



City of Lilburn Riparian Buffer Restoration Guidelines Effective January 1, 2019

Small town. Big difference.

Riparian buffer zones surrounding streams and other waters of the state provide important functions and benefits. They help reduce sediments, nitrogen, phosphorous, and pesticides by filtering these and other pollutants out of stormwater and runoff. Healthy riparian buffers also increase wildlife habitat, stabilize water channels and streambanks, improve water quality, provide stream shade and temperature control, and improve aesthetics. A high-quality stream buffer is densely vegetated with native plants, a diverse tree canopy, shrubs, and ground layer vegetation. A healthy buffer is also free from invasive species and eroding soils.

The City of Lilburn protects waters of the state, which includes streams, lakes and springs. A Riparian Buffer Restoration Plan prepared by a licensed professional is required to demonstrate adequate mitigation for encroachments into a buffer. These guidelines are intended to provide a framework for developing an appropriate revegetation plan to restore and enhance the buffer where encroachment has occurred or is proposed.

The City may review site conditions and landscape plans to determine whether to allow a reduction in, or departure from, the number of trees, shrubs and groundcover required by these guidelines. If a reduction of these plantings is approved, each mature Canopy tree shall have a spread of 30' and each mature Understory tree shall have a spread of 25'.

Special consideration should be given to selecting plant material to match site conditions. Selection of plant material should be based on the proximity of state waters and the associated flood zone. Areas within buffers must have 100% coverage of all exposed soils. The plants listed on the following pages, or equivalent alternatives as determined during Plan Review, shall be installed in the following proportions:

Plant Distribution/categories

25% Large Canopy Trees (1 inch to 3 inches in caliper)

25% Small Trees (1 inch to 3 inches in caliper or multi trunked 4 to 6 feet in height)

25% Shrubs (1 gallon to 7 gallon containers)

25% Groundcovers/Perennials/Grasses/Forbs (flats to 2" pots to 1 gallon containers). Grasses may be established using seed.

Generally no more than 33 % of the plants in each category may be of any one species.

Plant Coverage

One (1) large Canopy Tree per 200 sq. ft.

One (1) Understory Tree per 100 sq. ft.

One (1) Shrub One per 16 sq. ft.

One (1) Groundcover/Perennials per 4 sq. ft.

In addition:

- 1) All plants must be native to the Georgia Piedmont Region.
- 2) Removal of invasive species is highly recommended.
- 3) Planting credits may be given for existing preserved trees with root zones intact.
- 4) Plants must be installed manually (no motorized vehicles).

- 5) Compacted soils must be loosened prior to planting.
- 6) Soil disturbance is limited to digging individual holes for plants and according to the nursery/plant producer's recommendations.
- 7) Additional organic matter or compost to help establish root system must be used in lieu of fertilizer.
- 8) The entire restoration area (including around trees) must be mulched with 2"-3" of shredded or chipped wood or other approved mulching material.
- 9) Slopes steeper than 3:1 may require additional stabilization.
- 10) Weekly watering is required in the absence of adequate rainfall (1" per week) for 13 weeks.
- 11) Trees and shrubs planted must be warranted for 2 growing seasons (min 12 months).

