erie:**

A new trend in waterfront development has been to provide floating home developments. These floating homes, while stationary, might best be described as manufactured homes on a floating base. These new developments will need to be managed to assure that they are as safe and environmentally protective as their land based equivalents.

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<sup>40</sup> Lake Erie Protection & Restoration Plan, 2000, p. 2

FY 2009-2011 ACTIONS:

- ✓ ODH will initiate discussions with Department of Commerce regarding floating homes and their moorings. → ODH, ODNR, OEPA

**Reduce significant adverse impacts of repeat flooding on resources, people, and property:**

Flooding impacts both the natural and the built environment. A comprehensive approach to stormwater management and the adverse impacts of repeat flooding on developed properties is important to protecting capital investments made within the watershed.

FY 2009-2011 ACTIONS:

- ✓ Conduct an inventory of existing floodplain resource management authorities that will be the basis for identifying policy procedures. → ODNR
- ✓ Develop a Departmental Floodplain Management Directive. → ODNR
- ✓ Ensure that floodplain development funded by state agencies is sustainable and avoids unnecessary flood risk. → ODNR
- ✓ Provide Educational outreach to all local floodplain administrators in the Lake Erie Watershed to increase awareness for flood hazard management in watershed context beyond regulatory floodplain areas. → ODNR

**Identify and address gaps in the green infrastructure system in urban communities within the Lake Erie basin:**

The use of green infrastructure systems in urban communities can help manage stormwater, reduce flooding, allow for groundwater recharge, and provide important recreational grounds for urban residents. Planning for the proper types and locations of green infrastructure will allow for the most effective use of available space.

FY 2009-2011 ACTIONS:

- ✓ Determine a pilot community or urban watershed for assessment. → ODNR
- ✓ Complete the pilot assessment, identify strategies to address gaps, implement the strategies, and evaluate other communities/watersheds for future assessments. → ODNR
- ✓ Adopt stormwater BMP's for transportation projects to protect water quality in the Lake Erie watershed. → ODOT

**Enhance and increase public access opportunities to Lake Erie, public beaches, parks, nature preserves, and wildlife areas:**

Recreation along Lake Erie and throughout the watershed relies on public access to these facilities. As only 13% of the Lake Erie shoreline is open to public access, providing adequate publicly accessible areas is an essential piece of allowing all Ohioans the opportunity to enjoy what Lake Erie provides.

FY 2009-2011 ACTIONS:

- ✓ Geneva State Park – Multi-purpose/bike trail – new construction along the shoreline will link campground, cabins, beach, marina, picnic areas, lodge and Village. → ODNR
- ✓ East Harbor State Park – Apply for kayak/canoe access trail grant. → ODNR
- ✓ Geneva State Park – Shoreline Parking Area – Ashtabula county wants to develop a 20 car parking area and public restrooms on leased property just east of the lodge. → ODNR

**Create new water-based recreational opportunities along or near Lake Erie:**

Water-based recreation includes a variety of activities, from boating and fishing to swimming and diving. Providing adequate facilities and opportunities across the watershed is necessary to make these activities more accessible to all Ohioans.

FY 2009-2011 ACTIONS:

- ✓ Geneva State Park – Develop transient boat dock and maintain marina rental docks. → ODNR
- ✓ Cleveland Lakefront – Finalize plan for Euclid Beach Fishing Pier. → ODNR
- ✓ Develop and designate at least one state water trail along the shore of Lake Erie and its tributaries. → ODNR
- ✓ Develop the Lake Erie Islands Water Trail – Establish access sites, signage and a brochure for the designation of a water trail that links the mainland to the Lake Erie islands to enhance recreational boating opportunities. → ODNR

**Create new land-based recreational opportunities along or near Lake Erie:**

Land-based recreation includes a variety of activities, from hiking and camping to biking and bird-watching. Providing adequate facilities and opportunities across the watershed is necessary to make these activities more accessible to all Ohioans.

