

DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES

STAFF REPORT

- PROPOSED COUNTY CODE AMENDMENT
- PROPOSED PFM AMENDMENT
- APPEAL OF DECISION
- WAIVER REQUEST

Proposed Amendments to Chapter 122 (Tree Conservation Ordinance) of The Code of the County of Fairfax, Virginia, and the Public Facilities Manual Re: Conservation of Trees During the Land Development Process

Authorization to Advertise

September 14, 2010

Planning Commission Hearing

October 20, 2010 at 8:15 p.m.

Board of Supervisors Hearing

November 16, 2010 at 4:00 p.m.

Prepared by:

Urban Forest Management Division
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September 14, 2010

Staff Report

A. Issue:

Proposed Amendments to Chapter 122 (Tree Conservation Ordinance) of The Code of the County of Fairfax, Virginia and the Public Facilities Manual (PFM) Regarding: conservation of trees during the land development process.

B. Recommended Action:

Staff recommends that the Board of Supervisors adopt the proposed amendments as set forth in the Staff Report dated September 14, 2010. The proposed amendments pertain to portions of Chapter 122 (Tree Conservation Ordinance) and the PFM.

C. Timing:

Board of Supervisors authorization to advertise – September 14, 2010

Planning Commission Public Hearing – October 20, 2010

Board of Supervisors Public Hearing – November 16, 2010

Effective Date – 12:01 a.m. on November 17, 2010

D. Source:

Department of Public Works and Environmental Services (DPWES)

E. Coordination:

The proposed amendments have been prepared by DPWES Land Development Services and coordinated with the Office of the County Attorney. The proposed amendments to the PFM have been recommended for approval by the Engineering Standards Review Committee.

F. Background:

Past legislative efforts by Fairfax County to acquire state enabling authority to preserve forest resources during the land development process culminated in the enactment of § 15.2-961.1 of the *Code of Virginia*, effective July 1, 2008, allowing localities within Planning District 8 and classified as an eight-hour nonattainment area for ozone under the federal Clean Air Act and Amendments of 1990, to adopt local ordinances providing

for the conservation of trees during the land development process. The enabling legislation allowed Fairfax County to shift regulatory focus from tree replacement to tree preservation and consequently, on October 20, 2008, the Board of Supervisors approved regulations implementing Virginia Code §15.1-961.1.

Implementation included a new chapter of the County Code, Chapter 122, entitled Tree Conservation Ordinance. In addition, amendments to the PFM and Chapters 101 (Subdivision Provisions), 104 (Erosion and Sedimentation Control), 112 (Zoning Ordinance) and 120 (Heritage, Specimen, Memorial and Street Tree Ordinance) of the County Code were adopted to align with the Tree Conservation Ordinance. These amendments became effective on January 1, 2009 and incorporated the full authority granted to localities pursuant to §15.1-961.1 of the *Code of Virginia*.

At this time, amendments to the Tree Conservation Ordinance and the PFM are being proposed to address feedback from the development community regarding the applicability of the Ordinance to minor plans and the impacts observed during the first full year of administering the Ordinance. The proposed changes have been discussed with industry and an overview of the proposed changes was presented to the Board's Environmental Committee on June 15, 2009. A summary of the proposed amendments is set forth below.

G. Summary of Proposed Amendments:

The proposed amendments include revisions to the Tree Conservation Ordinance and Chapters 2, 6, and 12 of the PFM as further described below.

Tree Conservation Ordinance

The proposed revision to the Tree Conservation Ordinance (Chapter 122) provides clarification regarding the applicability of the tree canopy provisions set forth in Section 122-2-1. Specifically, paragraph (b) of Section 122-2-1 is being added to clarify that minor land disturbing activities, such as home additions, tear downs and rebuilds on existing foundations, minor site plans, demolitions and linear projects, such as trails, sidewalks, and sewers, are not subject to the tree conservation canopy requirements. Other land disturbing activities that present a minor threat to existing tree resources, as determined by the Director of the Department of Public Works and Environmental Services, also will not be subject to the tree canopy requirements.

The proposed amendment to Chapter 122 is included as Attachment A.

Public Facilities Manual

The proposed revisions to the PFM amend the plan submission requirements, the technical standards and specifications, and onsite practices that support the conservation of trees during land development and include the following:

1. Revisions to align the PFM with the Tree Conservation Ordinance regarding the applicability of the tree canopy requirements to minor land disturbing activities.

2. Changes to the tree inventory and condition analysis requirements in a manner that will likely reduce the time and expenses associated with preparing conservation plans by:
 - reducing the number of trees required to be inventoried and shown on plans by increasing the minimal diameter tree inventory standard from 8 inches to 12 inches;
 - reducing the number of trees required to be inventoried and shown on plans by reducing the width of the tree inventory zone from 50 to 35 feet;
 - reducing the number of dead, poor condition and hazardous trees that must be inventoried and shown on plans by reducing the size of the area where these conditions might exist; and
 - minimizing the need to involve Certified Arborists and/or Registered Consulting Arborists in the preparation of tree inventories and poor condition analyses.
3. Provisions to minimize the information required to be shown on plans when development sites clearly meet or exceed the minimal tree preservation levels related to tree inventory and condition analysis.
4. Additional opportunities for developers to modify the 10-year tree canopy requirements when proposed development sites meet the criteria related to space limitations and utility conflicts.
5. Reductions in the pro-rata fee used to determine contributions to the Tree Preservation and Planting Fund from \$500 to \$300 per every 200 square feet of tree canopy requirement that cannot be provided on-site.
6. Provisions for offsite tree planting on governmental properties and by non-profit tree planting groups by requiring developers to contribute a fee equal to the monetary value of 50 percent of proposed 10-year canopy reductions into the Tree Preservation and Planting Fund.
7. Replacing existing Plate 1-12(1M-12) with new plates 1A-12(1AM-12) and 1B-12(1BM-12) to provide additional information related to the tree inventory and condition analysis requirements.
8. Editorial revisions to PFM Chapters 2, 6 and 12.

The proposed amendments to the PFM are included as Attachment B.

H. Regulatory Impact:

The proposed amendments related to the 10-year tree canopy requirement clarify the applicability of the 10-year tree canopy requirement to minor land disturbances. Under the proposed amendments, home additions, tear downs and rebuilds on existing foundations, minor site plans, demolitions and linear projects, such as trails, sidewalks, and sewers, are not subject to the tree conservation canopy requirements. Other land disturbing activities that present a minor threat to existing tree resources, as determined by the Director of the Department of Public Works and Environmental Services, also will not be subject to the tree canopy requirements.

The proposed PFM amendments related to the requirement to provide a tree inventory and condition analysis lessen plan preparation requirements by reducing the number and extent of trees to be inventoried and minimizing the need to involve a Certified or Registered Consulting Arborist during plan design and preparation. In addition, the proposed PFM amendments provide additional opportunities for modifications of the tree canopy requirements and minimize the information required to be shown on plans when development sites clearly meet or exceed the minimal tree preservation levels.

The proposed PFM amendments related to the Tree Preservation and Planting Fund reduces the pro-rata fee paid by developers in the instance that sites cannot meet the full tree canopy requirement on-site. In addition, the proposed amendments specify the fee that developers must contribute into the Fund when providing offsite community tree planting.

I. Attached Documents:

Attachment A – Proposed amendments to Chapter 122 (Tree Conservation Ordinance)
Attachment B – Proposed amendments to the Public Facilities Manual

**Proposed Amendments to Chapter 122 (Tree Conservation Ordinance)
of
The Code of the County of Fairfax, Virginia**

Amend Article 2 (Tree Conservation During Land Development), Section 122-2-1 (Ten-year Tree Canopy Requirements), by adding Paragraph (b) to read as follows:

ARTICLE 2.

Tree Conservation During Land Development

Section 122-2-1. Ten-year Tree Canopy Requirements¹

(a) All land development requiring the submission of a site plan, preliminary subdivision plat, subdivision construction plan, conservation plan, grading plan, or a rough grading plan shall provide for the conservation of trees on the site such that, after ten (10) years, minimum tree canopy is projected to be as follows:

Table 1 10-Year Tree Canopy Requirements	
Use or Zoning District	Percentage of site to be covered by tree canopy in 10 years
Dedicated school, athletic field, nonwooded active recreation area	Ten percent (10%)
Commercial Revitalization District	See Note Below
Commercial; Industrial; PDC; R-20; R-30; PDH-20; PDH-30; PDH-40; PRM; R-MHP; medium and high-density areas of a PRC District	Ten percent (10%)
R-12; R-16; PDH-12; PDH-16	Fifteen percent (15%)
R-5; R-8; PDH-5; PDH-8	Twenty percent (20%)
R-3; R-4; PDH-3; PDH-4	Twenty-five percent (25%)

¹ Any locality with a local ordinance that was adopted prior to July 1, 1990, may adopt the tree conservation provisions of Va. Code Ann. § 15.2-961 based on 10-year minimum tree canopy requirements (Va. Code Ann. § 15.2-961. para. S). Fairfax County adopted tree cover requirements based on a 10-year minimum tree canopy requirements on April 16, 1990, effective June 30, 1990 (08-90-101, 09-90-104, ZO-90-190, and 29-90-PFM).

R-A; R-P; R-C; R-E; R-1; R-2; PDH-1; PDH-2; and low-density areas of a PRC District	Thirty percent (30%)
Note: In Commercial Revitalization Districts the above requirements shall apply to the extent feasible for expansion or enlargement of existing developments and shall be applicable for redevelopment and new developments. Expansion, enlargement, redevelopment and new development shall be as defined by the Zoning Ordinance.	

(b) For purposes of administering the above requirement, land development does not include: construction of additions to existing residential structures; construction of residential accessory structures; demolition of existing residential structures; reconstruction of residential structures on existing foundations; construction associated with minor site plans; construction of trails, sidewalks, sanitary sewers, storm sewers, and other public improvements of a linear nature not included as part of a larger common plan of development; and, other land disturbing activities that present a minor threat to existing tree resources as determined by the Director.

**Proposed Amendments
to the
Public Facilities Manual**

Amendments to Chapter 2

Amend Chapter 2 (General Subdivision and Site Plan Information), by revising Table 2.1 and Section 2-0111 (Tree Conservation Requirements), to read as follows:

TABLE 2.1 CODE AUTHORIZATION FOR PUBLIC FACILITIES MANUAL

PFM SECTION	SUBJECT	CODE REFERENCES
2-0111	Tree Canopy Conservation Requirements	101-2-2 (20) (21)

2-0111 ~~Tree Cover~~ Tree Conservation Requirements (29-90-PFM)

2-0111.1 ~~Tree Cover~~ conservation requirements shall be ~~provided~~ addressed on all land being developed as set forth in Chapter 122 of the Code (Tree Conservation Ordinance), the Subdivision Ordinance, Chapter 104 (Erosion and Sedimentation Control) of the Code, Article 13 of the Zoning Ordinance, and PFM § 12-0000 et seq.

2-0111.2 With the exception of the minor land disturbance scenarios identified in paragraph (b) of Section 122-2-1 (Ten-year Tree Canopy Requirements) of the Code, ~~this~~ requirement shall be met on all subdivision plans, site plans and ~~overlot~~ grading plans required to be submitted to the Director for review and approval.

Amendments to Chapter 6

Amend Chapter 6 (Storm Drainage), Section 1300 (Retention, Detention, and Low Impact Development Facilities), Paragraphs 6-1307.10G(1)(f), 6-1309.1B, 6-1311.3D, and 6-1311.4A, to read as follows:

6-1307.10G(1)(f) Where the basin is planted at the specified density, interior and peripheral parking lot landscaping and 10-year tree covercanopy credit will be granted if planting conforms to the requirements of Article 13 of the Zoning Ordinance and ~~§ 12-0702 and § 12-0703~~ Chapter 122 of the Code (Tree Conservation Ordinance) and PFM §12-0000 et seq.

6-1309.1B (102-08-PFM) Trees in tree box filters may be used to meet the requirements of Chapter 122 of the Code and § 12-0000 *et seq.* of the PFM. Minimum planting area and

minimum distance to barriers as required by § ~~12-0509.4E(5)~~12-0510.4E(5) must be met to use trees in tree box filters to meet 10-year tree cover canopy requirements. Use of some small trees may be possible (Category I and II).

6-1311.3D Reforested areas shall consist of a mixture of overstory trees, understory trees, and shrubs. Generally, overstory trees correspond to Category 3 or 4 trees and understory trees correspond to Category 1 or 2 trees as listed in Table 12.717 in §12-0000 *et seq.* At least 25 percent of the area shall be planted with trees from nursery stock. For nursery stock, deciduous trees must be a minimum of 1 inch (2.54 cm) caliper and evergreen trees must be a minimum of 6 feet (1.8 m) in height. For areas planted with nursery stock, the density of overstory trees shall be a minimum of 100 trees per acre and the density of understory trees shall be a minimum of 200 trees per acre. Nursery stock may be replaced by transplanted material as approved by the Director. For areas planted with bareroot seedlings (See § 12-0705.5B), the density of the trees shall be double that required for nursery stock. The density of shrubs shall be a minimum of 1089 plants per acre. Shrubs must be a minimum of 18 inches (0.4 m) in height.

6-1311.4A The topsoil layer shall have a minimum depth of 8 inches (20.3 centimeters) except for areas within the dripline of existing trees in or adjacent to the area to be reforested, where subsoiling may adversely impact existing tree roots. Compacted soils within the dripline of existing trees shall be addressed by the use of ~~vertical mulching as specified in § 12-0806.4B~~. See Plates 1-12 & 13-12. The mulch shall consist of a minimum of 3 inches (7.6 centimeters) of organic mulch that shall be placed on the topsoil layer at final grade. Mulch shall consist of wood chips, bark chips, or shredded bark that has been aged for a minimum of 4 months. Mulch beds must be kept free of any grass, weeds, vines and any other plant or condition that might hinder the establishment of the tree canopy.

Amendments to Chapter 12

Amend the Public Facilities Manual, by revising Chapter 12 (Tree Conservation), to read as follows:

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Standard Plate Designation Number	Description	Section
N/A 1A-12(1AM-12)	Tree Inventory and Poor Condition Analysis- 35-foot Inventory Zone	12-0507
N/A 1B-12(1BM-12)	Tree Inventory and Poor Condition Analysis Poor Condition, Hazardous and Dead Trees	12-0507
N/A 2-12(2M-12)	Critical Root Zones and Driplines of Trees	12-0507.2D
N/A 3-12(3M-12)	Tunneling	12-0402.1
N/A 4-12(4M-12)	Energy Conservation Tree Canopy Credit	12-0510.4B(2)
N/A 5-12(5M-12)	Deck Planter	12-0515.3
N/A 6-12(6M-12)	Tree Protection Fence Installation	12-0703.1B
N/A 7-12(7M-12)	Root Pruning	12-0702.1
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N/A 9-12(9M-12)	Pruning Cuts	12-0706.4A

12-0000 TREE CONSERVATION

12-0100 PURPOSE AND INTENT

The purpose and intent of § 12-0000 *et seq.* is to provide plan submission requirements, technical specifications and onsite practices that support the administration, implementation and enforcement of the tree conservation requirements of the Code including Chapter 101 (Subdivision Ordinance), Chapter 104 (Erosion and Sedimentation Control), Articles 13 and 17 of the Zoning Ordinance, Chapter 118 (Chesapeake Bay Preservation Ordinance), Chapter 120 (Heritage, Specimen, Memorial and Street Tree Ordinance) and Chapter 122 (Tree Conservation Ordinance).

12-0200 BACKGROUND AND ORDINANCE APPLICABILITY

Prompted by the unnecessary destruction of trees in the County during the process of development, the Board, on June 18, 1973, unanimously passed the Tree Planting and Preservation Ordinance. This ordinance was designed to control the destruction of trees and established the Office of the County Arborist (now known as the Urban Forest Management Division) to administer the ordinance. Over the first three years it became evident that certain revisions were necessary for more effective control of tree removal in the County. As a result, the ordinance requirements were incorporated into the Section 104-1-1 of the Code thereby becoming the Tree Preservation and Planting Requirements of § 104-1-1, with, ultimately, the requirements being changed to cover all vegetation as specified in § 104-1-1. In 1990, these requirements were again revised to reflect changes in the Code that require a percentage of tree canopy to be established or retained on each site being developed. The new provisions were established pursuant to State enabling legislation allowing certain localities to adopt tree replacement ordinances. Section 12-0000 *et seq.* deals primarily with woody vegetation (trees, shrubs and vines) while other vegetation for erosion control stabilization is more specifically covered in the “Virginia Erosion and Sediment Control Handbook.”

On October 20, 2008, the Board adopted an ordinance entitled “Tree Conservation Ordinance” which became Chapter 122 of the Code. The new Tree Conversation Ordinance is based on the authority and mandates of VA. Code Ann § 15.2 961.1 which enables jurisdictions located in Virginia Planning District 8 and classified as part of an eight hour nonattainment area for ozone to enact local tree ordinances that emphasize tree preservation over tree planting when meeting tree canopy requirements. At that same time, this chapter was renamed “Tree Conservation Ordinance” and rewritten to incorporate plan submission requirements, specifications and practices that support existing authority to conserve vegetation during land development pursuant to Chapters 101, 104, 112, and 118 of the Code in addition to new Chapter 122 of the Code.

12-0300 ESTABLISHMENT OF THE TREE COMMISSION

The Board, on June 18, 1973, established the Tree Commission to provide advice to the Board based on annual reevaluation of the experience under the ordinance, provide leadership in developing understanding of the objectives and methods of the tree program and assist the Urban Forest Management Division in the development and maintenance of technical specifications and guidelines.

12-0400 STANDARDS FOR PRESERVING TREES AND FORESTED AREAS

12-0401 Purpose . The purpose of this section is to provide standards that will optimize the preservation of structurally sound, healthy and functional trees and forested areas; minimize the retention of high-risk tree conditions that have potential to cause personal injury or property damage; minimize harmful practices and conditions that can degrade the long-term health, structure, functionality and regenerative capacity of forested areas; and to provide guidance concerning which trees can and cannot be used to meet 10-year Tree Canopy Requirements.

12-0402 Preservation Design Standards. Development sites shall be designed and constructed in a manner that: limits the extent of land disturbance to the minimum area needed to construct the proposed use; minimizes the negative impacts of permissible construction activities and practices on trees and forested areas; and, places staging and temporary storage areas, buildings, utility connections, roads, parking areas, recreational amenities, stormwater management facilities and all other land development in a manner that minimizes direct physiological damage to root systems and above ground portions of onsite and offsite trees and forested areas and minimizes changes to environmental conditions that trees and forested areas are dependent on to survive.

12-0402.1 Constructability. Tree preservation efforts shall take into account the constructability of the development site and the limitations imposed by tree physiology and its dependency on pre-development environmental conditions. Adequate clearing shall be shown for the installation of water, storm, sanitary sewer lines and existing utilities to be relocated. Clearing limits shall include room for trench wall sloping or benching, equipment access and deposition of soil. The limits of clearing for the installation of underground lines shall be adequate for the size of line and depth of installation. Generally, clearing limits should be equal to four times the depth of the trench. Wherever adequate space does not exist for utility clearing, the utility lines shall be installed using trenchless methods, sheeting and shoring, trench boxes, or tunneling (see Plate 3-12(3M-12)). If such methods are to be used, a note on the plan shall be provided indicating which sections of utilities are to be installed using these methods.

12-0402.2 Area shown for reserve lines for septic fields shall not be shown to be cleared except when required under one or more of the following circumstances:

12-0402.2A Clearing is necessary to provide a minimum horizontal distance of 10 feet (3.0 meters) between the proposed septic field and any tree.

12-0402.2B Clearing is necessary to properly grade reserve areas which are alternated between proposed active septic field lines.

12-0402.2C Clearing is otherwise lawfully required by the Health Department.

12-0403 Tree Condition Standards

12-0403.1 Definition. For purposes of administering this Chapter, a tree is any self-supporting woody plant which visually produces one main trunk and a more or less distinct and elevated head with many branches that typically reach at least 15 feet (4.6 meters) in height at maturity, and for purposes related to 10-year tree canopy requirements exceeds five feet (1.5 meters) in height at time of plan submission.

12-0403.2 Pre-Development Tree Condition Standards. Trees designated to be preserved with trunks located within ~~1050~~ feet (~~45.730.5~~ meters) of the limits of clearing generally shall be in fair to excellent condition at the time of plan submission. The following criteria for structural integrity and health shall be used to determine the condition of the tree.

12-0403.2A Structural Integrity. Trees designated to be preserved should have a high degree of structural integrity that enables the tree to remain firmly anchored to the soil and growing in a stable manner that is vertically oriented. Trees designated to be preserved with trunks that are located within ~~1050~~ feet (~~45.730.5~~ meters) of the proposed limits of clearing shall: have healthy crowns; have structurally sound trunks that support strong branch attachments and be free of major wounds, decay and cavities that could threaten the structural integrity of the roots, trunk and scaffold branches. Trees to be preserved shall lack: raised and exposed root systems; broken, dead or decayed roots; exaggerated leans; unbalanced upper crown development and weight; broken or dead scaffold branches; included bark; cambium layer wounds, girdling; and, any other condition that the Director determines to undermine the structural condition and safety of trees.

