

Healthy Lakeshores Through Better Shoreline Stewardship

In celebration of Lakes Appreciation Month

Watershed Academy Webcast



Thursday, July 15, 2010

1:00 - 3:00 Eastern

Fred Rozumalski, Landscape Ecologist, Barr Engineering, Minneapolis, MN

Liesa Lehmann, Waterway Protection Section Chief, Wisconsin DNR

Barbara Welch, Outreach Coordinator, Land & Water Bureau, Maine DEP

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Overview of Today's Webcast

- **Introduction**
 - Key Findings of the National Lakes Assessment -- a key stressor is lake shoreline habitat
- **General principles re. shoreline protection and restoration**
- **Wisconsin's shoreline programs**
- **Maine's shoreline programs**

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Key Findings of the National Lakes Assessment (NLA)

- First nationally-consistent assessment of the nation's lakes, ponds and reservoirs
- The 1,028 unique lakes sampled describe the condition of about 50,000 lakes nationwide
- Assessment done in close partnership with states/tribes and other lakes experts



Full report and related materials at: www.epa.gov/lakessurvey

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Purpose of National Lakes Assessment

- Report on the condition of U.S. lakes
 - Unbiased, based on randomly selected, representative subset of lakes
 - Reports on core indicators
 - Standardized or comparable methods
- Answers key questions:
 - Extent of lake waters supporting healthy ecosystems, recreation?
 - Extent of lake resource affected by key water quality problems/stressors?

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National Lakes Assessment Indicators

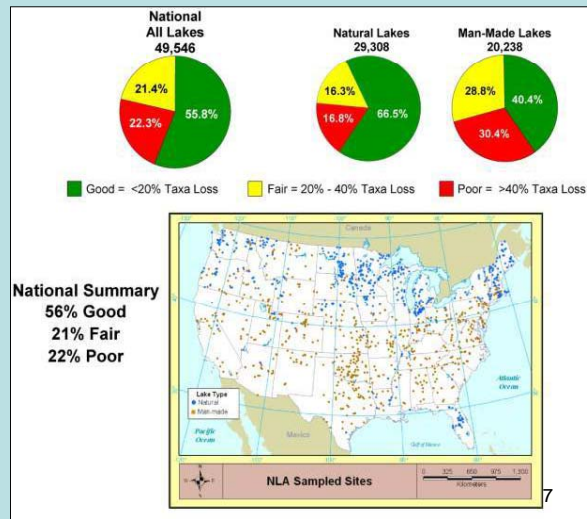
- Biological Integrity
 - Planktonic Index of Taxa Loss
 - Diatom Index of Biotic Integrity
- Trophic State
- Recreational Use
 - Occurrence of microcystin
 - Risk of cyanotoxin exposure
 - Enterococci
- Habitat Quality
 - Lakeshore Vegetation Cover
 - Littoral Quality
 - Human Shoreline Disturbance
- Chemical stressors
 - Nutrients
 - pH
 - DO
 - Salinity
- Change over time
 - Sediment diatom cores

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Biological Condition of the Nation's Lakes (Taxa Loss Index)

- Compared to least disturbed (reference) conditions,

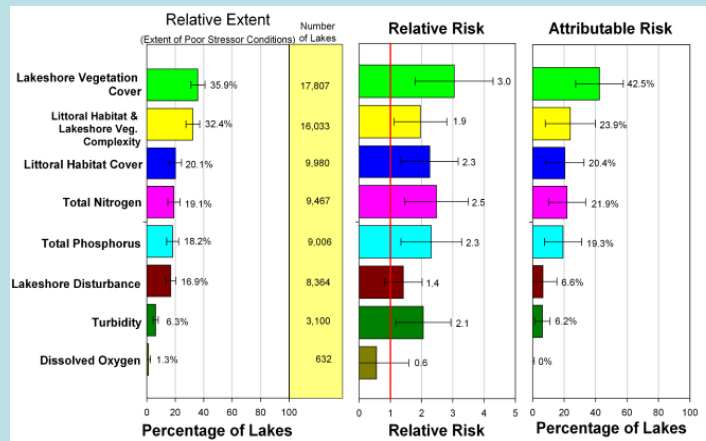
- 56% of lakes are rated good
- 21% are rated fair
- 22% are rated poor



Relating Stressors to Biological Condition

- NLA evaluated all stressors (chemical and habitat) to assess which are most important to biological condition.
 - **Relative Extent** – What is the proportion of stressors in poor condition?
 - **Relative Risk** – When stressors indicate poor condition, what is the increased proportion of lakes with poor biological condition?
 - **Attributable Risk** – What percent of lakes that are in poor biological condition should move to good/fair if this stressor is eliminated?

Extent, Relative Risk, and Attributable Risk



#1 – Lakeshore vegetation: Poor biology is three times more common when lakeshore vegetation cover is in poor condition. This affects 36% of lakes.

#2 – Nutrients: Poor biology is 2.5 times more common when nutrients are high. This affects about 20% of lakes.

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Policy Implications of the NLA

****Key NLA finding****

Habitat alteration is the most important measured stressor in lakes.



This finding points to need to address/mitigate lakeshore habitat impacts.

Professional lakes community is eager for evidence to support initiatives to protect lakeshores.

This message should be shared/communicated to the lakes community and others.

