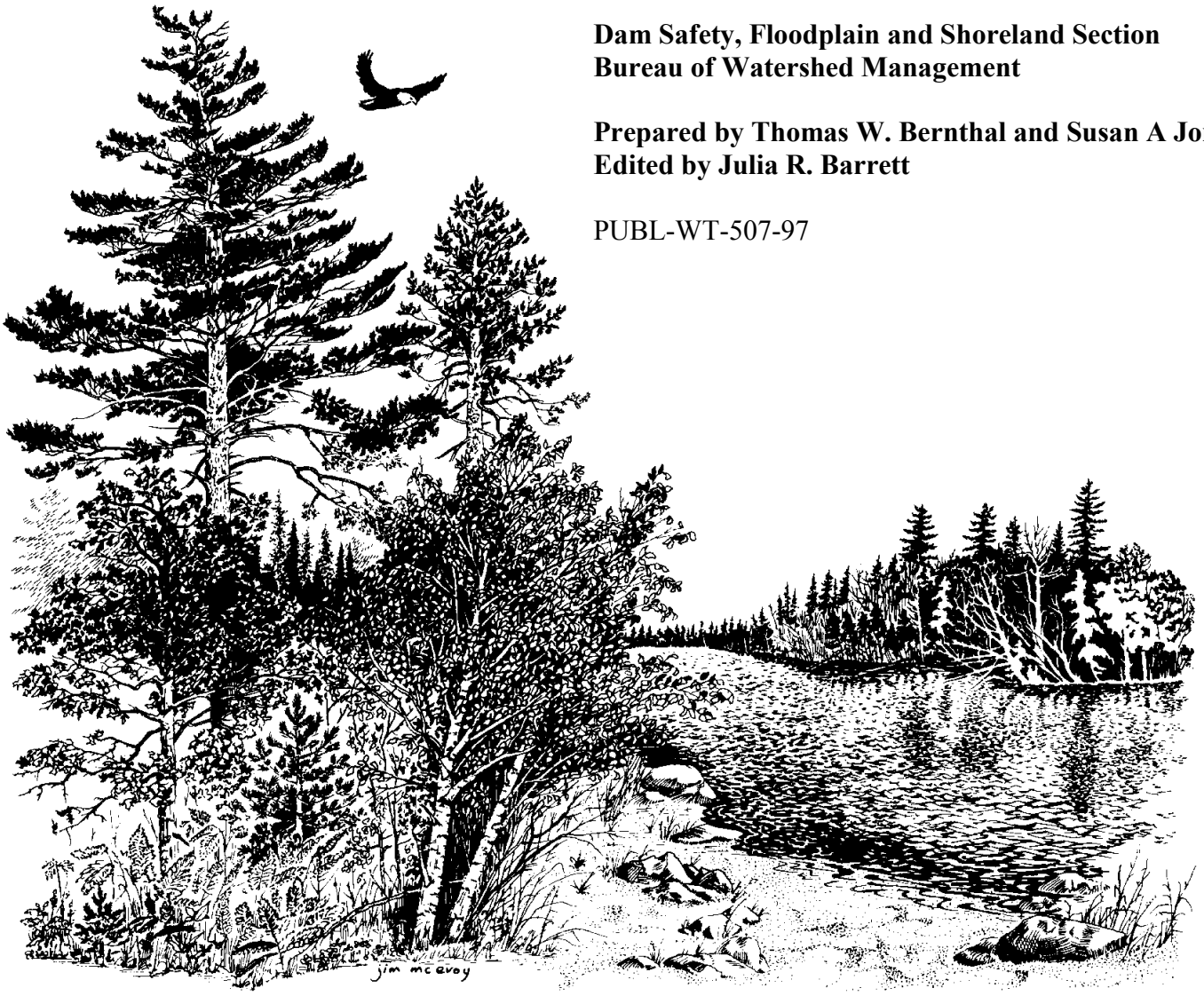
Shoreland Management Program Assessment

Appendixes and Index



Dam Safety, Floodplain and Shoreland Section
Bureau of Watershed Management

Prepared by Thomas W. Bernthal and Susan A Jones
Edited by Julia R. Barrett

PUBL-WT-507-97

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DEPT. OF NATURAL RESOURCES

Shoreland Management Program Assessment

Appendixes and Index

A Study by the Wisconsin Department of Natural Resources
Shoreland Management Program
Dam Safety, Floodplain and Shoreland Section
Bureau of Watershed Management

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This document is a companion to the **Shoreland Management Program Assessment** (PUBL-WT-506-97), which is a broad assessment of the program's effectiveness in light of current waterfront development patterns and trends, issues of administrative effectiveness, and program history. The **Shoreland Management Program Assessment** concludes wit ha listing of policy issues and options relative to NR 115, the administrative rule for the shoreland program, and possible initiatives to meet the challenge of preserving the natural amenities and wildlife habitat values along developed shorelands.

APPENDIX A
TOOLS FOR TOMORROW: ALTERNATIVE PLANNING AND ZONING STRATEGY

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APPENDIX A
TOOLS FOR TOMORROW: ALTERNATIVE PLANNING AND ZONING STRATEGIES

Introduction

This section is presented in two parts. The first part contains brief overviews of strategies being used around the country at the state or local level to address the same issues described in the report. These overviews are accompanied by comments on the feasibility of using these strategies in Wisconsin. It also contains notes about some innovative approaches presented I the planning literature. The intent is to provide an outline of some potential tools for local and state decision-makers, rather than to describe these strategies in detail. The reader is advised to refer directly to the source documents and their authors to get a more complete understanding of how these strategies are implemented.

The second part contains notes on key planning and zoning references in both the regulatory and voluntary conservation arenas and some more models with very brief comments describing their potential usefulness for Wisconsin.

Maine Phosphorus Allocation Method for Subdivision Review

Main Features
- Links comprehensive planning to the subdivision review process.
- Focuses on reducing nonpoint pollution (phosphorus) inputs in lake watersheds to an acceptable level.
- Exists as an option for towns and is an addition to statewide shoreland regulations similar to Wisconsin's.

Strengths
- Can address cumulative impacts and strongly links science and regulation.
- Empowers local communities to set realistic goals for future water quality and provides an equitable method for meeting those goals. The state provides technical assistance, but the town sets the goal.
- Is linked to a comprehensive planning requirement for towns.

Weaknesses
- Intensive data gathering and technical assistance are required from the state in both planning and implementation.
- Habitat and natural beauty are not addressed.
- Comprehensive planning process must be undertaken one lake at a time. (At most a chain of lakes could be done together.)

Applicability to Wisconsin
- Typically, greater staff and technical resources for planning exist at the county level rather than the town level.
- Effective implementation of this method is based on a comprehensive planning process. Maine has a growth management law that requires all municipalities to complete comprehensive plans, and provides technical assistance and funding while Wisconsin does not. However, Wisconsin's Lake Management Planning and Protection Grants are available to municipalities, as well as a new grant program for lake classification.

Description
The state of Maine is pioneering one of the most advanced and innovative approaches for local governments to address the cumulative water quality impacts. Maine has developed a method for subdivision review in lake watersheds that allows local governments to explicitly consider the cumulative impacts of phosphorus loading over a 50-year time period in a quantifiable way. This method is based on a comprehensive planning process undertaken by a town at the watershed level and requires a fairly intensive data-gathering effort. Based on extensive water quality data collected by the Maine Department of Environmental Protection (MDEP), a town determines a realistic water quality goal for a lake to be maintained over the next 50 years. This involves a five-step planning process:

1) Based on the lake's current water quality and its sensitivity to phosphorus loading, the MDEP assigns the lake to one of five lake water quality categories (from outstanding to poor/restorable). This step is data intensive.

2) Based on the water quality goal the town desires to maintain and current development pressure, the town selects a lake protection level (low, medium, high).
3) Combining the lake water quality and lake protection categories, an acceptable increase in lake phosphorus concentration due to development in the watershed is set. This represents the cumulative amount of phosphorus increase the town is willing to accept over the next 50 years.
4) The town must then estimate the future area to be developed based on eliminating already developed acreage and unsuitable acreage (wetlands and steep slopes shown on USGS maps) and projected growth in the watershed.
5) The future area to be developed is divided by the acceptable phosphorus increase to yield a per-acre phosphorus allocation, the maximum allowable amount of phosphorus that can be exported from each acre of land in future development. This number becomes the basis for the development review process.

Implementation

The town may draft a special Lake Protection Ordinance, amend existing ordinances, or create new shoreland, subdivision, and/or site plan review ordinances to implement the phosphorus control method. The method can be implemented through nonregulatory pathways as well. For instance, the locations of public facilities can be chosen to direct development to nonstressed areas.

New subdivision proposals must be designed not to exceed the phosphorus export allocation. The developer is free to choose from a number of phosphorus control methods to meet the allocation: reducing road widths and lengths, reducing the number of lots, limiting vegetation removal, providing permanent buffer strips (through deed restrictions) in proper locations, constructing wet detention ponds, and constructing infiltration systems. The phosphorus export for a subdivision is calculated based on available information on soils, topography and vegetation, and phosphorus export coefficients developed for these conditions, and treatment factors assigned to the various design options.

