

The statement of scope for this rule, SS 048-22 was approved by the Governor on May 26, 2022, published in Register No. 798A1 on June 6, 2022, and approved by the Natural Resources Board on September 28, 2022. This rule was approved by the Governor on October 31, 2024.

## ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD REPEALING AND RECREATING RULES

The Wisconsin Natural Resources Board proposes an order to **repeal** NR 323, 326, 328, and 329; and to **repeal and recreate** NR 320 relating to placing structures in and crossings over navigable waterways and affecting small business.

### WW-06-22

#### Analysis Prepared by the Department of Natural Resources

##### **1-3. Statute Authority, Interpretation, and Explanation:**

Chapter 30, Stats., regulates structures placed in navigable waterways, including boat houses, boat shelters, bridges and culverts, fish habitat structures, waterfowl habitat structures, wharves, piers, swimming rafts, pierhead lines, marina condominiums, water ski platforms and jumps, shoreline erosion control structures, pilings, intake or outfall structures, dry fire hydrants, fords, pea gravel blankets, and weed rakes.

This rule seeks to align administrative code for structures placed in navigable waterways with statutory and programmatic changes and to consolidate these rules to improve administrative efficiency.

Section 30.12 (1p), Stats., grants authority to the department to promulgate rules concerning exempt activities under s. 30.12 (1g), and (1j), Stats.

Section 30.123 (6s), Stats., grants authority to the department to promulgate rules concerning exempt activities found in s. 30.123 (6), Stats.

Section 30.12 (3), Stats., grants authority to the department to promulgate rules concerning individual permits for solid piers to outlying waters.

Section 227.11 (2) (a), Stats., grants authority to the department to promulgate rules to interpret the provisions of any statute enforced or administered by the agency if the agency considers it necessary to effectuate the purpose of the statute. Structures in navigable waterways are subject to ss. 30.12, 30.123, 30.206, and 30.208, Stats., and additional interpretation through rulemaking is required to effectuate the purpose of the statute.

##### **4. Related Statutes or Rules:**

Chapter NR 300, Wis. Adm. Code, establish administrative procedures, regulatory processes, and enforcement for permitting for structures placed in navigable waterways. Chapter NR 299, Wis. Adm. Code, establishes procedures and criteria for water quality certification.

##### **5. Plain Language Analysis:**

The department Waterways Permitting Program (Program) implements laws under ch. 30, Stats., that regulate the placement of structures and crossings in, removal of bed material from, and other activities that may impact navigable waterways. The Program protects riparian rights and public interests in lakes and streams, including navigation, fishing and hunting, water quality, recreation, and natural scenic beauty.

The purpose of this rule is to update administrative procedures and standards for the Program to align with current statutory requirements in chs. 30 and 227, Stats. Several current statutory exemptions, as well as several statewide general permits issued by the Program are in conflict with the current rule language. This has resulted in confusion and uncertainty for project proponents applying for permits and Program staff. The proposed rule would update exemption standards to be consistent with ch. 30 and current Program practice and remove activity specific general permit standards which are instead written into statewide general permits under s. 30.206, Stats. The proposed rule would also outline updated public interest review process steps and review factors for individual permits, consistent with ch. 30 and current Program practice. Finally, this effort would consolidate chs. NR 320, 323, 326, 328, and 329 to reduce administrative code redundancy and make Program regulations for structures and crossings in navigable waterways available in one space. These changes would reduce regulatory uncertainty and make all code language for structures and crossings in waterways consistent with current statutes and program practice.

**NR 320.01 to 320.03 (Purpose, Applicability, and Definitions)**

- Specify the rule purpose, applicability, and consistent definitions for use.

**NR 320.04 (Exemptions from Permitting)**

- Provides general standards that apply to all currently exempt structures and crossings consistent with statutes.
- Incorporates activity specific standards consistent with current program practice.
- Adds new exempt structures, including three fish habitat structures (fish sticks, root wads, boulder placements), seasonally placed structures up to 25 square feet, and temporary crossings for forestry purposes.
- Specifies activity specific standards for culvert replacements that protect against flood flow risk.
- Provides procedures for submitting a voluntary exemption review request.

**NR 320.05 (Statewide General Permit Development)**

- Removes all activity specific general permit technical standards from the rule language, many of which were in conflict with statutes and/or current program practice.
- Provides categories for eligibility criteria and standards that may be used in the development of statewide general permits.

**NR 320.06 (Individual Permits)**

- Updates activity specific standards and the general public interest factors to be used in Program evaluation of projects proposed under an individual permit to be consistent with current statutes.
- Clarifies the types of information the Program may evaluate in reviewing the public interest factors under an individual permit review.
- Proposes language that certain proposed structures placed on the Great Lakes or outlying waters may be required to be designed through engineering and/or modeling outlying waters as part of an individual permit application to ensure no detrimental impacts to the public interest.

**NR 320.07 to 320.09 (Municipal Breakwater Permits, Navigability Standards for Crossings, Riparian Rights Determinations)**

- Language taken from existing rules.

**NR 320.10**

- Culvert sizing calculator updated to incorporate stream bankfull width and height into the culvert area calculation, which will be a more appropriate procedure for culvert sizing sufficient to pass flood flows.

**NR 320.11 to 320.12 (Site Assessment Methods for Erosion Control Structures on Lakes and Streams)**

- Removed ecoregion general permit eligibility language for streambank erosion control structures as all general permit standards and criteria are now developed in statewide general permits.

**NR 320.13 (Enforcement)**

- Consolidated language from current five rules for enforcement procedures and updated to refer to ch. NR 300.

**6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:**

The US Army Corps of Engineers regulates similar activities in Wisconsin on waters of the United States through a tiered permitting process, including regional permits, nationwide permits, and individual permits.

**7. If Held, Summary of Comments Received During Preliminary Comment Period**

**and at Public Hearing on the Statement of Scope:** The department held a virtual preliminary public hearing on the statement of scope on August 18, 2022. Four members of the public attended the hearing and the department received one comment regarding application requirements associated with the regulated activities in the rule.

**8. Comparison with Similar Rules in Adjacent States:** For this rule revision, comparisons were made to four other states in EPA Region 5 – Illinois, Iowa, Michigan, and Minnesota. All these states are subject to the Clean Water Act and EPA and USACE regulations.

Iowa – Chapter 16 of IA Admin. Rule 571 sets permitting standards for docks, including location and construction requirements. Chapter 13 of IA Admin. Rule 571 describes permitting standards for shoreline erosion control structures including impact minimization, requirements regarding location and placement, and permit application requirements. Iowa does not have further administrative code regulating structures placed in navigable waterways.

Illinois – Title 17 Ill. Admin Code 3704 is the state rule for regulation of public waters including permitting administration for construction and placing structures in state-determined public waters. Specific project types and their standards are then regulated through statewide, regional, and general permits.

Michigan – Michigan Rule 281.8 establishes permitting standards for structure placement in inland lakes and streams and MR 322.1 establishes permitting standards for structure placement in the Great Lakes.

Minnesota – Minnesota Chapter 6115 provides procedures for permitting, exemption criteria, fees, inspection, and enforcement for public waterways projects. Chapter 8420 provides the administrative and procedural framework for wetland regulations including roles and responsibilities of local governments to administer the wetlands conservation act. The rule covers exemptions, permitting, wetland identification, wetland mitigation, and enforcement procedures.

## **9. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings Support the Regulatory Approach Chosen:**

The proposed rule revisions correct inconsistencies with controlling statutes, implement new statutory provisions, bring the rules up to date with current practices and clarify existing rule provisions and procedures. There was not a need to evaluate factual data and analytical methods to identify regulatory approaches. Rather, experienced department staff reviewed the existing rules and collected feedback from a large technical advisory committee and a variety of public stakeholders to identify necessary changes and developed the preliminary drafts of the proposed rules.

## **10. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:**

The department estimates that 10% of the applicants for all permits regulated by the proposed rule are small businesses, based on the number of applicants needing to pay a fee and associated with an organization.

*s. 227.11, Wis. Stats.* - In this section, “small business” means a business entity, including its affiliates, which is independently owned and operated and not dominant in its field, and which employs 25 or fewer full-time employees or which has gross annual sales of less than \$5,000,000.

## **11. Effect on Small Business (initial regulatory flexibility analysis):**

The proposed rule changes are not expected to result in a significant economic impact on small businesses. Small business applicants account for an estimated 10% of all waterways permit applicants. Language related to exemption standards and permit requirements and review factors in the proposed rule is not predicted to significantly change exemption or permit eligibility or application requirements. The proposed changes bring the rule language up to date with current statutory requirements and program practices. This rule does not affect administrative fees associated with permit applications.

## **12. Agency Contact Person:**

Tom Pearce  
Wisconsin DNR  
101 S. Webster St.  
(608) 800-1643  
Thomas.Pearce@wisconsin.gov

## **13. Place where comments are to be submitted and deadline for submission:**

A public comment period on the draft rule occurred from July 1 to August 1, 2024, with public hearings on July 30 and 31, 2024.

## **RULE TEXT**

**SECTION 1.** NR 320 is repealed and recreated to read:

### **Chapter NR 320**

#### **Waterways Structures and Crossings**

**NR 320.01 Purpose.** The purpose of this chapter is to establish reasonable procedures and limitations for exempt activities, general permits, and individual permits for all of the following activities in order to protect the public rights and interests in the navigable, public waters of the state as defined in s. 30.10, Stats., in furtherance of the State's duties under Wisconsin's Public Trust Doctrine:

(1) Placement of bridges and culverts in or over navigable waterways as regulated under s. 30.123, Stats.

(2) Placement of fish and wildlife habitat structures in navigable waterways as regulated under s. 30.12 (1), (1g) (a), (c), and (d), (2m), (3b), and (3m), and 30.20 (1g) (b) 1. and 2., Stats.

(3) Construction of piers, boat shelters, swimming rafts, and similar structures on the beds of navigable waterways as aids to navigation as regulated under ss. 30.12 and 30.13, Stats.

(4) Placement of shore erosion control structures in inland lakes and impoundments and Great Lakes as regulated under s. 30.12, Stats.

(5) Placement of structures in navigable waterways other than those regulated in subs. (1) through (4) and as regulated under s. 30.12 (1g), (1p), (3) (a), (d), and (3m), Stats.

**NR 320.02 Applicability. (1) BRIDGES AND CULVERTS PLACEMENT.** This chapter applies to construction, placement, and maintenance of bridges and culverts in or over navigable waterways as regulated under s. 30.123, Stats. Any person that intends to construct, place, or maintain a bridge or culvert in or over any navigable waterway shall comply with all applicable provisions of this chapter and any permit issued under this chapter.

**Note:** A permit that is granted under this chapter does not constitute review or authorization of floodplain effects. Where bridge or culvert activities occur in a mapped floodplain, permits will be required from the local municipality. The permittee may incur responsibility and liability for any direct or indirect damage caused or resulting from the presence of the bridge or culvert.

**(2) FISH AND WILDLIFE HABITAT STRUCTURES PLACEMENT.** This chapter applies to construction, placement, and maintenance of fish and wildlife habitat structures regulated under ss. 30.12 (1), (1g) (a), (c), and (d), (2m) and (3m) and 30.20 (1g) (b) 1. and 2., Stats. Any person that intends to construct, place, or maintain a fish or wildlife habitat structure in any navigable waterway shall comply with all applicable provisions of this chapter and any permit issued under this chapter.

**(3) PIERS, BOAT SHELTERS, AND SWIMMING RAFTS PLACEMENT.** This chapter applies to all piers, boat shelters and swimming rafts constructed or maintained by riparians on the beds of navigable waterways for the purpose of providing improved navigation access to those waterways. under ss. 30.12, 30.13, 30.20 (1g) (b) 1, and 227.11, Stats.

**(4) SHORE EROSION CONTROL STRUCTURES PLACEMENT.** Except as provided in s. 30.2023, Stats., this chapter applies to construction, placement, and maintenance of shore erosion control structures regulated under s. 30.12 (1), (1g) (a), (i), (j), (jm), and (k), (2m), (3) (a) 3c., 3g., 3r., 13, (3m), and 30.20 (1g) (b) 1., Stats. Any person that intends to construct, place, or maintain a shore erosion control structure in any inland lake or impoundment, any Great Lake or outlying water, or any river or stream shall comply with all applicable provisions of this chapter and any permit issued under this chapter.

**(5) MISCELLANEOUS STRUCTURES PLACEMENT.** This chapter applies to construction, placement, and maintenance of boat landings, dry fire hydrants, fords, intake and outfall structures, pilings, pea gravel blankets, and weed rakes regulated under ss. 30.12 (1g) (a), (g), (h), and (km), (3) (a) 1., 4., 5., (d), and (3m), and 30.20 (1g) (b) 1., Stats., and to all other structures constructed, placed, or maintained in navigable waterways. Any person who intends to construct, place, or maintain a structure in any navigable waterway shall comply with all applicable provisions of this chapter and any permit issued under this chapter.

**NR 320.03 Definitions.** In this chapter:

**(1)** “Area of special natural resource interest” has the meaning given in s. 30.01 (1) (am), Stats.

**Note:** Information and lists can be obtained by contacting the department or found on the department’s website at <https://dnr.wisconsin.gov>, keyword “Waterway and Wetland Permits”.

**(2)** “Backwater” means the increase in the water surface elevation that results from a bridge and any associated road fills under average water flow conditions.

**(3)** “Bank” means a soil slope rising less than 10 feet above the bed of a waterway as measured from the bank toe.

**Note:** See s. NR 320.11 (2), Table 1 for a diagram.

**(4)** “Bank cover” means a man-made structure composed of biological or inert materials designed to provide overhanging cover habitat for fish in streams.

**(5)** “Bank toe” means the break in slope at the foot of a bank where it meets the bed.

**(6)** “Bankfull height” or “maximum bankfull height” means the elevation at which water, when it has filled the principal channel of a stream, is just beginning to flow over the adjacent bank(s) and onto the floodplain.

**(7)** “Bankfull width” means the distance between the bankfull height on either side of a stream.

**(8)** “Biological materials” means living or organic materials that are biodegradable such as native grasses, sedges, forbs, shrubs, and trees; live stakes and posts; non-treated wood; jute netting; fiber rolls and mats; logs; and branches.