FY 2009-2011 ACTIONS:

- ✓ East Harbor State Park – Apply for Federal grant to extend multi-use trail. → ODNR
- ✓ Construct a bike path as a part of the State Route 611 project in the Village of Sheffield. → ODOT
- ✓ Provide technical assistance to funded communities to complete the *Safe Routes to School Program*. → ODOT
- ✓ Design multi-use trail as part of the I-90 bridge replacement project on the Black River. → ODOT
- ✓ North Coast Harbor – City of Cleveland – complete a walking loop around the North Coast Harbor. → ODOT
- ✓ Cooperate with local agencies in the development of a Cuyahoga River East Bank boardwalk in downtown Cleveland. → ODOT
- ✓ Cooperate with local agencies in the completion of the final six miles of the Ohio & Erie Towpath Trail to its northern terminus on the Cuyahoga River in downtown Cleveland. → ODOT

**Develop and maintain ODNR facilities with sustainable practices and products where practical:**

The use of more sustainable practices, which have a reduced impact on the environment is especially important when this development occurs within natural areas, which have been preserved through publicly funded sources. Within state operated facilities, the use of sustainable practices contributes to the preservation of resources and has a positive impact on the facilities and natural areas they are often located within.

FY 2009-2011 ACTIONS:

- ✓ Geneva State Park & East Harbor State Park – develop office & maintenance facilities for Div. of Watercraft. → ODNR
- ✓ Explore potential for inclusion of sustainable practices during implementation of all State Park maintenance and improvement activities. → ODNR
- ✓ Establish a statewide facility emergency repair fund to address immediate boating facility needs for the protection of public health and safety. → ODNR

**Provide a diversity of recreational fishing opportunities for Ohio anglers on Lake Erie waters and tributaries:**

Fishing opportunities within the Lake Erie watershed are as diverse as Ohio's four seasons. Ice fishing on the Lake, steelhead fishing on the Chagrin, walleye runs in the Maumee, and smallmouth in the throws of summer provide a variety of species, locations, and times for enjoying fishing experiences within the Lake Erie basin. Providing adequate facilities and opportunities across the watershed is necessary to make these activities more accessible to all Ohioans

FY 2009-2011 ACTIONS:

- ✓ Refine methods for aligning Ohio sport fishing regulations with interagency quotas on walleye and yellow perch. → ODNR
- ✓ Conduct a creel survey on steelhead tributary fisheries to obtain relevant statistics and learn about angler interests. → ODNR
- ✓ Synthesize information from 2006-07 shoreline creel survey to determine potential ways to maintain or improve the status of that fishery. → ODNR
- ✓ Examine statistical models that incorporate fisheries on multiple fish species and facilitate the development of objectives that accommodate benefits and trade-offs of management decisions on various species. → ODNR
- ✓ Promote recovery of fish stocks in the Sandusky River system when fish passage is restored. → ODNR
- ✓ Enhance seasonal sport fishing information to Lake Erie anglers. → ODNR

**Sustain a commercial fishing industry in Ohio waters of Lake Erie, with an emphasis on under-utilized fish species:**

The Ohio commercial fishery on Lake Erie consists of 18 active trap net and 12 active seine licenses, producing an annual average catch of about 3.9 million pounds with an average dockside value of about \$3.3 million. On average, yellow perch account for about 80% of the annual economic value, but only about 30% of the annual catch. The remaining 70% of the commercial catch consists of a variety of species that are under-utilized by the Ohio recreational fishery, most prominently white bass, white perch, freshwater drum, carp, and channel catfish. Recent legislative changes in the Ohio management system provide flexibility to commercial fishers in pursuing these under-utilized species without sacrificing their individual license shares of yellow perch. The sustainability of the Ohio commercial fishery will require a catch consisting of both economically valuable (though variably abundant) species and lower-valued species of more stable abundance, as well as having markets for all species.

