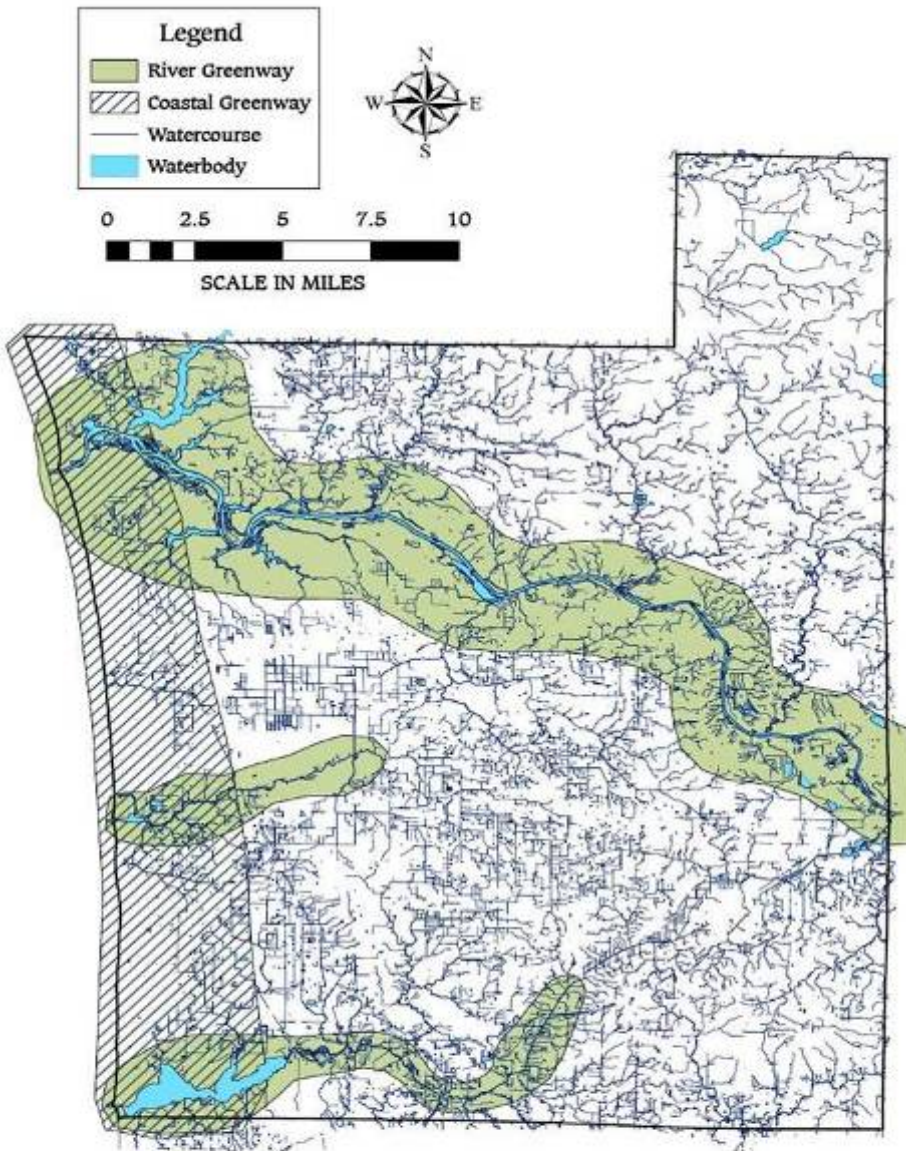


# Upper Macatawa Natural Area

## Impact on Water Quality







**OTTAWA COUNTY GREENWAYS**



Greenways improve water quality by creating a natural buffer zone that protects streams and rivers; by preventing soil erosion; and by filtering pollution caused by agricultural and road runoff.