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EPA Initiating An Outreach Effort to Communicate the Importance of Healthy Lakeshore Habitat

- Today's Webcast kicks off this outreach effort.
- EPA is working in partnership with a group of lakes professionals from various states and organizations to develop this outreach effort.
- EPA plans to update its Web site with more information on lake shoreline protection and restoration information.
- We will build on existing efforts such as Lakes Appreciation Month and The Secchi Dip-In.
- The Webcast includes an evaluation at the end and we welcome your feedback on what types of outreach efforts would be most helpful to the lakes community.



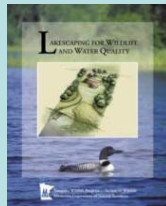
Introduce Webcast Instructors

- **General Principles re. shoreline protection and restoration**
 - Fred Rozumalski, Landscape Ecologist, Barr Engineering Company, Minneapolis, MN
- **Wisconsin's Shorelines and Shallows Strategy**
 - Liesa Lehmann, Waterway Protection Section Chief, WI DNR
- **The Maine Story: Carrots and Sticks**
 - For the sake of our lakes
 - Barbara Welch, Outreach Coordinator
 - Land & Water Bureau, Maine DEP





Healthy Lakeshores through Better Shoreline Stewardship Webinar
Working with “Neatniks” to Restore Our Lakeshores

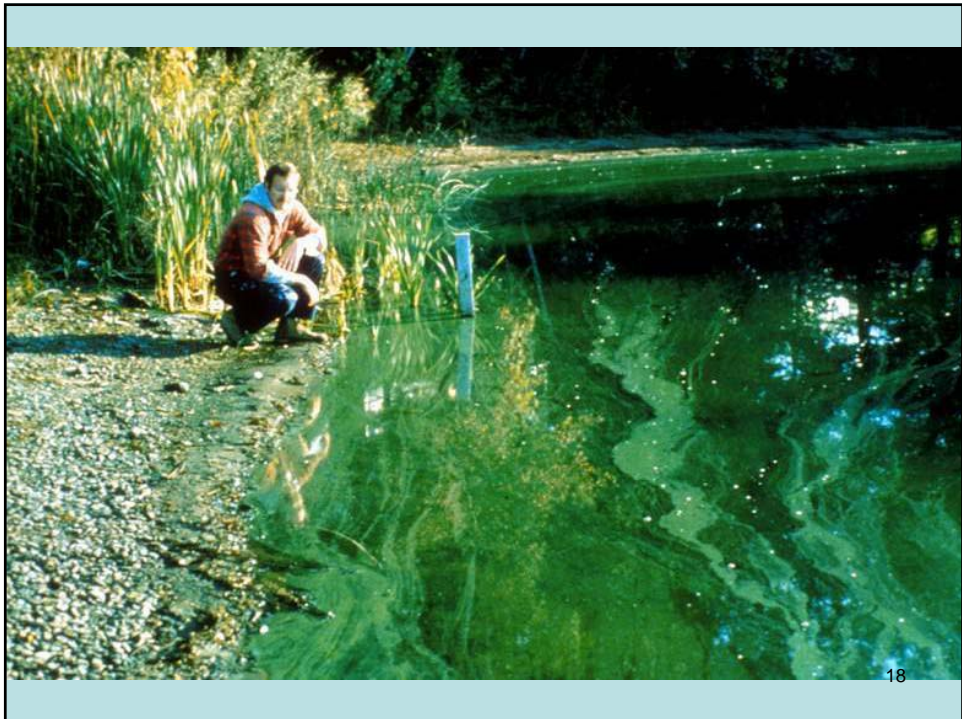


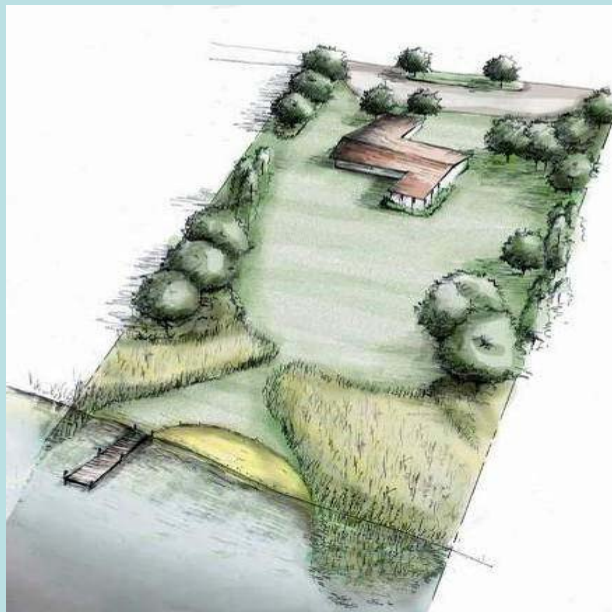
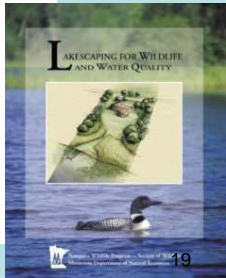
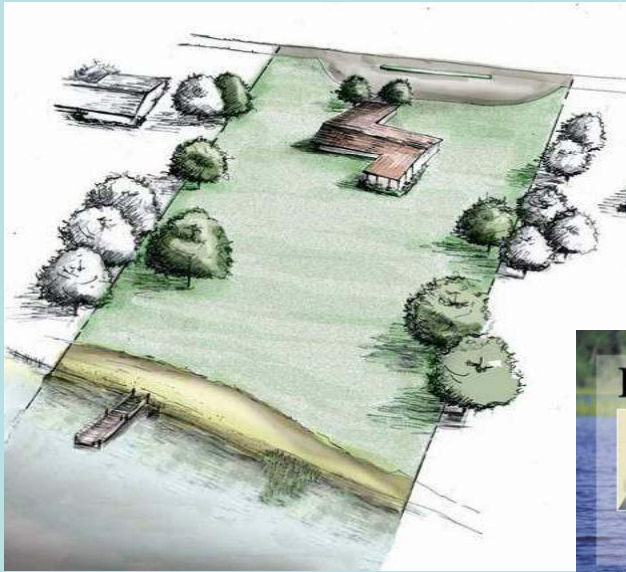
Fred Rozumalski
Landscape Architect/Ecologist
Barr Engineering Company

