



Model Ordinance

CHESAPEAKE BAY FOUNDATION

Forest Riparian Buffer

Chesapeake Bay Foundation
Pennsylvania Office
October 2006

This model ordinance, developed by the Chesapeake Bay Foundation's (CBF) Pennsylvania office, is intended to assist municipalities in the Commonwealth of Pennsylvania desiring to care for the quality of the environment and life within their jurisdiction. Reproduction, circulation, and other use of this document is permitted and encouraged. This ordinance can be adopted without modification; however, many municipalities may wish to make changes pursuant to local conditions. This ordinance reflects CBF's preferred version as to date with additional comments, suggestions, and options inserted throughout the document in italics.

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Section 1. Authority

The regulation is enacted pursuant to the authority of Article I, Section 27 (the "Environmental Rights Amendment"), Pennsylvania Municipalities Planning Code (MPC), 53 P.S. § 10101 et seq., 3 P.S. § 10603(c)(7), 53 P.S. § 10603(d), and 53 P.S. § 10603(g)(2), The Second Class Township Code (SCTC), 53 P.S. § 65101 and 66506 and the Borough Code, 53 P.S. § 45101 and 67704(6), (74), to protect the public health, safety, property, and welfare of the citizens of _____ [COMMUNITY] and to preserve and enhance the environmental, ecological, and aesthetic values of waterbodies in _____ [COMMUNITY], _____ [WATERSHED], and the Chesapeake Bay.

→ *This section should also list any other pertinent regulation or plan that will be further supported by the Riparian Buffer Ordinance (such as the municipality's Comprehensive Plan or Open Space and Environmental Protection Plan).*

Section 2. Intent

The intent of this article is to:

- 2.1. Improve surface water quality by reducing the amount of nutrients, sediment, organic matter, pesticides, and other harmful substances that reach watercourses, wetlands, subsurface, and surface water bodies by using scientifically- proven processes including filtration, deposition, absorption, adsorption, plant uptake, and denitrification, and by improving infiltration, encouraging sheet flow, and stabilizing concentrated flows of stormwater runoff.
- 2.2. Assist in the implementation of pertinent state laws concerning erosion and sediment control practices, specifically Erosion Control, of the Pennsylvania Clean Streams Law, Chapters 92 and 102 of the Administrative Code Title 25, and any subsequent amendments thereto, as administered by the Pennsylvania Department of Environmental Protection and the _____ [COUNTY] Conservation District.
- 2.3. Improve and maintain the safety, reliability, and adequacy of the water supply for domestic, agricultural, commercial, industrial, and recreational uses along with sustaining diverse populations of aquatic flora and fauna.
- 2.4. Preserve and protect areas that intercept surface water runoff, wastewater, subsurface flow, and/or deep groundwater flows from upland sources and function to remove or buffer the effects of associated nutrients, sediment, organic matter, pesticides, or other pollutants prior to entry into surface waters, as well as provide wildlife habitat, moderate water temperature in surface waters, attenuate flood flow, and provide opportunities for passive recreation.



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- 2.5. Regulate the use, siting, and engineering of all development to be consistent with the intent and objectives of this ordinance and accepted conservation practices, and to work within the carrying capacity of existing natural resources.
- 2.6. Conserve natural features important to land or water resources such as headwater areas, groundwater recharge zones, floodway, floodplain, springs, streams, wetlands, woodlands, prime wildlife habitats, and other features that provide recreational value or contain natural amenities whether on developed or undeveloped land.
- 2.7. Integrate with floodplain, steep slope, and other requirements that regulate environmentally sensitive areas to minimize hazards to life, property, and riparian features.
- 2.8. Recognize that natural features contribute to the welfare and quality of life of the townships residents.
- 2.9. Conserve natural, scenic, and recreation areas within and adjacent to riparian areas for the community's benefit.

Section 3. Definitions

- 3.1 **"Bankfull Width"** means the lateral extent of the water surface elevation at the bankfull depth. Bankfull width for a site should be calculated as an average of all measurements taken at the two or three cross-sections in each site.
- 3.2 **"Bankfull Depth"** is the average depth of the channel at the bankfull level. Calculation of bankfull channel depth at each cross-section involves the addition of bank height to the baseflow stream depth measurements. The overall bankfull channel depth for the sampling site is calculated as the average channel depth of the two to three cross-sections measured at each sampling site.
- 3.3 **"Buffer"** means a natural or enhanced vegetated area lying adjacent to stream or nontidal wetland.
- 3.4 **"Canopy Cover"** is the percent of a fixed area covered by the crown of an individual plant species or delimited by the vertical projection of its outermost perimeter; small openings in the crown are included.
- 3.5 **"Conservation Plan"** is a site-specific plan developed for an agricultural operation which, at a minimum, outlines specific techniques to minimize accelerated erosion and related sedimentation associated with plowing and tilling activities on the agricultural operation.



