2.6 Shoreland Protection: The Importance of Riparian Buffers

RELATED TOOLS:

- Habitat Protection
- Permananent (Post-Construction) Stormwater Management
- Environmental Characteristics Zoning
- Density Transfer Credit

BACKGROUND AND PURPOSE

The purpose of this chapter is to provide municipalities with a model ordinance designed to promote shoreland and riparian protection.

The simplest and most effective way to protect streams, rivers, lakes and estuaries is to leave an area of undisturbed native vegetation adjacent to the water body. These undisturbed areas act as buffers by performing functions that protect water quality and enhance wildlife habitat. Preserving and restoring riparian buffers is essential to surface water quality protection.

There are a number of important guides, technical reports and scientific bulletins available to help New Hampshire municipalities better understand the importance of shoreland protection and the value of riparian buffers (see References).

Two of the key resources for municipal planners are *Buffers for Wetlands and Surface Waters: A Guidebook for New Hampshire Municipalities* and *Riparian Conservation: A Professional's Practical Guide to Financial Assistance and Program Support*.

Surface waters can be broadly classified as either lakes and ponds or rivers and streams. Streams are typically classified according to their *order (see the definition of Stream Order in Glossary)*. In general, streams of higher order are larger than those of lower order. Rivers are examples of higher order streams. The size of a stream is one parameter that can be used to determine the amount of protection or buffer size that is desired for the water body.

In New Hampshire, municipalities currently have four options to regulate development for shoreland and riparian purposes:

Option 1: They may rely solely on the state's Comprehensive Shoreland Protection Act (CSPA) to protect the specific types of surface water bodies that fall under the jurisdiction of the CSPA[1]; or

Option 2: They may elect to adopt regulations that extend protection to the streams and surface water bodies that are not covered by the CSPA; or

Option 3: The municipality may adopt more stringent regulations than the minimum standards of the CSPA as provided for under RSA 483-B:8; or

[1] RSA 483-B, Comprehensive Shoreland Protection Act (CSPA); Effective Date of Enactment: 1991. Revised: 2008.

Option 4: The municipality may elect to develop separate stream corridor (watershed) regulations to protect the riparian buffers along first, second and third order streams and rivers within the community leaving the CSPA or a more stringent local shoreland ordinance to regulate the lakes, ponds, and higher order streams and rivers within the community.[2]

[2] If a municipality desires to pursue this option, the following applicable provisions from this Model Ordinance should be considered: I, II, III, IV, V, VI, VII a, b, d. 3, e, g, VIII, XI, and X.

Four primary resources were used to develop the ordinance of this chapter; the three-zone riparian buffer system developed by the Center for Watershed Protection; the Standards of the CSPA where those standards are most effective in protecting shorelands; the recommendations recently proposed by the Senate Commission to Review the Effectiveness of the CSPA as they relate to this ordinance; and the DES Model Rule for the Protection of Water Supply Watersheds.

The model ordinance is designed to implement Option 3 above. It includes a provision to protect lower order streams and expands upon the buffers established by the CSPA.

The ordinance contains three basic components: (1) a shoreland protection overlay district and zoning map; (2) shoreland protection district standards; and (3) riparian buffer standards. It is drafted as a complete zoning ordinance amendment.

Buffers for wetlands, fire and farm ponds, beaver impoundments, and coastal shorelands are excluded from the model ordinance.

For the purposes of this chapter, the terms "shoreland" and "riparian" shall be used interchangeably to refer to anything connected or immediately adjacent to the shoreline or bank of a stream, river, pond, lake, bay, estuary or other similar body of water. The term "riparian buffer" shall refer to the naturally vegetated shoreline, floodplain or upland forest adjacent to a surface water body.

APPROPRIATE CIRCUMSTANCES AND CONTEXT FOR USE

THE FUNCTION AND CONFIGURATION OF BUFFERS

There are many types and sizes of riparian buffers. Within any given watershed, riparian buffers can be strips of grassy land leading to the water's edge, thickly forested upland areas or floodplain areas that provide a transition zone between development areas and adjacent surface waters. Typically, these areas are managed to reduce the impacts of adjacent land use and to protect water quality by providing a buffer between upland development and the adjoining surface waters.