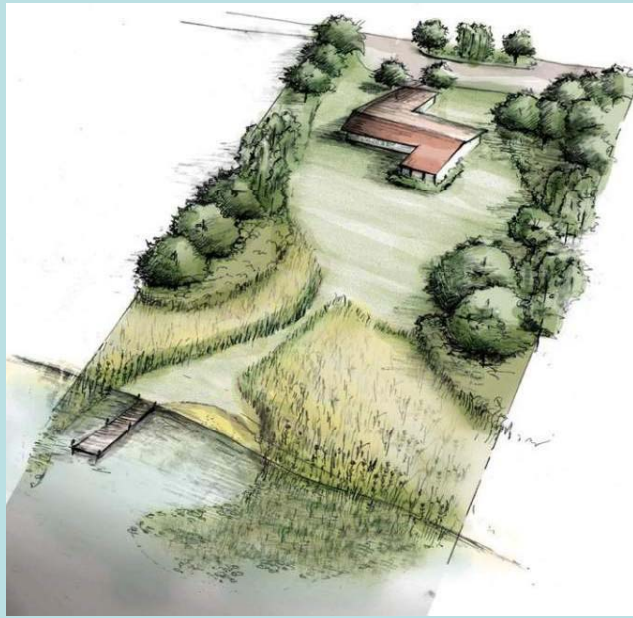


Construction









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Joan Iverson Nassauer M.L.A.
Professor of Landscape Architecture
University of Michigan
Natural Resources and Environment

