

# 07hr\_SC-ENR\_CRule\_06-126\_pt03



(FORM UPDATED: 08/11/2010)

## WISCONSIN STATE LEGISLATURE ... PUBLIC HEARING - COMMITTEE RECORDS

### 2007-08

[session year]

### Senate

[Assembly, Senate, or joint]

## Committee on ... Environment and Natural Resources (SC-ENR)

### **INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL**

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... **HR** ... **bills and resolutions** (w/Record of Comm. Proceedings)
  - (**ab** = Assembly Bill)                      (**ar** = Assembly Resolution)                      (**ajr** = Assembly Joint Resolution)
  - (**sb** = Senate Bill)                              (**sr** = Senate Resolution)                              (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

\* Contents organized for archiving by: Mike Barman (LRB) (July/2014)

**NATURAL RESOURCES BOARD AGENDA ITEM**

**SUBJECT:** Adoption of Board Order WT-36-06, creating NR328, Subchapter III - Shore Erosion Control Structures on Rivers and Streams

**FOR:** MARCH 2007 **BOARD MEETING**

**TO BE PRESENTED BY:** Mary Ellen Vollbrecht, Section Chief, Bureau of Watershed Management

**SUMMARY:**

The purpose of the proposed subchapter III in NR328 is to create additional general permits to streamline the review of applications for erosion control structures. The proposed subchapter establishes design, construction and location standards for bank erosion control structures placed in rivers and streams under general permits. General permits for biostabilization and integrated bank treatment meeting Natural Resources Conservation Service (NRCS) technical standards would be available throughout the predominantly agricultural and urban ecoregions of Wisconsin (where flooding is generally frequent and more severe, eroding banks deliver sediment loads that often impair habitat and water quality, and adjacent land uses frequently limit the area available for natural channel movement). A threshold level of bank erosion potential is required for sites to be eligible for the integrated bank treatment general permit so that rock armoring is avoided in areas where aquatic habitat is very good and could be harmed by such treatment. The rule establishes a standard map for identifying ecoregions and urban areas as well as a method for determining bank erosion potential.

General permits are also created for replacing seawalls or unvegetated riprap with biostabilization or integrated bank treatment as well repair of pre-existing riprap in some situations.


Landowners in agricultural and urban areas, including those seeking to restore stream habitat and water quality, will benefit from a streamlined permit process, reduced fee and clear, easy-to-apply standards. Anglers, boaters, tourists and others who use and enjoy Wisconsin's rivers and streams will benefit from a system that encourages protection of the healthy aquatic habitat and natural scenic beauty of their waters.

**RECOMMENDATION:** Adoption of Board Order WT-36-06 creating NR328-Subchapter III - Shore Erosion Control Structures on Rivers and Streams

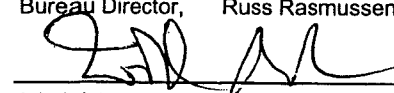
**LIST OF ATTACHED MATERIALS:**

- |    |                                     |   |     |                                     |          |
|----|-------------------------------------|---|-----|-------------------------------------|----------|
| No | <input type="checkbox"/>            | Fiscal Estimate Required                              | Yes | <input checked="" type="checkbox"/> | Attached |
| No | <input checked="" type="checkbox"/> | Environmental Assessment or Impact Statement Required | Yes | <input type="checkbox"/>            | Attached |
| No | <input type="checkbox"/>            | Background Memo                                       | Yes | <input checked="" type="checkbox"/> | Attached |

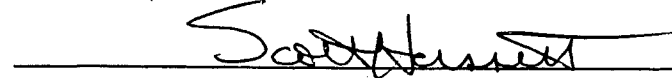
**APPROVED:**

  
Bureau Director, Russ Rasmussen

2/21/2007  
Date

  
Administrator, Todd Ambs

2/28/07  
Date

  
Secretary, Scott Hassett

3/1/07  
Date

cc: Amy J. Arthur - AD/5  
Carol Turner-LS/5  
Russ Rasmussen - WT/2

Mary Ellen Vollbrecht - WT/4  
Paul Cunningham - FH/4 (10 copies)

Edwina Kavanaugh-LS/5

STAFF REVIEW - DNR BOARD AGENDA ITEM

REMINDER

Have the following questions been answered under the summary section of this form?

- Why is the rule needed?
- What are the significant changes?
- What are the key issues/controversies?
- What was the last action of the Board?

LIST OF ATTACHED REFERENCE MATERIAL REQUIRED FOR RULE PROPOSALS:

Hearing authorization:

Final adoption:

Background Memo (if needed)\*

Background Memo (if needed)\*

Fiscal Estimate

Response Summary

Environmental Assessment (if needed)

Fiscal Estimate

Rule

Environmental Assessment (if needed)

Rule

\* If all the questions listed in the REMINDER section above can be adequately summarized on the Green Sheet (and a second sheet if needed), the Background Memo may be omitted.

Unit	Reviewer	Date	Comments
Environmental Analysis and Review	NA		
Management and Budget	Paul Hammond	1/29/07	
Legal Services -Program Attorney -Carol Turner	ER	1-29-07	
Other (if applicable)	SaA	2/12/07	

DATE: January 22, 2007

FILE REF: 3500

TO: Natural Resources Board

FROM: Scott Hassett, Secretary

SUBJECT: Adoption of NR 328 – Subchapter III, Bank Erosion Control Structures on Rivers and Streams, Board Order WT-36-06

1. Why is this rule being proposed?

This rule would create general permits for erosion control structures on the banks of rivers and streams. In the absence of a general permit, all erosion control structures require individual permits with a 30-day public comment period and opportunity for hearing. General permits for structures and alterations in public waters are intended not only to streamline the permitting process, but also to encourage designs that avoid the loss of streambank vegetation or large woody cover, natural scenic beauty and reduced fish and wildlife habitat diversity.

The proposed rule establishes general permits for several different types of stream bank erosion control structures that would otherwise require an individual permit.

2. Summary of Rule Proposal

NR 328 - Subchapter III establishes general permit standards for the following activities: (1) biostabilization and integrated bank treatment; (2) replacement of unvegetated riprap or seawalls with biostabilization or integrated Bank Protection; (3) repair of existing unvegetated riprap in some locations. Department staff, federal agency staff and external consultants developed the standards.

The biostabilization general permit allows placement of structures such as fiber rolls, fiber mats, live stakes, brush mattresses, fascines, branch packing, encapsulated soil lifts and natural vegetation. The biostabilization general permit is available for all sites in the Driftless – Prairie Pothole and Southeast Till – Cornbelt Plains ecoregions of Wisconsin. The design specifications reference the Natural Resources Conservation Service (NRCS) Engineering Field Handbook.

The integrated bank treatment general permit allows placement of rock or other inert toe protection such as riprap, in combination with bank treatments such as brush layering, brush mattresses, fiber rolls, live stakes, bank reshaping and seeding. The integrated bank treatment general permit is available for sites above a threshold level of erosion potential in the Driftless – Prairie Pothole and Southeast Till – Cornbelt Plains ecoregions and incorporated urban areas of Wisconsin. The design specifications reference the Natural Resources Conservation Service (NRCS) Engineering Field Handbook.

The rule includes a map of Wisconsin's ecoregions and an easy-to-apply scientific method for determining bank erosion potential.

Bank erosion control structures on streams in the Northern forested ecoregions are reviewed on a site-specific basis through the individual permit process. Northern rivers generally have forested or wetlands dominated watersheds and so are not as subject to bank erosion – and in fact have not generally been subject to applications for bank erosion control structures. Northern rivers have fish and wildlife habitat and natural scenic beauty that would potentially be harmed by improper installation of bank erosion control structures and merit the more specialized designs, site specific consideration and public review provided by the individual permit process.

Replacement of a seawall or unvegetated riprap with biostabilization or integrated bank treatment is allowed throughout the state with few limitations.

Repair of unvegetated riprap placed prior to the date of the rule (rearranging or adding rock) may be done within the horizontal footprint of the existing structure to a maximum length of 300 feet, within the same height limits as the other general permits, and within city and village boundaries.

3. How does this proposal affect existing policy?

The rule creates standards for additional structures to be authorized by a general permits. The standards are generally consistent with past permitting practice, providing an equal level of protection for habitat, water quality and natural scenic beauty of Wisconsin streams, and will streamline the permit process. The proposed standards should ensure a high level of predictability of and consistency in Department decision making.

4. Has the Board dealt with these issues before?

Yes. The Board authorized Emergency and Permanent Rules in 2004 for shore erosion control on inland lakes and impoundments. The Board authorized an Emergency Order in 2005 and a modified Emergency Order in 2006 for shore erosion control on rivers and streams. The proposed general permits add location standards to the construction and installation standards of the 2006 Emergency Order.

5. Who will be impacted by the proposed rules? How?

Waterfront property owners – from private landowners to business, builders and developers - will be interested in the additional general permits provided in the emergency rules, and the clear procedures and standards. State and federal agencies who design, install or fund shore protection and habitat projects along rivers and streams will benefit from the streamlined general permits. The public who use and enjoy Wisconsin's navigable waters will also benefit from standards established to protect the public interest.

6. Information on environmental analysis, if needed.

The Bureau of Environmental Analysis and Review has determined that these rule revisions are a Type III action under s. NR 150, Wis. Adm. Code, and no environmental analysis is required.

7. Recommendation.

Department staff recommend adoption of NR 328-Subchapter III as described in the attached Natural Resources Board Order WT-36-06.

### Fiscal Estimate — 2007 Session

- Original       Updated  
 Corrected       Supplemental

LRB Number	Amendment Number if Applicable
Bill Number	Administrative Rule Number NR 328-Subchapter III

**Subject**  
 Standards for placement of shore erosion control on streams and rivers

**Fiscal Effect**

- State:  No State Fiscal Effect  
 Indeterminate

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation.