FY 2009-2011 ACTIONS:

- ✓ Implement a new management system that includes electronic catch reporting and vessel monitoring systems for all trap net license holders. → ODNR

- ✓ Evaluate the use of under-utilized fish species under the new management system. → ODNR
- ✓ Consider adjustments to the new commercial fishing management system where appropriate. → ODNR

#### **Foster safer boating on the waters of Lake Erie:**

With more than 415,000 registered boats in Ohio, the potential for accidents while on the Lake, and other water bodies, is great. Providing the education and patrols necessary to create a safe boating environment allows more Ohioans to share the water.

##### FY 2009-2011 ACTIONS:

- ✓ Increase law enforcement vigilance by providing marine patrol training to law enforcement agencies around the Lake Erie Basin. → ODNR
- ✓ Increase public education on Lake Erie by creating Watercraft Education Officers in Toledo, Sandusky and the Cleveland ODNR Division of Watercraft Field Office locations, enhancing and providing safe boating instruction year round. → ODNR
- ✓ Continue to support existing safe boating councils in the Western, Central and Eastern basins of Lake Erie, developing partnerships and providing safe boating opportunities and festivals to grow and promote recreational boating on Lake Erie. Create two new councils. → ODNR
- ✓ Build a permanent ODNR Division of Watercraft Field Office location in the central basin for boat registration sales, boating education, law enforcement support, constituent relations and community outreach to one of the boating capitals of Ohio. → ODNR

#### **Provide adequate harbors of refuge and transient boat dockage and launch facilities along the Lake Erie shoreline:**

Facilities that allow for boaters to travel Ohio's North Coast by boat increase local tourism and provide a unique experience that few states can offer. Maintenance and development of adequate facilities are necessary to handle these boaters.

##### FY 2009-2011 ACTIONS:

- ✓ Geneva State Park Harbor – Dredging of Geneva's marina to provide boating Channels for safe moorage and Lake Erie access. → ODNR
- ✓ Cleveland Lakefront State Park – Remove sandbars from navigation lanes to provide safe boating channels for Lake Erie access. → ODNR

- ✓ Geneva State Park – Obtain funding for a sand by-pass feasibility study and engineering report. → ODNR
- ✓ Middle Bass Island State Park – Marina basin, docking and park development. → ODNR
- ✓ Cleveland Lakefront State Park– Gordon Park Boat ramp rehabilitation. (Possible Port relocation). → ODNR
- ✓ Cleveland Lakefront State Park – Wildwood Park Boat ramps rehabilitation. → ODNR
- ✓ East Harbor State Park– Dredging of boating channels for Lake Erie access. → ODNR
- ✓ Establish a transient marina facility along the Cleveland waterfront. → ODNR
- ✓ Develop a Lake Erie transient trail system to promote tourism and Lake Erie’s coastal history. → ODNR
- ✓ Pursue locations and initiate partnerships for construction/improvement of launch ramps, transient moorage, protective break walls, slips, docks, put-in points, and other amenities in concert with *Boating on Ohio Waterways (BOW) Plan* and the *Comprehensive Boating Facilities Plan*. → ODNR
- ✓ Actively reinvest boaters’ dollars into access and facilities to enhance boating opportunities. → ODNR
- ✓ Market financial assistance programs such as the Cooperative Boating Facilities (CBF) grant program, the Boating Infrastructure Grant Program (BIGP), Clean Vessel Act (CVA) grant program and the Recreational Marine Loan Program in key access areas. → ODNR
- ✓ Work toward development of transient moorage opportunities on Lake Erie including Middle Bass Island. → ODNR
- ✓ Continue grant funding and programmatic support for dredging to ensure recreational boating access to Lake Erie. → ODNR
- ✓ Target regions on Lake Erie for boating access development and renovations using guidance from the *Comprehensive Boating Facilities Plan* and the *BOW Plan*. → ODNR
- ✓ Assist local municipalities in the design and construction of waterway access projects emphasizing updates to address boaters’ needs. → ODNR
- ✓ Assist private sector marina development on Lake Erie through the Recreation Marine Loan Program. → ODNR