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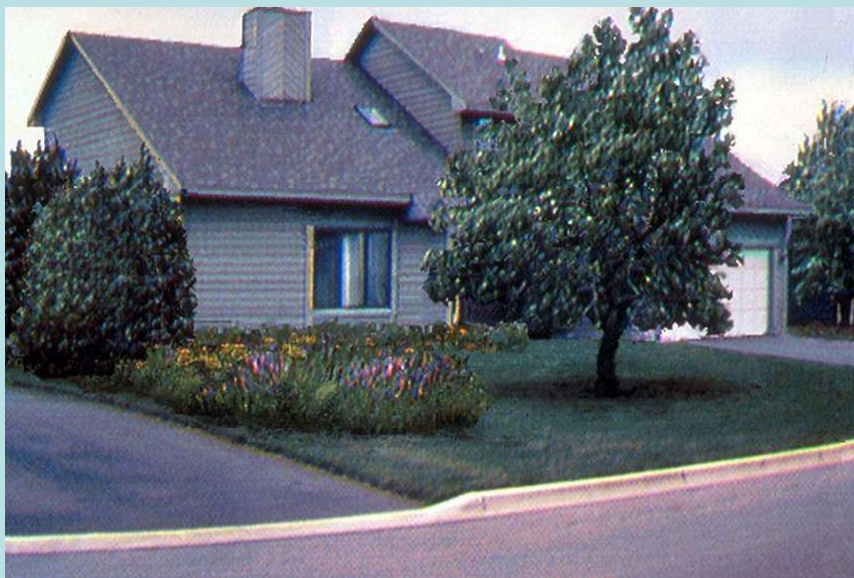
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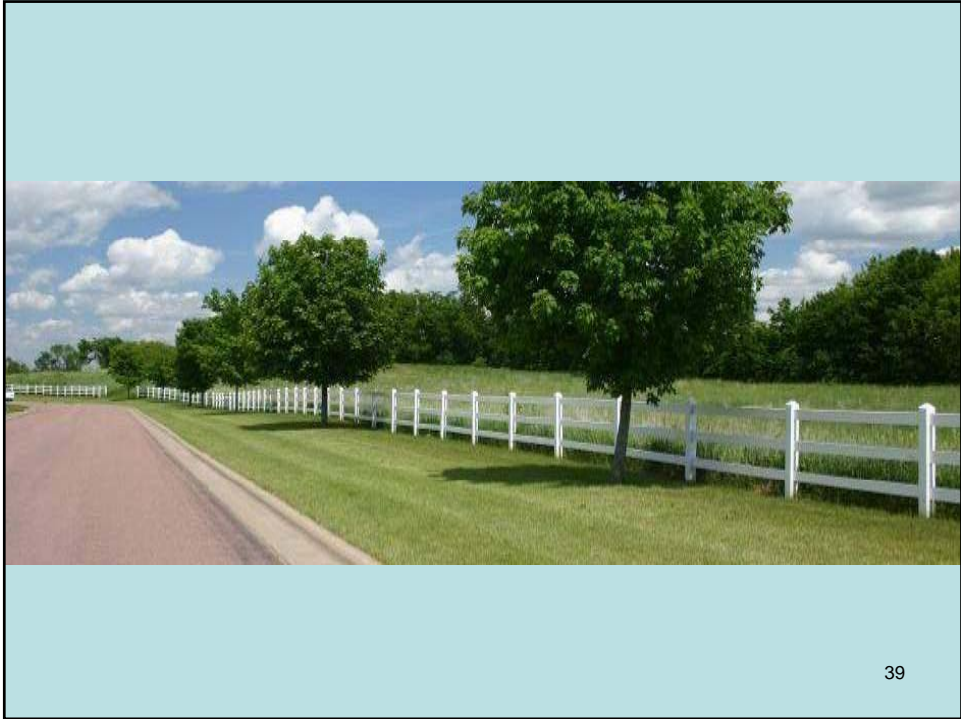
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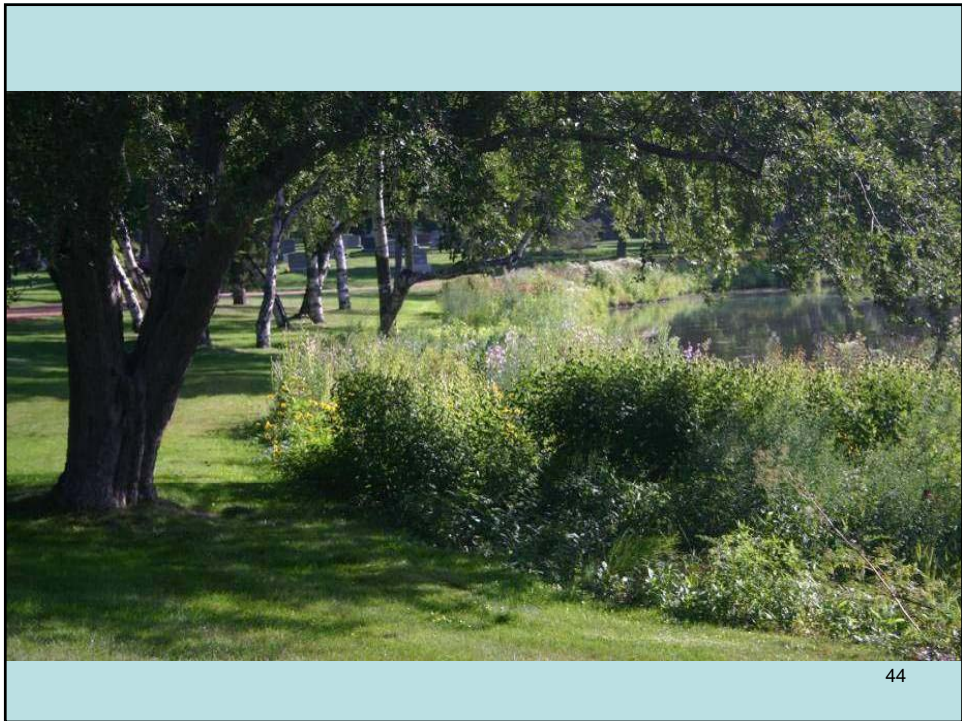
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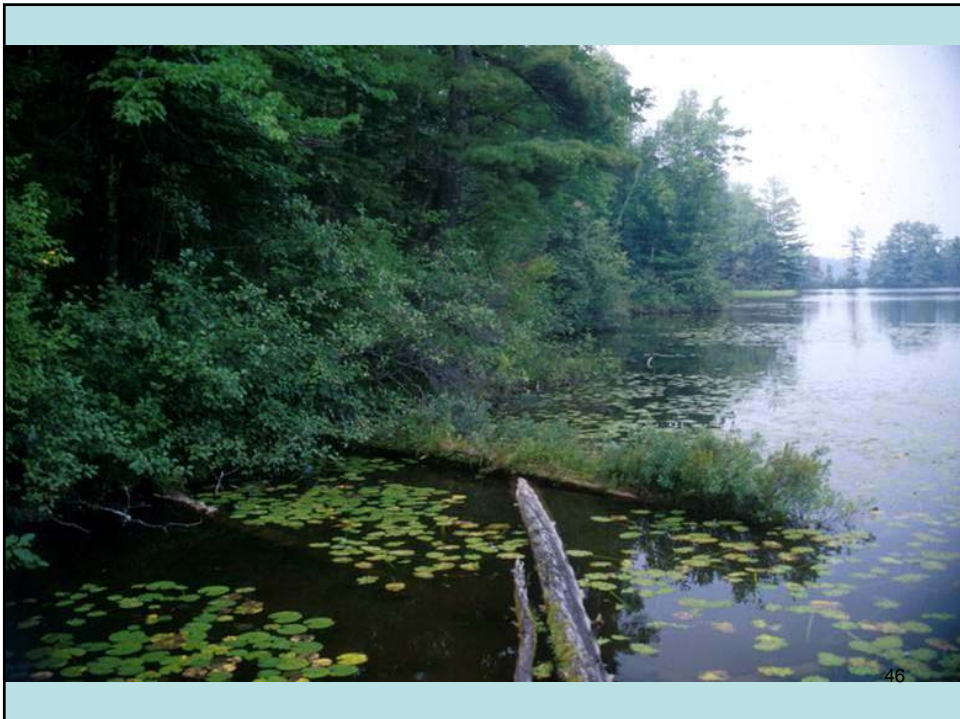












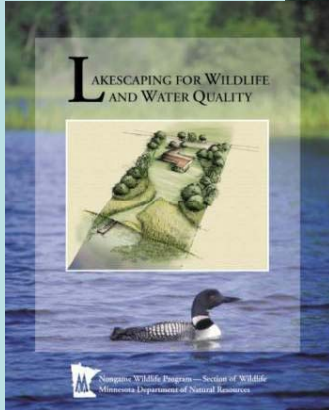


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Questions?