Most riparian buffers in New Hampshire consist predominately of forest vegetation. When left undisturbed and intact, these natural forest systems help to maintain clean water and healthy aquatic wildlife. Specifically, they serve to:

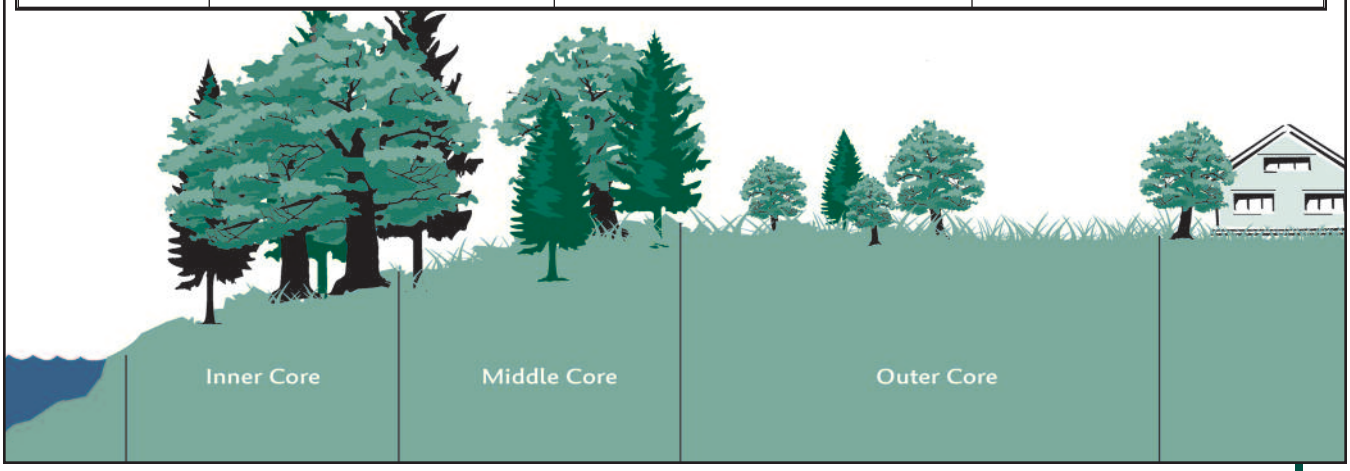
- Stabilize stream banks and shorelands with healthy root systems.
- Moderate the impact of heavy rains.
- Act as a natural filter, capturing sediment and pollutants from runoff.

- Protect people and property from flood damage by slowing and storing flood waters.
- Shade the shoreline and help to lower water temperatures. Cooler water holds more oxygen which is essential to aquatic animal species.
- Provide the organic matter that helps give soil the structural ability to hold oxygen and moisture. The duff layer (downed leaves, small twigs, and dead herbaceous vegetation) also moderates the impact of heavy rain, holds moisture, and can act as a natural mulch to prevent weed species.
- Increase property values by improving the appearance, beauty and aesthetics of the shoreland.
- Provide wildlife habitat on the shore with tree canopy, snags, and downed woody debris.
- Provide organic matter and woody material that falls into the water. The biomass that falls naturally into the water serves as food and habitat for the aquatic life in the water body.

The Center for Watershed Protection (CWP) has developed an effective three zone vegetated buffer model. The principles from that model have been adopted for the buffer strategy reflected in this model ordinance (see Figure 2.6.1). The CWP model consists of an inner core (closest to the water's edge), a middle core, and outer core.

Figure 2.6.1 The Three Cores of the Natural Riparian Buffer

Characteristics	Inner Core	Middle Core	Outer Core
Function	Protect the physical and ecological integrity of the shoreland	Provide distance between upland development and inner core	Prevent encroachment and filter backyard runoff.
Width	Minimum 25 feet from the reference line	Minimum 25 feet: first order streams; 50 feet: all other water bodies depending on stream order, slope, and floodplain	Minimum 25 feet
Vegetative Target	Undisturbed mature forest. Reforest if grass.	Managed forest, some clearing allowable.	Forest encouraged, but usually turfgrass.
Allowable Uses	**Very restricted** e.g., flood control, utility right of ways, footpaths, etc.	**Restricted** e.g., some recreational uses, some stormwater BMPs, bike paths, etc.	**Untrestricted** e.g., residential uses including lawn, garden compost, yard waste, most stormwater BMPs.
Target Pollutant Removal Rates	50% - 60% range	60% - 70% range	70% - 80% range



The inner core most closely matches the waterfront buffer in the CSPA. The middle and outer cores closely match the woodland buffer standards of the CSPA.