- ✓ Gather and evaluate customer input to determine the level of customer satisfaction with Watercraft services. → ODNR
- ✓ Complete five-year rule review & update of the Marina rules. → ODH, ODNR

#### **Obtain an annual real tourism economic growth in Ohio's Lake Erie counties:**

Tourism impacts can be defined as measurements over time, while tourism activity is a snapshot of economic activity not linked to growth or decline. In order to develop measurable objectives, it is necessary for methodology to remain consistent. For the second time in 10 years, the methodology for measuring tourism impact in the State of Ohio has been changed. Although this means the state will have access to a more thorough and inclusive estimate of tourism activity, it also means that data can no longer be used to measure "impact" because methodology has changed. These recommendations suggest participating in ongoing state tourism studies, but also developing a way to measure economic impact based on real data not dependent on methodology selection.

#### FY 2009-2011 ACTIONS:

- ✓ Develop a standardized measure of economic impact, possibly through county reports of sales tax revenue based on North American Industry Classification System codes. →OLEC
- ✓ Work with the America's Byways Resource Center to develop a tool for measuring spending and investment impact of byway designation. → ODOT
- ✓ Support America's Byways funding for projects to enhance Lake Erie Coastal Ohio Trail experience and economic impact potential. → ODOT

#### **Develop a strategy for enhancing the Great Lakes image to support Great Lakes Regional Collaboration goals and objectives:**

The *Great Lakes Regional Collaboration* provides several recommendations that reinforce the need for developing a coordinated approach at marketing the Great Lakes experience. Within the Sustainable Development recommendations, this plan states the need to build outreach that brands the Great Lakes as an exceptional, healthy, and competitive place to live, work, invest and play. In addition, a recommended action includes developing a marketing strategy for the Great Lakes targeted at a national audience. Rationale includes the ability to build a sense of ownership and pride in regional ecosystems, attract new residents and businesses, and to develop national support for the restoration and protection of the Great Lakes because of its ecological and economic importance to the country. This plan also defines the important role of education and outreach in developing resources for creating resource-based tourism projects and products.

#### FY 2009-2011 ACTIONS:

- ✓ Implement Great Lakes state tourism and educational alliance to develop sustainable tourism initiatives. → OLEC
- ✓ Identify and develop tools for bridging the gap between scientists, planners, managers, and local county and municipal staff and the tourism industry, to help them understand the relationship between their role and tourism's economic potential. → OLEC

**Utilize Lake Erie coastal tourism for sustainable economic development and protection of historic, natural, recreational, scenic, cultural, and archaeological resources:**

Sustainable tourism involves more than just marketing and image-building; one of its priorities is helping to protect those resources that are important for environmental and economic integrity. Creating a regional vision of the future lakeshore by working with communities and their existing and proposed development plans is an essential strategy. The long-term benefit of creating such a vision is the ability to move toward a clean, healthy Lake Erie that provides access, charismatic communities, and memorable experiences for residents, employees and visitors. Short-term benefits include identification of existing community improvement projects related to public access and byway priorities, development of new community-driven improvement projects that further enhance the coastal experience for residents and visitors, increased regional cooperation and communication as projects are identified and concepts reviewed, and development of a master list of byway-wide projects (comprised of both existing and new projects that meet byway planning priorities) that will be eligible for further Federal Highway Administration funding for completion, and development of preliminary way-finding plan to enhance education and visitation.

