

# Town of Jamestown Tree Preservation & Landscape Ordinance

## Section 1. Purpose and Intent

The regulations of this Ordinance are intended to reduce tree canopy loss and implement urban forest management improvements through requirements for tree protection, tree preservation, and the planting or replanting of trees and the maintenance of existing trees within the Town of Jamestown. Additionally, this ordinance will seek to establish minimum standards for the design of landscapes so as to improve the community aesthetically, economically and environmentally. The tree preservation requirements are intended to enhance the quality of life through sustainable urban forest practices and increase benefits trees provide, including, but not limited to the following:

- A. Absorption of Carbon Dioxide and returning Oxygen
- B. Reduction of soil erosion and increase in rainwater infiltration
- C. Provision of shade for cooling
- D. Screening of noise, dust and glare
- E. Reduction of storm-water runoff
- F. Maintenance and improvement of Town appearance and aesthetics
- G. Provision of habitat for wildlife
- H. Preservation, protection and enhancement of the natural environment

## Section 2. Definitions

For the purpose of this Ordinance, the following terms, phrases, words and their derivations shall have the meanings given herein unless the context clearly indicates otherwise.

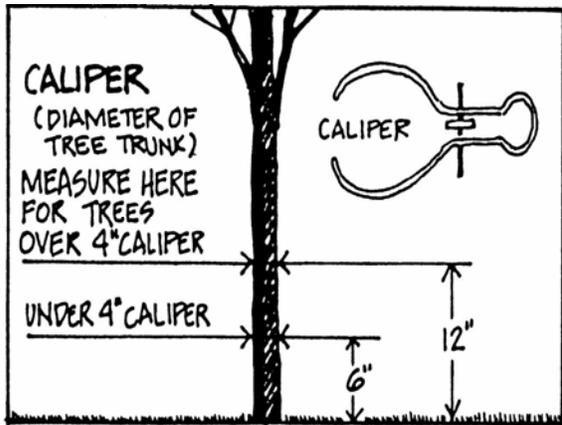
*Administrator* is the acting Planning Director as delineated herein and/or such duly appointed agents as may be authorized by the Town Manager.

*Alternative Methods of Compliance* such as alternate tree planting methods, plant materials, planting methods or reforestation may be used where unreasonable and impractical situations would result from application of tree planting and preservation requirements.

*ANSI (American National Standards Institute)* is a private, non-profit organization (501-C3) that administers and coordinates the U.S. voluntary standardization and conformity assessment system.

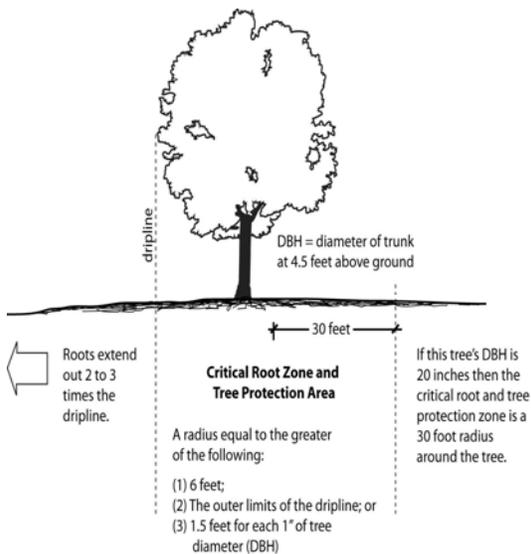
*Auguring* is a practice used to reduce the damage to and loss of individual trees where underground construction involves a tree's CRZ (Critical Root Zone).

*Caliper* is the diameter measurement of tree-trunk taken at six inches above ground level for trees up to and including four inches in caliper. For larger trees, measurement of caliper shall be taken at twelve inches above ground level.

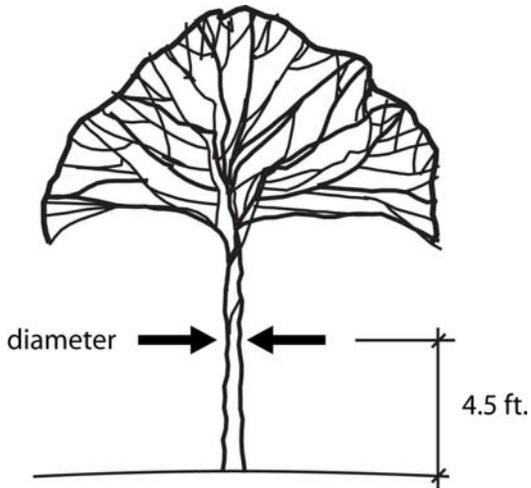


*Clear Cutting* is the felling and removal of all trees within an area. This practice is typically an indiscriminant removal of trees except in the case of silviculture harvesting where removal is followed up with a forest replanting or regeneration effort to keep the land forested.

*CRZ (Critical Root Zone)* is that area of tree roots around the tree measured to be no less than 1.5 feet in radius for every inch of trunk diameter measured four feet above the ground.

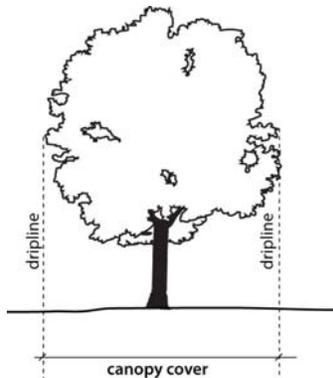


*DBH (Diameter at Breast Height)* is the diameter of a tree 4.5 feet above the average ground level.



*Deciduous* plants and trees are those that lose their leaves annually.

*Drip Line* is an imaginary vertical line extending from the outermost portion of the tree canopy to the ground.



*Evergreen* plants and trees retain their leaves throughout the year.

*Exotic/Invasive Species* are alien species that become established in natural or semi-natural ecosystems or habitats and threaten native plants. When such species spread, they threaten biological diversity. Invasive species include, but are not limited to, English Ivy – *Hedera helix*, Chinese Wisteria – *Wisteria sinensis*, Japanese Wisteria – *Wisteria floribunda*, Japanese Honeysuckle – *Lonicera japonica* and Kudzu – *Pueraria montana*.

*Heritage Tree* is any tree that is twelve inches in diameter or larger measured at 4.5 feet above the ground.

*Historic Tree* is a tree that has been specifically designated by the Town of Jamestown Council as historic.

*Large-maturing Tree* is one whose height is greater than 60 feet at maturity and meets the specification of “American Standards for Nursery Stock” published by the American

Association of Nurserymen. A tree of this category can also be referred to as a *Canopy Tree*.

*Maintenance* refers to proper cultural practices including pruning, fertilization, pest management and root system protection. The standards of maintenance are those published by the National Arborist Association.

*Medium-maturing Tree* is a tree whose height is 30-60 feet at maturity and meets the specifications of “American Standards for Nursery Stock” published by the American Association of Nurserymen.

*Monoculture* is a single, homogeneous culture without dissension or diversity.

*Planting Strip* is a ground surface located outside of any public right-of-way that is free of impervious cover and/or paved material and is reserved for landscaping purposes.

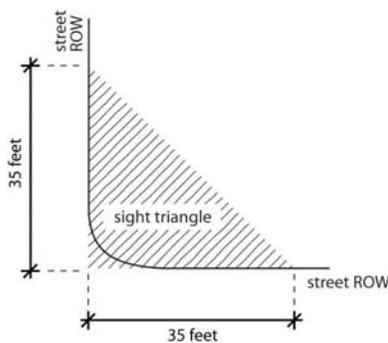
*Planting Yard* is a strip of land (of various widths) provided along the perimeter of a site for the installation of plant material in a combination of canopy trees and/or under story trees and shrubs.

*Regulated Tree* is one located on private property and whose establishment and/or maintenance is required in order to acquire a Certificate of Occupancy for a proposed use.

*Root Protection Zone (RPZ)* is generally 18 to 24 inches deep and a radius distance from the trunk of the tree equal to one foot for each one inch of trunk diameter or the outermost drip line of the tree, whichever is greater.

*Shrub* is an upright plant, which is planted for ornamental purposes.

*Sight Triangle* is the triangular area formed by a diagonal line connecting two points located on intersecting property lines (or a property line and the curb or a driveway), each point being 35 feet from the point of intersection.



*Small-maturing Tree* is one whose height is less than 30 feet at maturity and meets the specifications of “American Standards for Nursery Stock” published by the American Association of Nurserymen.

*Street Tree* is one planted within or adjacent to a public right-of-way as required by the Town.

*TCA (Tree Conservation Area)* is one (1) or more areas of a site, which includes existing trees and their critical root zones.

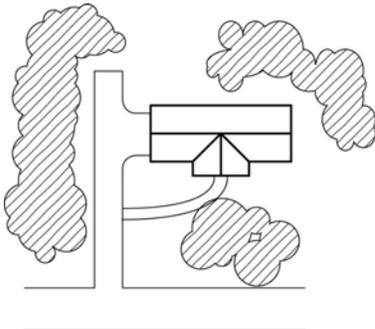
*Tree* – see *Large, Medium, and Small-maturing Tree* definitions.

*Topping* is the inappropriate removal or cutting back of major portions of a tree by any pruning practice resulting in more than 25% of the foliage and limbs being removed. This includes any pruning that leads to disfigurement of the normal shape of the tree.

*Tree Evaluation Formula* is one for determining the value of ornamental trees and shrubs as published by the International Society of Arboriculture (ISA).

*Tree Inventory* is the gathering of accurate information on the health and diversity of the community forest on a development site or within the Town.

*Tree Save Area* is one or more areas of a site which includes existing trees and their tree protection zone. The purpose of the tree save area is to encourage the preservation of healthy clusters of trees or heritage trees.



*Unsafe Tree* is a tree in which at least one of the following criteria applies:

- (1) A combination of a structural defect and a target
  - a. A structural defect, which predisposes the tree to failure; i.e., dead tree, trunk decay, dead branches, V-crotches; and
  - b. A target such as a structure, road, walkway, campsite or other area where property exists or people reside as in urban environments where target areas are almost always in close proximity to trees; or
- (2) A tree that is otherwise structurally sound, but which interferes with routine

activities of people. Such interference might include obstructions, sight distance problems for motorists, buckling of sidewalks, attracting lightning or interference with utilities.

*Vine* is a woody plant that has a spreading pattern of growth. Vines may be used on the ground, walls and trellises.

### **Section 3. Creation and Establishment of a Town Tree Board**

The Town Council shall establish a Tree Board, which will consist of seven (7) voting members who are residents of the Town of Jamestown. This Board will be created from the existing Parks and Recreation Board, whereas from here forth, the Board shall serve a dual purpose between the two aforementioned functions. The terms of office for the members shall be for two (2) years. Members may serve two full terms, after which they may not return for at least two (2) years.

The Town Council shall fill vacancies arising on the Committee for the balance of the unexpired term. All members shall hold office until their successors are appointed and qualified. Any member who misses more than three consecutive regular meetings loses his/her status. Members of the Board shall serve without compensation.

The Tree Board shall serve under the direction of the Town Planning Department and will be staffed by the Planning Director. Non-voting members may be added to the Board as necessary. Such members may include, but not be limited to, persons from the Town's Public Services Department, Parks and Recreation Department, local public utilities servers and the local Cooperative Extension Service. Non-voting members may be nominated by any voting member of the Tree Board and shall be installed by a simple majority vote.

### **Section 4. Tree Board Duties and Responsibilities**

The duties and responsibilities of the Tree Board shall include:

- (a) It shall be the responsibility of the Board to study and develop and/or update annually, specifications for the care, conservation, pruning, planting and replanting of publicly owned trees and shrubs in parks, along streets and in other public areas. Such information and plans will be presented annually to the Town Council. The Board, when requested by Council, shall consider, investigate, make finding, report and recommend upon any special matter or question coming within the scope of work of the Board.
- (b) The Board shall select officers, establish rules and regulations, and keep a journal of proceedings (minutes). A simple majority of the members shall be a quorum for the transaction of business.

- (c) The Board shall develop and maintain arboricultural specifications for tree care and replacement.
- (d) To provide guidance for developing tree and landscaping programs and policy; evaluate and monitor current regulations for effectiveness and recommend appropriate changes regarding the Tree Preservation & Landscape Ordinance or any other arboricultural specifications for tree care and replacement to the Town Council;
- (e) To conduct education programs with respect to tree preservation;
- (f) To review and provide recommendations regarding long term tree management and maintenance plans for the Town;
- (g) To review appeals, orders, requirements, decisions or interpretations made by Town staff charged with enforcing the Tree Preservation & Landscape Ordinance;
- (h) To make recommendations to the Board Of Adjustment with reference to variances with relation to provisions of the Tree Preservation & Landscape Ordinance;
- (i) To approve minor variations to the Tree Preservation & Landscape Ordinance that provide equal or better compliance;
- (j) Or any other duty or responsibility assigned to it by the Town Council with relation to arboricultural or landscaping matters

Any changes to the Parks & Recreation Advisory Committee Policy shall take precedence over the text listed above.

## **Section 5. Administration**

- (a) *Town Manager.* The Town Manager or his/her designee shall facilitate all functions of the Tree Board. This shall include, but not be limited to, setting meeting times and place, establishing an agenda, functioning as a liaison to the Town Council and serving as the Tree Board representative at public forums.
- (b) *Public Services Director.* For the purpose of carrying out the provisions of this chapter, the Public Services Director shall have responsibility and control over all trees and shrubbery planted or growing upon Town property.
- (c) *Enforcement Officer.* The Enforcement Officer (or Planning Director) is the designee who shall be given the authority to enforce the Ordinance against the Town's citizens in the event of compliance failure. This designee shall also have responsibility and control over all regulated, unsafe and diseased trees located on public and private property.

## Section 6. Applicability

The provisions of this Ordinance shall apply to the following:

- A. All new subdivisions and non-residential and multi-family developments
- B. Changes in use, expansions, and new buildings for already existing non-residential or mixed-purpose land uses as per the following:
  - 1. Changes in use from residential to non-residential, such as a change from residential to commercial, or residential to industrial. The requirements of this section shall be applicable to the entire zone lot.
  - 2. Vehicle Accommodation Areas – This Ordinance shall apply to any new parking lot. Only expanded portions of existing parking lots shall be held to the requirements that appear in the section *Parking Lot Tree Planting Requirements* of this Ordinance.
  - 3. Non-Residential Expansions – All non-residential expansions of buildings, parking areas, or open uses of land, except the first three thousand (3,000) square feet of expansions to buildings, parking areas, or open uses of land existing on October 1, 1993. The requirements of this section shall be applicable only to the expansion.
- C. Tree Disturbance – All other activities for which a Tree Disturbance Permit is required. (See *Tree Disturbance Permit* Section).

**Exemptions:** The provisions of this Ordinance shall **not** apply to the uses and activities listed below. Any applicable requirements of Article X (Watershed) relating to the Water Supply Watershed or Soil Erosion and Sedimentation Control still apply:

- A. Trees, vegetation and land-disturbing activity normally associated with the landscaping, construction, modification or occupancy of any existing or proposed single-family or two-family dwelling on an existing residentially zoned individual lot smaller than five acres, unless the property owner voluntarily registers a rare or specimen tree;
- B. Land in the Town's Public/Institutional (PI) zoning district, provided however, that the section on *Town Owned Land* of this Article shall apply to all public lands within the Town and its extraterritorial jurisdiction;
- C. Multifamily developments containing eight (8) or fewer dwelling units on a single zone (building) lot;
- D. Properties within or surrounded by the Town Core zoning overlay district,

however, any new parking lots or parking lot expansions in this district *shall not* be exempted from the regulations set forth in the *Parking Lot Tree Planting Requirements* of this Ordinance;

- E. Property lines abutting utility easements in excess of sixty (60) feet in width and all railroad rights-of-way;
- F. Property lines abutting dedicated street rights-of-way, which have remained unopened for a period of at least fifteen (15) years;
- G. Tree removal on three thousand (3,000) square feet or less, after the Town Enforcement Officer or Town Arborist has determined that such a removal is not associated with a forthcoming development proposal and will not be inconsistent with any plan previously approved by the Town or the County, however, watershed and/or soil erosion requirements may still apply;
- H. Property covered by an active forestry management plan written by a North Carolina Registered Forester, provided that documentation has been furnished to the Town Enforcement Officer or Town Arborist

#### **Section 7. Public Trees – Maintenance and Protection**

Except as hereinafter provided, no person except a public utility shall cut, prune, injure or remove any living tree on or in a public highway, right-of-way, neutral ground, public park, public place, triangle, sidewalk, or other public property; or cut or disturb or interfere in any way with the roots of any tree on public property; or spray with any chemicals, pesticides or oils, or whitewash any tree on public property; or place any wire, rope, sign, poster, barricade or other fixture on a tree or tree guard on public property; or injure, misuse or remove any device placed to protect any such tree.