- Increase Existing Appropriation       Increase Existing Revenues  
 Decrease Existing Appropriation       Decrease Existing Revenues  
 Create New Appropriation

- Increase Costs — May be possible to absorb within agency's budget.  
 Yes       No  
 Decrease Costs

- Local:  No Local Government Costs  
 Indeterminate

1.  Increase Costs  
 Permissive       Mandatory  
 2.  Decrease Costs  
 Permissive       Mandatory

3.  Increase Revenues  
 Permissive       Mandatory  
 4.  Decrease Revenues  
 Permissive       Mandatory

5. Types of Local Governmental Units Affected:  
 Towns       Villages       Cities  
 Counties       Others  
 School Districts       WTCS Districts

- Fund Sources Affected**  
 GPR       FED       PRO       PRS       SEG       SEG-S

Affected Chapter 20 Appropriations  
 s. 20.370 (4) (bi)

**Assumptions Used in Arriving at Fiscal Estimate**

**Summary:**

This rule establishes four general permits for the placement of shore erosion control measures on rivers and streams that would otherwise have been subject to individual permits under current law.

**Assumptions:**

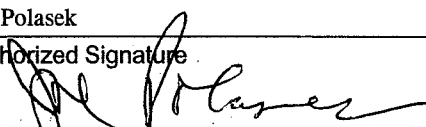
According to 2004 data, there are 240 permits processed annually for shore protection on rivers and streams. Of that amount, 216 require an individual permit at a cost of \$300, and 24 are exempt from a permit fee because they are done by state or federal agencies. Therefore, annual permit revenue under current law totals \$64,800 (216 permits x \$300).

The Department estimates that, under the proposed rule, 180 projects would require a \$300 individual permit, 36 projects would be eligible for a new \$50 general permit, and 24 projects would continue to be fee-exempt because they would be done by state or federal agencies. Therefore, the Department estimates annual permit revenue under the proposed rule to be \$55,800 [(180 individual permits x \$300) +(36 general permits x \$50)]. This will result in a decrease of \$9,000 in annual permit revenue.

By converting an estimated 36 individual permits per year to general permits, the proposed rule would streamline the permitting process and thus decrease the amount of work to process permits by 432 hours, or 0.21 FTE, with an associated cost reduction of \$13,800 in salary and fringe benefits (432 hours x \$32/hour salary and fringe). This FTE effort will be reallocated to other waterway related permitting activities.

**Long-Range Fiscal Implications**

None

Prepared By: Joe Polasek	Telephone No. 266-2794	Agency Department of Natural Resources
Authorized Signature 	Telephone No. 266-2794	Date (mm/dd/ccyy) 02/12/2007

**Fiscal Estimate Worksheet — 2007 Session**  
 Detailed Estimate of Annual Fiscal Effect

Original       Updated  
 Corrected       Supplemental

LRB Number	Amendment Number if Applicable
Bill Number	Administrative Rule Number NR 328 Subchapter III

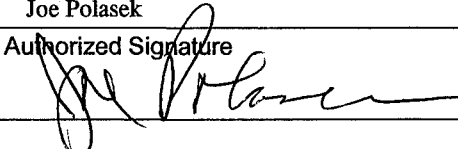
Subject  
 Standards for placement of shore erosion control on streams and rivers

One-time Costs or Revenue Impacts for State and/or Local Government (do not include in annualized fiscal effect):

Annualized Costs:		Annualized Fiscal Impact on State Funds from:	
		Increased Costs	Decreased Costs
<b>A. State Costs by Category</b>			
State Operations — Salaries and Fringes		\$	\$ - 13,800
(FTE Position Changes)		( FTE )	( - 0.21 FTE )
State Operations — Other Costs			-
Local Assistance			-
Aids to Individuals or Organizations			-
<b>Total State Costs by Category</b>		\$	\$ -
<b>B. State Costs by Source of Funds</b>			
GPR		\$	\$ -
FED			-
PRO/PRS			- 13,800
SEG/SEG-S			-
State Revenues	Complete this only when proposal will increase or decrease state revenues (e.g., tax increase, decrease in license fee, etc.)	Increased Revenue	Decreased Revenue
GPR Taxes		\$	\$ -
GPR Earned			-
FED			-
PRO/PRS			- 9,000
SEG/SEG-S			-
<b>Total State Revenues</b>		\$	\$ - 9,000

**Net Annualized Fiscal Impact**

	State	Local
Net Change in Costs	\$ -13,800	\$
Net Change in Revenues	\$ -9,000	\$

Prepared By: Joe Polasek	Telephone No. 266-2794	Agency Department of Natural Resources
Authorized Signature 	Telephone No. 266-2794	Date (mm/dd/ccyy) 02/12/2007

## **RESPONSE TO COMMENTS**

### **NR328, Subchapter III – Erosion Control Structures on Rivers & Streams**

Legislative Council drafting items – All changes made as recommended.

#### **Comments Regarding Rule definitions**

COMMENT 1 - “Biological materials biological/organic and plastic components; the LWCD assumes that if the majority (>50%) of the product” Please note that many erosion control products are a combination of is biological, then the product meets this definition, is this true? Are plastic/metal staples and anchors acceptable to secure biological products?

RESPONSE 1 – The definition was clarified to ensure that biological means fully 100% biodegradable materials. Erosion control products have fully biodegradable alternatives for products like Erosion Control Blankets, Turf-Reinforcement Mats, Stakes and anchors.

COMMENT 2 - “Biostabilization” This definition is unclear to the LWCD; does this definition mean that the structure designed to protect the toe of the bank is entirely comprised of biological materials (see also above – can this include plastic/metal components such as staples/anchors?) and the bank reshaping can NOT include any non-biological materials such as erosion control netting containing plastic or turf reinforcement mats (TRMs) to protect and stabilize the streambank?

RESPONSE 2 – The rule definition was clarified to make clear that biostabilization projects may include structural treatments for toe protection. These structural treatments are limited to biological materials (eg. Root wads, coir logs, tree revetments etc.), versus inert materials, which are not allowed (plastics, rock, etc.)

COMMENT3 - Definitions (2), (3), (8), and (16) are difficult to follow. Definition (2) Biological materials includes as examples “live stakes and posts; non-treated wood”; however, definition (16) Structural treatments include “tree revetments, rootwads, dormant posts”. Aren’t tree revetments, rootwads, and dormant posts also non-treated wood and biodegradable? All four of these definitions include terms contained in the other definitions (specifically the term structural - - at times, the term structural is inert items and at other times biological) and/or are difficult to discern between definition meanings.

RESPONSE 3- Definition of structural treatment was revised and now reads: “Structural treatment” means a system of non-living materials with a specific configuration installed as a means of bank stabilization including, but not limited to, riprap, tree revetments, logs, rootwads, dormant post, jacks, coir logs, bulkheads, and stream barbs. This was revised to be similar with SOC 580 Standard. Structural treatments may include either inert or biological materials.

COMMENT 4 - The Note following the seawall definition indicates that “Biostabilization structures steeper than 1.5 feet vertical to one foot horizontal, such as encapsulated soil-lifts are not considered seawalls.” yet, NR328.35(4)(c) states “Structural stabilization practices shall be sloped to 1.5 horizontal to one foot vertical or flatter.” These two statements appear to be conflicting statements. If the intent of these two conflicting statements is to allow flexibility into the design and implementation of streambank protection to account for the many different site conditions (there are many steep streambanks/slopes that can be protected via means of biological approaches) that can be encountered at streambanks, then the LWCD is appreciative. In cases in which only a fiber roll (ie. round cross section) will be installed along the streambank (which from a cross sectional view is greater than 1.5 horizontal to 1 foot vertical), then the Note following the seawall definition is appreciated. However, some clarification is necessary.

RESPONSE 4 – The intent with this definition is to describe seawalls as being nearly vertical in nature and comprised on largely inert materials. The clarity clause regarding encapsulated soil lifts aims to preclude steeper bioengineering only designs from being called seawalls. No changes were made to the wording.



COMMENT 5 - "Toe" means the most waterward edge of a shore erosion control structure. The LWCD objects to this definition. The above definition, which is contained within the Proposal, is not a definition for a "toe" of a streambank (the definition above is also subjective - - based on the placement "of a shore erosion control structure"). Please use the definition contained within Chapter 16 of the United States Department of Agriculture Natural Resources Conservation Service Field Engineering Handbook (Streambed & Shoreline Protection) or a variation of the Chapter 16 definition so the general public can understand also.

RESPONSE 5 - Wording change made as suggested.

COMMENT 6 - Other A definition for native vegetation should be included. Also, the proposal should promote the usage of Wisconsin native species along our streambanks.

RESPONSE 6 - A GP condition requires the use of native vegetation and reads as follows: Except as provided in sub. (3)(i), revegetation shall follow Wisconsin NRCS Field Office Technical Guide (FOTG), Section IV, Practice Standard 643A Shoreland Habitat, found at <http://efotg.nrcs.usda.gov/references/public/WI/643a.pdf>.

#### **Comments about Bank Erosion Potential Index**

COMMENT 7 - Bank erosion potential index does not adequately consider water level fluctuations downstream of dams.

RESPONSE 7 - The BEPI does reflect the hydraulic influence of upstream structures (e.g., dams, culverts, bridges). No change has been made to the rule because evaluation shows that no increased demand for erosion control structures occurs downstream of dams.

Using GIS, Department staff evaluated adjacency and density of permits downstream of the following dam locations: Rhineland Flowage; Boom Lake; Lake Nokomis; Spirit River Flowage; Lake Mohawksin; Duroy Lake; Long Lake; Apple River Flowage; Lake Neshonoc; Lake Pepin; Wisconsin River Flowage; Biron Flowage; Lake Wausau; Lake Dubay; Mosinee Flowage; Lake Koshkonong; Rock River at Watertown; Yahara River at Stoughton, Stebbinsville, and Fulton; Milwaukee River at Mequon, and Grafton. Among the 21 sites there was no evidence of increased frequency of permits downstream of the dams. Increased frequency of permits downstream would indicate a greater activity of erosion control practices downstream of dams due to their hydraulic influence. When differences did exist in terms of density of permits adjacent to dams they tended to greater numbers of permits upstream. Greater number of upstream permits may be explained by increased development patterns on the flowages or increased erosion problems. Nonetheless, regulation of erosion control structures upstream of dams on their flowages are not subject to the proposed rule, but are subject to the existing NR 328, subchapter I (Inland Lakes and Flowages).

COMMENT 8 - The Bank Erosion Potential Index fails to account for the effects of boating.