Further Information

Sources:

- Phosphorus Control in Lake Watersheds: A Technical Guide to Evaluating New Development
- Comprehensive Planning for Lake Watersheds
- Implementation Strategies for Lake Water Quality Protection

Available from:

Maine Department of Environmental Protection
Division of Environmental Evaluation & Lake Studies
Technical Assistance Unit
State House Station #17
Augusta, ME 04333
(207) 289-3901

Contact:

Jeff Dennis, Maine DEP, (207) 287-7847

Minnesota's Classification System and Minimum Shoreland Standards

Main Features

- Lakes and rivers in both rural and urban areas are covered, as well as all types of uses, with explicit standards for different uses in addition to residential use.
- Flexible - different shoreland zoning standards are linked to different classes of lakes and streams.
- Classes were assigned based on the existing intensity of development at the time of classification and the water body's capability to support future development without degradation.
- Reclassification is allowed on the basis of new information, but not for increased density of development.

Strengths

- Applies to urban areas as well as rural areas, avoiding the perceived inequities of NR 115, which applies to unincorporated areas.
- Uses readily available data.
- Employs classification criteria that are readily understandable to non-scientists.
- Recognizes the unsuitability of small, shallow lakes for more than very light development.
- Balances an analysis of a lake's physical and ecological capacity with a realistic acknowledgement of existing development patterns.

Weaknesses

- Can be cumbersome to use. It's difficult to find which standards apply to which waters for which uses.
- Incorporates a bias against stronger protection for shorelines of deeper and larger lakes.
- Uses somewhat simplistic ecological criteria.

Applicability to Wisconsin

- Statewide classification could be seen as undercutting local efforts at land-use planning.
- Setback, lot width, and lot size standards for the least restrictive class in Minnesota are roughly equivalent to Wisconsin's minimum standards. For other lake classes, Minnesota has more restrictive standards than Wisconsin.
- Minnesota's lake classifications were based on development patterns in 1976 when the existing level of development density was much lower than today's. Simply applying the same cutoff points would not work. A statistical analysis of the current size and development density distribution of Wisconsin's lakes would have to be done to develop realistic cutoff points.
- Currently there is no size cutoff for lakes below which Wisconsin does not apply shoreland regulations. Regulation of streams is based on navigability. Because of these two factors the number of water bodies to be classified would be unmanageable, unless size were used as a first-cut in the classification scheme.

Description

Minnesota has a shoreland regulation program quite similar to Wisconsin's in terms of the type of regulatory standards involved. Unlike Wisconsin, Minnesota has employed a classification system that provides a more flexible regulatory system recognizing the varied character of its public waters. Minnesota uses three shoreland management classes for lakes and five classes for rivers:

Lakes

- **Natural Environment** - Very low existing density (in 1976, when classification was done), small size (<150 acres) or high crowding potential (<60 acres per mile of shoreline), shallow (<15-feet deep) with winterkill of fish likely, and shoreland consisting of mostly wetland soils and shrub vegetation. The intent was to have strict standards to steer development away from areas that were currently lightly developed and had high potential for experiencing strong negative impacts.

- **Recreational Development** - Light or moderate existing density, moderate crowding potential (60-225 acres per mile of shoreline), not shallow (over 15-feet deep), fishery not dominated by bullhead/panfish, and shoreland consisting of mostly forested upland soils. These lakes were not likely to have limiting soil conditions for on-site sewage systems, and do not have eutrophic conditions. Therefore, they were thought to be capable of sustaining a moderate level of development.

- **General Development** - All lakes with high existing density **or** lakes with moderate existing density with the same physical and fishery conditions as recreational development lakes but low crowding potential (>225 acres per mile of shoreline). The rationale was that for lakes with high existing densities, regulations aimed at reducing future development density are likely to be ineffective. Lakes with a low crowding potential can support denser development.

Rivers and River Segments

- **Remote** - Located in roadless, forested, sparsely populated areas. Land use is forestry and low-intensity recreation.
- **Forested** - Located in forested, sparsely to moderately populated areas with some roads. Predominant land uses are forestry, recreation, and seasonal residential.
- **Transition** - Middle reaches of rivers in Minnesota and Mississippi river valleys. Land cover includes a mix of broadly forested, forested riparian strips, cultivated, and pasture. Some seasonal and year-round residential development, widely varying recreational use.
- **Agricultural** - Located in well-roaded, intensively cultivated areas with some pasture and small forested areas. Overall recreational use is low and residential use is not common.
- **Urban** - Located in or adjacent to major cities. Recreational use is common, but varies widely.
- **Tributary** - Watercourses mapped in the Protected Waters Inventory, but not assigned to another class.

Some of the common standards are presented in the following table.

A Partial List of Minnesota Statewide Minimum Shoreland Standards

Lake Class	**Lake Shoreland Standards** (Riparian Lots)							
	Lot Width (ft)		Lot Area (ft^2)		Structure Setback (ft)		Shore Impact Zone (ft)	
	unsewered	sewered	unsewered	sewered	unsewered	sewered	unsewered	sewered
Natural Environment	200	125	80,000	40,000	150	150	75	75
Recreational	150	75	40,000	20,000	100	75	50	37.5
General Development	100	75	20,000	15,000	75	50	37.5	25

River Class	**River Shoreland Standards** (Riparian Lots)							
Remote	300		not applicable		200		100	
Forested	200				150		75	
Transition	250				150		75	
Agricultural	150				unsewered	sewered	unsewered	sewered
					100	50	50	25
Urban and	unsewered	sewered			unsewered	sewered	unsewered	sewered
tributary	100	75			100	50	50	25

Further Information

Sources:

- Shoreland Management Classification System for Public Waters: Supplementary Report No. 1
- Statewide Standards for Management of Shoreland Areas – Effective Date: July 3, 1989

Available from:

Minnesota Department of Natural Resources
Division of Waters – Shoreland Management Program
500 Lafayette Road, St. Paul, MN 55155-4033
(612) 296-9226

Contact:

Ed Fick, Minnesota DNR, (612) 296-0528

Town of Wascott Lakes' Plan

The development of the plan is described in *The Local Resource-Regulation Connection: A Practical Approach for Incorporating a Concept of Resource Carrying-Capacity Into Local Land Use Programs* (1981). The project was sponsored by the Northwest District Zoning Administrators' Association in cooperation with University of Wisconsin-Extension state and local land-use specialists with assistance and data from Wisconsin Department of Natural Resources.

The plan calls for a sliding scale of lot area and width standards based on "quality and vulnerability" of individual lakes. This is a very good source for outlining the purpose and justification for lake classification that is tied to different standards for different classes. The concept of “carrying capacity” of a water body is used as the basis for the degree of protection offered through zoning. Waters with lower carrying capacity (i.e., greater vulnerability) should have more protective zoning standards in the shoreland. Criteria are used that can be quantified with existing information available for the entire range of waters to be classified. This leads to more simplistic criteria but allows all the lakes in a region to be classified. This kind of classification is a science-based land-use planning tool and not a scientific taxonomy of lake types.

The vulnerability rating is based on lake size, maximum depth, shoreland development factor (irregularity of shoreline), and flushing potential (landlocked or not). The quality rating is based on fish composition and fishery problems – that , is best professional judgment on winterkill, carp problems, and excessive fertility. The quality rating also encompasses best professional judgment on algal growth, alkalinity, and pH.

The result is a classification system that places all lakes larger than 5 acres in the town into one of three categories. Lakes smaller than 5 acres and rivers and streams automatically receive a minimum level of protection.

Town of Wascott Lake Classes and Shoreland Zoning Standards

Class	Lot Width (ft)	Structure Setback (ft)	Rating	Number of Lakes
Maximum Protection	200	125	High quality/high vulnerability	1
			High quality/moderate vulnerability	16
			Moderate quality/ high vulnerability	13
				30
Moderate Protection	175	100	High quality/low vulnerability	4
			Moderate quality/ moderate vulnerability	7
			Low quality/high vulnerability	35
				46
Minimum Protection [a]	150	75	Lakes < 5 acres	48
			Moderate quality/low vulnerability	1
			Low quality/moderate vulnerability	4
			Low quality/low vulnerabilty	1
				54

[a] Includes all rivers and streams.

Minnesota's Cluster Development Standards: Planned Unit Development

Main Features

- Requires permanent protection of open-space, greater setbacks, and restoration of shoreline vegetation as a trade-off for greater building density.

Strengths

- Promotes a style of development that shows promise as a method to protect natural shore cover while maintaining profitability for the developer.

Weaknesses

- Has not been widely used in Minnesota; the primary use has been for conversions or remodeling of nonconforming resort properties.

Applicability to Wisconsin

- Could provide a template for developing more complete cluster development standards with an incentive (e.g., greater density) to the developer in return for better shoreland protection. Provides a mechanism for promoting conservation subdivision design by establishing standards for regulating such subdivisions in shoreland areas.
- Wisconsin's 1985 Shoreland Zoning Model Ordinance provides suggested cluster standards, but these are **not** codified in NR 115. Major suggested features in Wisconsin's model ordinance are:
  - Process is a limited rezoning to set up a Residential Planned Unit Development (RPUD) Zoning District, not through a variance.
  - District must be >40 acres.
  - Land not used for lots and streets must be dedicated in perpetuity as open space.
  - Total density cannot exceed that which would result from current size, width, and setback standards. No incentive is provided.
  - Shore clear-cut area can increase to 100 feet of frontage.