Inner Core: extends a minimum of 25 feet from the water's edge for 1st and 2nd order streams (about the distance of one to two mature trees) and 50 feet for lakes, ponds and 3rd and 4th order streams. The Inner Core serves to protect the physical and ecological integrity of the adjacent water ecosystem. A mature riparian forest is the desired vegetation because it provides multiple canopy layers, interwoven root systems, shade, leaf litter, woody debris, and erosion protection. Only limited tree cutting and very restricted uses such as access paths and utility rights of way should be allowed. No land clearing or impervious surfaces (except an access path) should be considered within this zone.

Middle Core: extends beyond the inner core to the beginning of the outer core, a minimum of 25 feet for 1st and 2nd order streams and a minimum of 50 feet for all other water bodies. The exact size of this zone will depend on stream order and slope. This zone is mainly composed of managed forest with some clearing allowed. This zone protects adjacent water quality and offers wildlife habitat. Fifty percent of this area can be allowed for structures, recreational use, stormwater best management practices (BMPs), and tree removal. The other fifty percent of this zone should remain in an undisturbed state.

Outer Core: extends a minimum 25 feet out from the middle core for 1st and 2nd order streams and 50 feet for lakes, ponds and all 3rd and 4th order streams. This zone is mainly composed of forest or turf and typically contains the yard, garden, or woods between a residential dwelling and the rest of the buffer. This zone traps sediment and consists of play areas, gardens, compost piles, and other common residential activities.

While many factors including slope, soil type, adjacent land use (including amount of impervious cover), floodplain, vegetation type, and watershed condition all influence buffer width, in most cases, the most commonly prescribed minimum buffer widths for use in water quality and habitat protection are 35 to 250 feet (Tjaden and Weber). Buffers of less than 35 feet have not been found to sustain long-term protection of aquatic communities.

A minimum 100-foot buffer width is recommended in *Buffers for Wetlands and Surface Waters: A Guidebook for New Hampshire Communities*, as a standard width for all surface waters and wetlands in New Hampshire (Chase, et al. 1997)

Even for narrow creeks or intermittent streams that run through residential neighborhoods or commercial developments, riparian buffers are important for sediment control and aquatic integrity. Protection of these smaller creeks and streams is particularly important because:

- they are numerous across the landscape;
- they feed larger streams and rivers – one of the best ways to protect larger rivers is to protect the small streams that flow into them; and
- they can be readily impacted by sedimentation, erosion and non-point source pollution.

LEGAL BASIS AND CONSIDERATIONS FOR NEW HAMPSHIRE

This chapter is being prepared at a time when sweeping changes have been recommended to the State of New Hampshire's Comprehensive Shoreland Protection Act (CSPA). These changes, adopted by the legislature during 2007, will help to improve the implementation of the CSPA at both the state and local level.

Under the current CSPA, municipalities may adopt land use ordinances (zoning, subdivision, site plan, etc.) to regulate protected shorelands within their boundaries. These ordinances can be more stringent than the minimum standards of the CSPA (see RSA 483-B:8, Municipal Authority). In fact, the CSPA encourages municipalities to adopt land use control ordinances designed to protect the shorelands of water bodies and water courses not subject to the CSPA. These other water bodies can include first and second order (headwater streams and tributaries), third order streams and rivers, lakes, and ponds, and other impoundments. In addition, municipalities may elect to enforce the provisions of the CSPA by issuing cease and desist orders, and by seeking injunctive relief or civil penalties as provided in RSA 483-B:18, III(a) and (b). One of the advantages of local enforcement is that any civil penalties and fines collected by the court, can be remitted to the treasurer of the municipality prosecuting violations, for use of the municipality. In order to enforce the provisions of the CSPA, however, municipalities must have a knowledgeable code enforcement officer on hand who understands and can apply the provisions of the act on a case by case basis.