RESPONSE 8 - The BEPI does not distinguish between sources or causes of erosion but is a relative index of that aims to predict soil loss from the bank based on physical features of the bank itself. To respond to concerns about bank recession in areas of intense boating where the ability to reshape banks may be limited by infrastructure close to the bank edge, a new provision allows the use of bank recession measurement as an alternative to BEPI within city and village boundaries of urban watersheds. The recession amount is quite low (1.5 inches over three months) to account for the likely presence of infrastructure that would limit the ability to reshape stream banks.

COMMENT 9 - The BEPI scoring formula and thresholds prohibit the use of effective erosion control measures.

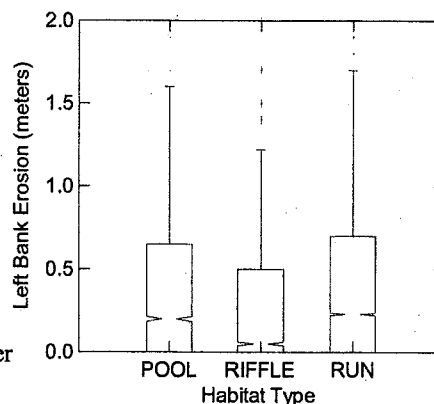
RESPONSE 9 - The rule contains no prohibitions. An application may be made and permit granted for any bank erosion control measure in any location.

COMMENT 10 – The BEPI threshold for integrated bank treatment is too high and should be reduced from 20 to 12.

RESPONSE 10 – DNR and NRCS staff evaluated 63 sites with varying stream characteristic statewide. BEPI scores ranged from -1 to 55. DNR and NRCS staff reviewed the scores on all sites and selected a threshold of 20 as the condition where rock is typically recommended as a structural treatment.

COMMENT 11 - Thalweg location not a good indicator of bank erosion. The driftless area experiences more event related erosion not base flow influenced; the exception sand banks.

RESPONSE 11 –Analysis of 2500 baseline monitoring sites indicates otherwise. The adjacent figure indirectly demonstrates the affect of thalweg position. Riffle sites typically have a thalweg position as center of the stream, because the riffle occurs between the apices of two sequential meanders. Riffle sites show much lower erosion than pool or run sites, in part due to the affect of thalweg position. Erosion assessments also show the cross-sectional profile changes much more rapidly and frequently in the meander bends (versus the straight stream segments) where the thalweg is adjacent to one of the banks. Figure 2 (taken from Stream Corridor Restoration, 1998) demonstrates this geomorphic effect (larger arrows indicate higher stream velocities and increased erosional stream power).



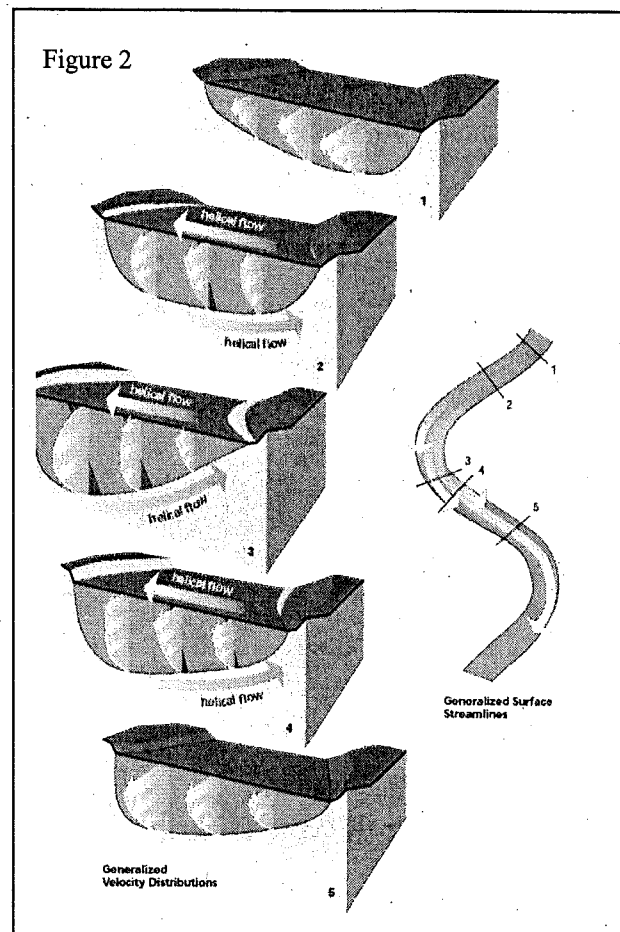
COMMENT 12 - The upstream structural points have no bearing on bank erosion in the driftless area. The structure location identifies streambed scouring at the outlet, which has minimal effect on bank erosion. The minimal points doesn't influence ranking, eliminate this category.

COMMENT 13 - Channel grade would better serve as an indicator of erosiveness of the stream, headwaters vs the mouth. The steeper the slope the more prevalent or aggressive the stream bank erosion. There is more variation to note in stream sections (headwater, mid section, & mouth).

RESPONSE 12 & 13 - The BEPI method was adapted from Rosgen, David L. "A Practical Method of Computing Streambank Erosion Rate", Wildland Hydrology Inc., Pagosa Springs, CO, 10 pp. The method was validated using field measured annual, lateral erosion rate. At some point further deviations from the original method will more likely require further validation work, hence Department staff are reluctant to make further refinements without data collection and analysis.

COMMENT 14 - The BEPI Score Worksheet is not "user friendly". The general public will not be able to use/follow the Worksheet.

RESPONSE 14 - Since direct measurements of streambank erosion (ie. bank recession) are very time consuming, BEPI remains the most practical quantifiable



field assessment approach available at this time.

COMMENT 15 - The BEPI evaluations should be in sink with the 580 standard cross-section requirements. Example: 1 review/single site or 2 reviews/1,000' of continuous project site. I have some projects 800' in length so I would need 5 BEPI's to justify a general permit. I think an average is needed.

RESPONSE 15 - The SOC 580 standard deploys more detailed assessment requirements for single sites over 300 feet in length, or multiple sites in a ¼ mile reach totaling over 500 feet. This matches up with the GP requirements in the rule for integrated bank treatments which states: "The total project length may not exceed 500 linear feet of stream bank per ¼ mile of stream reach". A treatment site of over 300' in length would also require more detailed assessment requirements.

COMMENT 16 - I would like to see a couple questions to enter the tier II evaluation process: If the project is cost-shared and designed by LCD/NRCS which follow the 580 standards and specifications, is there a reasonable method of eliminating duplication of effort? Void BEPI or utilize the evaluation tool for the design of the stream project (standard 580) if: the project is cost-shared project with Financial/Technical assistance provided by: NRCS/LCD/DNR/DATCP/Other

RESPONSE 16: SOC 580 Standards contain a series of factors or considerations that design engineers are required to conduct, however the 580 standards do not result in determinant outcomes. Permit decisions must be determinant and consistent. Use Stream bank erosion assessment protocols in NR 328 will not only results in consistent regulatory decisions but will also aid decisions in cost share programs and engineers in their design work. These front-end evaluations represent minimal insignificant proportion of the total project costs.

#### **Comments on General Permits**

COMMENT 17 – The rule does not allow for general permits in the North.

COMMENT 18 – Individual permits should be required for all non-urban areas in Northern Wisconsin.

RESPONSE 17 & 18 - No change to the rule was made. General permits are available in cities and villages as well as two urban watersheds, Superior and Wausau metro areas. Cumulatively, the placement of riprap can harm stream habitat and overall stream health. Associated impacts are loss of woody cover, loss of habitat diversity, loss of riparian and bank vegetation, potential for channel alteration and downstream impacts, and increased sediment delivery to the stream during project construction.

Both the Northern Lakes and Forests and North Central Hardwood Forests Ecoregions of Northern Wisconsin are a reservoir of outstanding resources. A Recent 2005 paper by Ed Baker and numerous other authors published in the Transactions of the American Fisheries Society found that most streams in the Northern Lakes and Forests ecoregion are relatively un-impacted by agricultural and urban land uses, and exist in good health.

The demand for this bank rehabilitation work is primarily in the southern ecoregions. Permits have long been required for streambank erosion control. Permit applications for a five year period on rivers and streams show that 70% of the permit applications are found in ecoregions where general permits are available. We project that more than 75% of applications are in areas where general permits are available.

COMMENT 19 – The rule does not provide a GP for new riprap on streams.

RESPONSE 19 – Both the biostabilization and integrated bank treatment GPs allow structural treatment of the bank. Integrated bank treatment is a combination of riprap and revegetation.

COMMENT 20 – The Department should base its general permit designs on proven test sites.

RESPONSE 20 – The general permit design criteria are broad and allow for various designs that fall within the Natural Resources Conservation Service (NRCS) Engineering Field Handbook specifications and Wisconsin Standards Oversight Council standard 580 specifications. The designs are developed by engineers and practitioners and evaluated nationwide by the U.S. Army Corps of Engineers Waterways Experiment Station.

COMMENT 21 - NR 328.35 (i) Please include plant plugs as an example, so as to read "*Vegetation, such as seeding, plant plugs, and dormant plantings, shall be .....*".

RESPONSE 21 – Wording change made as suggested.

COMMENT 22 - Are the use of cover crops (vegetation that establishes quickly to provide soil stability and cover) permitted in non-agricultural areas? If not, please reconsider.

RESPONSE 22 – After consideration quick seeding non-native cover crops remain limited to adjacent to agricultural fields. This aims to limit the unintended introduction of exotic plants into other areas of the state. Any native vegetation used as a cover crops is allowed.

COMMENT 23 - Eliminate (4)(d); in general, the LWCD strongly suggest that no topsoil be added below the OHWM. The LWCD concerns would be filling of wetlands, and soil being delivered to our water resources. In addition, the depth of soil considered to be "topdressing" may be subjective to the general public. If (4)(d) is not eliminated, then the LWCD suggest that the sentence read as follows: "*The placement of soil below the ordinary high water mark is allowed only for the establishment of biological materials.*"

RESPONSE 23 – Wording change made as suggested.

COMMENT 24 - Please clarify that 2 feet is 2 feet vertical.

