

**LAKE TERRAMUGGUS WATERSHED & SHORELINE OVERLAY DISTRICT**  
**PUBLIC HEARING DRAFT**

**[With Comments/Edits by Mark Branse (updated 10-19-21; Town Planner edits per the November 4, 2021 public hearing; further edits by Attorney Mark Branse and Peter Hughes 11-12-21: RED = PH edits; second color = MKB edits (colors may differ on different computers); yellow highlight = requested changes not made;)**

**New Article 10, Section J:**

**J. LAKE TERRAMUGGUS WATERSHED & SHORELINE OVERLAY DISTRICT**

**1. Purpose:**

The purpose of this Overlay District is to protect the water quality, aesthetics, aquatic and wildlife habitat, and the recreational use of Lake Terramuggus. This will be accomplished through establishing vegetated resource protection zones that maintain a healthy ground cover, understory, and tree canopy from the Lake shoreline to the perimeter of the Lake Terramuggus Watershed, except for invasive and nuisance species as defined in these Regulations. These measures are for the:

Protection of shoreline vegetative cover to preserve the natural beauty and the scenic qualities, which are critical attributes of the Town of Marlborough.

Prevention of adverse impacts to water quality caused by erosion, sedimentation, siltation, turbidity, excess nutrient loading, and chemical pollution.

Protection of the lake ecological functions as to minimize the lake eutrophication process from its current oligotrophic/mesotrophic condition.

Protection of ground and surface water quality for existing and future drinking water, and to protect aquatic life.-

Preservation and protection of the habitats of terrestrial and aquatic wildlife; Conservation and enhancement of the Overlay District's natural scenic and topographic conditions and environmental quality recognizing that these are vital to the economic and environmental health of the Town of Marlborough.

Management of the water resource protection zones includes specific limitations on alteration of the natural conditions. The following practices and activities are restricted within the Lake Terramuggus Watershed and Overlay District:

- 1) Clearing or grubbing of existing vegetation, except for invasive and nuisance species as defined in these Regulations;
- 2) Clear cutting of vegetation or trees;
- 3) Soil disturbance by grading, stripping, or other practices;
- 4) Filling or dumping;
- 5) Use, storage, or application of pesticides, herbicides, and fertilizers; and

- 6) Conversion of existing established vegetation from majority native to majority exotic species.

**2. Establishment of the Lake Terramuggus Overlay Zone & Map: Riparian Resource Protection Zone and Shoreline Resource Protection Zone:**

Except as provided in this Section J, the natural ground cover, understory and natural tree buffer shall be maintained within the Lake Terramuggus Overlay Zone, as shown on a map entitled, "Lake Terramuggus Watershed Overlay Zone" which map is made a part of these Regulations (hereafter, "Overlay Map."). The Overlay Zone noted above shall be divided into two (2) resource protection zones as shown on the Lake Terramuggus Watershed Overlay Map being:

**a. Shoreline Resource Protection Zone**

The Shoreline Resource Protection Zone is the area starting at the ordinary high watermark of the Lake with a landward depth of fifty (50) feet across the shoreline of the entire parcel measured perpendicular to the Lake shoreline, as said shoreline is shown on the Overlay Map. Except as provided in this Section J, all trees, shrubs, and ground cover shall be preserved and protected with the exception of invasive and nuisance plant species as defined in these Regulations.

**b. Riparian Resource Protection Zone**

The Riparian Resource Protection Zone is the area from the landward edge of the Shoreline Resource Protection Zone to edge of the Street Right of Way on which the parcel is located for lake front properties, and from the street right of way on which the lot has frontage to rear property lines for non-lake front properties, as shown on the Overlay Map. Except as provided in this Section J, all trees, shrubs, and ground cover shall be preserved and protected to the Street Right of Way (front property line) with the exception of invasive and nuisance plant species. Fifty (50) percent of this area shall remain undisturbed, as set forth below.

**3. Regulated Activities:**

Within the resource protection zones specified in this Section J, all land-disturbing activity not specifically allowed as exceptions in subsection 5 below are prohibited unless approved as required by these Regulations. The standards and requirements of this Section shall be in addition to those of Article 5A and 5C of these Regulations. "Land-disturbing activity" shall include any activity which involves the alteration of the surface of the earth as it existed on the effective date of these Regulations, including but not limited to; filling, removal, or re-grading of earth;

placement, construction, removal, or alteration of buildings or structures; establishment, removal, or alteration of uses of land; or planting or removal of vegetation.

Land-disturbing activities have a three-tier permitting process: Exceptions for as of right activities as set forth in Section J.5 that require no approval; Activities requiring Administrative Approval from the ZEO as set forth in Section J.6; and Activities requiring by Site Plan Review or Special Permit by the Zoning Commission as set forth in Sections J/7 – J.12.

#### **4. Activities Not Permitted Within the Shoreline Resource Protection and/or Riparian Resource Protection Zones**

Except for As of Right Uses listed in Section 5 below, or unless otherwise specified in this Section J, the following activities are not permitted activities within either the Shoreline Resource Protection Zone or the Riparian Resource Protection Zone:

- i. Topping of trees, i.e., the removal of the branched portion of a tree above the trunk, except for necessary clearing for the maintenance and installation of overhead utilities by Utility Companies.
- ii. Grubbing of brush or ground cover, or grinding of stumps in the Shoreline Resource Protection Zone, except where a new tree is to be planted in the location of the stump.
- iii. **Removal of vegetation less than three (3) feet in height including ground cover and duff layer.**
- iv. Use of power-driven excavation equipment (such as bulldozers, excavators, backhoes, and the like; but not including bucket trucks or cranes to reach tall tree limbs) for tree removal, clearing of land or construction of paths or retaining walls in the Shoreline Resource Protection Zone, except by Special Permit in accordance with Sections 8, 9, 10, and 11 below.
- v. **Removal of understory plants except as provided in this Section J.**
- vi. Anything to the contrary in these Regulations notwithstanding, placement of fill material in any amount unless a permit for such activity has been issued in accordance with this Section J or as it is permitted in accordance with Section 5, below.
- vii. New manicured lawns or other managed grasses established after the effective date of this Section J, except by Special Permit in accordance with Section J.11.3 of these Regulations.

viii. Removal of branches above the lower one third (1/3) of the tree height or above **twenty (20) feet** in height, whichever is less unless they are dead or damaged.

ix. Removal of more than **twenty-five (25%) percent** of the tree canopy.