The CSPA minimum standards are designed to overlay other state and municipal permitting programs. This means that state permitting programs such as Subsurface, Wetlands, and Alteration of Terrain as well as local building permits must ensure that any permits issued are in compliance with the CSPA.

Currently, the protected shoreland under the CSPA includes all land located within 250 feet of the reference line (see glossary for definition of reference line) of public waters and fourth order and higher streams.

Exemptions for forestry and agricultural activities are built into the CSPA and can be considered when establishing a local ordinance. The CSPA also provides an urban exemption for situations in which specialized urban conditions exist. This exemption requires the governing body to make a formal request to the Commissioner of DES to grant an exemption form the CSPA.

On July 1, 2005, the New Hampshire legislature established a "Commission to study the effectiveness of the CSPA." On November 30, 2006, the Commission's final report was released and in the spring of 2007, most of the Commission's recommendations were incorporated into house bills. The following summarizes the major proposed legislative changes that are important considerations in developing a local shoreland protection ordinance:

- The setback for primary structures to protected shoreland shall be at least 50 feet in all towns whether or not the municipality has an established lesser setback.

- The current methodology for measuring and maintaining the Natural Woodland Buffer (50 percent basal area removal/well distributed stand) would be replaced by establishing a waterfront buffer that extends 50 feet back from the reference line. Within the waterfront buffer there would be no root, rock, duff, or understory removals and no fertilizer or pesticide use. Tree cutting would be limited and would be managed in accordance with a grid and points system. Fifty percent of the area outside of permitted impervious surfaces would be left undisturbed.
- Impervious surfaces would be limited to 20 percent of the area within the protected shoreland. With mitigation, the impervious surface allowance could be up to 30 percent.
- The full protection of the CSPA would be extended to all third order and higher streams (including the Saco and Pemigewasset Rivers) as identified by the N.H. Hydrologic Database.

EXAMPLES AND OUTCOMES

There are many municipalities in New Hampshire that have developed regulations to protect shorelands and riparian buffers. The Office of Energy and Planning currently maintains a list of 48 communities within New Hampshire that have adopted local regulations for shoreland and riparian protection.

The model ordinance contained in this chapter provides municipalities with a new and effective tool for shoreland and riparian protection. Key provisions within the ordinance include:

- a 25 foot setback for primary structures from the reference line for first and second order streams;
- a 50 foot setback for primary structures from all third, fourth and higher order streams, lakes, ponds, and coastal estuaries;
- a 20 percent impervious surface limitation requirement for any portion of any lot located within the Shoreland Protection District. (see sidebar)
- The inclusion of Conditional Use Permit requirements for water-dependent structures, including but not limited to docks, piers, breakwaters, boathouses and marinas, etc. Many of these uses currently require planning board approval subject to both local site plan review and DES permits as applicable.
- Requirements for the submittal of a stormwater management plan for all earth moving or excavation activities on lots greater than one acre in size.
- Requirement for planning board approval of a selected clearing and landscape plan

Municipalities may wish to consider a 10 percent impervious surface limitation as studies show that there is a level (between 7 and 14 percent impervious surface) at which water quality and wildlife habitat become affected by urban characteristics, such as impervious surface. These results are similar to other studies, where measures of impervious surface of about 10 percent have been identified as the level at which stream quality decreases (Klein, 1979; Schueler, 1994; Booth and Reinelt, 1993).

Model Language and Guidance for Implementation

MODEL ORDINANCE FOR SHORELAND AND RIPARIAN PROTECTION

Shoreland Zoning Ordinance for the Municipality of _____

I. TITLE AND AUTHORITY

A. **Title:** This Ordinance shall be known as the "Shoreland Protection District of the City/Town of _____, New Hampshire."

B. **Authority:** Pursuant to the authority granted by RSA 483-B:8, Municipal Authority; RSA 674:17 I., Purposes of Zoning Ordinances; and RSA 674:21 I., Innovative Land Use Controls this ordinance is hereby adopted by the Town/City of _____, New Hampshire to protect the public health, safety, and general welfare.

II. PURPOSE

The purpose of this Ordinance is to establish regulations for the design of riparian buffers to protect the flowing streams and surface water bodies of the Town/City of _____ to protect the water quality of these resources; to protect the Town/City of _____'s riparian and aquatic ecosystems; and to provide for the environmentally sound use of the Town/City of _____'s land resources.