12-0403.2B Health. Trees designated to be preserved shall not exhibit signs ~~be free~~ of serious health-threatening disease and organisms that are causing or could cause significant levels of defoliation die-back and decay or could otherwise cause a significant decline in the health and structural integrity of the tree. Trees to be preserved also shall ~~also~~ be reasonably free of signs of disease or disorder caused by herbicides, pesticides, fertilizers, petroleum-based chemicals or other abiotic agents that the Director determines to be injurious to trees and forested areas.

12-0403.3 Trees that do not meet pre-development standards for structural integrity and health shall not be afforded tree canopy cover credits for purposes of meeting 10-year tree canopy requirements.

12-0403.4 Trees located on the development site within ~~1050~~ feet (~~45.730.5~~ meters) of the proposed limits of clearing that do not meet standards for structural integrity and health identified in § 12-0403.2A and 2B above shall be identified on Tree Conservation Plans and designated within the tree preservation plan and narrative as being subject to additional inspection, removal, pruning or other practices identified in § 12-0700 at time of the initial land clearing phase.

12-0000 TREE CONSERVATION

12-0403.5 Post-Development Tree Condition Standards. Trees designated to be preserved should survive construction in a manner that substantially retains their pre-development level of biological function, health and structural condition.

12-0403.5A Any tree that the Director determines is unlikely to survive construction due to direct physical damage to root systems and above ground portions of trees; soil compaction; the addition or removal of soil within critical root zones; changes to soil hydrology, changes to drainage patterns, increased solar exposure, increased exposure to wind, changes to ambient air temperatures; and any other environmental factor that the Director determines could result in or predispose trees to structural failure and health problems shall not be allowed to be retained or afforded canopy credits for purposes of meeting 10-year tree canopy requirements. Individual trees that will have 40 percent or more of the critical root zone disturbed by construction are not generally recommended for preservation.

12-0403.5B Trees, or portions thereof, determined by the Director to be dead, declining, hazardous or a maintenance nuisance due to impacts from construction or environmental changes that resulted from construction; or, trees or portions thereof that are hazardous to either life or property because of conditions not related to construction shall be subject ~~required to be removed~~ or other corrective action as further stated in § 12-0704.14 and § 12-0706.3A.

12-0403.6 Leaving Dead Trunks for Wildlife Benefits. The main trunks of dead trees may be allowed to remain on sites where the Director determines that a “trunk snag” may provide habitat or other wildlife benefits and have little or no potential to cause personal injury or property damage, or to obstruct streams or other drainage.

12-0404 Forested Area Condition Standards

12-0404.1 Definition. For purposes of administering the provisions of this Chapter, forested areas are comprised of self-supporting tree and woody plants that exceed five feet (1.5 meters) in height at time of plan submission and meet criteria for health, condition and suitability as further defined in this section. Areas that meet the administrative definition provided above usually represent native forest or woodland plant communities that occur in a range of successional stages from rapidly changing early successional pioneer woodlands (~~often described as “scrub”~~) to stable long-term sub-climax and climax forests. During mid to late successional stages, these plant communities typically consist of multiple layers of vegetation and other natural features including: super- and sub-canopy tree species; woody shrubs, herbaceous plants, vines, non-vascular plants and epiphytes; decaying leaf litter, root mass, fungi, soil biota; and abiotic components which the vegetation is dependent upon such as: soils, hydrologic conditions, and underlying geomorphic features.

12-0404.1A Forest communities in Fairfax County often lack indigenous vegetation components that have been suppressed or supplanted by invasive, non-native plants. Invasive plants must be managed to ensure the long-term health and functionality of native forest communities.

12-0000 TREE CONSERVATION

12-0404.1B It is the intent of this Chapter to provide for the protection and management of all the biotic components and abiotic conditions that may be present in a forested area designated to be preserved regardless of the successional stage.

12-0404.2 Pre-development Forested Area Condition. Forested areas that are designated for preservation ideally are comprised of healthy, functional native plant communities. However, virtually all tree canopy in Fairfax County has been generated on land previously used for a wide variety of uses. Former uses often leave debris scattered throughout regenerated forest stands. In addition to debris, soil profiles that have been disturbed by former uses often facilitate the growth and spread of invasive and noxious plants.

12-0404.2A For the reasons stated above, forested areas designated to be preserved should not contain human health and safety risks such as: hazardous trees; open post holes; containers of toxic materials; hunting stands and tree forts; abandoned cars; protruding wires and metal objects; and noxious plants such as poison ivy that occur in high densities.

12-0404.2B Forested areas should not contain invasive plant species at levels that endanger the long-term ecological functionality, health, and regenerative capacity of any native plant communities that are present.

12-0404.2C If risks to human health and safety or invasive plants exist in forested areas to be preserved, then tree preservation plans and narratives shall address how hazardous conditions will be eliminated and how invasive plants will be managed. Efforts to eliminate hazards and manage invasive plants shall be implemented in a careful manner that minimizes disruption to the vegetation and soil conditions present in preservation areas. The Director may allow human health and safety risks of a minor nature or minor levels of invasive plants to remain within forested areas if it is anticipated that associated removal or management practices would result in substantial ecologic or environmental damage or if removal of vegetation is prohibited under existing or proposed easements.

12-0404.3 Post-development Forested Area Condition. Individual trees and forested areas designated to be preserved shall be protected and managed during all phases of demolition, clearing and grading, and construction.

12-0404.3A Forested areas shall survive construction in a manner that preserves the ecological functionality, health, and condition of any super- and sub-canopy tree species; woody shrubs, herbaceous plants, vines, non-vascular plants, and epiphytes; decaying leaf litter, root mass, fungi, soil biota, and soil conditions that are present at time of plan submission.

12-0404.4 Post-Development Forested Area Size and Dimension Standard for 10-year Tree Canopy Credits. In order to ensure long-term survival and regenerative capacity of forest communities ~~within new developments~~, forested areas intended to ~~contribute count~~ towards the 10-year tree canopy requirement ~~for the site~~ shall meet minimum size and area requirements described in Table 12.1, ~~for any of the additional preservation credits identified in § 12-0509.3B~~

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~~to be applied.~~ Forested areas consisting of sizes or dimensions smaller than these minimal standards ~~may shall not~~ count towards meeting 10-year tree canopy requirements; however, these areas shall not be eligible for the default canopy credit multiplier of 1.25 or any of the additional canopy credit multipliers listed in § 12-0510.3B. The following area and width specifications are measurements of the ground surface area of preservation areas.

Table 12.1 Minimum Forested Area Size and Dimension

Successional Stage	Minimum Area Size		Minimum feet	Width meters
	ft ²	m ²		
Early Successional Forest Community	3,000 <u>2,178</u>	202.3 <u>278.7</u>	10	3.0
Sub-Climax	7,000 <u>4,356</u>	404.7 <u>650.3</u>	20 <u>25</u>	6.1 <u>7.6</u>
Long-term Sub-climax and Climax	10,000	929.0	35	10.7

Note: The above minimum sizes and dimensions are intended to be applied to the surface area of the undisturbed portions of tree preservation areas

12-0404.4A The Director may allow for deviations from the minimum forested area size and dimension standards listed in Table 12.1 for the preservation of individual trees or stands of trees that have not developed in a forested setting; ~~and,~~ where areas smaller than minimal standards will be preserved adjacent to existing forest areas located on adjoining property that are currently protected by means of open space dedication or by means of a deed restriction such as a conservation easement; or, where it can be demonstrated that additional treatments or practices will be implemented to ensure the long-term survival of the tree canopy in such areas.

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12-0500 TREE CONSERVATION PLAN REQUIREMENTS

12-0500.1 Conservation Plan. Section 104-1-2 of the Code states that a conservation plan is required of anyone engaging in land disturbing activities in the County.

12-0500.1A Tree Conservation Plan. A Tree Conservation Plan shall be required when ~~land disturbing activity requiring a conservation plan involves the removal, preservation, or replacement of trees or forested areas.~~ land disturbance requiring a conservation plan also involves one or more of the following scenarios.

12-0500.1A(1) Land disturbance has potential to destroy or degrade onsite trees or trees located on adjacent property, including trees designated for preservation through the provisions of Chapter 120 of the Code.

12-0500.1A(2) Development sites are required to preserve or plant trees to meet 10-year tree canopy requirements of Chapter 122 of the Code, or to meet related provisions of Chapters 101, 104, and 112 of the Code.

12-0500.1A(3) Development sites are required to preserve or plant trees and/or other plant materials and landscape features in order to comply with Parking Lot Landscaping or Transitional Screening and Barrier Requirements of Article 13 of the Zoning Ordinance; or to comply with tree or landscaping requirements of proffered conditions; development plans, conceptual/final development plans, PRC plans, special permits, special exceptions or variance approvals.

12-0500.1A(4) Development sites are required to restore forested areas within an Resource Protection Area as required by Chapter 118 of the Code and as further defined by § 12-0516.4.

12-0500.1A(5) Development sites are required to replant trees or vegetation in accordance with the provisions of § 12-0516; or, are required to address violations issued for land disturbing activity involving the removal of trees without an approved plan in accordance with Chapter 104 of the Code and as further defined by § 12-0516.5.

~~12-0500.1A(1)2~~ Tree Conservation Plans shall be submitted as part of all preliminary subdivision plats, construction plans, grading plans, and rough grading plans as required by Chapter 101 (Subdivision Provisions) of the Code.

~~12-0500.1A(2)3~~ Tree Conservation Plans shall be submitted as part of all site plans as required by Article 17 of the Zoning Ordinance.

~~12-0500.1A(3)4~~ Tree Conservation Plans shall be submitted as part of all grading plans for Building Permits on existing lots that are not within a subdivision currently bonded with the

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County and parcels with lots of 5 acres (2.0 hectares) or more as required by Chapter 104 (Erosion and Sedimentation Control) of the Code.

12-0500.25 A site plan, preliminary subdivision plat, subdivision construction plan, grading plan, or rough grading plan approved by the Director and meeting the requirements contained herein shall constitute an approved Tree Conservation Plan.

12-0501 ~~Required~~General Tree Conservation Plan Submission Requirements~~Elements~~

12-0501.1 ~~Except as may be modified by 12-0503, all Tree Conservation Plans shall address the~~ The following plan ~~submission requirements~~elements shall be included in all Tree Conservation Plans.

12-0501.1A Site Engineering and Layout Information. In addition to plan information that is specific to tree conservation, Tree Conservation Plans shall contain all proposed engineering and layout information needed to conduct a thorough review of proposed tree preservation, tree planting and landscaping requirements. This information will match the information provided in the associated site plan, preliminary subdivision plat, subdivision construction plan, grading plan, or rough grading plan.

12-0501.1B Existing Vegetation Map. Information about the general composition and extent of existing vegetation shall be provided in accordance with § 12-05056. ~~Please note that~~Certain zoning applications may require the submission of an Existing Vegetation Map.

12-0501.1C Tree Preservation Target Calculations and Narrative. Tree Conservation Plans shall contain calculations and a statement of compliance with or a proposed deviation from the Tree Preservation Target requirements of the Chapter 122 of the Code and § 12-05078. Tree Conservation Plans that include requests to deviate from the Tree Preservation Target shall provide a narrative containing all the information and documentation as provided in § 12-05078.

12-0501.1D 10-year Tree Canopy Requirements and Calculations. Any Tree Conservation Plan that must address 10-year Tree Canopy Requirements of the Chapter 122 of the Code shall provide 10-year tree canopy calculations. Guidance on preparing the calculations is provided in § 12-05101.

12-0502 ~~Provisional~~Additional Tree Conservation Plan ~~Elements~~Submission Requirements

12-0502.1 The following information may need to be included in Tree Conservation Plans if warranted by site-specific conditions or to satisfy additional requirements identified ~~by the~~in preparing the required Tree Conservation Plan to meet the General Submission Requirements ~~elements~~ described in § 12-0501.

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12-0502.1A Tree Inventory and Condition Analysis. Plans that involve removal and/or preservation of existing trees shall provide tree inventory and condition analysis information in accordance with § 12-05067.

12-0502.1B Plans that involve tree preservation shall provide a tree preservation plan and narrative as provided in § 12-05089.

12-0502.1C Tree Banking and Tree Fund. Plans requesting relief from providing onsite 10-year Tree Canopy Requirements shall provide all documentation, information, and plans in accordance with § 12-05142.

12-0502.1D Modifications to 10-year Tree Canopy Requirements. Plans involving a request to modify 10-year Tree Canopy Requirements as provided by the Chapter 122 of the Code shall provide all information, plan elements and documents that may be required by the Director to review the request for modification as part of the first submission of plans as further described in § 12-05123.

12-0502.1E Interior Parking Lot Landscaping Requirements. All plans providing a parking lot with 20 or more spaces shall provide interior parking lot landscaping information, calculations, and graphic elements in accordance with § 12-05134.

12-0502.1F Landscape Plan. Plans providing tree planting or other landscaping treatments to satisfy 10-year Tree Canopy Requirements; Parking Lot Landscaping or Transitional Screening and Barrier Requirements of Article 13 of the Zoning Ordinance; proffered conditions; or development plan, conceptual/final development plan, PRC plan, special permit, special exceptions or variance approvals shall provide a landscape plan in accordance with § 12-05145.

12-0502.1G Requirements and Specifications for Replacement Trees. The Director may require that trees located in areas shown to be preserved on an approved Tree Conservation Plan be replaced if removed without prior permission from the Director or if so damaged as to require removal. A revision to the approved Tree Conservation Plan shall be submitted for the approval of the Director showing the extents of overclearing, proposed new limits of clearing, locations of trees to be removed, the location of replacement trees or seedlings and other information as required by § 12-05156.

12-0502.1H A Forest Management Plan shall be submitted for approval by the Director when the State Forester is required to be notified of a timber harvesting operation. The operation shall be conducted pursuant to an approved forest management plan. Such plan shall be prepared in accordance with § 12-05167.

12-0503 Modifications to Tree Conservation Plan Submission Requirements

12-0503.1 Plan Submission Requirements for minor land disturbing activities and Public Improvement Plans. Grading plans associated with additions to existing residential structures;

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grading plans associated with the construction of residential accessory uses; demolition plans; grading plans associated with tear downs and rebuilds on existing foundations, minor site plans and public improvement plans for trails, sidewalks, sanitary and stormwater pipes installation, or other development scenarios that present a minor threat to existing tree resources, or other public improvement projects of a linear nature are not required to include an Existing Vegetation Map, Tree Preservation Target Calculations and Narrative, 10-year Tree Canopy Calculations, Tree Inventory and Condition Analysis, and Tree preservation plan and narrative.

~~12-0503.3.1A~~ 12-0503.1A All minor land development scenarios and public improvement plans of a linear nature shall address applicable submission requirements of §12-0504 and §12-0505. At a minimum these plans shall take reasonable steps to maximize the preservation of existing vegetation by addressing basic tree preservation plan elements and measures that include: minimizing soil disturbance to only that necessary to construct the project; providing proposed limits of clearing; providing an accurate treeline; and providing tree protection devices at the limits of clearing.

12-0503.2 Plan Submission requirements for Preliminary Plans. Preliminary Plans shall provide an Existing Vegetation Map prepared in accordance with § 12-0506, Tree Preservation Target Calculations and Statement prepared in accordance with § 12-0508, and 10-year Tree Canopy Calculations. The Tree Preservation Target and 10-year Tree Canopy Calculations shall be prepared in accordance with § 12-0511 based on an estimate of the ultimate clearing needed to facilitate the final development of lots and associated improvements and infrastructure.

12-0503.2A Preliminary Plans shall address the tree inventory and condition analysis requirements of § 12-0507 based on an estimate of the ultimate clearing needed to facilitate the final development of lots and associated improvements and infrastructure. However, these plans shall not be required to identify dead trees or hazardous tree conditions, or to address the management of human safety risks or invasive plant species as otherwise required by § 12-0509.3C and D.

12-0503.3 The Director may allow a modification of the tree inventory and condition analysis submission requirements of ~~§12-0507~~ ~~12-0508~~ if plans clearly meet or exceed the minimum level of tree preservation identified by the Tree Preservation Target provisions of § 12-0508. In these cases, the Director may allow modifications to the tree inventory and condition analysis if it is determined that the proposed tree preservation efforts are realistic and reasonably expected to conform to the post development standards for trees and forested areas provided in §§ 12-0403 and 12-0404. Plans qualifying for a modification of the inventory and condition analysis will at a minimum be required to provide the basic tree preservation plan requirements elements identified in § 12-0501 and § 12-0502 ~~12-0504~~ and ~~§ 12-0505~~, to identify offsite trees, any trees protected by Chapter 120 of Code and any Champion trees as provided in § 12-0507.

12-0503.4 If the Director determines that significant tree resources or forested areas are threatened by any of the plan types and/or development scenarios identified in § 12-0503.1,

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12-0503.2 or 12-0503.3 then the Director may require any or all of the Tree Conservation Plan submission requirements of § 12-0500 to be addressed.

~~12-0503~~12-0504 Site Engineering and Layout Information

~~12-0503~~12-0504.1 Site engineering and layout information required for the review of tree conservation and landscaping requirements of this Chapter shall include, but ~~are~~is not limited to, proposed site layout and building footprints; proposed and existing property lines, lots and parcels; minimum yard setbacks and building envelopes; location of proposed and existing conservation and utility easements; the location of RPA and floodplain boundaries; the locations of existing and proposed streets, access roads, driveways, pipestem drives, paths, and sidewalks; the location of existing and proposed underground and overhead utilities; the location of proposed stormwater management and best management practices facilities, including outfalls; proposed changes to topography; the location and type of erosion and sediment controls; and the location of retaining walls.

~~12-0503~~12-0504.1A The existing tree line must be accurately and clearly shown and labeled so that it is understood where the existing trees are located. This delineation shall include groups of trees and individual trees standing apart from any forested areas.

~~12-0503~~12-0504.1B The limits of clearing shall be shown for all items listed in the definition of “limits of clearing” (see § 13-0300) for both onsite and offsite construction. The limits shall encompass only the proposed area of construction associated with the plan, be clearly labeled, and shall not include any unnecessary clearing.

~~12-0503.1B~~ 12-0504.1C Other information. Other information shall be furnished as deemed necessary by the Director to conduct a thorough review of the tree conservation requirements of this chapter.

12-05045 Erosion and Sediment Control Plan Sheets

12-05045.1 The limits of clearing shown on the Phase I and II Erosion and Sediment Control Plan sheets shall match the limits shown on all other sheets in the plan set (also see §§ 11-0103 and 11-0104).

12-05045.1A All erosion and sediment control and tree protection measures shall be shown on the Erosion and Sediment Control Plan sheets. Tree protection measures for trees and vegetation to be retained shall also be shown on the demolition plan sheet, if provided.

12-05045.1B All erosion and sediment controls and tree protection devices shall be placed within the area to be disturbed and may not be located in areas shown to remain undisturbed. Tree protection fencing shall be provided at the limits of clearing wherever other control devices are not shown (see Plate 6-12(6M-12)).

12-05045.1C Temporary sediment basins should be designed to use the natural land forms to minimize grading and vegetation removal. If the construction of sediment basins requires the clearing of trees, replacement trees as specified in § 12-0516 ~~12-0515~~ shall be required by the Director so that the area is restored to a natural condition when the basin is removed.

12-05045.2 Other information. Other information shall be furnished as deemed necessary by the Director to conduct a thorough review of the tree conservation requirements of this ~~Chapter~~Section.

12-05056 Existing Vegetation-Maps

12-05056.1 ~~Except as modified by § 12-0503, All~~ plans requiring a Tree Conservation Plan shall provide a map depicting the location of any of the ~~eighteen~~ cover types defined in Table 12.2 that occur on the development site. This map shall be labeled as the “Existing Vegetation Map” and shall accurately delineate all areas of the cover types defined in Table 12.2 that measure 500 square feet (46.5 square meters) or greater in size.

12-05056.1A The existing vegetation map shall accurately depict the location of the ~~outer canopy edgedripline of existing tree canopy as formed by~~ individual freestanding trees and forested areas at time of plan submission, and shall identify the percentage of the development site covered by tree canopy comprised of self-supporting tree and woody plants that exceed five (5) feet (1.5 meters) in height at time of plan submission. This information will be used for purposes of determining the Tree Preservation Target requirement of § 12-05078. Note: the driplines of individual trees that are growing within forested areas do not need to be depicted.

12-05056.1B The existing vegetation map shall identify the location and ~~outer~~-dripline of any “Heritage,” “Specimen,” “Memorial” or “Street” tree that has been designated for preservation through the provisions of Chapter 120 of the Code that is located on the development site or on

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adjacent property that has potential to be impacted by any onsite or offsite construction activity associated with the proposed development.

12-05056.1C The map shall provide a statement regarding the successional stage of the vegetation, a list of the primary tree species, and a statement regarding the general health and condition of the vegetation.

