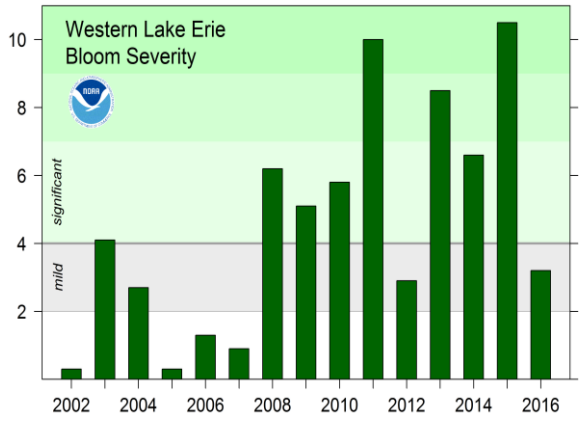
Factsheet: U.S. Action Plan for Lake Erie (2018)

COMMITMENTS AND STRATEGY FOR PHOSPHORUS REDUCTION

Problem

Excessive algal growth in Lake Erie poses significant threats to the ecosystem and human health of a waterbody that provides drinking water for 12 million people in the U.S. and Canada. Viewable from space, algae can persist for weeks during summer as blooms are carried by winds and currents eastward through the lake. Recent years have seen record-setting algal blooms and associated "dead zones" – oxygen depleted areas created when algae die and decompose. These events negatively impact the lake's critical $12.9 billion tourism industry and world class fishery.



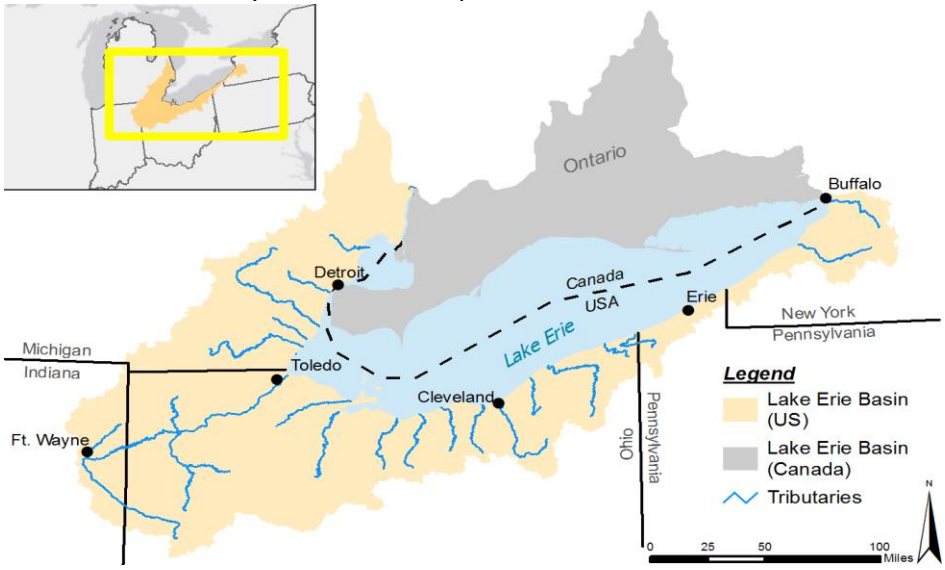
Images of algal blooms and severity. Credit: NOAA and Ohio Sea Grant.

Goals

The U.S.-Canada binational Great Lakes Water Quality Agreement sets goals and timeframes to address excess algal growth in Lake Erie through nutrient management. New phosphorus loading targets were established in 2016. The targets call for significant reductions from the Maumee River, and other sources in the western and central portions of the basin. The U.S. committed to reduce these sources by 40 percent from a 2008 baseline, which is a reduction of over 3,000 metric tons or 7.3 million pounds. Reducing nonpoint phosphorus losses during storm events, especially during the spring, is of utmost importance and will be critical to our success in preventing harmful and nuisance algal blooms in Lake Erie.

Approach

We developed the U.S. Action Plan by working in collaboration with 5 federal agencies, 5 states and numerous external non-government, industry and academic partners. All five of the states in the basin are committed to taking action to reduce nutrient loadings and minimize problems of excessive algal growth in Lake Erie. The magnitude of reduction needed is significant and there is no single solution. The bulk of the reduction needed will come from the western portion of the watershed, which encompasses millions of acres of privately owned agricultural lands in Ohio, Michigan and Indiana. While agriculture has a large role to play in achieving the needed reductions in Lake Erie, reductions will be needed from urban, suburban, and rural non-farm areas too.



Federal partners will continue to support states with financial and technical assistance as they work with their local agricultural community, watershed protection groups, water utilities, landowners, and municipalities to develop nutrient reduction strategies tailored to their unique set of challenges and opportunities. For example, we are working with the agricultural interests in Ohio, Michigan and Indiana on an implementation strategy to accelerate adoption of the most effective management practices.