**(9)** “Biological shore erosion control structure” means a shore erosion control structure that relies solely on biological materials.

**(10)** “Bluff” means the edge and face of land closest to a body of water, generally higher than 10 feet as measured from the bank toe, and high enough to contain multiple layers of soil and/or groundwater seepage.

(11) “Boat landing” means a structure installed on the bed and bank of a navigable waterway for the purpose of launching and landing a watercraft.

(12) “Boat shelter” has the meaning given in s. 30.01 (1c), Stats.

(13) “Boulder placement” means one or a cluster of large rocks, each greater than 10 inches in diameter, placed in a stream to improve habitat.

(14) “Bridge” has the meaning given in s. 30.01 (1g), Stats.

(15) “Channel” means the area between the defined bed and banks of a stream.

(16) “Clearance” means the vertical distance between the inside top of a culvert or the bottom of the lowest member of the bridge span and the ordinary high water mark of the waterway.

(17) “Clear span bridge” means a continuous span of which no portion of the bridge piling or other supporting structure may be located within the channel except for abutment protection.

(18) (a) “Commercial marina” means a facility, publicly or privately owned, that provides moorings for watercraft including allocations for public or private use.

(b) “Commercial marina” includes a facility that does any of the following:

1. Charges a mooring fee for slip rental on a seasonal basis.
2. Maintains piers for transient usage and has slip capacity exceeding the standard slip density allowances under s. 30.12 (1g) (f) 1. c., Stats.

(c) “Commercial marina” does not include properties with common ownership such as condominium associations.

(19) “Comprehensive plan” means a plan that includes all of the following:

- (a) Data on water resources, including public rights and interests in navigable waters.
- (b) Data on existing and potential uses of the water body and any use impairments.
- (c) Alternatives and recommended actions to protect or restore water resources or allocate uses of the water body.

(20) “Crossing” means a bridge, culvert, or ford used to traverse a stream.

(21) “Dam” has the meaning given in s. NR 333.03 (3).

(22) “Department” means the department of natural resources.

(23) “Dry fire hydrant” means a structure or device to which a fire hose can be connected that is constructed below the ordinary high water in a navigable waterway for the purpose of providing water for fighting fires.

**(24)** (a) “Enclose” means a condition created when a structure or crossing is placed in or over a waterway in a manner that completely blocks or prevents typical public navigational or recreational access to a portion of the waterway, and for which there are no alternate public access opportunities.

(b) “Enclose” does not include placement of a culvert or bridge that has been granted a waiver to navigational clearance requirements under s. NR 320.08 or authorizations to enclose a navigable waterway under s. 30.196, Stats.

**(25)** “Erosion intensity” or “EI” means the degree of erosion as estimated under s. NR 320.11 (2).

**(26)** “Fish crib” means a man-made 3-dimensional habitat structure composed of biological or inert materials designed specifically to attract and concentrate fish.

**(27)** “Fish habitat structure” means a fish crib, spawning reef, wing deflector, boulder placement, weir, lunker, half-log, rock, brush bundle, cross channel log, skyhook, rock deflector, coconut fiber roll, cross vane, root wad, fish stick, or similar device that is placed on the bed of a navigable water for the purpose of improving fish habitat.

**(28)** “Fish stick” means a large woody habitat structure made of whole trees that may be grouped or attached together and is anchored to the shore, bed, or bank of a lake and may be partially or fully submerged near the shoreline.

**(29)** “Ford” means a structure consisting of rock or gravel placed on the bed of a stream to facilitate crossing the stream, and placed in a manner that mimics the natural bed elevation of the stream.

**(30)** “Frozen conditions” means when a waterway is covered with ice thick enough to support vehicles.

**(31)** “Grading” means the physical disturbance of the bank by the addition, removal, or redistribution of soil.

**(32)** “Half-log” means a man-made structure composed of a log sawed lengthwise and anchored flat side down to the bottom of a lake or stream using steel rods for the purpose of providing habitat for fish.

**(33)** “Hard armoring” means a shore erosion control structure that relies solely on inert materials and includes but is not limited to riprap and seawalls.

**(34)** “High energy site” means a site where the storm-wave height calculated under s. NR 320.11 (1) is greater than or equal to 2.3 feet or where the erosion intensity score calculated under s. NR 320.11 (2) is greater than 67.

**(35)** (a) “Impoundment” means the pool of water created by a dam.

(b) “Impoundment” does not include any of the following:

1. Waters upstream of a pool that are raised but in an original channel.
2. The entire Mississippi River in Wisconsin.



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

(37) “Intake or outfall structure” means a structure located on the bank or bed of a navigable waterway below the horizontal plane of the ordinary high water mark that is used to divert water from the waterway for purposes other than irrigation or to discharge water to the waterway.

(38) “Line of navigation” has the meaning given in s. 30.01 (3c), Stats.

(39) “Littoral drift” means the sedimentary material that moves in the zone of waves breaking on the shore because of waves and current.

(40) “Low energy site” means a site where the storm-wave height calculated under s. NR 320.11 (1) is less than 1.0 foot or where the erosion intensity score calculated under s. NR 320.11 (2) is 47 or less.

(41) “Low flow conditions” means when a stream is flowing at an elevation below the OHWM and is able to be de-watered or temporarily re-routed to facilitate dry in-stream construction activities necessary to prevent adverse water quality impacts.

(42) “Maintain” as it relates to a structure, means to repair, own, or possess all or a portion of a structure.

(43) “Maximum toe elevation” means the elevation of the bank toe mark plus the storm-wave height estimated under s. NR 320.11 (1) or as allowed under s. NR 320.04 (12) (g).

(44) “Moderate energy site” means a site where the storm-wave height calculated under s. NR 320.11 (1) is greater than or equal to 1.0 foot but less than 2.3 feet, or where the erosion intensity score calculated under s. NR 320.11 (2) is 48 to 67.

(45) “Most flow conditions” means flows experienced in a channel that are equal to or less than bankfull discharge.

(46) “Municipality” means any town, village, city, or county in this state.

(47) “Navigable waterway” has the meaning given in s. 30.01 (4m), Stats.

**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 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).

(48) (a) “Nesting structure” or “wildlife habitat structure” means any structure or device constructed for the purpose of improving nesting habitat for wildlife, including birds, mammals, amphibians, and reptiles.

(b) “Nesting structure” or “wildlife habitat structure” includes wood duck houses, floating or fixed nesting platforms, backwater hooks, basking logs, escape logs, turtle or snake hibernacula, and vertical bird nesting banks.

(49) “Offshore” means located a minimum of 10 horizontal feet waterward from the ordinary high water mark.

(50) (a) “Open to the general public” means available to any person conditioned only upon the payment of a reasonable fee.

(b) “Open to the general public” does not include conditions that require purchase of a boat, boat slip, parcel of property, condominium unit, or membership in a club or organization.

(51) “Ordinary high water mark” or “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 by erosion, destruction of terrestrial vegetation, or other easily recognizable characteristic.

(52) “Outlying waters” has the meaning given in s. 29.001 (63), Stats.

(53) “Pea gravel” means an open graded coarse aggregate formed by the natural disintegration of numerous types and colors of rocks by glacial or streambed action into primarily round particles that are produced by washing and screening natural gravel with particles sized from one-half inch (12.5 mm) to number 8 mesh (2.36 mm).

(54) (a) “Pea gravel blanket” means a layer of pea gravel less than 6 inches in depth that is placed on the bed of a navigable lake, pond, or flowage to facilitate recreational purposes under s. 30.12 (3) (a) 1., Stats.

(b) “Pea gravel blanket” does not include the placement of sand or filter fabric.

(55) (a) “Perched culvert” means a culvert whose inlet or outlet elevation is higher than the streambed elevation.

(b) “Perched culvert” includes culverts with inverts higher than the natural streambed profile or higher than the lower vertical adjustment potential of the streambed.

(56) “Permanent breakwater” means a structure constructed of stone, rock, concrete, or other similar materials and located offshore for the purpose of diminishing the force of the waves and protecting the shoreline.

**Note:** These structures can be designed to provide fish and wildlife habitat in addition to erosion control by incorporating vegetation on the breakwater and in the nearshore zone. Examples of permanent breakwaters include stone dikes, barrier islands, stone islands, and submerged offshore shoals.

(57) “Pier” has the meaning given in s. 30.01 (5), Stats.

(58) “Pierhead line” means a line established by a municipality under s. 30.13, Stats., subject to approval by the department, in the water adjacent and roughly parallel to a shoreline for the purpose of creating uniformity in the length of piers extending from the shoreline into the waterway.

(59) “Piling” has the meaning given in s. 30.01 (5m), Stats.

(60) “Portage” means an overland route for manually carrying boats and supplies around a waterway crossing that does not provide at least 5 feet of navigational clearance as described in s. NR 320.08.

**(61)** “Reasonable fee” means a fee comparable to that charged the general public for similar facilities on the waterway or a similar waterway in the vicinity.

**(62)** (a) “Recreational structure” means a structure commonly used for water-based recreational purposes.

(b) “Recreational structure” includes water slides, basketball hoops, volleyball nets, and similar items.

(c) “Recreational structure” does not include seasonal or permanent boat shelters under sub. (11), piers under sub. (55), or swimming rafts under sub. (73).

**(63)** (a) “Replacement” means a degree of structural changes to a structure by which some or all of the structure is being removed and recreated.

(b) 1. For seawalls, “replacement” includes removal and recreation of a portion of the seawall down to or at the footing of the structure.

2. For riprap, “replacement” includes removal and replacement of filter fabric or the base substrate.

**(64)** “Riparian” means an owner of land abutting a navigable waterway.

**(65)** “Riparian zone” has the meaning given in s. 30.01 (5r), Stats.

**(66)** “Riprap” means a layer or layers of rocks, including filter material, placed on the bed or bank of a navigable waterway to prevent erosion, scour, or sloughing of the existing bank.

**(67)** “Root wad” means a structure constructed from interlocking tree materials that may include the root ball and a portion of the trunk, and that is placed to provide fish habitat or shoreline stabilization.

**(68)** “Seasonal boat shelter” means a boat shelter meeting the definition given in s. 30.01 (1c), Stats., for which the roof is completely removed from the waterway annually between December 1 and April 1.

**(69)** “Seawall” means an upright structure that is steeper than 1 foot horizontal to 1.5 foot vertical (1H:1.5V) and is installed parallel to the shore to prevent sliding or slumping of the land and to protect the adjacent upland from wave action.

**Note:** Seawalls are commonly constructed of timber, rock (including gabions), concrete, steel, or aluminum sheet piling, and may incorporate biological components.

**(70)** (a) “Scientific monitoring and sampling device” means a device commonly used to gather scientific data.

(b) “Scientific monitoring and sampling device” includes data loggers, staff gauges, fish sampling nets, fish tracking devices, and other similar equipment.

(71) (a) “Shore erosion control structure” means a structure with defined shape, size, form, and utility constructed and maintained for the purpose of protecting a shoreline from erosion.

(b) “Shore erosion control structure” includes vegetated armoring and hard armoring.

(72) (a) “Solid pier” means a structure, not allowing for the free flow of water beneath, extending into the water from the shore to serve as an aid to navigation.

(b) “Solid pier” does not include a pier that uses rock filled cribs or similar types of devices as foundation.

**Note:** Such foundations require permits under s. 30.12, Stats.

(73) “Spawning reef” means an expanse of rock below the surface of the water used by fish for spawning.

(74) “Storm-wave height” means the wave height estimated under s. NR 320.11 (1).

(75) “Swimming raft” has the meaning given in s. 30.01 (6e), Stats.

(76) “Temporary breakwater” means an offshore structure consisting of biological components, such as jute, fiber rolls, willow stakes, branchbox breakwater, or a structure consisting of inert components that will be removed after a set period of time.

**Note:** Temporary breakwaters are placed for the purpose of providing an area of quiescent water when new erosion protection designs and shoreland plant installations are becoming established. Biological temporary breakwater designs degrade naturally, and examples include branchbox breakwaters and fiber rolls.

(77) “Temporary stream crossing” means any private or public structure placed over or within the channel of a navigable stream to provide a walkway or roadway for pedestrians, animals, or vehicles and is removed after the use is concluded.

(78) “Temporary in-water containment practice” means a device commonly used to contain turbidity or other materials within a project area during or immediately after construction activities or site disturbances, including turbidity curtains, turbidity barriers, and containment booms.

(79) “Toe” means the most waterward edge of a structure.

(80) “Tree drop” means a human-made structure created by a tree placed into the water for the purpose of providing habitat for fish.

(81) “Vegetated armoring” means a shore erosion control structure that combines biological and inert materials and includes three types: integrated toe protection, vegetated-riprap, and vegetated-geogrids.

(82) “Wave height” means the vertical distance between the wave crest and wave trough.

(83) “Weed rake” means an appurtenance, attached to a structure such as a pier or piling, designed to mechanically remove aquatic plants by the movement of rake tines attached to a floating boom without grubbing, lifting, or rolling of the bottom sediments.

(84) “Wetland” has the meaning given in s. 23.32 (1), Stats.

(85) (a) “Wing deflector” means a man-made structure composed of biological or inert materials placed in a stream to deflect stream flow and modify a stream channel for the purpose of providing habitat for fish.

(b) “Wing deflector” does not include a stream bar, jetty, or rock pier.

**NR 320.035 Statute definitions.** (1) For purposes of s. 30.133, Stats.:

(a) “Similar conveyance” means any transfer other than an easement in excess of 2 years.

(b) “Similar conveyance” does not include a lease of a marina facility to an operator of the facility.

(2) In s. 30.12 (1g) (c), Stats., “similar device” means a man-made structure composed of biological or inert materials designed specifically for the purpose of providing habitat for fish, including tree drops, half-logs, and brush bundles.

**NR 320.04 Exemptions.** (1) **APPLICABLE ACTIVITIES.** This section applies to the exempt structures and crossings listed in ss. 30.12, 30.123, and 30.13, Stats. A structure or crossing that meets the general standards in sub. (3) and the relevant structure or crossing specific standards in subs. (4) to (16) shall be exempt under s. 30.12 (1g), 30.123 (6) (d), or 30.13 (1) or (1m), Stats.