RESPONSE 24 – Wording change made as suggested.

COMMENT 25 - Eliminate "*predominantly urban watershed*" and replace with "*urban watershed as identified in s. NR328.38, or is within village or city limits.*" This would make consistent with NR328.35(4)(b).

RESPONSE 25 – Wording change made as suggested.

COMMENT 26 - NR328.35(5)(g) Please clarify that the total project length in the Proposal treats both sides of the river/stream independently; the LWCD suggest using a diagram to illustrate the total project length.

RESPONSE 26 - For clarity, the phrase now reads "*....stream bank.....*", rather than "*....stream.....*".

COMMENT 27 - Suggest that the use of the term "shall" be changed to "may be top dressed with topsoil"; so that the sentence reads "*All stone above the ordinary high water mark may be top dressed with topsoil.*" The use of topsoil and the depth of topsoil should be discretionary, dependent upon site and vegetative needs.

RESPONSE 27. No change. Addition of topsoil and re-vegetation above the OHWM is a principal element of the integrated bank treatment GP.

#### **Comments Related to Existing Riprap**

COMMENT 28 – The rule should grandfather existing riprap without permits.

COMMENT 29 – Any riprap that was not permitted should be replaced with appropriate materials in accordance with the new rule.

RESPONSE 28 & 29 – We expanded the GP for replacement of seawalls to include replacement of riprap (authorized or unauthorized) with integrated bank treatment or biostabilization regardless of ecoregion or erosion potential (BEPI). This expansion allows the easier permit process for reducing the impacts of previously placed structures. An additional general permit was created to allow movement and addition of rock on existing unauthorized structures within city and village boundaries, with size and height limitations. This general permit is limited in geographic scope because it may not result in lessening of the impact of the structure.

**Comments About Criteria for Individual Permit Review**

COMMENT 30 – Criteria fail to ensure restoration of vegetation native to forested ecoregions.

RESPONSE 30 – We added a provision requiring consideration of the degree to which erosion control projects rehabilitate or protect native plant community classes endemic to the site along with Notes citing standard technical references describing the vegetation of Wisconsin forest communities.

**Comments About Implementation**

COMMENT 31- Utilize the address input to locate stream site vs point and click. We give landowners copies of a section map they live in and they struggle finding their house let alone a stream bank.

RESPONSE 31 – No Change. Applicants using DNR Webview will be able to find locations by entering in any of the following values; city or village, Township/range/section, county, civil town, lat/long coordinates, waterway name, or county. Unfortunately the Department's current Website design does not allow for a full address find location.

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD  
CREATING RULES

The Wisconsin Natural Resources Board proposes an order to create NR 328, subch. III relating to bank erosion control on rivers and streams.

WT-36-06

Summary Prepared by the Department of Natural Resources

Statutory Authority: ss. 30.12(1), and (3)(br), 30.2035, 30.206 and 227.11(2), Stats

Statutes Interpreted: ss. 30.12(1), (3) and (3m), and 30.206, Stats.

Explanation of Agency Authority:

The Department has authority under ss. 30.12 and 30.206, Stats., to promulgate rules to establish general permits.

Related statute or rule:

These rules relate directly to regulation of activities in navigable waters under ch. 30, Stats., and the NR 300 series of rules.

Plain Language Analysis:

The purpose of this rule is to establish general permits with appropriate conditions, and to establish standards for projects that may be authorized under an individual permit.

Standards for general permits and individual permits in this section are based on state-of-the-art science for determining erosion potential at a site that corresponds to the presence of habitat features (and coincidentally the potential for shore erosion at the site). Research shows that fish and wildlife habitat is maximized along natural shorelines and minimized where seawalls and riprap is installed. Where habitat is impaired due to severe streambank erosion or sedimentation, shore erosion control structures can improve habitat.

This order also establishes general permits for biostabilization, integrated bank treatment, and seawall replacement. Biostabilization is allowed at most locations outside of forested areas of the state. Integrated bank treatment is allowed at locations outside of forested areas that have a specified level of erosion potential.

This order also establishes considerations for individual permits.

Federal Regulatory Analysis: Any activity that results in a discharge (including deposits and structures) into "waters of the United States" is regulated by the U.S. Army Corps of Engineers (Corps) under section 404 of the Clean Water Act. An Individual Permit from the Corps is required, unless Wisconsin regulates the project in its entirety under chapter 30, Stats., in which case the project is authorized by the Corps under general permits GP-01-WI or GP-LOP-WI. Dredging or discharge into waters declared navigable under Section 10, Rivers and Harbors Act, 1899 is also regulated, and requires an Individual Permit from the Corps.

Comparison with Adjacent States:

**Minnesota**

The Minnesota Department of Natural Resources, Division of Waters is responsible for Administrative Rules 6115.0215 (Restoration of Public Waters) and 6115.0210 (Structures in Public Waters). Minnesota's regulations include exempted activities and general permits and the regulated activity are roughly similar to Wisconsin. Minnesota's stated resource protection goals are more protective than Wisconsin, however their Administrative Rule criteria are more subjective.

## **Michigan**

Inland lakes and streams are regulated under Part 301 and of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended. Under Part 301 the construction of any type of shore stabilization structure such as a sea wall, bulkhead, revetment, etc. at or below the ordinary high water mark of the lake or stream requires a permit. Michigan's stated goals and procedures (except MI has no erosion control structures exempt from permits) are similar to Wisconsin, however their specific decision criteria are more subjective.

## **Illinois**

Illinois has no firm detailed guidelines related to specific permitting of erosion control structures. The U.S. Army Corps of Engineers often plays the lead role in permit issuance of erosion control structures in Illinois. The Army Corps consults with Illinois DNR, Illinois EPA and the U.S. Fish and Wildlife Service when reviewing projects. Project reviews typically focus on water quality and endangered resources. Illinois' regulation of erosion control activities is less protective of habitat than in Wisconsin, and their decision criteria more subjective.

## **Iowa**

Pursuant to Chapter 461A, erosion control structures placed below the ordinary high water mark require a permit for rivers, streams and lakes under the jurisdiction of the DNR (Sovereign Lands Construction Permit). Iowa Administrative Code only identifies authority, and the Department offers limited guidance and historical precedence for conducting project reviews. Environmental reviews consist of a record of review for protected species (state listed endangered or threatened), rare natural communities, state lands and waters in the project area, including review by personnel representing state parks, preserves, recreation areas, wetlands, fisheries and wildlife. Iowa's regulation of erosion control activities is less protective of habitat than in Wisconsin decision criteria more subjective.

Summary of Factual Data and Analytical Methodologies: Standards are based on: state-of-the-art science for determining bank erosion potential at a site that corresponds to the presence of habitat features, and the potential for bank erosion at the site; State of Wisconsin baseline monitoring data and corroborating scientific research that differentiate between stream habitat types and occurrence of bank erosion corresponding to ecological regions.

Analysis and Documents Supporting Determination of Small Business Effect: Any person placing a structure or making similar physical modifications to public navigable waters either qualifies for an exemption or must obtain a general or individual permit under state statute. To comply, small businesses follow the same requirements as other waterfront property owners: (1) make a self-determination of exemption using web-based tools provided by the department or describe their activity on an exemption determination request form; (2) complete a general permit application; or (3) complete an individual permit application. Schedules, application steps and compliance/reporting requirements are very basic for all applicants, and most projects can be planned and conducted by individuals with no specific professional background.

Anticipated Private Sector Costs: No significant fiscal effect on the private sector is anticipated.

Effect on Small Business: Small businesses who wish to conduct regulated activities on or near navigable waterways will be affected by the rule. Specific standards will provide clarity and consistency in the permitting process.

Agency Contact Person: Paul Cunningham, Paul.Cunningham@dnr.state.wi.us, (608) 267-7502

Deadline for written comments: To be determined.

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SECTION 1. Chapter NR 328, subch. III is created to read:

**SUBCHAPTER III**  
**SHORE EROSION CONTROL STRUCTURES ON RIVERS AND STREAMS**

**NR 328.31 Purpose.** (1) The purpose of this subchapter is to establish reasonable procedures and limitations for general permits and individual permits for placement of shore erosion control structures in rivers and streams as regulated under s. 30.12, Stats., in order to protect the public rights and interest in the navigable, public waters of the state as defined in s. 30.10, Stats.

(2) The standards for general permits and individual permits in this chapter balance the reasonable right of riparians to control shore erosion under Wisconsin law with the public rights to navigation, recreation, fish and wildlife habitat, water quality and natural scenic beauty in navigable waters. (*Doemel v. Jantz*, 180 Wis. 225, 193 N.W., 393 (1923)).

(3) The standard for general permits recognizes that stream channels naturally move back and forth across their floodplains as the energy of water current is dissipated against the stream banks. Watershed land cover, reflecting rainfall infiltration and soil type, predicts the nature of in-stream habitat features as well as the extent of stream channel movement.

(4) This subchapter establishes differing choices of the types of general permits available based on ecoregion and land-use principles. Streams in predominantly forested watersheds have a high percent of natural shore vegetation, including wetlands and large woody cover. Streams of the Northern Lakes and Forests and the North Central Hardwood Ecoregions are environmentally healthy in comparison to other ecoregions that contain more agricultural and urban land use. Streams in predominantly forested watersheds also exhibit seasonally stable flows. Conversely, streams in agriculturally dominant watersheds exhibit more frequent and larger flooding events. These higher flows create severe bank erosion problems. Eroding banks deliver large amounts of sediment and impair instream habitat. Streams in predominantly urban watersheds are frequently confined by man-made structures, residences, and industries that cannot be moved. This subchapter establishes a broader array of general permits available for streams in agricultural or urban dominant watersheds.