By implementing the commitments identified in this plan, we will:

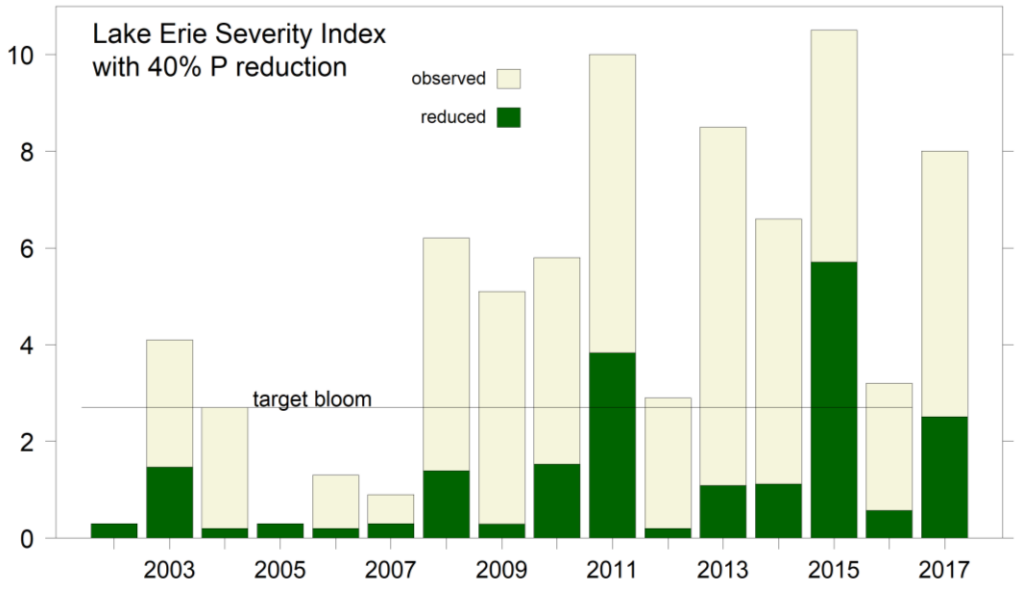
- significantly increase the rate of adoption of key management practices on agricultural lands such as nutrient management, drainage water management, and soil health initiatives.
- test and demonstrate effectiveness of new technologies, such as saturated buffers, blind inlets, phosphorus removal structures and P-optimal wetlands.
- significantly improve our tracking and measurements of phosphorus loadings to the Lake. This includes additional long term stream water quality monitoring stations and improvements to watershed and in-lake models.
- improve coordination and tracking of actions and investments, so that cost effective measures can be identified.

Expected Outcomes

Lake Erie is the smallest of the Great Lakes in volume and the water has a short residence time of only 2.7 years. As a result, the lake is expected to be very responsive phosphorus reductions. When phosphorus reductions were achieved in the 1980s, a prompt reduction of algal blooms was observed.

It is difficult to predict when efforts to reduce phosphorus loading on the ground will become apparent in the Lake. Based on our current information about the federal and state programs and projects already at work in the basin, the U.S. strategy projects a total phosphorus reduction of around 2.4 million pounds from 2008 levels will occur by 2020, which is 34 percent of the reduction needed.

Achieving the full reduction of 7.3 million pounds by 2025 will be a challenge but will result in a significant reduction in the frequency and extent of blooms. The graph below shows how historical algal blooms would have been reduced if there was a 40% reduction in phosphorus loading:



While we are optimistic that improvements will be seen by 2020 and 2025, there are many factors that could delay the Lake's recovery. For one, the actual implementation of measures to achieve reductions of this magnitude will take significant time and effort to achieve. Add to that, there is a tremendous amount of phosphorus already in the system, bound to sediments in the soils and the streambeds, and on the lake bottom, that will need time to work its way through the system.

The predictions we make today may not hold true in 10 years if the frequency of large rainfall events continues to increase. This will require an adaptive management approach in which management strategies are updated in the future as new environmental data become available and knowledge gaps are filled.

How Progress Will Be Measured

Efforts to measure progress will require continued, long-term monitoring as part of a science-based adaptive management approach.

A wealth of information will be collected over several years in order to determine whether the mitigation activities presented in this plan are effectively reducing phosphorus loads to the Lake. On an annual basis, we will track and report status of loads, update and calibrate models, and prioritize implementation resources. Every 3-5 years, we will conduct analyses to evaluate progress and determine whether there is a need to change course.

Our initial efforts are focused on:

1. Developing a coordinated monitoring strategy and network for collecting compatible tributary data to evaluate progress towards the new phosphorus targets;
2. Developing a system to routinely and reliably track and report loads; and
3. Identifying a suite of metrics and indicators for tracking progress on the ground, in the tributary streams and watersheds, and in the Lake.
4. Charting out the timeframes and key milestones and for adaptive management

The U.S. and Canada have committed to review and revise the domestic action plans at least every 5 years, starting in 2023. We expect that by 2021 we will have significantly more monitoring data available that will enable us to adjust our implementation plans, if needed, to accelerate progress.

Public Engagement and Reporting

Successful implementation of this domestic action plan will require broad support, coordination, and collaboration among agencies, academia, local government, private industry, and citizens. All of these groups have a role to play in contributing to the restoration of Lake Erie. Through this plan, USEPA and its Federal and State partners aim to provide a framework within which all the key players can work together to implement actions that are impactful and cost effective.

We will continue to engage Great Lakes stakeholders as we track progress towards achieving phosphorus reduction goals. In addition to the existing reporting mechanisms under GLWQA (such as the triennial Progress Report of the Parties and the annual Lakewide Action and Management Plan reports), the U.S. and Canada are coordinating with the Great Lakes Commission's Blue Accounting Initiative pilot project, ErieStat (www.eriestat.org).

The U.S. Action Plan can be accessed here: https://www.epa.gov/glwqa/glwqa-annexes

The full suite of U.S., state and Canada-Ontario domestic action plans can be accessed here: https://binational.net/annexes/a4/.