(2) **PROCEDURES.** The department shall process exemptions according to the procedures in ch. NR 300.

(3) **GENERAL STANDARDS.** (a) A structure or crossing in a navigable waterway that meets the general standards in this subsection and the relevant structure or crossing specific standards in subs. (4) to (15) shall be exempt under s. 30.12, 30.123, or 30.13, Stats.

**Note:** Federal or local permits or approvals may be required. A person is responsible for requesting and obtaining all necessary federal, state, and local permits or approvals for their structure or crossing.

(b) Except as otherwise provided in the structure or crossing specific standards in this section, a structure or crossing may not be located in an area of special natural resource interest as defined in s. 30.01 (1am), Stats., or a public rights feature under s. NR 1.06.

(c) Except as otherwise provided in the structure or crossing specific standards under subs. (4) to (16), if a structure or crossing is placed in a navigable waterway, a structure or crossing may be placed and maintained only by a riparian and the activity shall be placed entirely within the riparian’s zone of interest as determined by one of the methods outlined in s. NR 320.09. This paragraph does not apply to a culvert placed under s. NR 320.04 (10).

(d) Except as otherwise provided in the structure or crossing specific standards under subs. (4) to (16), a one-time deposit of sand, gravel, or stone under s. 30.12 (1g) (a), Stats., may be associated with the placement of a structure provided the deposit is limited to the area immediately underneath or adjacent to the structure and is less than 2 cubic yards.

(e) Dredging is allowable up to the amount necessary to place a structure or crossing under s. 30.20 (1g) (b) 1., Stats.

(f) Construction shall be accomplished in such a manner as to minimize erosion and siltation into surface waters and wetlands. All erosion control measures shall meet or exceed technical standards under subch. III of ch. NR 151. Any area where topsoil is exposed during the project shall be immediately seeded and mulched to stabilize disturbed areas and prevent soils from being eroded and washed into the waterway.

**Note:** Land disturbance and vegetation removal should be kept to the minimum area necessary to implement the project. Such disturbance may be regulated through local shoreland zoning regulations or under s. 30.19, Stats.

(g) 1. Except as otherwise provided in the structure or crossing specific standards under subs. (4) to (16), to minimize adverse impacts on fish movement, fish spawning, and egg incubation periods, in-water work may not occur during any of the following time periods unless timing restrictions have been waived by the department:

a. September 15<sup>th</sup> through May 15<sup>th</sup> for all trout streams identified on DNR published maps.

**Note:** To determine if a waterway is a trout stream, you may use the department trout stream maps at <https://dnr.wisconsin.gov>, keyword “trout stream maps.”

b. September 15<sup>th</sup> through June 15<sup>th</sup> on all Great Lakes tributaries upstream to the first dam or barrier.

c. November 1<sup>st</sup> through June 15<sup>th</sup> for Lake Michigan waters surrounding Door County, including Green Bay and all harbors and bays.

d. September 15<sup>th</sup> through July 1<sup>st</sup> for Lake Superior waters surrounding Douglas County, including St. Louis River and all harbors and bays.

e. March 1<sup>st</sup> through June 15<sup>th</sup> for all other waters.

2. A person may request a waiver for the fish timing restrictions in subd. 1. through the voluntary exemption determination request process under s. NR 300.04 (4).

**Note:** For a voluntary exemption determination request under s. NR 300.04 (4), the potentially exempt project proponent submits basic project information in writing to the department and the department makes a determination within 15 days. See <https://dnr.wisconsin.gov>, keyword “waterway permitting process” for specific details.

(h) Any grading, excavation, and land disturbance shall be confined to the minimum area necessary for construction.

(i) All project equipment shall be decontaminated for removal of invasive species prior to and after each use on the project site by following the most recent department approved washing and disinfection protocols to comply with ch. NR 40.

**Note:** Current protocols can be found on the department website at <https://dnr.wisconsin.gov>, keyword “invasives disinfection.”

**(4) SEASONALLY PLACED AND TEMPORARY STRUCTURES STANDARDS.** In addition to the standards under sub. (3), seasonally placed structures, including recreational structures, scientific monitoring and sampling devices, and temporary in-water containment practices shall meet all of the following requirements:

(a) Structures shall be placed only on a seasonal or temporary basis and shall be removed when the intended use has ended.

(b) Structures shall be placed between the shoreline and the line of navigation unless authorized by the department through submittal of an exemption determination request under s. NR 300.04 (4).

(c) Structures shall be placed in a manner that does not cause suspension of bottom sediments.

(d) Recreational structures may not exceed a total surface area of 25 square feet.

(e) Structures are not benthic barriers or similar structures intended to shade plants.

**(5) PLACEMENT OF TEMPORARY STREAM CROSSINGS ON NAVIGABLE STREAMS STANDARDS.** In addition to the standards under sub. (3), temporary stream crossings on navigable streams shall meet all of the following requirements:

(a) The temporary stream crossing shall be used to provide temporary access to an area for the primary purpose of engaging in normal forest management activities, including those activities that are undertaken on forest land to establish, maintain or enhance a forest. These activities include planting trees, thinning and trimming trees, and harvesting timber and other forest products. These activities do not include cutting firewood exclusively for personal use.

(b) The temporary in-stream crossing may only span a navigable stream that is less than 10 feet wide, measured from ordinary high water mark to ordinary high water mark. Temporary clear span bridges are not subject to this width limitation.

(c) Provided no in-water work is proposed as part of the project, temporary clear span bridges may be placed and removed during the time periods identified in sub.(3) (g).

(d) The temporary stream crossing may not be located on a wild river designated under s. 30.26, Stats.

(e) The temporary stream crossing shall consist only of timber mats, poles, small logs, culverts, pipes, or similar structures that are placed side by side in, on, or over the stream channel and firmly anchored to the bank to prevent the crossing from being transported downstream during flood conditions. If one or more culverts are used in the crossing, it shall not be placed with any permanent materials such as sand, gravel, or rock.

(f) The temporary stream crossing shall be placed parallel to the stream flow.

(g) The temporary in-stream crossing shall be placed and removed only during frozen or low flow conditions.

(h) The timber mats, poles, small logs, culverts or pipes shall be secured together using cables, chains, bands, fasteners, or other methods, prior to installation to facilitate removal.

(i) The temporary stream crossing shall be removed after the project requiring temporary access is completed or 160 days after installation, whichever occurs first.

(j) The temporary stream crossing shall be installed and removed a single time within the allowable use period and in compliance with the time periods specified in sub. (3) (g), if applicable.

(k) Compliance with the provisions under this paragraph constitutes a waiver of the navigational clearance requirements under s. NR 320.09, provided that the property owner provides a marked navigational portage route around the temporary crossing while the structure remains in place.

**(6) FISH HABITAT STRUCTURES STANDARDS.** In addition to the standards under sub. (3), fish habitat structures shall meet all of the following requirements:

(a) *Purpose.* The fish habitat structure shall be placed for the purpose of improving fish habitat.

(b) *Conservation practice standard.* Except as otherwise provided in the fish habitat structure specific standards in pars. (d) to (k) the fish habitat structure shall meet the appropriate natural resources conservation service conservation practice standard 395 Stream Habitat Improvement and Management.

(c) *Reporting.* The riparian shall report the placement of the structure to the local department fisheries biologist within 30 days after placement. The report shall contain a description of the project and its purpose, the name of the waterway, and a map showing where the structure was placed.

**Note:** A list of the local department fisheries biologists is available at department service centers and on the department's website at <https://dnr.wisconsin.gov/>, keyword "Fisheries Management and Habitat Protection."

(d) *Fish crib standards.* In addition to the standards under pars. (a) to (c) and sub. (3), fish cribs shall meet all of the following requirements:

1. The fish crib does not have to meet the riparian zone standard in s. NR 320.04 (3) (e). If a fish crib is placed beyond the line of navigation, the riparian shall receive permission from a neighboring riparian to place the structure.

2. The fish crib shall have a minimum of 5 feet of water over the top of the structure. The depth of water over the fish cribs shall be based on the normal lowest water level condition during a calendar year.

3. Except for fastening and anchoring devices, the fish crib shall be constructed of biological materials.

4. The dimensions of the fish crib shall be no larger than 8 feet tall by 8 feet long by 8 feet wide.

5. The fish crib may not be placed within 100 feet of swimming beaches or swimming rafts.

6. The fish crib may not be located in soft sediment or muck that is greater than 12 inches in depth.

7. The fish crib may not be placed where the bottom contour of the waterway exceeds a slope of



4-foot horizontal to one-foot vertical (4H:1V).

8. The fish crib shall be adequately anchored to prevent movement.

(e) *Spawning reef standards.* In addition to the standards under pars. (a) to (c) and sub. (3), spawning reefs shall meet all of the following requirements:

1. The waterbody into which a spawning reef is placed has a history of naturally reproducing walleye or sauger. Walleye Waters and history of natural reproduction can be identified on the department's Surface Water Data Viewer at <https://dnrmapping.wi.gov/H5/?viewer=SWDV>.

2. The spawning reef shall be constructed of an aggregate of clean, uncrushed gravel and rock from 2 to 8 inches in diameter, in a ratio of approximately 30 percent of the gravel or rock ranging from 2 to 4 inches in diameter and approximately 70 percent ranging from 4.1 to 8 inches in diameter.

3. The spawning reef shall be placed in a linear form parallel to the shore.

4. The spawning reef shall be no longer than 100 feet along the shoreline and no wider than 30 feet perpendicular to shore and may not be placed beyond 100 feet from shore.

5. The spawning reef shall be placed where water depths range from 0 to 5 feet.

6. The spawning reef may not be placed where the bottom contour of the waterway exceeds a slope of 4-foot horizontal to one-foot vertical (4H:1V).

7. The spawning reef may not be placed where the bottom substrate composition consists of less than 90 percent clean sand.

**Note:** A natural walleye spawning reef generally consists of substrates 2 to 8 inches in diameter with rounded edges. A Natural walleye spawning reef is located adjacent to gently sloping shorelines in shallow water and require a moderate amount of wave action to keep the substrate clean of algae and provide adequate water circulation for incubating eggs. The requirement of 90 percent clean sand indicates a lack of spawning habitat, the appropriate wave action, and substrate capable of supporting the reef. If the water depth remains less than 5 feet and the bottom contour remains less than 10H:1V, a maximum location of 100 feet from shore is required to reduce navigation concerns.

8. Any person placing a spawning reef shall, within 30 days after placement, provide written notice to the president or chair of any lake association, property owners association, or lake district for the affected lake. The notice shall include a description of the spawning reef and include a lake map identifying the exact location of the reef. The person is also responsible for posting a laminated copy of the same map, within 30 days after placement, at all public boat landings on the waterbody where the reef is located for a period of not less than one year.

(f) *Wing deflector standards.* In addition to the standards under pars. (a) to (c) and sub. (3), wing deflectors shall meet all of the following requirements:

1. Design and placement of a wing deflector shall follow the recommendations in *Guidelines for Management of Trout Stream Habitat in Wisconsin* by Ray J. White and Oscar M. Brynildson, Wisconsin Department of Natural Resources.

**Note:** Copies of these publications may be inspected by contacting the local department fisheries

biologist or public library.

2. The wing deflector may not extend more than 25 percent across the stream width.

(g) *Tree drop standards.* In addition to the standards under subs. (3) and (6), tree drops shall meet all of the following requirements:

1. The tree drop shall consist of live or recently live trees harvested within a year of placement and having a basal diameter of at least 8 inches.

2. The tree drop shall be securely anchored to the shore at intervals no less than 50 feet apart.

(h) *Half-log standards.* In addition to the standards under pars. (a) to (c) and sub. (3), half-logs shall meet all of the following requirements:

1. The half-log shall be constructed from live or recently live trees harvested within a year, with a minimum diameter of 10 inches and spacers may not exceed 12 inches in height.

2. The half-log shall be placed where the bottom substrate composition consists of sand or gravel, or both.

3. The half-log may not be placed in water deeper than 5 feet.

4. The half-log, if placed in a lake or flowage, may not be located more than 100 feet from shore or within 100 feet of a swimming raft.

(i) *Fish stick standards.* In addition to the standards under pars. (a) to (c) and sub. (3), fish sticks shall meet all of the following requirements:

1. The fish stick does not have to meet the riparian zone standard in s. NR 320.04 (3) (e). If a fish crib is placed beyond the line of navigation, the riparian shall receive permission from a neighboring riparian to place the structure.

2. The fish stick shall be placed to allow for at least 150 feet of open water navigation from the end of the fish stick structure to the line of navigation associated with the opposing shoreline.

3. The fish stick shall be placed at least 100 feet away from all of the following:

a. A bridge or dam.

b. A municipal or commercial marina.

c. A designated swimming area that is open to the public that is marked by buoys, ropes, or postings along the shore, including a publicly accessible swimming area on private land.

d. A publicly accessible boat ramp and any pier associated with the boat ramp that is solely for the purpose of loading and unloading watercraft.

e. A designated carry-in only watercraft access point.

4. A portion of the fish stick structure must be placed and anchored within 20 feet from the bank

toe or in water depths less than or equal to 3 feet based on normal summertime lows.

5. A portion of the fish stick structure must be placed and anchored within 20 feet from the bank toe or in water depths less than or equal to 3 feet based on normal summertime lows.

6. There are no restrictions on the placement distance landward of the bank toe.

7. Installation of a fish stick must use live or recently live trees harvested within a year of placement.

8. If whole trees are grouped, attached, or anchored together, the resulting structure must include a minimum of 1 tree with a basal diameter of at least 8 inches. If a single tree is used its basal diameter must be at least 8 inches.

(j) *Root wad standards.* In addition to the standards under pars. (a) to (c) and sub. (3), root wads shall meet all of the following requirements:

1. The root wad may only be placed on a stream reach with a gradient slope of 5 percent or less.
2. The root wad shall not extend past 25 percent of the stream width.
3. The root wad shall be placed with the root wad fan on a 45 to 60 degree angle relative to the current pointing upstream to prevent excessive erosion.
4. The root wad shall be anchored in an appropriate manner to keep from floating downstream.