## **5. Exceptions As of Right That Do Not Require An Administrative Permit**

The following uses are permitted as-of-right uses and activities within the Lake Terramuggus Riparian Resource Protection & Shoreline Resource Protection Overlay Zones. [Please note that this does not replace any obligation of the applicant to have a determination made by the Marlborough Conservation Commission as to inland wetlands & watercourses impact or any other regulatory agency as whether additional reviews and permits are necessary.]

i. **Existing structures or continuing activities, such as agriculture, that were legally in existence before the effective date of this Section J. This includes maintaining existing buildings and structures, driveways, and parking areas, without enlarging them, or activities approved under this Section J.**

ii. The building of new structures, modification of existing structures, or commencement of activities that were granted all applicable permits before the effective date of this Section J.

iii. **Mowing and maintenance of manicured lawns, ornamental grasses, gardens, or agricultural crops if these uses were already in place on the effective date of this Section J, including the substitution of one type of vegetation with another comparable type of vegetation (such as substituting one crop for another, or one type of grasses for another),**

iv. Gardens maintenance including the replacement with similar material of existing plants and shrubs in garden areas ~~that die~~; and including the removal of nuisance and invasive species by chemical or other means but without disturbance of the duff layer; and ~~expansion~~ expansion of garden areas into existing manicured lawn areas.

iv. Reconstruction of existing impervious areas without increasing or changing the current footprint, such as rebuilding a house, deck or driveway in the exact same footprint and without any increase in imperviousness.

v. Emergency operations necessary for public safety or protection of property.

vi. State, municipal and utility improvements and operations for which activity within the Lake Terramuggus Watershed & Shoreline Overlay District is unavoidable and necessary. This includes activities such as the replacement, rehabilitation, or creation of infrastructure such as [boat launch](#), sewer, water, and power lines, bridges, highway maintenance, drainage facilities.

vii. Fish and wildlife conservation activities that do not require removal of native vegetation or alteration of shoreline.

viii. The addition of gravel, not to exceed eight (8) cubic yards [per year](#), to an existing driveway or roadway to fill in areas where gravel has been lost over time (i.e. potholes).

ix. The paving, grinding, removal and replacement of asphalt on an existing driveway or road where the final grade is generally the same as the original road and/or driveway grades, and the driveway road width is maintained or reduced in impervious surface.

xii. Top dressing of existing manicured lawns or gardens with an organic material such as topsoil not to exceed eight (128 CY) cubic yards per year, which top dressing shall be mulched with natural wood mulch or hay within twenty-four (24 hours) after deposition; volumes of topsoil exceeding eight (128 CY) shall require an Administrative Permit per Section 6 below.

xiii. Except as indicated in the preceding subsections, there shall be no filling or excavation in any amount in the Shoreline Resource Protection Zone except by Special Permit in accordance with Section 8 below.

## **6. Exceptions Requiring an Administrative Permit**

The following exceptions are permitted only after submission of an application for and issuance of a written permit from the Zoning Enforcement Officer, and in compliance with replacement of trees in accordance with the Grid System [in Section 7 described below](#):

### **A. Shoreline Access Corridors.**

Provide a single footpath access corridor from each principal use on a lot to the Lake shore shall be in accordance with the following standards:

i. This footpath shall not exceed five (5) feet in width.

ii. Tree removal of twelve (12) inch circumference at breast height or less within the Shoreline Resource Protection Zones is allowed for purposes of creating a single footpath.

- iii. Soft surface access is suitable for those sites with flat to gently sloping conditions ranging from 0 to 8% (8 foot rise in 100 feet measured horizontally). The soft surface can consist of low-growing vegetation, natural wood mulches, natural materials, or native rock. Soft surface access with slopes less than 5% can have a more direct route through the buffer given that these flatter slopes are less likely to result in erosion. Slopes from 5% to 8% require that the soft access pathway follow natural surface contours to the extent possible.
- iv. Accessways on slopes that exceed 8% require hard surface access to prevent erosion. Grading is not allowed within the Shoreline Resource Protection Zone. Hard surface access consists of elevated planked walkways built through the buffer, and not including bituminous concrete or other impervious surfaces. Minimal land disturbance such as that necessary to install post holes for boardwalk support is allowed.
- v. Vegetation clearing cannot exceed one foot on either side of the pathway, such that clearing and cutting of shrubs or groundcover for a footpath access corridor shall not exceed a width of seven (7) feet. Stabilization of the one (1) foot area on either side of the pathway shall be either wood chips or ground cover plantings.
- vi. Constructed so as to prevent erosion, avoid soil disturbance and disperse runoff into vegetated areas using zigzag or switchback construction if necessary.
- vii. The construction of a footpath shall not involve earth moving equipment, except as a Special Permit under Section 10 below.
- viii. No footpath access corridor or associated clearing shall be established closer than ten (10) feet to a side lot line.

**B. Small Developments.** Development that will render post-development impervious surface of ~~ten~~tenfifteen percent (~~10~~105%) or less of the lot area, and located more than one hundred and fifty (150) feet from the ordinary high watermark of the Lake, and for which erosion and sedimentation controls shall be in place both pre-and post-development. Vegetation less than three feet in height, including ground cover (except lawn area) and the duff layer, shall not be removed.

**C. Tree removal.**

- i. Live Trees. After submittal, review and approval, healthy trees may be removed under the below specified circumstances provided those trees are replaced in accordance with this Section 6. Vegetation less than three feet in height, including ground cover and the duff layer, must not be removed.