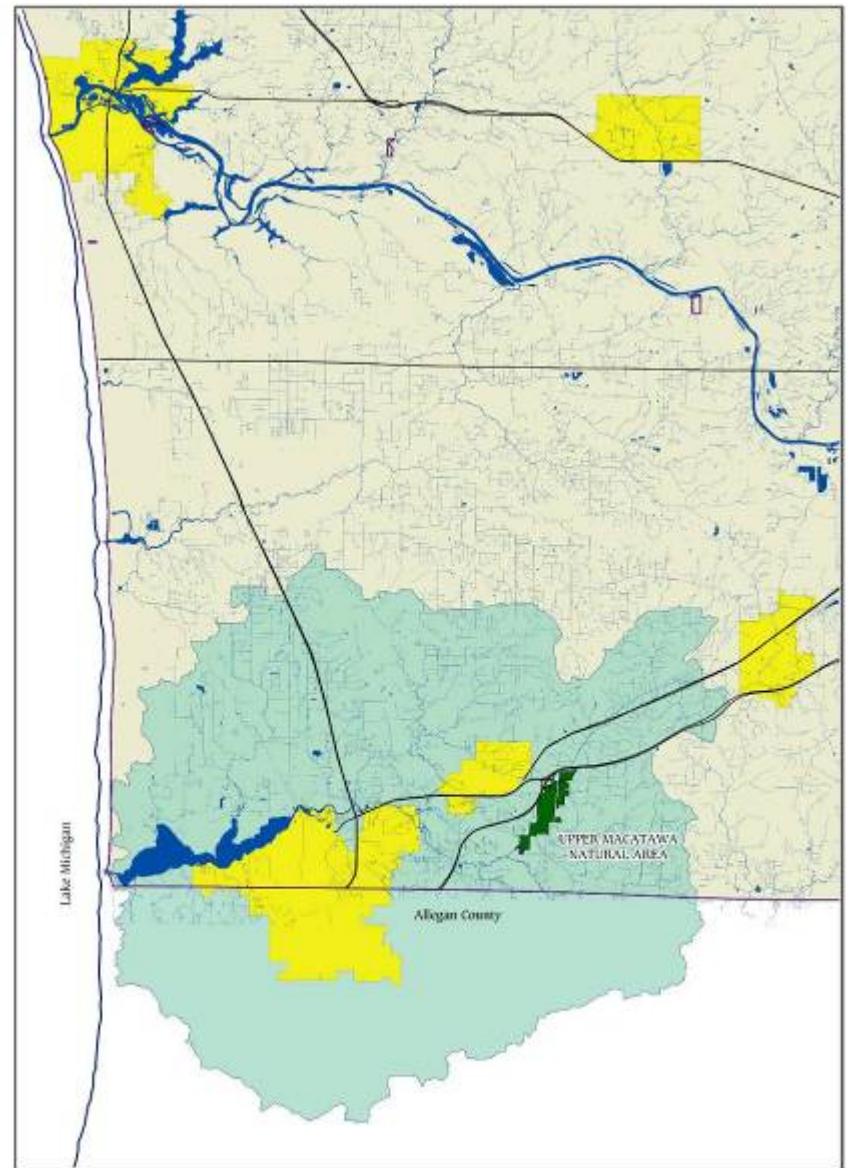




# Upper Macatawa Natural Area

## Four Major Goals

- Improve water quality (primarily phosphorus removal)
- Provide flood storage
- Increase wildlife habitat
- Provide recreational opportunities and preserve open space land