III. FINDINGS

The City/Town of _____, New Hampshire finds that shoreland protection and riparian buffers adjacent to flowing waters and surface water bodies provide numerous environmental benefits. Shoreland forested buffers serve to:

A. Restore and maintain the chemical, physical and biological integrity of the water resources;

B. Provide infiltration of stormwater runoff;

C. Remove pollutants delivered in stormwater runoff;

D. Reduce erosion and control sedimentation;

E. Stabilize lake and stream banks;

F. Maintain base flow of streams;

G. Contribute food and habitat for the aquatic ecosystem;

H. Moderate the temperature of near shore waters

I. Provide and enhance terrestrial wildlife habitat; and,

J. Enhance scenic value and recreational opportunities

Therefore, the City/Town of _____, New Hampshire adopts this ordinance to protect and maintain the native vegetation along the shorelands of the community's water courses and surface waters by implementing standards for protection, use and development of these areas within the jurisdiction of the municipality.

IV. APPLICABILITY

A. **Shoreland Protection District.** The Shoreland Protection District of the City/Town of _____, New Hampshire is an overlay district superimposed over the existing conventional zoning districts of the municipality. It includes within its boundary a protected shoreland on either side of all 1st, 2nd, 3rd and 4th order and higher rivers and streams, and a protected shoreland adjacent to all natural and impounded lakes and ponds and coastal estuaries (if applicable) located within the municipality. The Shoreland Protection District does not apply to wetlands, ephemeral streams, beaver impoundments, fire ponds, and farm ponds as defined in this ordinance. The Shoreland Protection District subject to this Ordinance shall be shown on the municipality's Official Shoreland Zoning Map, which is incorporated as part of this Ordinance.

B. **Official Shoreland Zoning Map.**

1. **Scale of Map.** The Official Shoreland Zoning Map shall be drawn at a scale of not less than 1 inch = 2,000 feet. District boundaries shall be clearly delineated and a legend indicating the symbols for each district shall be placed on the map.

A municipality may have a series of maps instead of one map depicting its shoreland protection district. The state's regional planning commissions are available to assist your municipality in preparing this map. A reliable source of stream location and stream order classification i.e. the identification of first, second, third and fourth and higher streams within your municipality is available from the New Hampshire Hydrography Dataset (NHHD) developed by Complex Systems Research Center, University of New Hampshire. The Final Report of the Commission reviewing the effectiveness of the CSPA recommends that the state adopt the NHHD for the purpose of identifying stream order.

Planning boards are encouraged to include in their site plan and subdivision regulations, requirements for the submittal of surveyed plans depicting the true location of the streams, rivers and other water bodies subject to this ordinance within the subject property. This plan information can then be used to supplement the NHHD data.