FY 2009-2011 ACTIONS:

- ✓ Implement Lake Erie tourism programs to promote tourism, increase revenues, and conserve areas of historical, scenic, and ecosystem importance. → OLEC
- ✓ Assist local communities with coastal infrastructure planning, development, and acquisition to ensure proper growth of tourism opportunities. → OLEC
- ✓ Coordinate a coastal plan for a united vision of coastal tourism development and a byway-wide concept of linked signage, interpretation, and public outreach to promote Ohio's north coast as a complete tourism destination. → OLEC
- ✓ Create and distribute a public access guide to ports and publicly accessible natural, cultural, and historical amenities and attractions in Ohio's coastal area. → ODNR

## Priority: Water Withdrawals

**Goal:** *Reduce significant adverse impacts of water withdrawals and losses on the Great Lakes basin and watersheds.*

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### Great Lakes Perspective:

On December 13, 2005, the Great Lakes Governors and Premiers signed agreements at the Council of Great Lakes Governors' (CGLG) Leadership Summit that provides unprecedented protections for the Great Lakes–St. Lawrence River Basin. The agreements, which include a ban on new diversions of water outside the Basin with limited exceptions, were approved by the Governors of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin and the Premiers of Ontario and Québec.

The agreements detail how the States and Provinces will manage and protect the Great Lakes—St. Lawrence River Basin and will provide a framework for each State and Province to enact laws protecting the Basin. The *Great Lakes – St. Lawrence River Basin Water Resources Compact* must be enacted into law in each of the Great Lakes states, then ratified by the United States Congress.<sup>41</sup>

### Ohio's Lake Erie Watershed:

Within Ohio, House Bill 416 was passed on February 19, 2008. The Bill was approved in the Senate on June 10, 2008 and signed into law on June 27, 2008 by Governor Strickland, ratifying the *Great Lakes-St. Lawrence River Basin Water Resources Compact*. The ratification legislation contains provisions for the establishment of an advisory board for the purpose of developing recommendations for legislation that is necessary to implement the requirements of the *Compact*. Among the issues that the board is required to address are: thresholds for regulating new or increased water withdrawals, development of the state's water conservation and efficiency programs, requirements regarding the review of lists of existing water users, and the methodology for determining the capacity of existing water withdrawal facilities. The board has the authority to address other important issues needed to fully implement the *Compact*. Also, the *Compact* identifies groundwater as part of the waters of the basin and so it is protected by all its provisions. With regard to the sale of containerized water outside the watershed, the ratification legislation signed by the Governor in June considers water incorporated into a product for either intermediate or end-use consumers either within or outside of the basin as a

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<sup>41</sup> Council of Great Lakes Governors website, [www.cglg.org](http://www.cglg.org)

consumptive use and not a diversion, but classifies the removal of water from the basin in a container greater than five and seven-tenths gallons in capacity as a diversion and therefore subject to all the restrictions identified in the *Compact*. The Great Lakes Compact Resolution was introduced in Congress on July 23, 2008.

### **2014 Strategic Objectives:**

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal for water withdrawals. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

#### **Ensure the sustainable use of our water resources while confirming that the States retain authority over water use and diversions of Great Lakes waters:**

The Ohio General Assembly has enacted the *Compact*, which has since received the Governor's signature. Enabling legislation and rules are necessary to implement the *Compact* in Ohio. As well, the Compact must be ratified by the United States Congress. The *Compact* includes provisions for accomplishing the following: 1) Banning diversions of water to areas outside the Great Lakes - St. Lawrence River Basin with limited exceptions; 2) Establishing a new, consistent standard that the Great Lakes States and Provinces will use to review proposed uses of Great Lakes water; 3) Strengthening technical data collection and sharing among the States and Provinces to assist in decision-making; 4) Requiring the States and Provinces to implement conservation and efficiency programs; 5) Encouraging lasting economic development while making sure water uses are sustainable; and 6) Committing to an ongoing process that allows for public involvement.

#### **FY 2009-2011 ACTIONS:**

- ✓ Support enabling legislation and rules to implement the *Great Lakes – St. Lawrence River Basin Water Resources Compact*. → ODNR

## Priority: Climate Change

- Goal:** *Help watershed communities and landowners understand and prepare for climate change and its related impacts.*
  - Goal:** *Implement responsible environmental practices that will reduce the state's contribution to climate change through reduced emissions and carbon sequestration strategies.*
  - Goal:** *Assist with the development and responsible use of alternative energies where feasible and beneficial.*
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### Great Lakes Perspective:

For over the past 200 years, the burning of fossil fuels, such as coal and oil, and deforestation has caused the concentrations of heat-trapping "greenhouse gases" to increase significantly in our atmosphere. These gases prevent heat from escaping to space, somewhat like the glass panels of a greenhouse.