**Note:** Duckbill anchoring and ground anchoring are the most common methods of anchoring. Please see NRCS National Engineering Handbook, Part 654 Stream Restoration Design, Technical Supplement 14E, Use and Design of Soil Anchors for reference.

5. The root wad shall be placed 100 feet or greater from all the following:

- a. A municipal or commercial marina.
- b. A designated swimming area that is open to the public that is marked by buoys, ropes, or postings along the shore, including a publicly accessible swimming area on private land.
- c. A publicly accessible boat ramp and any pier associated with the boat ramp that is solely for the purpose of loading and unloading watercraft.
- d. A designated carry-in only watercraft access point.

(k) *Boulder placement standards.* In addition to the standards under pars. (a) to (c) and sub. (3), boulder placements shall meet all of the following requirements:

1. The boulder placement may only be installed in wadable streams at least 10 feet in width as measured at bankfull width.

**Note:** Wadable streams are streams, creeks, and small rivers that are shallow enough to be sampled using methods that involve wading into the water. They typically include waters classified as 1<sup>st</sup> through 4<sup>th</sup> order, and sometimes 5<sup>th</sup> order, in the Strahler Stream Order classification system (based on

the number of tributaries upstream).

2. Three to seven boulders may be included in a boulder cluster and shall consist of natural rock of similar size.

**Note:** A spacing distance of 6 inches to 3 feet between each boulder is recommended.

3. Each boulder cluster shall be spaced 12 to 15 feet apart.

4. The boulder placement shall be isolated in the stream cross section and profile to prevent a backwater effect that could alter the bankfull discharge elevation or create upstream sedimentation of aquatic habitat.

5. The boulder placement shall not take up more than 30 percent of stream width, as measured at bankfull width, and may not cause a material obstruction to navigation.

6. The boulder placement shall not be placed at the head of a riffle and shall be placed to avoid additional flow into unstable bank areas that may result in increased bank erosion.

**Note:** Habitat performance may differ over time due to finer particle substrates with boulders getting covered.

**(7) WILDLIFE HABITAT STRUCTURES STANDARDS.** In addition to the standards under pars. (a) to (c) and sub. (3), wildlife habitat structures shall meet all of the following requirements:

(a) The nesting structure shall be placed for the purpose of improving wildlife habitat.

(b) The surface area of a nesting structure may not exceed 25 square feet.

(c) The nesting structure shall be designed and constructed of unpainted wood or of materials that are non-gloss earthtone colors that blend into a natural shoreline setting during leaf-on condition.

**(8) PIERS AND WHARVES STANDARDS.** In addition to the standards in sub. (3), piers and wharves shall meet all of the following requirements:

(a) The piers or wharf may be placed in an area of special natural resource interest, as described in s. 30.01 (1am), Stats., or in a public rights feature under s. NR 1.06, if placed in accordance with s. 30.13 (1), Stats.

(b) The pier or wharf may not extend into the water from the shoreline beyond the line of navigation, beyond the pierhead line, or beyond the length of the boat using the pier, whichever is farther from the shoreline, unless it can be demonstrated that the boat or boat hoists adjacent to the pier require a greater depth of water to operate.

**Note:** The depth of water necessary for nonfixed keel sailboats is measured with the centerboard or dagger boards raised.

(c) The pier or wharf may have the number of boat slips as described under s. 30.12 (1g) (f) 1. c., Stats.

**Note:** The initial 2-slip allotment is based on any frontage up to 50 feet. Each successive slip is allocated at a rate dependent on additional frontage in full 50' increments.

(d) The pier or wharf may not totally enclose any portion of a navigable waterway.

(e) The pier or wharf may not interrupt the free movement of water nor cause the formation of land by deposition of littoral drift upon the bed of the water.

**Note:** Adverse impacts of structures to navigable waterways can be minimized by reducing the surface area of those structures to that which is necessary to facilitate the use and by concentrating structure placement to one area along the shoreline. Piers and the allowable number of boat slips and personal watercraft slips should be placed as close together as practicable at a single location along a riparian's property.

(f) The timing restriction in s. NR 320.04 (3) (h) does not apply to a seasonally placed pier or wharf.

**(9) SEASONAL BOAT SHELTER STANDARDS.** In addition to the standards in sub. (3), seasonal boat shelters shall meet all of the following requirements:

(a) The seasonal boat shelter may be placed in an area of special natural resource interest, as described in s. 30.01 (1am), Stats., or in a public rights feature under s. NR 1.06, if placed in accordance with s. 30.13 (1), Stats.

(b) The seasonal boat shelter may not extend beyond the line of navigation or an approved pierhead line unless additional water depth is necessary for mooring a boat or using a boat hoist or boat lift.

(c) The seasonal boat shelter may not interfere with public rights and may not have a significant adverse effect on aquatic habitat.

(d) The seasonal boat shelter shall allow the free movement of water underneath the shelter and may not cause formation of land on the bed of the waterway.

(e) The seasonal boat shelter shall be designed and used exclusively for the berthing of a single watercraft.

(f) The seasonal boat shelter may not be more than 30 feet in length, unless its placement conforms with allowances under s. 30.01 (1c) (b), Stats.

(g) The seasonal boat shelter may not exceed an outside width of 14 feet.

(h) The seasonal boat shelter shall be connected to adjacent land by a pier placed in conformity with s. 30.12 or 30.13, Stats.

(i) The seasonal boat shelter may include a roof but may not include walls, sides, or equivalent construction unless placement of the shelter conforms with allowances under s. 30.01 (1c) (b), Stats.

(j) Seasonal boat shelter roofs shall be pitched not less than 1 foot nor more than 2.5 feet from the roof peak to the bottom of the eaves. Only the size and number of vertical components required to support the watercraft and any roof are permitted.

(k) Storage facilities may only be included above the eaves of the seasonal boat shelter.

(L) The seasonal boat shelter may include a single sign necessary to identify the property and lighting essential for safety and mooring.

(m) The number of boat shelters placed adjacent to a property is limited to one permanent and one seasonal shelter or 2 seasonal shelters for the first 100 feet or lesser amount of shoreline frontage. One additional seasonal shelter may be placed for each additional 50 feet of shoreline frontage in common ownership. In lieu of placing additional seasonal boat shelters beyond the initial allowance for the first 100 feet of shoreline frontage, a riparian may apply to the department for an individual permit to allow one additional permanent boat shelter for every additional 100 feet of shoreline frontage in common ownership. This paragraph shall apply to all permanent shelters and seasonal shelters originally placed after September 1, 1991.

(n) Permanent and seasonal boat shelters shall be placed as close together as practicable at a single location adjacent the riparian's property unless otherwise determined by the department through a voluntary exemption determination request under s. NR 300.04 (4).

(o) The timing restriction in s. NR 320.04 (3) (h) does not apply to a seasonally placed boat shelter.

**(10) CULVERT REPLACEMENT STANDARDS.** In addition to the standards in sub. (3), replacement culverts shall meet all of the following requirements:

(a) *Construction and design requirements.*

1. The replacement culvert shall be placed in substantially the same location as the culvert being replaced and may not have a lesser cross-sectional area than the existing culvert.

2. Individual waterway crossings consisting of a multiple-culvert design are not eligible under this exemption unless a waiver to this standard has been obtained through a voluntary exemption determination request under s. NR 300.04 (4).

3. The replacement culvert shall be adequately sized to protect stream hydrologic function and aquatic organism passage. Adequate culvert size may be determined through any of the following methods:

a. Using the culvert sizing methods outlined in s. NR 320.10 if the culvert area is calculated to be 20 square feet or less.

b. The placement of a single culvert sized to completely span bankfull width at a location that is representative of the stream width through the reach in question.

c. Duplicating the design or sizing of a downstream crossing that has been designed, constructed, or placed by the Department of Transportation or a municipality and that meets the performance objectives stated in subd. 4.

4. The replacement culvert shall be designed to mimic the natural streambed, stream channel, and stream gradient. The inverts of the replacement culvert shall be installed to sit below the natural streambed, which allows for deposition of natural materials. Water depths, widths, and velocities at the inlet and outlet shall match the natural stream channel under most flow conditions. Perched culverts are

not in compliance with the conditions under this subdivision.

**Note:** The Great Lakes stream crossing inventory may be used to identify locations of existing crossings that have been observed to cause ecological problems requiring attention at the time of replacement and can be viewed at <https://dnr.wisconsin.gov/>, keyword “Great Lakes stream crossing inventory.”

5. The replacement culvert shall not substantially disrupt aquatic species movements necessary to carry out life cycle functions. Perched culverts are not in compliance with the condition under this subdivision.

6. Construction activities below the ordinary high water mark of a waterway shall be continuous to the greatest extent practicable until the work is completed, and the site is stabilized. If periods of inactivity are unavoidable, the site shall be temporarily stabilized until the work is resumed and completed.

7. Excepting emergencies which constitute a threat to life, safety, or property, construction shall not take place during periods of high water to avoid flooding the construction site.

*(b) Installation practices to minimize environmental impacts.*

1. The replacement culvert shall be installed at least one foot beyond the road fill.

2. Operating construction equipment on the bed of the stream or below the ordinary high water mark is prohibited.

3. Vegetation, material, soil stockpiles, or equipment shall not be stored in wetlands unless authorized through applicable wetland exemptions or permits available under s. 281.36, Stats.

4. All fill material shall consist of clean suitable soil material, as defined under s. NR 500.03 (214), free from hazardous substances, as defined by s. 289.01 (11), Stats., and free from solid waste as defined under s. 289.01 (11) and (33), Stats.

5. Unless the waterway is dry for the duration of the construction activities, coffer dams shall be installed upstream and downstream of the project area and in conjunction with a method to maintain downstream flow.

6. Cofferdams and temporary diversion channels shall be constructed using non-erodible material and secured with rock or rock-bags at the bottom of the channel and top of the banks. Earthen coffer dams are not allowed.

7. Cofferdams shall be removed in such a way that minimizes the release of sediment and other downstream impacts, typically by removing the downstream coffer dam first then slowly removing the upstream coffer dam. Upon completion of culvert placement and stabilization, a bypass channel shall be restored to its original condition.

8. Pump intakes and discharges shall prevent impacts to fish and wildlife habitat and shall be placed to prevent the disturbance, removal, or scour of bed material.

9. Temporary bypass structures used to maintain streamflow, including diversion channels, pump bypass systems, or diverting to one culvert at a time, need to be adequately sized to prevent damage from

upstream flooding and downstream siltation, wash-out, or scouring.

10. Clean fill material shall be firmly compacted around the culvert, including coverage around the top of the culvert to at least one-third of the culvert diameter, or to a depth of 12 inches, whichever is greater.

11. Geotextile fabric or a coarse-grained filter bedding shall be placed and covered with clean riprap 6 to 24 inches in diameter around the culvert inlet and outlet.

12. Obstructions in the culvert such as accumulated brush, debris, or other obstructions shall be removed to prevent environmental impacts, such as exacerbated flooding or culvert failure.

**Note:** A city, village, town, or county must keep records of culverts replaced pursuant to this exemption in accordance with s. 30.123 (9), Stats.

**(11) BIOLOGICAL SHORE EROSION CONTROL STRUCTURES STANDARDS.** In addition to the standards in sub. (3), biological shore erosion control structures shall meet all of the following requirements:

(a) Vegetation shall be plant species that are native to the area of Wisconsin where the project is located.

**Note:** Vegetative treatments installed according to the Natural Resources Conservation Service (NRCS) Conservation Practice Standard Code 580 (Streambank and Shoreline Protection) or NRCS Engineering Field Handbook Chapter 16 are determined to meet this requirement.

(b) Willow wattles, willow posts, brush mattresses, brush layering, fiber roll breakwaters, plant carpets, root wads, and methods reliant on the use of other natural materials may be used in a biological shore erosion control structure. Fiber rolls shall be secured using can and duckbill anchors or hardwood stakes. Spacing between the duckbill anchors shall be 6 feet or less. Spacing between the hardwood stakes shall be 4 feet or less.

(c) The crown of a placed root wad shall extend the entire depth of stream, bottom to top, or to the maximum projected or measured scour depth, if included in a biological erosion control structure.

(d) No waterward extension of the property is permitted other than what is reasonably necessary to conduct the project and protect the existing bank. No soil or similar fill material may be placed in a wetland or below the ordinary high water mark of any navigable waterway, except as authorized by ch. 30 or s. 281.36, Stats.

(e) If wave barriers are used, the wave barriers shall be located within the 3-foot water depth contour or less, marked with reflectors, and may not create an obstruction to navigation. Any wave breaks or wave barriers shall be completely removed within 2 years of the installation date.

(f) Temporary breakwaters with non-biodegradable elements are considered a permissible element during the plant establishment phase of a biological erosion control project.

**(12) RIPRAP PLACEMENT, REPLACEMENT, AND REPAIR STANDARDS.** In addition to the standards under sub. (3), riprap placement, replacement, and repair shall meet all of the following requirements:

(a) The riprap may not be in an amount exceeding 200 linear feet if placed in a stream or inland



lake, or in an amount exceeding 300 linear feet if placed in a Great Lakes water body.

(b) The site where riprap is proposed along the shoreline of an inland lake or impoundment is a moderate energy or high energy site as determined by a storm-wave height under s. NR 320.11 (1) of 1.0 or greater or an Erosion Intensity (EI) score under s. NR 320.11 (2) of 48 or greater.

(c) The site where riprap is proposed along the shoreline of a stream has a Bank Erosion Potential Index (BEPI) score of 20 or greater, or the bank edge recession or lateral migration rate equals or exceeds 0.5 feet per year as calculated using methods in s. NR 320.12.

(d) The riprap is clean fieldstone or quarry stone with a diameter of no less than 6 inches and no greater than 48 inches.

**Note:** This includes riprap that is sized according to the USDA, NRCS Wisconsin Supplement to the Engineering Field Handbook Chapter 16 – Streambank and Shoreline Protection using D50 sizing methods. For example, a 6-inch D<sub>50</sub> gradation would be acceptable.

(e) In order to minimize the incursion into the waterway, the toe of the riprap may not extend more than 8 feet waterward of the ordinary high water mark.

(f) In order to minimize the possibility of being a barrier to fauna movement in the near-shore riparian corridor and to maximize the dissipation of wave energy, the final riprap slope may not be steeper than 1 foot horizontal to 1.25 feet vertical (1'H:1.25'V).

