Protecting Maumee Bay Beaches Through Ecosystem Restoration

Clean Water
Safe Beaches
Improved Habitat

Why Restore Wetlands Here?

In the Maumee Bay region, we have had problems with excess bacteria leading to posting of swimming advisories at the Lake Erie beaches of the park. And in recent years, Lake Erie has seen the recurrence of harmful algal blooms. The blooms are caused by excess nutrients, particularly phosphorus. Sedimentation – soil suspended in the water flow – carries both bacteria and nutrients. This wetland restoration captures sediment and excess nutrients and treats bacteria.

The Wolf Creek Committee

Members of the Wolf Creek Committee include cities and villages in the Maumee Bay region, state and county agencies including the Ohio Department of Natural Resources, and the University of Toledo. TMACOG is the committee coordinator. The committee works to address pollutants impacting Maumee Bay State Park. The goal is to reduce bacteria and nutrients and provide habitat. To reach that goal, projects have included sewer extensions, septic system repair, and projects to track bacteria sources.

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Links:
http://www.utoledo.edu/nsm/lec/research/errl/Wolf Creek Watershed.html (project website)

University of Toledo Lake Erie Center

Dr. Daryl Dwyer is the Director of the Environmental Remediation and Restoration Laboratory (ERRL) at the Lake Erie Center. Dr. Dwyer's laboratory and other research laboratories at the Lake Erie Center are dedicated to solving environmental problems at the land-water interface and bay-lake exchanges in the Great Lakes – the world's largest freshwater ecosystem. The Lake Erie Center scientists study aquatic conservation, bioremediation and restoration, coastal zone processes, environmental chemistry and hydrology, ecology and ecosystem management, fishery genetics, and environmental and health monitoring.

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There are two beach areas at Maumee Bay State Park: the inland lake and the Lake Erie beaches. The inland lake is not affected by Lake Erie water quality. The Lake Erie beaches are sometimes affected by excess bacteria and/or algae.

Wolf Creek/Berger Ditch is the primary source of bacteria at the beaches.

A system including wetland and a sedimentation pond has been built on and near the park grounds to treat the water in Wolf Creek. Using natural processes, these restored features capture sediment, filter the water, and treat the bacteria. The wetland and pond are also habitat for fish, birds, and other wildlife.

The in-stream sedimentation pond has been operating since August 2014. University of Toledo scientists are documenting the effect of the pond on water quality. The results are even better than scientists expected:

- **Total suspended solids daily reduction:** 57%
- **Densities of bacteria average daily reduction:** 93%
- **Phosphorus concentration average daily reduction:** 49%

Within a 10-acre footprint at Maumee Bay State Park, a wetland system was created as the second component of the habitat restoration project. Construction and the inclusion of native plant species to the site were completed in early spring, 2015. Measurements to observe the effects on water quality are now underway. However, scientists are confident that the design will prove to be a valuable model for lake shore water quality treatment.

**Sedimentation Pond**

The in-stream pond is effective because bacteria and phosphorus are often attached to suspended sediment. Water velocity slows as it enters the pond, which causes bed sediment and heavier particles to sink to the bottom of the pond. All of the nutrients and bacteria that were attached to these particles become trapped within the accumulating sediment. Water that exits the pond contains less sediment and consequently less nutrients and bacteria. Over time, bacteria will die and the nutrient-rich sediment will be dredged periodically and applied to agricultural fields.

**Wetland**

Water will be pumped through the wetland which traps contaminants, dissolved nutrients, and free-floating bacteria within the soil-rock substrate. Native plants use the nutrients for growth and naturally break down several types of contaminants.

**Are the Lake Erie beaches safe for swimming now?**

Find out at [www.ohionowcast.info](http://www.ohionowcast.info). Also visit [http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx](http://publicapps.odh.ohio.gov/BeachGuardPublic/Default.aspx) for all Ohio beach advisories and a wealth of historical sampling data.