The Macatawa River Watershed





# UPPER MACATAWA CONSERVATION AREA FEASIBILITY STUDY

*Prepared for:*

Ottawa County Parks & Recreation Commission

*October, 2001*

*Prepared by:*



**Resource  
Management  
Group, Inc.**

600 S. Beacon Boulevard  
P. O. Box 487  
Grand Haven, Michigan 49417-0487  
PHONE: 616-847-1680  
FAX: 616-847-9970



**J.F. New &  
Associates**

708 Roosevelt Road  
P.O. Box 243  
Walkerton, Indiana 46574  
Phone: 219-526-3400  
FAX: 219-526-3446



Site prior to  
restoration



Flooding 1997

## Phosphorus Removal Estimates:

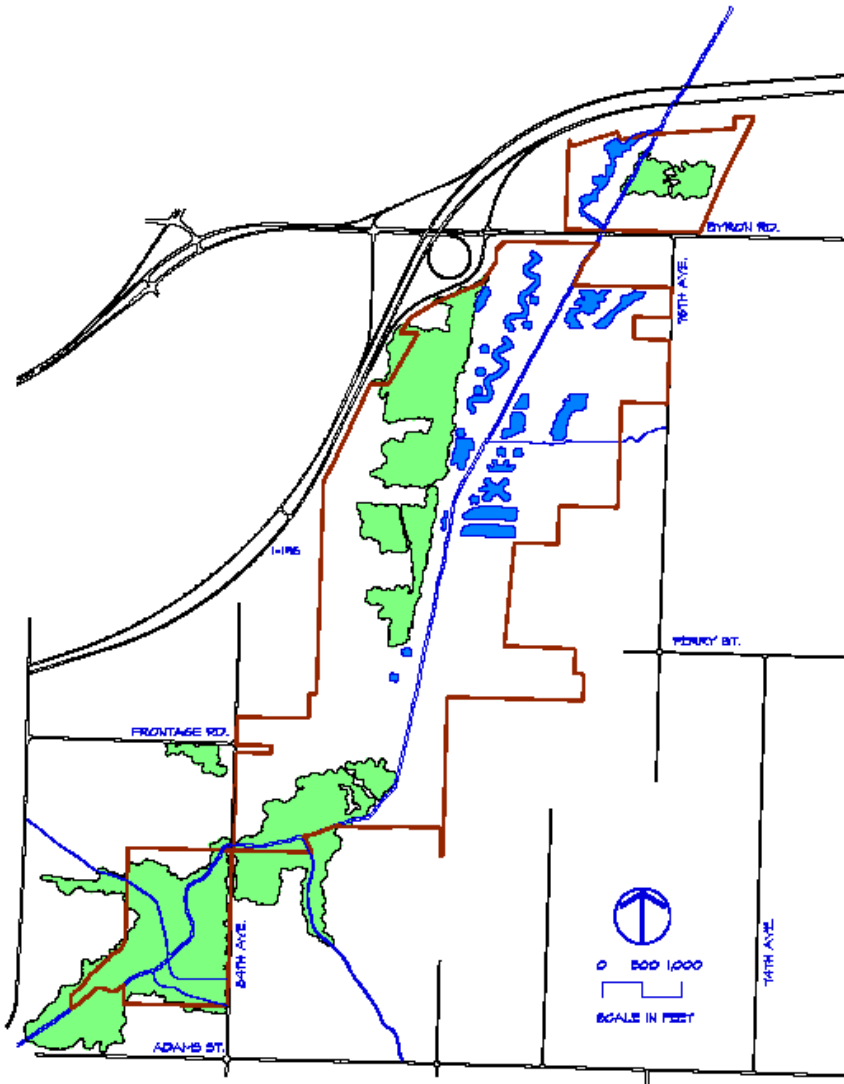
- Approximately 257 acres removed from agriculture @ 0.184 pounds per acre per year\* = 47.3 pounds
- Approximately 18,730 linear feet of buffer strips @ 0.00895 pounds per acre per year\* = 168 pounds
- Approximately 128 acres of wetlands @ 126.8 pounds per acre per year\* = 16,230 pounds

**TOTAL ANTICIPATED PHOSPHORUS REMOVAL – 16,440 POUNDS ANNUALLY**

# Upper Macatawa Natural Area Phase I Restoration



- Agricultural tiles broken
- Drainage ditches plugged
- Wetlands and wet meadows created
- Filter strips planted along river's edge
- Riparian tree buffer planted
- Native warm season grasses planted