- (a) Seventy-five (75%) percent of the tree canopy existing on the effective date of this Section J must be retained, irrespective of the allowances of subsections (b) and (c) below.
- (b) No more than six (6) trees growing within ten (10) feet of the foundation of the principal structure may be removed to prevent damage to the foundation or structure. Removal of more than six (6) trees within ten (10) feet of the foundation require a Special Permit in accordance with Section 8 below.
- (c) No more than six (6) trees with a twelve (12") inch Circumference at Breast Height or less may be removed from a lot in addition to the preceding paragraph; removal of trees of more than twelve (12") inch Circumference at Breast Height shall require a Special Permit in accordance with Section 8 below.
- (d) When trees are removed in accordance with this section, the area must be in compliance with the Grid System Tree Removal Standards of Section 7 below. If after removal the grid area will not be in compliance, replanting shall be required. Trees must be replaced with six -inch (6") Circumference at Breast Height minimum caliper trees at a 1:1 rate, planted at least five (5) feet apart, or with 15-inch minimum height shrubs at a 3:1 rate;

ii. Dead or Diseased Trees or Plants. The removal or pruning of dead, dying, diseased, or invasive or nuisance plants-plants or trees is permitted, provided, however, that the replanting with native trees, shrubs and/or ground cover is required in accordance with Section J.7 below and not to exceed the limits of Section J.4 (ix) above. Leaving some downed and standing woody debris is also preferable, to provide a greater variety of wildlife habitat unless the spread of plant diseases is a concern. Applications for removal of dying or diseased trees shall be supported by a certification to that effect from a licensed arborist.

- iii. Cutting and removal of live or dead/diseased trees in accordance with the preceding two paragraphs shall be conducted so as to comply with the following:
  - 1. Prevent damage to surrounding healthy trees, limbs, saplings, and shrubs;
  - 2. Minimize damage to Natural Ground Cover;
  - 3. Prevent soil erosion and sedimentation to the Lake; and
  - 4. Leave all stumps in the Shoreline Protection Zone, except where a new tree is to be planted in the location of the stump, and duff layer intact. Chemicals may be used to remove stumps in the Riparian Resource Protection Zone.
  - 5. Dead or diseased trees must be replaced with three-inch (3") circumference at breast height minimum caliper trees at a 1:1 rate planted at least five (5) feet apart or with 15-inch minimum height shrubs

at a 3:1 rate [if the grid does not meet the point requirements of Section J.7](#);

**D. Docks:** See Section J.11.G below.

**E. Impervious Surface Change:** Changing one kind of impervious surface for another, such as building a house addition in an area previously occupied by a deck, provided, however that the maximum building coverage for the zone shall not be exceeded.

**F. Gravel Driveway/Parking Area Maintenance:** The addition of gravel, in excess of eight (8) cubic yards, to an existing driveway, roadway, or parking area to fill in areas where gravel has been lost over time (i.e. potholes).

**G. Stormwater Infiltration:** The installation of infiltration systems to control stormwater run-off from roofs, driveways or other impervious surfaces.

## **7. Grid System Tree Removal and Replacement Standards**

**A. Tree Removal in the Shoreline Resource Protection Zone.** In addition to the tree removal permitted per Section J.6 above, tree removal may be permitted in the Shoreline Resource Protection Zone by the Zoning Commission as a site plan review in accordance with the standards of this Section 7A. After submittal, review and approval the Zoning Commission, trees may be removed from the Shoreline Resource Protection Zone under the below specified circumstances provided those trees are replaced in accordance with the requirements below.

The Shoreline Resource Protection Zone is divided into 25'×25' segments (625 square feet), or portion thereof. The coverage area of any existing or approved building(s) or impervious surfaces shall be excluded from the grid area [and the required number of points in the remaining grid area shall be proportionately reduced.](#) The trees within each segment are given points according to their circumference at breast height (at 4.5' off the ground). At least twelve (12) points must be maintained within each grid segment. Land owners may cut the trees or saplings, provided the sum of the points of the remaining trees for that segment is at least twelve (12) points and any openings in the tree canopy is less than 250 square feet. The table below shows how points are assigned.

[Landowners are not required to plant new trees to fulfill the 12-point tree coverage requirement for noncompliance on-land within the Shoreline Resource Protection Zone that was legally in existence prior to the adoption of this Section J.](#) However, land owners cannot decrease the point value of any grid section that does not meet the required 12-point score. In order to administer the grid-and-point system, the grid segments must be marked at 25'×25' intervals, measured as follows: Start at the

lakeshore ordinary high watermark line and measure 25' back from the lakeshore ordinary high watermark into the property and 25' across the shoreline resource zone. Start the first grid on the right side of the property facing towards the lake. If the property line is straight, only the four corners of each segment need to be marked. If the property boundary is not straight or square, measuring smaller intervals may be necessary to determine accurate grid sections. Tree points in partial segments (i.e., trees split by a grid line) are assigned proportional to the size of the segment. For example, if a segment is 312.5 square feet (half of the size of a 25' x 25' segment), and the tree has a value of 2 points, then it is given 1 point (half of 2). Also in partial segments, the required number of points will be reduced proportionately. For example, if the segment size is 312.5 square feet, then the required points in that partial segment will be 6 points, not 12.

**B. Tree removal in the Riparian Resource Protection Zones:** After submittal, review and approval the Zoning Enforcement Officer in accordance with Section J.6 above,, trees may be removed from the Riparian Resource Protection Zone under the below specified circumstances provided those trees are replaced in accordance with the requirements of this Section 7.B.:

The Riparian Resource Protection Zone is divided into 50'x50' segments (2,500 square feet) or portion thereof. The coverage area of any existing or approved building(s) or impervious surfaces shall be excluded from the grid area and the required number of points in the remaining grid area shall be proportionately reduced. The trees within each segment are given points according to their circumference at breast height (at 4.5' off the ground). At least twenty-four (24) points must be maintained within each grid segment. Landowners may cut the trees or saplings, provided the sum of the points of the remaining trees for that segment is at least 24 points and any openings in the tree canopy is less than 500 square feet. The table below shows how points are assigned.

Landowners are not required to plant new trees to fulfill the 24-point tree coverage requirement on land for noncompliance within the Riparian Resource Protection Zone that was legally in existence prior to the adoption of this Section J. However, landowners cannot decrease the point value of any grid section that does not meet the required 24-point score. In order to administer the grid-and-point system, the grid segments must be marked at 50'x50' intervals, measured as follows: Start at the, landward edge of the Shoreline Resource Protection Zone on the right side of the property facing towards the lake and measure 50' back and 50' across the width of the Riparian Resource Protection Zone on the lot. If the property line is straight, only the four corners of each segment need to be marked. If the property boundary is not straight or square, measuring smaller intervals may be necessary to determine accurate grid sections. Tree points in partial segments are proportional to the size of the segment. For example, if a segment is 1250 square feet (half of the size of a 50' x 50' segment), and the tree has a value of 2 points, then it is given 1 point (half of 2). Also In partial segments, the required number of points will be reduced proportionately. For

example, if the segment size is 1,250 square feet, then the required points in that partial segment will be 6 points, not 12.