- (a) No person shall pile building or other material, around any tree, plant or shrub in a public right-of-way in any manner that will in any way injure such tree, plant or shrub.
- (b) No person shall pave or place gravel, soil or other such material within twelve (12) feet of any tree on public property, unless approved by the Enforcement Officer.
- (c) No person shall dump, pour or spill any oil, pesticide or other deleterious matter upon any tree or tree space in any public rights-of-way, or keep or maintain upon any public rights-of-way, any receptacle from which any oil, pesticide or other deleterious matter leaks or drips onto any soil, parking area or concrete gutter so as to injure any tree on any public property.
- (d) No person shall use neutral grounds, parks, sidewalks, utility easements or other public places to dump grass clippings, tree trimmings, rocks or other organic

refuse. This shall not apply to properly placed yard waste that is intended for pickup by Town of Jamestown Public Services or Solid Waste crews.

- (e) No person shall decorate a tree or shrub in any public right-of-way, neutral ground, park, triangle or sidewalk, either with or without lights, or place advertising material, posters or political placards on trees in public properties.

### **Section 8. Regulation of Tree Care Professionals on Town Owned Lands**

- (a) It shall be unlawful for any person or firm to engage in the business or occupation of pruning, treating or removing street or park trees or trees within Town owned public rights-of-way without first applying for and procuring a Tree Disturbance Permit. Such a permit will only be granted to individuals, businesses or companies who employ a Certified Arborist to perform or supervise all tree work.
- (b) In order to receive a Tree Disturbance Permit, applicants must first sign an affidavit agreeing to abide by ANSI 300 Standards for tree care. Specifically, the “topping” of trees shall be prohibited except in cases where the top of the tree has been injured beyond repair by a storm or related incident.
- (c) Before any permit shall be issued, each applicant must first file evidence of possession of liability insurance and workman’s compensation insurance in the minimum amounts as required by the Town of Jamestown; indemnifying the Town or any person injured or damage resulting from the pursuit of such endeavors as herein described.
- (d) The Enforcement Officer is authorized to suspend or revoke the right of any person or business to perform work for the Town of Jamestown that engages in work practices which do not comply with tree care standards as specified in this Ordinance and the related ANSI Standards.

### **Section 9. Regulation of Tree Care Professionals on Private Lands**

- (a) Every owner of any tree overhanging any street or right-of-way within the Town shall prune the branches so that such branches shall not significantly obstruct the view of any street intersection and so that there shall be a clear space of thirteen (13) feet above the street surface or eight (8) feet above the sidewalk surface. Said owners shall remove all dead, diseased or unsafe trees, or broken or decayed limbs that constitute a nuisance to the safety of the public. The Town shall have the right to prune any tree or shrub on private or public property when it constitutes a public safety hazard, interferes with pedestrian traffic or the visibility of any traffic control device, sign or sight.
- (b) No part of this section is intended to prohibit the planting of street trees by adjacent property owners providing that the selection and location of said trees is in accordance with planting specifications of the Ordinance and that any such

planting conducted under utility lines shall be limited to planting material taken from the first class (small) of the list of recommended trees in this Ordinance.

- (c) The Town of Jamestown shall not directly regulate private companies providing tree care services on private property. However, the Town Enforcement Officer or Town Arborist may direct property owners to the International Society of Arboriculture (ISA) website or other resources to assist in the location of Certified Arborists, which have specific training in tree care.

## **Section 10. Hazard Trees**

- (a) The Town Manager or her designee may cause or order to be removed any tree or part thereof on private or public property, which is unsafe or injurious to sewers or other public improvements.
- (b) The Public Services Director or his designee may enter upon public or private property in the Town to spray, or otherwise treat or cause or order to be sprayed or otherwise treated, any tree infected or infested by any parasite, insect or other pest when it shall be necessary to do so to prevent the breeding or scattering of any parasite or animal pest and to prevent danger to persons or property or to trees planted on Town property.
- (c) Whenever, in the opinion of the Town Manager or her designee, the removal of a tree or shrub, or portion of a tree or shrub on private property shall be necessary under the provisions of this section, the Manager shall have the power to remove such, or portion of such, tree or shrub, or cause or order the same to be done upon notice with an opportunity to be heard to the property owner.
- (d) Prior to exercising the authority conferred by this section, the Town Manager or her designee shall give the owner notice and an opportunity to correct the condition by requesting that corrective action be taken. The request shall be in writing and sent via Certified Mail, Return Receipt requested, to the owner of the property in question and shall be acted upon within twelve (12) days (or a lesser period of time if an imminent threat to life or property exists) from the date of the receipt of the request. If, after twelve (12) days, the owner has not corrected the condition or undertaken action that would lead to a timely correction of the condition, the Town Manager or her designee may enter upon the property, perform the work necessary to correct the condition and bill the owner for the actual costs incurred. If the property owner fails to pay the bill for such work within thirty (30) days of such notice, the amount of the bill and any collection costs incurred shall become a lien against the subject property and shall be collected in the same manner provided for the collection of delinquent taxes. In situations involving an immediate threat to public health, safety or welfare, the Town may act without prior notification to the property owner.

## **Section 11. Maintenance of Regulated Planting Spaces**

Regulated spaces are those physical areas in which trees and landscape materials are required by the Tree Ordinance, Subdivision Ordinance, Floodplain Ordinance, Zoning Ordinance or other statutes of the Town of Jamestown.

- (A) The owner or lessee of the property where landscaping is required shall be responsible for the maintenance and protection of all plant and screening material. Landscaped areas shall be maintained in good condition and kept free of debris.
- (B) Failure to maintain or replace dead, damaged, or diseased material or to repair a broken fence or wall (where such fence or wall is considered a required portion of the landscape as outlined by this Ordinance) shall constitute a violation of this Ordinance and shall be subject to the provisions in the section on *Penalties* if not replaced within 30 days of notification.
- (C) In the occurrence of a natural event which destroys a large quantity of vegetation, the owner or lessee shall have 120 days to replant. Replaced plant material must be in compliance with the minimum size, spacing and quantity standards of this Ordinance.

## **Section 12. Tree Conservation Plan Procedures**

- (A) *Tree Disturbance Permit*: A tree disturbance permit is an official authorization, which shall be issued by the Town simultaneous to the issuance of a grading permit and prior to any tree disturbing activities. Tree disturbing activities include cutting and/or damage to the Critical Root Zone (CRZ) of live trees four (4) inches DBH or greater on sites not accompanied by a development plan, except as stated in *Exemptions*.
  - (1) *Requirements for a Tree Disturbance Permit*:
    - a. Identify the Tree Conservation Area (TCA).
    - b. The TCA as required for a site based on lot size, as determined in Section 14 (A), must be met.
    - c. Submit a Tree Protection Plan as specified in Section 12 (A) 2.
  - (2) *Tree Protection Plan Approval*: Approval of a Tree Protection Plan is required for all projects, except those listed in *Exemptions*, and shall be submitted along with all other necessary drawings to the Technical Review Committee. Tree protection items shall be included on all grading plans, erosion control plans and tree disturbance permit plans.
  - (3) Drawings shall identify the following items:
    - a. Boundaries of the required TCA
    - b. Required planting yards
    - c. Protected trees within the TCA including tree size and species
    - d. CRZ of each proposed protected tree or group of trees

- e. Limits of clearing
- f. Grading
- g. Trenching
- h. Required tree protection measures including protective fencing and signage
- i. Overhead and underground utilities, rights-of-way and easements
- j. Areas of reforestation, if any
- k. Stream buffers, if any
- l. A complete survey of all trees on the *site* (outside the labeled TCA) that exceed 18 inches DBH, including tree size and species

(4) The following required notes shall be indicated on tree preservation plans, erosion control plans, grading plans and Tree Disturbance Permit plans in **CAPITAL LETTERS**:

- a. Contact the Planning Department to set up a pre-construction meeting prior to any tree disturbance.
- b. All tree protection devices must be installed prior to inspection by the Planning Director or Enforcement Officer and prior to any tree disturbance activities.
- c. Removal or damage of trees in the conservation area will be subject to the penalties established in the *Penalties* section of this Ordinance.

(5) These plans shall be reviewed by the Planning Director or Enforcement Officer for conformance with applicable provisions of this section and for tree and vegetation viability. The plans will either be approved or returned for revisions. Reasons for return shall be noted on the proposed plan.

(6) All tree protection measures shall be installed prior to inspection by the Planning Director or Enforcement Officer and prior to tree disturbance.

(7) The Planning Director or Enforcement Officer will conduct follow-up site inspections for enforcement of the tree protection requirements.

**(B) Provisions for Preservation of Existing Trees:**

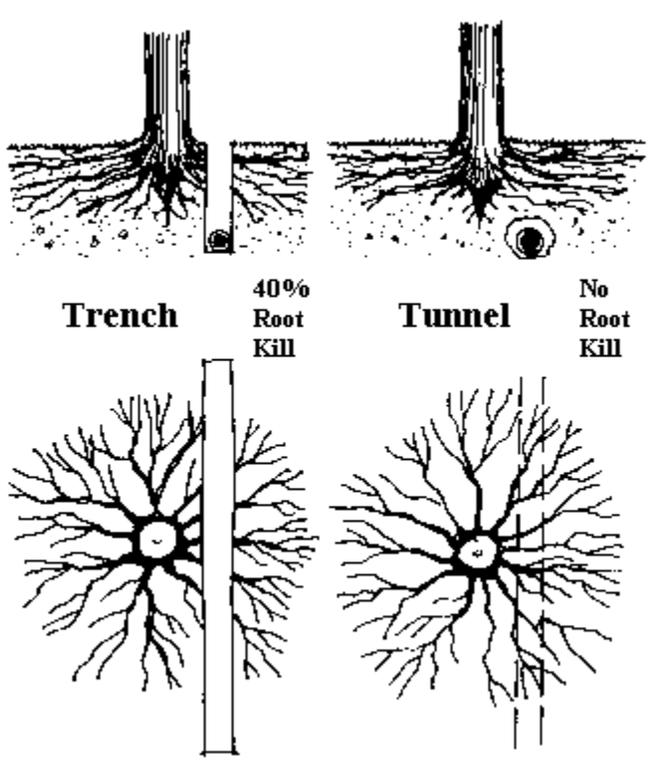
(1) *General*: Any existing tree or group of trees which stands within or near a required planting area and meets or exceeds the standards of this Ordinance may be used to satisfy the tree requirements of the planting area. The protection of tree *stands*, rather than individual trees, is strongly encouraged.

(2) *Protection of Existing Trees*: To receive credit, trees must be protected from direct and indirect root damage and trunk and crown disturbance. The following standards shall apply:

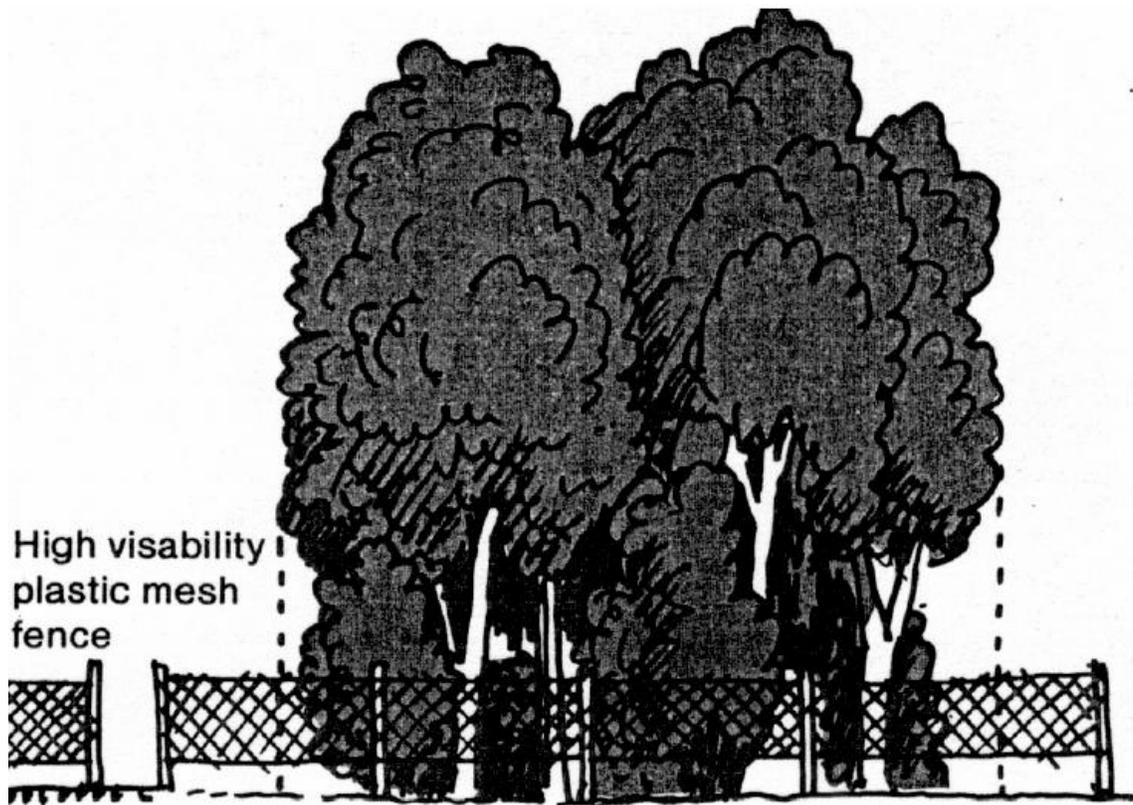
- a. The TCA shall include land within the CRZ as provided in this section.
- b. Construction site activities such as parking, material storage, dirt stockpiling, concrete washout and other similar activities shall not be

permitted within the TCA.

- c. Changes that significantly raise the grade of soil adjacent to the TCA shall be avoided.
- d. Utility line trenches and similar uses shall avoid the TCA. Due to certain site conditions, where disturbance within the TCA is unavoidable, underground tunneling or directional boring of utilities is preferred. Trenching shall be used only as the last alternative and root-pruning equipment specifically designed for that purpose shall be used. The Enforcement Officer shall be notified **prior** to this type of activity and an on-site meeting shall be performed to ensure compliance.



- e. Protective fencing shall be installed around the TCA prior to any tree disturbing activities. Such fences shall be at least four (4) feet high and shall consist of orange polyethylene safety fencing. Fencing shall remain in place until construction is complete and other landscaping has been installed, and the Planning Director or Enforcement Officer has approved its removal.



- f. The TCA should be designated as such with "Tree Conservation Area" signs posted visibly on the outside of the fenced-in area. Signs may not be posted on the trees.