Table 12.2 Existing Vegetation Map Cover Types	
The following vegetation and land use cover types shall be provided on Existing Vegetation Maps	
(1) Open Field	no trees present; <u>low shrubs, herbaceous meadow or other non-forest or non-woodland plant community</u>
(2) Upland Forest	upland hardwoods: oak, hickory and yellow-poplar upland softwoods: Virginia pine
(3) Early Successional Forest Community	areas of early successional tree canopy dominated by juvenile pioneer species such as Virginia pine, red cedar, tulip poplar, black locust, box elder, sweetgum, black willow, ailanthus, etc. These areas may also contain significant levels of turfgrass and other herbaceous plant materials
(4) Agricultural Land	land currently in use or recently used for agriculture or plant nurseries, as defined in the Zoning Ordinance, except for the growing of trees for sale
(5) Developed Land	areas of constructed features including buildings, parking and roadways
(6) Maintained Grasslands	grassed and landscaped areas, athletic fields or other green areas devoid of natural vegetation
(7) Bottomland Forest	river birch, sycamore, yellow poplar, sweet gum, green ash
(8) Unique or Endangered Forest Community	Use the National Vegetation Classification System (USNVCS) to describe. Include USNVCS Unique Identification Number, USNVCS Name, Global Status and if available, the Rounded Global Status. Example: USNVCS ID: CEG006216 USNVCS Name: Quercus alba - Carya glabra - Fraxinus americana / Cercis canadensis / Muhlenbergia sobolifera - Elymus hystrix Forest Global Status: G3. Rounded Global Status: G3 – Vulnerable
(9) <u>Landscaped tree canopy</u>	<u>tree canopy established through the planting of nursery stock trees that is not part of a natural forest community</u>
(10) <u>Miscellaneous</u>	<u>Areas that do not match the previous cover types. Provide brief description of these areas on the Existing Vegetation Map.</u>

12-05067 Tree Inventory and Condition Analysis

12-05067.1 Tree Inventory. All plans requiring the submission of a Tree Preservation Plan and narrative as required by § 12-0509 shall be required to show the accurate trunk location and common name of all trees with trunks ~~8-12~~ inches (203305 millimeters) or greater in diameter located within 25 feet (7.6 meters) of the proposed limits of clearing within the undisturbed area.

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and within 10 feet (3.0 meters) of the limits of clearing in the disturbed area, including areas on both sides of the limits of clearing (see Plate 1A-12(1AM-12)). Trees less than 12 in diameter (305 millimeters) may be required to be addressed as part of these requirements if the Director determines the trees to have significant ecological, cultural or environmental significance.

12-05067.1A The diameter of all trees shall be measured at a height of 4.5 feet (1.4 meters) from the base of the trunk or as otherwise allowed in the latest edition of the Guide for Plant Appraisal, published by the International Society of Arboriculture.

12-05067.1B Dead trees. Dead trees measuring ~~8~~12 inches (~~203~~305 millimeters) or greater in diameter that are located on the proposed development site at a distance of ~~10~~50 feet (~~45.7~~30.5 meters) or less outside of the proposed limits of clearing within the proposed undisturbed area ~~shall~~ould be identified on the Tree Conservation Plan. In addition, dead trees located ~~25~~10 feet (~~7.6~~3.0 meters) or less from the proposed limits of clearing and within the proposed area of disturbance ~~shall~~ould be identified on Tree Conservation Plans. Dead trees ~~will~~should be labeled as “Assessed as dDead –To be removed” (see Plate 1B-12(1BM-12)). These trees will be considered for removal or other arboricultural treatments during land clearing operations as further provided in § 12-0701.3

12-05067.2 Poor Condition Analysis. ~~T~~All trees measuring 12 inches (305 millimeters) or greater in diameter that do not meet standards for structural integrity and health identified in §§ 12-0403.2A and 12-0403.2B and located on the proposed development site within ~~150~~25 feet (~~45.7~~7.6 meters) of the proposed limits of clearing or within the proposed undisturbed area shall be labeled on Tree Conservation Plans as “Poor Condition.” In addition, any tree that is located ~~25~~10 feet (~~7.6~~3.0 meters) or less from the proposed limits of clearing and within the proposed area of disturbance that does not meet standards for structural integrity and health identified in §§ 12-0403.2A and 12-0403.2B ~~shall~~ould be labeled on Tree Conservation Plans as “Assessed in Poor Condition.” These trees will be considered for removal or other arboricultural treatments during land clearing operations as further provided in § 12-0701.3.

12-0507.2A(1) Application. The Poor Condition analysis does not require trees that are in the fair to excellent condition range to be labeled as such on plans. Unless otherwise required by proffered conditions; development plans, conceptual/final development plans, PRC plans, special permits, special exceptions, or variance approvals; only those trees meeting the definition of Poor Condition defined in §12-0507.2A(2) must be labeled.

12-05067.2A(2) Definition. Trees in “Poor Condition” are trees whose roots, trunk, scaffold branches, small branches and twigs, foliage and buds have been evaluated and documented through field observation using the guidance for determining the “Condition” factor for plant appraisal methodologies provided in the latest edition of the Guide for Plant Appraisal, published by the International Society of Arboriculture, and rated 40 percent or less on a scale of 0 to 100 percent, 0 percent representing a dead tree and 100 percent representing a tree in perfect health and structural condition.

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12-05067.2B Hazardous Trees Conditions. Any tree ~~(or portions thereof) measuring 8 inches (203 millimeters) or greater in diameter or portion of a tree~~ located on the proposed development site within ~~1050 feet (45.730.5 meters)~~ of the proposed limits of clearing within the proposed undisturbed area, or located ~~2510 feet (7.63.0 meters)~~ or less from the proposed limits of clearing and within the proposed area of disturbance that represents a ~~significant risk~~potential hazard to human ~~safety, health and property shall~~ould be labeled as ~~“Assessed as Potential Hazardous—To be considered for removal”~~ on the Tree Conservation Plan (see Plate 1B-12(1BM-12)). These trees will be considered for removal or other arboricultural treatments during land clearing operations as further provided in § 12-0701.3.

12-05067.2C Offsite Trees. A tree inventory and poor condition analysis shall be required for trees located on offsite properties that are ~~812 inches (203305 millimeters)~~ and greater in diameter located within 25 feet (7.6 meters) of the ~~approved-proposed~~ limits of clearing, ~~including areas on both sides of the limits of clearing~~. The location, diameter and ~~poor condition~~ rating of offsite trees may be estimated in the event that the adjacent property owner(s) ~~will~~has not granted permission to access their property. In these cases, the location and diameter measurements shall be noted as “location and diameter estimated;”; and, if a tree is suspected to be ~~is addressed to be~~ in poor condition from a remote visual assessment, then this shall be noted as “suspected as in poor condition-assessed visually from proposed development site” on the ~~tree preservation~~ plan. All reasonable efforts shall be made to lessen the impact of onsite construction activities on offsite trees (see Plate 1A-12(1AM-12)).

12-05067.2D Critical Root Zones. Trees ~~812 inches (203305 millimeters)~~ and greater in diameter located within 25 feet (7.6 meters) of the proposed limits of clearing within the undisturbed area and within 10 feet of the limits of clearing in the disturbed area, ~~including areas on both sides of the limits of clearing~~, shall have their estimated critical root zone delineated on Tree Conservation Plans. Critical root zones shall be determined using the formula found in Plate 2-12(2M-12).

12-05067.2E Tree Conservation Plans shall identify all “Heritage,” “Specimen,” “Memorial” or “Street” trees officially designated for preservation through the provisions of Chapter 120 of the Code that are located on the development site or on adjacent property that have potential to be impacted by any onsite or offsite construction activity associated with the proposed development. The tree preservation plan sheets shall identify such trees by common name; category of designation; trunk location; trunk diameter at 4.5 feet (1.4 meters); dripline (see Plate 2-12(2M-12)); estimated critical root zone (see Plate 2-12(2M-12)); and the location of any easement established for the tree’s protection and access.

12-05067.2E(1) All trees designated for preservation through the provisions of Chapter 120 of the Code shall be protected during construction. No construction activities shall be allowed within the critical root zones of these trees except as may be allowed by Article 5 of Chapter 120 of the Code. Tree preservation narratives shall address how these trees shall be protected throughout all phases of construction.

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12-05067.2F Tree Conservation Plans shall identify “Champion or Co-champion” trees located on the development site or on adjacent property that have been recorded on the Fairfax County, Virginia State ~~and~~or National Big Tree Registry. The tree preservation plan sheets shall identify such trees by common name; trunk location; trunk diameter at a height of 4.5 feet (1.4 meters); dripline, ~~and~~or estimated critical root zone. All efforts should be made to preserve these trees. Consideration should be given to preserving such trees for official designation as a “Heritage” or “Specimen” tree through the provisions of Chapter 120 of the Code. Contact the Urban Forest Management Division for information concerning the location of these trees.

12-05067.2G Information provided to satisfy the requirements of this section shall ~~be~~ prepared by a Certified Arborist who has taken and passed the certification examination sponsored by the International Society of Arboriculture and who maintains a valid certification status, or by a Registered Consulting Arborist as designated by the American Society of Consulting Arborists, and shall be overlaid on and match all information required on existing vegetation maps as required by § 12-05056. Tree Conservation Plans that the Director determines not to conform with the standards of § 12-0508 et seq. shall be subject to disapproval. (Note: see also § 12-0508.5B for Certified Arborists or Registered Consulting Arborists to prepare arboricultural documentation for deviations to the Tree Preservation Target)

12-05078 Tree Preservation Target

12-05078.1 Tree Preservation Target Definition. The percentage of the development site covered by all tree canopy (regardless of health or condition) at the time of plan submission shall equate to the minimum portion of the total 10-year tree canopy requirement of the Chapter 122 of the Code that should be met by means of tree preservation. This minimum portion shall be identified in Tree Conservation Plans as the “Tree Preservation Target.”

12-05078.1A In order to meet or exceed the site’s Tree Preservation Target level, all effort shall be made to design and construct development in a manner that is consistent with the preservation design standards provided in § 12-0402.

12-05078.1B Tree canopy that the Director determines does not or will not meet the pre- and post-development condition standards for trees and forested areas as provided in §§ 12-0403 and 12-0404 shall not be included in areas counting towards meeting the Tree Preservation Target.

12-05078.2 Tree Preservation Target Calculations and Statement. The calculations and statements shall be provided along with the 10-year tree canopy calculations as shown in Table 12.3.

Table 12.3 Tree Preservation Target Calculations and Statement		
A	Pre-development area of existing tree canopy (from Existing Vegetation Map) =	
B	Percentage of gross site area covered by existing tree canopy =	

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C	Percentage of 10-year tree canopy required for site (see Table 12.4) =
D	Percentage of the 10-year tree canopy requirement that should be met through tree preservation =
E	Proposed percentage of canopy requirement that will be met through tree preservation =
F	Has the Tree Preservation Target minimum been met?
G	If No for line F, then a request to deviate from the Tree Preservation Target shall be provided on the plan that states one or more of the justifications listed in § 12-0507.3 along with a narrative that provides a site-specific explanation of why the Tree Preservation Target cannot be met. Provide sheet number where deviation request is located.
H	If step G requires a narrative, it shall be prepared in accordance with § 12-0507 <u>8</u> .4
I	Place this information prior to the 10-year Tree Canopy Calculations as per instructions in Table 12.1 <u>20</u> .

12-05078.3 Allowable Deviations to Tree Preservation Target

12-05078.3A Deviations ~~in~~ whole or part from the site's Tree Preservation Target may be requested under the following conditions:

12-05078.3A(1) Meeting the Tree Preservation Target would preclude the development of uses or densities otherwise allowed by the Zoning Ordinance;

12-05078.3A(2) Meeting the ~~tree preservation target~~ Tree Preservation Target would require the preservation of trees that do not meet standards for health and structural condition and other vegetation and risk management requirements of § 12-0400 *et seq.*

12-05078.3A(3) Construction activities could be reasonably expected to impact existing trees or forested areas used to meet the ~~tree preservation target~~ Tree Preservation Target to the extent ~~they~~ they would not likely survive in a healthy and structurally sound manner for a minimum of 10-years in accordance with the post-development standards for trees and forested areas provided in §§ 12-0403 and 12-0404.

12-05078.4 Tree Preservation Target Deviation Request, Review and Documentation Process.

12-05078.4A Tree Preservation Target Narrative. The following procedure will be used to document requests to deviate from the minimum level of tree preservation identified by the ~~site-specific~~ Tree Preservation Target.

12-05078.4A(1) If, in the opinion of the developer, a site cannot meet the Tree Preservation Target due to one or more of the justifications listed in § 12-05078.3A(1) through

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§ 12-05078.3A(3) above, then ~~the developer must incorporate~~ a written request to deviate from the Tree Preservation Target shall be incorporated into the first submission of the plan.

12-05078.4A(2) A request to deviate from the Tree Preservation Target shall take the form of a letter addressed to the Director that provides a basis for the deviation, describes how the deviation is the minimum necessary to afford relief, and describes how the 10-year Tree Canopy Requirements could otherwise be met by means of tree planting, or by means of offsite tree canopy banking or contribution to the tree fund as provided in § 12-05142.

12-05078.4B Review of Request to Deviate from the Tree Preservation Target. If after reviewing the request, the Director determines the basis for the deviation to be premised on necessary site engineering and vegetation management practices and the proposed clearing and grading is the minimum necessary to provide for the proposed use or development of the site, then the Director shall deem the tree preservation level identified in the developer's deviation request to satisfy the minimal portion of the 10-year Tree Canopy Requirements that shall be met through tree preservation. The balance of the 10-year Tree Canopy Requirements shall then be met through the planting of trees.

12-05078.4B(1) If the Director determines that the proposed clearing and grading exceeds the minimum area necessary to provide for the proposed use or development of the site, both the plan and the request for deviation will be disapproved.

12-05078.4B(2) If the Director determines that an alternative site layout or alternative engineering practices could result in increased levels of tree preservation, then the Director may forward such alternatives to the developer in the form of plan review comments.

12-05078.4B(3) Alternative design recommendations shall be based upon accepted land development and vegetation management practices and take into account the relationship between the cost of conservation and the benefits of the trees to be preserved as described in ANSI A300 (Part 5) 2005 Management: Tree, Shrub, and Other Woody Plant Maintenance Standard Practices, Management of Trees and Shrubs during Site Planning, Site Development, and Construction, Annex A, A1.5, Cost Benefits Analysis (or the latest version of this standard).

12-05078.5 Developer Options. The developer shall consider the alternative design recommendations and redesign the plan accordingly, or the developer may elect to satisfy the unmet portion of the preservation threshold through onsite tree planting or through the offsite planting mechanisms identified in § 12-05142.

12-05078.5A If the developer rejects the Director's alternative design, then the developer shall provide the Director with a letter of explanation that addresses why the alternative design was rejected. Subsequent resubmissions of site plans, preliminary plats, subdivision plans, grading plans or rough grading plans containing alterations that could substantially alter or impact previous tree preservation efforts shall be subject to additional tree conservation and limits of clearing review comments.

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12-05078.5B Letters of explanation prepared for purposes of satisfying § 12-05078.5A above shall be prepared and certified by a licensed professional as defined in VA Code Ann § 54.1400. If arboricultural issues are part of the explanation, then the letter shall be signed by a Certified Arborist who has taken and passed the certification examination sponsored by the International Society of Arboriculture and who maintains a valid certification status or by a Registered Consulting Arborist as designated by the American Society of Consulting Arborists.

12-05078.5C If arboricultural issues are the sole subject of the letter of explanation then certification by a licensed professional as defined in VA Code Ann § 54.1400 shall not be required. Letters of explanation shall be incorporated into the approved site plan, subdivision plan, grading plan, or rough grading plan.

12-05089 Tree Preservation Plan and Narrative

12-05089.1 ~~Except as modified by § 12-0503, Any any~~ Tree Conservation Plan ~~that uses incorporating~~ tree preservation to satisfy 10-year Tree Canopy Requirements of Chapter 122 of the Code; to satisfy erosion and sedimentation control purposes relating to Chapter 104 of the Code, or to satisfy proffered conditions, development plans, conceptual/final development plans, PRC plans, special permits, special exceptions, or variance approvals shall provide a tree preservation plan and narrative as part of the Tree Conservation Plan as follows.

12-05089.2 Tree Preservation Plan ~~Elements~~ Submission Requirements

12-05089.2A The tree preservation plan shall accurately delineate individual trees and forested areas that are proposed for preservation, removal or transplanting and shall incorporate tree ~~survey~~ inventory and condition analysis information required by § 12-05067, including information for any trees that are dead, potentially hazardous or in poor condition and the location of critical root zones of trees ~~8~~ 12 inches (~~203~~ 305 millimeters) in diameter and greater and located within 25 feet (7.6 meters) of the proposed limits of clearing, ~~including areas on both sides of the limits of clearing in the undisturbed area and within 10 feet (3.0 meters) of the proposed limits of clearing in the area to be disturbed.~~

12-05089.2B Tree preservation plans shall accurately delineate “Heritage,” “Specimen,” “Memorial,” or “Street” trees in accordance § 12-05067.2DE and “Champion or Co-champion” from “Big Tree” Registries in accordance with § 12-05067.2EF.

12-05089.2C Tree preservation plans shall delineate areas of endangered or unique forest communities that are designated for preservation and used to gain additional canopy credits as provided in § 12-0510.3B(1)(c) ~~12-0509.3B(1)(b)~~.

12-05089.2D Tree preservation, ~~survey~~ inventory, and condition information shall be overlaid on basic site engineering and layout information including the limits of clearing as stated in § 12-05034.

12-05089.2E Tree preservation plans shall show the location and type of tree protection devices that are to be provided in accordance with § 12-0703.1A .

12-05089.2F The information provided on the Tree Conservation Plan shall match and be consistent with the information on all grading plan and erosion and sedimentation control sheets, and all other plans, such as landscaping plans, provided to satisfy Tree Conservation Plan requirements.

12-05089.3 Tree Preservation Narrative ~~Elements~~ Submission Requirements

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12-05089.3A A tree preservation narrative shall accompany tree preservation plan elements to describe specific treatments, practices, specifications, standards and plans that will be used to preserve and manage trees and forested areas as follows.

12-05089.3B The tree preservation narrative shall provide information about the timing and removal of any dead or potentially hazardous trees that may occur within preservation areas.

12-05089.3C The tree preservation narrative ~~shall~~should address how any human health and safety risks will be eliminated from forested areas as required by § 12-0404.2A.

12-05089.3D The tree preservation narrative shall address how invasive plants will be managed in forested areas as may be required by § 12-0404.2B.

12-05089.3E The tree preservation narrative shall contain any applications and/or documentation needed to review a proposal to officially designate a tree as a “Heritage,” “Specimen,” “Memorial,” or “Street” tree in accordance with § 12-050910.3B(2)(a).

12-05089.3F The tree preservation narrative shall address how any “Heritage,” “Specimen,” “Memorial,” or “Street” trees that are located on the development site or located offsite on adjacent property adjacent to the development site will be protected throughout all phases of construction as required by § 12-05067.2D2E(1).

12-05089.3G The tree preservation narrative shall describe how any arboricultural practices or treatments required by proffered conditions, development plans, conceptual/final development plans, PRC plans, special permits, special exceptions or variance approvals shall be timed and implemented.

12-05089.3H The tree preservation narrative shall contain a transplanting plan describing how trees and other plant material shall be selected, transported, treated, and stored if transplanting efforts are required by proffers or development conditions.

12-05089.3I The tree preservation narrative shall provide information, specifications, and graphical details relating to the timing, installation and maintenance of tree protection fencing and signage as provided in § 12-0703.1.

12-05089.3J The tree preservation narrative shall provide information about any work or activity that is proposed within areas to be preserved and shall address how preservation areas shall be managed, protected, and if necessary restored in accordance with § 12-0704.

12-05089.3K The tree preservation narrative shall contain tree inventory, tree condition, tree valuation, and tree bonding information that may be required by proffered conditions, development plans, conceptual/final development plans, PRC plans, special permits, special exceptions or variance approvals. Unless otherwise stated in the approvals listed above, the monetary value of the trees and landscaping shall be determined using the Trunk Formula

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Method contained in the latest edition of the Guide for Plant Appraisal published by the International Society of Arboriculture, and cost figures shall be in conformance with the latest edition of the Mid-Atlantic Tree Species Rating Guide published by the Mid-Atlantic Chapter of the International Society of Arboriculture. The location factor of the Trunk Formula Method shall be based on projected post-development contribution and placements ratings. The site rating component shall be equal to at least 80 percent.

12-05089.4 Other information. Other information shall be furnished as deemed necessary by the Director to conduct a thorough review of the tree preservation requirements of this section.

