Section 1: Executive Summary

Photo: Upper Thames River Conservation Authority

Working under the adaptive management concept, the Binational Executive Committee (BEC) recommended that a LaMP be produced for each lake by April 2000, with updates every two years thereafter. Consistent with the BEC resolution, the Lake Erie LaMP 2000 was presented in a loose-leaf format, with general tabbed sections, that could be inserted into a three-ring binder. This format allows the LaMP to be viewed as a working document, easily adding new material and removing outdated information as needed. However, the 2002 report was presented as a separate document. After some restructuring of the table of contents and binder tabs for 2004, the 2006 updates were simply incorporated into the binder. This 2008 report incorporates the updates since 2006.

It is important to understand that the Lake Erie LaMP document is a management plan and not a state of the lake report. Biennial updates are meant to measure the progress under the LaMP work plan or present the results of research or assessment reports that were undertaken or initiated by or in collaboration with the Lake Erie LaMP. This 2008 revised document does not include reference to all actions that have occurred in the Lake Erie watershed since the 2006 report. Also note that even though the development and implementation of lakewide management plans are specifically addressed under Annex 2 of the Great Lakes Water Quality Agreement, a number of other annexes guide the approach to the development of Lake Erie LaMP goals and the implementation of recommended actions. Connections to specific annexes are noted throughout the LaMP document.

In order to best measure the effectiveness of LaMP supported implementation actions, the Lake Erie LaMP must still finalize measurable indicators that identify the current state of the ecosystem relative to the desired state of the ecosystem, as described by the Lake Erie LaMP vision and ecosystem management objectives. The Indicators Task Group has been preparing an indicator matrix to better understand and organize the application of the proposed indicators. The matrix structure is based on the five habitat classification zones identified for the Lake Erie basin via workshops under the Lake Erie Millennium Network. The indicators are divided into two categories: pressure (addressing management actions and processes) and state. The matrix has been populated by candidate indicators and is being refined using selection criteria defined by the Task Group. The result will be a suite of indicators that meet the needs of the Lake Erie LaMP.

In the last decade, in-lake concentrations of total phosphorus have been on the rise. Tributary loadings of dissolved phosphorus are increasing. Hypoxia and anoxia in the central

basin are more extensive and occur over a longer period of time. Blooms of the cyanobacteria Microcystis and the extensive growth of Cladophora have been observed in the last few years to rival those of the 1970s. Another species of cyanobacteria, identified as *Lyngbya wollei*, which forms dense floating mats, began growing profusely in Maumee Bay in 2006. It has caused significant shoreline fouling and does not seem to die back during winter. On the fishery side, yellow perch stocks continue to recover well throughout the lake; however, the top predator species populations of walleye, lake trout and lake whitefish continue to struggle. The Lake Erie Committee of the Great Lakes Fishery Commission continues to develop and implement strategies to improve, stabilize and monitor the status of the Lake Erie fish community.

Lake Erie was monitored in 2004 under the U.S. and Canada collaborative comprehensive survey (ECCS) with the next round planned for 2009. Sampling was focused on observing key physical and water quality measurements, nearshore/offshore exchanges and the impacts of zebra and quagga mussels. In 2005, under the International Field Year on Lake Erie (IFYLE) program, research and monitoring was done to gather information to help forecast the onset, duration and extent of hypoxia and harmful algal blooms across the basin and to assess the ecological consequences of hypoxia on the food web. The results of this monitoring and research suggest that different processes control conditions in the offshore than affect the nearshore. Leading hypotheses implicate zebra and quagga mussels, timing of major storms, changes in the food web, and changes in the type of phosphorus entering the lake as major causes of the lake's current problems. Long-term tributary monitoring work, conducted by the National Center for Water Quality Research at Heidelberg College in Ohio, suggests a trend of increasing concentrations and loads of dissolved reactive phosphorus from the monitored tributaries in Michigan and Ohio. This trend is of particular interest as dissolved reactive phosphorus is the most bioavailable form of phosphorus.

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The Lake Erie LaMP participants have compiled and assessed a significant amount of information to determine the current problems in the lake, their sources, and the ecosystem objectives that must be achieved if the Lake Erie LaMP vision is to be obtained. It is now time to transition to implementation on a lakewide scale. LaMP managers have begun to consider the following questions: What actions or programs are most important to protect and restore the lake? Who has the authority to implement those actions? Is additional funding needed and, if so, where will it come from? Is the LaMP management structure sufficient to achieve the Lake Erie vision? What must be done to ensure that the LaMP becomes the long term universal guidance plan for managing Lake Erie?

To help answer these questions, over the last two years, the Lake Erie LaMP partnered with the International Joint Commission (IJC) and the Lake Erie Millennium Network to hold several workshops and discussion sessions to better define implementation and the direction of the LaMP. Through these discussions, it was agreed that nutrient management (particularly for phosphorus) remains the top priority for improving the lake. Accordingly, the Management Committee directed that the focus of the Lake Erie LaMP over the next two years will be on assessing the current state of knowledge on the science of nutrients in the

lake (both open lake and nearshore), and taking that information as the basis for developing a nutrient management strategy for the lake. The nutrient management strategy will be a call to action for LaMP partners to commit to actions as appropriate. The existing LaMP membership will also be examined to determine if additional agencies or jurisdictions must be recruited to be active partners in implementing the strategy.

Following up on earlier conclusions that it was imperative for Remedial Action Plans (RAP) and watershed initiatives around the lake to be more aware of the impacts of their management decisions on the lake, this 2008 update includes the progress of 12 RAPs and seven watershed initiatives around Lake Erie. Each update provides a short history of the individual RAP or watershed process and past actions, progress since the 2006 LaMP report and next steps. These reports indicate continuing interest and participation in RAP and watershed programs. The involvement of local groups and agencies is a critical component in the success of restoring beneficial uses to these areas and to ultimately reducing impacts on the lake. Some highlights from the last two years include:

- Approximately 500,000 yds^3 of PCB-contaminated sediment have been removed from the Ashtabula River Area of Concern (AOC);
- The Maumee RAP has received a grant for nearly $600,000 from the Joyce Foundation to improve habitat and conduct an ecological risk assessment;
- Multiple habitat improvement projects have been constructed in the Buffalo AOC;
- Over 400 acres of forest and wetland habitat have been restored in the Essex region of southwest Ontario;
- Many of the AOCs and watershed areas have habitat restoration projects, Combined Sewer Overflow (CSO) control/elimination projects, and storm water practices underway;
- Under the Rouge River wet weather demonstration project, 77 of 83 CSOs are now under control and 89 out of 127 miles of the river are now free from CSO impacts.