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Wisconsin's Shorelands and Shallows Strategy...



Liesa Lehmann, Wisconsin
Department of Natural Resources

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Wisconsin lakes and streams are held in trust for all citizens as “common highways and forever free.”

*Article IX, Section 1
Wisconsin Constitution*



Public Rights

- Fishing, Hunting
- Fish & wildlife habitat
- Commercial navigation
- Water recreation & boating
- Natural scenic beauty
- Water quality & quantity



Wisconsin's Goal...

To protect and enhance the habitat,
water quality and natural scenic
beauty of Wisconsin's shorelands



Comprehensive approach...

Effective management requires:

- Many people – federal, state and local governments, advocacy groups, waterfront owners, lake and river users
- Many tools and approaches...



4 Traditional Approaches



- **Direct Management**
 - owning the resources
- **Regulation**
 - permits and approvals
- **Financial Incentives**
 - paying others for conservation
- **Technical Assistance and Education**
 - staff and tools to guide conservation

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1. Direct Management

State parks and trails

e.g. Devils Lake State Park

State forests, fish / wildlife areas

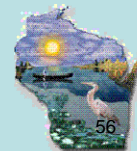
e.g. Northern Highland State Forest

Stewardship Fund

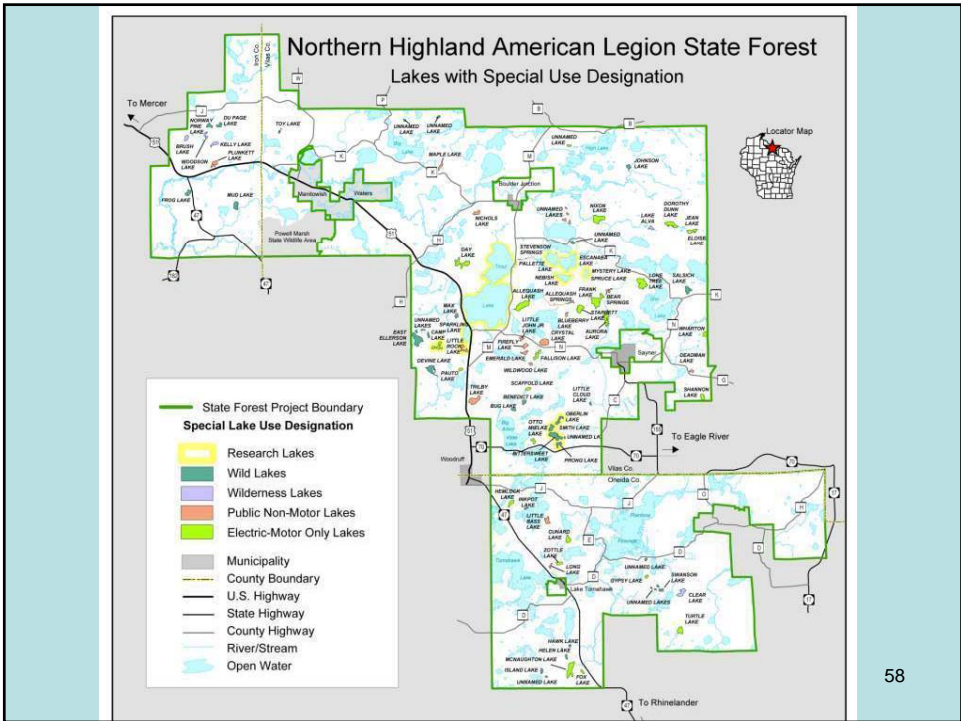
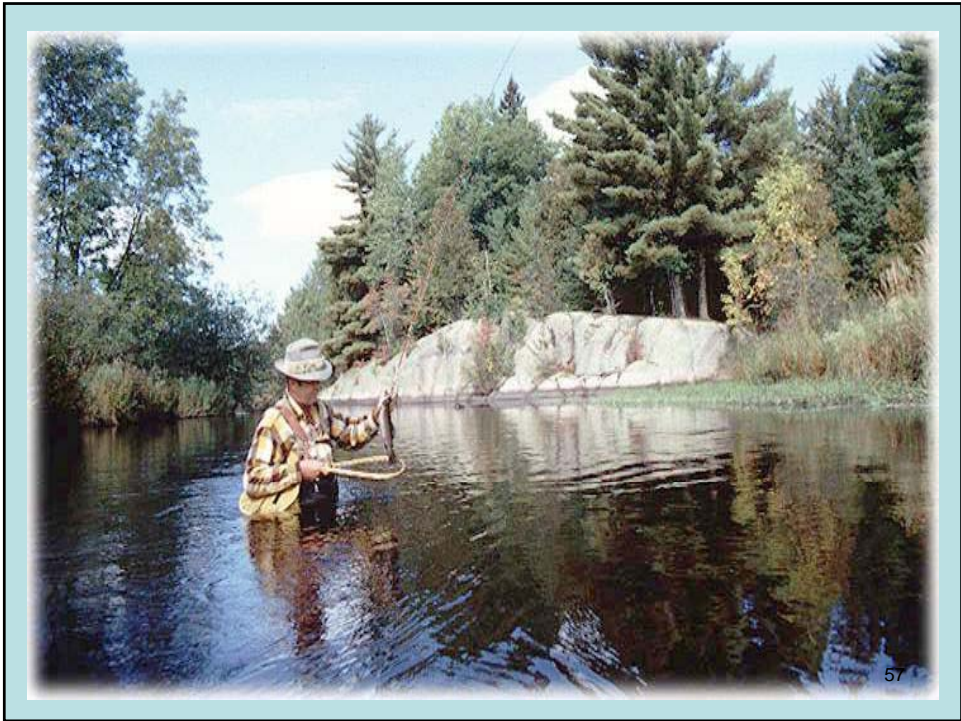
\$86,000,000 annual budget