**Note:** A slope of 2 feet horizontal to 1 foot vertical (2'H:1'V) is effective in achieving this performance outcome.

(g) The riprap does not reach an elevation higher than 36 inches above the ordinary high-water mark or above the storm-wave height as calculated under s. NR 320.11 (1), whichever is greater.

**Note:** The site assessment methods specified in s. NR 320.11 were part of Subchapter 1 of NR 328 applicable to inland erosion control structures, and remain applicable specifically to inland lakes and flowages, and not the Great Lakes or Outlying Waters.

(h) The riprap follows the natural contour of the shoreline.

(i) Filter fabric, clean-washed gravel, or coarse-grained filter bedding is used as a filter layer under the riprap.

(k) Except as provided in pars. (d), (e), and (i), no material, soil, or fill may be placed in a wetland or below the ordinary high-water mark of any navigable waterway.

(L) Any bank disturbed during the placement of riprap shall be re-vegetated above storm-wave height by using native plantings, which may include native non-woody plants, native shrub plantings, native live stakes or native jointed plantings. The addition of soil and mulch in this location may be necessary to ensure the establishment and longevity of plantings. This subsection does not apply in locations intended to serve as shoreline access points in compliance with ch. NR 115 or other applicable regulations, or where no such ordinances apply up to 10 feet in total length along each riparian parcel.

**Note:** For the purpose of this standard, the “bank” is identified as the bank depicted in the Erosion Intensity Worksheet under s. NR 320.11 (2), and the Bank Erosion Potential Index Worksheet under s.

NR 320.12.

**(13) DRYFIRE HYDRANT STANDARDS.** In addition to the standards under sub. (3), dry fire hydrants shall meet all of the following requirements:

(a) The dry fire hydrant may be placed and maintained only by a riparian, or by a municipality with the permission of the riparian.

(b) The dry fire hydrant may not be placed in a wetland or in a manner that adversely impedes surface or subsurface flow into or out of any wetland.

(c) The dry fire hydrant shall have a perforated inlet screen with cap on the inlet end.

(d) The dry fire hydrant shall be installed with the riser landward of the ordinary high water mark except when installed on a bridge or culvert.

(e) The dry fire hydrant located in a lake, pond, or flowage shall be installed so that the inlet pipe is at least 3 feet below the surface water level during normal low water level conditions. The dry fire hydrant in a stream shall be installed so that the inlet pipe is at least one foot below the surface water level during normal low water flow conditions.

(f) Unless otherwise authorized through applicable floodplain zoning or wetland regulations, the dry fire hydrant may not result in the permanent or temporary deposition of fill in any floodway or wetland.

**Note:** Installation of a dry fire hydrant does not authorize the placement of any fill material to access the hydrant.

(g) The dry fire hydrant may not result in a filling of the waterway that results in the waterward extension of the upland.

**(14) PILINGS STANDARDS.** In addition to the standards under sub. (3), pilings shall meet all of the following requirements:

(a) A piling may be placed and maintained only by a riparian.

(b) A piling may be placed only for the purpose of deflecting ice to protect an existing or proposed structure or to moor a watercraft on Lake Michigan, Lake Superior, or the Mississippi River.

(c) A piling shall have a minimum side setback of 10 feet from the riparian zone boundary as determined with one of the methods in s. NR 320.09.

(d) A piling may not be placed in a manner that adversely impedes surface or subsurface flow into or out of any wetland.

(e) A piling may not result in the permanent or temporary deposition of fill in any floodway or wetland.

(f) A piling may consist of a group of not more than 5 individual piles placed adjacent to each other and firmly bound together.

**(15) INTAKE OR OUTFALL STRUCTURES STANDARDS.** In addition to the standards under sub. (3), intake or outfall structures shall meet the following requirements:

(a) The intake or outfall structure may be placed and maintained only by a riparian, or by another person or entity with the permission of the riparian.

(b) The intake or outfall structure, including any wingwalls and rock riprap toe protection, shall be less than 6 feet from the water side of the ordinary high water mark and less than 25 percent of the width of the channel in which it is placed.

(c) The intake or outfall structure may not be placed in a manner that adversely impedes surface or subsurface flow into or out of any wetland.

(d) The intake or outfall structure may not result in the permanent or temporary deposition of fill in any floodway or wetland.

(e) The intake or outfall structure may not result in placement of fill in the navigable waterway that causes the waterward extension of the upland.

(f) The outfall structure may not exceed 24 inches in diameter, and in streams, may not result in a discharge of more than 50 percent of the stream's base flow (80 percent exceedance flow) at any given time.

(g) The intake structure may not exceed 12 inches in diameter and the invert of the culvert shall be located above the public rights stage elevation as determined by the department under s. 31.02, Stats.

(h) The intake or outfall structure may include rock riprap toe protection in an amount not to exceed 2 cubic yards.

**(16) SWIMMING RAFT STANDARDS.** In addition to the standards under sub. (3), swimming rafts shall meet all of the following requirements:

(a) The swimming raft may be placed in an area of special natural resource interest, as described in s. 30.01 (1am), Stats., or in a public rights feature under s. NR 1.06, if placed in accordance with s. 30.13 (1), Stats.

(b) The swimming raft is placed within 200 feet of shore and directly adjacent to the riparian's property.

(c) The swimming raft does not have to meet the riparian zone standard in s. NR 320.04 (3) (e).

(d) The swimming raft does not exceed 200 square feet in surface area or 38 inches in height.

1. The height limitation does not apply to protective covers, diving boards, ladders and slides.

2. The square footage of a swimming raft shall include diving boards, ramps, slides and similar accessories.

(e) The swimming raft is placed seasonally.

**(17) VOLUNTARY REVIEW REQUEST.** To ensure a proposed structure or crossing is eligible for an

exemption in this section, a person may submit an exemption determination request that includes the information under s. NR 300.04 (4) and follows the applicable procedures under s. NR 300.04 (4) to (6).

**(18) PERMIT REQUIRED.** Structures or crossings that do not meet the applicable standards under sub. (3) and either sub. (4), (5), (6), (7), (8), (9), (10), (11), (12), (13), (14), or (15), or are otherwise determined ineligible for an exemption by the department shall require a general permit or individual permit.

**Note:** The department has the authority under s. 30.12 (2m), Stats., and s. NR 300.04 (7), to require a permit in lieu of an exemption.

**320.05 Statewide general permit development. (1) PROCEDURES.** The department shall develop general permits in accordance with procedures under ss. 30.206 and 30.2065, Stats., and process general permit applications in accordance with the procedures in ch. NR 300.

**(2) APPLICABLE ACTIVITIES.** The department shall develop and issue statewide general permits under ss. 30.12, 30.123, 30.206 (1), and 30.2065, Stats., and may issue statewide general permits under s. 30.206 (1) (am), Stats.

**(3) STANDARDS.** To ensure that the cumulative adverse environmental impact of the activities authorized by a general permit is insignificant and that the 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, the department may impose any of the following conditions on the permit under s. 30.206 (1) (a), Stats.:

(a) Construction and design requirements that are consistent with the purpose of the activity authorized under the permit, including any of the following:

1. Project scope or size limitations to minimize impacts to the public rights.
2. Site access, construction sequencing, and erosion control practices to prevent direct and indirect impacts to the public rights during construction activities.
3. Bank vegetation clearing and in-water impact minimization requirements.
4. Timing restrictions to protect fish spawning and rearing or other sensitive resources including state threatened, endangered, or special concern species.
5. Invasive species prevention measures consistent with ch. NR 40.
6. Project measures and practices that are designed to minimize impacts to threatened, endangered, or special concern species, or other sensitive habitat features.

(b) Location requirements to ensure that the activity will not materially interfere with navigation or have an adverse impact on the riparian property rights of adjacent riparians including any of the following:

1. Limitations of project location to the designated riparian zone of the applicant.
2. Limitations of project proximity to navigational channels, boat landings, designated swimming areas, or other restricted areas.

**(4) PRE-EXISTING STRUCTURES.** (a) A structure or crossing that was placed in conformity with exemption standards prior to [LRB inserts rule promulgation date] shall continue to be exempt, provided the structure or crossing is maintained in compliance with all the standards in place at the time of installation and is not detrimental to public rights.

(b) A structure or crossing regulated under this chapter that is authorized by an existing department permit shall continue to be authorized, provided the structure is maintained in compliance with all the conditions of the original permit and does not infringe on public rights.

**Note:** Any modifications to a permitted structure or crossing that do not comply with the original permit conditions shall be evaluated by the department and the department may consider it exempt or require a new permit to proceed with the proposed modifications.

**(5) INDIVIDUAL PERMIT REQUIRED.** Activities that do not meet the standards for exemptions in s. NR 320.04 or the standards in statewide general permits issued by the department under s. 30.206 or 30.2065, Stats., or this subsection, shall require an individual permit.

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

**320.06 Individual permits. (1) PROCEDURES.** The department shall process individual permit applications according to the procedures in ch. NR 300.

**(2) APPLICABLE ACTIVITIES.** A structure or crossing that is not exempt under s. 30.12, 30.123, or 30.13, Stats., and is not authorized by a statewide general permit under s. 30.206 or 30.2065, Stats., requires authorization by an individual permit.

**(3) GENERAL STANDARDS.**

(a) A structure shall meet the standards in s. 30.12 (3m), Stats., and a crossing shall meet the standards in s. 30.123 (8) (c), Stats.

(b) A structure or crossing shall not totally enclose any portion of a navigable waterway.

(c) A structure or crossing shall not interfere with or cause material injury to the rights of other riparians, as determined by methods outlined in s. NR 320.09.

(d) A structure or crossing, other than a solid pier, shall not interrupt the free movement of water or trap or accumulate aquatic plants.

(e) A structure or crossing shall not cause the formation of land by deposition of littoral drift upon the bed of the water.

**(4) ACTIVITY SPECIFIC LOCATION STANDARDS.**

(a) *New riprap on lakes and flowages.* The department may authorize construction of new riprap at low energy sites on inland lakes and flowages by an individual permit provided any of the following applies:

1. The bank-edge recession or lateral migration described in s. NR 320.11 (3) is equal to or greater than 0.5 feet per year.

2. The erosion intensity score as calculated in s. NR 320.11 (2) is equal to or greater than 40.

3. The applicant can demonstrate that riprap is necessary to correct erosion on the site due to site specific circumstances.

**Note:** Justification to demonstrate the need to place riprap may include factual data including previous erosion control efforts, navigational motorized boat traffic patterns, a history of ice damage to the shoreline, or other factors.

(b) *New riprap on streams.* The department may authorize construction of new riprap at low energy sites on streams by an individual permit provided any of the following is true:

1. The bank-edge recession described in s. NR 320.12 (3) is equal to or greater than 0.5 feet per year.

2. The bank erosion potential index as calculated in s. NR 320.12 (2), is equal to or greater than 20.

3. The applicant can demonstrate that riprap is necessary to correct erosion on the site due to site specific circumstances.

**Note:** Justification to demonstrate the need to place riprap may include factual data including previous erosion control efforts, navigational motorized boat traffic patterns, a history of ice damage to the shoreline, or other factors.

(c) *Seawalls.* The department may authorize a seawall at a low energy site only by an individual permit at the following locations:

1. Municipal or commercial marinas where vertical docking facilities are a practical alternative after considering the public interest.

2. Navigational channels actively used as thoroughfares as described in s. NR 320.11 (2), Table 1, note 5, or for access where slopes are steeper than one foot horizontal to 1.5 feet vertical (1'H:1.5'V) and are showing evidence of erosion and where alternative methods of erosion control will impede navigation.

3. Locations where slopes are steeper than one foot horizontal to 1.5 feet vertical (1'H:1.5'V) and where the applicant demonstrates that alternative measures are not practicable considering bank height and the location of other permanent structures on the property.

(d) *Solid piers.* The department may authorize a solid pier only by an individual permit on the following waters:

1. Outlying waters.

2. Harbors connected to outlying waters.

3. Fox River from the DePere dam to Lake Winnebago.

4. Lake Winnebago.

5. Mississippi River.

(e) *Piers and wharves exceeding sizing and slip thresholds established in s. NR 320.04 (8).* In determining whether a proposed pier or wharf project constitutes a reasonable use of the property, the department may consider any of the following factors:

1. Riparian convenience and the intended purpose of the proposed project.
2. The historic use of the property, surrounding area, and navigable waterway.
3. Navigational safety and anticipated navigational impacts of the proposed project.
4. Public access opportunities on the navigable waterway and at the site of the proposed project.
5. The current use of the property, surrounding area, and navigable waterway.
6. The effect of local ordinances enacted pursuant to s. 30.77, Stats.
7. Other riparians' interests.
8. The applicable boat slip reasonable use presumption as described in s. 30.12 (1g) (f) 1. c. or (1j) (a), Stats.
9. Whether slips associated with commercial marinas or other commercial structures are open to the general public.

**Note:** Commercial marinas are typically considered open to the general public when they offer transient or daily use slips and no fee is required for pier use (e.g., restaurants), or provide annual slip rental opportunities to the general public.

**Note:** "What constitutes reasonable use depends upon the circumstance of each particular case, and no positive rule of law can be laid down to define and regulate such use with entire precision." *Timm v. Bear*, 29 Wis. 254, 265 (1871). Cases that provide guidance regarding the application of the reasonable use doctrine to pier projects include *Sterlingworth Condominium Ass'n v. DNR*, 205 Wis. 2d 710, 556 N.W.2d 791 (1996), *Sea View Estates Beach Club, Inc. v. DNR*, 223 Wis. 2d 138, 588 N.W.2d 667 (1998), and *Hilton ex rel. Pages Homeowners' Ass'n v. DNR*, 2006 WI 84, 293 Wis. 2d 1, 717 N.W.2d 166.