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- 3.6 **"Earth Disturbance"** means any land or vegetation change, including, but not limited to, clearing, grubbing, stripping, removal of vegetation, dredging, grading, excavating, transporting and filling of land, that do not involve construction, paving or any other installation of impervious cover.
- 3.7 **"Earth Disturbance Activity"** means those actions or activities which comprise, facilitate or result in land disturbance.
- 3.8 **"Exceptional Value Water"** refers to surface waters of high quality which satisfy Pennsylvania Code Chapter 93.4b(b) (relating to antidegradation).
- 3.9 **"Floodplain"** means any land area susceptible to flooding, which would have at least a one percent probability of flooding occurrence in any calendar year based on the basin being fully developed as shown on the current land use plan; i.e., the regulatory flood.
- 3.10 **"Forest Riparian Buffer"** means an area of trees, usually accompanied by shrubs and other vegetation, that is adjacent to a body of water which is managed to maintain the integrity of stream channels and shorelines, to reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals, and to supply food, cover, and thermal protection to fish and other wildlife.
- 3.11 **"High Quality Water"** refers to surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Pennsylvania Code Chapter 93.4b(a).
- 3.12 **"Impervious Cover"** means any manmade paved, hardened or structural surface regardless of material. Impervious cover includes but is not limited to rooftops, buildings, streets, roads, decks, swimming pools and any concrete or asphalt.
- 3.13 **"Land Development"** means any land change, including but not limited to clearing, grubbing, stripping, removal of vegetation, dredging, grading, excavating, transporting and filling of land, construction, paving and any other installation of impervious cover.
- 3.14 **"Land Development Activity"** means those actions or activities which comprise, facilitate or result in land development.
- 3.15 **"Nonconforming Uses/Structures"** means any uses or structures that were legally established prior to current ordinance provisions but which do not comply with current ordinance provisions
- 3.16 **"Nontidal Wetlands"** means those areas not influenced by tidal fluctuations that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.



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- 3.17 **"Nonpoint Source Pollution"** means pollution generated by various land use activities rather than from an identifiable or discrete source and is conveyed to waterways through natural processes, such as rainfall, snowmelt, or groundwater seepage rather than direct discharges.
- 3.18 **"One Hundred-Year Floodplain"** means the area of land adjacent to a stream that is subject to inundation during a storm event that has a recurrence interval of 100 years.
- 3.19 **"Parcel"** means any plot, lot or acreage shown as a unit on the latest county tax assessment records.
- 3.20 **"Permit"** means the final permit issued by the _____ [COMMUNITY] required for undertaking any land development activity.
- 3.21 **"Person"** means any individual, partnership, firm, association, joint venture, public or private corporation, trust, estate, commission, board, public or private institution, utility, cooperative, city, county or other political subdivision of the State, any interstate body or any other legal entity.
- 3.22 **"Pollution"** means contamination of any waters of the Commonwealth such as will create or is likely to create a nuisance or to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, municipal, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life, including but not limited to such contamination by alteration of the physical, chemical or biological properties of such waters, or change in temperature, taste, color or odor thereof, or the discharge of any liquid, gaseous, radioactive, solid or other substances into such waters.
- 3.23 **"Protection Area, or Stream Protection Area"** means, with respect to a stream, the combined areas of all required buffers and setbacks applicable to such stream.
- 3.24 **"Riparian"** means belonging or related to the bank of a river, stream, wetland, lake, pond or impoundment.
- 3.25 **"Stream Bank"** means the sloping land that contains the stream channel and the normal flows of the stream.
- 3.26 **"Stream Channel"** means part of a watercourse either naturally or artificially created that contains an intermittent or perennial base flow of groundwater origin. Base flows of groundwater origin can be distinguished by any of the following physical indicators:
- A. Hydrophytic vegetation, hydric soil, or other hydrologic indicators in the area(s) where groundwater enters the stream channel in the vicinity of the stream headwaters, channel bed, or channel banks;



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- B. Flowing water not directly related to a storm event; and/or
- C. Historical records of a local high groundwater table, such as well and stream gauge records.

3.27 **"Stream"** means perennial and intermittent watercourses identified through U.S. Geological Survey (USGS) maps or by _____ [COMMUNITY] and any lake, nontidal wetland, or impoundment which receives or drains water from such sources. Perennial streams are those which are depicted on a USGS map with a solid blue line. Intermittent streams are those which are depicted on a USGS map with a dotted blue line.

→ Defining the term "stream" is perhaps the most contentious issue in the definition of stream buffers. This term determines the origin and the length of the stream buffer. Although some jurisdictions restrict the buffer to perennial or "blue line" streams, others include both perennial and intermittent streams in the stream buffer program. Some communities do not rely on United States Geological Survey (USGS) Hydrologic Maps and/or the most recent Natural Resource Conservation Service (NRCS) county Soil Survey Map and instead prepare local maps of all stream systems that require a buffer. In addition, many local governments also include setbacks for wetlands, lakes, and vernal ponds within their riparian buffer ordinance.

3.28 **"Stream Order"** means a classification system for streams based on stream hierarchy. The smaller the stream, the lower its numerical classification. For example, a first-order stream does not have tributaries and normally originates from springs and/or seeps. See Appendix A.

3.29 **"Stream System"** means a stream channel together with one or both of the following:

- A. 100-year floodplain; and/or
- B. Hydrologically related nontidal wetland

3.30 **"Vernal Pond"** means a small body of standing water that forms in the spring from meltwater and is often dry by mid-summer or may even be dry before the end of the spring growing season. Many vernal ponds occur in depressions often found in woodlots. Wetland vegetation may become established but are usually dominated by annuals.