Lake protection grants

Acquisition, management plans

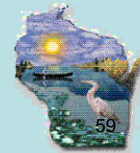


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2. Regulation

- Shoreland Zoning Ordinances
- Waterway and Wetland Permits
- County Lake Classification

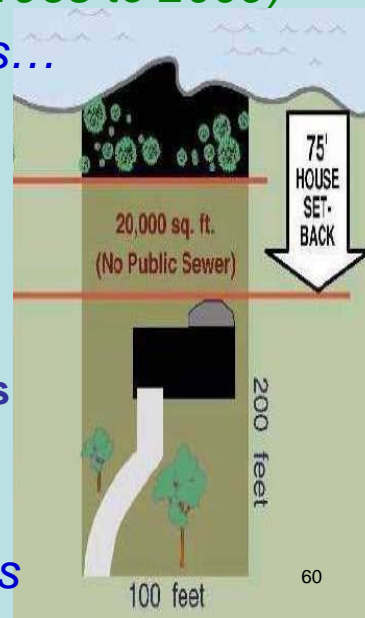


Shoreland Zoning (1968 to 2009)

Minimum social standards...

- Lot sizes
- Building Setbacks
- 35' no clear cut
- Structure limits
 - Piers, boathouses
- Nonconforming structures
 - 50% rule
- No mitigation

...Not ecosystem standards



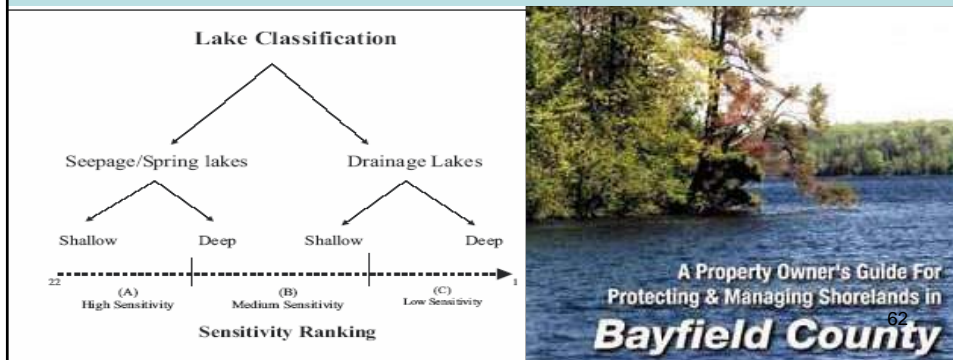
Waterway and Wetland Permits

- Dams
- Dredging
- Grading
- Piers
- Water Levels
- Shoreline erosion protection
- Designated Waters
 - different standards to protect sensitive waters and resources



County Lake Classification

1. Classify lakes by sensitivity to development
2. Lot size, setback, and other dimensional zoning standards for classes of lakes
3. Colorful, graphic, plain-language guides for shoreland property owners



3. Financial incentives

Lake Protection grants (WDNR)

Acquisition, planning, restoration, education

County Conservation grants (WDATCP)

Plans, site preparation and planting

Tax credits for property owners

Burnett County shoreland stewards

Contributions from local lake organizations and citizens



4. Tech Assistance & Education

UW-Extension

Basin educators

Lake and land use specialists

Wisconsin Association of Lakes

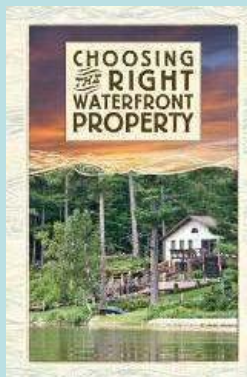
County Staff

Land and water conservation

Natural resource/economic development

Private service providers

Friends from other states



Lessons learned...

Direct Management

- Best for protection of highest quality, most sensitive waters and shorelands
- Great for demonstrations



Lessons learned...

Regulation

- Best for statewide minimum standards
- Based on social acceptance, not on science
- Not enough to protect lakes and shorelands
- Support with education and technical assistance tools



Lessons learned...

Incentives

- Only works with willing partners
- Stimulates acquisition
- Encourages science and community in planning and local regulations
- Catalyzes local learning, technical assistance and research
- Pays for restoration and demonstration



Lessons learned...

Technical Assistance and Education

- Partner with universities and learning centers
- Understand local values to gain acceptance and change behavior
- Make learning easy...have fun!