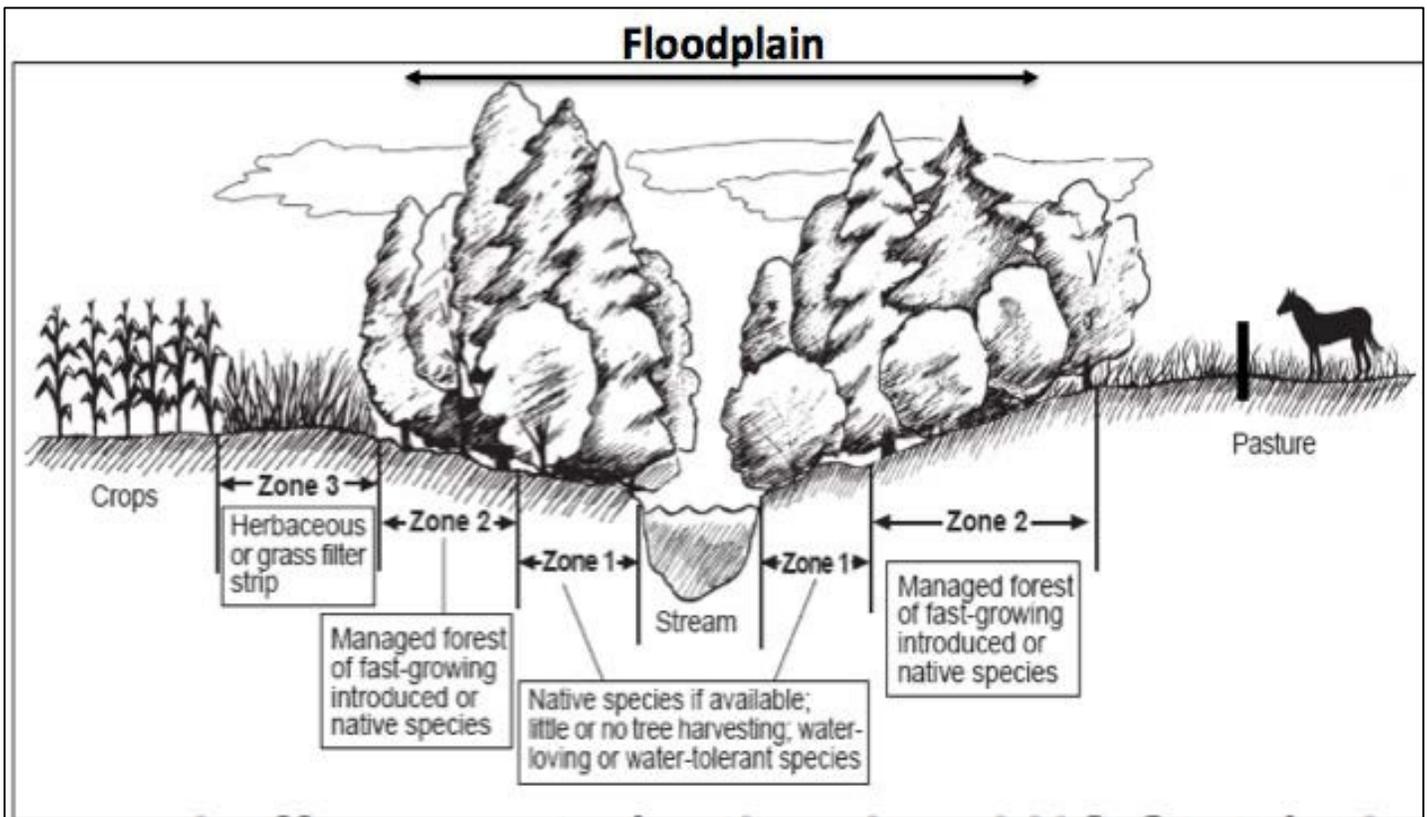
Riparian Zones

Below is a description and schematic of the riparian buffer zones intended to assist with planning and design.

Bank Zone (#1): The 25' Streamside Zone represents that portion of the buffer that is directly adjacent to state waters and is subject to regular inundation from "normal" hydrologic events. In situations where streambanks have been disturbed, additional consideration should be given to the proper design and execution of work to prevent streambank erosion. Work to be completed in this zone of the buffer may require specialized work including geotextile, soil bioengineering, structural elements and other techniques.

Overbank Zone (#2): The 50' Middle Zone represents that portion of the buffer that may receive periodic flooding dues to large storm events. See the Stream Buffer Protection ordinance for restrictions in this zone.

Upland Zone (#3): This Outer Zone is that portion of the buffer that will generally not be affected by flood events.



Suggested/Approved Plant List

Plants approved for buffer revegetation include native Canopy trees, Understory trees, Shrubs, Forbs/Groundcovers/Perennials, and Grasses. See *Section 109, Article V – Buffers, Landscaping and Vegetation*, Appendix "A" Tree Species List or Stream Buffer Restoration Plant List provided by the Planning Department. Plants not listed may be submitted for approval but in no case will invasive species be considered.