3.31 **"Watershed"** means the land area that drains into a particular stream.

Section 4. Applicability



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- 4.1 This regulation shall apply to all lands that are within the jurisdiction of _____ [COMMUNITY] and that border designated watercourses as defined in Section 3.12 and 3.26 of this regulation.
- 4.2 The provisions here shall apply to the construction of any building or any earth disturbance resulting from or in connection with any activity or use requiring any of the following:
- A. Building Permit
 - B. Zoning Hearing Board approval
 - C. Conditional Use Approval
 - D. Subdivision/Land Development approval
 - E. Grading Permit
- 4.3 No approvals or permits shall be issued by _____ [COMMUNITY] without full compliance with the terms of this regulation where applicable.

Section 5. Exemptions

The following land uses are exempt from this ordinance:

- 5.1 Existing land uses, except as follows:
- A. When the existing land use, or any building or structure involved in that use, is enlarged, increased, or extended to occupy a greater area of land; or
 - B. When the existing land use, or any building or structure involved in that use, is moved (in whole or in part) to any other portion of the property; or
 - C. When the existing land use ceases for a period of more than one year.
- 5.2 Agricultural production, provided that it is consistent with all state and federal laws, regulations promulgated by the Pennsylvania Department of Environmental Protection, and best management practices established by the Pennsylvania State Conservation Commission.
- 5.3 Selective logging, except within 75 feet of a stream, and provided that logging practices comply with the best management practices set forth by the Pennsylvania Bureau of Forestry.



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- 5.4 Crossings by transportation facilities and utility lines. However, issuance of permits for such uses or activities is contingent upon the completion of a feasibility study that identifies alternative routing strategies that do not impact forest riparian buffer area, as well as a mitigation plan to minimize impacts on the riparian buffer area.
- 5.5 Temporary stream, stream bank, and vegetation restoration projects, the goal of which is to restore the stream or riparian zone to an ecologically healthy state.
- 5.6 Structures which, by their nature, cannot be located anywhere except within the forest riparian buffer area. These include docks, boat launches, public water supply intake structures, facilities for natural water quality treatment and purification, and public wastewater treatment plant sewer lines and outfalls. Such structures should, however, provide for the minimum practicable disturbance of the forest riparian buffer area by minimizing size and location, and taking advantage of co-location if possible.
- 5.7 Wildlife and fisheries management activities consistent with the purposes of , but not limited to, Pennsylvania the Game and Wildlife Code, 34 Pa.C.S. § § 101—2965, Pennsylvania Scenic Rivers Act, act of December 5, 1972 (P.L. 1277, No. 283), 32 P.S. §§ 820.21-820.29, Pennsylvania Appalachian Trail Act, act of April 28, 1978 (P.L. 87, No. 41), 64 P.S. §§ 801-805, and Pennsylvania Wild Resource Conservation Act, act of June 23, 1982 (P.L. 597, No. 170), 32 P.S. §§ 5301-5314.
- 5.8 Construction of a single family residence, including the usual appurtenances, provided that:
- A. Based on the size, shape or topography of the property, as of the effective date of this ordinance, it is not reasonably possible to construct a single-family dwelling without encroaching upon the forest riparian buffer area;
 - B. The dwelling conforms with all other zoning regulations;
 - C. Septic tanks or drain fields are not located within the riparian buffer area;
 - D. Dwelling avoids to maximum extent practicable disturbance of the riparian forest buffer area.



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- 5.9 Other uses permitted by the Pennsylvania Department of Environmental Protection or under Section 404 of the Clean Water Act.
- 5.10 Notwithstanding the above, all exempted uses, structures or activities shall comply with the requirements of the Pennsylvania Code Title 25 Chapter 102 Erosion and Sediment Control and all applicable best management practices and shall not diminish water quality as defined by the Pennsylvania Clean Streams Law and federal Clean Water Act. All excepted uses shall be located as far from the stream bank as reasonably possible.

Section 6. Width Requirements of the Forested Riparian Buffer

- 6.1 The width of the forested riparian buffer shall be established as the greatest of the following:
- A. A specified distance from the top of each stream bank, based on stream order, as given in Table 1.

Table 1: Minimum Buffer Widths by Stream Order

Stream Order	Buffer Width
1-2	100 feet
3-4	75 feet
>4	50 feet

- B. The forested riparian buffer width shall be modified if there are steep slopes which are within a close proximity to the stream and drain into the stream system. In those cases, the riparian buffer width can be adjusted, as given in Table 2.

Table 2: Buffer Width Additions based on Slope

Percent Slope	Addition to Buffer Width
10%-15%	Add 10 feet
16%-17%	Add 20 feet
18%-20%	Add 30 feet
21%-23%	Add 50 feet
24%-25%	Add 60 feet
25% and greater	Add 70 feet

- C. The riparian buffer width shall be expanded if the stream within or adjacent to the land development area is designated as High Quality (HQ) or Exceptional Value



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(EV) in Pennsylvania Code Chapter 93 Water Quality Standards, Subsection 9 Designated Water Uses and Water Quality Criteria. In such cases the riparian buffer width shall be a minimum of 250 feet.