Shoreland Zoning - Revising a 40-year old rule

**State rule with minimum standards for
shoreland management**

**Implemented by counties through their
local ordinances**

Standards apply to “shoreland zone”

–300-feet from a river or stream

–1000-feet from a lake

Unincorporated areas only



The Approach

Kept the good

- Lot size, setback, structure limits

Fixed some things

- Vegetation, nonconforming structures

Added some new

- Mitigation, Impervious Surface Limits⁷¹



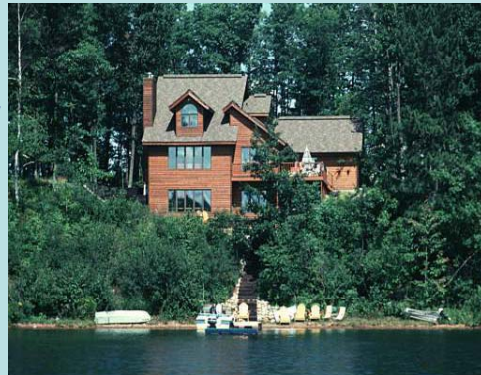
The Process

Listening Sessions

Technical Advisory Committee

Public Hearings

Stakeholder involvement



Vegetation Removal

Before

- No clear-cut in first 35-feet



Now

- Vegetation removal prohibited in first 35 feet, except
 - Access and viewing corridors
 - Shoreline restoration
 - Invasives control
 - Dead, dying, diseased
 - Sound forestry

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Mitigation

Before

- No requirement to offset impacts



Now

- Mitigation required to offset development and restore natural function
- Triggered by new development above IS%, expanded nonconforming
 - County establishes proportional system
 - Must be enforceable and recorded

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Impervious Surfaces

Before

- No impervious surface standards



Now

- Impervious Surface Limits
 - Applies within 300-feet of any waterway
 - 15% of lot size, 30% cap with Mitigation
 - Keep existing %IS

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Implementing the Revised Rules

DNR's role

- Model ordinance
- Grant funding
- Technical assistance

County's role

- 2 years to adopt
- can be more restrictive

Citizen's roles

- Participate in local ordinance revision



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Wisconsin's Goal...

To protect and enhance the habitat,
water quality and natural scenic beauty
of Wisconsin's shorelands



www.dnr.wi.gov/waterways

The Maine Story Carrots and Sticks

for the sake of our lakes

Barb Welch
Maine DEP

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Carrots & Sticks

Combination of
Regulatory & Voluntary programs

Regulatory

Shoreland Zoning
P-Free fertilizer



Voluntary

LakeSmart



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Shoreland
Zoning:
Protecting
shorefronts since
1973



(most of the time)



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Optional Shoreland Zoning Standards

18 suggested standards, for example;

- 100 foot natural buffer with a maximum 6 foot wide winding pathway
- Construction activities will have boundaries of the activity clearly marked with tape or stakes by the CEO prior to the start
- All new or existing gravel roads must be maintained and repaired so as not to cause a direct or indirect discharge
- All shoreline areas shall be stabilized with native vegetation whenever possible or if necessary with native vegetation and rock riprap

If a town incorporated nine would be considered a Bronze municipality; fourteen – Silver; and all eighteen – Gold

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P-Free Fertilizer

- Law passed in 2007 requiring sign to be posted, not a ban
- In 2 years most stores selling 90% P-free



Voluntary Compliance to achieve lakeshore protection and overall lake health

In Order to Work Smarter Not Harder – used Social Marketing and Social Science

What is Social Marketing?

Applying commercial marketing principles to social issues to achieve a change in behavior for the good of the individual or society.



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Social Marketing Process

1. Define driving forces, goals and objectives
2. Analyze target audience
3. Create tools
4. Package program
5. Distribute program
6. Evaluate outreach campaign
7. Tweak and implement



Getting In Step

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Step 1. Define driving forces, goals and objectives

Driving Force

Declining water quality due to urban/suburban landscaping

Goal

Lake-friendly landuse practices statewide

Objectives

5 workshops/year
50% of participants take action



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Step 2. Identify and analyze target audience (and the targeted behaviors)

- Target audience - lake shore residents
- Concerned, lacking knowledge on cause and effect. looking for easy fixes. retired
- McKenzie-Mohr's Behavior Change matrix

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Table for the creation of an effective social marketing campaign

Describe area of concern?

Homeowner purchases of lawn (turf) products that contain pesticides, fertilizers or both doubled from 1994 thru 1999.

<u>Activity</u> (Specific behaviors that people could do)	<u>Competing Behaviors</u> What do people currently do Use focus groups or observation	<u>Impact</u> Quantify impact each has on water x % expected to adopt the behavior = cumulative impact	<u>Barriers</u> What will stand in our way of getting people to do what we would like them to do	<u>Benefits</u> From the new behavior or how to make competing behavior less desirable	<u>Tool or Action</u> Workshop, ad, door hanger, media coverage, etc
Use pesticides /fertilizers only when needed, amounts only as required	~1/3 don't fertilize, 1/3 fertilizer 1-2 times/year and 1/3 fertilize 3-5 times/year	Impact?	Habit, more is better, and risk not recognized	Save for kids & pets, save consumers \$, reduce opportunity for accidents	Point of sale info, bag closure sticker

Step 3. Create the tool

Recognition program with some TA

- Workshops
- Property evaluation
- Awards for incentive
- Signs to increase visibility