(5) This subchapter authorizes bank erosion control treatments based on erosive potential at a site within the stream. Erosive potential is a reflection of habitat features at a site. Natural shoreline features provide natural erosion control in various ways. The force of current sorts out sand, gravel, cobbles, boulders and bedrock from beneath glacial till and other fine soils. These more energy resistant materials form energy-absorbing barriers that eliminate, or slow, erosion. Natural vegetation provides erosion control in several ways. Plant roots form a matrix that holds soil particles together to stabilize banks. Exposed stalks, stems, branches, foliage and fallen trees dampen waves, reduce local flow velocities, and dissipate energy against the plant rather than eroding the soil. Low-erosion potential sites are often typified by abundant natural vegetation, gradually sloped banks, gravel/rubble/boulder substrates at the toe of the bank, and no stratified soil layers. At low erosion potential and some moderate erosion potential sites, vegetation can effectively meet erosion control needs without infringement on habitat, navigation, natural scenic beauty or other public interests. Vegetation alone may be inadequate in some moderate erosion potential sites and many high erosion potential sites; therefore, methods that rely on technical structures or a combination of vegetation with technical structures may be necessary. Re-vegetated, topsoil-covered riprap and integrated bank protection are preferred structural bank protection methods in high-erosive potential settings.

(6) Standards for general permits are intended to ensure that cumulative adverse environmental impact of authorized activities is insignificant and that issuance of the general permit will not injure public rights or interests, cause environmental pollution as defined in s. 299.01(4), Stats., or result in material injury to the rights of any riparian owner. To achieve this, general permit standards establish: construction and design requirements consistent with the purpose of the activity; location requirements that ensure that the activity will not have an adverse impact on fish and wildlife habitat, water quality and natural scenic beauty, or materially interfere with navigation or have an adverse impact on the riparian property rights of adjacent riparian owners.



(7) Factors for individual permits are intended to provide direction for detailed evaluation of permit applications, and to balance case-by-case review with consistent decision-making. Individual permits may only be granted where the department determines that the structure will not materially obstruct navigation, will not be detrimental to the public interest, and will not materially reduce the flood flow capacity of a stream.

**NR 328.32 Applicability.** (1) Except as provided in s. 30.2023, Stats., this subchapter applies to construction, placement and maintenance of bank erosion control structures regulated under s. 30.12(1), (1g)(a), and (k), (2m), (3)(a), 3r. and 13. and (3m), Stats. Any person that intends to construct, place or maintain a bank erosion control structure in any river or stream shall comply with all applicable provisions of this chapter and any permit issued under this chapter.

(2) Erosion control measures such as grading to establish a stable slope, revegetation or other bioengineering methods that do not involve the placement of structures below the ordinary high water mark of a waterway or disturbance of more than 10,000 square feet on the bank are not regulated under s. 30.12 or 30.19, Stats., or this subchapter.

(3) Bank erosion control structures solely located above the ordinary high water mark are likely to migrate below the OHWM as the energy of water current is dissipated against the toe of the stream bank. When this migration occurs, the bank erosion control structure is considered subject to the provisions of this chapter.

**Note:** A permit is required if land disturbance or excavation exceeds 10,000 square feet on the bank of the navigable waterway (s. 30.19, Stats., and ch. NR 341) or if the activity is conducted in a wetland (ss. 281.17 and 281.36, Stats.).

**Note:** Erosion control activities may be subject to county, city or village ordinances. Local zoning ordinances place restrictions on grading, buffers, and the cutting of vegetation in the shoreland zone. The riparian is required to comply with, and obtain all necessary permits under, local shoreland ordinances.

**NR 328.33 Definitions.** In this subchapter:

(1) "Bank erosion control structure" means a structure with defined shape, size, form and utility constructed and maintained for the purpose of protecting a streambank from erosion.

(2) "Biological materials" means living or organic materials that are 100% biodegradable such as native grasses, sedges, forbs, shrubs and trees; live stakes and posts; non-treated wood for staking; jute netting; fiber rolls and mats, erosion control blankets and turf reinforcement mats composed of natural fibers; logs; root wads; tree revetments; and branches.

**Note:** Temporary breakwaters, with non-biodegradable elements, are considered a permissible element during the plant establishment phase of a biological erosion control project.

(3) "Biostabilization" means a structure that relies solely on biological materials and may include bank reshaping. Biological bank erosion control structures include but are not limited to native vegetation, fiber rolls, fiber mats, live stakes, brush mattresses, fascines, branch packing, erosion control blankets, turf reinforcement mats, brush layering, encapsulated soil lifts, or revegetation by seeding.

(4) "Commercial marina" has the meaning in ch. NR 326.

(5) "Department" means the department of natural resources.

(6) "Grading" means the physical disturbance of the bank by the addition, removal or redistribution of soil.

(7) "Inert materials" means those materials that slowly degrade, such as chemically treated wood, stone, stainless and galvanized steel, plastics and synthetic polymers.

(8) "Integrated bank treatment" means a structure that combines 2 separate treatments: structural treatment with inert materials for toe protection at the base of the bank and biostabilization on the upper portion of the bank.

(9) "Municipal marina" has the meaning in ch. NR 326.

(10) "Ordinary high water mark" means the point on the bank or shore up to which the presence and action of water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation or other easily recognizable characteristic.

(11) "Navigable waterway" means any body of water with a defined bed and bank, which is navigable under the laws of the state. In Wisconsin, a navigable body of water is capable of floating the lightest boat or skiff used for recreation or any other purpose on a regularly recurring basis.

**Note:** This incorporates the definition at s. 30.01(4m), Stats., and current case law, which requires a watercourse to have a bed and banks, *Hoyt v. City of Hudson*, 27 Wis. 656 (1871), and requires a navigable waterway to float on a regularly recurring basis the lightest boat or skiff, *DeGayner & Co., Inc. v. DNR*, 70 Wis. 2d 936 (1975); *Village of Menomonee Falls v. DNR*, 140 Wis. 2d 579 (Ct. App. 1987).

(12) "Principal structure" means the main building or other structure on a lot or parcel of land that is utilized for the property's primary use, including attached garages and porches on residential structures.

(13) "Replacement" means a degree of structural changes to the bank erosion control structure by which some or all of the structure is removed and recreated. For seawalls, any replacement of a portion of the seawall down to or at the footing of the structure is considered replacement. For riprap, replacement of filter fabric or replacement of the base substrate is considered replacement.

(14) "Riparian" means an owner of land abutting a navigable waterway.

(15) "Riprap" means a layer or layers of rock, including filter material, placed on the bed and bank of a navigable waterway to prevent erosion, scour or sloughing of the existing bank.

(16) "Seawall" means an upright structure that is steeper than 1.5 feet vertical to one foot horizontal and that is installed parallel to the bank to prevent the sliding or slumping of the land and to protect the adjacent upland from the action of surface water. Seawalls are commonly constructed of timber, rock (including gabions), concrete, steel or aluminum sheet piling, and may incorporate biological components. Biostabilization structures steeper than 1.5 feet vertical to one foot horizontal, such as encapsulated soil-lifts are not considered seawalls.

(17) "Structural treatment" means a system of non-living materials with a specific configuration installed as a means of bank stabilization including, but not limited to, riprap, tree revetments, logs, rootwads, dormant post, jacks, coir logs, bulkheads, and stream barbs.

(18) "Toe" means the break in slope at the foot of a bank where it meets the streambed.

(19) "Wetland" means an area where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions.

**Note:** Common law doctrine of avulsion secures to the waterfront property owner the ability to reclaim land suddenly lost to erosion, *AG ex rel Becker v. Bay Boom Wild River and Fur Company*, 172 Wis. 363 (1920).

**NR 328.34 Pre-existing structures.** A streambank erosion control structure authorized by department permit prior to the effective date of this rule ... [revisor inserts date] shall continue to be authorized, provided the structure is maintained in compliance with all the conditions of the original permit.

Any modifications to the structure that do not comply with the original permit conditions shall require a new permit and shall comply with all standards in this section. Bank erosion control structures that were not authorized prior to the effective date of this rule ... [revisor inserts date] require authorization prior to any repair, modification or replacement.

**NR 328.35 General permits. (1) PROCEDURES.** General permits shall be processed according to the procedures in ch. NR 310.

(2) **APPLICABLE ACTIVITIES.** Projects that meet all the criteria in sub. (3) and either sub. (4), (5) or (6) are eligible for general permit coverage under ss. 30.12(3)(br) and 30.206, Stats.

(3) **GENERAL STANDARDS. (a)** If the department determines that a proposal submitted under this section has the potential to impact an endangered or threatened species in accordance with s. 29.604, Stats., the application shall be deemed incomplete. The department may not consider the application complete or issue a general permit until the applicant submits documentation to demonstrate one of the following:

1. The project avoids impacts to the endangered or threatened species in accordance with s. 29.604, Stats.

2. The project has received an incidental take authorization under s. 29.604, Stats.

(b) If the applicant modifies the project plans to meet the requirements of par. (a), the modified plans shall be submitted before the department may consider the application complete or issue a general permit.

(c) The bank erosion control structure may not be placed in a wetland.

**Note:** Eligibility for a general permit does not automatically result in a federal permit or state water quality certification for fill in wetlands. Some projects involving minimal wetland fill may be eligible for authorization under a U.S. Army Corps of Engineers general permit which has already been granted state water quality certification [see non-reporting and 404 GP activities in the table at <http://www.mvp.usace.army.mil/docs/regulatory/WIMATRIX.htm>] or a general permit under s. 281.36(8), Stats. (under development) All other projects affecting wetlands will require individual water quality certification including public notice as required by s. 401, Federal Clean Water Act, and s. 281.36(2), Stats., and carried out under chs. NR 103 and 299. For further instructions, see the department's website at [www.dnr.wi.gov](http://www.dnr.wi.gov) under the topic "Waterway and Wetland Permits."

(d) Bank erosion control structures may be placed only by a riparian.

(e) To minimize adverse impacts on fish movement, fish spawning, egg incubation periods and high stream flows, placement may not occur during any of the following time periods:

1. For trout streams identified under s. NR 1.02(7) and perennial tributaries to those trout streams, September 15 through May 15.

2. For all waters not identified in subd. 1. and located south of state highway 29, March 15 through May 15.

3. For all waters not identified in subd. 1. and located north of state highway 29, April 1 through June 1.

4. The applicant may request that the requirement in subd. 1., 2. or 3. be waived by the department on a case-by-case basis, by submitting a written statement signed by the local department fisheries biologist, documenting consultation about the proposed shore erosion control project, and that the local department fisheries biologist has determined that the requirements of this paragraph are not necessary to protect fish spawning for the proposed project.