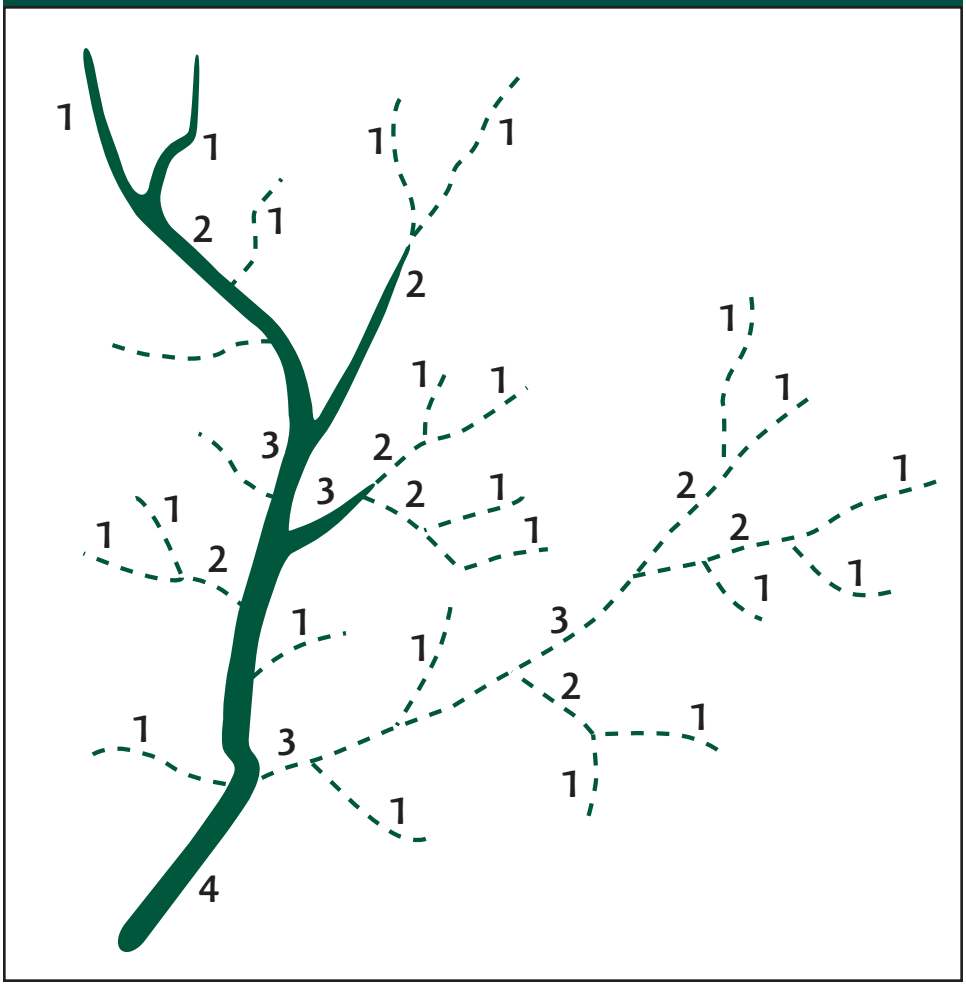
Other reliable mapping resources:

Stream Buffer Characterization Data and Maps; town specific maps that assess 150 and 300 buffer areas.
Online: www.nhep.unh.edu/resources/actions.htm

Buffer Data Mapper; demonstrates the land area impact of various buffer widths.
Online: http://mapper.granit.unh.edu/viewer.htm

2. **Certification of Official Shoreland Zoning Map.** The Official Shoreland Zoning Map shall be certified by signature of the municipal clerk and shall be located in the municipal planning office. In the event the municipality does not have a planning office, the municipal clerk shall be the custodian of the map.

Figure 2.6.2 Fourth Order Rivers: The Strahler Method



3. **Changes to the Official Shoreland Zoning Map.** If amendments are made to the Shoreland Protection District or other matters portrayed on the Official Shoreland Zoning Map, such changes shall be made on the map within 30 days after the amendment has been adopted by the municipality.

V. DISTRICT BOUNDARIES

A. **Definition of District Boundaries.** The district boundaries of the Shoreland Protection District shall encompass all land within a horizontal distance of 150 feet of the reference line of any 1st and 2nd order stream, and 250 feet of the reference line of any 3rd and 4th order stream and higher, lake, pond or coastal estuary as defined by this Ordinance.

B. **Interpretation of District Boundaries.** Where uncertainty exists as to the exact location of district boundary lines, the city/town code enforcement officer with the assistance of the N.H. Department of Environmental Services (DES) shall be the final authority as to boundary locations.

Municipalities are encouraged to incorporate specific written descriptions of district boundaries into this Ordinance so that disputes over boundaries are minimized. The Official Shoreland Zoning Map is only one of the primary tools in determining district boundaries. Other tools include actual field verification of the reference line. This is where the assistance of DES will be the most useful.

VI. DEFINITIONS

Accessory Structure or Use: A use or structure located on the same lot and customarily incidental and subordinate to the primary structure, including but not limited to paths, driveways, patios, any other improved surface, pump houses, gazebos, woodsheds, garages, or other outbuildings. A deck or similar extension of the primary structure or a garage attached to the primary structure by a roof or a common wall is considered part of the primary structure.

Base flow: The groundwater contribution to stream flow arising from submerged springs and seeps.

Beaver Impoundment: An area this is generally inundated most of the year as a result of flowing water impounded by a beaver dam. Beaver impoundments and the meadows that develop when the dams are not kept up and deteriorate are generally considered wetlands.