12-050910 10-year Tree Canopy Requirements

12-050910.1 Chapter 122 of the County Code requires that ~~All~~ all land development requiring the submission of a site plan, preliminary subdivision plat, subdivision construction plan, conservation plan, grading plan, ~~and~~ rough grading plan shall provide for the conservation of trees on the site ~~to the extent~~ such that, after 10 years, minimum tree canopy shall be provided as follows:

Table 12.4 10-year Tree Canopy Requirements	
Use or Zoning District	Percentage of site to be covered by tree canopy in 10 years
Dedicated school, athletic field, <u>non-wooded</u> active recreation area	Ten percent (10%)
Commercial; Industrial; PDC; R-20; R-30; PDH-20; PDH-30; PDH-40; PRM; R-MHP; medium and high-density areas of a PRC District	Ten percent (10%)
R-12; R-16; PDH-12; PDH-16	Fifteen percent (15%)
R-5; R-8; PDH-5; PDH-8	Twenty percent (20%)
R-3; R-4; PDH-3; PDH-4	Twenty-five percent (25%)
R-A; R-P; R-C; R-E; R-1; R-2; PDH-1; PDH-2; and low-density areas of a PRC District	Thirty percent (30%)
Note: In Commercial Revitalization Districts the above requirements shall apply to the extent feasible for expansion or enlargement of existing developments and shall be applicable for redevelopments and new developments. Expansion, enlargement and new development shall be as defined by the Zoning Ordinance.	

12-0510.1A. For purposes of administering the above requirement, Chapter 122 of the County Code provides that land development does not include: construction of additions to existing residential structures; construction of residential accessory structures; demolition of existing residential structures; reconstruction of residential structures on existing foundations; construction associated with minor site plans; construction of trails, sidewalks, sanitary sewers, storm sewers, and other public improvements of a linear nature not included as part of a larger common plan of development; and, other land disturbing activities that present a minor threat to existing tree resources as determined by the Director.

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~~12-0509~~12.2 The tree canopy requirement may be met through the preservation or planting of trees; however, when existing trees meet standards of suitability and when it is feasible to preserve those trees within the framework of permissible uses, densities, design standards, and construction practices, all efforts shall first be made to design and construct the development site in a manner that preserves existing trees before tree planting is allowed to meet any portion of the tree canopy requirement.

~~12-0509~~12.3 Preserving Existing Trees and Forested Areas for 10-year Tree Canopy Credits

~~12-0509~~12.3A Tree canopy credit shall be given to areas comprised of self-supporting and woody plant material exceeding five feet in height at time of plan submission provided that the vegetation also meets standards for health, condition, and suitability as defined in § 12-0400 *et seq.*, and provided the vegetation meets standards established to manage proper levels of biodiversity and the spread of invasive plants, pests and diseases as provided in § ~~12-0509~~12.3C and § ~~12-0509~~12.4C.

~~12-0510~~12.3A(1) Tree canopy credit shall only be given to trees with main trunks located on the site being developed. However, trees with trunks that are bisected by the development site's outer property line may contribute canopy credits if it is reasonable to assume that these jointly owned trees will survive for a minimum of 10 years after plan approval. In these cases, jointly owned trees may only contribute canopy credit for that portion of their canopies that directly overhang the development site.

~~12-0510~~12.3A(2) Portions of tree canopy overhanging the development site that is attached to offsite trees shall not contribute 10-year canopy credits. Where shared property lines bisect dense forest stands and it is not practical or feasible to determine which property the canopy originates from, the extent of onsite canopy areas may be defined by the shared property line.

~~12-0509~~12.3B Additional Canopy Credits for Tree Preservation. The canopy area of trees and forested areas that meet the Tree Condition Standards, Forested Area Condition Standards, and Area Size and Dimension Standards of § 12-0400 *et seq.* shall be calculated using a canopy credit multiplier of 1.25 except as provided in § ~~12-0509~~12.3C below.

~~12-0509~~12.3B(1) An additional canopy credit with a multiplier of 1.5 will be granted in order to encourage the preservation of forest or woodland communities identified in Table 12.5.

~~12-0510.3B(2)~~ 12-0510.3B(1)(a) Areas of existing vegetation proposed to provide 10-year tree canopy credits shall be shaded and labeled on plans to indicate the amount of canopy coverage being claimed. If the use of additional tree canopy credits is proposed, then the plan shall identify the amount of canopy that has been credited to that area, along with the specific canopy multiplier that is being applied. Supporting calculations and canopy credit breakdowns shall be provided as required by § 12-0511.

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Table 12.5 Endangered or Unique Forest Communities

Common Name	USNVCS ID	Translated name	Distribution	Status
Northern hardpan basic oak - hickory forest	CEGL006216	white oak - pignut hickory - white ash / Eastern redbud / rock muhly - bottlebrush grass forest	Found in the Culpeper Basin and western Piedmont foothills of Virginia and Maryland. Known distribution of this community is confined to a six-county area in Northern Virginia and adjacent Maryland	Rounded Global Status: G3 – Vulnerable
fall-line terrace gravel magnolia bog	CEGL006219	blackgum - sweetbay - (pitch pine) / swamp azalea - poison-sumac / bamboo vine woodland	This community is known from a limited area at and just east of the fall line in Fairfax County and others areas of the Mid-Atlantic fall-line zone	Rounded Global Status: G1 - Critically Imperiled
Atlantic upland depression willow oak swamp forest	CEGL007403	willow oak / (greenish-white sedge, greater bladder sedge, cypress swamp sedge) / tree moss forest	Upland depression swamps found in the Piedmont of the Carolinas, Virginia and the Potomac Valley region of Maryland	Rounded Global Status: G2 - Imperiled
ash - swamp blackgum freshwater tidal swamp	CEGL006287	pumpkin ash - swamp blackgum - (green ash) / common winterberry / Halberd-leaf tearthumb forest	This open- to closed-canopy swamp forest occurs on fresh tidal rivers at the upper reaches of tidal influence (and somewhat beyond in some cases) and generally receives diurnal or irregular tidal flooding.	Rounded Global Status: G3 – Vulnerable
*All USNVCS names, ID number, distribution and status data are taken or adopted from: NatureServe Explorer: An online encyclopedia of life [web application] http://www.natureserve.org/explorer . NatureServe. 2008. Version 7.0. NatureServe, Arlington, Virginia.				

~~12-0509.3B(1)(a)~~ 12-0510.3B(1)(b) Additional canopy credits of 1.5 may be granted for the preservation of forest or woodland communities that do not appear in Table 12.5 if the Director determines such communities to provide valuable environmental, ecological and wildlife conservation benefits.

~~12-0509.3B(1)(b)~~ 12-0510.3B(1)(c) For purposes of reviewing proposals to preserve unique or endangered forest communities, these areas shall be delineated and identified on tree preservation plans in accordance with § 12-0509.2C ~~12-0508~~ using community descriptions, names, and nomenclature of the Federal National Vegetation Classification System (FGDCSTD005) or latest version of this standard.

~~12-0509~~10.3B(2) Canopy multipliers ranging between 1.5 to 3.0 may be used when preserving trees intended for designation by the Board as “Heritage,” “Memorial,” “Specimen,” or “Street”

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trees in accordance with the provisions of Chapter 120 (Heritage, Specimen, Memorial and Street Tree Ordinance) of the Code. See Table 12.6 below for specific multipliers. The proposed canopy area multiplier and accurate canopy area must be identified for these trees within the 10-year Tree Canopy Calculations and tree preservation narrative.

Table 12.6 Multipliers for Heritage, Specimen, Memorial and Street Trees		
Category Multiplier	Range	Notes
Heritage	2 to 3	Upper range of multipliers only available for trees protected by a conservation easement.
Specimen	2 to 3	
Memorial	1.5 to 2.5	
Street	1.5 to 2	

~~12-0509~~10.3B(2)(a) The preservation of trees intended for designation as Heritage, Specimen, Memorial, and Street trees shall be implemented to the full satisfaction of the Director. The submission of arboricultural treatments and a tree management plan, the establishment of a conservation easement or other actions that are necessary to ensure the long-term preservation of the trees may be required. An application requesting official designation in one of the four categories must be included in the tree preservation narrative (see § 12-0508~~9~~.3).

~~12-0509~~10.3C Reduced Canopy Credit. Individual trees and forested areas that are comprised of species or communities that are too abundant in the countywide tree population or are especially vulnerable to pest or disease shall receive reduced 10-year tree canopy credits as follows.

~~12-0509~~10.3C(1) In order to encourage proper levels of biodiversity in the countywide tree population and the preservation of valuable upland species, forests, woodlands and wildlife habitat that fall outside of areas designated for protection by Chapter 118 of the Code, and § 2-900 (Floodplain Regulations) of the Zoning Ordinance, areas of tree canopy located within a RPA and 100-year floodplain shall be calculated using a reduced canopy credit multiplier of 1.0.

~~12-0509~~10.3C(1)(a) The Director may allow the application of canopy credit multipliers higher than 1.0 for the preservation of unique or threatened forest communities (see § 12-0509~~10~~.3B(1)) that fall within an RPA or 100-year floodplain.

~~12-0509~~10.3D No Canopy Credit. 10-year tree canopy credit shall not be granted for the canopy areas comprised of or dominated by species that are over-abundant in the countywide tree population, exhibit serious invasive behavior or are especially vulnerable to pest or disease as follows.

~~12-0509~~10.3D(1) Table 12.7 identifies invasive species that shall not be used to meet the 10-year Tree Canopy Requirement ~~under any circumstance.~~

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Table 12.7 Invasive Species	
Species name	Common name
<i>Ailanthus altissima</i>	tree of heaven
<i>Elaeagnus umbellata</i>	autumn olive
<i>Acer platanoides</i>	Norway maple
<i>Albizia julibrissin</i>	Mimosa
<i>Paulownia tomentosa</i>	princess tree
<i>Populus alba</i>	white poplar
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Morus alba</i>	white mulberry
<i>Ulmus pumila</i>	Siberian elm
<i>Pyrus calleryana, all cultivars</i>	Callery pear
<i>Quercus acutissima</i>	sawtooth oak
<i>Broussonetia papyrifera</i>	paper mulberry

12-050910.3D(2) Conditional Canopy Credits. Table 12.8 identifies species that are subject to health-threatening levels of diseases and pests or are prone to developing structural problems and invasive behavior. If preserved, canopy areas comprised of these species shall not be used to meet the 10-year Tree Canopy Requirement. However, certain species may be used to meet 10-year tree canopy requirements if the Director determines that preservation efforts are in alignment with criteria identified in the “Conditions” column of Table 12.8.

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Table 12.8 Species that Cause Problems after Preservation				
<i>Species name</i>	Common Name	Problem	Canopy Credit	Conditions
<i>Acer negundo</i>	box elder	Weak wood. Grows quickly. Rots quickly. Short lived.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure
<i>Acer saccharinum</i>	silver maple	Weak wood. Branch and scaffold failure due to poor branch attachment.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure
<i>Ailanthus altissima</i>	tree of heaven	High failure rate when large. Branch and trunk failure due to internal decay. Highly invasive.	None	
<i>Albizia julibrissin</i>	mimosa	Weak wooded. Susceptible to disease. Short life span.	None	
<i>Catalpa bignonioides</i>	Southern catalpa	Brittle wood. Trunk failure due to internal decay.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure
<i>Catalpa speciosa</i>	Northern catalpa	Brittle wood. Trunk failure due to internal decay.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure
<i>Morus alba</i>	white mulberry	Invasive.	None	
<i>Paulownia tomentosa</i>	princess tree	Weak wood, prolific seeds, invasive.	None	
<i>Pinus virginiana</i>	Virginia pine	Susceptible to wind-throw and structural instability when existing stands are fragmented or exposed by clearing operations.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure and does not pose a high-risk condition
<i>Populus deltoides</i>	Eastern cottonwood	Weak wood and brittle branches.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure
<i>Populus nigra</i> 'Italica'	Lombardy poplar	Weak wood. Susceptible to canker disease.	None	
<i>Pyrus calleryana</i>	All planted varieties, cultivars and naturally seeded or sprouted variants	Highly invasive. Poor branch attachment. Highly susceptible to storm damage. Overuse in Fairfax County.	None	

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	of Callery pear.			
<i>Robinia pseudoacacia</i>	black locust	Branch failure due to decay and poor branch attachment.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure
<i>Salix babylonica</i>	weeping willow	Objectionable root system. Weak wood.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure
<i>Ulmus pumilia</i>	Siberian elm	Branch failure due to decay and poor branch attachment.	Full if prerequisite conditions are met	Full credit if preserved in natural settings away from buildings and infrastructure

12-050910.4 Planting Trees for 10-year Tree Canopy Credit

12-050910.4A Consideration Items. The following elements shall be considered when selecting tree species planted to meet 10-year Tree Canopy Requirements and when selecting tree species planted to meet the Landscaping and Screening Requirements of Article 13 of the Zoning Ordinance.

12-050910.4A(1) Ultimate Tree Size. The mature height and spread of trees shall be considered to ensure that they will not interfere with proposed structures and overhead or underground utilities. Root development shall be considered to ensure that tree placement will not cause interference with walls, walks, drives, patios, and other paved surfaces or affect water and sewer lines, septic systems, underground drainage systems, or dam embankments.

12-050910.4A(2) Site Conditions. The existing and proposed use(s) and condition(s) of the developed area, as well as the existing and future availability of light and water, shall be considered prior to plant selection. Trees which exhibit a tolerance to air pollution should be selected if a large amount of air pollution will be present. Trees which are suitable for buffering or screening should be selected where noise or objectionable views are anticipated problems. Generally, evergreens provide better buffering and screening than deciduous trees. Trees should be selected which can tolerate de-icing salts if there is a chance these will be used in close proximity.

12-050910.4A(3) Life Span. Preference should be given to trees with long life spans.

12-050910.4A(4) Resistance to Disease and Insects. Trees that are known to be resistant to attacks by disease or insects should be given preference over those known to be susceptible.

12-050910.4A(5) Tree Benefits. In order to encourage the establishment of tree canopy that provides enhanced levels of environmental, ecological and social-economic benefits, additional 10-year tree canopy credits shall be provided as defined by § 12-050910.4B below.

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12-050910.4B Opportunities for Additional 10-year Tree Canopy Credits. This section identifies opportunities to receive additional tree canopy credits in exchange for the planting of trees in a manner that will provide specific environmental and ecological benefits, or for the use of species that are native to Fairfax County, or for the use of species that are resistant to diseases, pests, decay and the negative impacts imposed by harsh environmental conditions. Individual trees planted for these purposes shall not receive credit under more than one category of additional canopy credits identified below. Furthermore, additional tree canopy credit may not be applied to trees proposed to satisfy interior parking lot landscaping, peripheral parking lot landscaping, and/or transitional screening requirements, if the Director determines that the application of additional 10-year canopy credits is likely to compromise the ability of the proposed design to fulfill the intent and purpose of Article 13 of the Zoning Ordinance. The appropriate canopy area multiplier and discrete area of canopy associated with trees planted for these purposes shall be clearly identified within the landscape plan plant schedule and 10-year tree canopy calculations.

12-050910.4B(1) Air Quality. A multiplier of 1.5 may be applied to the normal 10-year tree canopy area listed in Table 12.197 for trees that the Director determines to provide air quality benefits. The use of these species in urban areas ~~that~~ are less likely to produce higher levels of reactive volatile organic compounds (primarily isoprene and monoterpenes) that can facilitate the formation of ground-level ozone when these gaseous compounds react with nitrous oxide and other binary compounds of oxygen and nitrogen while in the presence of high ambient air temperatures and sunlight.

12-050910.4B(1)(a) The species listed in the “Air Quality” column of Table 12.197 may receive the additional canopy credits identified in § 12-0509.4B(1) above when planted in the nursery stock sizes listed in Table 12.197 and located in common open space protected in perpetuity by a deed restriction, such as a conservation easement. Other species not listed in the “Air Quality” column of Table 12.197 may be approved if they are determined by the Director to emit lower levels of reactive volatile organic compounds.

12-0510.4B(1)(b) A multiplier of 1.5 may be applied to the species listed in the “Air Quality” column of 12.17 if they are proposed to be planted in a manner that provides significant levels of shade to parking lot surfaces and associated motorized vehicles, and located in planting beds intentionally designed to facilitate root development. These trees may also be used to meet Interior Parking Lot Landscaping requirements of Article 13 of the Zoning Ordinance as further provided in § 12-0514. Other species not listed in the “Air Quality” column of Table 12.17 may be approved if they are determined by the Director to emit low or medium levels of reactive volatile organic compounds.

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Table 12-9 Species for Air Quality Improvements	
Species:	Common Name:
<i>Acer rubrum</i>	red maple
<i>Acer saccharum</i>	sugar maple
<i>Aesculus flava</i>	yellow buckeye
<i>Carya cordiformis</i>	bitternut hickory
<i>Carya glabra</i>	pignut hickory
<i>Carya illinoensis</i>	<u>P</u> ecan
<i>Carya laciniosa</i>	shellbark hickory
<i>Carya ovateovata</i>	shagbark hickory
<i>Carya tomentosa</i>	mockernut hickory
<i>Catalpa speciosa</i>	Northern catalpa
<i>Fagus americana</i> <u>Americana</u>	American beech
<i>Ginkgo biloba</i>	ginkgo (male only)
<i>Liriodendron tulipifera</i>	tulip poplar
<i>Sophora japonica</i>	Japanese pagoda tree
<i>Tilia americana</i> <u>Americana</u>	American linden, basswood
<i>Ulmus americana</i> ‘Independence’	American elm
<i>Ulmus hollandica</i> ‘Groenveldt’	Groenveldt elm
<i>Ulmus parvifolia</i>	Chinese elm
<i>Zelkova serrata</i>	Japanese zelkova

12-050910.4B(2) Energy Conservation. A multiplier of 1.5 times the 10-year tree canopy credit listed in Table 12.197 may be applied to the canopy area of trees planted to achieve reductions in energy use in buildings.

12-050910.4B(2)(a) Selecting Trees for Energy Conservation. Table 12.197 identifies species that may receive credits for energy conservation planting. These species are well suited for this purpose due to their ultimate size, form, canopy density and other criteria. When choosing a planting location for energy conservation, a tree’s form and ultimate size should be considered to minimize maintenance problems and assure healthy, long-term growth and survival. Consult Table 12.197 to determine tree sizes and other species-specific constraints. For example, if the planting area is located 20 feet (6.1 meters) from a building, a Category III tree would be appropriate. If the planting distance from the building is 30 feet (9.1 meters) or greater, a Category IV tree should be considered (see Plate 4-12(4M-12)).

12-050910.4B(2)(b) Locating Trees for Energy Conservation Credits. In Fairfax County, maximum reductions in utility energy usage results when deciduous trees shade the western, southwestern, and northwestern walls and windows of buildings. Trees planted for energy conservation canopy credits must be located 20 to 35 feet (6.1 to 10.7 meters) from the edge of a building and substantially shade its western, southwestern, or northwestern exposure from 2:30 p.m. to 7:30 p.m. from May through September (see Plate 4-12(4M-12)).

12-050910.4B(2)(c) Energy Conservation Landscape Plan Submission Requirements. The landscape plan must clearly label trees which are used for the additional energy conservation and

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heat island reduction canopy credits. The 10-year tree canopy calculations shall identify the discrete specific amount of canopy credits taken for energy conservation and heat island reduction plantings.

12-050910.4B(3) Water Quality. A multiplier of 1.25 times the 10-year tree canopy credit listed in Table 12.197 may be counted toward meeting the 10-year Tree Canopy Requirement for trees planted to improve stormwater runoff quality as provided in § 6-1300 (Retention, Detention, and Low Impact Development Facilities) and further described in: § 6-1307 (Bioretention Filters and Basins); § 6-1308 (Vegetated Swales); § 6-1309 (Tree Box Filters); and, § 6-1311 (Reforestation). Trees planted in connection with Best Management Practices may also apply a multiplier of 1.25.

12-050910.4B(4) Wildlife Benefits. A multiplier of 1.5 times the 10-year tree canopy credit listed in Table 12.197 may be used on the canopy area of native tree species identified in ~~Table 12.10~~ the “Wildlife” column of Table 12.17 planted to provide food, nesting, habitat, and migration opportunities for wildlife that are planted in nursery stock sizes. These canopy credits may also apply to cultivars of native tree species if the Director determines that such a cultivar is capable of providing the same type and extent of wildlife benefit as the species it is derived from.

12-050910.4B(5) Native Trees. A multiplier of 1.5 times the 10-year tree canopy credit listed in Table 12.197 may be applied to the canopy area of native tree species identified in ~~Table 12.10~~ the “Native” column of Table 12.17 that will be planted in nursery stock sizes. For purposes of administering this Chapter, a “native tree species” is defined as a tree species that the Director determines to be indigenous to any of the forest or woodland communities that were likely present in Fairfax County immediately prior to European settlement of Virginia. A letter certifying that all plant material used to gain the additional credits has been propagated from seed or non-genetically modified germoplasm collected within the mid-Atlantic region is required.