Stream Buffer Restoration Plant List

A. CANOPY TREES

		Zone	Hardiness
Red Maple	<i>Acer rubrum</i>	1,2,3	Good
River birch	<i>Betula nigra</i>	1,2,3	Good
Shagbark Hickory	<i>Carya ovata</i>	2,3	Good
Sugarberry	<i>Celtis laevigata</i>	1,2,3	Good
Persimmon	<i>Diospyros virginiana</i>	2,3	Good
American Beech	<i>Fagus grandifolia</i>	2,3	Good
White Ash	<i>Fraxinus americana</i>	2,3	Good
Green Ash	<i>Fraxinus pennsylvanica</i>	1,2,3	Good
Sweetgum	<i>Liquidambar styraciflua</i>	1,2,3	Good
Tulip Poplar	<i>Liriodendron tulipifera</i>	2,3	Good
Southern Magnolia	<i>Magnolia grandiflora</i>	2,3	Good
Sweetbay Magnolia	<i>Magnolia virginiana</i>	1,2	Good
Black Gum	<i>Nyssa sylvatica</i>	2,3	Good
Loblolly Pine	<i>Pinus taeda</i>	2,3	Good
Virginia Pine	<i>Pinus virginiana</i>	3	Good
Sycamore	<i>Platanus occidentalis</i>	1,2,3	Good
White Oak	<i>Quercus alba</i>	2,3	Good
Southern Red Oak	<i>Q. falcata</i>	2,3	Good
Overcup Oak	<i>Q. lyrata</i>	1,2,3	Good
Swamp Chestnut Oak	<i>Q. michauxii</i>	1,2,3	Good
Red Oak	<i>Q. rubra</i>	2,3	Good
Shumard Oak	<i>Q. shumardii</i>	1,2,3	Good
Water Oak	<i>Q. nigra</i>	1,2,3	Good
Willow Oak	<i>Q. phellos</i>	1,2,3	Good
Black Willow	<i>Salix nigra</i>	1,2	Good

B. UNDERSTORY TREES

Florida Maple	<i>Acer barbatum</i>	2,3	Good
Red Buckeye	<i>Aesculus pavia</i>	2,3	Good
Serviceberry	<i>Amelanchier canadensis</i>	2,3	Fair
Ironwood	<i>Carpinus caroliniana</i>	1,2,3	Good
Redbud	<i>Cercis canadensis</i>	2,3	Good
Dogwood	<i>Cornus florida</i>	2,3	Good
Hawthorn	<i>Crataegus spp.</i>	2,3	Good
Carolina Silverbell	<i>Halesia carolina</i>	2,3	Fair
American Holly	<i>Ilex opaca</i>	2,3	Good
Sweetbay	<i>Magnolia virginiana</i>	1,2,3	Good
Southern Crabapple	<i>Malus angustifolia</i>	3	Good
Hophornbeam	<i>Ostrya virginiana</i>	2,3	Good
Sourwood	<i>Oxydendrum arboreum</i>	3	Good

C. SHRUBS

Buckeye	<i>Aesculus sylvatica</i>	2,3	Good
Tag Alder	<i>Alnus serrulata</i>	1,2	Good
Red Chokeberry	<i>Aronia arbutifolia</i>	1,2,3	Fair
Pawpaw	<i>Asimina triloba</i>	2,3	Fair
Sweetshrub	<i>Calycanthus floridus</i>	2,3	Good
American Beautyberry	<i>Callicarpa americana</i>	2,3	Good
Buttonbush	<i>Cephalanthus occidentalis</i>	1,2	Good
Sweet Pepperbush	<i>Clethra alnifolia</i>	1,2	Good
Silky Dogwood	<i>Cornus amomum</i>	1,2	Good
American Strawberry Bush	<i>Euonymus americanus</i>	2,3	Good
Witchhazel	<i>Hamamelis virginiana</i>	2,3	Good
Inkberry	<i>Ilex glabra</i>	1, 2	Good
Oak-leaf Hydrangea	<i>Hydrangea quercifolia</i>	2,3	Good
Florida Anise	<i>Illicium floridanum</i>	2,3	Good
Small Anise	<i>I. parviflorum</i>	2,3	Good
Possumhaw	<i>Ilex decidua</i>	1,2	Good
Winterberry	<i>I. verticillata</i>	1,2	Good
Itea, Virginia Sweetspire	<i>Itea virginica</i>	1,2	Good
Spice Bush	<i>Lindera benzoin</i>	2	Good
Dog Hobble	<i>Leucothoe axillaris</i>	1,2	Fair
Wax Myrtle	<i>Myrica cerifera</i>	2,3	Good
American Devilwood Wild	<i>Osmanthus americanus</i>	2,3	Fair
Chickasaw and Hog Plum	<i>Prunus angustifolia, P. umbellata</i>	2,3	Good
Plum	<i>P. americana</i>	2,3	Good
Piedmont Azalea, other natives**	<i>Rhododendron canescens,</i>	2	Fair