Best Management Practices (BMPs): A proven or accepted structural, non-structural, or vegetative measure the application of which reduces erosion or sedimentation, stabilizes stream channels, or reduces peak storm discharge, or improves the quality of stormwater runoff, or diminishes the quantity of stormwater runoff flowing to a single location by using multiple BMPs at separate and dispersed locations. BMPs also include construction site maintenance measures such as removing construction debris and construction waste from construction sites and disposing of debris and waste appropriately in order to reduce contamination of stormwater runoff.

Boat Slip: On water bodies over 10,000 acres, means a volume of water 25 feet long, 8 feet wide, and 3 feet deep as measured at normal high water and located adjacent to a structure to which a watercraft may be secured. On water bodies of 10,000 acres or less, a volume of water 20 feet long, 6 feet wide, and 3 feet deep as measured at normal high water mark and located adjacent to a structure to which a watercraft may be secured (RSA 482-A:2 VIII.).

Buffer: A vegetated area, including trees, shrubs and herbaceous vegetation, which exists or is established to protect a stream, river, lake, pond, reservoir, or coastal estuarine area.

Canopy: The more or less continuous vegetative cover formed by tree crowns in a wooded area.

Disturbed Area: An area in which natural vegetation is removed, exposing the underlying soil.

Ephemeral Stream: A drainage feature that carries only stormwater in direct response to precipitation with water flowing only during and shortly after large precipitation events. An ephemeral stream may or may not have a well defined channel, the aquatic bed is always above the water table, and stormwater runoff is the primary source of water. An ephemeral stream typically lacks the biological, hydrological, and physical characteristics commonly associated with the continuous or intermittent conveyance of water.

Estuaries: A tidal wetland whose vegetation, hydrology or soils are influenced by periodic inundation of tidal waters.

Farm Pond: A small, shallow (3-14 foot) artificial impoundment maintained for private recreational use, such as fishing or swimming, or to provide water for livestock, irrigation, or other agricultural uses. Such ponds may be addressed as part of an approved USDA Natural Resources Conservation Service conservation plan and as such do not need to be protected by this Ordinance.

Fire Pond: A small, naturally-occurring or artificially constructed water body designated and maintained for the purpose of providing water for fire suppression, characterized by large-vehicle access to the water's edge throughout the year and/or the presence of a dry hydrant. Typically such ponds have been identified or designated by the municipality's fire department as a fire pond.

First Order Streams: Are intermittent and perennial streams identified as either dashed lines or solid lines on the New Hampshire Hydrography Dataset (NHHD) or the most recent edition of USGS topographic maps, where mapped.

Defining "First Order Streams" is perhaps the most difficult issue in developing this ordinance. This model ordinance defines first order streams as both intermittent and perennial streams because these streams are the most important headwater streams within a watershed. However, municipalities may elect to limit the application of this ordinance to "perennial" streams only. To accomplish this, intermittent streams would need to be excluded from the definition of first order streams. This would require revisions to the NHHD database, because intermittent streams are currently identified as first order streams in this database.

Forest Management: The application of scientific and economic principles to conserve forest resources and obtain forest benefits.

Great Pond: All natural bodies of fresh water situated entirely in the state having an area of 10 acres or more are state-owned public waters, and are held in trust by the state for public use; and no corporation or individual shall have or exercise in any such body of water any rights or privileges not common to all citizens of this state; provided, however, the state retains its existing jurisdiction over those bodies of water located on the borders of the state over which it has exercised such jurisdiction (RSA 271:20).

Ground Cover: Any herbaceous or woody plant which normally grows to a mature height of two feet or less, especially mat forming vegetation which stabilizes the soil.

Headwater Streams: Intermittent streams and perennial streams of first and second order.

Impervious Surface: Any areas covered by material that impedes the infiltration of water into the soil. Examples of impervious surfaces include buildings, roofs, decks, patios, and paved, gravel, or crushed stone driveways, parking areas, and walkways.

Intermittent Streams: A well-defined channel that contains water for only part of the year, typically during winter and spring when the aquatic bed is below the water table. The flow may be heavily supplemented by stormwater runoff. An intermittent stream often lacks the biological and hydrological characteristics commonly associated with the conveyance of water. Intermittent streams (or portions thereof) are portrayed as dashed blue lines on a USGS topographic map, where mapped).