Description

Minnesota also has Commercial PUD standards in which the impervious area is less than 25%. The RPUDs include:

- Open-Space Requirements
  - More than 50% open and pervious space is maintained.
  - Recreation areas count as open space; areas between buildings count as open space.
  - Fifty percent of the open space must be in a continuous block of water frontage, which must be left in an undisturbed condition.
  - Unsuitable areas (wetlands, bluffs, cemeteries, etc.) must be left as open space.
  - Open space is protected by **permanent** legal means (e.g., deed restriction, permanent easement, public dedication, or restrictive covenant) that limit alteration of topography and vegetation and prohibit commercial use.
- Setbacks
  - Increases in density require 50% increased setbacks or 25% + mitigation acceptable to local government.

- Centralization of Facilities
  - Sewer or central on-site system wastewater treatment system is preferred.
  - Recreational facilities – such as docks, boat launches, piers, swimming areas - must be centralized in a suitable (slope, soil, water depth, etc.) area. Boat spaces are limited to one per riparian dwelling unit.
- Review Process
  - Local government may approve a project through conditional use permit and/or preliminary plat approval taking the comments of the Minnesota DNR area hydrologist into consideration. After being reviewed by area hydrologist, who sends a draft approval or denial to Land Use Management Section, the director of Division of Waters makes the final decision.
- Conversion to RPUD - used for resorts
  - Deficiencies corrected where reasonable.
  - Erosion and vegetative cover problems must be remediated.
  - No increase in density is allowed.

Allowable Density Increases By Tier

Development Tier	Allowable Density Increase Above Normal Standards
Riparian	50% (1.5)
Second tier	100%
Third and beyond (density increases can be transferred from inner tier to outer tier)	200%

Further Information

Source:

- Statewide Standards for Management of Shoreland Areas - Effective Date: July 3, 1989; Section 6120.3800 Planned Unit Development

Available from:

Minnesota Department of Natural Resources
Division of Waters - Shoreland Management Program
500 Lafayette Road
St. Paul, MN 55155-4033
(612) 296-9226

Contact:

Ed Fick, Minnesota DNR, (612) 296-0528

Baltimore County Buffer Ordinance

Main Features

- Focuses on maintaining forested buffers along wetlands, streams, and their floodplains.
- Includes a tracking database to allow evaluation of the regulation's effectiveness.
- Requires "no disturbance to the extent possible" in the buffer area.
- Requires buffer area to be dedicated to the county in fee or in easement. Buffers must be shown on all plats and marked in the field prior to any clearing, grading, or construction. Identifying water resources is the responsibility of the applicant.
- Bases buffer width on the type of water resource and its designated uses and expands it in areas of steep slope, erodible soils, and poor vegetative cover.

Strengths

- Strict and protective, the loopholes are closed. Stresses avoiding activities in the buffer when practical.
- Burden is on developer to provide information and analysis, rather than the county. Clear guidance on delineation methods and buffer sizing provide a degree of certainty for developers.
- The public interest basis for regulations is spelled out clearly. Buffer is made visible and is permanently protected.

Weaknesses

- Restrictive and potentially expensive for developers.
- Lack of advance certainty regarding location of wetland and 100-year floodplain boundaries. (Use of standard methodologies has helped reduce uncertainty.)
- Case-by-case application can sometimes result in inconsistencies or a discontinuous buffer.

Applicability to Wisconsin

- This ordinance is designed for and applied to streams, wetlands, and floodplains, rather than lakes. As such, the ordinance may be more acceptable to Baltimore landowners because their desire for a view and access to wetlands and streams may not be as strong as Wisconsin landowners' desires for viewing and access to lakes and larger rivers. In a sense, the Baltimore County buffer places restrictions on the use of private property in the "back yard" while Wisconsin's shoreland zoning restrictions apply to what most waterfront owners think of as their "front yard."

- Several of the strengths of the ordinance could provide starting points to improve the effectiveness of local shore cover preservation regulations. Some sections of the ordinance may be especially useful for regulating new development of previously undeveloped shorelines, or when linked to a classification system that identifies high-priority, more sensitive waters. Examples are:
  - requiring the buffer boundary to be identified on plats and in the field
  - requiring conservation easement or fee title to county for buffer lands
  - utilizing stronger "no disturbance" language
  - identifying the 100-year floodplain as an aquatic resource to be protected, rather than part of the buffer

Description

Part of a high-priority regional effort to protect public water supply reservoirs, as well as the Chesapeake Bay, the ordinance is one of many mechanisms for the management of the county's riparian ecosystems. Other tools include watershed management planning, water quality monitoring, citizen education and volunteer activities, stream restoration, stormwater retrofits, wetland creation, waterway cleanups, dredging, and shore erosion control.

The ordinance establishes a permanent buffer around streams, floodplains, and wetlands. Any development or forest harvesting operation requires submittal of a thorough site plan addressing all development issues to the county. The plan is reviewed by all applicable agencies. A wide range of information is required to be shown, including property lines, topography, existing infrastructure, vegetation and soil, and identification of all streams, wetlands, and floodplains. The Department of Environmental Protection and Resource Management approves or modifies the developer's buffer proposal.

Buffer width varies: 25 feet from outer wetland and 100-year floodplain boundary; 75 feet from the bank of non-trout streams; 100 feet from the bank of trout streams. On first and second order streams (the smallest tributaries), buffer width is measured from the center of the stream. Additional buffer width may be required as a result of steep slopes, adjacent land cover, erodible soils, and habitat needs. There is consensus accepting the use of this buffer sizing methodology among regulators, developers, and consultants.

Further Information

Sources:

- ARTICLE IX. PROTECTION OF WATER QUALITY, STREAMS, WETLANDS AND FLOODPLAINS: Sections 14-331 to 14-350, Baltimore County Code
- A Methodology For Evaluating Steep Slopes Adjacent to Watercourses and Wetlands, January, 1991

Available from:

Baltimore County Department of Environmental Protection and Resource Management
401 Bosley Avenue
Towson, MD 212024
(410) 887-5683

Contact:

Don Outen, Baltimore County Department of Environmental Protection and Resource Management
(410) 887-3733

City of Boulder, Colorado Wetland Protection Ordinance

Main Features

- A comprehensive local government wetland protection ordinance.
- The information base for the ordinance was provided by an EPA-funded study, *Advanced Identification of Wetlands in the City of Boulder Comprehensive Planning Area*. All wetlands in the area were field surveyed and delineated on large-scale maps (1 inch = 400 feet and 1 inch = 100 feet, aerial bluelines) and the functions of each wetland were evaluated.
- Significant wetlands are identified on the wetland maps, but permit standards are the same for all wetlands.
- Wetlands under 400 square feet (0.01 acre) are generally exempt.
- Buffer areas are defined and regulated.
- City operations are also subject to the ordinance. Routine activities are governed by a Best Management Practices manual.
- Applicants challenging delineations of wetland boundaries and buffers pay an extra fee for new determinations by the city.

Strengths

- Permit decisions are made relatively quickly. (They must be made within 25 days after a complete application is submitted.)
- Developers are given advance knowledge of significant wetlands and reasonable certainty on wetland boundaries and buffer areas.
- Notification of neighboring landowners and other interested parties is required.
- Decision sequence is set for all permits requires avoidance and minimization of wetland fill, as well as a public interest review. Compensatory mitigation may be required for permitted losses.
- Enforcement provisions include fines, requiring restoration, or paying for restoration performed by the city. Fines and restoration costs are treated in the same manner as delinquent taxes.

Weaknesses

- Advance identification and evaluation requires a very high degree of expertise, expense, effort and time.
- The need for an Army Corps of Engineers permit is not eliminated by a city permit, so the applicant still has to deal with two layers of bureaucracy.
- Map amendment process is cumbersome.

Applicability to Wisconsin

- Provides a possible model for local regulation, based on intensive inventory field work.
- The much larger amount of wetland in most Wisconsin landscapes increases the likelihood that field delineation and functional evaluation would be more difficult, time consuming, and expensive.

Further Information

Sources:

- Advanced Identification for Wetlands n the City of Boulder Comprehensive Planning Area
- City of Boulder Wetlands Protection Ordinance
- City of Boulder Wetlands Protection Ordinance: Guidance for Wetland Permit Applications
- City of Boulder Wetlands Protection Program Best Management Practices

Available from:

City of Boulder Department of Community Planning and Development
PO Box 791, Boulder, CO 80306
(303) 441-3270

Conservation Subdivision Design:
A Variation Cluster Development
by Randall Arendt

Randall Arendt is vice president of conservation planning at the Natural Lands Trust, based in Media, Pennsylvania. The Natural Lands Trust is a nonprofit regional land trust, and Arendt's work in conservation subdivision design is part of the trust's efforts to help municipalities add significant land protection standards to their existing land-use ordinances.

Main Features

- Subdivision design allows for the same density of development as traditional subdivision design but typically results in 50% and 70% of the land remaining as open-space land.
- Preserves water resources and other natural features by designing around them.
- Stormwater quantity and quality impacts can be significantly reduced due to less impervious area.