(** *Jap. Evergreen azaleas R. periclymenoides, R. flammeum not acceptable*)

Smooth or Winged Sumac	<i>Rhus glabra, R. copallinum</i>	3	Good
Elderberry	<i>Sambucus canadensis</i>	1,2	Good
Maple-leaf Viburnum	<i>Viburnum acerifolium</i>	2,3	Fair
Swamp-haw Viburnum	<i>Viburnum nudum, V. cassinoides</i>	1,2	Good

D. FORBS/GROUNDCOVERS/PERENNIALS Ferns

Sensitive fern	<i>Onoclea sensibilis</i>	2	Fair
Cinnamon fern	<i>Osmunda cinnamomea</i>	2	Fair
Royal fern	<i>Osmunda regalis</i>	2	Fair
Christmas fern	<i>Polystichum acrostichoides</i>	2,3	Fair
Virginia Chain fern	<i>Woodwardia virginica</i>	2	Fair
Netted Chain Fern	<i>Woodwardia aereolata</i>	1	Good

Flowers			
Butterflyweed	<i>Asclepias tuberosa</i>	2,3	Fair
New England Aster	<i>Aster novae-angliae</i>	2,3	Fair
Turtlehead	<i>Chelone lyonii</i>	2,3	Fair
Lanceleaved Coreopsis	<i>Coreopsis lanceolata</i>	2,3	Fair
Bleeding heart	<i>Dicentra eximia</i>	2,3	Fair
Hardy ageratum	<i>Eupatorium coelestinum</i>	2,3	Fair
Joe-Pye Weed	<i>Eupatorium fistulosum</i>	2,3	Fair
Wild Geranium	<i>Geranium maculatum</i>	2,3	Fair
Narrow-leaved sunflower	<i>Helianthus angustifolius</i>	2	Fair
Hibiscus (Note: not shrub althea)	<i>Hibiscus coccineus</i>	2	Fair
Gayfeather	<i>Liatris spicata, L. aspera</i>	2,3	Fair
Cardinal Flower	<i>Lobelia cardinalis</i>	2	Fair
Great Lobelia	<i>Lobelia siphilitica</i>	2	Fair
Evening Primrose	<i>Oenothera speciosa,</i>	2	Fair
Obedient Plant	<i>Physostegia virginiana</i>	2,3	Fair
Solomon's Seal	<i>Polygonatum biflorum</i>	2	Fair
Black-Eyed Susan	<i>Rudbeckia fulgida</i>	2,3	Good
Black-Eyed Susan	<i>Rudbeckia hirta</i>	2,3	Good
False Solomon's Seal	<i>Smilacina racemosa</i>	2,3	Fair
Goldenrod	<i>Solidago spp.</i>	2,3	Fair
Stoke's Aster	<i>Stokesia laevis</i>	1,2	Fair
Foamflower	<i>Tiarella cordifolia</i>	2	Poor
Spiderwort	<i>Tradescantia virginiana</i>	2,3	Good
Ironweed	<i>Vernonia noveboracensis</i>	2,3	Good
Yellow-root	<i>Xanthorhiza simplicissima</i>	1,2	Good

F. SUGGESTED GRASSING SPECIES Type Seeding Rate **Season** **Lbs /Acre**
* Seeding Rates Based on Pure Live Seed

Big Bluestem	<i>Andropogon gerardii</i>	Warm	25
Side-Oats	<i>Gramma Bouteloua curtipendula</i>	Warm	20
Switchgrass	<i>Panicum virgatum</i>	Warm	10
Little Bluestem	<i>Schizachyrium scoparium</i>	Warm	14.5
Indian Grass	<i>Sorghastrum nutans</i>	Warm	22
Eastern Gamagrass	<i>Tripsacaum dactyloides</i>	Warm	22
Wild Rye	<i>Elymus virginicus, E. canadensis</i>	Cool	20

Notes

1. Use annual rye as cover crop when seeding during the dormant season.
2. Hardiness rating based on individual species' ability to survive adverse conditions during initial establishment period. Any selections with "Fair" rating shall be justified in writing.

Typical Vegetation Zones

(Not to Scale)