**C. Table of Grid-and-Point System Points for Both the Riparian Resource Protection Zone and the Shoreline Resource Protection Zone**

The tree circumferences are measured using a tape measure at a distance of 4.5' from the ground. This measurement is the circumference of the tree. If a tree has multiple stems that begin at a point higher than the circumference at breast height or 4.5' feet from the ground, it counts as one tree. If the two stems begin below the circumference at breast height, the trunks are each measured at the circumference at breast height and the circumferences are added together.

Trees located on a property line shall be counted toward the Grid Point System utilizing half the points allocated for the circumference of the tree.

Circumference at breast height	Points
Under 2"	0
<u>32"</u> - <u>56"</u>	1
6" - 8"	2
<u>98"</u> - 12"	4
<u>132"</u> - 16"	8
16" and greater	12
Ground cover other than grass, per 100 SF	.5

Any trees planted in accordance with this Section shall be monitored for three (3) years to assure survival. Trees that do not survive the three-year monitoring period shall be replaced with trees of three (3") inches ~~larger~~ Circumference at Breast Height than the tree that did not survive.

**8. Activities and Uses Within the Shoreline Resource Protection Zone and Riparian Resource Protection Zone That Require Special Permit – In General**

Other than activities permitted by Right, by approval of the Zoning Commission by site plan review, or by Administrative Permit noted above, no land-disturbing activity shall be commenced within the Shoreline or Riparian Resource Protection Zones unless and until a Special Permit for such activity has been granted by the Commission. The Commission shall consider the following standards when reviewing an application for a Special Permit Approval where required by this Section J, in addition to those of Sections 5, 5A and 5B:

- a. The compatibility of the permitted activity with the purposes of the District, shall have **an insignificant impact** on the purpose of the overlay district, the Plan of Conservation & Development, and the health, safety and welfare of the public.
- b. Whether strict application of the Lake Terramuggus Watershed & Shoreline Overlay District regulations would deny the applicant reasonable use of the property, or whether these regulations would render the property unusable or unsuitable for development.
- c. Whether there is a feasibly or prudent alternative through plan modification that will lessen the impacts and protect the buffer as intended in these regulations.
- d. That the relief granted is the minimum necessary and does not conflict with other municipal, state, or federal regulations
- e. For any development within one hundred fifty (150) feet from the ordinary high watermark of the Lake including new construction and additions to existing buildings, and structures and structures for shoreline access (decks, stairs, etc. but not including docks), the permit application must demonstrate that the construction and installation of the proposed structure does not contribute to deleterious effects on the Lake.
- f. For any development within the Shoreline Resource Protection Zone that will render post-development impervious surface of more than 5%, -the permit application must demonstrate, by expert testimony, that the construction and installation of the proposed impervious surface does not contribute to **deleterious effects** on the Lake.
- g. -For any development within the Riparian Resource Protection Zone that will render post-development impervious surface of more than ten percent (10%) of the area of the Zone that is within 150 feet of the Ordinary High Watermark of the Lake, the permit application must demonstrate, by expert testimony, that the construction and installation of the proposed impervious surface does not contribute to **deleterious effects** on the Lake.
- h. - No application shall be approved if it depicts the creation of one hundred (100) square feet or more of new cleared area within the Shoreline Resource Protection Zone, over and above what is

permitted by Sections 5 and 6 above; nor the creation of five hundred (500) square feet of new cleared area within the Riparian Resource Protection Zone over and above what is permitted by Sections 5 and 6 above, unless the applicant can demonstrate, by expert testimony, that the construction and installation of the proposed clearing does not contribute to deleterious effects on the Lake.

- i No application shall be approved if it depicts the creation of total cleared area on the lot of twenty-five percent (25%) or more of the lot area within the Shoreline Resource Protection Zone or fifty percent (50%) of the lot area within the Riparian Resource Protection Zone, unless the applicant can demonstrate, by expert testimony, that the construction and installation of the proposed cleared area does not contribute to deleterious effects on the Lake.

#### **9. Special Permit for View Corridors in the Shoreline Resource Protection Zone or Riparian Resource Protection Zone**

Tree removal within Riparian and/or Shoreline Resource Zone(s) for views or a view corridor above and beyond the provisions of Sections J.6, and J.7 above may be permitted by Special Permit from the Commission; provided that such removal shall not exceed fifteen (15) feet in width, shall not constitute an area greater than one-fifth of the total resource protection area located on each lot, and there shall be no more than one (1) such view corridor per lot;

Within a view area or corridor, the Commission may approve the removal of selected trees for the purpose of improving the lake view, provided that an amount not greater than ten (10) percent of the total Circumference at Breast Height of all trees located in the Resource Protection Zone areas of each lot is removed and the trees are no more than twelve (12) inches at Circumference at Breast Height; and provided further that trees shall be replaced within the same grid area, in accordance with the Grid System of Section 7 above, from which such trees were removed.

Within the Shoreline Preservation Resource Zone any tree removal within twenty five (25) feet of the ordinary high watermark shall be manually performed using hand or chain saws; no other motorized equipment or vehicles shall enter this area and no other disturbance of the natural terrain is permitted.

#### **10. Special Permit for fill in the Shoreline Resource Protection Zone.**

Fill may be allowed in the Shoreline Resource Protection Zone only by Special Permit provided, in addition to the standards of this Section 10, in compliance with the following:

- (a) No woody vegetation will be adversely impacted by the proposed fill, and specifically no more than four (4") inches of fill will be placed on more than 50% of the area within the drip line of existing vegetation.
- (b) No inland wetlands shall be filled.
- (c) The requirements of the Erosion and Sedimentation Control standards of these Regulations must be satisfied.
- (d) The fill area must be vegetatively stabilized within seven (7) days after reaching finished grade.
- (e) Work may only be conducted between April 1 and October 1 in order to allow new vegetation to germinate and become established.
- (f) Positive and proper drainage must be established and the requirements of these Regulations for Stormwater Management [in Article 5 b and Section J 12.F](#) must be satisfied.