(C) *Evaluation of Specimen Trees and Stands of Trees:* Existing specimen trees and stands of trees must meet the following conditions to be considered for the TCA:

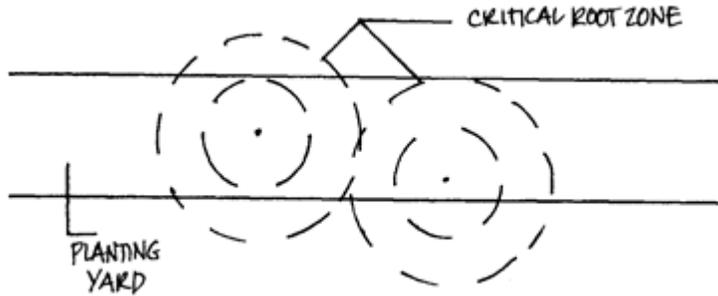
- (1) A life expectancy of greater than ten (10) years
- (2) A relatively sound and solid trunk with no extensive decay
- (2) No major insect or pathological problems

(D) *Dead or Unhealthy Trees:*

- (1) No credit will be allowed for any dead tree, any tree in poor health, or any tree subjected to grade alterations.
- (2) Except for storm damage, the death of any tree used for preservation credit within five (5) years of site development shall require the landowner to plant new trees equal to the number of credited trees. After five (5) years any trees that were used for preservation credit that die shall be replaced.
- (3) The Planning Director may require trees left standing outside of the TCA to be removed if improperly protected or determined to be hazardous.

**Section 13. Tree Conservation**

(A) *Tree Conservation Area:* As previously defined in this Ordinance, a tree conservation area (TCA) is one (1) or more areas of a site, which includes existing trees and their critical root zones. The purpose of the TCA is to encourage the preservation of healthy trees that are four (4) inches or greater in diameter at breast height (DBH).

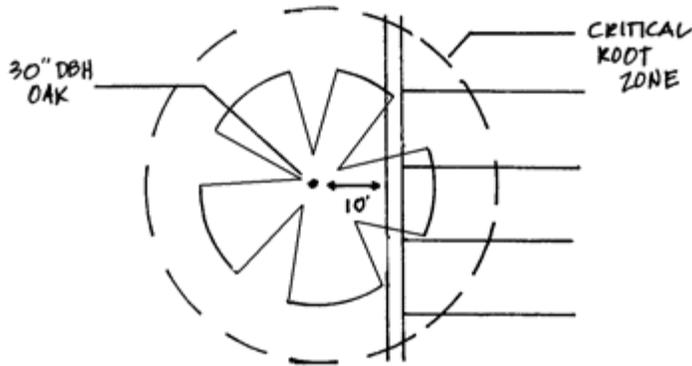


(B) *Critical Root Zone:* To preserve existing trees within the designated TCA, the critical root zone (CRZ) of the trees shall be preserved. The CRZ will include a radius around the tree equal to one and one half (1.5) feet for every one (1) inch of DBH from the tree trunk as measured at the ground level from the root flare. It is recommended to save the entire CRZ of each preserved tree. If the entire CRZ cannot be preserved, tree roots must be cut prior to grading of the site. Should the CRZ have to be disturbed, the disturbed area shall extend no closer to the protected tree's trunk than the distance specified below:

Table Inset:

Diameter of Tree (DBH) in Inches	Minimum Distance From Tree in Feet
4 – 7.9	1 foot for every 1 inch DBH
8 – 22.9	10
23 – 29.9	15
30+	20

(C) Disturbance within the CRZ will be allowed only on one side of the tree(s) to be saved and only with prior approval by the Planning Director.



**Section 14. Tree Conservation Area Determination**

(A) *Extent of the TCA:* The TCA shall be provided in accordance with the chart below. If trees of four (4) inches or greater DBH exist within or partially within these areas, such trees must be saved to the extent possible. The area will be designated a TCA and shall not be disturbed except as allowed herein.

Table Inset:

Size of Parcel	TCA Required to Include
0 – 55,000 sq. ft.	One percent (1%) of lot area, and be located within the required planting yard
55,000 sq. ft. – 5 acres	One and one-half percent (1.5%) of lot area; All trees four (4) inches or greater DBH, which are located within the required planting yards
5.01 – 10 acres	Three percent (3%) of lot area; All trees four (4) inches or greater DBH which are located within the required planting yard or within fifteen (15) feet of the side and rear property lines, whichever is greater
Greater than 10 acres	Six percent (6%) of lot area; All trees four (4) inches or greater DBH which are located within the required planting yard or within twenty-five (25) feet of the side and rear property lines, whichever is greater

(B) No development shall be required to have the TCA exceed fifteen (15) percent of the total developable site area.

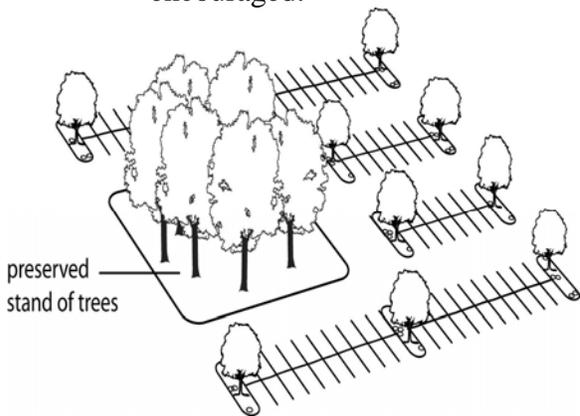
(C) If there are trees that meet the TCA requirements on other areas of the site (riparian buffers, stream corridors, floodplains, etc) the landowner may request that the required TCA be designated around such trees instead of the usual locations.

(D) *Other Provisions:* The requirements of this section may be modified to permit the establishment of the TCA (See Tree Conservation Flexibility Standards).

(E) *Smaller Trees:* Trees less than four (4) inches DBH within the TCA may be preserved at the landowner's option and counted toward planting yard requirements as provided herein.

(F) *TCA Selection:* In selecting which existing tree stands are to be designated as TCA, the landowner shall give due consideration to building, parking lot, driveway, street and utility location as they relate to the practicality of preservation and shall use the following tree preservation priority list:

- (1) Existing stands of mature hardwoods as highest priority, then
- (2) Existing stands of younger hardwoods, then
- (3) Existing specimen trees (as determined by the Planning Director or Enforcement Officer), then
- (4) Existing stands of hardwoods and Pine mix, and lastly
- (5) Existing stands of Pine trees. Preservation of a single Pine tree is not typically encouraged.



(G) If it is necessary to pick among two or more stands of trees within a category listed above, the following priority list shall be used:

- (1) Type A planting yards, as a first priority, then
- (2) Type B planting yards, then
- (3) Type C planting yards, then
- (4) Type D planting yards, and lastly
- (5) Street planting yards

(H) The following are permitted in the required TCA provided there is no disturbance to the CRZ of the preserved trees

- (1) Landscaping features including planting boxes, sculpture, arbors, trellises and birdbaths
- (2) Outdoor furniture, ornamental entry columns and gates, flagpoles, lampposts, address posts, mailboxes, public utility wires and poles, fences, retaining walls, or similar structures
- (3) Cornices, steps, canopies, overhanging eaves and gutters, windowsills, bay

windows or similar architectural features, chimneys and fireplaces, fire escapes, fire balconies, and fire towers which project not more than two and one-half (2 1/2) feet into any required TCA.

- (4) Handicap ramps except for porches and landings
- (5) Steps not connected to any above-grade structure

(I) *Tree Removal Inside the TCA:* Trees less than four (4) inches DBH not being preserved, undergrowth and plant material in poor condition may be removed from the TCA. No roots shall be removed from the TCA. Stumps may be removed only by grinding. All requests for tree removal within the TCA must have prior approval by the Planning Director or Enforcement Officer pursuant to the provisions of this chapter. However, in an emergency situation due to storm damage; to alleviate an immediate hazard to the health, safety and welfare of the citizens; or to repair property damage, prior approval for tree removal in previously approved designated areas is not required.

(J) All removal of said material shall be done or supervised by an experienced Urban Forester, Landscape Architect or ISA Certified Arborist, who will certify that the tree and root removal or pruning was done in accordance with standard arboricultural practices.

(K) Any tree within the TCA including the CRZ, which the landowner chooses to remove or that must be removed due to poor health or impractical means of preservation shall be removed in a manner that is in accordance with standard arboricultural practice (See ANSI Standards) so as to cause as little disturbance or harm to those trees intended to be saved as practical.



(L) *Relationship of the TCA and Planting Yards:*

- (1) All trees of appropriate size and type preserved in the TCA that are within the planting yard shall be credited toward meeting all or part of the planting yard requirements, except for the street planting yard where there shall be at least one (1) canopy tree, existing or planted, within every fifty (50) linear feet of street planting yards, and the minimum eight (8) foot width shall not be reduced. Credits are to be given for required trees in the same planting yard as the tree(s) preserved in accordance with the chart below.

Table Inset:

DBH of Existing Tree(s) in Inches	Number of Trees Credited
4 – 7.9	1
8 – 22.9	2
23 – 29.9	3
30+	4

- (2) Any area in a TCA shall count as a portion of a planting yard or parking lot planting area. (See Section 15 - D).
- (3) No new landscaping is required within a TCA unless it is contiguous to existing single-family development and it is needed to shield abutting parking lots, access drives, loading areas and outside storage.

**Section 15. Tree Conservation Flexibility Standards**

- (A) *Stream Buffer Credits:* Properties falling under the Stormwater Management Control Requirements which are required to maintain an undisturbed stream buffer may use some or all of the buffer to satisfy the required TCA, provided that the undisturbed stream buffer contains trees that are a minimum of four (4) inches in diameter at breast height (DBH).
- (B) *Land Dedication:* Land that is dedicated to the Town that is contiguous to the property being developed may be used towards the tree preservation requirement, if the dedicated land contains trees that are a minimum of four (4) inches in diameter at breast height (DBH).
- (C) *Reforestation Credits:* In situations where TCA requirements cannot be met based on site conditions and when approved by the Planning Director, reforestation efforts on the property can be used to satisfy up to fifty (50) percent of the required TCA.
- (D) *Tree Preservation Adjacent to or Within the Parking Lot and Parking Lot Plantings:* For new, expanded, or rebuilt parking lots where trees are being preserved adjacent to the parking lot in order to meet the parking lot planting requirements, trees preserved in a TCA and within eight (8) feet of the parking lot may be used to satisfy

up to fifty (50) percent of the required number of parking lot trees. A TCA that is "notched into" corners or edges of a parking lot is deemed to be within the parking lot, not adjacent to it. Trees in the TCA counted toward planting yard requirements may not count for required parking lot trees. Extra trees in such locations do count. It is the landowner's option to save trees within the parking lot. In order to do so, the CRZ must be preserved. Credits for preserving parking lot trees are determined by the CRZ preserved for the tree being saved. One (1) tree for every two hundred (200) square feet of CRZ preserved may be used to satisfy up to fifty (50) percent of the required number of parking lot trees.

(E) *Reduction in Parking Requirements:* To allow an existing development to retrofit parking to conform to the landscaping regulations, or to allow an existing or new development to preserve trees within or adjacent to a parking lot, the number of required off-street parking spaces may be reduced by the Planning Director or Enforcement Officer by up to ten (10) percent.

(F) *Reduction in the Amount of TCA Required for Specimen Tree Preservation Within the Lot:* To allow developers the flexibility to manipulate the location of required Tree Conservation Areas, and to encourage the preservation of certain specimen trees or tree stands **within** developed lots rather than just at the periphery, the Planning Director or Enforcement Officer may, at his or her discretion, allow the developer the right to reduce the total amount of required TCA using the following table:

Table Inset:

DBH of Existing Specimen Tree(s) in Inches	Allowable Reduction in TCA
8 – 12	5 % reduction
13 – 20	10% reduction
21 – 30	25% reduction
31+	40% reduction

(G) *Waivers:* The Planning Director or Enforcement Officer shall have the authority to allow reduced planting yards or to waive the planting yard requirements to allow for a greater TCA in another area or make other exceptions, which meet the cause and intent of this section. Additionally, if the Planning Director or Enforcement Officer concludes that due to existing unusual or unique site characteristics, preserving some or all required trees in the TCA(s) would create an undue or unreasonable hardship, then the protection of some or all of required trees in the TCA(s) may be waived.

The procedure for such a waiver requires the applicant to submit their claim in writing, along with any necessary site plans to demonstrate the hardship. If the claim is submitted at least twelve (12) days prior to the regularly scheduled Tree Board meeting, the Board at their next regularly scheduled meeting will hear it. The

findings of the Tree Board shall be final and binding to all parties. Appeals may be made to the Board of Adjustment, following the procedure outlined in the Town of Jamestown Development Ordinance.

## **Section 16. Landscape Plan Procedures**

(A) *Landscape Plan Approval:* An applicant must receive approval of a landscape plan from the Planning Director or Enforcement Officer prior to grading or before other site work may begin.

(B) *Installation of Plant Materials:*

(1) Installation of plant material shall occur prior to the issuance of a certificate of compliance (or occupancy).

(2) If at the time of a request for a certificate of compliance, the required planting areas are not complete and it can be determined that:

- a. Plant materials are unavailable,
- b. Completion of the planting areas would jeopardize the health of the plant materials, or
- c. Weather conditions prohibit completion of the planting areas, then the installation of plant materials may be deferred by the Enforcement Officer. The landowner shall submit a copy of a signed contract for installation of the required planting areas and may be required to post a surety equal to the amount of the contract. In no instance shall the surety be for a period greater than one hundred and eighty (180) days. The Enforcement Officer may issue a temporary certificate of compliance but shall not issue a certificate of compliance until the planting areas have been completed and approved.

## **Section 17. Planting Areas**

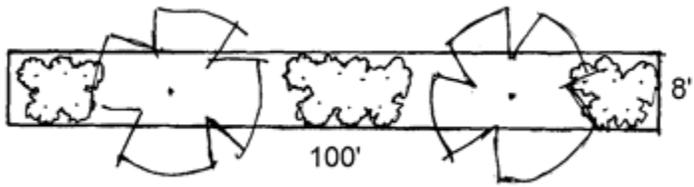
(A) *Required Planting Areas*

The following areas are required to be landscaped:

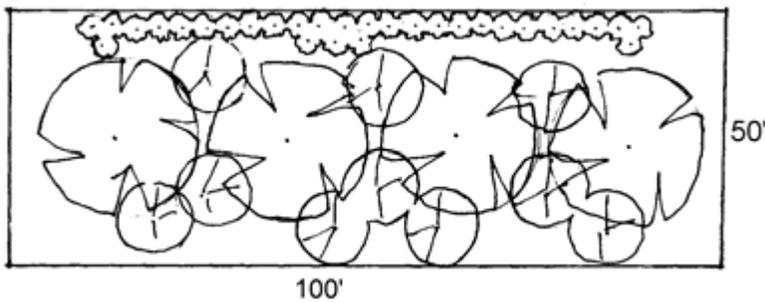
1. Planting yards
2. Parking lots
3. Areas with slopes greater (steeper) than 3:1

(B) *Planting Yard Descriptions*

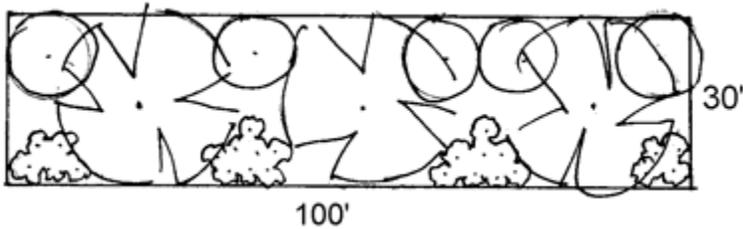
(1) *Street-planting Yard:* A planting area parallel to a public street designed to provide continuity of vegetation along the right-of-way and a pleasing view from the road. No more than fifteen (15%) of the street-planting yard may be used for walkways or signs. Parking, merchandise display and off-street loading are prohibited in the street-planting yard.