Strengths

- **Economic:** Takes advantage of the value of wetlands, streams, and other natural areas as site amenities that enhance property values in the new development. Often requires less infrastructure cost because of the groupings of home sites.
- **Ecological:** Creates significant amounts of contiguous open-space land that can be utilized for the protection or enhancement of wildlife habitat and other open-space resource values. Can easily be incorporated into a network of open-space corridor lands which can be essential for area-sensitive wildlife species and protecting genetic diversity.
- **Quality of Life:** Creates more interesting developments by designing around and capitalizing on the natural and unique human-built features of the landscape. Potential for significant area for passive and active recreation lands. Clustering houses fosters a neighborhood/community environment.

Weaknesses

- Conservation subdivision design is often not permitted under current local zoning and subdivision design requirement, due to street width and lot size requirements.
- This design approach appears to have been most commonly been utilized for up-scale developments and has not been well tested on subdivisions designed for individuals with lower to moderate income levels.
- The design approach often automatically utilizes the density allowed under conventional subdivision design when calculating the allowed number of total dwellings.

Applicability to Wisconsin

- In certain cases it may be desirable to step back and evaluate whether that density is appropriate.
- May require some modification of local zoning and subdivision design requirements (to allow narrower streets for instance). Otherwise, likely to be permitted under existing regulatory framework. Provides an excellent opportunity to avoid further fragmenting of the landscape.

- In a waterfront setting, impacts to the immediate shore and near-shore would make it unwise to increase the density of waterfront lots or increase the number of owners holding riparian rights. Any decrease in lot widths should be for nonriparian lots only.
- Specific cluster development standards should be developed that allow the environmental benefits of this type of subdivision design to be achieved while ensuring that shore cover and near-shore habitat are adequately protected.

Description

Randall Arendt describes conservation subdivision design as a four-step process. The first step is to identify the conservation areas on the property. These include both the areas limited to development by current regulations and environmental constraints and those "unprotected elements of the natural and cultural landscape that deserve to be spared" from development. The balance of the site defines the potential development areas. The next step is locating house sites, which for marketing and quality-of-life reasons are placed in proximity to the conservation areas. The third step is to determine the layout of local street access to the homes and the location of footpaths to connect the various parts of the neighborhood and to access the natural features in the open-space areas. In this approach, drawing in the lot lines is the last step.

Further Information

Sources:

- *Conservation Subdivision Design* by Randall Arendt
- *Rural By Design* by Randall Arendt
- SEWRPC Planning Guide No. 7, Rural Cluster Development Guide

Contact:

Monica Drewniany
Southeastern Wisconsin Regional Planning Commission
PO Box 1607
Waukesha, WI 53187
(414) 547-6721, ext. 253

Other Good Planning Resources and References

Stormwater Management

DRAFT Model Stormwater Management Zoning Ordinance - Wisconsin Department of Natural Resources.

This **draft** model ordinance was prepared by Department of Natural Resources staff as a starting point for public discussion and input. A final version of the model ordinance is not yet complete. Nevertheless, the draft model ordinance can provide a template for municipalities seeking a better approach to stormwater problems. Counties, cities, towns, and villages are all given explicit authority to regulate stormwater through a comprehensive stormwater management zoning ordinance. Although the primary users of such ordinances are likely to be incorporated municipalities, stormwater management is critical to mitigating the impacts of urbanization on streams and the impacts of backlot development around lakes, which may remain unincorporated.

The draft model ordinance offers standards for controlling the water quality impacts and water quantity impacts of development proposals. The ordinance focuses on impacts from the increase in connected impervious areas associated with development. Technical guidelines for designing stormwater management practices are to be published by the University of Wisconsin - Extension in *The Wisconsin Stormwater Manual. Part Two: Technical Design Guidelines for Stormwater BMP's*.

The draft model ordinance also contains a commentary section summarizing the background information and the rationale behind each ordinance provision. This section provides an excellent discussion of the mechanisms and impacts of increases in impervious surface area on surface and ground water quality, local drainage problems, local and regional flooding, and degradation of physical habitat in streams and wetlands.

Available from:

John Pfender, Runoff Management Practices Section
Bureau of Watershed Management, DNR
PO Box 7921
Madison, WI 53707 (608) 266-9266

Site Planning for Urban Stream Protection - Center for Watershed Protection

This manual describes an approach to development design that protects streams by reducing impervious cover. It contains a summary of the research linking impervious cover to stream quality and outlines the planning and implementation steps needed to institute a watershed-based zoning strategy at the local level. Some specific practices associated with cluster design are described including urban stream buffers, alternative street and parking lot design, and other innovative stormwater management practices. The manual is intended for use by municipal officials, landscape architects, planners, and engineers.

Available from:

Center for Watershed Protection
8737 Colesville Rd., Suite 300, Silver Spring, MD 20910
(301) 589-1890

Cooperating Agreements Between Local Agencies

Working Agreement Between Walworth County Land Conservation Committee and Walworth County Park and Planning Commission

Confusion arising from overlapping jurisdiction on many projects in rapidly developing counties has created the need to outline the roles of land conservation departments, who typically engage in implementing soil and water conservation programs and nonpoint pollution reduction practices in both rural and urban areas, and zoning and planning departments that administer the zoning code. By developing a working agreement or memorandum of understanding, county agencies can streamline regulatory processes and resolve conflicts over jurisdiction. Perhaps the most important advantage to be gained is the ability to utilize available staff technical expertise most efficiently.

Walworth County uses its working agreement to direct the technical expertise of land conservation staff in soil erosion and stormwater management toward zoning applications such as conditional use permits. This should provide some workload relief for zoning staff and ensure a good review. Walworth County also consolidates zoning, sanitation, and erosion control reviews so that a consistent response is given to an application.

Walworth County Land Disturbance Erosion Control and Stormwater Management Ordinance

This ordinance is focused on controlling erosion and stormwater runoff during construction and does not address long-term stormwater management to a significant degree. An important feature of the ordinance is that it applies to any land-disturbing activity in the shoreland zone. This allows erosion control standards for shoreland construction to be routinely handled through the land conservation department, rather than requiring a conditional use permit.

Voluntary Conservation: Conservation Easements and Land Acquisition

***The Conservation Easement Handbook*, by Janet Diehl and Thomas S. Barrett, principal authors. Published by the Land Trust Exchange and the Trust for Public Land, 1988**

This is a valuable how-to manual covering the legal, marketing, tax, acquisition, monitoring, and enforcement aspects of conservation easements held by nonprofit organizations and public agencies. It includes many sample checklists and forms covering these aspects and a model conservation easement document with extensive commentary on each section of the model.

***Doing Deals: A Guide to Buying Land for Conservation*, by The Trust for Public Land. Published by the Land Trust Alliance and the Trust for Public Land, 1995**

This book provides a guide for Land Trusts and other conservation organizations on the entire process of selecting and acquiring land.

Gathering Waters

This is a land conservation organization that assists land owners, land trusts, and communities in their efforts to protect Wisconsin's land and water resources. It provides technical assistance in establishing conservation easements and a variety of other conservation options available to landowners.

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Wetland Protection Planning Tools Linked to s. 404 Permit Programs

Three types of wetland planning projects authorized under the Clean Water Act are noted here. Their purpose, with varying degrees of emphasis, is to provide better scientific information in a region to improve the basis for regulatory decision making and to increase the predictability of regulatory programs. Through these planning processes, a better assessment of cumulative impacts is sought to attain better overall wetland protection while reducing the uncertainty of permit-by-permit decision making.

Advanced Identification, initiated by U.S. Environmental Protection Agency

The United States Environmental Protection Agency (USEPA) and the United States Army Corps of Engineers (USACE) can initiate the Advanced Identification (ADID) process when requested by a state or local agency. ADIDs usually involve and intensive wetlands inventory, as well as mapping and a characterization of each wetland's functions. Regional USEPA offices use this information to designate areas as suitable or unsuitable for disposal of fill. The process involves opportunities for public and agency review and comment. ADIDs can streamline the regulatory process by providing agencies with a preliminary indication of wetland functional value based on a suitable/unsuitable determination. However, the ADID determination does not guarantee the outcome of a future permit decision.

Examples: Chiwaukee Prairie ADID, Town of Norway (Wind Lake)

Special Area Management Plan, initiated by the USACE

Like an ADID, a Special Area Management Plan (SAMP) requires interagency cooperation between USACE, USEPA, and state and local government. It involves intensive delineation and functional evaluation based on field work. A SAMP differs from an ADID in that it is designed to produce definite regulatory results by producing - in advance of permit applications - local, state, and federal (USACE general permits) approvals for fill in identified wetland areas and identification of wetland areas the are to be restricted from approval by local, state, and federal (Clean Water Act 404(c)) authorities. Some wetland areas may not be slated for either protection or fill. Any future permit applications for these areas will be evaluated through the individual permit process. However, some SAMPs produce only advisory designations of suitability or unsuitability for fill.

Unlike an ADID, the SAMP must consider both resource protection and economic growth. A SAMP is even more resource intensive and costly than an ADID. Generally, this level of effort is reserved for environmentally sensitive areas that are under strong development pressure. All parties are required to agree in advance on how the SAMP results will be used.

Example: City of Superior SAMP

Special Wetland Inventory Studies, initiated by USEPA

A Special Wetland Inventory Study (SWIS) provides a database of scientific information on a region's wetlands and is not specifically tied to a regulatory outcome. However, the SWIS still provides a streamlining of the regulatory process by providing a wealth of accessible data to many county, state, and federal agencies as well as academic institutions and conservation groups.