**11. Special Permit for Shoreline [Stabilization Retaining Walls in the Shoreline Resource Protection Zone and \[Landscape Retaining Walls in the Shoreline Resource Protection Zone or the Riparian Resource Protection Zone; and for Lawn Expansion\]\(#\)](#)**

[Shoreline stabilization and Landscape rRetaining Walls](#) shall require a Special Permit from the Zoning Commission in accordance with Sections -5A and 5B of these Regulations, and shall also be subject to the following standards:

**1. Shoreline [Erosion Stabilization Prevention Retaining Walls](#)**

[Shoreline stabilization Retaining](#) walls significantly alter shoreline characteristics. They create a totally unnatural shoreline which causes alteration of wave actions, beach dynamics and shoreline erosion patterns. [Retaining Shoreline Stabilization w-walls](#) which do not follow the natural contour of the shoreline have a high probability of affecting erosion of neighboring properties and may have adverse impacts to the Lake and lakebed. Other alternatives, such as rip rap, [and/or bio-stabilization](#) -should be explored first. [Shoreline stabilization Retaining](#) walls should be constructed only as a last resort.

- a. [Shoreline stabilization Retaining](#) walls are permitted only where active erosion is present.
- b. The use of [shoreline stabilization retaining](#) walls solely for landscaping is not allowed.

- c. Shoreline stabilization Retaining walls designed to extend the land area into the Lake shall not be permitted.
- d. Stone armoring with angular or round stones (“rip rap”) shall constitute the primary retaining wall method. Rip rap retaining wall standards are as follows:
- 1) Rip rap rock shall be sized properly for the specific task.
  - 2) All rip rap rock shall be free of silts, sands or fines and acquired from a site outside of the Lakeshore Shoreline Resource Protection Zone, except as allowed in the following subsection.
  - 3) Rip rap rock or other appropriate stone, but not soil, shall be placed at or landward of the ordinary high-water mark and be placed at a maximum slope of 2:1.
  - 4) Prior to the placement of rip rap, filter fabric may be required to be placed along the shoreline and incorporated into the rip rap design to inhibit erosion and the washing of fines through the rip rap.
- e. In situations where rip rap will not suitably address the erosional process, the following methods in order of preference are allowed: dry-wall stone wall or rock. The following standards shall apply to the use of either of the above methods:
- 1) When more than 12 inches of retaining wall is exposed on the lakeward side of the wall, rip rap complying with subsection e (1-5) above shall be placed on the waterward side of the wall such that the rock shall extend to within at least six (6) inches of the top of the wall when placed at a maximum slope of 2:1.
  - 2) The landward side of the retaining wall shall extend at least two (2) inches but not more than eight (8) inches above the level of backfill to inhibit surface water run-off which may carry fertilizer, herbicides, pesticides, etc.
  - 3) Within five (5) feet landward of any retaining wall, backfill shall consist of easily drained gravel, rock, stone, sand or a combination of the above. Drain or weep holes should be provided for in any wall. No attempt should be made to establish grass or a lawn immediately behind a wall.
  - 4) All material excavated for placement of the footings may be used as backfill behind the wall or else be deposited outside of the

Shoreline Resource Protection Zone in an approved location on the parcel or removed off-site.

- 5) Backfill shall be limited to that amount necessary to re-establish the pre-existing slope and contours of the landward side.
- 6) If an existing wall has structurally failed and presents a safety hazard and cannot reasonably be repaired, the remains shall remain in place until either an erosion control plan has been approved by the Zoning Enforcement Officer, or a plan to repair or reconstruct the wall has been submitted to and approved by the Commission, which plan shall incorporate best management practices, including shoreline stabilization to prevent erosion, bank failure, or other adverse environmental impact.

## 2. Landscape Retaining Walls

- a. Landscape retaining walls shall not be located closer than ten (10) feet to the ordinary -high watermark of the Lake.
- b. Within one hundred (100) feet of the ordinary high water mark, landscape retaining walls shall not exceed three (3) feet in height.
- c. -Backfill shall be limited to that amount necessary to re-establish the pre-existing slope and contours of the landward side.
- d. For any drainage weep pipes proper outlet protection is necessary to prevent erosion down slope of the wall.

## 3. Lawn Expansion

Lawn expansion in accordance with the criteria of Section 7.12 of these Regulations.

## 12. Development Standards for Administrative Permit, Site Plan, and Special Permit Uses:

### A. Vegetation Retention & Clearing

1. The site plan shall demonstrate that within the Overlay Zone natural vegetation has been retained, protected or supplemented, wherever practical. Where stripping of vegetation is necessary measures shall be taken to minimize soil erosion and appropriate control measures shall be installed prior to removal of vegetation. No area will be cleared where

unacceptable erosion will likely result, based on slope, soil types and conditions. Development of a lot or site shall require the least possible amount of vegetation clearing, soil disturbance, exposure time, soil compaction and topography change.

2. Clearing of existing vegetation shall be accomplished in a manner that retains trees and ground cover and understory plantings in intact groupings of individual plants, rather than leaving single trees which are susceptible to sun scald, wind throw and soil compaction.

3. Clearing/thinning cannot result in non-vegetated areas that exceed 500 square continuous feet (area of approximately 20 feet by 25 feet) to prevent potential erosion problems from developing. The square footage limitation is cumulative per adjacent property.

4. Lot coverage and building footprints shall minimize site disturbance and preserve large areas of undisturbed space.

5. Construction fencing is required to protect existing trees and vegetation.

6. Underground utilities will be employed where possible. Any necessary clearing and trenching shall be kept to a minimum width. Replanting is required.

7. When new plantings and landscaping are proposed for any site that has natural qualities and existing native vegetation, proposed plantings shall reflect such native patterns and restore and restore or enhance existing vegetation in a manner that reflects the natural landscape patterns and native species composition.

8. The removal of any vegetation within the Shoreline Resource Protection Zone shall be limited to an area equal or less in width to twenty (20%) percent of the length of the shoreline water frontage of the parcel. In no case shall the contiguous area of clearing exceed twenty-five (25) feet in width including contiguous area of cleared area on the parcel or in combination with an abutting parcel.