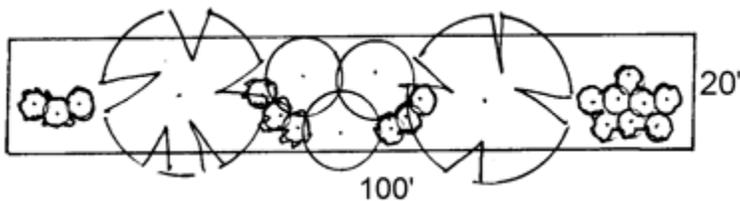
- (2) Type A Planting Yard: A high-density screen intended to block substantially visual contact between adjacent uses and create a spatial separation. A Type A planting yard reduces lighting and noise, which would otherwise intrude upon adjacent uses.



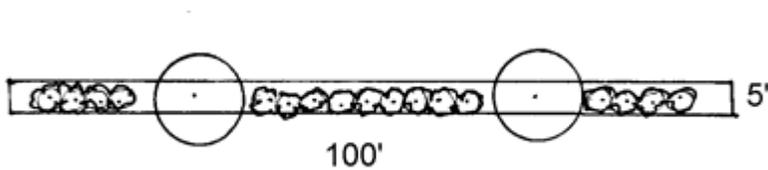
- (3) Type B Planting Yard: A medium-density screen intended to partially block visual contact between uses and create spatial separation



- (4) Type C Planting Yard: A low-density screen intended to partially block visual contact between uses and create spatial separation

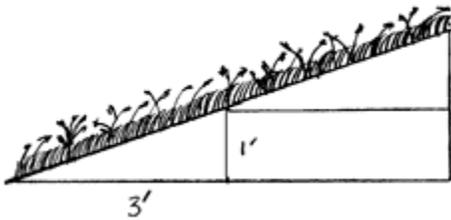


- (5) Type D Planting Yard: A peripheral planting strip intended to separate uses, provide vegetation in densely developed areas, and to enhance the appearance of individual properties



- (6) Parking Lot Plantings: Planting areas within and adjacent to parking areas designed to shade and improve the attractiveness of large areas of pavement

(C) *Reforestation of Slopes Steeper than 3:1*



- (1) Areas having slopes steeper than 3:1 must be reforested to provide tree cover over the entire area. The following standards apply:
- a. Reforestation shall include a minimum of one (1) tree per two hundred (200) square feet of surface area and shall be made up of a mixture of deciduous hardwood and evergreen trees that are a minimum of twelve (12) inches high at planting and approved by the Enforcement Officer or Urban Forester.
  - b. The trunk of any required tree shall be no closer than ten (10) feet from any other existing tree.

(D) *Planting Yard Determination*

To determine the planting yards required by this Ordinance, the following steps shall be taken:

- (1) Identify the classification of the proposed or expanded land use and of each existing adjacent land use(s) by using the Permitted Use Schedule. A proposed land use is considered existing on an adjacent property when a building permit is issued. If a zone lot contains uses with different land use classifications, select the higher numbered classification. If the development qualifies as an integrated multiple use development, the entire development shall be treated as a single zone lot for planting yard and TCA purposes and its land use classification (LUC) shall be that classification applicable to the highest number of uses in the development. (For example, an integrated shopping

center containing seven (7) establishments with LUC's of "3" and three (3) establishments with LUC's of "4" shall be classified as a "3").

- (2) Use the Planting Yard Chart to determine the appropriate letter designation for each planting yard.
- (3) Match the letter designation obtained from the Planting Yard Chart with the Planting Yard and Parking Lot Rate Chart to determine the types and numbers of shrubs and trees required.

(E) *Calculation of Street Planting Yards*

Street planting yard rate and width calculations shall exclude access drives.

(F) *Planting Yard Flexibility Standards*

- (1) Walls, a minimum of five (5) feet in height constructed of masonry, stone or pressure treated lumber, or an opaque fence, a minimum of five (5) feet in height, may be used to reduce the widths of the planting yards by ten (10) feet providing such reductions do not disturb the CRZ of existing trees.
- (2) Understory trees shall be substituted for canopy trees at the rate of two (2) understory trees for every canopy tree planted within fifteen (15) feet of an overhead power line.
- (3) Canopy trees may be substituted for shrubs at the rate of one (1) canopy tree for eight (8) shrubs and understory trees may be substituted for shrubs at the rate of one (1) understory tree for five (5) shrubs if approved by the Town Arborist or Enforcement Officer.

TABLE INSET:

PLANTING YARD CHART							
EXISTING ADJACENT USE (S)							
	Land Use Classification	Least Intensive				Most Intensive	
Proposed Use		1	2	3	4	5	Undeveloped
Least Intensive	1	*	*	*	*	*	*

	2	C	D	D	D	D	D
	3	B	B	D	D	D	D
	4	A	A	C	D	D	D
Most Intensive	5	A	A	B	C	D	D
_____							
* No Planting Yard Requirement							

TABLE INSET:

PLANTING YARD AND PARKING LOT RATE CHART						
_____						
PLANTING RATES						
_____						
Type	Average Width (ft.)	Minimum Width (ft.)	Maximum Width (ft.)	Canopy Tree Rate	Understory Tree Rate	Shrubs Rate
Street Yard	8	8	25	2/100 lf	NA	17/100 lf
Type A Yard	50	40	75	4/100 lf (a)	10/100 lf (b)	33/100 lf (c)
Type B Yard	30	25	50	3/100 lf	5/100 lf	25/100 lf
Type C Yard	20	15	40	2/100 lf	3/100 lf	17/100 lf
Type D Yard	5	5	10		2/100 lf	18/100 lf
Parking Lot	NA	NA	NA	1/12 parking spaces	NA	NA
_____						
a) Twenty-five (25) feet on center.						
b) Ten (10) feet on center.						
c) Three (3) feet on center.						

(G) *Planting Yard Design and Maintenance Standards*

- (1) *Plant Species:* Species used in required planting yards and parking lots shall be of a locally adapted nature. Refer to the recommended plant species list, which includes water wise species, in the Appendix. Other species may be approved by the Town Arborist or Enforcement Officer.
- (2) *Plant Size:* Specific plant sizes are listed below:
  - (a) *Canopy Tree Size:* When mature, a canopy tree should be forty (40) feet high and have a minimum crown width of thirty (30) feet. Canopy trees must be a minimum of three (3) inches in caliper, measured six (6) inches above grade, when planted.
  - (b) *Understory Tree Size:* When mature, an understory tree should be twenty-five (25) to forty (40) feet high. Understory trees must be a minimum of two (2) inches in caliper measured six (6) inches above grade at the time of installation.
  - (c) *Shrub Size and Type:* All approved shrubs, using required planting techniques planted parallel to the edge of parking lots, access drives, loading and unloading areas and outside storage shall be evergreen and installed at a minimum size of eighteen (18) inches, spread or height, and reach a minimum height of thirty-six (36) inches and a minimum spread of thirty (30) inches. Required shrubs in other locations, outside of the areas listed above may be evergreen or deciduous, shall be three (3) gallon in size as per ANSI standards at the time of installation.



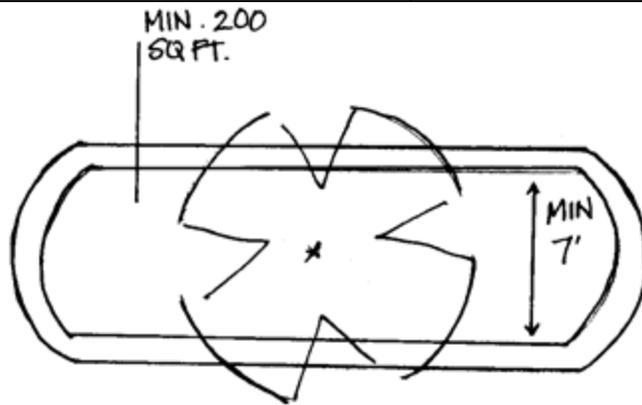
(H) *Parking Lot Planting Areas*

For new parking lots, in order to meet the parking lot planting requirements, required canopy tree areas shall be located within the parking lots and adjacent to parking spaces as planting areas between rows of parking spaces, inside medians, at the end of parking bays, or in tree islands. The landowner may provide required planters using

one (1) or more of the planter sizes below. Each parking space must be entirely within the designated distance of a parking lot planter as specified below: Each parking lot planting area shall have a minimum inside dimension of seven (7) feet and shall have a minimum area of two hundred (200) square feet. Grouping of parking lot trees within the same island is strongly encouraged, even if this would decrease the number of islands otherwise built within the parking lot. The Town Arborist or Enforcement Officer may approve a smaller island based on the mature height of that tree species.

TABLE INSET:

Size of Parking Lot Planter	Number of Trees in Planter	Distance
200 – 499 sq. ft.	1	100 ft.
500 – 899 sq. ft.	3	130 ft.
900+ sq. ft.	5	150 ft.



(I) *Grouping*

Shrubs and trees may be grouped or clustered in the required planting yards, except for the perimeter landscaping adjacent to parking lots, outside storage, access drives and loading and unloading areas. The remainder of the materials shall be distributed throughout the planting yard. There shall be at least one (1) row of evergreen shrubs or evergreen understory trees in all Type A planting yards.

(J) *Berm Size*

Any berm shall have a minimum height of three (3) feet, a minimum crown width of three (3) feet and a side slope no greater than 3:1 (3 horizontal to 1 vertical).

(K) *Wall Planters*

Wall planters shall be constructed of masonry, stone, or pressure treated lumber stamped for ground contact (AWPB LP-22 1980 or equivalent). The minimum height of the wall planter shall be thirty (30) inches. The minimum height of shrubs in the wall planter shall be six (6) inches. The effective planting area of the wall planter shall be four (4) feet in width. If the wall planter is to contain trees, the effective

planting width shall be seven (7) feet.

(L) *Encroachments Permitted in Required Planting Yards and the TCA*

The following are permitted in required planting yards provided the landscaping requirements are met and there is no interference with any sight area:

- (1) Landscaping features, including but not limited to, ornamental pools, planting boxes, sculpture, arbors, trellises, and birdbaths
- (2) Pet shelters, at-grade patios, play equipment, outdoor furniture, ornamental entry columns and gates, flagpoles, lampposts, address posts, HVAC equipment, mailboxes, outdoor fireplaces, public utility wires and poles, pumps, wells, fences, retaining walls, or similar structures
- (3) Cornices, steps, canopies, overhanging eaves and gutters, windowsills, bay windows or similar architectural features, chimneys and fireplaces, fire escapes, fire balconies, and fire towers may project not more than two and one-half (2 1/2) feet into any required planting yard, but in no case shall be closer than three (3) feet to any property line
- (4) Handicap ramps except for porches and landings
- (5) Steps not connected to any above-grade structure

(M) *Setback Less Than Planting Yard*

If the required building setback is less than the required planting yard width or TCA, the building setback shall reduce the required planting yard width only alongside the building. The planting rate of the required planting yard shall still apply.

(N) *Location of Planting Material Outside Shade of Building*

Where a building is located less than ten (10) feet from a property line, and the planting yard would be heavily shaded by buildings on both sides of the property line, the required trees and shrubs may be planted outside the shaded area to improve survivability.

(O) *Obstructions*

Landscaping shall not obstruct the view of motorists using any street, driveway, or parking aisle.

(P) *Location*

Required trees and shrubs shall not be installed in street rights-of-way. Required trees and shrubs may be placed in water quality conservation easements. Required trees and shrubs may be planted in electric utility easements below overhead lines and in drainage maintenance and utility easements by approval of the Technical Review Committee.

(Q) *Plant Protection*

Whenever planting areas are adjacent to parking lots or drives, such areas shall be protected from damage by vehicles, lubricants, or fuels.



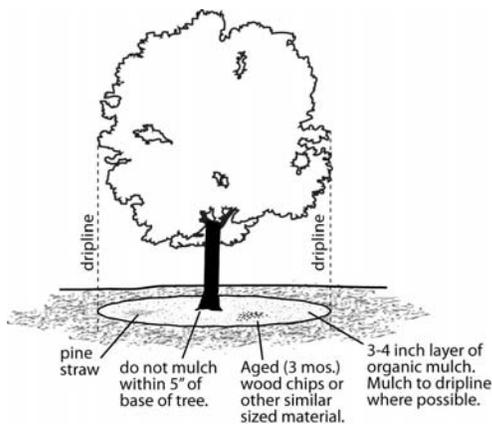
(R) *Maintenance*

The landowner is responsible for maintaining all required plant materials and planting areas in good health and appearance. Any dead, unhealthy, or missing plants (preserved or planted) shall be replaced with new plant material equal to the number of credited trees planted or preserved, subject to the provisions of this Ordinance. This plant material shall be sized according to the requirements this Ordinance and shall be replanted within one hundred eighty (180) days with vegetation which conforms to the initial planting rates and standards.

(S) *Planting Techniques*

The following soil preparation techniques shall be used for all required landscape areas.

- (1) Soil preparation for the entire landscape yard includes the addition of organic amendments tilled to a depth of eight (8) to twelve (12) inches.
- (2) All plantings in the landscape yards shall be mulched, including interior parking lot islands less than five hundred (500) square feet to a depth of three to four (4) inches. The mulch shall be free of trash and maintained weed free thereafter.



- (3) Earthen basins are to be constructed around the installed plants.
- (4) Plants, as permitted by this Ordinance, are to be grouped together where possible.
- (5) For establishment and survival, plants shall be watered by the landowner or contractor for the first year after planting.

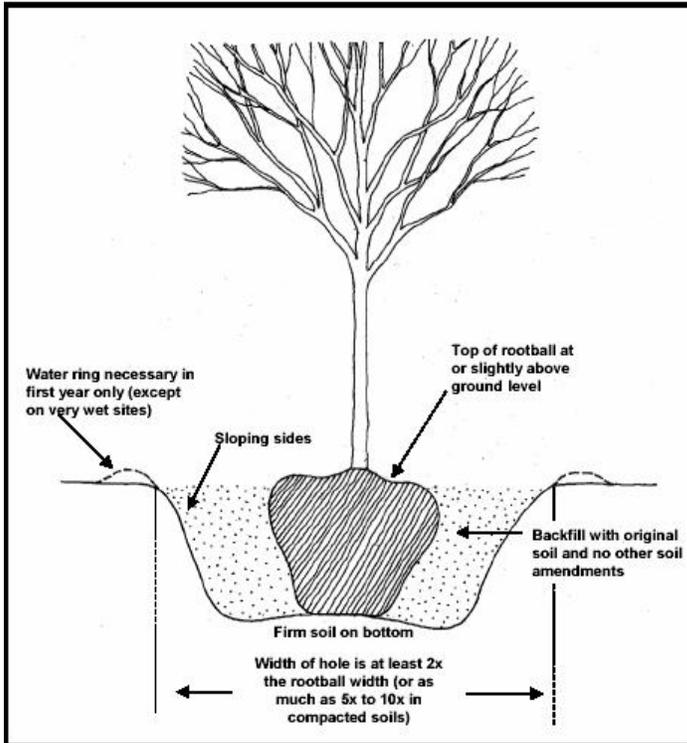


Figure 2. Recommended Tree Planting Method

(T) *Irrigation*

It is suggested that drip irrigation, which includes drip misters, be used for required landscaping planting beds during the required establishment period. After establishment, supplemental watering can be reduced and used on an as needed basis. Traditional spray irrigation is prohibited except for turf areas.

(U) *Pruning*

All required trees shall be allowed to reach their mature size and shall be maintained at their mature size. Trimming and pruning shall be done in strict accordance with the American National Standards Institute (ANSI) standards. Topping is not an acceptable pruning practice. Topping is the reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit. The Town Arborist or Enforcement Officer may require the removal and replacement of any tree(s) located in required planting yards or TCA's that have been topped or excessively trimmed.



**Before Pruning**

Mature trees often need pruning due to crowded foliage, broken and dead branches, and asymmetrical shape.