- D. In the case of the presence of a nontidal wetland or vernal pond wholly or partially within the riparian buffer, an additional twenty-five (25) feet will be added to the widths in Tables 1 and 2 from the wetland or pond boundary.

→ Unlike most ordinances, CBF recommends larger widths for smaller order streams. Headwater—first or second order—streams are generally short in length, but comprise the vast majority of the total stream and river miles. In general terms, buffers have the greatest potential for control over water quality when adjacent to low-order streams. As stream order increases, the contributing area and volume of water available to the buffer area also increases, potentially diminishing the relative capability of the buffer to filter and remove pollutants as a percent of total loading. This does not mean that the buffer's effectiveness in treating pollutants immediately upslope may be compromised, only that the magnitude of control exerted over the water in the stream diminishes. Likewise, as stream order increases so does stream size, thus decreasing the ability of streamside trees to provide control of water temperature.

→ Numerous sizing schemes are employed in buffer ordinances. For ease of interpretation and implementation, we have selected a simple, yet scientific, sizing scheme. The buffers widths in this ordinance were determined based on local and regional water quality commitments. Research has indicated that for phosphorus abatement, widths on the order of 50 feet or so may be adequate. However, to address nitrogen pollution—a significant problem in the Chesapeake Bay watershed—buffers with widths on the order of those recommended in this ordinance are required. Given the mandated reductions in both phosphorus and nitrogen for those communities within the Bay watershed of Pennsylvania, it is highly recommended that the widths presented in this ordinance be employed.

→ If the width sizing recommendations in this model ordinance are deemed inappropriate, a minimum width of 50 feet for all streams, regardless of stream order, should be employed.

Section 7. Riparian Buffer Width Zones

- 7.1 The Riparian Buffer Zone shall have three distinct areas requiring the following widths and management (Appendix B):

A. Zone 1: Streamside Zone

1. Protects the physical and ecological integrity of the stream ecosystem
2. Begins at the edge of the stream bank of the active channel and extends a minimum of fifty (50) percent of the total buffer width from the top of the bank
3. Target vegetation for the streamside zone is undisturbed native woody species.



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B. Zone 2: Middle Zone

1. Protects key components of the stream and provides distance between upland development and the streamside zone
2. Begins at the outer edge of the Streamside Zone and extends a minimum of twenty-five (25) percent of the remaining total buffer width from the Streamside Zone
3. Target vegetation for the streamside zone is undisturbed native woody species.

C. Zone 3: Outer Zone

1. Prevents encroachment into the forest buffer and filters runoff from residential and commercial development
2. Begins at the outward edge of the Middle Zone and provides a minimum of twenty-five (25) percent of the remaining total buffer width from the Middle Zone
3. Restricts septic systems, permanent structures, or impervious cover, with the exception of paths
4. Encourages the planting of native woody and herbaceous vegetation to increase the total width of the buffer.

Section 8. Uses Permitted within Forest Riparian Buffer

- 8.1 The forest buffer, including wetlands and floodplains, shall be managed to enhance and maximize the unique value of these resources. Management includes specific limitations on alteration of the natural conditions of these resources.
- 8.2 Zone 1: Streamside Zone. Undisturbed forest area aims to protect the stream and its ecosystem. Targets mature undisturbed forest with native plants forming canopy, understory, and duff layer. Uses allowed:
 - A. Open space uses that are primarily passive in nature, such as wildlife sanctuaries, nature preserves, forest preserves, fishing areas, footpaths, educational/public awareness signs.
 - B. Reforestation and stream stabilization.
 - C. Historic building reconstruction.



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D. Flood control structures and utility rights of way.

E. Buffer Crossings.

1. Driveways serving 1 or 2 single-family detached dwelling units, provided the mitigation requirements of Section 9, herein, are satisfied. Buffer crossing standards in Section 8, herein, should be considered. The right-of-way should be the minimum width needed to allow for maintenance access and installation
2. The angle of the crossing shall be perpendicular to the stream or buffer to minimize clearing requirements
3. The minimum number of road crossings should be used within each subdivision, and no more than one fairway crossing is allowed for every 1,000 feet of buffer.

F. Agricultural crossings by farm vehicles and livestock.

G. Pre-existing agricultural uses when conducted in accordance with a Conservation Plan approved by the County Conservation District.

H. Removal of dead or diseased trees, and those causing safety concerns.

8.3 Zone 2: Middle Zone. Managed forest area which further protects the stream and its ecosystem and provides distance between upland development and the streamside zone. Targets mature native forest vegetation (trees and shrubs). Undisturbed forest as in Zone 1 is strongly encouraged to further protect water quality and the stream ecosystem. Uses allowed:

- A. Uses listed in Section 8.2, herein.
- B. Biking or hiking paths.
- C. Stormwater management facilities, with the approval of _____ [COMMUNITY].
- D. Recreational uses approved by _____ [COMMUNITY].
- E. Limited forestry management techniques and timber harvesting with approval from _____ [COMMUNITY].