(f) Any grading, excavation and land disturbance shall be confined to the minimum necessary for the construction and may not exceed 10,000 square feet.

**Note:** A permit is required under s. 30.19, Stats., and ch. NR 341 if land disturbance or excavation exceeds 10,000 square feet on the bank of the navigable waterway. Bank shaping activities necessary to protect stream and river shorelines from erosion on lands used entirely for agriculture are exempt from this subchapter.

(g) Erosion control measures shall meet or exceed the technical standards for erosion control approved by the department under subch. V of ch. NR 151. Any area where topsoil is exposed during construction shall be immediately sodded, seeded and mulched, covered with erosion mat or riprapped to stabilize disturbed areas and prevent soils from being eroded and washed into the waterway.

**Note:** These standards can be found at the following website:  
<http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>

(h) Unless part of a permanent stormwater management system, all temporary erosion and sediment control practices shall be removed upon final site stabilization. Areas disturbed during construction or installation shall be restored.

(i) Vegetation, such as seeding, plant plugs, and dormant plantings shall be plant species native to the area of Wisconsin where the project is located. Non-invasive cool season species such as Virginia wild rye, Timothy, alfalfa, alsike clover, orchard grass, Smooth brome grass and red top, may be incorporated into native seed mixes for the purpose of rapid stabilization of critical sites adjacent to agricultural fields.

(j) All equipment used for the project shall be designed and properly sized to minimize the amount of sediment that can escape into the water.

(k) The stabilization method shall follow the natural contour of the shoreline. No waterward extension of the property is permitted other than what is reasonably necessary to conduct the project and protect the existing bank. Except as provided in sub. (4)(d), no soil or similar fill material may be placed in a wetland or below the ordinary high water mark of any navigable waterway.

(L) Erosion control structures shall begin and end at a stabilized or controlled point.

(m) Except as required for appropriate toe installation of the erosion control structure, dredging is not permitted under this section.

(n) The erosion control structure design and placement may not result in a net decrease in the density or size-structure of tree-falls or logs in the water or on the bed and banks of the stream.

(o) Except for the Driftless Area and Prairie Pothole Region, all trees greater than 4" DBH (diameter breast high) removed as part of the erosion control project within 35 feet of the ordinary high water mark shall be incorporated into the waterward portion of the erosion control design.

**Note:** Driftless Area and Prairie Pothole Region can be found in s. NR 328.38, Figure 1.

**(4) BIOSTABILIZATION.** Biostabilization on the bed or bank of a navigable river or stream may be authorized under this general permit if it meets the requirements of sub. (3) and all of the following requirements:

(a) The project site is not located on a federal or state, under ss. 30.26 and 30.27, Stats., designated wild or scenic river.

(b) The project site is located in the Driftless Area and Prairie Pothole Region, or Southeastern Wisconsin Till Plains and Chiwaukee Prairie Region, or is located in an urban watershed as identified in s. NR 328.38, or is within village or city limits.

**Note:** Driftless Area and Prairie Pothole Region, and Southeastern Wisconsin Till Plains and Chiwaukee Prairie Region can be found in s. NR 328.38, Figure 1.

**Note:** Village or city boundaries are identified according to Tiger 2000 Census.

(c) Structural treatment practices shall be sloped to 1.5 horizontal to one foot vertical or flatter. Bank treatments without structural toe protection and only revegetation shall be sloped to 2 foot horizontal to one foot vertical or flatter. Structural treatments may not include inert materials and are limited to biological materials.

(d) The placement of soil below the ordinary high water mark is allowed only for the establishment of biological materials.

(e) Except as provided in sub. (3)(i), revegetation shall follow Wisconsin NRCS Field Office Technical Guide (FOTG), Section IV, Practice Standard 643A Shoreland Habitat, found at <http://efotg.nrcs.usda.gov/references/public/WI/643a.pdf>.

**(5) INTEGRATED BANK TREATMENT.** Integrated bank treatment on the bed or bank of a navigable river or stream may be authorized under this general permit if it meets the requirements of sub. (3) and all of the following requirements and limitations:

(a) The project site is located in the Driftless Area and Prairie Pothole Region, or Southeastern Wisconsin Till Plains and Chiwaukee Prairie Region, or is located in an urban watershed as identified in s. NR 328.38, or is within village or city limits.

**Note:** Driftless Area and Prairie Pothole Region, and Southeastern Wisconsin Till Plains and Chiwaukee Prairie Region can be found in s. NR 328.38, Figure 1.

**Note:** Village or city boundaries are identified according to Tiger 2000 Census.

(b) The project satisfies any of the following criteria:

1. Bank Erosion Potential Index (BEPI) equals or exceeds 20 as determined by the method in s. NR 328.38(2).

2. Bank edge recession for a project located in an urban watershed identified in s. NR 328.38(1) equals or exceeds 0.5 feet per year as described by the method in s. NR 328.38(3) and is also either located within a village or city boundary or has a portion of the principal structure located within 35 feet of the OHWM.

**Note:** NR 328(3) requires that the time between separate measurements shall equal or exceed 3 months during the open-water season.

**Note:** The applicant will satisfy the "equal to or greater than 0.5 feet per year" requirement by demonstrating that the bank edge recession is equal to or greater than 1.5 inches per 3 months during the open-water season.

(c) The total project length may not exceed 500 linear feet of stream bank per ¼ mile of stream reach.

(d) The project site is not located on federal or state (under ss. 30.26 and 30.27, Stats.), designated wild or scenic river.

(e) Stone associated with toe protection shall be clean field stone or quarry stone appropriately sized according to the USDA, NRCS Wisconsin Supplement to the Engineering Field Handbook Chapter 16 - Streambank and Shoreline Protection.

**Note:** These standards can be found at the following website: <ftp://ftp-fc.sc.egov.usda.gov/WI/efh/efh-chapter16.pdf>

(f) Toe protection materials may not be placed above the ordinary high water mark elevation plus one vertical foot in the Wisconsin Till Plains and Chiwaukee Prairie Region. Toe protection materials may not be placed above the ordinary high water mark elevation plus 2 vertical feet in the Driftless Area and Prairie Pothole Region, or is located in an urban watershed as identified in s. NR 328.38.

(g) Structural stabilization practices shall be sloped to 1.5 horizontal to one foot vertical or flatter. Banks treated only with vegetation shall be sloped to 2 feet horizontal to one foot vertical or flatter.

(h) Associated stream habitat structures shall practice standards found in NRCS Field Office Technical Guide (FOTG), Standard 395, Stream Habitat Improvement and Management.

(i) All stone above the ordinary high water mark shall be top dressed with a minimum of 6 inches of top soil.

(j) Except as provided in sub. (3)(i), revegetation shall follow Wisconsin NRCS Field Office Technical Guide (FOTG), Section IV, Practice Standard 643A Shoreland Habitat, found at <http://efotg.nrcs.usda.gov/references/public/WI/643a.pdf>.

**(6) REPLACEMENT OF SEAWALL OR RIPRAP BANK EROSION CONTROL STRUCTURE WITH INTEGRATED BANK TREATMENT.** Replacement of riprap or a seawall placed prior to the effective date of this rule ... [revisor inserts date] with integrated bank treatment on the bed or bank of a river or stream may be authorized under a general permit if it meets all of the requirements of subs. (3) and (5)(d) to (j), and with additional limitations as follows:

(a) The applicant can document using historical information and photographs that the seawall or riprap structure was placed prior to the effective date of this rule ... [revisor inserts date].

(b) The integrated bank treatment may not exceed the lesser of the length of the existing structure or 300 linear feet of streambank.

(c) Toe protection materials may not be placed above the ordinary high water mark elevation plus one vertical foot for projects located outside the locations identified in sub. 5(f).

**(7) REPLACEMENT OF SEAWALL OR RIPRAP BANK EROSION CONTROL STRUCTURE WITH BIOSTABILIZATION.** Replacement of riprap or a seawall placed prior to the effective date of this rule ... [revisor inserts date] with biostabilization on the bed or bank of a river or stream may be authorized under a general permit if it meets all of the requirements of subs. (3) and (4)(c) to (e), and with additional limitations as follows:

(a) The applicant shall provide historic photographs demonstrating that the seawall or riprap structure was placed prior to the effective date of this rule ... [revisor inserts date].

(b) The biostabilization treatment may not exceed the lesser of the length of the existing structure or 300 linear feet of streambank

**(8) REPAIR OF RIPRAP BANK EROSION CONTROL STRUCTURE.** Repair of riprap placed prior to the effective date of this rule ... [revisor inserts date] may be authorized under a general permit if it meets all of the requirements of subs. (3)(a) to (k) and (5)(e) to (f), and with additional limitations as follows:

(a) The repair site is located within village or city boundaries.

(b) Redistribution or placement of stone is limited to the horizontal footprint of the existing structure and may not exceed the elevations identified in 5(f),

(c) Stabilization work at elevations above those identified in 5(f) shall be limited to biostabilization practices and revegetation.

(d) The repair may not exceed the lesser of the length of the existing structure or 300 linear feet of streambank.

**(9) INDIVIDUAL PERMIT REQUIRED.** (a) Activities which do not meet the applicable standards in sub. (3), (4), (5), or (6) are otherwise ineligible for a general permit and shall require an individual permit.

(b) The department has authority under s. 30.206(3r), Stats., to require an individual permit in lieu of a general permit.

**NR 328.36 Individual permits. (1) PROCEDURES.** (a) Individual permits shall be processed according to the procedures in ch. NR 310.

(b) If the department determines that a proposal submitted under this section has the potential to impact an endangered or threatened species in accordance with s. 29.604, Stats., the application shall be deemed incomplete. The department may not consider the application complete or issue an individual permit until the applicant submits documentation to demonstrate one of the following:

1. The project avoids impacts to the endangered or threatened species in accordance with s. 29.604, Stats.

2. The project has received an incidental take authorization under s. 29.604, Stats.

(c) If the applicant modifies the project plans to meet the requirements of par. (b), the modified plans shall be submitted before the department may consider the application complete or issue an individual permit.