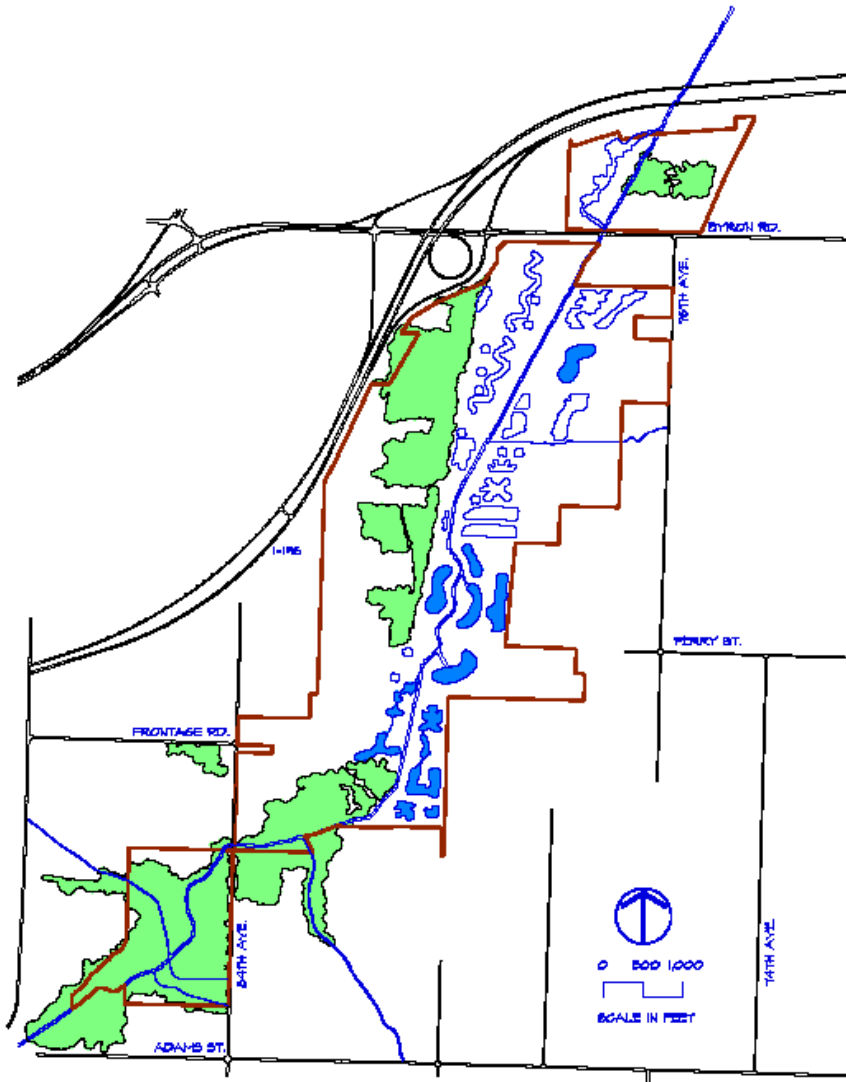


# Phase One Construction



# Upper Macatawa Natural Area Phase II Restoration

- 1,600 feet of the Macatawa River was realigned.
- A series of treatment wetlands were created.
- Off line channels and low serpentine berms with native vegetation remove sediment and phosphorus.
- Agricultural ditches were rerouted into a wetland basin for nonpoint source pollution reduction and flood storage.