8.4 Zone 3: Outer Zone. Prevents encroachment into the forest riparian buffer and filters runoff from adjacent land. Encourages sheet flow of runoff into the buffer. Planting native vegetation is strongly encouraged to increase the total buffer width. Uses allowed:



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- A. Uses listed in Sections 8.2 and 8.3, herein.
- B. Recreational uses that do not involve impervious surfaces or encourage concentrated flow of stormwater into the buffer.

Section 9. Uses Specifically Prohibited in the Forest Riparian Buffer

9.1 Any use or activity not authorized within Section 8, herein, shall be prohibited within the forest riparian buffer area and the following activities and facilities are specifically prohibited:

- A. Clear cutting of trees and/or other vegetation.
- B. Drainage by ditching, underdrains, or other systems.
- C. Housing, grazing, or other maintenance of livestock, except as stated in Section 8.2, herein.
- D. Storage of any hazardous or noxious materials.
- E. Use of fertilizers, pesticides, and/or other chemicals, excluding those used in agricultural practices
- F. Roads or driveways, except where permitted as buffer crossings in compliance with Section 8.2, herein.
- G. Motor or wheeled vehicle traffic in any area not designed to accommodate adequately the type and volume.
- H. Parking lots.
- I. Expansion of existing structures.
- J. Any type of permanent structure except those presented in Section 8, herein.
- K. Subsurface sewage disposal areas.

→ Some ordinances employ a simpler approach in which the zone classification is eliminated in favor of single standards for the entire buffer. In such cases, the prohibited and permitted uses presented in Zone 1: Streamside Zone are often used for the entire buffer.

Section 10. Nonconforming Structures & Uses in Forest Riparian Buffer Area



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- 10.1 A nonconforming use, existing at the time of passage of this regulation and within a forest riparian buffer area, that is not permitted under this regulation may be continued but shall not be changed or enlarged unless changed to a use permitted under this regulation.
- 10.2 A nonconforming residential or commercial structure, existing at the time of passage of this regulation and within a forest riparian buffer area, that is not permitted under this regulation, may be continued or replaced. Such structures may be enlarged vertically.
- 10.3 A nonconforming accessory structure, existing at the time of passage of this regulation and in the forest riparian buffer, that is not permitted under this regulation may be continued or replaced but shall not have the existing building footprint or roofline expanded or enlarged.

Section 11. Forest Riparian Buffer Restoration Requirements & Plan

- 11.1 _____ [COMMUNITY] shall require forest buffer restoration on proposed development site where:
 - A. The existing vegetation of the buffer area, as determined in Section 5, herein, comprises less than sixty-six (66) percent woody vegetation, as determined by the Township Engineer.
 - B. A buffer area has some existing desirable woody vegetation, but has less than sixty-six (66) percent canopy cover; planting density required in Section 10.2, herein, may be decreased as determined or approved by the Township Engineer.
- 11.2 When forest buffer restoration is required planting shall consist of:
 - A. Plants shall be minimum 2-year stock, and may include bare root, container grown, or balled and burlapped stock.
 - B. Plants should be installed in staggered rows or an equivalent informal arrangement.
 - C. Planting density shall be consistent with normal industry practices according to planting stock type, installation procedures, and management, with consideration of the required survival guarantee listed in Section 11.5, herein.
 - D. The ratio of trees to shrubs shall be approximately 1:1, but may be from 2:1 to 1:2, depending on site-specific conditions.



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- E. Species mix for planting should be diverse – at least 4 species of trees and 4 species of shrubs. Consideration of specific site conditions and plant preferences (such as shade and soil moisture) is also required.
- F. Species selected for planting in forest riparian buffer restoration shall be pre-approved by the Township Engineer, and will be devised utilizing native and naturalized tree and shrub species from the following reference:
 - 1. Palone, R.S. and A.H. Todd (editors.) 1997. Chesapeake Bay riparian handbook: a guide for establishing and maintaining riparian forest buffers. USDA Forest Service. NA-TP-02-97. Radnor, PA.

→ Many of the benefits of ordinance implementation are dependent on the presence of this type of vegetation. Planting is especially important in areas of the state where native seed sources are inadequate for natural regeneration. Planting and sheltering trees, but not shrubs, is generally advisable to reduce damage by deer and rodents.

11.3 Forest Riparian Buffer Restoration Requirements listed in Section 10, herein, must be adhered to unless one or more of the following exceptions exist:

- A. The overall buffer area has existing desirable woody vegetation providing sixty-six (66) percent canopy cover or greater, as determined by the Township Engineer.
- B. A portion of the buffer area's existing habitat is determined to contain, or has the potential to support, one or more threatened or endangered species, as determined through a Pennsylvania Natural Diversity Index (PNDI) search. Requirements listed in Section 10, herein, will be waived for the identified portion of forest riparian buffer area.
- C. A portion of the buffer area's existing habitat is determined to contain one or more historical sites, as determined by the Pennsylvania Historical & Museum Commission (PHMC). Requirements listed in Section 10, herein, will be waived for the identified portion of forest riparian buffer area.