9. All new plants should reflect the listing of native plant materials including trees, shrubs, and groundcovers identified by CT DEEP publication Native Tree & Shrub Availability List and shall not include any invasive species.

10. Where expert testimony is referenced in this Section J, the Commission or the Zoning Enforcement Officer, as the case may be, may give appropriate weight to the testimony of professional consultants having

expertise in the fields of limnology, stormwater management, civil engineering, landscape architecture, erosion control, and similar environmental protection fields where such expertise is relevant to the activity that is subject of the application.

**B. Preservation of Topographic Features:**

1. Site grading and erosion controls must meet the provisions of these Regulations.
2. Existing natural topographic conditions of the site shall be retained or restored whenever possible. Only a minimal amount of grading for a project shall be proposed and must meet stormwater requirements. Non-point source pollution shall be prevented to the maximum extent possible, taking into account site conditions such as slope, soil type and erosivity and vegetative cover. All grading or earth moving operations shall be planned and executed to ensure that final contours are consistent with existing terrain, both on and adjacent to the site. Grading and removal of vegetation at a development site shall be minimized and erosion and sedimentation control measures are in place and properly installed and maintained.
3. Natural vegetative stabilization methods shall be employed to the fullest extent possible; if structural retaining walls are necessary, they should be limited in height and length and be constructed with native materials, unless conditions warrant engineered, structural retention.
4. Site development shall take advantage of any existing natural means of managing, directing or infiltrating site stormwater run-off.
5. The reduction of any permeable surfaces designed to accommodate stormwater runoff shall be offset by the implementation of alternative methods to manage, filter and treat stormwater runoff on the project site.
6. Finished slopes for all cuts and fills shall not exceed 3:1 unless the applicant can demonstrate that steeper slopes will be stabilized and can be adequately maintained for the long term.
7. Best Management Practices (BMPs) shall be in place and are sufficient to remove or neutralize those pollutants that present a potential impact to the water body.

**C. Site Design:**

**1. Buildings**

a) All accessory buildings or structures larger than two hundred (200) square feet, and other impervious surfaces, other than docks, accessways, or swimming platform as herein regulated, shall be setback a minimum of fifty (50) feet from the ordinary high watermark of the Lake. A single accessory buildings two hundred (200) square feet or less may located in the Shoreline Protection Zone, notwithstanding Article 6, Section D.2.c.

b) Construction of new principal buildings shall be setback a minimum of one hundred (100) feet from the ordinary high watermark of the Lake, except when replacing a home existing at the time of adoption of this Section J which may be rebuilt in the same foot print as the existing one.

c) Expansion of existing principal buildings footprint located more than seventy-five (75) feet and less than or equal to hundred (100) feet from the ordinary high watermark of the Lake may be permitted to be constructed no less than seventy-five (75) feet from the ordinary high watermark, provided, however, that for each one (1) square foot incursion past the footprint of the existing principal dwelling toward the seventy-five (75) foot setback, one (1) square foot of natural vegetation shall be added to the parcel's natural vegetative area within said seventy-five (75') foot setback area.

d) No building shall expand closer to the Lake if it's located within seventy-five (75) feet of the ordinary high watermark. Said structure may expand vertically or in width provided no such expansion shall be closer to the Lake than any point of the existing building. In the event that a variance has been granted, but no construction commenced, prior to the adoption of this Section J to allow construction or expansion of a building within seventy-five of the ordinary high watermark, then for each one (1) square foot incursion past the footprint of the existing principal dwelling within the seventy-five (75) foot setback, one (1) square foot of natural vegetation shall be added to the parcel's natural vegetative area. In addition, any variance to allow construction or expansion of a building within seventy-five of the ordinary high watermark of the Lake shall require the issuance of a Special Permit by the Commission in accordance with Section 8 of this Section J.

d)e) Any expansion of impervious surface area shall require infiltration measures for the first inch of rainfall (for example, rain gardens, dry wells, or other similar measures.)

**D. Sanitary Waste**

- a) Except for the use of portable toilets by beach associations or the Town of Marlborough, there shall be no on-site or alternative sanitary waste disposal system permitted; all wastewater must connect to the public sewer system.
- b) Any outhouse or building that contains bathroom facilities shall be setback at least twenty five (25) feet from the ordinary high watermark of the nearest point of the shoreline.

**E. Driveways**

- a) Driveways shall be suitable for safe passage and sufficient for fire and rescue access. Access driveways shall not exceed twelve feet in width and shoulder clearing shall be limited to three (3) feet in width on each side. Driveway width may increase in proximity to garages or carports, but in no event more than one (1) foot wider than the garage or carport that they serve, and a turn-around stub not exceeding fifteen (15) feet in length and width. See Article ~~III~~Three, Section A. 11, of these Regulations regarding driveways.

**F. Stormwater Management**

- a) Lot coverage and building footprints shall minimize site disturbance and preserve large areas of undisturbed space, and impervious surfaces should be non-contiguous when possible.
- b) Runoff from any construction site shall be intercepted and directed around the disturbed area into an undisturbed vegetated area.
- c) c) There shall be no soil compaction outside the construction disturbance area, which shall be identified and delineated in the field with appropriate safety or landscape fencing. There shall be no storage of construction vehicles, construction materials, or fill outside of the delineated construction disturbance area, nor shall these areas be used for construction equipment or vehicle access ways.

- d) Non-point source pollution shall be prevented to the maximum extent possible, taking into account site conditions such as slope, soil type and erosivity and vegetative cover.
- e) Best Management Practices (BMPs) shall be in place and are sufficient to remove or neutralize those pollutants that present a potential impact to the water body.

**G. Dock Standards**

- a) Only one dock is allowed per waterfront property ownership.
- b) Docks shall not exceed thirty (30) feet in length.
- c) Various dock configurations are allowed which provide boat slip access to one side of the dock if constructed within the standards of these regulations. However, in no event is a "T" configuration or similar design allowed for individual residential properties.
- d) No more than ten (10') feet of the shoreline may be disturbed for the installation of a dock approved after the effective date of this Section J. All docks are to be removable structures and shall not be permanently affixed to the lake-bottom or shoreline edge.