**After Proper Pruning**

After pruning, trees should retain a symmetrical appearance and tree-like form. A minimum canopy spread of 20 feet must be maintained.



**After Excessive Pruning**

Pruning in excess of one fourth (25%) of the required canopy spread is prohibited. Tree-topping (hatracking) is prohibited.

**Section 18. Removal of Regulated Trees**

No regulated tree shall be removed without first acquiring a permit from the Enforcement Officer. Failure to do so shall constitute a violation of this chapter and shall be subject to the penalty provisions in the *Penalties* section of this Ordinance.

**Section 19. Tree Disturbance Permit and Display Requirements**

**(A) Activities Requiring a Permit**

Except as otherwise specifically exempted herein, it shall be unlawful to:

- (1) Remove, prune, apply chemicals that are harmful to or disturb any tree or the soil within the CRZ of any tree; or
- (2) Clear vegetation from a site; or
- (3) Begin any excavation, remove soil or place fill on a site within Jamestown and its extraterritorial jurisdiction until the Town Manager or her designee has issued a permit certifying that such activity complies with the applicable provisions of this Ordinance.

**(B) Applicability**

The provisions of this article shall apply to any development except:

- (1) Land in the town's office/institutional zoning districts
- (2) Routine maintenance of existing vegetation outside the public rights-of-way, such as pruning, watering and fertilizing
- (3) The removal of dead trees and shrubs, or trees and shrubs that have been diagnosed and determined to be diseased beyond treatment, with the burden of proof being placed on the remover
- (4) The removal of soil or vegetation from undeveloped land to allow for non-commercial open space no greater than one-quarter (1/4) acre, providing this activity does not take place within the critical root zone of any rare or specimen tree
- (5) Land disturbing activity normally associated with the occupancy of an existing single family or two-family dwelling
- (6) Any new construction or expansion of a single family or two-family dwelling requiring a building permit and involving land disturbance less than five

thousand (5000) square feet, unless the land disturbance is cumulatively over five thousand (5000) square feet

(C) *Permit Display*

All permits issued hereunder shall be so displayed as to be clearly visible from a public right-of-way. Annual permits shall be kept in all vehicles at the work site.

(D) *Emergency Waiver*

The provisions of this section are waived if compliance would hamper the rescue of life or property from immediate danger or the repair of utilities in the event of emergencies such as wind storms, ice storms, or other disasters. Any emergency work shall follow the Town's Landscape Standards and Specifications as closely as possible.

(E) *Enforcement*

Upon a determination that work does not conform with provisions of this section, the Town Manager or her designee shall issue a stop work order which shall remain in effect until all corrections are made in conformance with this Ordinance.

(F) *Pre-construction Conference*

Prior to the commencement of any activities requiring a permit, a pre-construction conference shall take place to review procedures for protection and management of all protected landscape elements identified on the landscape protection plan and to designate one or more persons as landscape protection supervisor(s). This meeting shall include the Town Arborist or Enforcement Officer.

## **Section 20. Developing Land**

(A) *Protective Fencing*

(1) Vegetation that is to be protected on developing land, as indicated on a landscape protection plan, shall be protected by fences or other equally effective measures during construction activity. Such fencing shall be located and erected according to Town standards and be located as shown on the landscape protection and site grading plans. All land disturbing activity, storage of equipment, building material, soil and other debris shall be kept within the area of development activity and outside of the protective fencing.

(2) Vegetation that is to be retained during rights-of-way clearing of single family or two-family residential subdivisions, as indicated on a landscape protection plan, shall be delineated by high visibility flagging during construction activity. Such flagging shall be located and installed according to Town standards and be located as shown on the landscape protection and site grading plans. The use of flagging shall be limited to those specific applications where no rare or specimen trees will be affected by development

activity and the Town Manager or her designee determines it to be as effective as protective fencing.

- (3) Landscaping activities taking place after the removal of protective fencing shall be accomplished with light machinery or hand labor and in accordance with the Town's landscaping standards and specifications.

*(B) Treatment of Trees During Construction*

- (1) No nails, ropes, cables, signs or fencing shall be attached to any part of any tree that is to remain.
- (2) Trees that are damaged during construction shall be treated so as to promote their continued health.

**Section 21. Rare and Specimen Tree Provisions**

*(A) Specimen Tree Defined*

A specimen tree is any healthy living tree that:

- (1) Has a trunk diameter at breast height (DBH) of eighteen (18) inches or more; or
- (2) A trunk DBH of twelve (12) inches or more in the case of the following species:
  - Karpinus (Hornbeam)
  - Ilex spp. (Holly)
  - Magnolia spp.
  - Ostrya (Hophornbeam)
  - Tsuga spp. (Hemlock)

*(B) Rare Tree Defined*

A rare tree is any healthy living tree that:

- (1) Has a trunk diameter at breast height (DBH) of 36 inches or more; or
- (2) A trunk DBH of 18 inches or more in the case of the following species:
  - Karpinus (Hornbeam)
  - Ilex spp. (Holly)
  - Magnolia spp.
  - Ostrya (Hophornbeam)
  - Tsuga spp. (Hemlock)
- (3) Is listed as a state or national champion by the North Carolina Forest Service or the American Forestry Association; or
- (4) Provides unique habitat for any endangered or threatened wildlife species protected by federal law; or
- (5) Has been cited by the Town Council as being historically significant; or

- (6) Represents an uncommon species, such as Long Leaf Pine, Live Oak or Sequoia Redwood, that the Town Manager or her designee considers to be desirable and not to pose a threat to the local ecological balance

(C) Rare and Specimen Trees on Developing Land

- (1) Rare and specimen trees shall be shown on all preliminary landscape protection plans if such trees are within one hundred (100) feet of areas where soil disturbance or construction activity is proposed. In addition, these trees shall be identified and located by survey on the approved landscape protection plan if such trees are located on the development site or adjacent public property. The Town Manager may visit the site to determine the accuracy of identification.
- (3) Proposed development shall be designed to preserve rare and specimen trees. Where rare and specimen trees exist, flexible approaches such as adjustments to lot layout, placement of buildings and paved surfaces and location of utilities shall be pursued in order to save them.
- (3) No soil disturbance from construction, trenching, grading, paving or storage of equipment or materials shall take place within the critical root zone of any rare or specimen tree to be preserved unless the Town Manager or her designee determines there is no reasonable way the property can be developed without such disturbance or unless the proposed work will be carried out in accordance with the specifications for such work in the Town's landscaping standards and specifications.
- (4) No rare tree shall be removed from developing land unless the Town Manager or her designee determines there is no reasonable way the property can be otherwise developed, improved or properly maintained and the tree saved.

(D) Voluntary Protection of Rare and Specimen Trees on Private Land

- (1) Rare and specimen trees that are located on individual lots with single and two-family homes shall be protected if voluntarily registered by the property owner.
- (2) Registration of such trees shall survive transfer of ownership if language is contained in the document transferring ownership and shall extend the coverage hereof.
- (4) The owner shall be entitled to consultation with the Town Arborist or Enforcement Officer concerning proper care of the tree.
- (4) Once so registered, trees may be removed from the register at a later date at the request of the property owner.

**Section 22. Enforcement**

(A) Notice and Appeal

- (1) Any person who violates any provision of this Ordinance shall be notified by the Enforcement Officer of the specific violation by certified or registered mail, return receipt requested, or by hand delivery. The notice shall set forth the nature of the violation, the measures required to comply with this chapter, if compliance is at all practicable, and a reasonable time period within which compliance must be met.
- (2) If any aggrieved person disagrees with a decision of the Enforcement Officer, such person may request a hearing within twelve (12) working days of receipt of the violation. The request must be in writing and directed to the Tree Board's secretary. The secretary shall immediately assemble an appeals board from among the membership of the Tree Board. The hearing will be conducted at the next regularly scheduled meeting of the Tree Board. The chairperson of the Town of Jamestown Tree Board shall always serve on the appeals board as the chairperson and shall not vote except to cast the deciding vote in case of a tie.

The owner shall have the right to be represented by Counsel, examine and cross-examine witnesses at the said hearing. The Town Attorney shall serve as the appeals board's legal advisor during the said hearing. The appeals board shall render a written decision within 30 days after the hearing.

- (3) The appeals board may modify, amend or revise the decision appealed. The decision of the appeals board shall be served upon the appealing party by registered or certified mail, return receipt requested, or by hand delivery.
- (4) If any aggrieved party is dissatisfied with the decision of the appeals board, an appeal may be taken to the Town of Jamestown Board of Adjustment. Notice of the appeal must be filed within twelve (12) working days of receipt of the appeals board's decision. Any appeals to the Board of Adjustment shall be in the nature of certiorari.
- (5) Any aggrieved party may request an injunction to preserve the status quo during the pending of any appeal in accordance with applicable North Carolina law.

(B) Penalties

- (1) *Tree Disturbance Prior to Permit Approval:* The penalty for the removal of or damage to trees, prior to the issuance of a tree disturbance permit or TRC approval shall be a civil penalty of ten thousand dollars (\$10,000.00) per acre or fraction thereof. (I.e., the civil penalty for a site of 0.35 acres that is cleared prior to TRC approval or prior to the issuance of a tree disturbance permit is three thousand five hundred dollars (\$3,500.00). Additionally, the Town of

Jamestown, under G.S. 160A-458.5, may deny a building permit to any landowner that clears land in anticipation of development in violation of this Ordinance for up to three (3) years after completion of the timber harvest. If it is determined that the timber harvest was a “willful violation” of this Ordinance, then the Town of Jamestown reserves the right to deny development approvals for a period of five (5) years following the timber harvest.

- (2) *Removal or Damage to Individual Trees after Permit Approval:* The penalty for removal of or damage to the CRZ of protected trees after the issuance of a tree disturbance permit, or TRC approval, within an approved TCA without approval by the Town Manager or her designee shall result in a civil penalty as determined by the Town Manager or her designee, up to the amount shown in the chart below, in addition to the replacement of those trees with quality specimens native to the Piedmont region of North Carolina.

TABLE INSET:

DBH of Tree(s) Removed or Damaged	Maximum Civil Penalty	Reforestation (4 inch DBH minimum)
4 – 11.9 inches	\$800	1 tree
12 – 20.9 inches	\$1,600	2 trees
21 – 28.9 inches	\$2,400	3 trees
29 – 35.9 inches	\$3,200	4 trees
36+ inches	\$4,000	5 trees

- (3) *Removal of an Area of Trees after Permit Approval:* The penalty for removal of or damage to an area of protected trees that have not been surveyed after the issuance of a tree disturbance permit or TRC approval, within an approved TCA without approval of the Town Manager or her designee, shall result in a civil penalty of ten thousand dollars (\$10,000.00) per acre or fraction thereof but not less than one thousand dollars (\$1,000.00). Such areas shall be reforested at a rate one (1), two-inch caliper canopy tree per two hundred (200) square feet.

- (4) *Failure to Install or Maintain Tree Protection Devices:* There shall be a civil penalty of five hundred dollars (\$500.00) per day for failure to install or maintain approved tree protection measures sufficient to protect the TCA beginning with the date the citation is issued and ending when the site is in compliance. The property owner may be subject to any penalties for damage under section (2) above.

- (5) *Failure to Comply with the Landscape Provisions:* There shall be a penalty of five hundred dollars (\$500.00) per day for failure to install required landscape

material or to replace dead landscape material beginning with the date the citation is issued and ending when the site is in compliance.

- (6) *Civil Penalties Considered Restorative:* Civil penalties assessed under this section are considered restorative; intended to provide compensation to the Town for costs associated with the Town's program to monitor, control, prosecute, cure and/or correct the violation. As such, the amount declared herein is presumed to provide sufficient restoration to the Town for its costs.

### **Section 23. Provisions for Discrepancies**

Should there be any discrepancies in the language of this Ordinance or with other portions of the Town of Jamestown Development Ordinance, the Town of Jamestown Enforcement Officer shall be responsible for making a determination or interpretation of the intent of the Ordinance. In general, the stricter of the standards in questions shall prevail. The Enforcement Officer shall make such a determination or interpretation so as to further protect the general safety, health and welfare of the Town's citizens, while maintaining the spirit and general purpose of this Ordinance. Any appeals to the decision of the Enforcement Officer may be directed to the Tree Board through the procedure listed in Section 22.

## Section 24. Appendices

### Appendix 1. Canopy Trees

Canopy Trees						
Scientific Name	Common Name	Water Wise	E/D	TYPE	Ht (Feet)	Exposure
<i>Abies firma</i>	Japanese fir	No	E	C	40 to 70	Sun
<i>Acer platanoides</i>	Norway maple	Yes	D	C	40 to 50	Sun
<i>Acer pseudo-platanus</i>	Sycamore maple	Yes	D	C	40 to 60	Sun
<i>Acer rubrum</i>	Red maple	Yes	D	C	40 to 60	Sun, partial shade
<i>Acer saccharum</i>	Sugar maple	No	D	C	50 to 75	Sun, partial shade
<i>Acer x freemanii</i>	Freeman maple	Yes	D	C	50 to 65	Sun
<i>Aesculus flava</i>	Yellow buckeye	No	D	C	50 to 70	Sun, partial shade
<i>Aesculus hippocastanum</i>	Common horse chestnut	No	D	C	50 to 75	Sun, partial shade
<i>Alnus glutinosa</i>	Common alder	Yes	D	C	40 to 60	Sun, partial shade
<i>Betula jacquemontii</i>	Jacquemontii birch; Whitebarked himalayan birch	No	D	C	30 to 50	Sun
<i>Betula lenta</i>	Sweet birch	Yes	D	C	40 to 55	Sun, partial shade
<i>Betula nigra</i>	River birch	No	D	C	40 to 70	Sun, partial shade
<i>Calocedrus decurrens</i>	Incense cedar	Yes	E	C	30 to 70	Sun, light shade
<i>Carpinus betulus</i>	European hornbeam	Yes	D	C	40 to 60	Sun, partial shade
<i>Carpinus betulus 'fastigiata'</i>	Upright European hornbeam	Yes	D	C	40 to 60	Sun, partial shade
<i>Carpinus caroliniana</i>	American hornbeam, Ironwood	Yes	D	C	20 to 30	Sun, partial shade
<i>Carya illinoensis</i>	Pecan	Yes	D	C	70 to 100	Sun, light shade
<i>Castanea sativa</i>	Spanish chestnut	Yes	D	C	80 to 100	Sun
<i>Catalpa speciosa</i>	Northern catalpa	Yes	D	C	40 to 70	Sun, partial shade
<i>Cedrus atlantica 'Glauca'</i>	Blue atlas cedar	Yes	E	C	60 to 100	Sun, partial shade
<i>Cedrus deodara</i>	Deodar cedar	Yes	E	C	40 to 70	Sun, light shade
<i>Cedrus libani</i>	Cedar of Lebanon	Yes	E	C	40 to 60	Sun
<i>Celtis laevigata</i>	Hackberry	Yes	D	C	60 to 80	Sun
<i>Celtis occidentalis</i>	Hackberry	Yes	D	C	40 to 60	Sun
<i>Cercidiphyllum japonicum</i>	Katsuratree	No	D	C	40 to 60	Sun
<i>Chamaecyparis obtusa</i>	Hinoki falsecypress	No	E	C	50 to 75	Sun, light shade
<i>Chamaecyparis pisifera</i>	Japanese falsecypress	No	E	C	50 to 70	Sun
<i>Cunninghamia lanceolata</i>	China fir	No	E	C	30 to 75	Sun, partial shade
<i>Eucommia ulmoides</i>	Hardy rubber tree	Yes	D	C	40 to 60	Sun
<i>Fagus grandifolia</i>	American beech	No	D	C	50 to 80	Sun, partial shade