Step 3. Create the tool

Create method for evaluating properties

1. Driveways & parking
2. Structures & septic
3. Yard & paths
4. Shorefront

Gives scores and suggestions for improvements



Use 3rd party – Soil & Water Conservation Districts to evaluate

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Step 4. Package Program

Develop by surveying audience

Name

Logo

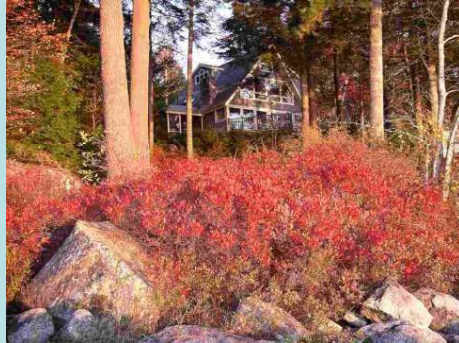


“Living lightly on the land for the sake of our lake”

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Step 5. Distribute program

3 year pilot 2003-2005
Success Stories



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Step 6. Evaluate



Process Indicators (“bean count”):

- 6 workshops well received (but expensive)
- 68 property evaluations
- 27 awards, 39 recognitions on 17+ lakes

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Step 6. Evaluate

Impact Evaluation Questions:

- The number of people who actually did something as a result of the program
- The number of recognitions and awards related to workshops



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Step 6. Evaluate

Context Evaluation Questions:

- Who is getting awards
- Why others are not
- What support is need
- Why are some lakes successful and others not



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Market Research to Answer Impact and Context Questions

- Phone Survey of workshop participants
- Paper survey to lake associations
- Interview 3rd party evaluators and lake association contacts
- Mail survey to property owners who had evaluations



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Results of Market Research: Workshop Phone Survey

- 61% who signed up – showed up
- 72% learned something new
- 37% had a property evaluation in 2004 and more waiting for one
- 83% took action (planting, diversions,...)
- But actions not directly tied to workshop

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Results of Market Research Informal Interviews

People who took action – our Audience:

- Specifically year-round or summer-long lake shore residents
- Lake or watershed association members

Successful LakeSmart areas had associations with sparkplug, leaders, and incentives

Property evaluator crucial, not workshop



Results of Market Research Mail Survey of BMPS

Most likely to fix:

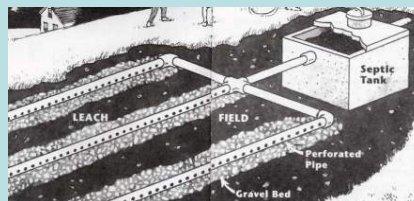
Septic systems 70%

Erosion 68%

Least likely:

Reducing lawn only 40%

Stabilizing shoreline only 17%



Needs: \$, Technical Assistance, materials

Step 7. Lessons Learned and Applied

New requirements for Project lakes

- Assoc. must apply to join
- Active association
- Local "Spark Plug"
- Offer incentives/support
- A minimum 3 year commitment to work toward specific target # of evals



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Apply Social Marketing to get bigger bang

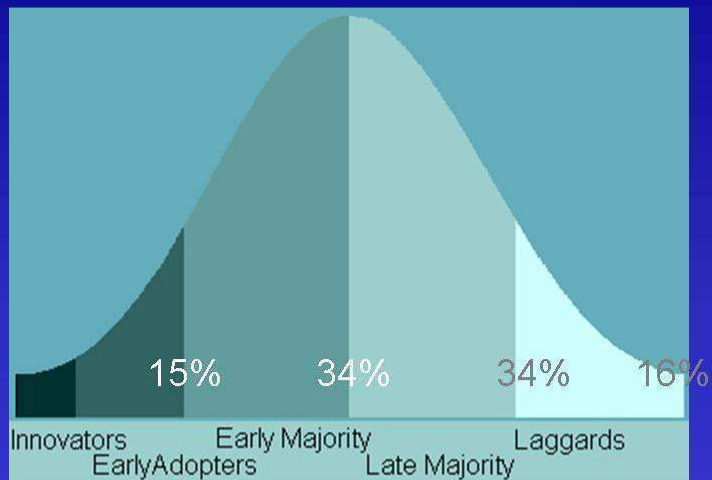
New Objective

- 15% of properties on project lakes are LakeSmart in 3 years



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Social Diffusion Theory*



Once **15%** of a community's population has adopted a new idea, it has the critical mass to spread on its own momentum.

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LakeSmart Awards



Lake associations willing to make 3 year commitment and staying active toward the 15% goal

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Costs for 34 lakes

- ~\$18,000/year to pay SWCD evaluators (mix of state and 106 funds)
- ~0.5 staff person's time, split between 3 people



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New: 3 Year Pilot to Train Volunteers

Collaboration with Congress of Lake Associations

- Use talented, willing volunteers to screen properties.



- Save DEP resources
- Empower lake associations
- Can become evaluators

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before

Questions?



after

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www.MaineDEP.com
www.maine.gov/dep/blwq/doclake/lakesmart

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Next Watershed Academy Webcast:

Re-Visioning Landscapes with LID: The Houston Experience



**August 11, 2010
1:00–2:30 Eastern**

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Participation Certificate

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www.epa.gov/owow/watershed/wacademy/webcasts/pdf/2010_07_15_certificate.pdf

You can type each of the attendees names in and print the certificates

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