Example: Green Bay SWIS

APPENDIX B
COMPARISON OF SIMILAR SHORELAND AND WETLAND PROTECTION PROGRAMS

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Programs that address shoreland and shoreland/wetland protection purposes and objectives	- Shoreland Zoning (1966): NR 115, 117 - Animal Waste Rules (NR 243) - Priority Watershed Program (NR 120) - Construction Site Erosion/Stormwater (NR 216) - On-site wastewater treatment rules (Comm 83)	- Wetland Conservation Act - Water quality standards, CWA 401 certification[a] - Shoreland Management Program (1989) - Critical areas	- Comprehensive Shoreland Protection Act (1991)	- Great Lakes Submerged Lands Act (1955) - Shorelands Protection and Management Act (1970) - Inland Lakes and Streams Act (1972) - Natural River Act (1970) - Sand Dunes Protection Management Act (1976) - Goemaere-Anderson Wetland Protection Act (1979) provides for direct administration of the federal CWA 404 permit program[b]	- Mandatory Shoreland Zoning Act (revised 1991) - Model ordinance - Comprehensive Planning and Land Use Regulation Act
Purpose/authority	- Public trust in navigable waters - Promote public health, safety, convenience, and general welfare	- Public trust in public waters - Preserve surface water quality - Conserve economic and natural values of shorelands - Provide for wise use of state's surface water and related land resource	- Public trust in public waters - Promote public health, safety, and welfare	- Provide for conservation and protection of natural resources - Maintain public right of access to and safe use of waterways - Protect the public trust and safeguard the rights of river and lakefront property owners	- Public trust in state's surface waters - Promote health safety and general welfare
Statewide standards	- State minimum, but local ordinances can be more restrictive - Model ordinance developed by state for local use if desired	- State minimum, but local ordinances can be more restrictive	- State minimum, but local ordinances can be more restrictive	- Local ordinances must be approved by state, or state regulates directly	- Local ordinances must conform to state law, but can be more restrictive or entirely different if purposes of state law are met
Administration and enforcement	- Local with state oversight	- Local with state oversight	- No specific shoreland permit, requirements are added to other required permits - State does permit review and enforcement, local may also inspect and enforce	- Local with state oversight	- Local shoreland zoning permit must be issued before any utility service can be provided

[a]Section 401 of the Clean Water Act (CWA 401) requires state water quality certification for a federal wetland permit to be valid.

[b]Section 404 of the Clean Water Act (CWA 404) governs the issuance of federal permits to fill wetlands.

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Regulated area	Shorelands of - lakes: OHWM[a] + 1000 feet - streams: 300 feet Or entire floodplain	Shorelands of - lakes >25 acres (>10 acres in municipalities) - rivers draining >2 mi^2 - OHWM + 1000 feet, 300 feet, or entire floodplain	Shorelands of - lakes >10 acres - large rivers, 4th order and larger (74 in all) - estuaries and coast waters 250 feet for all, no mention of floodplain	- Great Lakes and connected waterways: OHWM + 1000 feet - Designated Natural Rivers: OHWM + 400 feet - Sand Dunes: designated critical area + 250 feet (locals can extend regulations further if necessary)	Shorelands of - Lakes (Great Ponds): >10 acres - Saltwater bodies, rivers: >25 mi^2 watershed Wetlands: 250 feet from upland edge Streams: 75 feet
Classification system	None	**Lakes classes** - Natural environment: <150 acres, <60 acres water/mile of shoreline, <3 dwellings/mi, <15 feet deep - Recreational development: 60-225 acres/mi, 3-25 dwellings/mi, >15 feet deep - General development: >225 acres/mile, >25 dwellings/mile, >15 feet deep **Rivers classes** Top 5 classes all have to be recreationally significant on a statewide basis - Remote: roadless, low population, forested - Forested: sparse to moderate population, forested - Transition: misture of cultivated, pastured, and forested land use - Agricultural: intensive agricultural land use - Urban: major cities - Tributary: all others (not recreationally significant)	None	Natural Rivers designated by a state Commission based on: "preserving and enhancing its [the river's] values for water conservation, its free flowing condition and its fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic and recreational values and uses." Only free-flowing rivers or segments can be designated as Natural Rivers Shoreland Protection Act: - Environmental areas: designated by state based on "preservation or maintenance of fish or wildlife or both"	None for lakes "Significant river segments" listed; these have larger structure setbacks than other rivers and streams.

[a]Ordinary high-water mark; for legal purposes, the point of transition from water to land.

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Vegetated buffer zones (setbacks) for these objectives: - wildlife useage - screening to maintain natural beauty - sediment/nutrient trapping	Shoreland zoning: - 35-foot restricted cutting zone: no clearcuts >30 feet in any 100 feet for entire range of objectives Other state programs: - Priority Watershed Program: 66-foot streambank easements, new variable 20-70 foot riparian vegetated buffer interim BMP for sediment trapping, removal of row crops, and wildlife benefits - Agricultural Shoreland Zoning (DATCP): 25 feet + buffer for same objectives	Varying setbacks and permitted or conditional uses based on combination of water body classification and land-use category - Shore impact zone: half the distance of the structure setback line - Bluff impact zone: bluff + 20 feet - Clear-cutting not allowed; limited cutting must maintain screening, shading of rivers; grading restrictions, BMPs required	Natural woodland buffer of 150 feet: "healthy, well-distributed stand" (including shrubs, ground cover and roots) must be maintained - May remove fallen, diseased, and noxious vegetation - May not harvest more than 50% of basal area in 20 years - Clearing for construction of accessory structures, etc., not counted toward 50% limit - No stump removal within 50 feet of water	Natural Rivers: - Natural vegetation strip varies from 25 feet to 100 feet depending on the river	Buffer Areas: - Within 75 feet: no clear-cuts, maintain well-distributed stand - Within 100 feet: maximum cut = 40% of basal area (tree volume) - Beyond 100 feet: clear-cuts must be < 10,000 feet^2
Structure setbacks	75-foot structure setback Structure no defined	Structure: any building or appurtenance except utility lines and facilities Setbacks for lakes: - Natural environment: 150 feet - Recreational: 100 feet (75 feet, if sewered) - General development: 75 feet (50 feet, if sewered) Rivers: - Remote: 200 feet - All others: 100 feet (50 feet, if sewered)	Structure: very broadly defined (excludes fences) Primary structure: not incidental or accessory - 50=foot setback for primary structure, but locals can have their own setback Accessory structures: not subject to a setback	Natural Rivers: Building setbacks vary from 100 feet to 200 feet Shorelands Act: - Permanent structures: buildings an on-site wastewater treatment system facilities: small = foundation <3500 feet^2 large = foundation >3500 feet^2 - These definitions relate primarily to setbacks in high erosion risk areas - 30-foot minimum setback to permanent structure in high erosion risk areas - Structures <1200 feet^2 can be built without permit	Structures and principal structure defined same as New Hampshire (structure and primary structure, respectively) No principal structures for any use except facilities for small education, scientific, or nature interpretation are allowed in Resource Protection Districts

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Structural standards	Not addressed in NR 115 Model ordinance suggests some standards for boathouses	Only 1 water-oriented structure per lot that is: - Set back 10 feet - <10 feet tall - <250 feet^2 - Other requirements to ensure reduced visibility Stairways preferred over grading: - <4 feet wide for residential, wider for commercial, parks and PUDS Landings: - <32 feet^2 - No canopies or roofs - Above ground or designed to prevent soil erosion - Inconspicuous from lake Decks can be added to nonconforming structures only if: - No reasonable location outside structure setback - >30-foot setback or <15% closer than existing structure - Wooden, no roof or screen	No statewide requirement Suggest 35 feet or 2.5- story maximum height	No statewide requirement	35-foot maximum height Stairways allowed when no alternative is available
Shoreline frontage or lot width	Minimum average lot width: - Sewered: 65 feet - Unsewered: 100 feet with at least the same frontage Model Ordinance: - Lot width is per main building - Side yards per main bldg: minimum 10 feet; combined total, 25-foot minimum	Lot width, lakes: - Natural environment: 200 feet (125 feet, if sewered) - Recreational: 150 feet (75 feet, if sewered) - General development: 100 feet (75 feet, if sewered) Lot width, rivers: - Remote: 300 feet - Forested: 200 feet - Transition: 250 feet - Agricultural: 150 feet - Urban and tributary: 100 feet (75 feet, if sewered)	Shoreland frontage defined as the average of actual frontage (following the irregular shoreline) and straight-line distance between points where side lot lines intersect reference line (similar to OHWM). 150-foot minimum frontage (sewered lots follow underlying zoning on width)	Natural Rivers: - Lot widths vary from 100 feet to 330 feet Shoreland Protection Act: - No lot width requirements	Shore frontage for building types: - Residential per dwelling unit tidal: 150 feet nontidal: 200 feet - Recreational facilities: 200 feet - All others per principal structure tidal: 200 feet nontidal: 300 feet - Commercial fishery/maritime districts not covered