Lake: A natural or impounded inland body of fresh water. May also be called a pond or great pond. The terms lakes and ponds are commonly used interchangeably,

however, a lake can be distinguished from a pond because a lake contains a thermocline layer while a pond does not.

Lot of Record: A legally created parcel, the plat (keep "or" here in case there is only a recorded metes and bounds description) description of which has been recorded at the registry of deeds for the county in which it is located.

Marina: A commercial waterfront facility whose principal use is the provision of public services such as the securing, launching, storing, fueling, servicing, repairing and sales of watercraft equipment and accessories.

Natural Vegetation: All existing live woody and herbaceous trees, shrubs, and other plants.

Natural Woodland Buffer: Is defined in the CSPA, RSA 483-B as a forested area consisting of various species of trees, saplings, shrubs, and ground covers in any combination and at any stage of growth.

Non-Conforming Lot: A single lot of record which, at the effective date of adoption or amendment of this Ordinance, does not meet the dimensional requirements of the district in which it is located.

Non-Conforming Structure: A structure which does not meet any one or more of the following dimensional requirements; setback, height, or lot coverage, but which is allowed solely because it was in lawful existence at the time this Ordinance or subsequent amendments take effect.

Non-Conforming Use: Use of buildings, structures, premises, land or parts therefore which is not permitted in the district in which it is situated, but which is allowed to remain solely because it was in lawful existence at the time this Ordinance or subsequent amendments take effect.

Mean High Water Level: See Reference Line definition.

Ordinary High Water Mark: Means the line on the shore, running parallel to the main stem of the river or stream, established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the immediate bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial Streams: A stream that normally flows year round because it is sustained by groundwater discharge as well as by surface water. A perennial stream exhibits the typical biological, hydrological, and physical characteristics commonly associated with the continuous conveyance of water. Perennial streams (or portions thereof) are portrayed as solid blue lines on a USGS topographic map, where mapped.

Pond: Means a natural or impounded still body of water. The term is often used conterminously with "lake."

Primary Structure: A structure built for the support, shelter or enclosure of persons, animals, goods, or property of any kind, as well, as anything constructed or erected with a fixed location on or in the ground, exclusive of fences. The primary

structure is central to the fundamental use of the property and is not accessory to the use of another structure on the same premises.

Protected Shorelands: The area subject to this Ordinance.

Public Waters: See CSPA, RSA 483-B:4, Definitions.

Reference Line: Defined in the CSPA, RSA 483-B and under this Ordinance as follows:

a. for natural fresh water bodies without artificial impoundments, the natural mean high water level as determined by the NH Department of Environmental Services;

b. for artificially impounded fresh water bodies with established flowage rights, the limit of the flowage rights, and for water bodies without established flowage rights, the waterline at full pond as determined by the elevation of the spillway crest;

c. for coastal waters, the highest observable tide line, which means a line defining the furthest landward limit of tidal flow, not including storm events, recognized by indicators such as the presence of a strand line of flotsam and debris, the landward margin of salt tolerant vegetation, or a physical barrier that blocks further flow of the tide;

d. for third and fourth order and higher rivers and streams, the ordinary high water mark; and

e. for first and second order streams, the extent of the defined channel.

Removal or Removed: Cut, sawed, pruned, girdled, felled, pushed over, buried, burned or otherwise destructively altered.

Riparian Area: The area of land adjacent to the shoreline or bank of a stream, river, pond, lake, bay, estuary, or other similar body of water.

Riparian Buffer: See Buffer definition.

Sapling: A young tree less than four inches (9.75 cm) in diameter (dbh) and less than 20 feet in height

Selected Clearing and Landscape Plan: A site plan drawn to scale depicting the lot boundaries, shoreland protection district boundaries, shoreline, reference line, all impervious surfaces, structures, septic and well systems, setback requirements, proposed view corridor, and existing and proposed trees and vegetation.

Setback: Horizontal distance from the reference line of a water body to the nearest part of a structure, road, parking space or other regulated object or area.

Shoreland: The area of land adjacent to the reference line of a stream, river, pond, lake, bay, estuary, or other similar body of water.

Shoreland Frontage: The average of the distances of the actual natural shoreline frontage and a straight line drawn between the property lines (RSA 483-B:4, Definitions).