**(2) ANALYSIS OF INDIVIDUAL PERMITS.** The department shall consider factual data from applicants regarding all of the following factors in evaluating individual permit applications:

**Note:** The department's analysis of individual permits is not constrained to the general permit standards identified in s. NR 328.35.

(a) The cumulative and individual impact on public rights and interests including fish and wildlife habitat, physical, chemical and biological effects on the adjacent waterway and natural scenic beauty including: interference with navigation and its incidents, such as swimming, boating, fishing and hunting; impacts on natural scenic beauty; and impacts on special concern, threatened or endangered species.

**Note:** Less developed reaches of rivers and streams will experience greater impacts on natural scenic beauty from the structure and its activity than other more developed reaches. In evaluating the impacts on public rights and interests under this section, the impacts of any existing structures as well as the proposed structures should be taken into account.

(b) Impacts on bank and in-stream habitat including: reduced density of woody cover in shallow water; reduced density, coverage and diversity of nearshore vegetation, such as terrestrial, emergent, floating-leafed and submerged zones; designated sensitive areas, spawning or nursery habitat.; change in substrate that reduces its suitability for habitat.

(c) The bank erosion potential of the site as determined by the methods in s. NR 328.38.

(d) The erosion potential of the site based on site-specific conditions, including ice action, boating, and hydraulic influences of other structures.

(e) The effect of the project on the adjoining upland, its ability to prevent erosion and sedimentation into the waterway, and the relative contribution of bank erosion to any excess nutrient and sediment load to the stream.

**Note:** Assessments of bank erosion contribution to excess sediment load should consider whether the land is adjacent to a surface water identified as impaired by the Department and listed pursuant to 33 USC 1313 and 40 CFR 130.7, if the impairment relates to excessive delivery of nutrients or sediments. Assessments may also consider whether the project is located within a watershed draining to surface water identified as impaired by the Department, and if the impairment relates to excessive delivery of nutrients or sediments.

**Note:** Assessments of bank erosion contribution to excess sediment load should consider whether the land is adjacent to surface water identified as outstanding or exceptional resource water under s. 281.15, Stats. Assessments may also consider whether the project is located in watersheds draining to outstanding or exceptional resource waters designated under s. 281.15, Stats.

(f) Whether project designs or specific conditions can avoid or reduce impacts of the structure. Designs shall have high likelihood of success, and duration equal to the life-span of upland structures to be protected, if any.

(g) Whether streambank protection measures allowed without permits or with a general permit would provide adequate erosion control.

**Note:** Assessments landward of the erosion control site typically include: land use and management, waterway access and use, vegetation management, runoff and stormwater management.

(h) The degree to which the erosion control project rehabilitates or protects native plant community classes endemic to the site.

**Note:** The following habitat classification guides can be used as benchmarks in this assessment:

Kotar, J. and T.L. Burger (1996) A guide to forest communities and habitat types of central and southern Wisconsin. Department of Forest Ecology and Management, University of Wisconsin - Madison, Madison, Wisconsin.

Kotar, J., J. A. Kovach and T.L. Burger (2002) A guide to forest communities and habitat types of northern Wisconsin., 2nd Edition. Department of Forest Ecology and Management, University of Wisconsin - Madison, Madison, Wisconsin.

**NR 328.38 Data requirements and site assessment methods.** Applicants and department staff shall adhere to the following data requirements and site assessment methods:

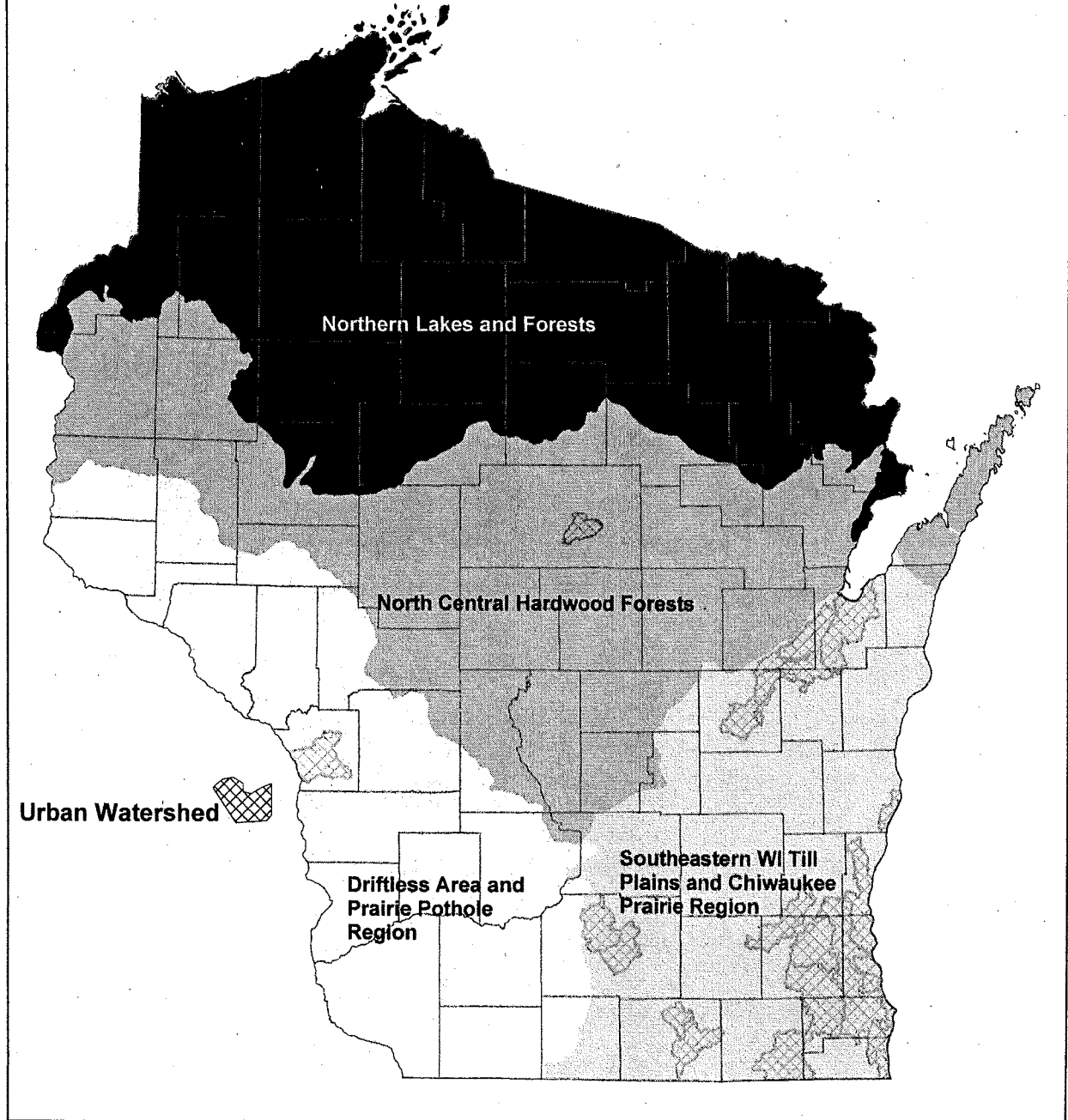
(1) IDENTIFICATION OF ECOREGIONS AND URBAN AREAS. Ecoregions and urban areas identified in Figure 1 are based scientific literature characterizing the ecology of Wisconsin streams (Lyons et al. 1996; Wang et al.1997; Lyons et al. 2001; Wang et al. 2003; and Weigel et al. 2006), Omernik 1987, and Omernik et al. 2000. The department shall provide applicants with maps and internet-based location tools for the purpose of determining ecoregion and urban watersheds.



Figure 1.

## Bank Erosion Control GP Permit Map

Based on Level III and IV Ecoregions of Wisconsin and urban watersheds.



**Note:** Lyons, J., L. Wang, and T. Simonson. 1996. Development and Validation of an index of biotic integrity for coldwater streams in Wisconsin. *North American Journal of Fisheries Management* 16: 241-265.

Lyons, J., R.R. Piette, and K.W. Niermeyer. 2001. Development, validation, and application of a fish-based index of biotic integrity for Wisconsin's large warmwater rivers. Transactions of the American Fisheries Society 130:1077-1094.

Omernik, J.M., 1987, Ecoregions of the conterminous United States (map supplement): Annals of the Association of American Geographers, v. 77, no. 1, p.

Omernik, J. M., Chapman, S. S., Lillie, R. A., Dumke, R. T. (2000) "Ecoregions of Wisconsin" Transactions of the Wisconsin Academy of Sciences, Arts, and Letters 88: 77-103

Wang, L., J. Lyons, P. Kanehl, and R. Gatti. 1997. Influences of watershed land use on habitat quality and biotic integrity in Wisconsin streams. Fisheries 22(6):6-12.

Wang, L., J. Lyons, P. Rasmussen, P. Seelbach, T. Simon, M. Wiley, P. Kanehl, E. Baker, S. Niemela, and P.M. Stewart. 2003. Watershed, reach, and riparian influences on stream fish assemblages in the Northern Lakes and Forest Ecoregion, U.S.A. Canadian Journal of Fisheries and Aquatic Sciences 60: 491-505.

Weigel, B.M, J. Lyons, and P. Rasmussen. 2006. Relative influence of environmental variables at multiple spatial scales on fishes in Wisconsin's warmwater nonwadeable rivers. American Fisheries Society Symposium 48:493-511.

**(2) CALCULATION OF STREAM BANK EROSION INTENSITY INDEX.** The department shall provide applicants with worksheets and internet-based computer software for the purpose of calculating the bank erosion potential index (BEPI). When the department or applicants assess erosion at the bank stabilization site they shall apply methods outlined in Table 1 to calculate a bank erosion potential index (BEPI) score. For each continuous treatment site of 300 feet or less, applicants shall submit at least one BEPI assessment. For continuous treatments greater than 300 feet applicants shall conduct and submit BEPI assessments at 150 foot intervals along the treatment site.

**Table 1. Bank Erosion Potential Index (BEPI) Score Worksheet**

Applicants and department staff shall use this worksheet to calculate erosion intensity pursuant to s. NR 328.38 (2).