**H. Shoreline Decks, & Stairways**

1. Decks and stairways include all structures which are located landward of the Ordinary High Water Mark and are considered as constructed surfaces.
2. Proper placement and construction so as to minimize visual impact from adjoining properties, including canopies or roofs over decks or stairways with the Resource Protection Area.
3. Within the Shoreline Protection area, decks, stairways and docks shall not have any canopies or roofs but not including portable patio umbrellas or similar temporary shade furniture.
4. Flush or ground mounting of all decks, stairways and walkways in conjunction with wise use of the topography and landscaping is required. Elevated or projecting structures are typically prohibited. In addition, the cantilevering of decks and stairways to create level areas on otherwise steeply sloping, hilly or rocky properties is also typically prohibited.

5. Landings for stairways or docks are permitted only where required by safety concerns and shall not exceed forty (40) square feet.
6. The stairs shall be no more than four (4) feet wide.
7. All decks shall be ground mounted. Where topography is uneven, no portion of the floor of a deck shall extend higher than two (2) feet from the adjacent lakeshore. Railings may be constructed; however, said railings shall not extend higher than four (4) feet in height and shall maintain at least fifty percent (50%) of unobstructed space in the design.
8. Elevated decks including those extending from dwelling units, storage buildings, etc., within thirty five (35) feet of the shoreline which extend higher than two (2) feet above the adjacent ground level, which are cantilevered over the surface below or which protrude from the second or upper story of a building are prohibited.
9. Landscaping, or other natural methods may be required to obscure direct view of a deck from the Lake or adjoining properties.
10. Stairways shall follow the natural grade of the existing topography and should be designed and sized to provide access only [for example no wider than four (4) feet]. Typically, the stairway will be mounted flush or within a few inches of the adjacent or underlying lakeshore. In no case would a stairway walking surface be situated higher than two (2) feet above the adjacent or immediately underlying ground. Should the shoreline prove to be too steep to adequately follow this standard, the applicants shall discuss alternative methods of accessing the lakeshore or consider the lakeshore to be inaccessible as opposed to excavating, filling or modifying the lakeshore zone so as to meet the standard.

**I. Lighting**

- a) All outdoor lighting on lots which is within Watershed and Shoreline Overlay District shall be controlled so as not to shine up into the sky or onto any neighboring property or onto the Lake. This may be accomplished by use of fully shielded cut-off fixtures, directing light fixtures downward rather than upward, or by other similarly effective means. Where lighting is for security purposes or to illuminate walkways, driveways, yards or parking area only fully shielded cut-off style light fixtures shall be used.
- b) Meet the requirements of Article 3.16 Outdoor Lighting.

## J. Mitigation Plan

All land clearing activity shall include mitigation in all designs. In circumstances where nonconforming structures are improved or expanded within the Shoreline and/or Riparian Resource Zones, the reviewing agency may require the shoreline property owner to return any mowed or cleared areas to a naturally vegetated state with supplemental planting of appropriate native vegetation in order to restore the Shoreline or Resource Protection Zone.

The reviewing agency may allow an expansion that increases the impervious surface coverage to not more than twenty (20) percent with an approved mitigation plan that includes runoff capture and infiltration structures to prevent stormwater runoff from reaching the Lake.

A mitigation plan could include measures such as resource area restoration, implementation of erosion and stormwater runoff controls, and removal of nonconforming or obtrusive accessory structures located within the Shoreline Resource Protection Zone setback area.

### 13. Permitting Process:

a. Application for Approval. The applicant shall submit an Application for Special Permit or Zoning Permit, as the case may be, and provide documentation demonstrating the need for an approval, the efforts made to minimize disturbance to the functions of the buffer and water resources, or other documentation that may be reasonably requested by the reviewing agency.

b. Application fee. Each application for a regulated activity in the Lake Terramuggus Watershed & Shoreline Overlay District to be considered by the reviewing agency and shall be accompanied by a fee payable to the Town of Marlborough in accordance with the schedule adopted by Town ordinance.

c. Variances. ~~No~~For aAny variance ~~shall be~~ granted ~~from~~for any provision of this Section J, such activity shall require a Special Permit from the Commission.

### 14. Violations

If a landowner violates provisions of these regulations the Commission shall order the corrective action as follows;

1. For tree removal in violation of this Section J for trees two inch caliper or less at circumference at breast height: at least one (1) tree of at least 2.5 inches circumference at breast height must be planted for each tree removed or pruned beyond the limits allowed for trees two inch caliper or less circumference at breast height. For trees removed with a circumference at breast height greater than two (2) inches in caliper

circumference at breast height: replanting shall be of trees at least 3.5" circumference at breast height and equal to at least one hundred and fifty (150%) percent of the total caliper at circumference at breast height removed or a combination of fifty (50%) percent of the caliper and a ratio of 3:1 shrub planting, at the discretion of the Commission.

2. Replanted trees shall be native species. Based on the type of tree removed deciduous or conifer shall be replanted at the same ratio as were removed.
3. Saplings and shrubs removed in violation of this Section J shall be replaced in the same quantity with native species that will be effective in preventing erosion and maintaining water quality and providing habitat for riparian species.
4. Planting shall be done at a time of the year when there is the greatest potential for survival of the plantings.
5. The replanting shall be monitored for a period of three (3) years. Any trees or plantings that do not survive -during this time period shall be replanted with a tree at least 1" circumference at breast height larger than the one that did not survive. The landowner shall submit a report to the Commission on the yearly anniversary of the completion of the plantings, this report shall identify the survival rate and any replanting necessary with a schedule for such replanting.
6. The landowner shall submit a plan showing the location of the replanting and erosion and sediment control plan.
7. If the area cleared in violation results in the removal of the stumps, root system, and/or duff layer the replanting shall be determined by the Zoning Enforcement Officer, guided by the vegetation existing on abutting properties with similar plantings. If the vegetation on the adjoining property is known to be dissimilar then trees at least six (6) feet in height shall be planted at a density no less than one (1) tree per eighty (80) square feet of area disturbed. Additionally, any ground cover or shrubs disturbed shall be restored utilizing native shrubs and understory plantings at the same density.

