Title: Michigan Natural Shoreline Partnership

Opening Paragraph: The Michigan Natural Shoreline Partnership (MNSP) was formed in 2008 to promote the use of natural landscaping and erosion control to protect Michigan's inland lakes. The partnership brings together technical expertise and organizational support to address informational, educational and policy needs related to natural shoreline development. It is a public/private partnership consisting of governmental agencies, industry representatives, academic institutions, environmental organizations, and nonprofit organizations actively engaged in promoting natural shoreline management.

The Partnership's objectives include:

- Train contractors and landscape professionals in shoreline technologies and bioengineered erosion control.
- Educate property owners about natural shorelines and technologies that benefit lake ecosystems.
- Research, demonstrate and develop natural shoreline technologies that benefit lake ecosystems.
- Encourage local and state policies that promote natural shoreline management.

Problem: Urbanization and land development throughout the state have influenced sedimentation, nutrient enrichment, toxic pollutant and hydrologic loading to lakes. This has resulted in decreased water quality and biological habitat. The majority of Michigan's public access lakes have moderate or low nutrient levels, but nutrient levels are high enough in several lakes to warrant corrective action. During the summer 2007, 1,028 lakes were sampled for the National Lakes Assessment, including 50 Michigan lakes. The results indicate that poor lakeshore habitat is the biggest problem and high nutrient levels are the second biggest problem in our nation's lakes.

Additionally, a review of Part 301 permits for shoreline projects indicates that Michigan is increasingly losing natural shorelines and natural lakeshore habitat. The number of permits issued under Part 301 for hard shoreline structures (i.e., seawalls) increased from 1999-2009. In 1999, 39% of all permits issued under Part 301 were for hard shoreline structures and in 2009 that number increased to 45%. In the year 2000 alone the number of seawalls installed resulted in over 145,000 linear feet or 27.5 miles of shoreline being "hardened".

Results: The Partnership provides three types of training: 1) Certified Natural Shoreline Professional (CNSP) training for professional landscapers who execute shoreline stabilization projects; 2) training for professional natural resource staff who will educate private landowners; and 3) a continuing education program for various audiences.

Certified Natural Shoreline Professional (CNSP)

The CNSP program is a voluntary training program that enables contractors and industry professionals to learn natural shoreline landscape design and technology at low cost. The course includes three days of classroom learning, one day of field experience and an exam. Topics covered include: lake shoreline ecosystems; bioengineering and plant products; natural landscape design; and State of Michigan rules, regulations, and permitting. Also, a CNMP manual was developed for the course.

As part of the professional certification training, shoreline construction demonstration projects were conducted at four sites in 2010 and 2011 (Figure 1). These demonstration projects resulted in 400 linear feet of shoreline protection .

Approximately 100 professionals were trained in 2010 and 2011. Pre- and post-workshop surveys of the professional landscapers demonstrated an increase in knowledge in several important aspects of natural shoreline techniques (Table 1).

Property Owner Education Network

The MNSP has developed a Natural Shoreline Educator Tool Kit that includes a property owner guidebook, multiple power point presentations, other educational materials and marketing support materials. Professionals from non-profit/conservation groups were trained to use these materials to conduct workshops statewide for lakefront property owners. The majority of the "Tool Kit" materials are available for download on the website for educators to use.

Three Educator Trainings were held for professionals in 2011 and a total of 78 professionals are a part of the Educator Network. Department of Environmental Quality (DEQ) Nonpoint Source staff and Shoreline Permit Staff have also been trained. Multiple Natural Shoreline workshops have been conducted by participants in the Natural Shoreline Educator Training.

Pre- and post-workshop surveys of the natural resource professionals demonstrated an increase in knowledge in several important aspects of natural shoreline techniques (Table 2)

Continuing Education

1) Shoreline and Shallows Conference

The MNSP offers a technical conference each year. This conference provides information on advanced natural shoreline design, and research completed on marketing, and inland lake ecosystems. Ninety-seven professionals from industry, academia, conservation groups, and DEQ/Department of Natural Resources (DNR) attended.

2) Encapsulated Soil Lifts Workshop

The MNSP offers technical hands-on workshops for the certified professionals. A workshop was held in 2011 and 19 certified shoreline professionals attended. This program offered 6 CEUs for participants.

Partners and Funding: The Section 319 support for this partnership was provided in staff time to support the overall partnership and develop the homeowner outreach tool kit/education program. The MNSP is a collaboration of 15 organizations with broad and balanced stakeholder representation.

Contact Information: Julia Kirkwood, MDEQ-Water Resources Division; 269-567-3583; kirkwoodj@michigan.gov

For more information on the project, please visit the Michigan Natural Shoreline Partnership website: www.shorelinepartnership.org

Photographs:

Figure 1. Before and After photos of the CNSP Demonstration Sites. Note: each after photo is taken at approximately 15 weeks after installation.

Before and After: Gull Lake Demonstration Installation Site for the 2010 Kalamazoo CNSP Course

Before and After: Ford Lake Demonstration Installation Site for the 2010 Pontiac CNSP Course.

Before and After: Kent Lake Demonstration Installation Site for the 2011 Brighton CNSP

Before and After: Lake Cadillac Demonstration Installation Site for the 2011 CNSP Cadillac Course.

Table 1: Changes in knowledge following Certified Natural Shoreline Professional training.

Question (answer)	**Percent increase in correct response (average of 4 CNSP Courses)**
Waves tend to break over and lose energy when wave height is equal to water depth (false)	129
Average fetch is defined as the longest unobstructed distance across open water from the point of interest (false)	122
The most rigorous process for estimating low, moderate or high energy at a shoreline property is the (WI Erosion Intensity Score Sheet)	48
The WI Erosion Intensity Score Sheet takes into account (bank height and boating activity)	101
The two most commonly used tools in bioengineering shoreline erosion control are (linear shoreline protection and erosion control blankets)	57
Natural shoreline landscapes consist of both upland zones and zones at or near the water's edge. Although the overall goal may be consistent across zones, approaches may be slightly different above and below (the ordinary high water mark)	26

Table 2: Changes in knowledge following Property Owner Education Network training provided in 2010 and 2011.

Question (answer)	**Percent increase in correct response (average of 3 workshops)**
According to the US EPA's National Lake Assessment, what is the biggest problem in our nation's lakes? (Poor lakeshore habitat)	120
Property owners can estimate wave energy at their shoreline by using the: (multiple choice: Wisconsin energy and erosion calculator)	334
Placing rock riprap in front of an existing seawall will reduce its environmental impact (True)	56
The two most common products used in bioengineered shoreline erosion control are: (multiple choice: erosion control blankets and coir fiber logs)	47
Native Plants are: (all of the above: deep rooted systems, adapted to climatic conditions in a specific setting, required by law to be used below the ordinary high water mark)	72