11.4 Forest Riparian Buffer Restoration Plan. The applicant shall include, as part of preliminary and final plan submission, provision for the long-term management ("management plan") of the forest riparian buffer. The management plan shall include the following:

- A. The manner in which any buffer area will be owned and by whom it will be managed and maintained.
- B. The conservation and/or land management techniques and practices which will be used to conserve and protect such areas, as applicable.



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- C. The professional and personnel resources that are expected to be necessary in order to maintain and manage the property.

11.5 Survival Guarantee. Applicant or its successors shall be responsible for the survival of at least seventy (70) woody plants per acre, or equivalent for areas under one (1) acre in size, after three (3) years.

Section 12. Plan Requirements

12.1 A plan approved by _____ [COMMUNITY] is required for all development activities as outlined in Section 4 of this ordinance.

12.2 The plan shall set forth an informative, conceptual, and schematic representation of the proposed activity by means of maps, graphs, charts, or other written or drawn documents so as to enable the agency an opportunity to make a reasonably informed decision regarding the proposed activity.

12.3 The plan shall contain the following information:

- A. A location or vicinity map
- B. Field-delineated and surveyed streams, springs, seeps, bodies of water, and wetlands (include a minimum of two hundred (200) feet into adjacent properties)
- C. Field delineated and surveyed forest buffers
- D. Existing structures
- E. Limits of the 100-year floodplain
- F. Hydric soils mapped in accordance with the NRCS soil survey of the site area
- G. Steep slopes greater than fifteen (15) percent for areas adjacent to and within two hundred (200) feet of streams, wetlands, or other waterbodies
- H. A narrative of the species and distribution of existing vegetation within the buffer
- I. A note to reference any forest buffer stating: "There shall be no clearing, grading, construction or disturbance of vegetation except as permitted by the _____ [COMMUNITY]."
- J. A note to reference any protective covenants governing all forest buffer areas stating: "Any forest buffer shown hereon is subject to protective covenants that



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may be found in the land records and that restrict disturbance and use of these areas.”

12.4 Forest Riparian Buffer Restoration Plan, as outlined herein Section 11, if applicable.

12.5 The buffer plan shall be submitted in conjunction with the required grading plan for any development, and the forest buffer should be clearly delineated on the final grading plan.

12.6 Permanent boundary markers, in the form of educational signage approved by _____ [COMMUNITY] shall be installed every 200 feet prior to final approval of the required clearing and grading plan. Signs shall be placed at the transitional edge of Zone 2 and Zone 3 (See Section 7.3).

Section 13. Waivers and Variances.

13.1 Waivers. _____ [COMMUNITY] may grant waivers for the following, if deemed appropriate by _____ [Specific legislative or administrative body/office in COMMUNITY]:

- A. The buffer width may be relaxed and the buffer permitted to become narrower at some points, as long as the average width and total area meets the requirements set forth in Section 6 herein. This averaging of the buffer may be used to allow for the presence of an existing structure or to recover a lost lot, however, the buffer width may be narrowed by no more than twenty five (25) percent, and no new structures may be built within the 100-year floodplain.
- B. _____ [COMMUNITY] may offer credit for additional density elsewhere on the site in compensation for the loss of developable land due to the requirements of this ordinance. This compensation may increase the total number of dwelling units on the site up to the amount permitted under the base zoning.

13.2 Variances. The applicant shall submit a written request for a variance to _____ [COMMUNITY]. The application shall include specific reasons justifying the variance and any other information necessary to evaluate the proposed variance request. _____ [COMMUNITY] may require an alternatives analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development. In granting a request for a variance, _____ [COMMUNITY] may require additional site design, landscape planting, fencing, the placement of signs, and the establishment of water quality best management practices in order to reduce impacts on water quality, wetlands, and floodplains. _____ [COMMUNITY] may grant a variance for the following:



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- A. Those projects or activities where it can be demonstrated that strict compliance would result in significant practical difficulty or significant financial hardship.
- B. Those projects or activities serving a public need where no feasible alternative is available.
- C. The repair and maintenance of public improvements where avoidance and minimization of adverse impacts to the forest riparian buffer area have been addressed.

Section 14. Inspection

- 14.1 The _____ [COMMUNITY] shall have the authority to conduct investigations as it may reasonably deem necessary to carry out its duties as prescribed in this ordinance, and for this purpose to enter at reasonable time upon any property, public or private, for the purpose of investigating and inspecting the sites of any land-disturbing activities within the protection area.
- 14.2 The Zoning Enforcement Officer may cause inspections to be made periodically during the course of land development and shall make a final inspection following completion of the work. The permittee shall assist the Zoning Enforcement Officer in making such inspections, if need be.
- 14.3 The Zoning Enforcement Officer may cause inspections to be made periodically following completion of the land development to determine forest riparian buffer intactness.
- 14.4 No person shall refuse entry or access to any authorized representative or agent who requests entry for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper or interfere with any such representative while in the process of carrying out official duties.