Species	Common Name	Notes
<i>Acer negundo</i> —	box elder	See § 12-0509.3D(2)
<i>Acer rubrum</i>	red maple	
<i>Amelanchier arborea</i>	downy serviceberry —	
<i>Amelanchier canadensis</i>	S hadbush	
<i>Asimina triloba</i> —	paw paw	
<i>Betula lenta</i> —	sweet birch	
<i>Betula nigra</i>	river birch	
<i>Carpinus caroliniana</i>	American hornbeam	
<i>Carya glabra</i> —	pignut hickory	
<i>Carya alba</i>	mockernut hickory	a.k.a. <i>Carya tomentosa</i>
<i>Carya cordiformis</i>	bitternut hickory	
<i>Castanea pumila</i>	Allegheny chinkapin	
<i>Celtis occidentalis</i>	common hackberry	
<i>Cercis canadensis</i> Canadensis	Eastern Redbud	
<i>Chionanthus virginicus</i>	Fringetree fringetree	

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<i>Cornus florida</i> —	flowering dogwood	See § 12-0509.4C
<i>Cornus alternifolia</i>	alternate leaf dogwood	
<i>Diospyros virginiana</i>	Persimmonpersimmon	
<i>Fagus grandifolia</i>	American beech	
<i>Hamamelis virginiana</i>	Witchhazelwitchhazel	
<i>Ilex opaca</i>	American holly	
<i>Juniperus virginiana</i>	Eastern red cedar	
<i>Liquidambar styraciflua</i>	Sweetgumsweetgum	See § 12-0509.3D(2) See § 12-0509.4C
<i>Liriodendron tulipifera</i>	tulip poplar	
<i>Magnolia virginiana</i>	sweetbay magnolia	
<i>Nyssa sylvatica</i>	black gum	
<i>Ostrya virginiana</i>	Eastern hophornbeam	
<i>Pinus taeda</i>	loblolly pine	
<i>Pinus virginiana</i>	Virginia pine	See § 12-0509.3D(2)
<i>Pinus echinata</i> ————	short leaf pine	
<i>Pinus rigida</i> ————	pitch pine	
<i>Platanus occidentalis</i>	Sycamoresycamore	
<i>Populus grandidentata</i> —	bigtooth aspen	
<i>Quercus alba</i>	white oak	
<i>Quercus bicolor</i>	swamp white oak	
<i>Quercus falcatafalcate</i>	Southern red oak	
<i>Quercus palustrispalustris</i>	pin oak	See § 12-0509.4C
<i>Quercus phellos</i> ————	willow oak	
<i>Quercus prinus</i> ————	chestnut oak	
<i>Quercus rubra</i> ————	Northern red oak	
<i>Quercus stellata</i> ————	post oak	
<i>Quercus velutina</i> ————	black oak	
<i>Salix nigra</i> ————	black willow	See § 12-0509.3D(2) See § 12-0509.4C
<i>Sassafras albidum</i> ————	sassafras albidum	
<i>Tilia americana</i> ————	American basswood	
<i>Tsuga Canadensiscanadensis</i>	Eastern Canadian hemlock	See § 12-0509.4C
<i>Ulmus rubra</i> ————	slippery elm	

12-050910.4B(6) Use of Improved Cultivars and Varieties. A multiplier of 1.25 times the 10-year tree canopy credit listed in Table 12.197 may be applied to the canopy area of cultivars or varieties that the Director determines to develop desirable growth and structural patterns; resist decay organisms and the development of cavities; show high levels of resistance to disease or insect infestations or exhibit high survival rates in harsh urban environments. These trees must be planted in nursery stock sizes in order to receive addition credits. The suitability of trees to receive these credits shall be determined based on the Director’s evaluation of relevant published peer-review research and the cultivar or variety’s ability to withstand site-specific environmental conditions. (See also the “Improved Cultivar/Variety” column in Table 12.17)

12-050910.4C Species that Can Cause Problems after Planting. 10-year tree canopy credits shall either not be granted, shall be reduced or shall be granted conditionally for planting tree species that the Director has determined to be problematic due to overabundance in the countywide tree population; invasive behavior; a special susceptibility to pests or disease; a predisposition to health and structural problems; a predisposition to causing damages to

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infrastructure; or the potential to cause negative impacts to the environment. Table 12.11-9 identifies these problematic species, the canopy credit multiplier (if any) that may be applied, and the condition(s) that must be met for using the canopy credit multiplier.

Table 12.11-9 Species that Cause Problems after Planting				
Species Com	mon nameName	Problem Canopy	Credit Multiplier	Conditional Credit
<i>Acer platanoides</i>	Norway maple	Invasive seedlings.	None	
<i>Acer saccharinum</i>	silver maple	Brittle wood. Branch and twig failure. Invasive root system. Overuse in Fairfax County.	None	
<i>Acer saccharum</i>	sugar maple	Susceptibility to stress in urban environments.	Conditional 1.0	Full credit if planted away from high heat environments such as parking lots.
<i>Betula papyrifera</i>	white birch	Susceptible to bore insects. Short life span.	None	
<i>Cornus florida</i>	flowering dogwood	Discula anthracnose. (Dogwood Spot Anthracnose).	Conditional 1.0	Full credit if varieties resistant to Discula anthracnose are used.
<i>Cupressocyparis leylandii</i>	leyland cypress	Susceptible to disease. Overuse in Fairfax County.	0.5	Not conditional, but reduced credits
<i>Elaeagnus umbellata</i> <i>umbellata</i>	autumn olive	Highly invasive.	None	
<i>Elaeagnus angustifolia</i>	Russian olive	Invasive.	None	
<i>Fraxinus spp.</i>	ash species	Susceptibility to emerald ash borer.	None	
<i>Ginkgo biloba</i> (female only)	ginkgo Fem	ale plant produces fruits with objectionable odor.	Conditional 1.0	Full credit if male plant is used.
<i>Liquidambar styraciflua</i>	sweetgum	Invasive root system. High VOC emissions.	Conditional 0.5	None if planted near buildings or infrastructure. May receive .25X if planted immediately adjacent to an existing forest/woodland community that contains this species as a major constituent
<i>Morus alba</i>	white mulberry all cultivars	Invasive. No	ne	
<i>Phellodendron amurense</i> (female only)	amur corktree	Prolific, invasive seeds.	Conditional 1.0	May receive full credit if male plant is used.
<i>Pinus strobus</i> <i>strobus</i>	white pine	Brittle wood. Branch and twig failure.	0.5	Not conditional, but reduced credits

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		Susceptibility to disease and environmental stress. Overuse in Fairfax County.		
<i>Populus alba</i>	white poplar	Invasive root system	None	
<i>Populus deltoides</i>	Eastern cottonwood	Brittle wood. Branch and twig failure. Invasive root system.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credits if planted immediately adjacent to existing forest/woodland communities that contain this species as a constituent
<i>Populus nigra</i> 'Italica'	Lombardy poplar	Susceptibility to disease. Short life span.	None	
<i>Pyrus calleryana</i>	all varieties and cultivars of Callery pear.	Poor branch attachment. Highly susceptible to storm damage. Invasive. Overuse in Fairfax County.	None	
<i>Quercus palustris</i>	pin oak	Invasive root system. Susceptibility to stress in urban environments with low soil pH.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credit if planted immediately adjacent to existing forest/woodland communities that contain this species as a major constituent.
<i>Salix alba</i>	white willow	Weak wood. Grows quickly. Branch and twig failure.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credit if planted immediately adjacent to existing forest/woodland communities that contain this species as a constituent.
<i>Salix nigra</i>	black willow	Weak wood. Grows too quickly. Branch and twig failure.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credit if planted immediately adjacent to existing forest/woodland communities that contain this species as a constituent.
<i>Tsuga canadensis</i> /	Canadian hemlock	Susceptible to Hemlock Woolly Adelgid.	0.5	Not conditional, but reduced credits
<i>Tsuga caroliniana</i> /	Carolina hemlock	Susceptible to Hemlock Woolly Adelgid.	0.5	Not conditional, but reduced credits

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<i>Ulmus americana</i>	American elm	Susceptibility to disease. Root systems can damage nearby infrastructure.	Conditional 1.0	None if planted near buildings or infrastructure. May receive full credit if disease resistant varieties are used and tree is located away from infrastructure

12-050910.4D Use of Seedlings, Woody Shrubs and Woody Seed Mix

12-050910.4D(1) Tree seedlings and, ~~woody shrubs and woody seed mix~~ may be used to meet tree canopy requirements in common open space and on individual lots within the R-2, R-1, R-C, and R-E zoning districts. The ground surface area of tree seedling planting areas shall equate to the 10-year canopy credit area. ~~The ground surface area shall not be eligible for any of the additional tree canopy credits offered in § 12-0509.4B.~~

12-050910.4D(1)(a) Native ~~woody shrubs and native woody seed mix~~ may be used to supplement tree seedlings as long as these treatments do not exceed 33 percent of the overall planting area. The number of a single species may not exceed 10 percent of the overall number of seedlings planted to meet these provisions. Plant material used to satisfy these requirements shall not contain any of the problematic trees species list in Table 12.44-9 unless approved by the Director.

12-050910.4D(1)(b) All plant materials used to satisfy these requirements shall be comprised of native species and shall be planted in densities that equate to 400 plants per acre (10 plants per 100 square meters); ~~however the Director may approve different densities for woody seed mix depending its composition and method of delivery.~~

12-050910.4D(2) Beds for Seedlings, and Shrubs~~and Woody Seed Mix Beds~~

12-050910.4D(2)(a) A continuous mulch bed shall be provided for the entire surface area that provides 10-year tree canopy credit. Tilling and soil amendments are required to relieve compaction in planting beds and restore soil function in previously compacted soils in accordance with § 12-0705.5F(1).

12-050910.4D(2)(b) The mulch bed shall consist of a minimum of 2 inches (5.1 centimeters) of organic mulch that shall be placed on the topsoil layer at final grade. Mulch shall consist of wood chips, bark chips, or shredded bark that has been aged for a minimum of 4 months. Mulch beds must be ~~keep~~kept free of any grass, weeds, vines, and any other plant or condition that might hinder the establishment of the tree canopy.

12-050910.4D(3) Mortality Rates and ~~Plan~~-Replacement Procedures. Planting of tree seedlings, and woody shrubs, ~~and woody seed mix~~ must be well established prior to release of the conservation deposit. The conservation deposit will be held for a minimum of two years after the initial installation of the plantings in accordance with § 12-0705.87.

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12-050910.4E Standards for Tree Location

12-050910.4E(1) Tree canopy credit shall be given to trees that are preserved or planted on privately owned lots and parcels, common open space, dedicated open space and on public property provided that the tree canopy meets specifications and standards of ~~the~~ § 12-0400.

12-050910.4E(2) Tree canopy credit shall be given to trees planted to meet interior parking lot landscaping, peripheral parking lot landscaping, and transitional screening requirements of Article 13 of the Zoning Ordinance, provided that the trees are planted in accordance with specification and standards of this Chapter.

12-050910.4E(3) Tree canopy credit will not be given to trees preserved or planted on portions of sites that will be dedicated to any purpose or use the Director determines is likely to result in significant levels of tree loss within 10-years of plan approval.

12-050910.4E(4) Tree canopy credit will not be given to trees preserved or planted on portions of sites where the Director determines that activities, maintenance practices, or environmental conditions associated with the use are not likely to support the long term health, structural integrity, safety, and biological, ecological, or environmental functionality of trees and/or forested areas.

12-050910.4E(5) Trees planted to provide all or part of the 10-year Tree Canopy Requirements shall be shown on a landscaping plan in accordance with § 12-05145. These trees shall be planted as per § 12-0705 *et.seq.* with the minimum size planting area provided for each tree according to its projected 10-year tree canopy area as found in Table 12.197. The minimum width of any planting area shall be 8 feet (2.4 meters), measured from the interior of the sides of the restrictive barrier such as curb or pavement. Trees shall be located no closer than 4 feet (1.2 meters) from any restrictive barrier, or as determined appropriate by the Director to facilitate the peripheral parking lot landscaping requirements of Article 13 of the Zoning Ordinance.

12-050910.4E(6) Trees planted to satisfy any requirement of Article 13 of the Zoning Ordinance shall be spaced so that the outer limit of their projected 10-year tree cover area as listed in Table 12.197 does not significantly overlap, or as determined appropriate by the Director. When groups of trees are planted to replicate a natural wooded environment, understory species may be planted closer to overstory species where there is less potential for canopies to conflict. All efforts shall be made to locate or space planted trees in a manner which will promote long-term survival.

12-050910.4E(7) Tree canopy credit may be given to offsite tree canopy as provided in § 12-05124 (Providing 10-year Tree Canopy through Tree Banking and Tree Fund).

12-054011 10-year Tree Canopy Calculations

12-054011 The following method shall be used to calculate the 10-year Tree Canopy Requirements of Chapter 122 (Tree Conservation Ordinance) of the Code.

12-054011.1A Calculate the gross site area in square feet (square meters).

12-054011.1B Subtract the square feet (square meters) of land shown to be dedicated for parkslands, schools, other public uses and street frontage to determine the adjusted gross site area. Areas of proposed interior streets that will be dedicated to VDOT shall not be subtracted. A note describing the areas subtracted shall be provided.

12-054011.1C Areas containing the uses listed in § 12-054011.1C(1) through § 12-054011.1C(6) may be subtracted from the gross site area; however, once subtracted these areas cannot be counted toward meeting the tree canopy requirement. Calculate the sum of all areas identified in § 12-054011.1C(1) through § 12-054011.1C(6) which are clearly shown on the plan. Subtract this sum from the adjusted gross site area and provide a note describing the areas subtracted.

12-054011.1C(1) Lakes and retention ponds, based on the normal water surface elevation, and swimming pools.

12-054011.1C(2) Lands under active commercial production or management of agricultural, horticultural, or forest crops or active use as pasture lands for grazing animals.

12-054011.1C(3) Landfills and quarries.

12-054011.1C(4) Major utility distribution easements 25 feet (7.6 meters) or more in width.

12-054011.1C(5) Absorption fields and seepage pits for onsite sewage disposal systems.

12-054011.1C(6) Floodplains and wetlands.

12-054011.1D Multiply the adjusted gross site area by the percentage of tree canopy area required by the zoning district in Table 12.4

12-054011.1E Calculate the area of tree canopy provided through preservation of existing vegetation. Multiply the area of trees and forested areas to be preserved by any applicable canopy area multiplier as provided in § 12-051009.3B

12-054011.1F Calculate the area provided by proposed landscape trees by obtaining the 10-year tree canopy credit for each tree by using Table 12.197

12-054011.1G Calculate the additional 10-year tree canopy credits (if any) for planting trees for air quality, energy conservation, water quality, etc as described in § 12-050910.4B

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12-054011.1H Calculate the additional 10-year tree canopy credits (if any) for planting seedlings; and woody shrubs, and woody seed mix.

12-054011.1I Total all the credits provided by planted trees.

12-054011.1J Add the 10-year tree canopy credits (existing vegetation plus planted trees) to determine the total proposed tree canopy credit. The total proposed 10-year tree canopy credit must meet or exceed the percentage of 10-year tree canopy area required as provided in § 12-050910.1

12-054011.1J (1) Table 12.120 is provided as a template to facilitate calculating 10-year Tree Canopy Requirements and presenting the calculations in Tree Conservation Plans.

Table 12. 120 10-year Tree Canopy Calculation Worksheet			
Step		Totals	Reference
A. Tree Preservation Target and Statement			
A 1	Place the Tree Preservation Target calculations and statement here preceding the 10-year tree canopy calculations		see § 12-05078.2 for list of required elements and worksheet
B. Tree Canopy Requirement			
B1	Identify gross site area =		§ 12-054011.1A
B2	Subtract area dedicated to parks, road frontage, and		§ 12-054011.1B
B3	Subtract area of exemptions =		§ 12-051011.1C(1) through § 12-054011.1C(6)
B4	Adjusted gross site area (B1 – B2) =		
B5	Identify site’s zoning and/or use		
B6	Percentage of 10-year tree canopy required =		§ 12-50910.1 and Table 12.4
B7	Area of 10-year tree canopy required (B4 x B5 B6) =		
B8	Modification of 10-year Tree Canopy Requirements requested?	Yes	or No
B9	If B8 is yes, then list plan sheet where modification request is located		Sheet number
C. Tree Preservation			
C1	Tree Preservation Target Area =		
C2	Total canopy area meeting standards of § 12-02400 =		
C3	C2 x 1.25 =		§ 12-050910.3B
C4	Total canopy area provided by unique or valuable forest or woodland communities =		
C5	C4 x 1.5 =		§ 12-050910.3B(1)
C6	Total of canopy area provided by “Heritage,” “Memorial,” “Specimen,” or “Street” trees =		
C7	C6 x 1.5 to 3.0 =		§ 12-050910.3B(2)
C8	Canopy area of trees within Resource Protection Areas		

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	and 100-year floodplains =		
C9	C8 x 1.0 =		§ 12-0509 <u>10.3C(1)</u>
C10	Total of C3, C5, C7 and C9 =		If area of C10 is less than B7 <u>then</u> remainder of requirement must be met through tree planting - go to D
D. Tree Planting			
D1	Area of canopy to be met through tree planting (B7-C10) =		
D2	Area of canopy Planted planted for air quality benefits =		
D3	x 1.5 =		§ 12-0509 <u>10.4B(1)</u>
D4	Area of canopy planted for energy conservation =		
D5	x 1.5 =		§ 12-0509 <u>10.4B(2)</u>
D6	Area of canopy planted for water quality benefits =		
D7	x 1.25 =		§ 12-0509 <u>10.4B(3)</u>
D8	Area of canopy planted for wildlife benefits =		
D9	x 1.5 =		§ 12-0509 <u>10.4B(4)</u>
D10	Area of canopy provided by native trees =		
D11	x 1.5 =		§ 12-0509 <u>10.4B(5)</u>
D12	Area of canopy provided by improved cultivars and varieties =		
D13 X	1 x 1.25	§	12-0509 <u>10.4B(6)</u>
D14	Area of canopy provided through tree seedlings =		
x	1.0		§ 12-0509 <u>10.4D(1)</u>
D15	Area of canopy provided through native shrubs or woody seed mix =		§ 12-0509 <u>10.4D(1)(a)</u>
	x1.0		§ 12-0509 <u>10.4D(1)(a)</u>
D16	Percentage of D14 represented by D15=		Must not exceed 33% of D14
D17	Total of canopy area provided through tree planting =		
D18	Is an offsite planting relief requested?		Yes or No
D19	Tree Bank or Tree Fund?		§ 12-0514 <u>2</u>
D20	Canopy area requested to be provided through offsite banking or tree fund		
D21	Amount to be deposited into the Tree Preservation and Planting Fund		
E. Total of 10-year Tree Canopy Provided			
E1	Total of canopy area provided through tree preservation (C10) =		
E2	Total of canopy area provided through tree planting (D17) =		
E3	Total of canopy area provided through offsite mechanism (D19) =		
E4	Total of 10-year Tree Canopy Provided = (E1+E2+E3)		Total of E1 through E3. Area should meet or exceed area <u>required by B67</u>

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~~12-054011.2~~ For subdivision plans showing only the construction of public improvements, 10-year tree canopy requirements shall be calculated based on the development shown plus on an estimate of the clearing necessary for associated with the lot final development of the lots. A schematic depicting the estimated final clearing for all activities shall be shown on the plan. A graphic representation of the estimated tree canopy to be preserved after lot clearing may be requested by the Director if deemed necessary. If the area to be provided by preserved vegetation does not meet or exceed the total percentage of 10-year tree canopy required, then the deficiency shall be provided on the subdivision plan by planting acceptable landscape trees. The 10-year tree canopy calculations for these types of projects shall also project if the Tree Preservation Target requirements of § 12-0508 will be meet.

~~12-054011.3~~ Public Improvement and Linear Projects. For ~~projects plans where~~ that only address the public improvements are to be constructed, such as road or other linear projects associated with a site or subdivision plan, the requirements for 10-year tree canopy shall be deferred until such time as the developments for which the linear projects are being installed are constructed the preparation of the associated site or subdivision plan. The pPlans for the linear these types of projects shall contain the following note: “10-year Tree Canopy Requirements for this project shall be provided with each associated site or subdivision plan, as applicable.” This provision does not exclude the any such plan from having to meeting all other requirements of § 12-0000 et seq. (See § 12-0503 for plan submission requirements for standalone public improvement and linear plans not linked to another site or subdivision plan.)

~~12-054011.4~~ Sections or Phases. When a development is divided into phases or sections, each phase or section shall be treated separately for 10-year Tree Canopy Requirements.

~~12-054011.4(A)~~ In developments that are divided into phases or sections which provide conservation or scenic easements or dedicated open space, tree canopy provided in those areas may be used toward meeting the 10-year Tree Canopy Requirement for the entire development. The remaining 10-year Tree Canopy Requirement shall be met in the individual phases or sections of the development, and cannot be used to meet the requirement for more than one section. In these cases, the calculations showing breakdown of where tree canopy shall be provided in the easements or open space and each section or phase shall be shown on each plan submitted within the development.

~~12-054011.4(B)~~ The following shall be provided on each Tree Conservation Plan for developments which are divided into sections and utilize the provisions of § 12-054011.4(A): a graphic representation of the 10-year tree canopy provided for each section; 10-year tree canopy provided for completed sections; 10-year tree canopy that will be provided for the section under review; and 10-year tree canopy anticipated for each future section. At no time shall the cumulative 10-year tree canopy provided be less than the 10-year tree canopy required by § 12-054011 for the entire development.

~~12-054011.5~~ Non-bonded Plans. On non-bonded grading plans submitted under Chapter 104 of the Code, a request for modification of the 10-year Tree Canopy Requirements may be included

in the tree preservation plan narrative. For all other site and subdivision plans, a modification of the 10-year Tree Canopy Requirements must be requested in a letter to the Director.