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Minimum lot size	Minimum lot area: - Sewered: 10,000 feet^2 - Unsewered: 20,000 feet^2 Model Ordinance: - Lot sizes are per main building	Lot area per building, lakes: - Natural environment: 80,000 feet^2 (40,000 feet^2, if sewered) - Recreational development: 40,000 feet^2 (20,000 feet^2, if sewered) - General Development: 20,000 feet^2 (15,000 feet^2, if sewered) Lot area per building, rivers - No lot area controls	Lot sizing by soil type in unsewered areas	Natural rivers: - No lot area minimum, underlying zoning would apply Shoreland Protection Act: - No lot area minumum, but structure zone is maximum of 1200 feet^2 without special permit	Minimum lot size for building types: - Residential per dwelling unit tidal: 30,000 feet^2 nontidal: 40,000 feet^2 - Recreational facilities: 40,000 feet^2 - All others per principal structure: tidal: 40,000 feet^2, nontidal: 60,000 feet^2 - Commercial fishery/maritime districts no covered
On-site wastewater treatment system controls	- Regulated by Department of Commerce - 50-foot setback from OHWM	- Sewer preferred – smaller, narrower lots allowed for sewered areas - Regulated my MN Pollution Control Agency (not MN DNR) - Setbacks vary by class but 25 feet (lakes) or 50 feet (rivers) closer than for structure	Lakes setback depends on soils: - 75 feet for most - 100 feet if restrictive layers within 18 inches - 125 feet in porous soils Rivers: 75 feet	Natural Rivers: - On-site wastewater treatment system setback varies from 100 feet to 150 feet	On-site wastewater treatment systems not allowed in Resource Protection Districts

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Alternative developments (RPUD[a], CPUD[b], etc.)	Limited rezoning to set up a RPUD District addressed in Model Ordiance: - Rezoning is the mechanism, not variance - Must be >40 acres - Land not used for lots and streets must be dedicated in perpetuity as open space - Total density cannot exceed that which would result from current size, width, and setback standards - Shore clear-cut area can increase to 100 feet of frontage	RPUD: - Must have "centralized" sewage system - Tier system used to allow greater density up to a maximum if: - >50% open and pervious space is maintained - Recreation areas are open space - Unsuitable areas (wetlands, bluffs, cemeteries, etc.) are left as open space - Open space is not commercial - Open space is protected by **permanent** legal means - Normal setbacks are met or exceeded - Increases in density are accompanied by (25-50%) increased setbacks Conversion to RPUD: - Deficiencies corrected where reasonable - Erosion and vegetative cover problems must be remediated - No increase in density CPUD: - Similar design criteria - Impervious area <25% - Complicated formula for maximum allowable density	No special allowances for cluster development, but total number of units cannot exceed 1 per 150 feet of frontage Suggested ordinance language on clusters - Increase allowable density by 2% - 60% of parcel remains permanent open space by a conservation easement - <20% impervious cover	Not state-level standards found, underlying zoning standards would apply	Unknown

[a]RPUD = Residential Planned Unit Development
[b]CPUD = Commercial Planned Unit Development

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Construction site erosion control; grading and filling; stormwater	No specific standards in NR 115 Ch. 30 permit required for grading >10,000 feet^2 on the bank of a navigable waterway Model ordinance: - Conditional use permit for >2,000 feet^2, >20% slope, or 1,000 feet^2 on a 12-20% slope NR 216: - Stormwater (WPDES[a]) permit for large municipalities and land disturbance >5 acres	Local permit required for grading/filling on: - Steep slopes (>12%), moving >10 yards^3 in shore or bluff impact zone **or** 50 yards^3 elsewhere Permit conditions: - Wetland restrictions, erosion control and sediment trapping, stabilization per NRCS[b] specifications	Alteration of Terrain Permit required from state Construction design standards must follow stormwater and erosion and sediment control manuals	State standards under Soil Erosion and Sedimentation Control Act would apply for soil disturbance >50,000 feet^2 and within 250 feet of OHWM	Soil disturbance within 100 feet of water regulated by state
Wetland Protection in the shoreland zone	Shoreland-Wetland zoning districts established for wetlands shown on Wisconsin Wetlands Inventory 12 generally nonstructural permitted uses, all others prohibited. Filling, grading, and ditching always prohibited or limited even in permitted uses. No variances, but shoreland wetland areas can be rezoned if the rezoning does not result in significant adverse impact upon wetland functions. State can veto rezonings.	Wetlands are placed in Conservancy District and must meet test of suitability for development. State uses water quality certification authority for federal CWA 404 permits.	Governed by Wetlands Board	Permit required for dredging, filling, draining, or building structures in any wetland connected to any lake or stream Permit required for isolated wetlands >5 acres Michigan has assumed administration of CWA 404 permit program	Unknown

[a]Wiscosin Permit Discharge Elimination System.

[b]Natural Resources Conservation Service (formerly Soil Conservation Service).

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Forestry standards	35-foot vegetative cutting restriction zone applies Forestry BMP Manual contains voluntary standards for riparian management zones (RMZ): - RMZ=35 feet from non-navigable and navigable intermittent streams: no equipment within 15 feet unless ground frozen or dry - RMZ=100 feet from lakes and navigable perennial streams: no equipment within 50 feet, leave 60 feet^2, >5 inches DBH[a], well-distributed	Forestry activities must comply with both - *Minnesota Nonpoint Pollution Assessment - Forestry* - *Water Quality in Forest Management BMPs in Minnesota*	See vegetated buffer standards	Not researched	See vegetated buffer standards
Agricultural standards	Not spelled out in NR 115 Agricultural shoreland zoning in some counties	For agricultural uses: - Shore impact zone = 50 feet from OHWM - Must have permanent vegetation or have NRCS approved conservation plan Feedlot standards: - 300-foot setback; nonconforming feedlots may only expand landward	Not researched	Not researched	Not researched

[a]Diameter at breast height: measurement used in forestry.

	Wisconsin	Minnesota	New Hampshire	Michigan	Maine
Key features of interest to Wisconsin		Allows flexibility for local conditions: - Other standards for specific water can be written as part of a comprehensive planning effort - Nonconforming uses in urban areas can justify relaxed standards - Can trade off stricter standards in one area for relaxed standards in another - Any of these changes must be approved by the state and justified Impervious cover <25% on any shoreland lot	Suggest impervious cover <20% in model ordinance	Model zoning ordinances developed by state. Locals can choose from a menu of different zoning methods: - Partial zoning (interim method) - Separate district (specific and focused but uses existing mechanisms) - Overlay district (fits in with existing land-use plan)	Comprehensive planning and subdivision review using the phosphorus allocation method; see Appendix A for description
Staffing for shoreland program	- 30 water management specialists throughout state - 72 county zoning administrators - 2 central office planners	- 23 area hydrologists throughout state - 1 central office - 85 county code administrators - 160 cities	Unknown	Unknown	Unknown

APPENDIX C
COMPARISON OF SHORELAND AND WETLAND PROTECTION PROGRAMS IN THE MIDWEST

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Programs that address shoreland and shoreland/wetland protection purposes and objectives	- Shoreland Zoning (1966): NR 115, 117 - NR 103 Wetland Water Quality Standards, CWA 401 Certification - Animal Waste Rules (NR 243) - Priority Watershed Program (NR 120) - Construction Site - On-site wastewater treatment system rules (Comm 83)	- 1991 Wetland Conservation Act - Water quality standards, CWA 401 certification - Shoreland Management Program (1989) - Critical areas	- Great Lakes Submerged Lands Act (1955) - Shorelands Protection and Management Act (1970) - Inland Lakes and Streams Act (1972) - Natural River Act (1970) - Sand Dunes Protection Management Act (1976) - Goemaere-Anderson Wetland Protection Act (1979) provides for direct administration of CWA 404 permits	- Protected Wetland Act (1990) - Protected Water Area System (1984) - CWA 401 water quality certification	- No Shoreland Program - Interagency Wetlands Policy Act - CWA 401 water quality certification
Purpose/authority	- Public trust in navigable waters - Promote public health, safety, convenience, and general welfare	- Public trust in public waters - Preserve surface water quality - Conserve economic and natural values of shorelands - Provide for wise use of state's surface water and related land resource	- Provide for conservation and protection of natural resources - Maintain public right of access to and safe use of waterways - Protect the public trust - Safeguard the rights of river and lakefront property owners	- Protect and enhance quality of all waters - Protected water area system: to protect "outstanding cultural and natural resource values"	- Interagency Wetlands Policy Act: regulates state and state-funded activities costing >$10,000
Statewide standards	State minimum standards required, but local ordinances can be more restrictive Model ordinance developed by state for local use if desired	State minimum, but local ordinances can be more restrictive	Great Lakes Shorelands, Critical Sand Dune Areas, and Designated Natural Rivers require a local ordinance approved by state	Zoning is strictly local Protected Waters: - Natural Resource Commission prepares and administers a management plan	Most wetland regulation is at the local level
Administration and enforcement	Local with state oversight	Local with state oversight	Local with state oversight	Implementation tools are easements, leases, covenants, land purchases, and education	