Section 15. Performance Bond

- 15.1 Prior to the issuance of any permit for land-disturbance activities applicable in pursuant to this ordinance, the applicant shall submit a performance and maintenance bond that shall ensure compliance with all terms and conditions of the permit. The bond shall pertain only to the property on which the proposed activity would occur and shall include a description of the property. The bond shall be valid for a length of time to be determined by the _____ [COMMUNITY], and shall be specified on the face of the bond. The bond shall be in an amount equal to ten (10) percent of the



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estimated cost of completing the proposed land-disturbance activity. The sum of the bond shall be made payable to _____ [COMMUNITY]. A bonding company licensed and registered in the Commonwealth of Pennsylvania shall provide the bond.

- 15.2 Within thirty (30) days following the expiration of the bond, and with verification through on-site inspection that the bonded activity is in compliance with all terms and conditions of this ordinance, the _____ [COMMUNITY] shall refund the bond to the applicant.

Section 16. Violations, Enforcement, & Penalties

- 16.1 The Zoning Enforcement Officer of _____ [COMMUNITY] is authorized to enforce the requirements of this ordinance in accordance with this section.
- 16.2 Violations. If any person commences any land-disturbing activity requiring an earth disturbance permit as prescribed in this ordinance without first obtaining said permit, or, if upon inspection or investigation, the Zoning Enforcement Officer or other authorized agent determines that a land-disturbing activity is not being conducted in accordance with an approved permit, the activity shall be considered to be in violation of this ordinance.
- 16.3 Enforcement Action. Upon determination of a violation, the _____ [COMMUNITY] shall issue a notice of violation to the permit holder, property owner or the party in charge of the activity on the property. Such notice shall be in writing and require the immediate stop of all work on the property. The notice shall also include:
- A. The named and address of the owner
 - B. The address or description and location of the property where the violation is occurring
 - C. A description of the violation(s)
 - D. A description of the corrective actions needed to return to compliance and a time schedule to complete the corrective actions.
- 16.4 Where an emergency exists, no written notice shall be required to stop work. Written notice of the stop work order shall be presented to the appropriate responsible parties within three business days of the emergency order.
- 16.5 Penalties. The penalties that may be assessed for violations may include:



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- A. **Performance Bond Forfeiture.** If, through inspection, it is determined the corrective measures specified in a stop-work order have not been completed within the specified time, the responsible party shall be deemed to be in violation, and, in addition to other penalties, the performance bond shall be subject to forfeiture
- B. **Suspension, Revocation or Modification of Permit.** The permit may be suspended, revoked or modified by the _____ [COMMUNITY] if, through inspection, it is determined the corrective measures specified in a stop-work order have not been completed within the specified time
- C. **Civil Penalties.** Any person violating any provision of this ordinance, permitting conditions or stop-work order and the owner of the land where the violation occurs shall be liable for a civil penalty of not less than one thousand dollars (\$1,000.00) and not more than two thousand dollars (\$2,000.00) per violation per day. Each day the violation continues shall constitute a separate offense
- D. **Criminal Penalties.** Any person violating any provision of this ordinance, permitting conditions, or stop-work order, the _____ [COMMUNITY may issue a citation to the owner of the land where the violation occurs or other responsible person, requiring such person to appear in _____ [APPROPRIATE MUNICIPAL, MAGISTRATE, OR RECORDERS] court to answer charges for such violation. Upon conviction, the owner of the land where the violation(s) occurs or other responsible person shall be liable for a criminal penalty in the form of imprisonment for not more than ninety (90) days and penalties not less than one thousand dollars (\$1,000.00) and not more than two thousand dollars (\$2,000.00) per violation per day. Every day that such violation(s) continue will be considered a separate offense.
- E. In addition to any other sanctions listed in this ordinance, a person who fails to comply with the provisions of this forest riparian buffer ordinance shall be liable to the agency in a civil action for damages in an amount equal to one and a half (1.5) times the cost of restoring the buffer. Damages that are recovered in accordance with this action shall be used for the restoration of buffer systems or for the administration of programs for the protection and restoration of water quality, streams, wetlands, and floodplains
- F. Any person who violates any provision of this ordinance may be liable for any cost or expenses incurred as a result thereof by the _____ [COMMUNITY].

Section 17. Administrative Appeal and Judicial Review



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17.1 Administrative Appeal. Any person aggrieved by a decision or order of _____ [COMMUNITY], may appeal an enforcement action in writing within ten (10) days after receipt of such action to the (chief elected official) of (local jurisdiction) and shall be entitled to a hearing before the (governing body) of (local jurisdiction) within _____ days of receipt of the written appeal.

17.2 Judicial Review. Any person aggrieved by a decision or order of _____ [COMMUNITY], after exhausting all administrative remedies, shall have the right to appeal de novo to the County Court.

Section 18. Conflicts With Other Regulations & Severability

18.1 Where the standards and management requirements of this buffer ordinance are in conflict with other laws, regulations, and policies regarding streams, steep slopes, erodible soils, wetlands, floodplains, timber harvesting, earth disturbance activities, or other environmental protective measures, the more restrictive shall apply.