(f) *Permanent and seasonal boat shelters.* Permanent or seasonal boat shelters that do not meet the requirements for placement under an exemption under s. 30.12, Stats., or s. NR 320.04 (9), a waterway general permit issued under s. 30.206, Stats., or a previously issued department permit require authorization through an individual permit, subject to all of the following conditions:

1. Permanent or seasonal boat shelters are designed to berth a single watercraft.
2. Permanent or seasonal boat shelters are on a property that does not also include a boathouse over a navigable waterway.
3. The number of boat shelters placed adjacent to a property is limited to one permanent and one seasonal shelter or 2 seasonal shelters for the first 100 feet or lesser amount of shoreline frontage. One additional seasonal shelter may be placed for each additional 50 feet of shoreline frontage in common ownership. In lieu of placing additional seasonal boat shelters beyond the initial allowance for the first 100 feet of shoreline frontage, a riparian may apply to the department for an individual permit to allow one additional permanent boat shelter for every additional 100 feet of shoreline frontage in common ownership.

(5) **INDIVIDUAL PERMIT EVALUATION.** The department, in its review of an individual permit application to determine whether placement of a structure or crossing meets the standards for issuance under s. 30.12 (3m) or 30.123 (8) (c), Stats., and to assess the project's individual and cumulative impacts on public rights and interests in navigable waterways shall evaluate all of the following information if

available and applicable to the project:

- (a) Physical, chemical, and biological effects on the waterway.
- (b) Water quality.
- (c) Water quantity.
- (d) Fish and wildlife habitat, especially impacts on littoral zone and nearshore habitat.

**Note:** Evaluation of fish and wildlife habitat includes 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; the presence of any waterway designations identified in ch. NR 1; spawning or nursery habitat; and change in nearshore substrate that reduces its suitability for habitat.

**Note:** Department staff, resource professionals, or consultants conducting site investigations associated with waterway individual permit application reviews should follow [Lake Shoreland & Shallows Habitat Monitoring Field Protocols](#). This protocol provides a standard methodology for surveying, assessing, and mapping habitat in lakeshore areas, including the Riparian Buffer, Bank, and Littoral Zones, and can aid in the department's review of a project's overall impact on public interest factors. See [dnr.wi.gov](http://dnr.wi.gov), keyword "surface water monitoring" and Lakeshore Habitat under "Protocols."

**Note:** Department staff, resource professionals, or consultants conducting site investigations associated with stream individual permit applications should follow [Guidelines for evaluating fish habitat in Wisconsin streams](#). This report describes procedures for evaluating the quality and quantity of habitat for fish in small and medium streams of Wisconsin. (<https://www.fs.usda.gov/research/treearch/10228>)

- (e) Navigation.
- (f) Recreational activities, including swimming, boating, snowmobiling, fishing, and hunting.
- (g) Natural scenic beauty.
- (h) Special concern, threatened, or endangered species.

**Note:** Survey information may be used to indicate that special concern, threatened, or endangered species or their habitats are found near the site.

**(6) INDIVIDUAL PERMIT REVIEW.** To determine whether an application meets the public interest criteria identified under sub. (5), the department may evaluate information regarding any of the following project specific factors during an individual permit application review:

- (a) The purpose of the proposed project, as limited by recognized riparian rights and permitting allowances to conduct specifically identified activities under ch. 30, Stats.
- (b) Whether a proposed structure or crossing has been designed in size and extent to allow for use of the structure for its intended purpose and to prevent detrimental impacts to public rights and interests.

**Note:** A project design should have high likelihood of success as demonstrated by its appropriateness for site specific conditions and history of performance at similar sites given the best



available data.

(c) Whether project specific conditions can avoid or reduce the public interest impacts of the structure while achieving the overall project purpose.

(d) Site and water-body specific factors that inform the public interest performance of the proposed structure.

**Note:** For example, for an erosion control project, the erosion exposure of the project site based on site-specific conditions, including ice and the presence of natural ice ridges.

(e) The effect of the project on adjacent properties.

**(7) STANDARDS FOR STRUCTURES PLACED ON GREAT LAKES AND OUTLYING WATERS AND ALL SOLID PIERS.** (a) To ensure that there is no detrimental impact to the public interest, the department may require site specific design engineering, modeling, or geotechnical analysis certified by an engineer licensed or certified to practice in the State of Wisconsin under ch. 443, Stats., for structures placed on the Great Lakes and outlying waters and solid piers that demonstrates the structure will meet the public interest review criteria under sub. (5).

(b) The department may consider all of the following project factors to determine if engineering, modeling, or geotechnical analysis is required in an individual permit application for structures mentioned in par. (a):

1. An erosion control structure is proposed along a site where a principal structure is located within 75 feet of the current ordinary high water mark.

2. Grading on the bank is proposed because it is necessary to access the site to place an erosion control structure, rock crib, or solid pier.

3. A proposed erosion control structure will encroach greater than 10 feet lakeward from the ordinary high water mark to the toe.

4. Fill material other than filter stone and armor stone is proposed to be placed against the current slope face underlying a proposed erosion control structure.

5. The proposed slope of the final erosion control structure is steeper than 1.5 foot horizontal to 1 foot vertical (1.5'H:1'V).

6. The proposed slope of the final erosion control structure is shallower than 2.5 feet horizontal to 1 foot vertical (2.5'H:1'V).

7. A shore perpendicular structure, groin, solid pier, rock-crib filled pier, or other similar structure, is proposed for purposes of shore protection or erosion control.

8. A shore perpendicular structure is proposed for the purpose of navigation, including a groin, rock filled crib, or solid pier.

9. An offshore structure, such as a breakwater, is proposed.

10. A new or reconstruction of a seawall is proposed as an erosion control structure.

11. An erosion control structure is proposed along the base of a bluff.

**(8) INDIVIDUAL PERMIT ISSUANCE.** (a) The department shall issue individual permits in a manner consistent with the requirements in s. 30.12 (3m) or 30.123 (8), Stats.

(b) The department may impose conditions on individual permits that are necessary to ensure the project meets the requirements for issuance as identified in s. 30.12 (3m) (c) or 30.123 (8) (c), Stats., and to ensure the project is not detrimental to public rights and interests in navigable waterways as informed by individual permit review factors under this section. Conditions placed on an individual permit may include timeline, construction, design, or location factors.

(c) Applications not meeting the standards for issuance identified in par. (a) and those for which the department chooses not to impose specific conditions under par. (b) shall be denied.

**320.07 Municipal breakwater permits. (1) ELIGIBLE WATERWAYS.** The department may issue permits for placement of breakwaters in the following water bodies:

(a) Castle Rock and Petenwell flowages, Adams and Juneau counties.

(b) Lake Koshkonong, Dane, Jefferson, and Rock counties.

(c) Beaver Dam lake, Fox lake, and Lake Sinissippi, Dodge county.

(d) Lake Puckaway, Green Lake county.

(e) Lake Nokomis – Rice River reservoir, Lincoln and Oneida counties.

(f) Big Eau Pleine reservoir, Marathon county.

(g) Lake DuBay, Marathon and Portage counties.

(h) Rainbow and Willow flowages, Oneida county.

(i) Lake Poygan, Winnebago and Waushara counties.

(j) Lake Winneconne and Lake Buttes des Morts, Winnebago county.

(k) Lake Winnebago, Calumet, Fond du Lac, and Winnebago counties.

(L) Impoundments of the Mississippi river.

**Note:** The listed waters are generally typified by the following conditions – artificially impounded; 2,500 acres and larger; extensive water level fluctuation; high rate of wetland/ shoreline loss from erosion; and historic loss of shoreline vegetation.

**(2) ELIGIBLE APPLICANTS.**

(a) The department may issue permits for breakwaters to municipalities and similar public entities, including the state and federal governments, inland lake protection and rehabilitation districts or similar special purpose units of government, and public utilities. Any riparian with ownership of upland

adjacent to, or flowed lands underlying, the breakwater shall be a co-applicant if the public entity is not the riparian. If the public entity is not the riparian, the public entity may submit a permit application only if all riparians with ownership of upland adjacent to, and flowed lands underlying, the proposed breakwater consent to be co-applicants.

(b) As part of the permit application, a public entity shall provide information to demonstrate to the satisfaction of the department that the public entity has all of the following:

1. Statutorily assigned duties, authorities, or requirements that may reasonably be construed to include control of shore erosion and protection of aquatic habitat.

2. A system of governance that allows participation in decision making by a range of public interests.

3. Institutional permanence of a duration similar to the life of the structure.

**(3) STANDARDS.** The department may issue a permit for a breakwater under this section if all of the following conditions are met:

(a) A breakwater is determined by the department to be the best management practice to control shore erosion and preserve or restore aquatic habitat, considering efficacy of the structure and impacts to the public interest in navigable waters.

(b) The breakwater is designed by an engineer licensed or certified to practice in the State of Wisconsin under ch. 443, Stats., to be stable under stated maximum water level and wave conditions to avoid a failed structure that quickly becomes a hazard to users of the waters.

(c) The breakwater is specifically recommended for the purpose specified in par. (a) in a comprehensive plan approved by the department for management of a specific water body and its watershed.

(d) The requirements of s. 1.11, Stats., are met.

(e) The department has complied with the notice and hearing procedures in s. 30.208 (3) to (5), Stats.

**(4) PERMIT CONDITIONS.** In addition to any conditions determined by the department to be necessary to protect public rights and interests in navigable waters under s. 30.12, Stats., any permit issued by the department under this section shall contain all of the following conditions:

(a) The breakwater shall remain under public ownership or control by a public entity described under sub. (2) (a). Public ownership and control, including necessary rights to use and management of the breakwater and the area to be protected from wave energy by the breakwater shall be established by documentation of any of the following as part of the permit application:

1. Fee title ownership of the breakwater by a public entity described in sub. (2) (a).

2. Lease of the breakwater to a public entity described under sub. (2) (a) with a term of 25 years or more.

3. A conservation easement on the breakwater held by a public entity described in sub. (2) (a) that includes the rights to construct and maintain the structure and the right of public access to the structure.

(b) No ancillary structures or facilities, other than scientific measuring devices and navigational markers, shall be located on or attached to the breakwater.

### **320.08 Navigability standards for bridges and culverts.**

(1) A new bridge or culvert or replacement of an existing bridge or culvert spanning a navigable waterway regulated under this chapter shall, except as provided in this section, maintain a clearance of not less than 5 feet.

(2) The department may require clearance of more than 5 feet when the waterway has been or is likely to be navigated when the waterway is above its ordinary high water mark elevation or if it is used by watercraft or snowmobiles requiring greater clearance.

(3) The department may allow less than 5 feet of navigation clearance for a bridge or culvert when the department determines all of the following apply:

(a) The waterway is known by the department to have little or no snowmobile use or navigation, other than by watercraft capable of using a portage established under par. (b).

(b) The owner provides a permanent portage, identified by signage, over or around the bridge or culvert.

(c) The reduced clearance will not be detrimental to the public interest, as determined by the department.

**320.09 Riparian rights determinations.** In order to determine whether a pier or boat shelter interferes with the rights of an adjacent riparian, a riparian may use any of the following methods they determine most fully meets the Wisconsin supreme court ruling in *Rondesvedt v. Running*, [19 Wis. 2d 614](#) (1962), that “. . . each must have his due proportion of the line bounding navigability and a course of access to it from the shore exclusive of every other owner, and that all rules for apportionment or division are subject to such modification as may be necessary to accomplish substantially this result.”

(1) *Apportionment of the line of navigation.* The general procedure for the apportionment of the line of navigation is to measure the whole shoreline of the cove or bay and the line of navigation in front of the shoreline and to apportion the line of navigation among the riparians in proportion to the length of their respective holdings on the shoreline. The area of water within which each riparian may place a pier to reach the line of navigation is determined by drawing straight lines between the corresponding points of division on the shoreline and the line of navigation.

(2) *Coterminous riparian rights lines.* Under the coterminous riparian rights lines method, chords are drawn to connect points established at the intersection of each lot line with the ordinary highwater mark. The lines that bisect the angle formed by adjacent chords are the coterminous riparian rights lines. The extension of the coterminous riparian rights lines to the line of navigation describes the portion of the water within which each riparian may place a pier to gain access to the line of navigation. If the coterminous riparian rights lines intersect before the line of navigation is reached, another method of apportionment will be used.

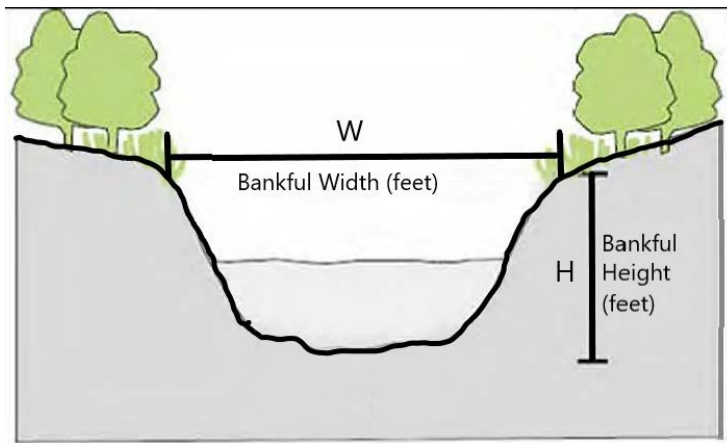
(3) *Extended lot lines.* Under the extended lot line method, the area of water within which each riparian may place a pier to reach the line of navigation is determined by extending the lot lines along the same alignment from the upland to the line of navigation.

(4) *Other methods.* Any other method for determining the rights of riparians to gain access to the line of navigation that is consistent with sub. (1).

**320.10 Culvert sizing.** Project proponents and department staff shall use any of the following calculation and assessment methods for potentially exempt culverts under s. NR 320.04 (10) and culvert individual permit applications under s. NR 320.06.

(1) **CALCULATION OF REQUIRED CULVERT AREA.** To determine the required culvert area, measurements shall be made of the channel width of the stream in feet at the bankfull width (W), and the maximum bankfull height in feet above the stream bottom (H) (see diagram). These measurements shall be made at each of 3 locations or transects along the stream: the location of the newly proposed culvert crossing; 100 feet upstream from the crossing; and 100 feet downstream from the crossing. Where there is an existing crossing being replaced, measurements at the site of the crossing may not be representative due to impacts related to the existing crossing. In such instances two measurements shall be taken, upstream and downstream of the crossing location. Measurements shall be taken to ensure that the locations where measurements are made are representative of the stream overall. The individual measurements of W and H shall be averaged to derive the final W and H values. The required culvert area is then calculated with the following equation:

Required Culvert Area (square feet) =  $H \times W$



(2) **CULVERT SIZING.** Once the required culvert area has been determined, the applicant can identify the proper culvert size by reviewing Table 1 for round culverts and Table 2 for arched pipe culverts. The minimum size culvert needed to pass flows shall have an area that is as much or more than the required culvert area. For example, the recommended culvert size for a culvert area calculation of 8.50 square feet would be 42 inches.