As the concentrations of these gases continue to increase in the atmosphere, the Earth's temperature is climbing above past levels. According to NOAA and NASA data, the Earth's average surface temperature has increased by about 1.2 to 1.4°F in the last 100 years. The eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 2005. Most of the warming in recent decades is very likely the result of human activities. Other aspects of the climate are also changing such as rainfall patterns, snow and ice cover, and sea level. Scientists are certain that human activities are changing the composition of the atmosphere, and that increasing the concentration of greenhouse gases will change the planet's climate. However, they are not sure by how much it will change, at what rate it will change, or what the exact effects will be.<sup>42</sup>

### Ohio's Lake Erie Watershed:

Within Ohio, climate change has become a topic of great significance, hence its addition to the list of priorities in this plan, which otherwise echo the *Great Lakes Regional Collaboration's* priorities for protection and restoration. Ohio has become a founding and active member of *The Climate Registry*, Ohio EPA staff members have become active participants in climate change-related issues such as carbon sequestration pilot projects, and Governor Strickland's Executive Order 2007-02S has challenged all state agencies, boards, and commissions to endeavor to

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<sup>42</sup> US EPA website, Climate Change, <http://www.epa.gov/climatechange/basicinfo.html>

achieve an overall reduction in building energy use for their facilities by 15%. Through this plan, a three-pronged approach to climate change has been proposed. This plan will: (1) help residents prepare for climate change and its impacts, (2) implement responsible environmental practices that will reduce the state's contribution to climate change, and (3) assist with the development and responsible use of alternative energy technologies.

### **2014 Strategic Objectives:**

The following Strategic Objectives have been identified to help move Ohio closer to addressing its goal for climate change. These objectives are meant to provide an ambitious target that will be evaluated as a part of the 2014 *Lake Erie Quality Index* (LEQI). Each Strategic Objective is followed by one or more actions to be taken in State Fiscal Years 2009-2011.

#### **Coordinate with regional and national efforts to address climate change and its effects:**

On the national level, several structures are in place or are forming that will allow states to interact on topics related to climate change. Participation by Ohio agencies in national efforts to understand and address climate change and its effects will provide Ohioans with the most accurate and up-to-date information and science available.

#### **FY 2009-2011 ACTIONS:**

- ✓ Participate in the Coastal States Organization's alternative energy and climate change workgroups. → ODNR
- ✓ Work to develop accurate and transparent greenhouse gas emissions measurement protocols as a part of the Climate Registry. → OEPA
- ✓ Encourage Ohio businesses to participate in the Climate Registry. → OEPA
- ✓ Support the collection of data necessary to provide a better understanding of the potential impacts of climate change. → OLEC
- ✓ Provide for better coordination between state agencies, local governments, the private sector, academia, and the general public in regards to climate change science, potential impacts, and recommended practices. → OLEC
- ✓ Broaden participation in Ohio EPA's Climate Change Taskforce. → OEPA

#### **State agencies, boards, and commissions will endeavor to achieve an overall reduction in building energy use for their facilities by 15% by the end of FY 2011:**

Ohio is one of the most energy abundant states in the country, rich with a diverse array of energy resources ranging from fossil fuels to renewable resources. Ohio's economy also ranks among the most energy-intensive in the nation, home to energy-dependent industries ranging from agriculture to manufacturing. It is the responsibility of state government to lead by example in reducing energy consumption in this era of steep energy prices, mounting environmental concerns, and persistent energy security risks. By improving energy efficiency

and adopting advanced energy utilization technologies, we can make the most of our existing energy resources and also stimulate activity and investment in the energy efficiency services sector. Each state agency, board, and commission has been directed by Governor Ted Strickland to achieve an overall reduction of 5% in building energy use for its facilities in FY 2008 and 15% by the end of FY 2011.<sup>43</sup>

