# Passive Treatment Wetland to Improve Nearshore Health and Reduce Nonpoint Source Pollution

Daryl F. Dwyer, Ph.D University of Toledo Department of Environmental Sciences

> Maumee AOC Summit December 1, 2011

## Addressing the problem



- The Wolf Creek Watershed has been identified as a source of bacteria, nutrients, and sediment into Lake Erie.
- Row crops comprise 67% of the 16 mi<sup>2</sup> watershed.

- Swim advisories are posted at the Lakeside Beach at Maumee Bay State Park an average of 20 days per year.
- Escherichia coli is used as the indicator organism.
- Advisories are posted when densities exceed 235 CFU/100 ml.





### Two-stage system

#### Stage 2 - Treatment Wetland

- 10 30 acres
- Treat water using filtration and plant uptake

#### Stage 1 – Sedimentation Basin

- 1 3 acres
- Collect sediment and nutrients

# Stage 1 – Sedimentation Basin





A treatment wetland will facilitate:

- Short-term
  - Reductions in the loadings of bacteria, nutrients, sediment into Lake Erie.
  - Increased availability of the lakeside beach at Maumee Bay State Park by reducing swim advisories.
- Long-term
  - Restoration of (> 10 acres) native wetland habitat.
  - Improved water quality and protection of human health.
  - Reductions of nutrient inputs that cause harmful algal blooms.

## Timeline