**Revised Article Two (Zones), Section A:**

**Add:**

**LTWSOD – Lake Terramuggus Watershed & Shoreline Overlay Zone**

**Article Four DEFINITIONS**

**Lake Terramuggus Terms:** For the purposes of Article 10, Section J, Lake Terramuggus Watershed & Shoreline Overlay District, the following terms shall be defined as follows:

**Buffer Strip Natural:** Landscaped and open space areas or any combination thereof used to filter or impede stormwater runoff or physically separate or screen one use or land feature from another in order to visually shield or reduce noise, artificial lighting, or other nuisances.

**Cleared areas:** Areas where vegetative cover has been permanently removed or altered. Vegetative cover includes tree canopy, understory, groundcover and the duff layer.

**Circumference at Breast Height:** The circumference of a tree measured four and half (4 ½) feet above the ground level.

**Dock:** A platform, either non-floating or floating, which extends into, over or across the water to provide for boat moorage, access to a moorage area, swimming facilities, or other related activities.

**Dock Length:** Dock length is the length of that portion of the dock which extends lakeward at any time over water and is measured from the current water level to the farthest waterward end of the dock.

**Dock Wing:** That portion of a dock and deck which lies generally parallel to the shoreline with its main function as a wave break or to provide a boat slip or sheltered area as opposed to primarily provide access out to deep water.

**Drip Line:** The area defined by the outermost circumference of a tree canopy where water drips from and onto the ground.

**Duff layer:** Leaf litter plus small fragments of plants and organic debris that provide a spongy substrate that absorbs the energy of falling water and allows runoff to infiltrate soil.

**Existing Development:** Buildings, structures, impervious areas, landscaped areas, utilities and accessory structures present on the effective date of this Article.

**Footprint, Building:** The gross floor area encompassed by a building's outer walls. Footprint is measure from exterior face to exterior face. Footprint does not include porches, decks, patios, exterior landings, storage areas or garages, whether attached or detached.

**Footprint:** The total area that an impervious surface covers on a horizontal plane, including decks, driveways, patios, structures, overhangs, balconies, or cantilevered constructed spaces that expand beyond a structure's foundation.

**Grubbing:** The removing and disposing of all unwanted vegetative matter from underground, such as stumps, roots, buried logs, and other debris

**Impervious surface:** Those manmade surfaces, including paved and unpaved roads, parking areas, roofs, driveways, and walkways, from which precipitation runs off rather than infiltrates.

**Invasive species:** See "Species, Invasive."

**Lake** – Lake Terramuggus. See Article 10, Section J for definitions related to the Lake Terramuggus Watershed & Shoreline Overlay District

**Land Disturbing Activity:** Any grading, scraping, excavating, or filling of land; clearing of vegetation; and any construction, rebuilding, or alteration of a structure which involves disturbance of the land in and around the structure.

**Lawns, Manicured:** Areas of grass which planted with those types of grasses commonly found in residential lawns, and regularly mowed, edged, or otherwise maintained so as form an area of uniform height of vegetation of six (6") or less.

**Managed Grasses:** Ornamental grasses which are not native to Connecticut, but have been planted to create a formal garden feature.

**Mature Forested Vegetation:** This can be defined as trees, generally grouped or in a line, of a minimum Circumference at Breast Height, A Circumference at Breast Height of 4” is a reasonable minimum size for most mature forested vegetation.

**Mitigation:** An action required of a shoreline property owner designed to compensate for lost Shoreline Buffer or increased Impervious Surface area.

**Natural Ground Cover:** Any herbaceous plant, woody seedling or shrub less than three feet in height. Natural Ground Cover shall also include naturally occurring leaf or needle litter, stumps, decaying woody debris, stones, and boulders. Natural Ground Cover shall not include lawns, landscaped areas, gardens, invasive species [or nuisance](#), exotic species, imported organic or stone mulches, or other artificial materials.

**Nuisance Species:** See “Species, Nuisance.”

**Ordinary High Watermark:** The point on the bank or shore up to which the presence and action of surface water is so continuous as to leave a distinctive mark, such as by erosion, destruction or prevention of terrestrial vegetation, predominance or aquatic vegetation or other easily recognized characteristic.

**Shrub, Large:** a shrub that, when mature, reaches a height at least six (6) feet.

**Shrub, Small:** a shrub that, when mature, reaches a height of up to six (6) feet.

**Species, Invasive:** Plants identified by the Connecticut Department of Energy and Environmental Protection’s publication, The Connecticut Invasive Plant List.

**Species, Nuisance:** Species of plants that cause skin irritation or other adverse reactions in humans, including poison ivy, poison oak, and poison sumac.

**Tree, Canopy:** A tree when mature reaches a height of at least thirty five (35) feet.

**Tree. Understory:** A tree that, when mature, reaches a height of twelve (12) to thirty five (35) feet.

**Vegetative cover:** Mixed vegetation within the Shoreline and Riparian Resource Protection Zone area, consisting of trees, shrubs, groundcover and duff. Does not mean grass lawns, noxious weeds or nuisance plants.

**Wall, Shoreline Stabilization:** Any wall located in the Shoreline Resource Protection Zone between the ordinary high watermark and the adjacent shoreline of Lake Terramuggus that is designed or intended to separate water and land areas.

**Wall, Landscape Retaining:** Any wall located in the Shoreline Resource Protection Zone or the Riparian Resource Protection Zone that is designed or intended to retain earth on the upper side.

**Water Dependent Structures:** Structures which, by their very nature, must be located in or adjacent to the Lake, such as docks and floats, but not included buildings such as boathouses, sheds, cabanas, tents, or similar enclosures or covered areas.

Be LakeSmart for the Sake of Your Lake

[/www.maine.gov/dep/blwq/doclake/lakesmart/resources.htm](http://www.maine.gov/dep/blwq/doclake/lakesmart/resources.htm)

DEP Issue Profile: Clearing Vegetation in the Shoreland

[//www.maine.gov/dep/blwq/docstand/ip-szveg.htm](http://www.maine.gov/dep/blwq/docstand/ip-szveg.htm)

Vegetated Buffers: Planting vegetation for lake protection

[//www.pwd.org/news/publications.php#Brochures](http://www.pwd.org/news/publications.php#Brochures) -  
[orhttp://www.maine.gov/dep/blwq/docwatershed/materials](http://www.maine.gov/dep/blwq/docwatershed/materials).