FY 2009-2011 ACTIONS:

- ✓ Investigate potential use of wind power as an alternative energy source at State Park facilities. → ODNR
- ✓ Incorporate “Green” practices into new facility construction activities. → ODNR, ODOT
- ✓ Initiate inclusion of wind power as appropriate. → ODNR

**Investigate methods of farming and raising row crops that will diminish the carbon footprint in the Lake Erie basin, particularly in the heavily-farmed Maumee River basin:**

Carbon sequestration is the process through which agricultural and forestry practices remove carbon dioxide (CO<sub>2</sub>) from the atmosphere. The term “sinks” is also used to describe agricultural and forestry lands that absorb CO<sub>2</sub>, the most important global warming gas emitted by human activities. Agricultural and forestry practices can also release CO<sub>2</sub> and other greenhouse gases to the atmosphere. Sequestration activities can help prevent global climate change by enhancing carbon storage in trees and soils, preserving existing tree and soil carbon, and by reducing emissions of CO<sub>2</sub>, methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O).<sup>44</sup>

FY 2009-2011 ACTIONS:

- ✓ Determine and help promote appropriate agricultural/farming BMPs. → ODNR
- ✓ Promote opportunities for terrestrial carbon sequestration to Ohio's agricultural producers and landowners. → ODA, ODNR

**Support opportunities for terrestrial carbon sequestration including CO<sub>2</sub> injection:**

Geologic sequestration (GS) is the process of injecting CO<sub>2</sub> from a source, such as coal-fired electric generating power plants, through a well into the deep subsurface. With proper site selection and management, geologic sequestration could play a major role in reducing emissions of CO<sub>2</sub>. Underground injection of CO<sub>2</sub> for purposes such as enhanced oil recovery and enhanced gas recovery is a long-standing practice. CO<sub>2</sub> injection specifically for geologic sequestration involves different technical issues and potentially much larger volumes of CO<sub>2</sub>

<sup>43</sup> Executive Order 2007 – 02S, Coordinating Ohio Energy Policy and State Energy Utilization

<sup>44</sup> Carbon Sequestration in Agriculture and Forestry, USEPA, <http://www.epa.gov/sequestration/>

than in the past.<sup>45</sup> The Intergovernmental Panel on Climate Change (IPCC) estimated that there is enough capacity worldwide to permanently store as much as 1,100 gigatons of CO<sub>2</sub> underground. For reference, worldwide emissions of CO<sub>2</sub> from large stationary sources is approximately 13 gigatons per year.<sup>46</sup>

FY 2009-2011 ACTIONS:

- ✓ Identify pilot projects within the Lake Erie basin for CO<sub>2</sub> injection. → ODNR

**Inventory opportunities for reforestation across the basin:**

Carbon sequestration is the process through which agricultural and forestry practices remove carbon dioxide (CO<sub>2</sub>) from the atmosphere. The term “sinks” is also used to describe agricultural and forestry lands that absorb CO<sub>2</sub>, the most important global warming gas emitted by human activities. Agricultural and forestry practices can also release CO<sub>2</sub> and other greenhouse gases to the atmosphere. Sequestration activities can help prevent global climate change by enhancing carbon storage in trees and soils, preserving existing tree and soil carbon, and by reducing emissions of CO<sub>2</sub>, methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O).<sup>47</sup>