12-0512.12 Providing 10-year Tree Canopy through Tree Banking and Tree Fund

12-0512.12.1 Criteria for use. Transfer of onsite 10-year Tree Canopy Requirements through offsite tree banking or through pro rata payment into the Tree Preservation and Planting Fund shall be allowed when the Director determines that one or more of the following criteria apply.

12-0512.12.1A The strict application of the tree canopy requirements would cause irresolvable conflicts with other site development requirements, design standards, or comprehensive planning goals.

12-0512.12.1B Sites or portions of sites lack sufficient space for future tree growth;

12-0512.12.1C Planting spaces will not provide adequate space for healthy root development;

12-0512.12.1D Trees would cause unavoidable conflicts with underground or overhead utilities and;

12-0512.12.1E Trees are likely to cause damage to public infrastructure

~~12-0511.1F Strict provisions of this Part would reduce the usable area of a lot due to lot configuration or size to a point that would preclude a reasonable use of the lot or would otherwise cause an unreasonable hardship to the developer.~~

12-0512.1F Use of off-site tree banking or contribution to the Tree Preservation and Planting Fund is a prerequisite for modifying the 10-year tree canopy percentage requirement as required by the provisions of § 12-0513.4C.

12-0512.2 Tree Banking. For any of the criteria listed in § ~~12-0512.1~~ ~~12-05011.1~~ above the Director may allow an offsite tree canopy bank established by means of tree preservation, reforestation or afforestation to meet onsite canopy requirements as follows.

12-0512.2A All offsite tree banking must provide canopy that is protected in perpetuity through a conservation easement, deed restriction, or a similar protective mechanism acceptable to the Director.

12-0512.2B Existing tree canopy preserved for offsite tree banking shall not occur on property that is already protected by means of other conservation ordinances, regulations, land trust agreements, proffered conditions, development plans, conceptual/final development plans, PRC plans, special permits, special exceptions and variances. However, offsite tree canopy may be provided on property already protected by the means listed above if the canopy is newly-established through a reforestation or afforestation effort.

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12-051112.2C The Director shall require the submission and approval of a five-year tree canopy establishment plan and the collection of funds sufficient to ensure the execution of maintenance and management obligations of such plans.

12-051112.2D All tree banking must be located within Virginia jurisdictions classified as part of the Metropolitan Washington D.C. 8-hour ozone non-attainment area and Planning District 8.

12-051112.3 Tree Preservation and Planting Fund. For any of the criteria listed in § 12-051112.1 above, the Director may allow developers to contribute a pro-rated fee into the County's Tree Preservation and Planting Fund. The County may use this fund directly to preserve or plant trees on public property or may elect to disburse these funds to community-based organizations exempt from taxation under § 501 (c) (3) of the Internal Revenue Code with tree planting or community beautification missions for the purpose of implementing tree planting projects or programs that benefit the community at large.

12-051112.3A Fees collected for these purposes shall be based on the cost to establish 10-year tree canopy cover using ~~two~~2-inch caliper nursery stock tree.

12-051112.3B Pro-rata Tree Canopy Cost. The cost to establish 200 square feet (18.6 square meters) of 10-year tree canopy using 2-inch caliper landscape tree shall be set at ~~five~~three-hundred dollars (\$~~5~~300). ~~This price covers the cost typically associated with purchasing plant material, cost of installation, and cost associated with watering, corrective pruning and removal of any staking and guying during a one-year period,~~

12-051112.3D~~C~~ Any fees collected for these purposes must be spent within a five-year period established by the collection date or the fees will be refunded to the original contributor or legal successor.

12-051213 Modifications to 10-year Tree Canopy Requirements

12-051213.1 The Director may approve ~~the~~a reduction of 10-year Tree Canopy Requirements where development is proposed on property ~~previously used for agriculture or other permitted uses of a similar nature that resulted in the clearing and suppression of tree canopy, or where sites lack significant levels of tree canopy at time of plan submission (i.e. 0 to 5 percent),~~ previously used for agriculture or other permitted uses of a similar nature that suppressed the development of trees and lacks significant levels of tree canopy at time of plan submission (i.e. 0 to 5 percent); or, where ~~the existing~~ tree canopy does not meet pre-development standards listed in § 12-0400 *et seq.* ~~In these cases the 10-year Tree Canopy Requirements may be reduced by up to 25 percent if it is determined by the Director that the proposed design meets the criteria listed below.~~

12-0512.1A ~~Opportunities to use offsite tree banking provisions or contributions to the Tree Preservation and Planting Fund as provided in § 12-0511 have been fully exercised.~~

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12-0513.2 The Director may approve a modification of 10-year Tree Canopy Requirements where strict application of the requirements would reduce the usable area of a lot due to lot configuration or size to a point that would preclude a reasonable use of the lot or would otherwise cause an unreasonable or unnecessary hardship to the developer.

~~12-0512.23~~ 12-0513.23 The Director may approve a modification of the 10-year Tree Canopy Requirements for additions to or modifications of existing structures or uses to the minimum extent necessary so that the requirement would not result in the existing structure or use being unable to meet some other requirement of the Code or the Public Facilities Manual.

12-0513.4 The 10-year Tree Canopy Requirements may be reduced for the scenarios listed in § 12-0513.1 through § 12-0513.3 if it is determined by the Director that the proposed design first meets the criteria listed in §12-0513.4A through 4C below.

~~12-0512.1B~~ 12-0513.4A The site has been ~~intentionally~~-designed to maximize the preservation of existing trees canopy including opportunities to preserve trees for additional 10-year tree canopy credits as provided in § 12-0509.3B. Tree preservation efforts shall be realistic and reasonably expected to conform to the post development standards for trees and forested areas provided in § § 12-0403 and 12-0404. The Director may approve the application of up to two (2) categories of additional canopy credits per planted tree to facilitate modification requests.

~~12-0512.1C~~ The proposed landscape plan maximizes opportunities to gain additional 10-year tree canopy credits for trees planted to provide the environmental and ecological benefits identified in § 12-0509.4B.

12-0513.4B The site has been designed to maximize opportunities to gain additional 10-year tree canopy credits for planting trees that provide the environmental and ecological functionality identified in § 12-0510.4B.

12-0513.4C The application proposes to contribute the pro rata monetary equivalent of 50 percent of the proposed 10-year canopy reduction to the Tree Preservation and Planting Fund as provided in § 12-0512. The pro rata monetary equivalent shall be premised on the cost unit provided in 12-0512.3B.

~~12-0512.35~~ 12-0513.35 The Director may impose conditions to any modification in order to assure that the results of the modification will be in accordance with the purpose and intent of this chapter.

12-0513.14 Interior Parking Lot Landscaping

~~12-0513.14.1~~ Requirement. As stated in Article 13 of the Zoning Ordinance, all parking lots with 20 or more spaces are required to provide interior parking lot landscaping that covers no less than 5 percent of the total area of the parking lot.

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~~12-0513~~14.2 Area to be Counted. The area to be counted as part of the parking lot is defined as the entire surface of the parking lot, loading spaces, drive-thru spaces, the exposed surfaces of parking decks and any paved surface that serves exclusively as access to the parking lot, deck, loading area or drive-thru.

~~12-0513~~14.3 Area to be Credited

~~12-0513~~14.3A Interior parking lot landscaping credit shall be calculated using the area of 10-year tree canopy credit provided in Table 12.197.

~~12-0513~~14.3B Peripheral parking lot landscaping, and trees counted toward meeting the transitional screening requirements may not be used toward meeting interior parking lot landscaping requirements.

~~12-0513~~14.3C Only those deciduous trees that provide shade directly to a portion of the area to be counted shall be credited toward meeting the required five (5) percent interior parking lot landscaping. In order to be counted towards meeting these requirements, a portion of the tree's 10-year tree canopy must overlap the parking lot surface.

~~12-0513~~14.3D A majority of the trees planted or preserved to meet the parking lot landscaping requirement shall be located in the interior portion of the parking area and shall be reasonably dispersed throughout the parking lot. Alternative designs may be approved by the Director.

~~12-0513~~14.3E If existing forest trees are to be used to meet the parking lot landscaping requirement, only that portion of the preservation area located in the interior of, or directly adjacent to, the area to be counted may be credited.

~~12-0513~~14.4 Calculations. To determine the area of interior parking lot landscaping required, (a) multiply the total area to be counted (see § 12-051314.2) by five (5) percent (or by 0.05); (b) calculate the total area of tree canopy to be preserved or planted in locations that will provide direct shade to the surface of the parking lot. The areas credited to landscape trees used to meet the requirements shall be based on the area of 10-year tree canopy cover provided in Table 12.197. The total area of 10-year tree canopy provided in (b) must equal or exceed five (5) percent of the parking lot area as required by (a). A table similar to that shown in Table 12.131 shall be provided on the landscape sheet.

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Table 12.131 Interior Parking Lot Landscaping Calculations

	ft ²	m ²
Area to be Counted =	50,500	4,691
Int. Landscaping Required (5%) =	2,525	235
Total Shade Tree Canopy Provided. (11 trees @ 250 ft ² (23m ²) ea.) =	2,750	255
 Total Area Required =	 2,525	 235
Total Area Provided =	2,750	255

12-0513.5 Graphic Requirements. To receive credit for the trees counted toward meeting the interior parking lot landscaping requirement, the “areas to be counted” as calculated under § 12-0513.2 12-0514.2 shall be shaded and each tree counted toward meeting the requirement shall be marked with a symbol indicating its use as a tree providing shade to the area to be counted. The graphics used to illustrate interior parking lots landscaping do not need to be the same scale as the landscape plan sheet.

12-0513.6 Temporary Parking Lots. When temporary surface parking lots are to be replaced with parking decks in future phases of development, the calculations for interior parking lot landscaping shall be completed separately for the surface parking lot and the permanent parking decks to ensure that when the temporary surface parking lot is removed the requirement will continue to be met. If a combination of permanent surface and decked parking is proposed as the final overall design, calculations shall be provided to demonstrate that the requirement will continue to be met throughout the phased development.

12-0514.15 Landscape Plans

12-0514.15.1 All landscape plans shall provide the following information and plan elements.

12-0514.15.1A Scale. The landscape plan sheets shall be drawn at a scale equal to the site/grading plan sheets.

12-0514.15.1B Legibility. The landscape plan shall be clearly drawn and legible.

12-0514.15.1C Plant Labels. Each plant to be planted shall be accurately located and labeled using the botanical species name or appropriate abbreviation. If symbols are used, they shall be easily discernible and a symbol key shall be provided on the right hand side of each landscape plan sheet.

12-0514.15.1D Tree Canopies. The symbols used to locate trees shall be drawn to scale to accurately represent their projected 10-year tree canopy area. Trees should be spaced so that their 10-year tree canopy areas do not significantly overlap; (see Table 12.197 for projected 10-year tree canopy areas.)

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12-054415.1E Plant Schedule. The landscaping plan shall include a plant schedule which shall include the following (see Table 12.1244).

12-054415.1F Plant name, both botanical and common.

12-054415.1G Quantity of each species used in the plan.

Table 12. 44 12 Sample Plant Schedule (English units used in this example)								
Key	Botanical Name	Common Name	Qty.	Stock Size (height/ caliper)	Stock Type	10-yr Tree Canopy ft ²	Tree Canopy Sub-total ft ²	Remarks
IO	<i>Ilex opaca</i>	American holly	12 6	ft height	cont.	75	900	Sheared
JV	<i>Juniperus virginiana</i>	Eastern redcedar	10 6	ft height	cont.	45	450	
AS	<i>Acer rubrum</i>	red maple	5	2 in. caliper	B&B	200	1000	
KP	<i>Koelreuteria paniculata</i>	goldenrain tree	7	2 in. caliper	B&B	150	1050	specimen
VD	<i>Viburnum dentatum</i>	arrowwood viburnum	10	24 in. height	B&B	0	0	
TOTAL 10-YEAR TREE CANOPY PROVIDED BY PLANTING = 3,400 ft ²								
NOTE: The remarks column may also be used to note any other characteristics which a plant should exhibit (e.g., sheared, specimen, multi-stem, tree form).								

12-054415.1H Stock size as specified in Table 12.153.

Table 12. 153 Plant Material Stock Size Specifications	
Type of Plant & Stock	Specify by
Deciduous trees	Caliper
Evergreen trees	Height
Deciduous shrubs	Height
Evergreen shrubs	Height
Seedlings, bare-root	Age

12-054415.1I Type of root stock to be planted (e.g., balled and burlapped (B&B), bareroot, container).

12-054415.1J The total amount of tree canopy claimed for each species of tree to be planted.

12-054415.1K If a symbol is used instead of a plant name label on the plan, the symbol shall be included in the plant schedule.

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12-054415.1L Plant Diversity. ~~To curtail the spread of disease or insect infestation in a plant species, if 30 or more trees are required to be planted on a site, then no more than 10 percent of the total number of trees required to be planted onsite shall be composed of one species and no more than 33 percent of the total number of trees shall be composed of one genus. This requirement shall not apply to the composition of transitional screening yards required by the provisions of Article 13 of the Zoning Ordinance. Sites requiring less than 30 trees and/or portions of sites dedicated as a transitional screening yard shall not be comprised of more than 33 percent of one plant species or 66 percent of one genus.~~

12-054415.2 Transitional Screening Yard Labels

12-054415.2A A label(s) shall be provided that identifies the location and width of all transitional screening yard(s) required by Article 13 of the Zoning Ordinance. Labels shall also be provided on all adjacent parcels that identify their use and zoning in order to determine screening requirements for the proposed onsite use.

12-054415.2B No existing or proposed sidewalk, trail or easement shall exist or be proposed within a transitional screening yard unless it is placed perpendicular to, or nearly perpendicular to, the transitional screening yard.

12-054415.3 Planter Details and Alternative Designs. If trees are shown to be planted in deck planters or other areas of restricted root growing space, a detail shall be provided which illustrates the overall size, depth, soil composition, irrigation technique and drainage of the planter or planting space. (see Plate 5-12(5M-12)). When minimum planting areas cannot be provided, alternative designs that provide the maximum possible planting area may be allowed as approved by the Director.

12-054415.4 10-year Tree Canopy Calculations. All required calculations for 10-year tree canopy calculations shall be provided on the landscape plan sheet in accordance with Table 12.4120 if they have not already been provided as part of the Tree Conservation Plan.

12-054415.5 Interior Parking Lot Landscaping . All calculations and illustrations for interior parking lot landscaping shall be provided on the landscape plan sheet.

12-054415.6 Planted Trees and Easements

12-054415.6A The landscape plan shall show all existing and proposed easements that may conflict with the tree planting requirements of Article 13 of the Zoning Ordinance and this Chapter.

12-054415.6B Trees shall not be planted within any existing or proposed public utility easement that is required to be delineated on the plan, or within 5 feet (1.5 meters) of storm drainage easements that contain pipes. In addition, trees shall not be planted in an area which will interfere

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with existing or proposed utilities or obstruct or interfere with access of maintenance personnel or equipment, as determined by the Director, except as may be allowed in accordance with § 12-051415.6C below.

12-051415.6C If trees are shown to be planted within an existing or proposed public utility easement, the plan shall contain a letter of permission from the owner of the easement.

12-051415.6D Trees in public utility easements, even with a letter of permission, shall not be granted tree canopy credit and shall not be credited toward meeting the transitional screening requirements of Article 13 of the Zoning Ordinance.

12-051415.6E Existing vegetation or proposed plantings fully located within VDOT rights-of-way shall not be credited toward meeting 10-year Tree Canopy Requirements or the screening and landscaping requirements of Article 13 of the Zoning Ordinance, except as may be permitted in a commercial revitalization district.

12-051415.7 Areas to be Reforested With Seedlings. If areas are shown on the plan to be reforested with seedlings, a legend shall be provided describing the species type(s) and stock type(s) to be used (bare root and/or containerized), seedling age, planting method, ground and/or soil treatment to be conducted, ground cover treatment if any and timing relative to other construction activities. Signs shall be posted on all sides of the area to be planted. The plan shall show the location of all signs and a detail showing the size and text of the signs.

~~12-0514.8 Areas to be Reforested by Woody Seed Mix. If areas are shown on the plan to be reforested using seeding methods, a description shall be provided of the seed mix content, seeding rate, application method, ground and/or soil treatment, ground cover treatment, and timing relative to other construction activities. Signs shall be posted on all sides of the seeded area. The plan shall show the location of all signs and a detail showing the size and text of the signs.~~

12-051415.158 Other Information. Other information shall be furnished as deemed necessary by the Director.

12-051516 Requirements and Specifications for Replacement Trees and/or Vegetation

12-051516.1 The Director may require that trees located in areas shown to be preserved on an approved Tree Conservation Plan be replaced if removed without prior permission from the Director or if so damaged as to reasonably require removal. The value of replacement trees required by the Director shall not exceed the value of those removed as determined by the formula in the most recent edition of the "Guide for Plant Appraisal" prepared by the Council of Tree and Landscape Appraisers and published by the International Society of Arboriculture (~~also see § 12-0802.2~~).

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12-054516.1A A revision to the approved Tree Conservation Plan shall be submitted for the approval of the Director showing the extents of overclearing, proposed new limits of clearing, locations of trees to be removed and the location of replacement trees or tree seedlings.

12-054516.2 Deciduous replacement trees shall be a minimum of 2 inches (5.1 centimeters) caliper, measured 6 inches (15.3 centimeters) from the ground and evergreen trees shall be a minimum of 6 to 8 feet (1.8 to 2.4 meters) in height unless otherwise approved or required by the Director. The type of plant material required shall be appropriate for the site condition and planted as specified in § 12-0705 (see Table 12.153).

12-054516.3 When an area has been cleared of vegetation for landfill areas or for a temporary use (such as a sediment basin, pond, temporary construction easement, stockpile or construction easements for public or private utility installation), replanting shall be required to restore the area to a condition similar to its natural state. At least 25 percent of the disturbed area shall be planted with trees specified in § 12-054516.2 using the figures for 10-year tree canopy. The remaining area shall be planted with seedlings as specified in § 12-0705.5 and stabilized with a seed mix of grasses, and perennials ~~and woody vegetation~~ as approved by the Director. All replacement trees shall be specified on the planting plan (see Table 12.164). Native species suitable for the proposed site conditions shall be provided approximating the species composition existing prior to clearing.

12-054516.4 When RPAs have been disturbed without prior approval by the Director, or are proposed to be disturbed as part of a construction plan, buffer areas with native vegetation shall be restored or created as required under Chapter 118 of the Code, and planting shall be consistent with Performance Criteria found in the “Riparian Buffers Guidance and Mitigation Guidance Manual” published by the Division of Chesapeake Bay Local Assistance, Virginia Department of Conservation and Recreation. At least 25 percent of the area shall be planted with trees as specified in § 12-054516.2. In addition, one seedling as specified in § 12-0705.5A shall be planted for each 100 square feet (9.3 square meters) of disturbed area and one shrub with a minimum height of 18 inches (0.4 meters) shall be planted for each 40 square feet (3.7 square meters) of disturbed area. Soil preparation, soil amendments, and/or ~~woody~~ seed mix shall be required as determined by the Director. The surface area associated with these plantings may be used to meet 10-year tree canopy requirements when being planted to offset allowable disturbances to RPAs. Wetland plantings (including herbaceous plantings) and/or wetland seed mix shall be used where site conditions warrant (see Tables 12.164 and 12.197).

Area Type	Trees 2 inches in caliper or greater	Shrubs	Seedlings	Other
Temporary Use (§ 12-054516.3)	25% of the disturbed area	N/A	15 per 1000 ft ² (15 per 93 m ²)	Grass, <u>and</u> perennial and woody seed mixes
RPA (§ 12-054516.4)	25% of the disturbed area	25 per 1000 ft ² (25 per 93 m ²)	10 per 1000 ft ² (10 per 93 m ²)	Wetland plants, Wetland seed

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~~12-0515.16.5~~ Land disturbing activity without an approved plan.

~~12-0515.1A~~ 12-0516.5A When a violation is issued for land disturbing activity involving the removal of trees without an approved plan in accordance with Chapter 104 of the Code, a Tree Conservation Plan shall be submitted to the County within the time frame established on the violation. The Tree Conservation Plan shall show all site features as they existed prior to the violation and the site features as they are proposed to appear, in the same manner as if a violation had not occurred. The Tree Conservation Plan shall provide a date for completion of all items shown on the plan.

~~12-0515.1B~~ 12-0516.5B Site remediation may be required to restore the site to its pre-violation condition. Such remediation may include but not be limited to regrading of the site to the pre-existing contours.

~~12-0515.1C~~ 12-0516.5C Replacement trees and/or other vegetation may be required by the Director according to the guidelines set forth in § 12-0706.3B~~G~~.

~~12-0515.2~~ 12-0516.6 Land disturbing activity conducted in violation of an approved Tree Conservation Plan.

~~12-0515.2A~~ 12-0516.6A A revision to the approved Tree Conservation Plan may be required by the Director when land disturbing activities are conducted, without prior approval of the Director, in areas beyond the limits of clearing shown on the approved plan. The revision shall provide all of the required plan information and shall show the original limits of clearing approved for the area that was over cleared, and the required number of replacement trees.