New Meander



# River Rescue



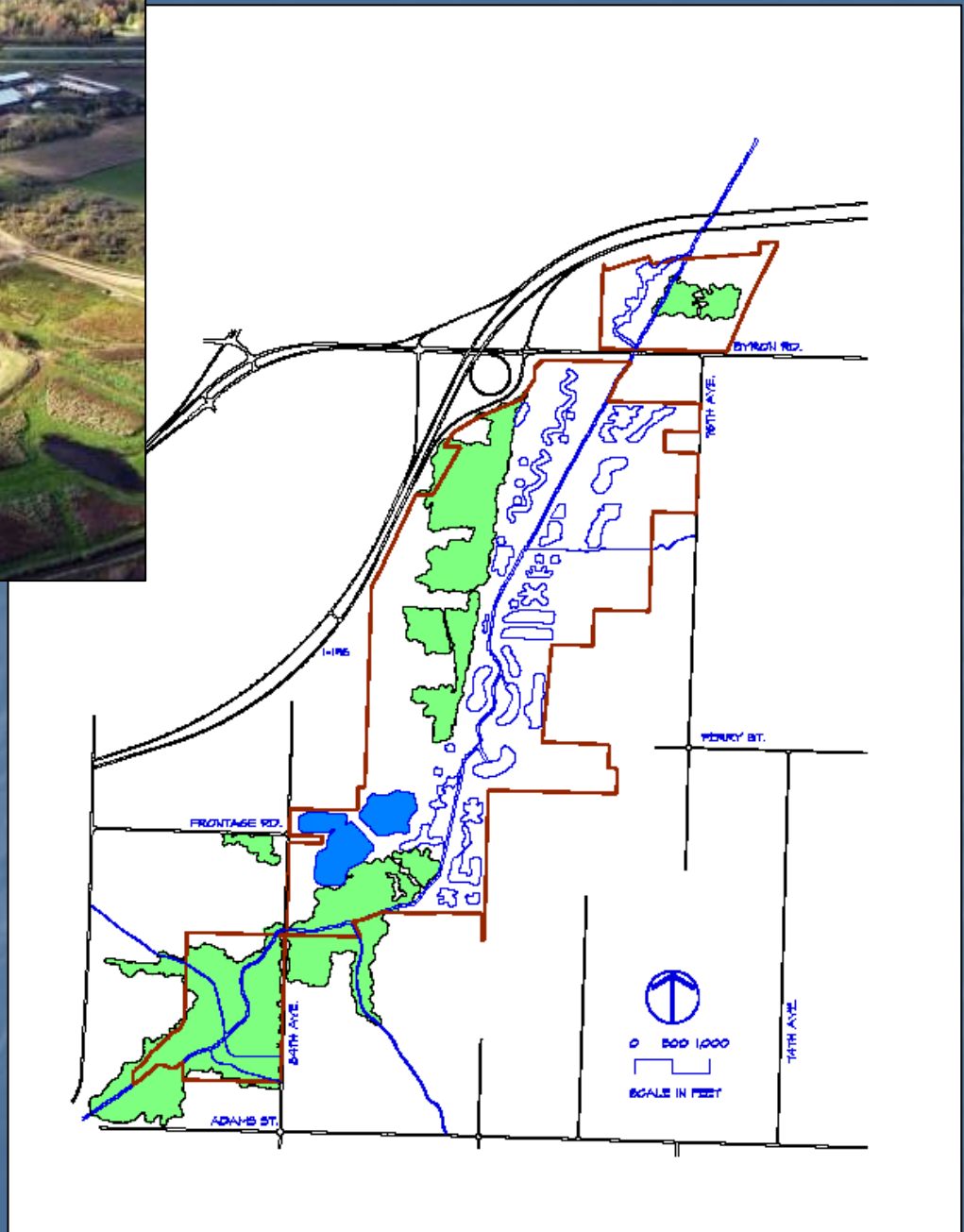
New Channel





## Upper Macatawa Natural Area MDOT Mitigation

- 11.5 acres of forested wetland
- 7.0 acres of scrub/shrub wetland
- Rerouting of agricultural ditches
- Extensive wetland species planting