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Regulated area	Shorelands of navigable waters: - Lakes: OHWM + 1000 feet - Streams: 300 feet Entire floodplain	Shorelands of - Lakes >25 acres (>10 acres in municipalities) - Rivers draining >2 mile2 OHWM + 1000 feet, 300 feet, or entire floodplain	- Great Lakes and connected waterways: OHWM + 1000 feet - Designated natural rivers: OHWM + 400 feet - Sand dunes: designated critical area + 250 feet (locals can extend regulations further if necessary)	Protected waters program is non-regulatory	
Classification System	None for Shoreland Zoning	**Lakes Classes** - Natural environment: <150 acres, <60 acres water/mile of shoreline, <3 dwellings/mile, <15 feet deep - Recreational development: 60-225 acres/mile, 3-25 dwelling/mile, >15 feet deep - General development: >225 acres/mile of shoreline, >25 dwelling/mile, >15 feet deep **Rivers classes** Top 5 classes all have to be recreationally dignificant on a statewide basis - Remote: roadless, low population, forested - Forested: sparse to moderate population, forested - Transition: mixture of cultivated, pastured, and forested land use - Agricultural: intensive agricultural land use - Urban: major cities - Tributary: all others (not recreationally significant)	Natural Rivers designated by a state Commission based on: "preserving and enhancing its [the river's] values for water conservation, its free-flowing condition and its fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic, and recreational values and uses." Only free-flowing rivers or river segments can be considered	Protected Waters: No classification beyond designation on basis of cultural and natural resource value	No state-level program

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Vegetated buffer zones (setbacks) for these objectives: - wildlife usage - screening to maintain aesthetics from water body - sediment/nutrient trapping	Shoreland zoning: - 35-foot restricted cutting zone; no clear-cuts >30 feet in any 100 feet for entire range of objectives Other state programs: - Priority Watershed Program: 66 feet streambank easements, 20-70-foot riparian vegetated buffer interim BMP for sediment trapping, removal ofd row crops and wildlife benefits - Agricultural shoreland zoning (DATCP): 25 feet + buffer for same objectives	Varying setbacks and permitted or conditional uses based on combination of waterbody classification and land-use category: - Shore impact zone: half the distance of the structure setback line - Bluff impact zone: bluff = 20 feet Vegetative clearcutting not allowed; limited cutting must maintain screening, shading of rivers; grading restrictions, BMPs required	Natural Rivers: - Natural vegetation strup varies from 25 feet to 100 feet depending on the river	Plans typically suggest a 50-foot buffer between river bank and cropland	No state-level program
Structure setbacks	75-foot structure setback Structure not defined	Structure: any building or appurtenance except utility lines and facilities Setbacks for lakes: - Natural environment: 150 feet - Recreational: 100 feet (75 feet, if sewered) - General development: 75 feet (50 feet, if sewered) Rivers: - Remote: 200 feet - All others: 100 feet (50 feet, if sewered)	Natural Rivers: - Building setbacks vary from 100 feet to 200 feet	Not addressed	

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Structural standards	Not addressed in NR 115 Model ordinance suggests some standards for boathouses	Only 1 water-oriented structure per lot that is: - Set back 10 feet - <10 feet tall - <250 feet^2 - Other requirements to ensure reduced visibility Stairways preferred over grading: - <4 feet wide for residential, wider for commercial, parks, and PUDs Landings: - <32 feet^2 - No canopies or roofs - Above ground or designed to prevent soil erosion - Inconspicuous from lake Decks can only be added to nonconforming structures, and only if: - No reasonable location outside structure setback - >30-foot setback or <15% closer than existing structure - Wooden, no roof or screen		Not addressed	No state-level program
Shoreline frontage or lot width	Minimum average lot width: - Sewered: 65 feet - Unsewered: 100 feet with at least the same frontage Model ordinance: - Lot width is per main building - Side yards per main building: minimum 10 feet, combined total 25 feet	Lot width, lakes: - Natural environment: 200 feet (125 feet, if sewered) - Recreational: 150 feet (75 feet, if sewered) - General development: 100 feet (75 feet, if sewered) Lot width, rivers: - Remote: 300 feet - Forested: 200 feet - Transition: 250 feet - Agricultural: 150 feet - Urban and tributary: 100 feet (75 feet, if sewered)	Natural Rivers: - Lot widths vary from 100 feet to 330 feet	Not addressed	

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Minimum lot size	Minimum lot area: - Sewered: 10,000 feet^2 - Unsewered: 20,000 feet^2 Model ordinance: - Lot area is per main building	Lot area per building, lakes: - Natural environment: 80,000 feet^2 (40,000 feet^2, if sewered) - Recreational development: 40,000 feet^2 (20,000 feet^2, if sewered) - General development: 20,000 feet^2 (15,000 feet^2, if sewered) Lot area per building, rivers: - No lot area controls		Not addressed	
On-site wastewater treatment system controls	Regulated by Department of Commerce: - 50-foot setback from OHWM	Sewer preferred: smaller, narrower lots allowed for sewered areas Regulated by Minnesota Pollution Control Agency (not DNR) Setbacks vary by class but 25 feet (lakes or 50 feet (rivers) closer than for structure	Natural Rivers: - On-site wastewater treatment system setback varies from 100 feet to 150 feet	Regulated by Department of Health	

	Wisconsin	Minnesota	Michigan	Iowa	Illinois

Altermative developments (RPUD, CPUD, etc.)	Limited rezoning to set up a RPUD
	
	District addressed in Model Ordinance:
	- Rezoning is the mechanism, not variance
	- Must be >40 acres
	- Land not used for lots and streets must be dedicated in perpetuity as open space
	- Total density cannot exceed that which would result from current size, width, and setback standards
	- Shore clear-cut area can increase to 100 feet of frontage
		RPUD:
		- Must have "centralized" sewage system
		- Tier system used to allow greater density, up to a maximum, if:
		  - >50% open and pervious space is maintained
		  - Recreation areas count as open space
		  - Unsuitable areas (wetlands, bluffs, cemeteries, etc.) are left as open space
		  - Open space is not commercial
		  - Open space is protected by permanent legal means
		  - Normal setbacks are met or exceeded
		  - Increases in density are accompanied by (25-50%) increased setbacks
		
		Conversion to RPUD:
		- Deficiencies corrected where reasonable
		- Erosion and vegetative cover problems must be remediated
		- No increase in density
		
		CPUD:
		- Similar design criteria
		- Impervious area <25%
		- Complicated formula for maximum allowable density
			Unknown	Unknown	

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Construction site erosion control; grading and filling; stormwater	- No specific standards in NR 115 - Ch. 30 requires permit for grading over 10,000 feet^2 on the bank of a navigable waters - Model ordinance suggests special exception permit be required when slope >20% grading >2000 feet^2, or grading 1,000 feet^2 on slopes 12-20% - NR 216 Stormwater permit for large urban municipalities and land disturbance >5A; UDC Erosion control required for 1- and 2-family dwellings - Some local ordinances exist	Local permit required for grading/filling on: - Steep slopes (>12%) - Moving >10 yards^3 in shore or bluff impact zone **or** 50 yards^3 elsewhere Permit conditions: - Wetland restrictions - Erosion control - Sediment trapping - Stabilization per NRCS[b] specifications		NPDES Stormwater permit required by DNR for >5 acre land disturbance Local zoning may apply in some watersheds	
Wetland Protection in the shoreland zone and wetland protection outside the shoreland zone	NR 115 and NR 117: - Shoreland-wetland zoning districts established for wetlands shown on Wisconsin Wetland Inventory 12 generally nonstructural permitted uses, all others prohibited. Filling, grading, and ditching always prohibited or limited even in permitted uses. No variances, but shoreland wetland areas can be rezoned if the rezoning does not result in significant adverse impact upon wetland functions. State can veto rezonings. CWA 404 Program: - Wetlands of any size protected throug hCWA 401 state water quality certification process using NR 103, which is necessary to get a CWA 404 permit from the Army Corps of Engineers.	Shoreland Management: - Larger wetlands are typically zoned as conservation districts by locals Wetland Conservation Act: - Provides for tax incentives and easement acquisition - Local wetland replacement programs require replacement or restoration as permit condition for draining or filling a wetland CWA 404 Program: - State uses CWA 401 water quality certification to participate in permit process	CWA 404 Program: - Permit **from state** required for dredging, filling, draining, or building structures in any wetland of any size	Protected Wetland Program: - Permit required to drain type 3,4, or 5 wetlands (shallow, deep marshes, and open water >2 acres) - Doesn't apply to filling - Permit granted if the drained wetland is replaced by a wetland of equal or greater value ($500/day fine) CWA 404: - CWA 401 water quality certification automatically granted for all NWPs - Individual permits are reviewed by state	CWA 401 water quality certification

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Forestry buffers	35-foot vegetation cutting restriction zone applies Forestry BMP manual riparian management zones (RMZ): - RMZ=35 feet from non-navigable and navigable intermittent stream; no equipment within 15 feet unless ground is frozen or dry - RMZ=100 feet from lakes and navigable perennial streams; no equipment within 50 feet, leave 60 feet2, >5 inches DBH (well-distributed)	Forestry activities must comply with: - *Minnesota Nonpoint Pollution Assessment – Forestry* - *Water Auality in Forest Managemnt BMPs in Minnesota*		Management plans discourage livestock grazing in woodlands	No state-level program
Agricultural standards	Not spelled out in NR 115 Agricultural shoreland zoning in some counties	For agricultural uses: - Shore impact zone: 50 feet from OHWM - Must have permanent vegetation or have NRCS approved conservation plan Feedlot standards: - 300 feet setback; nonconforming feedlots may only expand landward		Management plans call for preparation of farm soil conservation plans	