(a) To find the area of any round culvert, use the following equation:

Round Culvert Area (square feet) =  $R \times R \times 3.14$

$R$  (radius in feet) = Culvert diameter (inches) / 24

**(b) Example culvert area calculation.**

Culvert size required for a stream with a culvert area calculation of 8.5 square feet:

$$8.5 \text{ square feet} = R \times R \times 3.14$$

$$2.7 \text{ square feet} = R \times R$$

$$1.6 \text{ feet} = R$$

$$R = 19.7 \text{ inches}$$

$$\text{Culvert diameter} = 39.4 \text{ inches}$$

$$\text{Culvert size} = 42 \text{ inches}$$

<b>Table 1. Round culvert diameters and corresponding culvert area</b>	
Culvert diameter (inches)	Culvert area (square feet)
18	1.80
24	3.10
30	4.90
36	7.10
42	9.60
48	12.60
54	15.90
60	19.60
66	23.80

<b>Table 2. Pipe arch culvert diameters and corresponding culvert area</b>		
Pipe width or span (inches)	Pipe height or rise (inches)	Culvert area (square feet)
43	27	6.4
50	31	8.7
58	36	11.4
65	40	14.3
72	44	17.6
73	55	22.0
85	54	25.3
81	59	26
87	63	31
95	67	35
103	71	40

**(3) CULVERT LENGTH DETERMINATION.** The proper culvert length is determined by the following calculation:

**(a)** To determine the length of any culvert, use the following equation:

$$L \text{ (Length of Culvert)} = W + 4H + 2$$

W = Width of road top

H = Height of culvert + average depth of road fill

H is multiplied by 4 as a constant for the side slope angle (2 x 2:1)

2 is added as a constant for 1 foot of pipe extension beyond fill

**(b)** Example culvert length calculation.

Length of culvert needed for 10' road top, 24" (2") diameter pipe, 1' average road fill depth, 2:1 side slopes, 1' pipe extension beyond fill:

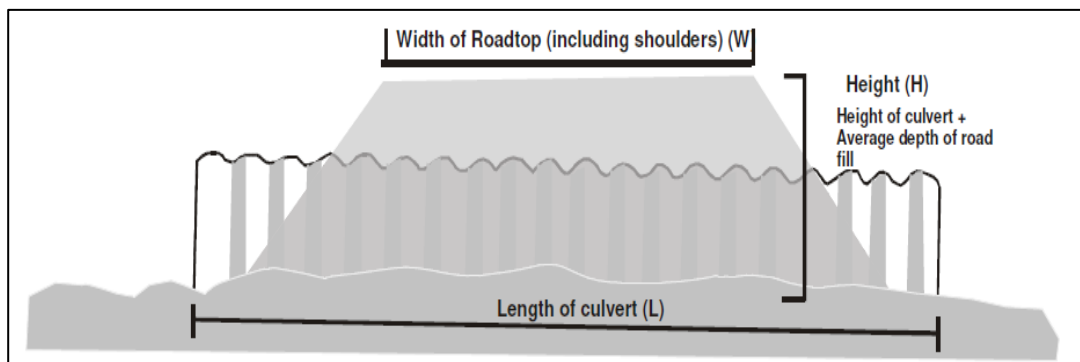
$$L = 10' \text{ road top} + 4(2' \text{ culvert} + 1' \text{ fill}) + 2' \text{ extension}$$

$$L = 10 + 4(2+1) + 2$$

$$L = 10 + 4 \times 2 + 4 \times 1 + 2$$

$$L = 10 + 8 + 4 + 2$$

$$L = 24 \text{ feet}$$



### **320.11 Site assessment methods for erosion control structures on inland lakes and flowages.**

Applicants and department staff shall use any of the following data requirements and site assessment methods for potentially exempt riprap under s. NR 320.04 (12) and shoreline erosion control structures individual permit applications under s. NR 320.06 for inland lakes and flowages.

**(1) CALCULATION OF STORM-WAVE HEIGHT.** The department shall provide applicants with worksheets and a web page calculator for the purpose of estimating storm-wave height. The storm-wave height calculator shall be mathematically designed based on Young and Verhagen (1996) and Young (1997) by applying a storm wind speed of 35 miles per hour (51.45 ft/sec), fetch at the applicant's shore protection site, and the average depth along that fetch. To record fetch, applicants shall measure the longest unobstructed straight-line distance originating from the shore protection site across the water surface to the opposite intersect with the shore. To estimate average depth applicants shall examine a lake map, sum the reported depths along the fetch, and divide by the number of recorded values. At least 5 equally placed intervals along the fetch shall be used.

**Note:** To use a web version of the storm-wave height calculator, go to <http://dnr.wi.gov>, keyword “calculating energy along a shoreline.”

**Note:** The citation for Young (1997) is as follows: Young, I.R. 1997. The growth rate of finite depth wind-generated waves. Coastal Engineering, Vol. 32, pp. 181-195. The citation for Young and Verhagen (1996) is as follows: Young, I.R. and L.A. Verhagen. 1996. The growth of fetch limited waves in finite water depth. Coastal Engineering, Vol. 29, pp. 47-78.

**Note:** Statewide storm wind speeds are estimated from Naber Knox, P. 1996. Wind Atlas of Wisconsin. Wisconsin Geological and Natural History Survey, Bulletin No. 94.

**(2) CALCULATION OF EROSION INTENSITY.** When an applicant or the department believes that, as a result of site conditions, storm-wave height as calculated under sub. (1) may inaccurately predict the degree of erosion, the erosion intensity score may be calculated to determine erosion. The department shall provide applicants with worksheets and a web page calculator for the purpose of calculating erosion intensity. When the department or applicants assess erosion at the shore protection site, they shall apply methods outlined in Table 1 to calculate an erosion intensity score. Wherever erosion intensity and storm-wave height result in different energy categories, the site shall be placed in the category as determined by the erosion intensity score.



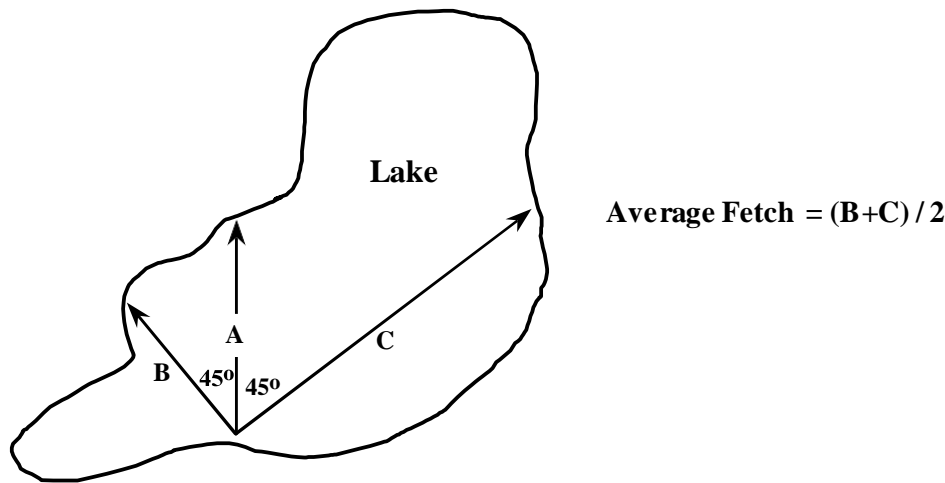
**Table 1. Erosion Intensity (EI) Score Worksheet**

SHORELINE VARIABLES	<b>DESCRIPTIVE CATEGORIES</b> *Erosion Intensity Value is Located in Parenthesis on Left Side of Each Category						SCORE	
<b>AVERAGE FETCH</b> <sup>1</sup> —, average distance (miles), across the open water to the opposite shore measure 45° other side of the perpendicular to the shoreline.	(0) <1/10	(2) 1/10 –1/3	(4) 1/3–1	(7) 1 –3	(10) 3–10	(13) 10–30	(16) >30	
<b>DEPTH AT 20 FEET</b> , depth of water (feet) 20 feet from shoreline	(1) <1	(2) 1–3	(3) 3–6	(4) 6–12	(5) >12			
<b>DEPTH AT 100 FEET</b> , depth of water (feet) 100 feet from shoreline	(1) <1	(2) 1–3	(3) 3–6	(4) 6–12	(5) >12			
<b>BANK HEIGHT</b> <sup>2</sup> , height of bank (feet), measure from toe of the bank to top of the bank–lip.	(1) <1	(2) 1–5	(3) 5–10	(4) 10–20	(5) >20			
<b>BANK COMPOSITION</b> composition and degree of cementation of the sediments	(0) rock, marl, tight clay, well cemented sand (dig with a pick)		(7) soft clay, clayey sand, moderately cemented (easily dug with a knife)		(15) uncemented sands or peat (easily dug with your hand)			
<b>INFLUENCE OF ADJACENT STRUCTURES</b> , likelihood that adjacent structures are causing flank erosion at the site	(0) no hard armoring on either adjacent property	(1) hard armoring on one adjacent property	(2) hard armoring on both adjacent properties	(3) hard armoring on one adjacent property with measurable recession	(4) hard armoring on both adjacent properties with measurable recession adjacent to both structures			
<b>AQUATIC VEGETATION</b> <sup>3</sup> type and abundance of vegetation occurring in the water off the shoreline	(0) rocky substrates unable to support vegetation		(1) dense or abundant emergent, floating or submergent vegetation	(4) scattered or patchy emergent, floating or submergent vegetation	(7) absence of emergent, floating or submergent vegetation			
<b>BANK VEGETATION</b> , type and abundance of the vegetation occurring on the bank face and immediately on top of the bank lip	(0) bank composed of rocky outcropping unable to support vegetation		(1) dense vegetation, upland trees, shrubs and grasses, including lawns	(4) clumps of vegetation alternating with areas lacking vegetation	(7) lack of vegetation (cleared), crop or agricultural land			
<b>BANK STABILITY</b> , The degree to which bank and adjacent area (within 10 feet of the bank–lip) is stabilized by natural ground, shrub, and canopy vegetation (outside a 10' pier access corridor). Human disturbance is typified by tree removal, brushing, mowing, and lawn establishment.	(0) established lawn with few canopy trees	(1) established lawn with moderate to dense canopy trees	(4) moderate to dense natural ground vegetation and canopy trees with shrub layer substantially reduced; or few canopy trees with moderate to dense natural shrub layer.		(7) moderate to dense canopy trees with moderate to dense natural shrub layer; or other natural features pre-vents establishment of vegetation.			
<b>SHORELINE GEOMETRY</b> general shape of the shoreline at the point of interest plus 200 yards on either side.	(1) coves or bays			(4) irregular shoreline or straight shoreline	(8) headland, point, or island			
<b>SHORE ORIENTATION</b> <sup>4</sup> geographic direction the shoreline faces	(0) < 1/3 mile fetch	(1) north to east to south–south-east (349°–360°, 1°–168°)		(4) south to west–southwest (169°–258°)	(8) west to north–north- west (259°–349°)			
<b>BOAT WAKES</b> <sup>5</sup> proximity to and use of boat channels	(1) no channels within 100 yards, broad open water body, or constricted shallow water body; or channels within no–wake zones		(6) thoroughfare within 100 yards carrying limited traffic, or thoroughfare 100 yards to ½ mile offshore carrying intensive traffic		(12) thoroughfare within 100 yards carrying intensive traffic (unregulated boating activity)			
<b>EROSION INTENSITY (EI) SCORE</b>								

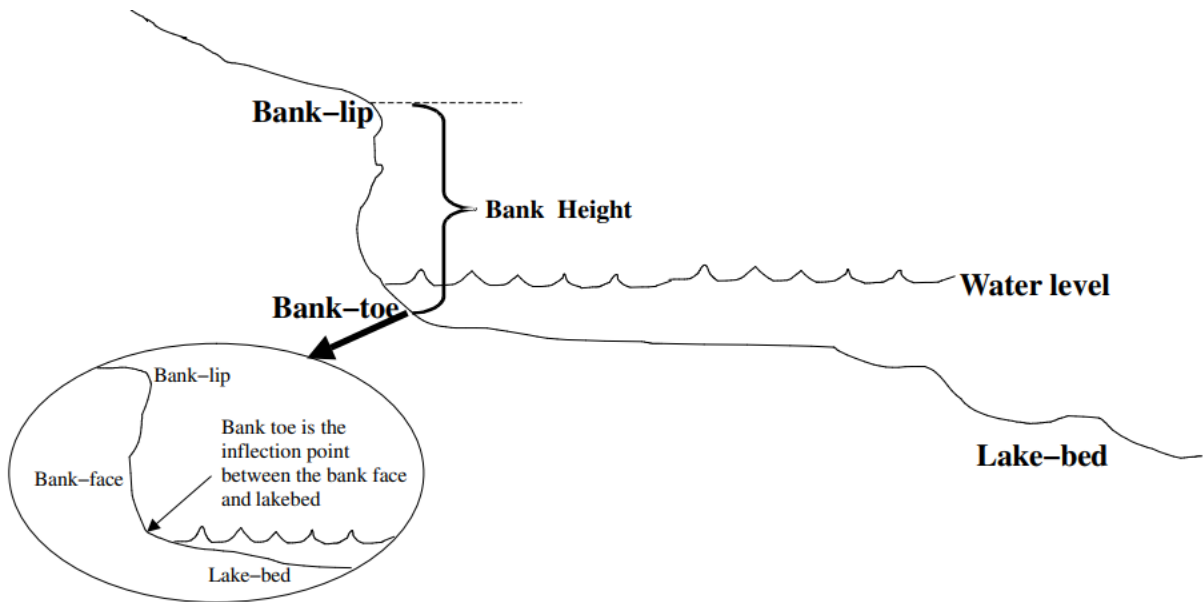
**Note:** The EI Score Worksheet is adapted from Knutson, P. L., H. H. Allen, and J. W. Webb, 1990. “Guidelines for Vegetative Erosion Control on Wave–Impacted Coastal Dredged Material Sites,

“Dredging Operations Technical Support Program Technical Report D-90-13, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS 39180, 35 pp.