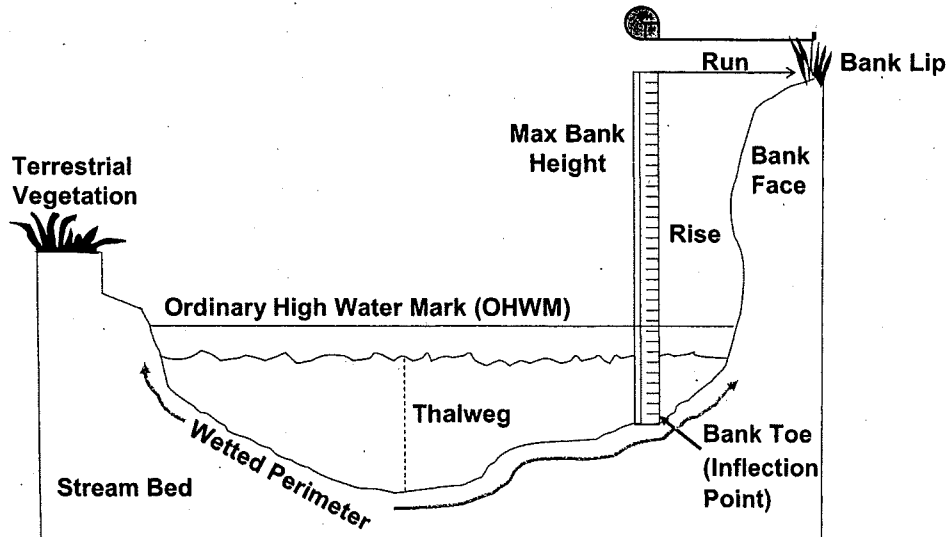
<b>STREAMBANK VARIABLES</b>	<b>DESCRIPTIVE CATEGORIES</b> Erosion Intensity Value is Located in Parenthesis at Bottom of Each Category Box.						<b>SCORE</b>
<b>Bank Materials –</b> predominance of bank materials at toe (between bed and <sup>1</sup> OHWM on bank face).	Bedrock Outcrop  Stop assessment BEPI=0	Cobble >3 inches (-10 points)	Silt/Clay  (0 points)	Gravel <3 inches  (5 points)	Sandy Gravel  (7 points)	Non plastic sands and silts  (10 points)	
<b>Hydraulic Influence of Upstream Structures –</b> distance (number of channel widths) to bridges, culverts, or dams. <u>Calculation:</u> Number of Channel Widths= Stream Distance to Structure / Average Channel Width	10+ channel widths  (1 point)	5.1-10 channel widths  (2 points)	2.1-5 channel widths  (3 points)	0-2 channel widths  (4 points)			

<b><sup>2</sup>Max Bank Height (feet) Divided by the OHWM Height (feet)</b>  <u>Calculation:</u> Max Bank Height / OHWM Height	1 – 1.19  Very Low or Low  (2 points)	1.2 – 1.5  Medium  (5 points)	1.6 – 2.0  High  (7 points)	2.1 – 2.8  Very High  (8 points)	>2.8  Extreme  (10 points)	
<b><sup>3</sup>Bank Slope (degrees) - measure rise/run and translate into angle degree</b> <u>Calculation:</u> Bank Slope= Inverse Tangent (Rise/Run)	0 – 20  Very Low  (1 point)	21 – 60  Low  (3 points)	61 – 80  Moderate  (5 points)	81 – 90  Vertical  (7 points)	91+  Undercut  (10 points)	
<b><sup>4</sup>Stratification/ Bank Layering –type of soil layering occurring on the bank face.</b>	No stratification  (0 points)	No stratification, seepage present  (3 points)	Stratified above OHWM  (4 points)	Stratified above OHWM with seepage present, or stratified below OHWM  (7 points)	Stratified below OHWM with visual seepage  (10 points)	
<b><sup>5</sup>Bank Vegetation – abundance of the vegetation, roots, and tree-falls occurring between the OHWM and the bank lip.</b>	Rock outcrop bank– unable to support vegetation.  (-7 points)	Dense vegetation <30% bare soil visible  (-4 points)	Clumps of vegetation 30-59% bare soil visible  (0 points)	Sparse vegetation 60-90% bare soil visible  (4 points)	Vegetation absent >90% bare soil visible  (7 points)	
<b><sup>6</sup>Thalweg Location - deepest part of the channel and the location of stream current.</b>	Located across the stream, against opposite bank (0 points)	Flowing down the center of the stream channel  (2 points)	Immediately adjacent to bank proposed for erosion control (8 points)			
<b>Bank Erosion Potential Index (BEPI) Score</b>						

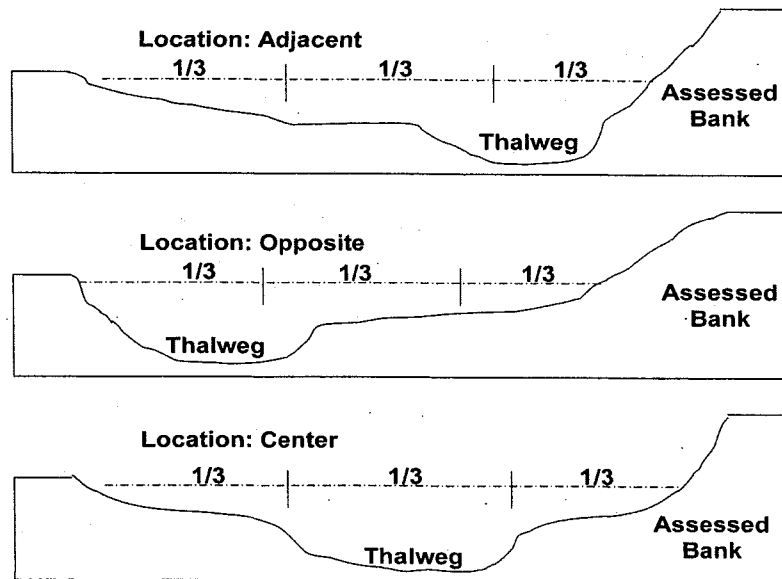
**Note:** Table 1 is adapted from Rosgen, David L. “A Practical Method of Computing Streambank Erosion Rate”, Wildland Hydrology Inc., Pagosa Springs, CO, 10 pp.

1. Ordinary High Water Mark (OHWM) means the point on the bank or shore up to which the presence and action of water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation or other easily recognizable characteristics. If bank material is composed of bedrock outcrop, stop with the BEPI assessment at this point; the reported total BEPI score is assumed equal to 0.
2. Maximum bank height means the vertical measure (feet) from the bank toe to the top of the bank lip, irrespective of changes in the water level. Bank toe is the inflection or bending point between the bank face and stream bed.

- To measure the bank slope (degrees), the rise and run must be measured from the bank toe to the top of the bank lip. With your measure tape or stick, place the end firmly on the bank toe, parallel to the bank face and measure up to the bank lip to find the rise or max bank height. Subsequently, measure the run from the bank toe to the bank lip. From these measures, one should be able to calculate the bank slope with the formula 'bank slope= inverse tangent (rise/run)'. Additionally, the BEPI Calculator is available on the Department's website < <http://dnr.wi.gov/.html>>. This website automatically calculates the bank slope and BEPI score after inputting fields for bank materials, structures upstream, OHWM height, max bank height, distance to bank face, bank layering/stratification, bank vegetation, and thalweg location.



- Stratification or bank layering means soils consisting of alternating layers of varying soils or textures.
- Bank vegetation is the type and abundance of vegetation occurring between the ordinary high water mark (OHWM) and the bank lip. To assess the abundance of vegetation on the targeted bank, apply a 10 foot wide window of assessment from the OHWM to the top of the bank. The following percentages are assigned for the categories: bare soil visible over less than 30% of the surface area=dense vegetation; bare soil visible across 30-59% of the surface area= clumps of vegetation; bare soil visible across 60-90% of the surface area = vegetation sparse; bare soil visible across > 90% of the surface area = vegetation absent. Root wads, tree falls, and snags on the bank are considered in this assessment, because of their influence on thalweg, sediment transport, scour, and bank protection. After assessing the percentage of bare soil in the 'box', record its associated point value.
- Thalweg means the deepest part of the channel or the location of fastest current. To find the thalweg, the channel must be divided into thirds. The applicant needs to perform one or a mixture of tests for the three segments in determining its location. The following tests are suggested: float an object such as an orange peel down the stream to find the segment of fastest current, find the segment with the bubble line visible at the water's surface, or find the deepest part of the channel, if safe. After locating the thalweg, record its proximity to the tested bank, adjacent (closest), center, or opposite (furthest) and record its associated point value.



**(3) BANK EDGE RECESSION MEASUREMENTS.** Methods of measuring bank edge recession shall include all of the following: establishment of a physical measurement reference line between at least 2 headstakes; date-imbedded photographs showing the initial installation of the reference line and headstakes; reference distance measures to the bank lip shall be reported on department supplied forms; and time between separate measurements shall equal or exceed 3 months during the open-water season.

**NR 328.39 Enforcement. (1)** Noncompliance with the provisions of ss. 30.12, 30.20 and 30.206, Stats., this chapter, or any conditions of an exemption, general permit or individual permit issued by the department, constitutes a violation and may result in a forfeiture, fine or imprisonment. The department may seek abatement under s. 30.294, Stats., for any activity in violation of ss. 30.12, 30.20 and 30.206, Stats.

**(2)** If the activity may be authorized by a general permit under s. 30.206, Stats., failure of an applicant to follow the procedural requirements may not, by itself, result in abatement of the activity.

**(3)** When an after-the-fact permit application has been filed with the department, the department shall follow the procedures in ch. NR 301 for violations.

**(4)** Any violation of these rules shall be treated as a violation of the statutes they interpret or are promulgated under.

**(5)** No person may place a shore erosion control structure in a navigable waterway if the activity is not eligible for an exemption, authorized by a general permit or individual permit issued under this chapter, or otherwise authorized under this chapter.

SECTION 2. EFFECTIVE DATE. This rule shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22(2)(intro.), Stats.

SECTION 3. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on \_\_\_\_\_

Dated at Madison, Wisconsin \_\_\_\_\_

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

By \_\_\_\_\_  
Scott Hassett, Secretary

(SEAL)