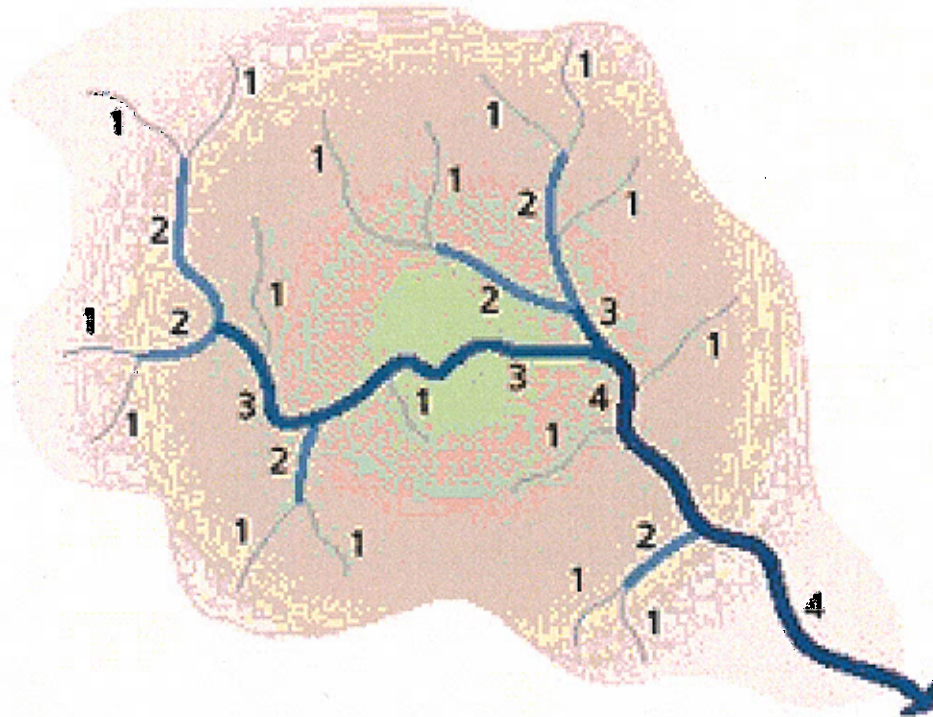
18.2 If any clause, section, or provision of this regulation is declared invalid or unconstitutional by a court of competent jurisdiction, validity of the remainder shall not be affected thereby.



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APPENDIX A. STREAM ORDER

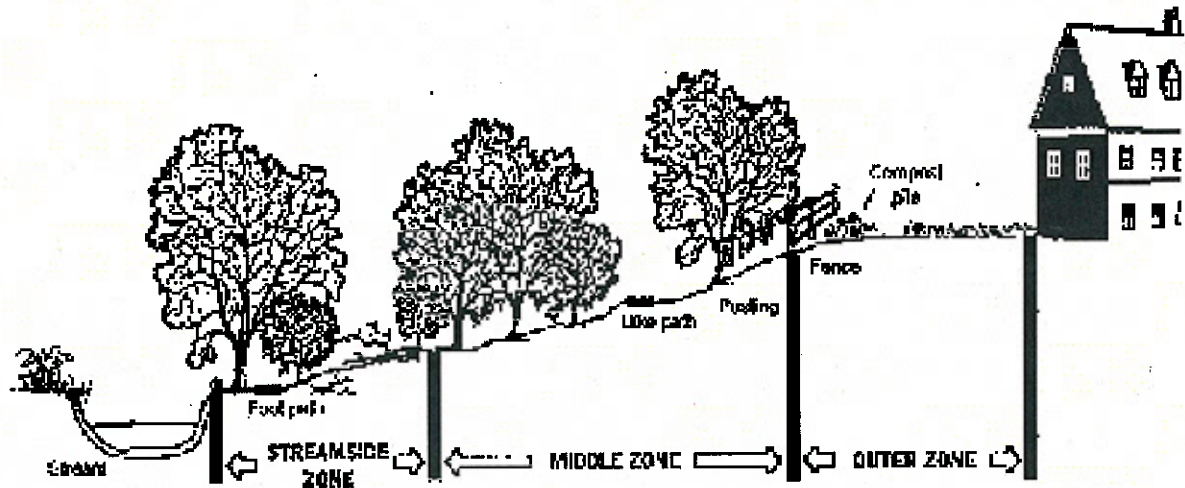
Stream Order Classification (Courtesy of the University of Wisconsin)



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APPENDIX B. ZONED BUFFER SYSTEM

Three Zone Buffer System (Courtesy of the Center for Watershed Protection)



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CHESAPEAKE BAY FOUNDATION ***Saving a National Treasure***

The Chesapeake Bay Foundation is the largest conservation organization dedicated solely to saving the Chesapeake Bay and its rivers and streams. Its motto, Save the Bay, defines the organization's mission and commitment. With headquarters in Annapolis, Md., state offices in Maryland, Virginia and Pennsylvania, and a varied group of educational centers and programs, CBF works throughout the Chesapeake's 64,000-square-mile watershed. Founded in 1967, CBF is a 501(c)(3) not-for-profit organization. CBF is supported by more than 170,000 active members and has a staff of 150 full-time employees. Approximately 95 percent of CBF's \$17.5 million annual budget is privately raised.

For more information, visit www.cbf.org/pennsylvania or at The Chesapeake Bay Foundation, Old Water Works Building, 614 North Front Street, Ste. G., Harrisburg, PA 17101 or (717) 234-5550.



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