<b>Key Forestry Practices<sup>48</sup></b>	<b>Typical definition and some examples</b>	<b>Effect on greenhouse gases</b>
Afforestation	Tree planting on lands previously not in forestry (e.g., conversion of marginal cropland to trees).	Increases carbon storage through sequestration.
Reforestation	Tree planting on lands that in the more recent past were in forestry, excluding the planting of trees immediately after harvest (e.g., restoring trees on severely burned lands that will demonstrably not regenerate without intervention).	Increases carbon storage through sequestration.
Forest preservation or avoided deforestation	Protection of forests that are threatened by logging or clearing.	Avoids CO <sub>2</sub> emissions via conservation of existing carbon stocks.
Forest management	Modification to forestry practices that produce wood products to enhance sequestration over time (e.g., lengthening the harvest-	Increases carbon storage by sequestration and may also avoid CO <sub>2</sub> emissions by altering management. May

<sup>45</sup> Geological Sequestration of Carbon Dioxide, USEPA, [http://www.epa.gov/ogwdw/uic/wells\\_sequestration.html](http://www.epa.gov/ogwdw/uic/wells_sequestration.html)

<sup>46</sup> Geologic Sequestration, USEPA, [http://www.epa.gov/climatechange/emissions/co2\\_geosequest.html](http://www.epa.gov/climatechange/emissions/co2_geosequest.html)

<sup>47</sup> Carbon Sequestration in Agriculture and Forestry, USEPA, <http://www.epa.gov/sequestration/>

<sup>48</sup> Forestry Practices that Sequester or Preserve Carbon, USEPA, <http://www.epa.gov/sequestration/forestry.html>

	regeneration cycle, adopting low-impact logging).	generate some N <sub>2</sub> O emissions due to fertilization practices.
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FY 2009-2011 ACTIONS:

- ✓ Implement a pilot marginal farmland assessment, identify priority areas for reforestation, and identify the means to reforest these areas. → ODNR
- ✓ Implement the reforestation of priority areas as part of a pilot project and assess the planning and implementation process and results. → ODNR

**Produce 25% of retail energy from advanced energy technology by 2025, with at least half of this energy created in Ohio:**

Energy is at the core of Ohio’s economic and environmental health. The production and use of electricity is the central element of Ohio’s energy economy. Assuring an adequate supply of affordable energy service is a basic responsibility of government. *Energy, Jobs, and Progress for Ohio* is one piece of Governor Ted Strickland’s *Turnaround Ohio* proposal. As a part of this proposal, “principle two” called for policies to stimulate renewable and advanced energy production in Ohio as an instrumental tool in attracting investment in related energy technology manufacturing. This principle requires that by 2025, a minimum of 25% of the electricity sold in Ohio must be generated from advanced energy technologies, and no less than half of this must be from renewable resources. As well, at least half of the advanced energy requirement must be met through assets sited in Ohio, including a “carve-out” requirement for solar power.<sup>49</sup>

FY 2009-2011 ACTIONS:

- ✓ Incorporate criteria for the establishment of wind energy facilities in Lake Erie through an update to existing Ohio Administrative Code rules regarding submerged lands. → ODNR
- ✓ Assist with development of a voluntary, cooperative working agreement model for wind energy facilities in Ohio. → ODNR

**Provide research and technical assistance to watershed communities to ensure optimal siting of advanced energy facilities:**

To meet the required and desired outputs from advanced energy technologies, new facilities will need to be developed. No energy source is without its potential negative impacts on the Lake Erie ecosystem. The management of these impacts to balance energy production and harmful consequences is an important part of advanced energy planning and implementation. State

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<sup>49</sup> Energy, Jobs, and Progress for Ohio, Turnaround Ohio, p. 1-4, <http://governor.ohio.gov/Portals/0/Policy/Energy%20Jobs%20Progress.pdf>

agencies will play a key role in providing technical assistance to communities working to design and build facilities within the Lake Erie basin, and potentially on Lake Erie itself.

FY 2009-2011 ACTIONS:

- ✓ Collaborate with private interests to reduce impacts to avian species from the siting of nearshore and offshore wind energy facilities. → ODNR
- ✓ Provide partial funding through a NOAA enhancement grant for a Division of Wildlife wind energy biologist. → ODNR