### Canopy Trees

Scientific Name	Common Name	Water Wise	E/D	TYPE	Ht (Feet)	Exposure
<i>Fraxinus americana</i>	White ash	Yes	D	C	60 to 80	Sun
<i>Fraxinus pennsylvanica</i>	Green ash	Yes	D	C	50 to 60	Sun
<i>Ginkgo biloba (male)</i>	Ginkgo	Yes	D	C	40 to 70	Sun
<i>Gleditsia triacanthos</i>	Honeylocust	Yes	D	C	30 to 70	Sun
<i>Gleditsia triacanthos inermis</i>	Thornless honeylocust	Yes	D	C	30 to 70	Sun
<i>Gordonia lasianthus</i>	Loblolly bay	No	E	C	30 to 50	Sun, partial shade
<i>Gymnocladus dioica</i>	Kentucky coffeetree	Yes	D	C	60 to 75	Sun
<i>Ilex opaca</i>	American holly	Yes	E	C	30 to 60	Sun, partial shade
<i>Juniperus virginiana</i>	Eastern redcedar	Yes	E	C	30 to 40	Sun
<i>Kalopanax pictus</i>	Castor-aralia	Yes	D	C	40 to 60	Sun
<i>Larix keampferi</i>	Japanese larch	No	D	C	50 to 70	Sun
<i>Liquidambar styraciflua</i>	Sweetgum	Yes	D	C	60 to 100	Sun, partial shade
<i>Liriodendron tulipifera</i>	Tuliptree, Yellow poplar	No	D	C	40 to 100	Sun
<i>Magnolia acuminata</i>	Cucumbertree magnolia	No	D	C	50 to 80	Sun, partial shade
<i>Magnolia grandiflora</i>	Southern magnolia	Yes	E	C	40 to 80	Sun, partial shade
<i>Metasequoia glyptostroboides</i>	Dawn redwood	Yes	D	C	50 to 90	Sun
<i>Nyssa sylvatica</i>	Black gum	No	D	C	40 to 60	Sun, partial shade
<i>Picea abies</i>	Norway spruce	No	E	C	40 to 60	Sun
<i>Picea glauca</i>	Alberta spruce	Yes	E	C	40 to 60	Sun, light shade
<i>Picea pungens</i>	Colorado blue spruce	Yes	E	C	30 to 90	Sun
<i>Pinus echinata</i>	Shortleaf pine	Yes	E	C	80 to 100	Sun
<i>Pinus elliotii</i>	Slash pine	Yes	E	C	60 to 80	Sun
<i>Pinus flexilis</i>	Limber pine	Yes	E	C	30 to 60	Sun, partial shade
<i>Pinus heldreichii</i>	Bosnian pine	Yes	E	C	70 to 90	Sun
<i>Pinus nigra</i>	Austrian pine	Yes	E	C	30 to 60	Sun
<i>Pinus rigida</i>	Pitch pine	Yes	E	C	40 to 60	Sun
<i>Pinus strobus</i>	White Pine	Yes	E	C	Varies	Sun
<i>Pinus sylvestris</i>	Scotch pine	Yes	E	C	30 to 70	Sun
<i>Pinus taeda</i>	Loblolly pine	Yes	E	C	30 to 40	Sun, partial shade
<i>Pinus thunbergiana</i>	Japanese black pine	Yes	E	C	50 to 70	Sun

### Canopy Trees

Scientific Name	Common Name	Water Wise	E/D	TYPE	Ht (Feet)	Exposure
<i>Pinus virginiana</i>	Virginia pine	Yes	E	C	15 to 40	Sun
<i>Platanus acerifolia</i>	London plane tree	Yes	D	C	60 to 80	Sun
<i>Platanus occidentalis</i>	Sycamore	No	D	C	70 to 100	Sun, partial shade
<i>Quercus acutissima</i>	Sawtooth oak	Yes	D	C	30 to 45	Sun, light shade
<i>Quercus alba</i>	White oak	Yes	D	C	60 to 100	Sun
<i>Quercus bicolor</i>	Swamp white oak	Yes	D	C	50 to 60	Sun, partial shade
<i>Quercus coccinea</i>	Scarlet oak	Yes	D	C	50 to 80	Sun
<i>Quercus falcata</i>	Southern red oak	Yes	D	C	70 to 90	Sun
<i>Quercus hemisphaerica</i>	Darlington oak	Yes	D	C	40 to 60	Sun, partial shade
<i>Quercus imbricaria</i>	Shingle oak	Yes	D	C	50 to 60	Sun
<i>Quercus laurifolia</i>	Laurel oak	Yes	D	C	40 to 60	Sun
<i>Quercus lyrata</i>	Overcup oak	Yes	D	C	35 to 45	Sun
<i>Quercus macrocarpa</i>	Bur oak	Yes	D	C	70 to 80	Sun
<i>Quercus nigra</i>	Water oak	Yes	D	C	50 to 75	Sun, partial shade
<i>Quercus nuttallii</i>	Nuttall oak	Yes	D	C	40 to 60	Sun
<i>Quercus palustris</i>	Pin oak	Yes	D	C	60 to 80	Sun
<i>Quercus phellos</i>	Willow oak	Yes	D	C	60 to 80	Sun
<i>Quercus prinus</i>	Chestnut oak	Yes	D	C	60 to 70	Sun
<i>Quercus rubra</i>	Red oak	Yes	D	C	60 to 75	Sun
<i>Quercus shumardii</i>	Shumard oak	Yes	D	C	40 to 60	Sun
<i>Quercus stellata</i>	Post oak	Yes	D	C	40 to 50	Sun
<i>Quercus virginiana</i>	Live oak	Yes	E	C	30 to 50	Sun
<i>Selix matsudana</i>	Scarlet Curls, Tortuosa	No	D	C	40 to 50	Sun
<i>Sassafras albidum</i>	Sassafras	Yes	D	C	30 to 60	Sun, partial shade
<i>Taxodium ascendens</i>	Pond cypress	Yes	D	C	70 to 80	Sun
<i>Taxodium distichum</i>	Baldcypress	Yes	D	C	50 to 100	Sun
<i>Tilia americana</i>	American linden	Yes	D	C	60 to 100	Sun
<i>Tilia cordata</i>	Littleleaf linden	Yes	D	C	30 to 50	Sun
<i>Tilia tomentosa</i>	Silver linden	Yes	D	C	40 to 70	Sun
<i>Tsuga canadensis</i>	Canadian hemlock	No	E	C	30 to 80	Sun, partial shade

### Canopy Trees

Scientific Name	Common Name	Water Wise	E/D	TYPE	Ht (Feet)	Exposure
<i>Tsuga caroliniana</i>	Carolina hemlock	No	E	C	30 to 70	Sun, partial shade
<i>Ulmus americana</i>	Liberty Elm, Valley Forge Elm	Yes	D	C	75 to 125	Sun, partial shade
<i>Ulmus parvifolia</i>	Lacebark elm, Chinese elm	Yes	D	C	40 to 50	Sun
<i>Zelkova serrata</i>	Zelkova	Yes	D	C	50 to 80	Sun, partial shade

## Appendix 2. Understory Trees

<i>Understory Trees</i>						
Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Abies koreana</i>	Korean fir	No	E	U	15 to 30	Sun
<i>Acer barbatum (A. saccharum ssp. floridanum)</i>	Southern sugar maple	Yes	D	U	20 to 25	Sun
<i>Acer buergeranum</i>	Trident maple	Yes	D	U	25 to 35	Sun
<i>Acer campestre</i>	Hedge maple	Yes	D	U	25 to 35	Sun, light shade
<i>Acer cissifolium</i>	Ivy-leaved maple	No	D	U	20 to 30	Sun, partial shade
<i>Acer ginnala</i>	Amur maple	Yes	D	U	15 to 20	Sun, partial shade
<i>Acer griseum</i>	Paperbark maple	No	D	U	20 to 30	Sun, partial shade
<i>Acer japonicum</i>	Fullmoon maple	No	D	U	20 to 30	Sun, partial shade
<i>Acer leucoderme</i>	Whitebark maple, Chalk maple	Yes	D	U	25 to 30	Sun, partial shade
<i>Acer maxmowiczianum</i>	Nikko maple	No	D	U	20 to 30	Sun
<i>Acer negundo</i>	Box elder	Yes	D	U	30 to 50	sun
<i>Acer palmatum</i>	Japanese maple	No	D	U	15 to 25	Sun, partial shade
<i>Acer spicatum</i>	Mountain maple	No	D	U	10 to 30	Sun, partial shade
<i>Acer triflorum</i>	Three-flower maple	No	D	U	20 to 30	Sun, partial shade
<i>Acer truncatum</i>	Purple blow maple	Yes	D	U	20 to 25	Sun
<i>Aesculus californica</i>	California buckeye	Yes	D	U	20 to 30	Sun, partial shade
<i>Aesculus glabra</i>	Ohio buckeye	No	D	U	20 to 40	Sun, partial shade
<i>Aesculus pavia</i>	Red buckeye	Yes	D	U	10 to 20	Sun, partial shade
<i>Aesculus sylvatica</i>	Painted buckeye	No	D	U	5 to 15	Sun, partial shade
<i>Albizia julibrissin</i>	Mimosa	Yes	D	U	20 to 35	Sun
<i>Alnus japonica</i>	Japanese alder	Yes	D	U	12 to 25	Sun, partial shade
<i>Alnus serrulata</i>	Tag alder	Yes	D	U	15 to 20	Sun, partial shade
<i>Amelanchier alnifolia</i>	Serviceberry	No	D	U	15 to 25	Sun, partial shade
<i>Amelanchier arborea</i>	Downy serviceberry	No	D	U	10 to 25	Sun, partial shade
<i>Amelanchier canadensis</i>	Shadbush	No	D	U	15 to 20	Sun, partial shade
<i>Amelanchier x grandiflora</i>	Apple serviceberry cvs: Autumn Brilliance, Princess Diana, etc.	No	D	U	20 to 25	Sun, partial shade
<i>Carpinus japonica</i>	Japanese hornbeam	Yes	D	U	20 to 30	Sun, partial shade
<i>Carpinus orientalis</i>	Oriental hornbeam	Yes	D	U	15 to 25	Sun, shade
<i>Cercis canadensis</i>	Eastern redbud	Yes	D	U	20 to 30	Sun, partial shade
<i>Cercis canadensis ssp retisus</i>	Oklahoma redbud	Yes	D	U	20 to 30	Sun, partial shade

### Understory Trees

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Cercis canadensis ssp. texensis</i>	Texas redbud	Yes	D	U	15 to 20	Sun, partial shade
<i>Cercis chinensis</i>	Chinese redbud	Yes	D	U	8 to 12	Sun
<i>Chionanthus retusus</i>	Chinese fringe tree	Yes	D	U	15 to 25	Sun, partial shade
<i>Chionanthus virginicus</i>	Fringe tree	No	D	U	12 to 20	Sun, partial shade
<i>Cladrastis kentuckea</i>	Yellowwood	Yes	D	U	30 to 45	Sun
<i>Cornus florida</i>	Flowering dogwood	No	D	U	15 to 20	Partial shade
<i>Cornus kousa</i>	Kousa dogwood	No	D	U	20 to 30	Sun, partial shade
<i>Cornus mas</i>	Cornelain cherry dogwood	Yes	D	U	20 to 25	Sun, partial shade
<i>Cornus Stellar hybrids</i>	Stellar dogwood	No	D	U	15 to 30	Sun, partial shade
<i>Corylus avellana 'Contoria'</i>	Lauders walking stick	No	D	U	12 to 20	Sun
<i>Cotinus coggygria</i>	Smoketree	Yes	D	U	10 to 15	Sun
<i>Cotinus hybrids</i>	Smoketree cvs: Grace	Yes	D	U	10 to 15	Sun
<i>Cotinus obovatus</i>	American smoke tree	Yes	D	U	10 to 15	Sun
<i>Crataegus crus-galli</i>	Cockspur hawthorn	Yes	D	U	20 to 30	Sun
<i>Crataegus laevigata</i>	Scarlet hawthorn, English hawthorn	Yes	D	U	20 to 25	Sun
<i>Crataegus phaenopyrum</i>	Washington hawthorn	Yes	D	U	25 to 30	Sun
<i>Crataegus x lavallei</i>	Lavalle hawthorn	Yes	D	U	15 to 30	Sun
<i>Crataegus viridis</i>	Green hawthorn	Yes	D	U	15 to 20	Sun, light shade
<i>Cryptomeria japonica</i>	Cryptomeria	Yes	E	U	50 to 60	Sun, light shade
<i>Cryptomeria japonica</i>	Cryptomeria cvs: Sekkan-Sugi, etc.	No	E	U	15 to 30	Sun, light shade
<i>Cupressocyparis leylandii</i>	Leyland cypress	Yes	E	U	40 to 50	Sun
<i>Cupressus arizonica</i>	Arizona cypress	Yes	E	U	30 to 40	Sun
<i>Cupressus sempervirens</i>	Italian cypress	Yes	E	U	20 to 30	Sun
<i>Cydonia sinensis</i>	Chinese quince	No	D	U	10 to 20	Sun, partial shade
<i>Euscaphis japonica</i>	Korean sweetheart tree	Yes	D	U	20	Sun, partial shade
<i>Firmiana simplex</i>	Chinese parasol tree	No	D	U	30 to 45	Sun
<i>Halesia carolina, H. tetraptera</i>	Carolina silverbell	No	D	U	20 to 40	Sun, partial shade
<i>Halesia diptera</i>	Two-winged silverbell	No	D	U	15 to 30	Sun, partial shade
<i>Heptacodium miconiodes</i>	Seven-son flower	Yes	D	U	10 to 20	Sun, partial shade
<i>Hovenia dulcis</i>	Japanese raisin tree	No	D	U	30	Sun, light shade

### Understory Trees

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Ilex cassine</i>	Dahoon holly	No	E	U	20 to 30	Sun, partial shade
<i>Ilex decidua</i>	Possumhaw	Yes	D	U	20 to 30	Sun, partial shade
<i>Ilex pedunculosa</i>	Long stalk holly	No	E	U	20 to 30	Sun, partial shade
<i>Ilex vomitoria 'Pendula'</i>	Weeping yaupon holly	Yes	E	U	20 to 25	Sun, partial shade
<i>Ilex x 'Nellie R. Stevens'</i>	Nellie R. Stevens holly	Yes	E	U	20 to 40	Sun, partial shade
<i>Ilex x 'Carolina Sentinal'</i>	Carolina Sentinal holly	No	E	U	20 to 25	Sun, partial shade
<i>Ilex x attenuata</i>	Ilex cvs: Savannah, Foster, Sunny Foster, East Palatka, etc.	Yes	E	U	20 to 30	Sun, partial shade
<i>Juniperus saliciola</i>	Southern red cedar	Yes	E	U	30 to 40	Sun
<i>Juniperus scopulorum</i>	Rocky Mountain juniper cvs: Blue Haven, Skyrocket, Wichita Blue	Yes	E	U	15 to 40	Sun
<i>Koelreuteria bipinnata</i>	Southern Goldenraintree	Yes	D	U	20 to 30	Sun
<i>Koelreuteria paniculata</i>	Goldenraintree	Yes	D	U	20 to 40	Sun
<i>Lagerstroemia fauriei</i>	Japanese crapemyrtle	Yes	D	U	20 to 30	Sun
<i>Lagerstromia indica</i>	Crapemyrtle	Yes	D	U	15 to 30	Sun
<i>Lagerstromia indica x fauriei</i>	Crapemyrtle cvs: Choctaw, Muskogee, Natchez, Tuscarora, etc.	Yes	D	U	15 to 30	Sun
<i>Lithocarpus henryi</i>	Henry tanbark oak	Yes	E	U	25 to 30	Sun, partial shade
<i>Maackia amurensis</i>	Amur maackia	Yes	D	U	20 to 30	Sun
<i>Maclura pomifera</i>	Osage-orange	Yes	D	U	20 to 40	Sun
<i>Magnolia grandiflora 'Little Gem'</i>	Little Gem magnolia	Yes	E	U	15 to 20	Sun
<i>Magnolia hybrids</i>	Magnolia cvs: Ann, Betty, Judy, Mary Nell, Galaxy, etc	No	D	U	10 to 30	Sun
<i>Magnolia liliiflora</i>	Lily magnolia	No	D	U	12 to 15	Sun
<i>Magnolia macrophylla</i>	Bigleaf magnolia	No	D	U	30 to 40	Sun, partial shade
<i>Magnolia sieboldii</i>	Oyama magnolia	No	D	U	10 to 20	Partial shade
<i>Magnolia stellata</i>	Star magnolia	No	D	U	10 to 20	Sun
<i>Magnolia virginiana</i>	Sweetbay magnolia	No	E	U	10 to 60	Sun, partial shade
<i>Magnolia x soulangiana</i>	Saucer magnolia	No	D	U	15 to 25	Sun, partial shade
<i>Malus spp.</i>	Crabapple	Yes	D	U	15 to 25	Sun
<i>Morus australis 'Unryo'</i>	Contorted mulberry	No	D	U	20 to 30	Sun
<i>Nyssa ogeche</i>	Ogeche gum	No	D	U	30 to 50	Sun, partial shade
<i>Ostrya virginiana</i>	American hophornbeam or Ironwood	Yes	D	U	25 to 40	Sun, partial shade
<i>Oxydendrum arboreum</i>	Sourwood	Yes	D	U	20 to 30	Sun, partial shade