Upland Prairie Restoration





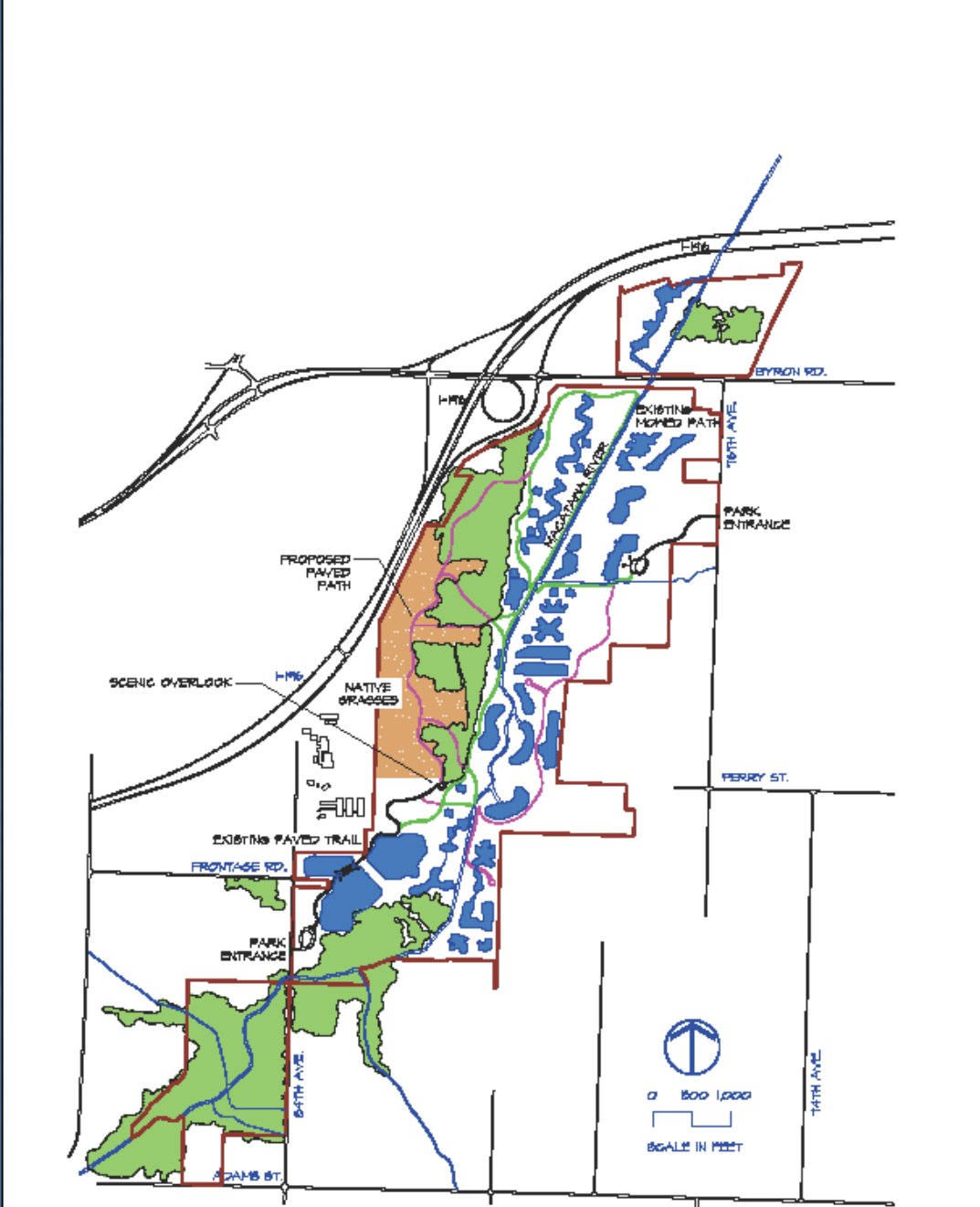
- Visitor Amenities
- Project Evaluation



Scenic Overlook



Wildlife Viewing 'Hide'





## PROJECT PARTNERS

**Macatawa Greenway Partnership** – Helped conceive project and raised funds from area business to assist with both acquisition and restoration.

**United States Department of Agriculture** – Through NRCS provided restoration funding and expertise.

**Michigan Department of Environmental Quality** – Provided key grants to assist with acquisition (Coastal Restoration Grant) and restoration (CMI Non-point Source Pollution Control grant)

**Land Conservancy of West Michigan** – Holds conservation easement funded by EPA Clean Act Section 319 grant.

**Michigan Department of Transportation** – Constructed and maintain wetland mitigation project.

**Ducks Unlimited** - Provided funding assistance and technical expertise for habitat restoration.

**Macatawa Watershed Project** – Provided support and assistance with phosphorous reduction strategy and water quality research and education.

**Holland Audubon** - Conducts periodic bird inventories.