**1. Average fetch:** The following diagram describes the calculation of average fetch.

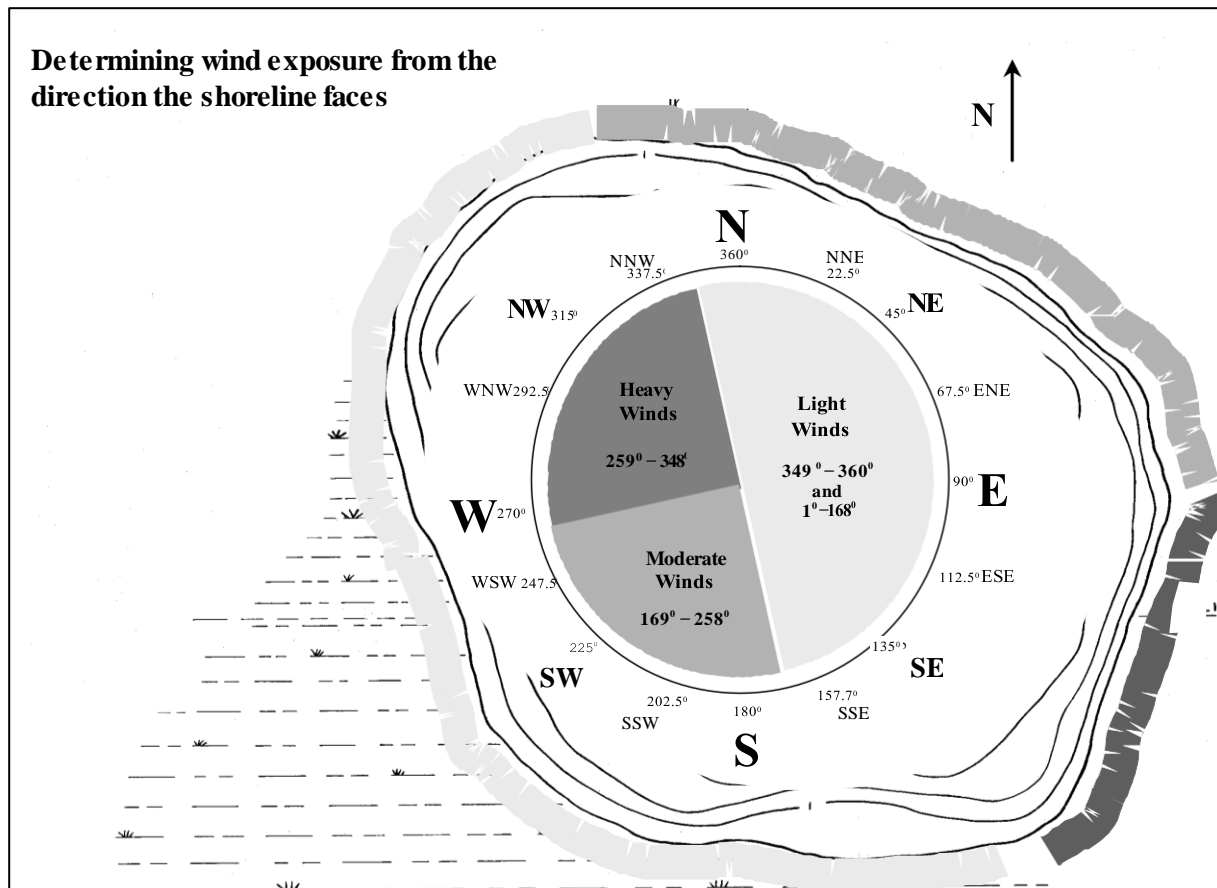


**2. Bank height:** Bank height is the vertical measure (feet) from the bank toe to the top of the bank lip, irrespective of water level changes.



**3. Aquatic vegetation:** Dense or abundant means that on average 50 to 100% of the bottom is visually obstructed by plants during the growing season, defined by the dates June 1 through September 15. Scattered or patchy means that on average 1 to 49% of the bottom is visually obstructed by plants during the growing season, defined by the dates June 1 through September 15. Absent means that on average < 1% of the bottom is visually obstructed by plants during the growing season, defined by the dates June 1 through September 15.

**4. Shoreline orientation:** The following lake map shows an example of accurately determining shoreline orientation.



**5. Boating:** A thoroughfare is identified as physical narrowing of the waterbody that by its nature intensifies boating activity near the shore. Thoroughfares that are 250 yards or wider are not scored 12 points, unless the depth contours of the thoroughfare constrict boating activity in close proximity to one shore and the traffic is intensive. Intensive traffic is defined by a location where at least 50% of the public boating access available must pass through the thoroughfare to reach the open water of the lake, provided the waterway has a total of more than 60 car-trailer units. Limited traffic is defined by a location where at least 30% of the public boating access available must pass through the thoroughfare to reach the open water of the lake, provided the waterway has a total of more than 40 car-trailer units.

**(3) BANK EDGE RECESSION MEASUREMENTS.** (a) Except as provided in pars. (b) and (c), the method of measuring bank edge recession shall include all of the following:

1. Establishment of a physical measurement reference line between at least 2 headstakes.
2. Date-imbedded photographs showing the initial installation of the reference line and headstakes.

3. Reference distance measures to the bank lip.

4. Time between separate measurements shall be of 3 months or more during the open-water season.

(b) As an alternate to the bank edge recession measurements method identified in par. (a), if 2 or more years of LiDAR elevation data are available for a site, the LiDAR elevation data may be used to determine the average annual rate of bank edge recession by comparing the horizontal distance the bank lip has moved using a GPS point and dividing this measurement by the difference in the number of years between datasets.

(c) As an alternate to the recession measurement methods identified in par. (a) or (b), the severity of shoreline erosion may be identified using average annual rate, in feet per year, of shoreline recession with measurements from historic aerial imagery over a period of 20 years. This method may be excluded, or the evaluation period abbreviated, if imagery is unavailable or obscured by canopy.

**320.12 Site Assessment methods for erosion control structures on streams.** Applicants and department staff shall use the following data requirements and site assessment methods for potentially exempt riprap under s. NR 320.04 (12) and shoreline erosion control structures individual permit applications under s. NR 320.06 for streams.

**(1) CALCULATION OF STREAM BANK EROSION POTENTIAL INDEX.** The department shall provide applicants with worksheets and a web page calculator 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 the BEPI worksheet in Table I to calculate a 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**

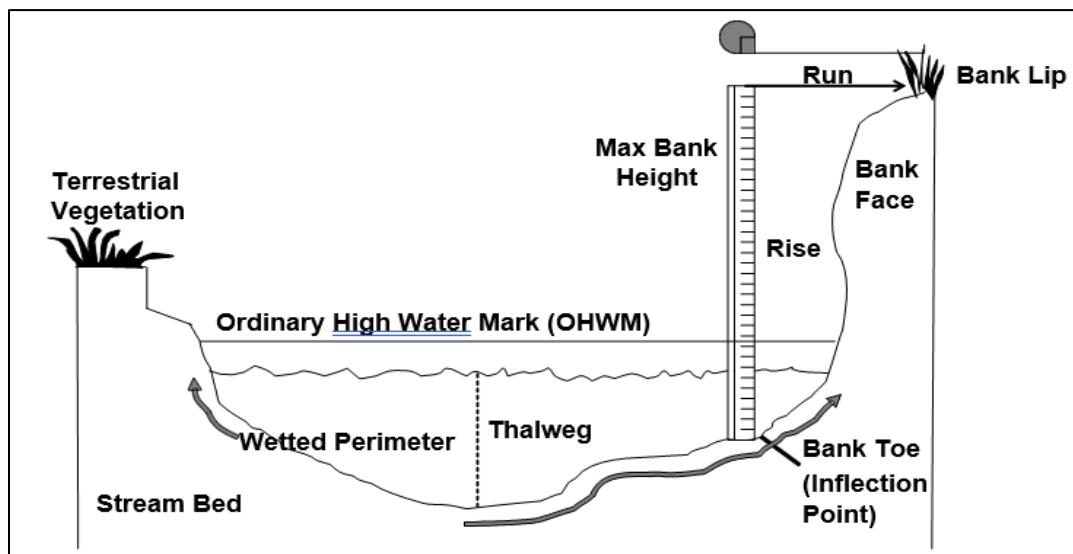
STREAMBANK VARIABLES	DESCRIPTIVE CATEGORIES Erosion Intensity Value is Located in Parenthesis at Bottom of Each Category Box.						SCORE
<b>BANK MATERIALS</b> – predominance of bank materials at toe (between bed and OHWM <sup>1</sup> on bank face).	Bedrock Outcrop <i>Stop assessment</i> BEPI=0	Cobble >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>MAX BANK HEIGHT</b> <sup>2</sup> (feet) Divided by the OHWM Height (feet)	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>BANK SLOPE</b> <sup>3</sup> (degrees) – measure rise/run and translate into angle degree <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>STRATIFICATION or BANK LAYERING</b> <sup>4</sup> –type of soil layering occurring on the bank face.	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>BANK VEGETATION</b> <sup>5</sup> – abundance of the vegetation, roots, and tree–falls occurring between the OHWM and the bank lip.	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>THALWEG LOCATION</b> <sup>6</sup> – deepest part of the channel or the location of stream current.	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:** The Bank Erosion Potential Index Worksheet is adapted from Rosgen, David L. “A Practical Method of Computing Streambank Erosion Rate”, Wildland Hydrology Inc., Pagosa Springs, CO, 10 pp.

**1. Bank Materials** 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.

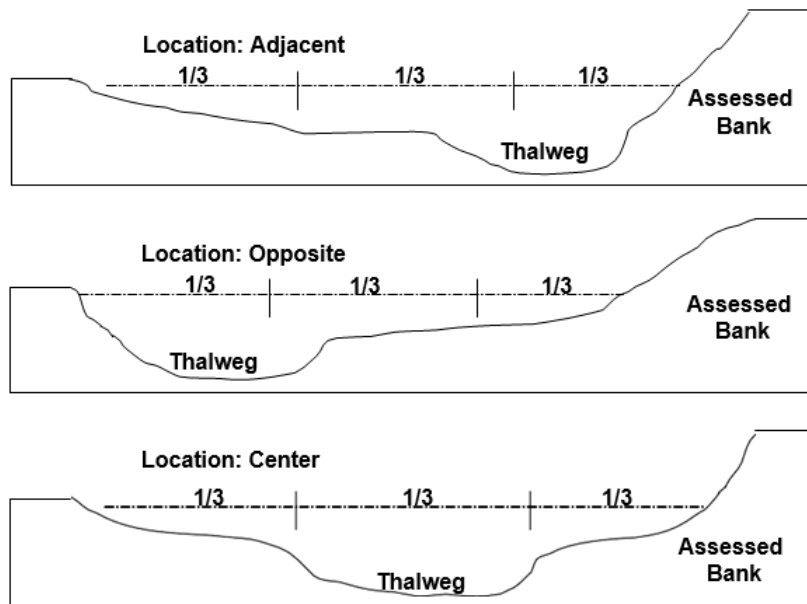
**3. To measure the bank slope (degrees)**, the rise and run must be measured from the bank toe to the top of the bank lip. With your measure tape or stick, place the end firmly on the bank toe, parallel to the bank face and measure up to the bank lip to find the rise or max bank height. Subsequently, 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 <https://dnr.wisconsin.gov/>. This website automatically calculates the bank slope and BEPI score after inputting fields for bank materials, structures upstream, OHWM height, maximum bank height, distance to bank face, bank layering/stratification, bank vegetation, and thalweg location.



**4. Stratification or bank layering** means soils consisting of alternating layers of varying soils or textures.

**5. 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 to 59% of the surface area = clumps of vegetation; bare soil visible across 60 to 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.

**6. 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.



**(2) BANK EDGE RECESSION MEASUREMENTS.** (a) Methods of measuring bank edge recession shall include all of the following:

1. Establishment of a physical measurement reference line between at least 2 headstakes.
2. Date-imbedded photographs showing the initial installation of the reference line and headstakes.
3. Reference distance measures to the bank lip.
4. Time between separate measurements of 3 months or more during the open-water season.

(b) As an alternate to the bank edge recession measurements method identified in par. (a), if 2 or more years of LiDAR elevation data are available for a site, the LiDAR elevation data may be used to determine the average annual rate of bank edge recession by comparing the horizontal distance the bank lip has moved using a GPS point and dividing this measurement by the difference in the number of years between datasets.

(c) As an alternate to the recession measurement methods identified in par. (a) or (b), the severity of shoreline erosion can be identified using average annual rate, in feet per year, of shoreline recession



with measurements from historic aerial imagery over a period of 20 years. The average annual rate of lateral migration shall be measured at the apex of the channel bend using historic aerial imagery over a period of 20 years. This method may be excluded, or the evaluation period abbreviated, if imagery is unavailable or obscured by canopy.

### **320.13 Enforcement.**

(1) No person may place a structure in, or a crossing in or over, 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.

(2) Noncompliance with the provisions of s. 30.12, 30.13, 30.123, 30.20, or 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, 30.298 (5), or 30.03 (4) (a), Stats., for any activity in violation of s. 30.12, 30.13, 30.123, 30.20, or 30.206, Stats.

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

(4) When an after-the-fact permit application has been filed with the department, the department shall follow the procedures in s. NR 300.20 for violations.

(5) Any violation of this chapter shall be treated as a violation of the statutes this chapter interprets or is promulgated under.

**SECTION 2.** Chapters NR 323, 326, 328, and 329 are repealed.

**SECTION 3. EFFECTIVE DATE.** This rule takes effect on the first day of the third month following publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

**SECTION 4. BOARD ADOPTION.** This rule was approved and adopted by the State of Wisconsin Natural Resources Board on September 25, 2024.

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

STATE OF Wisconsin DNR

DEPARTMENT OF NATURAL RESOURCES

BY \_\_\_\_\_

Steven Little, Deputy Secretary