	Wisconsin	Minnesota	Michigan	Iowa	Illinois
Key features of inters to Wisconsin		Allows flexibility for local conditions - Other standards for specific waters can be written as part of a comprehensive planning effort - Nonconforming uses in urban areas can justify relaxed standards - Can trade off stricter standards in one area for relaxed standards in another - Any of these changes must be approved by the state Impervious cover <25% on any shoreland lot Critical areas planning and local river management plans are other tools that can be used in areas of special concern	Model zoning ordinances developed by state. Locals can choose from a menu of different zoning methods: - Partial zoning (interim method) - Separated district (specific and focused but uses existing mechanisms) - Overlay district (fits in with existing land-use plan) Michigan's DNR is able to offer "one-stop shopping" by providing a single application form for all state and federal permits: - Application is reviewed through a consolidated and coordinated process involving all affected agencies, interested groups, and riparian landowners - Local zoning approvals must still be obtained separately	Tax exemptions are given for protected wetland (type 2, 3, and 4), certified wildlife habitat, native prairie, river and stream banks (33 feet each side), and other lands with natural resource value.	
Staffing for shoreland program and wetland program	- 30 water management specialists throughout state - 72 county code administrators - 6 central office policy/mapping for both programs	- 23 area hydrologists throughout state - 12 Area Rangers - 6 regional, 5 central, and 85 county code administrators - 160 cities for both programs		5 total central office staff and fisheries and wildlife field biologists	6 total

APPENDIX D
TABLE OF MINOR CLARIFICATIONS TO NR 115

Issue	Option/Suggested language
1. **Structure Setbacks**	
1.1 Some applicants and zoning administrators have questioned how the setback should be measured. It's common sense that structure measurement is horizontal; it is also consistent administrative practice in most (all) counties. Horizontal measurement is not specified in current NR 115 or in Guidebook. However, 1985 model ordinance section 13.0 (definitions) says: "All distances unless otherwise specified should be measured horizontally."	Clarify in the rule that the setback measurement is horizontal.
1.2 The current rule does not acknowledge the importance of the structure setback requirement to protection of habitat and spawning grounds.	Add *protect spawning grounds and habitat for fish and other aquatic life* to the purposes of the 75-foot setback. This will acknowledge the importance of the 75-foot setback in reducing sediment delivery to near shore waters and reducing the intensity of disturbance to aquatic and shoreline wildlife.
2. **Nonconforming Uses, Structures and Lots**	
2.1 Nonconforming uses, structures, and lots don't lend themselves equally to application of the 50% rule. NR 115 and local shoreland ordinances don't clearly distinguish among nonconformities.	Distinguish among nonconforming uses, structures, & lots and establish standards for each.
3. **Vegetative Cutting Standards**	
3.1 By not mentioning fish and aquatic life in the "purposes" section, NR 115(3)(c) fails to recognize the very important role a vegetated shoreline plays for fish and amphibian habitat in the littoral zones of lakes, in-stream aquatic life habitat, shoreline wildlife habitat, riparian zone habitat values and streambank stability (documented in lit review[a]).	Add *protect fish and aquatic life* to the purposes sentence.
4. **Lot Sizes and Widths**	
4.1 The literature review has identified this standard as key to addressing cumulative impacts on habitat, water quality, and natural beauty, but habitat and natural beauty are not mentioned in the purposes sentence.	Add *protection of fish and aquatic life and natural beauty from the cumulative impacts of shoreline and near-shore modifications* to the purposes section.
5. **Wetlands**	
5.1 Department staff have suggested that the rule language for permitted uses in shoreland-wetland districts allow only public boat access sites be allowed without rezoning in shoreland-wetland districts (this is consistent with the model ordinance).	NR 115.05(2)(c)(9) suggested reword: "The establishment and development of public and private parks and recreation areas, *public* boat access sites, . . . provided that no filling is done *except for public boat access* and that any private . . ."

[a]Effectiveness of Shoreland Zoning Standards to Meet Statutory Objectives by Thomas W. Bernthal. Wisconsin Department of Natural Resources, Bureau of Watershed Management, 1997.

Issue	Option/Suggested Language
5.2. Boat access is among the permitted uses in shoreland-wetlands, NR 115.05(2)©(9), "provided that no filling is done"; however, boat access construction by its nature **requires** some filling (and this is recognized in Model ordinance). Another needed clarification is that parking lots associated with boat access or other permitted uses **are not** permitted.	NR 115.05(2)(c)(9) should state that filling or excavating necessary for the construction or maintenance of public boat launching ramps or attendant access roads is allowed only where such construction or maintenance cannot as a practical matter be located outside the wetland, the access road is designed and constructed to minimize adverse impact upon the natural functions of the wetland enumerated in NR 115(e)(4), the road is constructed with the minimum cross sectional area practical to serve the intended use, and road construction activities are carried out in the immediate area of the roadbed only. Parking lots associated with permitted uses in this section are prohibited within the shoreland-wetland.
5.3. The shoreland-wetland section of NR 115 includes a number of incorrect statutory references which need to be fixed.	NR 115.05(1) ESTABLISHMENT OF APPROPRIATE ZONING DISTRICTS. Should be amended to read: "Counties shall adopt shoreland ordinances that include, at a minimum, zoning regulations for *general shoreland and* shoreland-wetland zoning districts. NR 115.05(2)(b) 2. Correct statutory reference is s. 59.97(5)(e) Stats. (Rest are referenced this way; could also be 5997(5)(e)(2). NR 115.05(2)(d) **Prohibited uses in shoreland-wetland zoning districts**. Correct statutory reference is s. 59.97(5)(e) **not** 59.79(5)(e) NR 115.05(2)(e) **Rezoning of shoreland-wetland zoning districts**. NR 115.05(2)(e)(3) Correct stat. Reference is to s. 59.97(5)(e) or (e)(2) **not** (e)(3)
6. **Administration and jurisdiction**	
6.1. "Special exception" (NR 115.03(10))	Refine definition of "special exception"
6.2. "Unnecessary hardship" (NR 115.03(11))	Refine definition of "unnecessary hardship" to conform to case law and statutes
6.3. "Ordinary high-water mark" (NR 115.03(6)) - The definition in NR 115 and NR 117 basically quote Diana v. Husting, but add the word "surface" which is not in the court decision. - While groundwater data per se isn't used in determining the OHWM, soil mottling and leaching along the bank probably result from surface water that is percolating through the soil or that has gone into bank storage. This should not be precluded from consideration by the use of the word "surface" (water) in the definition.	Reword the definition to read ". . . the presence and action of water is so continuous as to leave a distinctive mark . . ."
6.4 "Shoreland" (NR 115.03(8)) Definition in NR 115 and NR 117 does not include lands below the OHWM, which is included in s. 144.26, Stats	Change NR 115 and NR 117 "shoreland" definition to conform to s. 281.31, Stats., adding *lands under navigable waters*. This would clearly allow regulation below the OHWM. Counties that choose to regulate below the OHWM may do so under s. 281.31. Counties may choose not to regulate below the OHWM.

Issue	Option/Suggested Language
6.5. "Navigable waters" (NR 115.03(5)) Reword the section of the definition of "navigable waters" exempting lands adjacent to farm drainage ditches from shoreland zoning. Clarify the language so that it is apparent that the exemption from shoreland zoning is for agricultural USE and that when use changes the exemption no longer applies.	NR 115.03(5)(b) suggested reword: "those parts of such drainage ditches adjacent to such lands were *not* ~~non~~navigable streams before ditching ~~or had no previous stream history~~." A revision to s. 281.31(2) is also needed to add the language on farm drainage ditches from NR115.02(5), (a) through (c).
6.6. "Variance" (NR 115.03(12)) Clarify the definition of "variance" in NR 115.03(12) - a relaxation of <u>dimensional</u> standards provided statutory standards are met. Eliminate "or use" a building …	Suggested reword: "'Variance' means an authorization granted by the board of adjustment to construct, or alter ~~or use~~ a building or structure in a manner that deviates from the *dimensional standard*s ~~requirements~~ of a shoreland zoning ordinance."
6.7. A rule definition is needed for "natural scenic beauty," which is noted in statute as one of the purposes for shoreland zoning regulations.	Add definition to NR 115: " A landscape exhibits 'natural scenic beauty' if it is generally pleasing visually and it appears unaltered or minimally altered by the influences of civilization and society."
6.8. Jurisdiction over annexed shoreland areas should be spelled out in NR 115.	Incorporate appropriate changes to NR 115 and model based on changes to s. 59.971(7) regarding annexed shoreland areas.
6.9. DNR reorganization changes necessitate changing some terms used in NR 115	Add changes base on DNR reorganization: e.g., *regional offices of DNR* to replace *district office* reference.
6.10. NR 115.05(1) ESTABLISHMENT OF APPROPRIATE ZONING DISTRICTS. The distinction between general shoreland and shoreland-wetland districts is not clear.	Amend NR 115.05(1) to read: "Counties shall adopt shoreland ordinances that include, at a minimum, zoning regulations for *general shoreland and* shoreland-wetland zoning districts."
6.11. Confusion arises in situations where two different zoning standards apply to the same structure or use. By law the more restrictive standard applies, but a not would be helpful to the user.	Suggest a note in county ordinance that the general rule in zoning administration is that the most restrictive regulation from this or other ordiances applies If applying two separate zoning standards, the applicant must find a way to meet both standards in order to be legally granted a permit (for example, 75-foot setback and 50-foot setback for sanitary system).

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* P = Found in "Shoreland Management Program Assessment"
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