### Understory Trees

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Parrotia persica</i>	Persian ironwood	No	D	U	20 to 40	Sun, light shade
<i>Persea borbonia</i>	Redbay	Yes	E	U	15 to 40	Sun, partial shade
<i>Phellodendron amurense</i>	Amur cork tree	Yes	D	U	30 to 45	Sun
<i>Photinia serrulata</i>	Chinese photinia	Yes	E	U	20 to 30	Sun
<i>Picea glauca</i> (dwarf cultivars)	Spruce cvs: Conica, etc	Yes	E	U	10 to 20	Sun, light shade
<i>Pinus bungeana</i>	Lacebark pine	Yes	E	U	30 to 50	Sun
<i>Pinus cembra</i>	Swiss stone pine	Yes	E	U	30 to 40	Sun
<i>Pinus korariensis</i>	Korean pine	Yes	E	U	30 to 40	Sun, partial shade
<i>Pinus mugo</i>	Mugo pine	Yes	E	U	15 to 20	Sun, partial shade
<i>Pinus wallichiana</i>	Himalayan pine	Yes	E	U	30 to 50	Sun, partial shade
<i>Pistacia chinensis</i>	Chinese pistache	Yes	D	U	25 to 40	Sun
<i>Poncirus trifoliata</i>	Hardy orange	Yes	D	U	8 to 20	Sun
<i>Prunus</i> 'Snow Goose'	Snow Goose cherry	No	D	U	20	Sun
<i>Prunus campanulata</i>	Taiwan cherry	No	D	U	20 to 30	Sun, partial shade
<i>Prunus caroliniana</i>	Carolina laurelcherry	No	E	U	20 to 40	Sun, partial shade
<i>Prunus cerasifera</i>	Purple leaf plum	No	D	U	15 to 25	Sun
<i>Prunus mume</i>	Japanese apricot	No	D	U	10 to 20	Sun, partial shade
<i>Prunus persica</i> (Corinthian hybrids)	Corinthian peach	No	D	U	20 to 25	Sun
<i>Prunus sargentii</i>	Sargent cherry	No	D	U	20 to 40	Sun
<i>Prunus serrulata</i>	Japanese cherry	No	D	U	15 to 25	Sun, partial shade
<i>Prunus subhirtella</i>	Higan cherry	No	D	U	20 to 40	Sun
<i>Prunus</i> x 'Okame'	Okame cherry	No	D	U	15 to 30	Sun
<i>Prunus x blireana</i>	Blireana cherry	No	D	U	15 to 20	Sun
<i>Prunus x cistena</i>	Purple leaf plum	No	D	U	7 to 14	Sun
<i>Prunus x yedoensis</i>	Yoshino cherry	No	D	U	30 to 40	Sun, light shade
<i>Pseudolarix amabilis</i>	Golden-larch	No	D	U	20 to 40	Sun
<i>Ptelea trifolia</i>	Hop tree	Yes	D	U	15 to 20	Sun, partial shade
<i>Pyrus calleryana</i>	Pear cvs: Cleveland, Aristocrat, Capital, Redspire, 'Holmford'	Yes	D	U	30 to 40	Sun
<i>Rhamnus caroliniana</i>	Carolina buckthorn	Yes	D	U	15 to 30	Sun
<i>Rhus typhina</i>	Staghorn sumac	Yes	D	U	15 to 25	Sun

### Understory Trees

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Robinia pseudoacacia</i>	Black locust	Yes	D	U	30 to 50	Sun
<i>Salix babylonica</i>	Weeping willow	No	D	U	30 to 50	Sun
<i>Sinojackia rehderiana</i>	Jacktree	No	D	U	15 to 20	Sun, partial shade
<i>Stewartia rostrata</i>	Upright stewartia	No	D	U	15	Sun, partial shade
<i>Stewartia koreana</i>	Korean stewartia	No	D	U	20 to 30	Sun, partial shade
<i>Stewartia ovata</i>	Mountain stewartia	No	D	U	10 to 15	Sun, light shade
<i>Stewartia pseudocamellia</i>	Japanese stewartia	No	D	U	20 to 40	Sun, partial shade
<i>Styrax japonica</i>	Japanese snowbell	No	D	U	20 to 30	Sun, partial shade
<i>Styrax malacodendron</i>	Silky stewartia	No	D	U	10 to 15	Partial shade
<i>Styrax obassia</i>	Fragrant snowball	No	D	U	20 to 30	Sun, partial shade
<i>Syringa reticulata</i>	Japanese tree lilac	No	D	U	20 to 30	Sun
<i>Thuja occidentalis</i>	Eastern arborvitae	No	E	U	10 to 30	Sun
<i>Thuja occidentalis</i>	American arborvitae	No	E	U	40 to 60	Sun
<i>Thuja orientalis</i>	Oriental arborvitae	No	E	U	18 to 25	Sun
<i>Thuja plicata</i>	Giant arborvitae	No	E	U	50 to 80	Sun, partial shade
<i>Thuja x 'Green Giant'</i>	Green Giant arbor	No	E	U	40 to 60	Sun
<i>Trachycarpus fortunei</i>	Windmill palm	Yes	E	U	15 to 35	Sun, partial shade
<i>Trochodendron aralioides</i>	Wheel tree	No	D	U	10 to 20	Partial shade
<i>Ulmus alata</i>	Winged elm	Yes	D	U	30 to 40	Sun
<i>Vitex agnus-castus</i>	Vitex chastetree	Yes	D	U	15 to 20	Sun
<i>Ziziphus jujuba</i>	Common jujuba	Yes	D	U	15 to 20	Sun

### Appendix 3. Shrubs

Shrubs						
Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Abelia chinensis</i>	Chinese abelia	Yes	D	S	5 to 7	Sun, partial shade
<i>Abelia hybrids</i>	Abelia cvs: Edward Goucher, Little Richard, Sunrise, etc.	Yes	D	S	Varies	Sun, partial shade
<i>Abelia x grandiflora</i>	Glossy abelia	Yes	D	S	3 to 6	Sun, partial shade
<i>Abeliophyllum distichum</i>	White forsythia	Yes	D	S	3 to 5	Sun, partial shade
<i>Abies concolor (dwarf cultivars)</i>	White fir	Yes	E	S	Varies	Sun, partial shade
<i>Aesculus parviflora</i>	Bottlebrush buckeye	Yes	D	S	8 to 12	Sun, partial shade
<i>Agava americana</i>	Century plant	Yes	E	S	3 to 6	Sun
<i>Amorpha canescens</i>	Leadplant	Yes	D	S	2 to 4	Sun
<i>Aucuba japonica</i>	Aucuba	Yes	E	S	6 to 10	Partial shade
<i>Berberis julianae</i>	Wintergreen barberry	Yes	E	S	6 to 8	Sun, partial shade
<i>Berberis koreana</i>	Korean barberry	Yes	D	S	4 to 6	Sun, partial shade
<i>Berberis thunbergii</i>	Japanese barberry	Yes	D	S	3 to 6	Sun, partial shade
<i>Berberis thunbergii var. atropurpurea</i>	Red barberry, Rose glow barberry	Yes	D	S	3 to 6	Sun, partial shade
<i>Berberis triacanthophora</i>	Threespine barberry	Yes	E	S	3 to 5	Sun, partial shade
<i>Berberis verruculosa</i>	Warty barberry	Yes	E	S	3 to 4	Sun, partial shade
<i>Berberis x chenaultii</i>	Chenault barberry	Yes	E	S	3 to 4	Sun
<i>Berberis x gladwynensis 'William Penn'</i>	William Penn barberry	Yes	E	S	3 to 4	Sun, partial shade
<i>Berberis x mentorensis</i>	Mentor barberry	Yes	D	S	5	Sun, partial shade
<i>Buddleia alternifolia</i>	Alternate-leaf butterfly-bush	Yes	D	S	10 to 20	Sun
<i>Buddleia davidii</i>	Butterfly-bush	Yes	D	S	10 to 15	Sun
<i>Buddleia golbosa</i>	Orange ball tree	Yes	D	S	10 to 15	Sun
<i>Buddleia lindleyana</i>	Lindley butterfly-bush	Yes	E	S	4 to 6	Sun
<i>Buddleia loricata</i>	Butterfly-bush	Yes	E	S	4 to 5	Sun
<i>Buxus harlandii</i>	Harland boxwood	Yes	E	S	4 to 6	Sun
<i>Buxus hybrids</i>	Boxwood cvs: Green Mountain, Green Velvet, Wintergreen	Yes	E	S	2 to 4	Partial shade
<i>Buxus sempervirens</i>	Common boxwood	Yes	E	S	15 to 20	Partial shade
<i>Buxus sempervirens 'Suffruticosa'</i>	English boxwood	Yes	E	S	2 to 4	Partial shade
<i>Buxus sinica var. japonica</i>	Japanese boxwood	Yes	E	S	3 to 6	Partial shade
<i>Buxus sinica (B. microphylla)</i>	Little leaf boxwood	Yes	E	S	3 to 4	Partial shade
<i>Callicarpa americana</i>	American beautyberry	Yes	D	S	3 to 8	Sun, partial shade

### Shrubs

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Euonymus japonicus</i>	Japanese euonymus	Yes	E	S	5 to 10	Sun, partial shade
<i>Euonymus kiautschovicus</i>	Spreading euonymus	Yes	E	S	8 to 10	Sun, partial shade
<i>Fontanesia fortunei</i>	Fortune's fontanesia	Yes	D	S	10 to 15	Sun, partial shade
<i>Forsythia x hybrids</i>	Forsythia cvs: Beatrix Farrand, Lynwood Gold, Golden Times, Spring Glory, etc.	Yes	D	S	Varies	Sun, partial shade
<i>Forsythia x intermedia</i>	Border forsythia	Yes	D	S	8 to 10	Sun, partial shade
<i>Fothergilla gardenii</i>	Dwarf fothergilla	Yes	D	S	2 to 3	Sun, partial shade
<i>Fothergilla major</i>	Large fothergilla	Yes	D	S	6 to 12	Partial shade
<i>Gardenia augusta (G. jasminoides)</i>	Gardenia	Yes	E	S	4 to 6	Sun, partial shade
<i>Genista pilosa</i>	Silky-leaf woadwaxen	Yes	D	S	1 to 3	Sun
<i>Hamamelis mollis</i>	Chinese witchhazel	Yes	D	S	10 to 15	Partial shade to shade
<i>Hamamelis vernalis</i>	Vernal witchhazel	Yes	D	S	6 to 10	Sun, partial shade
<i>Hydrangea quercifolia</i>	Oakleaf hydrangea	Yes	D	S	4 to 6	Sun, partial shade
<i>Ilex 'China Boy', 'China Girl'</i>	China holly	Yes	E	S	8 to 10	Sun, partial shade
<i>Ilex cornuta</i>	Holly cvs: Carissa, Burford, Rotunda, Needlepoint, etc.	Yes	E	S	2 to 15	Sun
<i>Ilex cornuta cvs.</i>	Holly cvs: Burfordii, D'Or, O' Spring	Yes	E	S	10 to 25	Sun, partial shade
<i>Ilex crenata cvs.</i>	Holly cvs: Hetz, Helli, etc.	Yes	E	S	4 to 10	Sun, partial shade
<i>Ilex decidua</i>	Possomhaw holly	Yes	D	S	7 to 15	Sun, partial shade
<i>Ilex glabra</i>	Inkberry holly	Yes	E	S	6 to 8	Sun, partial shade
<i>Ilex latifolia</i>	Lusterleaf holly	Yes	E	S	20 to 25	Sun, partial shade
<i>Ilex vomitoria</i>	Yaupon holly	Yes	E	S	15 to 20	Sun, partial shade
<i>Ilex vomitoria cvs.</i>	Holly cvs: Nana, Schillings, Katherine, etc.	Yes	E	S	Varies	Sun, partial shade
<i>Ilex x 'Nellie R. Stevens'</i>	Nellie Stevens holly	Yes	E	S	15 to 25	Sun, partial shade
<i>Ilex x 'Emily Bruner'</i>	Emily Bruner holly	Yes	E	S	15 to 20	Sun, partial shade
<i>Ilex x 'Mary Nell'</i>	Mary Nell holly	Yes	E	S	10 to 20	Sun, partial shade
<i>Ilex x koehneana</i>	Koehne holly	Yes	E	S	Varies	Sun, partial shade
<i>Indigofera amblyantha</i>	Indigofera	Yes	D	S	4 to 6	Sun
<i>Indigofera heterantha</i>	Himalayan indigo	Yes	D	S	4 to 6	Sun
<i>Itea virginica</i>	Virginia sweetspire	Yes	D	S	3 to 5	Sun, partial shade
<i>Jasminum floridum</i>	Shewy jasmine	Yes	E	S	3 to 5	Sun, partial shade
<i>Jasminum humile</i>	Italian yellow jasmine	Yes	E	S	5 to 7	Partial shade

## Shrubs

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Jasminum nudiflorum</i>	Winter jasmine	Yes	D	S	3 to 4	Sun, partial shade
<i>Juniperus chinensis</i>	Chinese juniper cvs: Wintergreen, Spartan, Hooks, etc.	Yes	E	S	12 to 50	Sun
<i>Juniperus chinensis (dwarf cultivars)</i>	Chinese juniper cvs: Procumbens Nana, Berkshire, Sargentii, Hetzi	Yes	E	S	3 to 12	Sun
<i>Juniperus communis</i>	Common juniper	Yes	E	S	5 to 10	Sun
<i>Juniperus conferta</i> cvs.	Juniper cvs: Blue Lagoon, Blue Pacific, Boulevard, etc.	Yes	E	S	1 to 2	Sun
<i>Juniperus davurica</i> cvs.	Parsons juniper	Yes	E	S	2 to 3	Sun
<i>Juniperus horizontalis</i>	Juniper cvs: Blue Vase, Blue Chip, Wiltonii, etc.	Yes	E	S	1 to 2	Sun
<i>Juniperus hybrids</i>	Juniper cvs: Saybrook Gold, etc.	Yes	E	S	Varies	Sun
<i>Juniperus procumbens</i>	Japanese garden juniper	Yes	E	S	.5 to 1.5	Sun
<i>Juniperus rigida</i>	Needle juniper	Yes	E	S	15 to 20	Sun
<i>Juniperus sabina</i>	Savin juniper	Yes	E	S	4 to 6	Sun
<i>Juniperus scopulorum (dwarf cultivars)</i>	Juniper cvs: Blue Creeper, Skyrocket, etc.	Yes	E	S	Varies	Sun
<i>Juniperus squamata</i> cvs.	Juniper cvs: Holger, Blue Elf, Calgary Carpet, Blue Satr, etc.	Yes	E	S	Varies	Sun
<i>Juniperus virginiana</i> cvs.	Juniper cvs: Blue Mountain, Blue Cloud, Grey Owl, etc.	Yes	E	S	Varies	Sun
<i>Juniperus x media</i>	Juniper cvs: Seagreen, Old Gold, etc.	Yes	E	S	Varies	Sun
<i>Kalmia latifolia</i>	Mountain laurel	Yes	E	S	4 to 8	Sun, partial shade
<i>Kolkwitzia amabilis</i>	Beautybush	Yes	D	S	6 to 10	Sun
<i>Lagerstroemia indica and hybrids</i>	Crape myrtle cvs: New Orleans, Centennial, Chica, Tonto, Acoma	Yes	D	S	5 to 15	Sun
<i>Lantana camara</i>	Lantana	Yes	D	S	1 to 5	Sun
<i>Lavandula angustifolia</i>	Common lavender	Yes	E	S	1 to 2	Sun
<i>Lavandula x intermedia</i>	Hybrid lavender	Yes	E	S	1 to 2	Sun
<i>Lespedeza thunbergii</i>	Thunberg lespedeza	Yes	D	S	3 to 6	Sun
<i>Lespedeza bicolor</i>	Shrub bushclover	Yes	D	S	6 to 10	Sun
<i>Ligustrum japonicum</i>	Japanese privet	Yes	E	S	6 to 12	Sun, partial shade
<i>Ligustrum lucidum</i>	Waxleaf privet	Yes	E	S	20 to 25	Sun, partial shade
<i>Ligustrum sinense</i>	Chinese privet	Yes	E	S	10 to 15	Sun, partial shade
<i>Ligustrum x vicaryi</i>	Vicary golden privet	Yes	E	S	10 to 12	Sun
<i>Lindera benzoin</i>	Spice bush	Yes	D	S	6 to 12	Sun, partial shade
<i>Lonicera fragrantissima</i>	Winter honeysuckle	Yes	D	S	6 to 10	Sun, partial shade
<i>Lonicera nitida</i>	Boxleaf honeysuckle	Yes	E	S	6 to 8	Sun, partial shade

## Shrubs

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Lonicera pileata</i>	Privet honeysuckle	Yes	E	S	2 to 3	Sun, partial shade
<i>Loropetalum chinensis</i>	Loropetalum	Yes	E	S	6 to 12	Sun, partial shade
<i>Loropetalum hybrids</i>	Loropetalum cvs: Plum Delight, Ruby, Fire Dance, etc.	Yes	E	S	4 to 10	Sun, partial shade
<i>Mahonia aquifolium</i>	Oregon grape holly	Yes	E	S	3 to 6	Partial shade
<i>Mahonia bealei</i>	Leatherleaf mahonia	Yes	E	S	6 to 7	Partial shade
<i>Mahonia fortunei</i>	Chinese mahonia	Yes	E	S	5 to 6	Partial shade
<i>Mahonia x media</i>	Mahonia cvs: Buckland, Charity, Faith, etc.	Yes	E	S	8 to 15	Partial shade
<i>Mitelia figo</i>	Banana shrub	Yes	E	S	6 to 10	Sun, Partial shade
<i>Myrica cerifera</i>	Southern waxmyrtle	Yes	E	S	10 to 15	Sun, partial shade
<i>Myrica pensylvanica</i>	Northern bayberry	Yes	E	S	5 to 12	Sun, partial shade
<i>Nandina domestica</i>	Nandina	Yes	E	S	6 to 8	Sun, partial shade
<i>Perovskia atriplicifolia</i>	Russian sage	Yes	E	S	3 to 5	Sun
<i>Photinia serrulata</i>	Chinese photinia	Yes	E	S	20 to 25	Sun, partial shade
<i>Physocarpus opulifolius</i>	Ninebark	Yes	D	S	5 to 10	Sun, partial shade
<i>Picea abies (dwarf cultivars)</i>	Spruce cvs: Little Gem, Pendula, etc.	Yes	E	S	Varies	Sun
<i>Picea glauca (dwarf cultivars)</i>	Spruce cvs: Conica, etc.	Yes	E	S	Varies	Sun
<i>Picea pungens (dwarf cultivars)</i>	Spruce cvs: Globosa, Montgomery, Bakeri, Fat Albert, Foxtail, etc.	Yes	E	S	Varies	Sun
<i>Pinus mugo</i>	Mugo pine	Yes	E	S	15 to 20	Sun, partial shade
<i>Pinus mugo (dwarf cultivars)</i>	Pine cvs: Pumilio, Mughus	Yes	E	S	Varies	Sun
<i>Pinus nigra cvs.</i>	Pine cvs: Arnold Sentinel, Monstrosa, ec.	Yes	E	S	3 to 5	Sun
<i>Pinus rigida</i>	Pine cvs: Sherman Eddy, etc	Yes	E	S	15 to 20	Sun
<i>Pinus sylvestris (dwarf cultivars)</i>	Pine cvs: Nana, Hillside Creeper, etc.	Yes	E	S	Varies	Sun
<i>Pinus thunbergii (dwarf cultivars)</i>	Pine cvs: Nana, Thunderhead	Yes	E	S	Varies	Sun
<i>Pittosporum tobira</i>	Japanese pittosporum	Yes	E	S	10 to 12	Sun, partial shade
<i>Podocarpus macrophyllus var. maki</i>	Shrubby podocarpus	Yes	E	S	20 to 35	Sun, partial shade
<i>Potentilla fruticosa</i>	Shrubby potentilla	Yes	D	S	1 to 4	Sun, partial shade
<i>Prunus glandulosa</i>	Flowering almond	Yes	D	S	4 to 5	Sun, partial shade
<i>Prunus laurocerasus</i>	English laurel	Yes	E	S	10 to 18	Sun, partial shade
<i>Punica granatum</i>	Pomegranate	Yes	D	S	12 to 15	Sun, partial shade
<i>Pyracantha coccinea</i>	Scarlet firethorne	Yes	E	S	6 to 18	Sun

## Shrubs

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Pyracantha hybrids</i>	Pyracantha cvs: Mohave, Mojave, Red Elf, Tiny Tim, etc.	Yes	E	S	Varies	Sun
<i>Pyracantha koidzumii</i>	Formosa pyracantha	Yes	E	S	8 to 12	Sun
<i>Raphiolepis hybrids</i>	Hawthorn cvs: Gulfgreen, Cuppertone	Yes	D	S	3 to 6	Sun
<i>Rhamnus fragula</i>	Alder buckthorn	Yes	D	S	10 to 12	Sun, partial shade
<i>Rhaphiolepis x delacourii</i>	Indian hawthorn, Yeddo hawthorn	Yes	E	S	3 to 4	Sun, partial shade
<i>Rhapidophyllum hystrix</i>	Needle palm	Yes	E	S	6 to 8	Sun, partial shade
<i>Rhododendron austrinum</i>	Florida azalea	Yes	D	S	8 to 10	Partial shade
<i>Rhododendron calendulaceum</i>	Flame azalea	Yes	D	S	4 to 8	Partial shade
<i>Rhodotypos scandens</i>	Black jetbead	Yes	D	S	3 to 6	Sun, partial shade
<i>Rhus aromatica</i>	Sumac	Yes	D	S	2 to 6	Sun, partial shade
<i>Rhus glabra</i>	Smooth sumac	Yes	D	S	10 to 15	Sun
<i>Rhus michauxii</i>	Michaux's sumac	Yes	D	S	2 to 3	Sun
<i>Rhus typhina</i>	Staghorn sumac	Yes	D	S	15 to 25	Sun
<i>Rosa chinensis</i>	China rose	Yes	D	S	6 to 8	Sun
<i>Rosa rugosa</i>	Rugosa rose	Yes	D	S	4 to 6	Sun
<i>Rosmarinus officinalis</i>	Rosemary	Yes	E	S	2 to 4	Sun
<i>Ruscus aculeatus</i>	Butcher's broom	Yes	E	S	1.5 to 3	Partial shade
<i>Sabal minor</i>	Dwarf palmeto	Yes	E	S	3 to 5	Sun
<i>Santolina chamaecyparissus</i>	Santolina, Lavender cotton	Yes	E	S	1 to 2	Sun
<i>Sarcococca confusa</i>	Sweet Box	Yes	E	S	3 to 5	Partial shade
<i>Sarcococca hookeriana</i>	Himalayan sarcococca	Yes	E	S	4 to 6	Partial shade
<i>Sarcococca orientalis</i>	Oriental sweetbox	Yes	E	S	2 to 3	Partial shade
<i>Sarcococca ruscifolia</i>	Fragrant sarcococca	Yes	E	S	2 to 3	Partial shade
<i>Sinojackia rehderiana</i>	Jacktree	Yes	D	S	15 to 20	Sun, partial shade
<i>Spiraea cantoniensis</i>	Double Reeves spirea	Yes	D	S	4 to 6	Sun, partial shade
<i>Spiraea japonica</i>	Japanese spirea	Yes	D	S	4 to 5	Sun, partial shade
<i>Spiraea nipponica 'Snowmound'</i>	Snowmound spirea	Yes	D	S	3 to 5	Sun, partial shade
<i>Spiraea prunifolia</i>	Bridalwreath spirea	Yes	D	S	4 to 9	Sun, partial shade
<i>Spiraea thunbergii</i>	Thunberg spirea	Yes	D	S	3 to 5	Sun, partial shade
<i>Spiraea x humalda</i>	Bumalda spirea	Yes	D	S	2 to 3	Sun, partial shade

### Shrubs

Scientific Name	Common Name	Water Wise	E/D	Type	Ht (Feet)	Exposure
<i>Spiraea x vanhouttei</i>	Vanhoutte spirea	Yes	D	S	6 to 8	Sun, partial shade
<i>Syringa pekinensis</i>	Peking lilac	Yes	D	S	15	Sun
<i>Taxus chinensis</i>	Chinese yew	Yes	E	S	5 to 10	Sun, partial shade
<i>Teucrium chamaedrys</i>	Wall germander	Yes	E	S	1 to 1.5	Sun
<i>Ulmus galbra 'Horizontalis'</i>	Tabletop scotch elm	Yes	D	S	15	Sun
<i>Viburnum acerifolium</i>	Maple-leaf viburnum	Yes	D	S	4 to 6	Partial shade
<i>Viburnum awabuki</i>	Chindo Viburnum	Yes	E	S	10 to 15	Sun, partial shade
<i>Viburnum pilcatum var tomentosum</i>	Doublefile viburnum	Yes	E	S	8 to 10	Sun, partial shade
<i>Viburnum tinus</i>	Laurustinus	Yes	E	S	6 to 12	Sun, partial shade
<i>Viburnum x pragense</i>	Pragense viburnum	Yes	E	S	8 to 10	Sun, partial shade
<i>Vitex agnus castus</i>	Chastetree	Yes	D	S	15 to 20	Sun
<i>Vitex negundo</i>	Chastetree	Yes	D	S	10 to 20	Sun
<i>Xanthorhiza simplicissima</i>	Yellowroot	Yes	D	S	2 to 3	Sun, partial shade
<i>Yucca filamentosa</i>	Adam's needle yucca	Yes	E	S	2 to 4	Sun
<i>Yucca flaccida</i>	Weakleak yucca	Yes	E	S	1 to 2	Sun
<i>Yucca gloriosa</i>	Soanish dagger yucca	Yes	E	S	6 to 8	Sun

## Appendix 4. Trees to Plant Near or Under Power Lines

### TREES TO PLANT NEAR OR UNDER POWER LINES

The following plants are some excellent selections for city and rural landscaping under power lines. These small trees do not grow taller than 25 feet. (Please note that this list is for normal distribution power lines. There are different requirements for high transmission power lines.)

COMMON NAME	SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME
American fringe tree	<i>Chionanthus virginicus</i>	Japanese apricot	<i>Prunus mume</i>
Amur maple	<i>Acer ginnala</i>	Japanese dogwood	<i>Cornus kousa</i>
Blackhaw viburnum	<i>Viburnum prunifolium</i>	Japanese flowering cherry	<i>Prunus serrulata</i> 'Accolate', 'Okame'
Buckeye	<i>Aesculus pavia</i>	Japanese maple	<i>Acer palmatum</i>
Cherry laurel	<i>Prunus caroliniana</i>	Japanese snowbell	<i>Syrax japonicus</i> 'Pink Chimes'
Cherry plum	<i>Prunus cerasifera atropurpurea</i>	Japanese snowbell	<i>Syrax japonicus</i> 'Carillion'
Chinese fringetree	<i>Chionanthus retusus</i>	Little Gem magnolia	<i>Magnolia grandiflora</i> 'Little Gem'
Crabapple	<i>Malus spp.</i>	Nellie R. Stevens holly	<i>Ilex</i> 'Nellie R. Stevens'
Crape myrtle	<i>Lagerstroemia indica</i> 'Cherokee'	Northern bayberry	<i>Myrica pennsylvanica</i>
Crape myrtle	<i>Lagerstroemia indica</i> 'Dallas Red'	Osmanthus	<i>Osmanthus fortunei</i>
Crape myrtle	<i>Lagerstroemia indica</i> 'Natchez'	Redbud	<i>Cercis canadensis</i>
Crape myrtle	<i>Lagerstroemia indica</i> 'Powhatan'	Saucer magnolia	<i>Magnolia soulangiana</i>
Crape myrtle	<i>Lagerstroemia indica</i> 'Tuscarora'	Serviceberry	<i>Amelanchier spp.</i>
Dahoon	<i>Ilex cassine</i>	Smoketree	<i>Cotinus coggygria</i>
Dogwood	<i>Cornus florida</i>	Star magnolia	<i>Magnolia stellata</i>
Doublefile viburnum	<i>Viburnum plicatum</i> var. <i>tomentosum</i>	Sweetbay magnolia	<i>Magnolia virginiana</i>
Dr. Kassab holly	<i>Ilex</i> 'Dr. Kassab'	Trident maple	<i>Acer buerferanum</i>
Foster #2 holly	<i>Ilex</i> 'Foster #2'	Witchhazel	<i>Hamamelis x intermedia</i>
		Yaupon	<i>Ilex vomitoria</i>

## Appendix 5. Trees Not Recommended

### TREES NOT RECOMMENDED

The following species are not recommended because they are poor or marginal performers.

COMMON NAME	SCIENTIFIC NAME	PROBLEM
Box elder	<i>Acer negundo</i>	Aggressive, shallow roots, weak wood
Bradford Pear	<i>Pyrus calleryana 'Bradford'</i>	Genetic flaw, splits apart
Catalpa	<i>Catalpa bignonioides</i>	Weak wooded
Green ash	<i>Fraxinus pennsylvanica</i>	Anthraxnose
Honeylocust	<i>Gleditsia spp.</i>	Our region is too hot for this species
Mulberry	<i>Morus spp.</i>	Messy fruit, shallow roots
Norway maple	<i>Acer platanoides</i>	Our region is too hot for this species
Princess tree	<i>Paulownia tomentosa</i>	Weedy tree, messy, weak wooded
Russian olive	<i>Elaeagnus angustifolia</i>	Poor form, disease
Siberian elm	<i>Ulmus pumila</i>	Weak wood, slime flux
Silver maple	<i>Acer saccharinum</i>	Aggressive, shallow roots, weak wood
Tree-of-heaven	<i>Ailanthus altissima</i>	Weedy trees, seeds, weak wood
White pine	<i>Pinus strobus</i>	Many disease and insect problems

Appendices 1 – 5 courtesy of City of Greensboro Planning Dept.