~~12-0515.2B~~ 12-0516.6B Replacement trees and/or other vegetation may be required by the Director according to the guidelines set forth in § 12-0706.3B~~G~~.

12-0516.17 Forest Management Plan for Commercial Forests

~~12-0516.17.1~~ A Tree Conservation Plan shall not be required for the harvesting of trees on commercial forest land if the operation is conducted in conformance with the Virginia Department of Forestry's Best Management Practices. However, when the State Forester is required to be notified of a timber harvesting operation, the operation shall be conducted pursuant to a Forest Management Plan approved by the Director.

~~12-0516.17.2~~ A Forest Management Plan shall not be approved for land for which a commitment with the County, such as proffered conditions, development plans, conceptual/final development plans, PRC plans, special permits, special exceptions or variance approvals, has been made to preserve trees.

~~12-0516.17.3~~ A Forest Management Plan shall include but not be limited to the following information:

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12-054617.3A Location and description of the property.

12-054617.3B Type and species of trees on the site.

12-054617.3C Outstanding or monarch trees on the site.

12-054617.3D Diameter range of the timber to be cut.

12-054617.3E Description of the quality of the timber, including soundness and maturity.

12-054617.3F Description of the topography and forest floor condition.

12-054617.3G Source of regeneration.

12-054617.3H Time frame in which cutting will take place.

12-054617.3I Methods for stabilization, siltation and runoff control.

12-054617.3J Future use of the land.

12-0600 TREE SELECTION AND CANOPY COVER GUIDE**12-0601 Explanation of Tree Selection and Canopy Cover Guide**

12-0601.1 Purpose. The Tree Selection and Canopy Cover Guide (Table 12.197) contains information which is helpful when selecting trees to be planted on sites after construction has been completed. For the purposes of defining tree canopy credit, the table contains categories of trees based on their ultimate height and spread. This information is not all inclusive, but does include many species which have performed well in this region and are generally available in local nurseries. The highlighted tree species and their cultivars, many of which are native species, have proven to perform well in the landscape under the conditions typical for the listed tree uses. Sections 12-0601.1A through 12-0601.1E(8) provides an explanation of Table 12.197 entitled Tree Selection and Canopy Cover Guide, columns and codes. The Director may approve trees other than those listed in Table 12.197 for various uses and canopy credit, upon request, with adequate documentation regarding the characteristics of the tree(s) in question.

12-0601.1A Botanical/Common Name. This column lists trees alphabetically and categorizes them based on their ultimate size and tree canopy area. Botanical names are given first, including genus, species, and, in some cases, cultivar name. Common names used in the Mid-Atlantic region are given second. Deciduous trees are separated from evergreens in all categories. Evergreens include both coniferous and broadleaf species.

12-0601.1B Minimum Planting Area. This column shows the soil surface area in square feet (square meters) that must be provided when planting a given species. This information shall be used to determine the minimum planting space for all planted trees. When minimum planting areas cannot be provided due to existing conditions, alternative designs that provide the maximum possible planting areas may be allowed as approved by the Director. A detail showing the alternative design shall be provided on the landscape plan.

12-0601.1C Projected 10-year Tree Canopy Area. These columns give the projected 10-year tree canopy area in square feet (square meters) for trees of different sizes at time of planting. Deciduous trees are listed by commonly available caliper sizes and evergreen trees are listed by commonly available heights. The 10-year canopy cover shall be used to determine tree canopy credit for planted trees and shall be used for drawing trees to scale on the landscape plan and to determine minimum spacing requirements. When drawn to scale, tree canopies shall not significantly overlap (see § 12-05145.1D). Trees proposed to be planted in sizes larger than those listed in Table 12.197 (larger than a 3-inch (7.6 centimeter) caliper for deciduous trees and taller than 10 feet (3.0 meters) in height for evergreens) may receive additional 10-year tree canopy credit using Table 12.197 as a guide as approved by the Director.

12-0601.1D Tree Uses and Screening Yard Use. Tree selection should be based upon post-development site conditions (see Table 12.175).

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Table 12.175 Tree Uses and Screening Yard Use Codes

Tree Uses	Code
General G	
Native N	
Parking Lot Planting Areas	PL
Planting in Restricted Areas	RA
Energy Conservation Credit	EC
Wildlife Value	WL
Screening Yard Use	Code
Categorized by Transitional Screening Requirements:	
Large Evergreen Tree	LE
Medium Evergreen Tree	ME
Large Deciduous Tree	LD

12-0601.1D(1) General (G). These trees are suitable for a variety of uses.

12-0601.1D(2) Native (N). A native tree is defined as a tree species that the Director determines to be indigenous to any of the forest or woodland communities that were likely present in Fairfax County immediately prior to European settlement of Virginia. These trees may be used for additional canopy credits as provided in § 12-0509.34B.

12-0601.1D(3) Parking Lot Planting Areas (PL). These tree species have been selected for use in parking areas based on their favorable branching habits and tolerance of poor soils, drought, radiant heat and restrictive root space. Trees most appropriate for planting on parking decks will have the following environmental tolerances: restricted root zone (RZ), poor soils (SC), air pollution (AP) and drought tolerance (D). Tree planters on decks shall provide the minimum planting areas as stated in Table 12.197 and include a suitable, lightweight soil mix, and means of irrigation and drainage (see Plate 5-12(5M-12)).

12-0601.1D(4) Plantings in Restricted Areas (RA). These species should be considered ~~Where~~ the ultimate size and form of a tree, along with its root structure, must be given consideration in order to avoid potential maintenance, safety, and access problems. ~~These species should be considered.~~

~~12-0601.1D(5) Energy Conservation (EC). The deciduous species listed (EC) are suggested for use adjacent to buildings to conserve energy by providing shade. These trees may be used for additional tree canopy credits as provided in § 12-0509.4B(2) (see Plate 4-12(4M-12)).~~

~~12-0601.1D(6) Wildlife Value (WL). These trees provide food and/or shelter for wildlife. These trees may be used for additional tree canopy credits as provided in § 12-0509.4B(4).~~

12-0601.1D(75) Screening Trees (LE, ME, LD). Trees identified by these notations are effective in meeting the transitional screening requirements of Article 13 of the Zoning

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Ordinance, by providing eye-level visual screening. Both deciduous and evergreen species are listed but only evergreens provide year-round screening.

12-0601.1E Environmental Tolerances. This column is used to select species that are tolerant of specific environmental factors, both natural and constructed, that occur frequently in the urban setting. Refer to Table 12.186 for the tolerance code list.

Table 12.186 Environmental Tolerance Codes

Environmental Tolerances	Code
Restricted Root Zone	RZ
Poor Soil Conditions	SC
Partial Shade	PS
Full Shade	SH
Air Pollution	AP
De-icing Salts	IS
Wet Soil Conditions	W
Drought Conditions	D

12-0601.1E(1) Restricted Root Zone (RZ). These species will tolerate limited planting areas better than other species. Roots of these trees will usually not disrupt surrounding hardscapes. It is noted that trees that are planted in areas that meet only the minimum requirements for planting area, generally will not be healthy, long-lived trees. A larger planting space will result in more healthy, vigorous specimen trees due to increased nutrient availability and improved soil conditions.

12-0601.1E(2) Poor Soil Conditions (SC). These species are noted for their tolerance to a range of soil conditions found in the urban environment. It should be noted that most trees do not tolerate poor soils. Tolerant trees that may grow in poor soil will generally not thrive.

12-0601.1E(2)(a) A poor soil is a soil used as a growing medium that has marginal properties for support of plant life. Poor soil conditions may include one or more of the following characteristics: low nutrient content (essential nutrients have been leached or the soil lacks nutrient holding capacity), improper pH (a soil that is either too acidic or too alkaline) and poor structure (highly compacted with little pore space and a low water infiltration and percolation rate).

12-0601.1E(2)(b) Subsoils used to provide a stable base for sidewalks, parking lots, buildings, etc., and general grading purposes are often inadequate for plant growth. Amending these soils with composted organic matter and agricultural lime may improve soil pH, structure and nutrient availability. Testing soil for pH and nutrient content is advisable prior to amending soil. Soil amending in individual planting holes is not recommended. If soil amendments are needed, they should be applied using broadcast methods and tilled in over a large planting area.

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12-0601.1E(3) Partial Shade (PS). These species tolerate or prefer areas receiving partial amounts of direct sunlight such as on the Eastern or Northern sides of structures or forested areas.

12-0601.1E(4) Full Shade (SH). These species tolerate or prefer a shaded environment. However, the deeper the shade, the more difficult it is for any tree to thrive.

12-0601.1E(5) Air Pollution (AP). This group of species will tolerate areas subjected to exhaust gas emissions found along roadways and within parking lots. These trees are typically deciduous and shed their leaves before particulate matter can damage plant tissue. Evergreens retain leaves or needles longer, allowing particulate matter to be absorbed and destroy plant tissue, and as such are more susceptible to pollution injury.

12-0601.1E(6) De-icing Salts (IS). These species are tolerant of root and leaf exposure to de-icing salts such as sodium chloride and calcium chloride. These trees should be planted along roadways and in the vicinity of parking lots, sidewalks and asphalt paths subject to snow and ice removal operations.

12-0601.1E(7) Wet Soil Conditions (W). These species will tolerate moderate to excessive soil moisture. These trees should be planted adjacent to waterways, ponds, lakes, stormwater retention and detention facilities.

12-0601.1E(8) Drought Conditions (D). These species will tolerate hot, dry conditions. They require less available soil moisture than most trees and should be considered for planting areas subjected to heat, drying winds, and intense solar radiation without the benefit of supplemental moisture. These conditions are often found along roadways, parking lots, parking decks, and around buildings that absorb heat and reflect sunlight.

12-0601.1F The “Conditional Use or Reduced Credit”; “Air Quality”; “Energy Conservation”; “Water Quality”; “Wildlife”; “Native”; and “Improved Cultivar/Variety” columns provides information concerning the reduced or additional 10-year canopy credit that various species may receive if planted as provide in § 12-0510.3C, § 12-0510.3D(2), and § 12-0510.4 et. Seq.

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Table 12.19 Tree Selection And Canopy Cover Guide

Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
CATEGORY I DECIDUOUS TREES		Trees 50 feet or less in height at maturity with a spread less than one-half of their height						
<i>Acer rubrum</i> 'Columnare'/ columnar red maple	50 (5)	40 (4)	50 (5)	75 (7)	RA		RZ	
<i>Carpinus betulus</i> 'Fastigiata'/ fastigate European hornbeam	50 (5)	40 (4)	50 (5)	75 (7)	RA		PS	
<i>Fagus sylvatica</i> 'fastigiata'/ fastigate European beech	50 (5)	40 (4)	50 (5)	75 (7)	RA		PS	
<i>Ginkgo biloba</i> 'Sentry'/ sentry ginkgo	50 (5)	40 (4)	50 (5)	75 (7)	RA		AP, D, RZ, SC	Yes
<i>Quercus robur</i> 'Fastigiata'/ fastigate English oak	50 (5)	40 (4)	50 (5)	75 (7)	RA		SC	
CATEGORY II DECIDUOUS TREES		Trees that can be maintained at a height of 20 feet or less and have a spread approximately equal to their height						
<i>Acer campestre</i> / hedge maple	50 (5)	75 (7)	100 (9)	125 (12)	G		AP, D	
<i>Acer ginnala</i> / amur maple	50 (5)	75 (7)	100 (9)	125 (12)	G, RA		D, PS, RZ	
<i>Acer palmatum</i> / Japanese maple	50 (5)	75 (7)	100 (9)	125 (12)	G		RZ, SH	
<i>Amelanchier arborea</i> / downey serviceberry	50 (5)	75 (7)	100 (9)	125 (12)	G, N, RA, WL		PS, RZ, W	
<i>Amelanchier laevis</i> / Allegheny serviceberry	50 (5)	75 (7)	100 (9)	125 (12)	G, N, RA, WL		PS, RZ, W	
<i>Carpinus caroliniana</i> / American hornbeam	50 (5)	75 (7)	100 (9)	125 (12)	G, N, RA		SH, W	
<i>Cercis canadensis</i> / Eastern redbud	50 (5)	75 (7)	100 (9)	125 (12)	G, N, RA		D, PS, RZ, SC	
<i>Chionanthus virginicus</i> / fringetree	50 (5)	75 (7)	100 (9)	125 (12)	G, N, RA		PS, RZ, W	
<i>Cornus florida</i> / flowering dogwood	50 (5)	75 (7)	100 (9)	125 (12)	N, WL		PS	Yes
<i>Cornus kousa</i> / Kousa dogwood	50 (5)	75 (7)	100 (9)	125 (12)	G, WL		RZ	
<i>Cornus mas</i> / Cornelian cherry dogwood	50 (5)	75 (7)	100 (9)	125 (12)	G, RA, WL		PS, RZ	
<i>Halesia carolina</i> / Carolina silverbell	50 (5)	75 (7)	100 (9)	125 (12)	G, N		PS	
<i>Magnolia soulangiana</i> / sauer magnolia	50 (5)	75 (7)	100 (9)	125 (12)	G		AP, RZ	

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Table 12.19 Tree Selection And Canopy Cover Guide

Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
		<i>Magnolia stellata</i> / star magnolia	50 (5)	75 (7)				
<i>Magnolia virginiana</i> / sweetbay magnolia	50 (5)	75 (7)	100 (9)	125 (12)	G, N, RA		RZ, SH, W	
<i>Oxydendrum arboreum</i> / sourwood	50 (5)	75 (7)	100 (9)	125 (12)	G, N		D, PS	
<i>Prunus x incam</i> 'Okame'/ Okame cherry	50 (5)	75 (7)	100 (9)	125 (12)	RA			
<i>Stewartia koreana</i> / Korean stewartia	50 (5)	75 (7)	100 (9)	125 (12)	RA		RZ	
<i>Stewartia ovata</i> / Mountain stewartia	50 (5)	75 (7)	100 (9)	125 (12)	G, RA		RZ	
<i>Stewartia pseudocamellia</i> / Japanese stewartia	50 (5)	75 (7)	100 (9)	125 (12)	RA		RZ	
<i>Styrax americana</i> / American snowbell	50 (5)	75 (7)	100 (9)	125 (12)	G, RA		PS, RZ	
<i>Styrax japonicus</i> / Japanese snowbell	50 (5)	75 (7)	100 (9)	125 (12)	G, RA		PS, RZ	
CATEGORY III DECIDUOUS TREES	Trees 25 to 50 feet in height at maturity with a spread equal to or greater than their height and trees over 50 feet in height at maturity with a spread less than their height							
<i>Aesculus hippocastanum</i> / Horse chestnut	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	IS, SC	
<i>Betula nigra</i> / river birch	90 (8)	125 (12)	150 (14)	175 (16)	G, N	LD	W	
<i>Castanea mollissima</i> / Chinese chestnut	90 (8)	125 (12)	150 (14)	175 (16)	G	LD		
<i>Celtis occidentalis</i> / Hackberry	90 (8)	125 (12)	150 (14)	175 (16)	EC, G, N, WL	LD	AP, D, SC, W	
<i>Cercidiphyllum japonicum</i> / Katsuratree	90 (8)	125 (12)	150 (14)	175 (16)	EC, G, PL	LD		
<i>Diospiros virginiana</i> / persimmon	90 (8)	125 (12)	150 (14)	175 (16)	N, WL		D, SC	
<i>Eucommia ulmoides</i> / hardy rubber tree	90 (8)	125 (12)	150 (14)	175 (16)	EC, PL		D, SC	
<i>Fagus sylvatica</i> / European beech	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	PS	
<i>Gleditsia triacanthos inermis</i> / thornless honeylocust	90 (8)	125 (12)	150 (14)	175 (16)	PL	LD	AP, D, SC, W	

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Table 12.19 Tree Selection And Canopy Cover Guide

Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
		—'Imperial'	90 (8)	125 (12)				
—'Skyline'	90 (8)	125 (12)	150 (14)	175 (16)	PL	LD	AP, D, SC, W	
—'Shademaster'	90 (8)	125 (12)	150 (14)	175 (16)	PL	LD	AP, D, SC, W	
<i>Gymnocladus dioica</i> / Kentucky coffeetree	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	D, SC, W	
<i>Juglans nigra</i> / black walnut	90 (8)	125 (12)	150 (14)	175 (16)	N, WL	LD	SC, W	
<i>Koelreuteria paniculata</i> / goldenrain tree	90 (8)	125 (12)	150 (14)	175 (16)	G		D, SC	
<i>Larix decidua</i> / European larch	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	D	
<i>Maclura pomifera</i> / Osage orange (male only)	90 (8)	125 (12)	150 (14)	175 (16)	G, N	LD	D	
<i>Magnolia acuminata</i> / Cucumber tree	90 (8)	125 (12)	150 (14)	175 (16)	G, N	LD		
<i>Magnolia macrophylla</i> / bigleaf magnolia	90 (8)	125 (12)	150 (14)	175 (16)	G	LD		
<i>Metasequoia glyptostroboides</i> / dawn redwood	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	AP, W	
<i>Nyssa sylvatica</i> / black gum	90 (8)	125 (12)	150 (14)	175 (16)	EC, G, N, PL, WL	LD	PS, W	
<i>Phellodendron amurense</i> / amur corktree (male only)	90 (8)	125 (12)	150 (14)	175 (16)	EC, G	LD	AP, D	
<i>Prunus serrulata</i> 'Kwansan'/ Kwansan cherry	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	AP	
<i>Prunus sargentii</i> / sargent cherry	90 (8)	125 (12)	150 (14)	175 (16)	G			
<i>Prunus subhirtella</i> / weeping Japanese cherry	90 (8)	125 (12)	150 (14)	175 (16)	G			
<i>Prunus yedoensis</i> / Yoshino cherry	90 (8)	125 (12)	150 (14)	175 (16)	G			
<i>Taxodium distichum</i> / bald cypress	90 (8)	125 (12)	150 (14)	175 (16)	G, N	LD	W	
<i>Tilia cordata</i> / littleleaf linden	90 (8)	125 (12)	150 (14)	175 (16)	EC, G, PL	LD	AP	

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Table 12.19 Tree Selection And Canopy Cover Guide

Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
		—'Glenleven'	90 (8)	125 (12)				
—'Greenspire'	90 (8)	125 (12)	150 (14)	175 (16)	EC, G, PL	LD	AP	
CATEGORY IV DECIDUOUS TREES	Trees 50 feet and greater in height at maturity with a spread equal to or greater than their height and trees over 75 feet in height at maturity with a spread less than their height							
<i>Acer rubrum</i> / red maple	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, PL	LD	IS, PS, W	
<i>Acer saccharum</i> / sugar maple	130 (12)	150 (14)	200 (18)	250 (23)	EC, G	LD	PS	Yes
<i>Carya illinoensis</i> / Pecan	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, WL	LD	W	
<i>Carya ovata</i> / shagbark hickory	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, WL	LD		
<i>Fagus americana</i> / American beech	130 (12)	150 (14)	200 (18)	250 (23)	G, N, WL	LD	PS	
<i>Ginkgo biloba</i> / ginkgo (male only)	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, PL	LD	AP, D, RZ	
<i>Liquidambar styraciflua</i> / Sweetgum	65 (6)	75 (7)	100 (9)	125 (11.5)	EC, G, N	LD	W	Yes-0.5
<i>Liriodendron tulipifera</i> / tulip poplar	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N	LD	AP, W	
<i>Platanus acerifolia</i> / London planetree	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, PL	LD	AP, D	
<i>Platanus occidentalis</i> / Sycamore	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N	LD	W	
<i>Quercus alba</i> / white oak	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, WL	LD	IS	
<i>Quercus bicolor</i> / swamp white oak	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, WL	LD	D, IS, SC, W	
<i>Quercus coccinea</i> / scarlet oak	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, WL	LD		
<i>Quercus imbricaria</i> / shingle oak	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, WL	LD	W	
<i>Quercus palustris</i> / pin oak	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, PL, WL	LD	W	Yes

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Table 12.19 Tree Selection And Canopy Cover Guide

Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
		<i>Quercus phellos</i> / willow oak	130 (12)	150 (14)				
<i>Quercus rubra</i> (borealis)/ Northern red oak	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, WL	LD	IS	
<i>Sophora japonica</i> / Japanese pagoda tree	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, PL	LD	AP, D, SC	
<i>Tilia americana</i> / American linden, basswood	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, N, PL	LD		
—'Redmond'	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, PL	LD		
—'Legend'	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, PL	LD		
<i>Ulmus hollandica</i> 'Groenveldt'/ Groenveldt elm	130 (12)	150 (14)	200 (18)	250 (23)	EC, G	LD	D	
<i>Ulmus parvifolia</i> / Chinese elm	130 (12)	150 (14)	200 (18)	250 (23)	EC, G, PL	LD		
<i>Zelkova serrata</i> / Japanese zelkova	130 (12)	150 (14)	200 (18)	250 (23)	G, PL	LD		
CATEGORY I EVERGREEN TREES	Trees generally less than 30 feet in height at maturity with a spread less than 15 feet							
<i>Ilex x attenuata</i> 'Fosteri'/ Foster's holly	30 (3)	40 (4)	50 (5)	75 (7)	G	ME	SH	
<i>Ilex x Nellie Stevens</i> / Nellie Stevens holly	30 (3)	40 (4)	50 (5)	75 (7)	G	ME		
<i>Juniperus chinensis</i> / Chinese juniper	30 (3)	40 (4)	50 (5)	75 (7)	G		D	
—'Columnaris'	30 (3)	40 (4)	50 (5)	75 (7)	RA		D	
—'Denserecta'	30 (3)	40 (4)	50 (5)	75 (7)	RA		D	
—'Erecta Glauca'	30 (3)	40 (4)	50 (5)	75 (7)	RA		D	
—'Grey Gleam'	30 (3)	40 (4)	50 (5)	75 (7)	RA		D	
—'Hetzi columnaris'	30 (3)	40 (4)	50 (5)	75 (7)	RA		D	
—'Keteleeri'	30 (3)	40 (4)	50 (5)	75 (7)	RA		D	

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Table 12.19 Tree Selection And Canopy Cover Guide

Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
		—'Robusta green'	30 (3)	40 (4)				
—'Torulosa'	30 (3)	40 (4)	50 (5)	75 (7)	RA		Ⓓ	
<i>Juniperus virginiana</i> 'Princeton Sentry'/Eastern redcedar	30 (3)	40 (4)	50 (5)	75 (7)	RA	ME	Ⓓ, IS	
<i>Taxus baccata</i> 'Fastigiata'/ upright Irish yew	30 (3)	40 (4)	50 (5)	75 (7)	RA			
<i>Thuja occidentalis</i> 'Nigra'/ dark green American arborvitae	30 (3)	40 (4)	50 (5)	75 (7)	G, RA	ME	W	
<i>Thuja orientalis</i> / Columnar oriental arborvitae	30 (3)	40 (4)	50 (5)	75 (7)	G, RA		PS, W	
CATEGORY II Trees 30 to 40 feet in height at maturity with a spread of 15 to 20 feet								
EVERGREEN TREES								
<i>Abies concolor</i> / white fir	50 (5)	75 (7)	100 (9)	125 (12)	G	ME		
<i>Calocedrus decurrens</i> / incense cedar	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	W	
<i>Chamaecyparis lawsoniana</i> / Lawson falsecypress	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	PS	
<i>Chamaecyparis obtusa</i> / Hinoki false cypress	50 (5)	75 (7)	100 (9)	125 (12)	G	LE	W	
<i>Chamaecyparis pisifera</i> 'Plumosa'/ plume sawara false cypress	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	W	
<i>Chamaecyparis thyoides</i> / Atlantic whitecedar	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	W	
<i>Cryptomeria japonica</i> / Japanese cryptomeria	50 (5)	75 (7)	100 (9)	125 (12)	G	LE	IS	
<i>Cunninghamia lanceolata</i> / China fir	50 (5)	75 (7)	100 (9)	125 (12)	G	ME		
<i>Cupressocyparis leylandii</i> / Leyland cypress	25 (2.5)	38 (3.5)	50 (4.5)	63 (6)	G	LE	PS, W	0.5
<i>Ilex aquifolium</i> / English holly	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	SH	
<i>Ilex opaca</i> / American holly	50 (5)	75 (7)	100 (9)	125 (12)	G, N	ME	IS, SH	
<i>Juniperus scopulorum</i> 'Moonglow'/ Rocky Mt. Juniper	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	Ⓓ	
<i>Juniperus virginiana</i> / Eastern redcedar	50 (5)	75 (7)	100 (9)	125 (12)	G, N	ME		

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Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
		—'Canaert'	50 (5)	75 (7)				
—'Manhattan Blue'	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	D, IS	
<i>Picea glauca</i> / white spruce	50 (5)	75 (7)	100 (9)	125 (12)	G	LE	D, PS, RZ	
<i>Picea omorika</i> / Serbian spruce	50 (5)	75 (7)	100 (9)	125 (12)	G	LE		
<i>Picea orientalis</i> / Oriental spruce	50 (5)	75 (7)	100 (9)	125 (12)	G	LE	SC	
<i>Picea pungens</i> / Colorado blue spruce	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	D	
<i>Pinus bungeana</i> / lacebark pine	50 (5)	75 (7)	100 (9)	125 (12)	G	ME		
<i>Pinus parviflora</i> / Japanese white pine	50 (5)	75 (7)	100 (9)	125 (12)	G	ME		
<i>Pinus thunbergiana</i> / Japanese black pine	50 (5)	75 (7)	100 (9)	125 (12)	G	ME	D, IS, RZ	
<i>Pseudotsuga menziesii</i> / Douglas fir	50 (5)	75 (7)	100 (9)	125 (12)	G	ME		
<i>Taxus cuspidata</i> 'Capitata'/ pyramidal Japanese yew	50 (5)	75 (7)	100 (9)	125 (12)	G	ME		
<i>Tsuga canadensis</i> / Canadian hemlock	25 (2.5)	38 (3.5)	50 (4.5)	63 (6)	G	ME	SH	0.5
<i>Tsuga caroliniana</i> / Carolina hemlock	25 (2.5)	38 (3.5)	50 (4.5)	63 (6)	G	ME	SH	0.5
CATEGORY III EVERGREEN TREES	Trees 40 to 50 in height at maturity with a spread of 20 to 30 feet							
<i>Cedrus atlantica</i> / atlas cedar	90 (8)	125 (12)	150 (14)	175 (16)	G	LE		
<i>Picea abies</i> / Norway spruce	90 (8)	125 (12)	150 (14)	175 (16)	G	LE	PS	
<i>Pinus echinata</i> / shortleaf pine	90 (8)	125 (12)	150 (14)	175 (16)	G	LE	PS	
<i>Pinus nigra</i> / Austrian pine	90 (8)	125 (12)	150 (14)	175 (16)	G	LE		
CATEGORY IV EVERGREEN TREES	Trees 50 feet in height or greater at maturity with a spread of over 30 feet							
<i>Magnolia grandiflora</i> / Southern magnolia	130 (12)	150 (14)	200 (18)	250 (23)	G	LE	PS, W	

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Table 12.19 Tree Selection And Canopy Cover Guide

Botanical/ Common Name	Minimum Planting Area in ft ² (m ²)	Projected 10-yr Tree Canopy Area in ft ² (m ²) and caliper in In (cm) at planting			Tree Uses	Screening Yard Use	Environmental Tolerances	Conditional Use or reduced credit
		1.0 (2.5)	2.0 (5.0)	3.0 (8.0)				
		<i>Pinus rigida</i> / pitch pine	130 (12)	150 (14)				
<i>Pinus strobus</i> / white pine	65 (6)	75 (7)	100 (9)	125 (11.5)	G	LE	PS	0.5
<i>Pinus sylvestris</i> / Scotch pine	130 (12)	150 (14)	200 (18)	250 (23)	G	LE	D	
<i>Pinus taeda</i> / loblolly pine	130 (12)	150 (14)	200 (18)	250 (23)	G, N	LE	W	
<i>Pinus Virginiana</i> Virginia pine	130 (12)	150 (14)	200 (18)	250 (23)	LE	—		

 —Native or other proven desirable species for the uses indicated

TREE USES: EC=energy conservation, G=general, N= native, PL=parking lot, RA=for restricted areas, WL=wildlife value (see § 12-0601.1D)

SCREENING YARD USE, LD=large deciduous, ME=medium evergreen, LE=large evergreen (see Sect. 13-303 of the Zoning Ordinance)

ENVIRONMENTAL TOLERANCES: AP=air pollution, D=drought, IS=de-icing salts, PS=partial shade, RZ=restricted root zone, SC=poor soil conditions, SH=full shade, W=wet soil (see § 12-0601.1E)

CONDITIONAL USE OR REDUCED CREDIT (see § 12-0509.3D(2))

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
CATEGORY I Trees 50 feet or less in height at maturity with a spread less than one-half of their height														
DECIDUOUS TREES														
<u><i>Acer rubrum</i> 'Columnare'/ columnar red maple</u>	<u>50 (5)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>RZ</u>							
<u><i>Carpinus betulus</i> 'Fastigiata'/ fastigate European hornbeam</u>	<u>50 (5)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>PS</u>							
<u><i>Fagus sylvatica</i> 'fastigiata'/ fastigate European beech</u>	<u>50 (5)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>PS</u>							
<u><i>Ginkgo biloba</i> 'Sentry'/ sentry ginkgo</u>	<u>50 (5)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>AP, D, RZ, SC</u>	<u>Yes</u>						
<u><i>Quercus robur</i> 'Fastigiata'/ fastigate English oak</u>	<u>50 (5)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>SC</u>							
CATEGORY II Trees that can be maintained at a height of 20 feet or less and have a spread approximately equal to their height														
DECIDUOUS TREES														
<u><i>Acer campestre</i>/ hedge maple</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>AP, D</u>							
<u><i>Acer ginnala</i>/ amur maple</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>D, PS, RZ</u>							
<u><i>Acer palmatum</i>/ Japanese maple</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>RZ, SH</u>							
<u><i>Amelanchier arborea</i>/ downey serviceberry</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>PS, RZ, W</u>			<u>1.25</u>	<u>1.5</u>	<u>1.5</u>		
<u><i>Amelanchier laevis</i>/ Allegheny serviceberry</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>PS, RZ, W</u>			<u>1.25</u>	<u>1.5</u>	<u>1.5</u>		

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
<u><i>Asimina triloba</i>/ Paw paw</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>			<u>SH, W</u>				<u>1.25</u>	<u>1.5</u>	<u>1.5</u>	
<u><i>Carpinus caroliniana</i>/ American hornbeam</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>SH, W</u>				<u>1.25</u>	<u>1.</u>	<u>5</u>	
<u><i>Castanea pumila</i>/ Allegheny chinkapin</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>								<u>1.5</u>	<u>1.5</u>	
<u><i>Cercis canadensis</i>/ Eastern redbud</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (2)</u>	<u>G, RA</u>		<u>D, PS, RZ, SC</u>						<u>1.5</u>	
<u><i>Chionanthus virginicus</i>/ fringetree</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>PS, RZ, W</u>				<u>1.25</u>	<u>1.</u>	<u>5</u>	
<u><i>Cornus florida</i>/ flowering dogwood</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>PS</u>	<u>Yes</u>				<u>1.5</u>	<u>1.5</u>	
<u>‘Appalachian Spring’</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>							<u>1.25</u>	<u>1.</u>	<u>5</u>
<u><i>Cornus kousa</i>/ Kousa dogwood</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>RZ</u>							
<u>‘Stellar’ Hybrid series</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>RZ</u>							<u>1.5</u>
<u><i>Cornus mas</i>/ Corneliancherry dogwood</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>PS, RZ</u>							
<u><i>Halesia carolina</i>/ Carolina silverbell</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>PS</u>							
<u><i>Magnolia soulangiana</i>/ saucer magnolia</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>AP, RZ</u>							

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
<u>Magnolia stellata/ star magnolia</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>AP, RZ</u>							
<u>Magnolia virginiana/ sweetbay magnolia</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>RZ, SH, W</u>			<u>1.25</u>		<u>1.</u>	<u>5</u>	
<u>Ostrya virginiana/ Eastern hophornbeam</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>D, PS</u>						<u>1.5</u>	
<u>Oxydendrum arboreum/ sourwood</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>		<u>D, PS</u>						<u>1.5</u>	
<u>Prunus x incam 'Okame'/ Okame cherry</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>RA</u>									
<u>Sassafras albidum/ sassafras</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>									<u>1.5</u>	
<u>Stewartia koreana/ Korean stewartia</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>RA</u>		<u>RZ</u>							
<u>Stewartia ovata/ Mountain stewartia</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>RZ</u>							
<u>Stewartia pseudocamellia/ Japanese stewartia</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>RA</u>		<u>RZ</u>							
<u>Styrax americana/ American snowbell</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>PS, RZ</u>							
<u>Styrax japonicus/ Japanese snowbell</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G, RA</u>		<u>PS, RZ</u>							

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
CATEGORY III DECIDUOUS TREES	Trees 25 to 50 feet in height at maturity with a spread equal to or greater than their height and trees over 50 feet in height at maturity with a spread less than their height													
<u>Aesculus flava/ Yellow buckeye</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	IS, SC	1.	5					
<u>Aesculus hippocastanum/ Horse chestnut</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	IS, SC							
<u>Betula nigra/ river birch</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	W			1.25	1.5	1.5		
<u>Castanea mollissima/ Chinese chestnut</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD								
<u>Celtis occidentalis/ Hackberry</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	AP, D, SC, W			1.5	1.25	1.5	1.5	
<u>Cercidiphyllum japonicum/ Katsuratre</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, PL	LD				1.5				
<u>Cladrastis kentuckea/ yellowwood</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	W			1.5				
<u>Diospiros virginiana/ persimmon</u>	90 (8)	125 (12)	150 (14)	175 (16)			D, SC					1.5	1.5	
<u>Eucommia ulmoides/ hardy rubber tree</u>	90 (8)	125 (12)	150 (14)	175 (16)	PL		D, SC							
<u>Fagus sylvatica/ European beech</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	PS							

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
<u><i>Gleditsia triacanthos inermis</i>/ thornless honeylocust</u>	90 (8)	125 (12)	150 (14)	175 (16)	PL	LD	AP, D, SC, W							
<u>'Imperial'</u>	90 (8)	125 (12)	150 (14)	175 (16)	PL	LD	AP, D, SC, W							
<u>'Skyline'</u>	90 (8)	125 (12)	150 (14)	175 (16)	PL	LD	AP, D, SC, W							
<u>'Shademaster'</u>	90 (8)	125 (12)	150 (14)	175 (16)	PL	LD	AP, D, SC, W							
<u><i>Gymnocladus dioicus</i>/ Kentucky coffeetree</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	D, SC, W				1.25	1.5		
<u><i>Juglans nigra</i>/ black walnut</u>	90 (8)	125 (12)	150 (14)	175 (16)		LD	SC, W				1.25	1.5	1.5	
<u><i>Koelreuteria paniculata</i>/ goldenrain tree</u>	90 (8)	125 (12)	150 (14)	175 (16)	G		D, SC							
<u><i>Larix decidua</i>/ European larch</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	D							
<u><i>Maclura pomifera</i>/ Osage orange (male only)</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, N	LD	D						1.5	
<u><i>Magnolia acuminata</i>/ Cucumber tree</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, N	LD							1.5	
<u><i>Magnolia macrophylla</i>/ bigleaf magnolia</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD								
<u><i>Metasequoia glyptostroboides</i>/ dawn redwood</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	AP, W							

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<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
<u><i>Nyssa sylvatica</i>/ black gum</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, PL	LD	PS, W			1.5	1.25	1.5	1.5	
<u><i>Phellodendron amurense</i>/ amur corktree (male only)</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	AP, D	Yes						
<u><i>Prunus serrulata</i> ‘Kwansan’/ Kwansan cherry</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	AP							
<u><i>Prunus sargentii</i>/ sargent cherry</u>	90 (8)	125 (12)	150 (14)	175 (16)	G									
<u><i>Prunus subhirtella</i>/ weeping Japanese cherry</u>	90 (8)	125 (12)	150 (14)	175 (16)	G									
<u><i>Prunus yedoensis</i>/ Yoshino cherry</u>	90 (8)	125 (12)	150 (14)	175 (16)	G									
<u><i>Salix nigra</i>/ Black willow</u>	90 (8)	125 (12)	150 (14)	175 (16)							1.25	1.5	1.5	
<u><i>Sophora japonica</i>/ Japanese pagoda tree</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, PL	LD	AP, D, SC	1.	5	1.5				
<u><i>Taxodium distichum</i>/ bald cypress</u>	90 (8)	125 (12)	150 (14)	175 (16)	G	LD	W				1.25	1.5	1.5	
<u><i>Tilia cordata</i>/ littleleaf linden</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, PL	LD	AP	1.	5					
<u>‘Glenleven’</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, PL	LD	AP	1.	5					
<u>‘Greenspire’</u>	90 (8)	125 (12)	150 (14)	175 (16)	G, PL	LD	AP	1.	5					

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<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
CATEGORY IV														
DECIDUOUS TREES														
Trees 50 feet and greater in height at maturity with a spread equal to or greater than their height and trees over 75 feet in height at maturity with a spread less than their height														
<u><i>Acer rubrum/</i> red maple</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G, PL</u>	<u>LD</u>	<u>IS, PS, W</u>	<u>1.</u>	<u>5</u>	<u>1.5</u>	<u>1.25</u>	<u>1.5</u>	<u>1.5</u>	
<u><i>Acer saccharum/</i> sugar maple</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>	<u>PS</u>	<u>Yes</u>	<u>1.5</u>	<u>1.5</u>	<u>1.</u>	<u>5</u>		
<u><i>Carya cordiformis/</i> Bitternut hickory</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>			<u>1.5</u>			<u>1.5</u>	<u>1.5</u>	
<u><i>Carya glabra/</i> Pignut hickory</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>			<u>1.5</u>			<u>1.5</u>	<u>1.5</u>	
<u><i>Carya illinoensis/</i> pecan</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>	<u>W</u>	<u>1.</u>	<u>5</u>			<u>1.5</u>	<u>1.5</u>	
<u><i>Carya ovata/</i> shagbark hickory</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>			<u>1.5</u>			<u>1.5</u>	<u>1.5</u>	
<u><i>Carya tomentosa/</i> mockernut hickory</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>			<u>1.5</u>			<u>1.5</u>	<u>1.5</u>	
<u><i>Fagus americana/</i> American beech</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>	<u>PS</u>	<u>1.</u>	<u>5</u>			<u>1.5</u>	<u>1.5</u>	
<u><i>Ginkgo biloba/</i> ginkgo (male only)</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G, PL</u>	<u>LD</u>	<u>AP, D, RZ</u>	<u>1.</u>	<u>5</u>	<u>1.5</u>				
<u><i>Liquidambar styraciflua/</i> sweetgum</u>	<u>65</u> (6)	<u>75</u> (7)	<u>100</u> (9)	<u>125</u> (11.5)	<u>G</u>	<u>LD</u>	<u>W</u>	<u>Yes</u> <u>0.5</u>			<u>1.25</u>	<u>1.5</u>	<u>1.5</u>	
<u><i>Liriodendron tulipifera/</i> tulip poplar</u>	<u>130</u> (12)	<u>150</u> (14)	<u>200</u> (18)	<u>250</u> (23)	<u>G</u>	<u>LD</u>	<u>AP, W</u>	<u>1.</u>	<u>5</u>			<u>1.5</u>	<u>1.5</u>	

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		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
<u><i>Platanus acerifolia/</i> London planetree</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>	<u>AP, D</u>			<u>1.5</u>				
<u>'Bloodgood'</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>	<u>AP, D</u>			<u>1.5</u>				<u>1.5</u>
<u><i>Platanus occidentalis/</i> sycamore</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>	<u>W</u>			<u>1.25</u>	<u>1.</u>	<u>5</u>		
<u><i>Quercus alba/</i> white oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>	<u>IS</u>			<u>1.5</u>	<u>1.</u>	<u>5</u>	<u>1.5</u>	
<u><i>Quercus bicolor/</i> swamp white oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>	<u>D, IS, SC, W</u>			<u>1.5</u>	<u>1.25</u>	<u>1.5</u>	<u>1.5</u>	
<u><i>Quercus coccinea/</i> scarlet oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>	<u>W</u>					<u>1.5</u>		
<u><i>Quercus falcata/</i> Southern red oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>				<u>1.5</u>	<u>1.</u>	<u>5</u>	<u>1.5</u>	
<u><i>Quercus imbricaria/</i> shingle oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>						<u>1.5</u>		
<u><i>Quercus palustris/</i> pin oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>	<u>W</u>	<u>Yes</u>		<u>1.25</u>	<u>1.5</u>	<u>1.5</u>		
<u><i>Quercus prinus/</i> Chestnut oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>	<u>D</u>			<u>1.5</u>	<u>1.</u>	<u>5</u>	<u>1.5</u>	
<u><i>Quercus phellos/</i> willow oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>				<u>1.5</u>	<u>1.25</u>	<u>1.5</u>	<u>1.5</u>	
<u><i>Quercus rubra (borealis)/</i> Northern red oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>	<u>IS</u>			<u>1.5</u>	<u>1.</u>	<u>5</u>	<u>1.5</u>	

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and caliper in in (cm) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(4)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>1.0 (2.5)</u>	<u>2.0 (5.0)</u>	<u>3.0 (8.0)</u>										
<u><i>Quercus stellata</i>/ post oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>			<u>1.5</u>	<u>1.</u>	<u>.5</u>	<u>1.5</u>		
<u><i>Quercus velutina</i>/ black oak</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>			<u>1.5</u>	<u>1.</u>	<u>.5</u>	<u>1.5</u>		
<u><i>Tilia americana</i>/ American linden, basswood</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>		<u>1.5</u>	<u>1.5</u>			<u>1.5</u>		
<u>'Redmond'</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>PL</u>	<u>LD</u>		<u>1.5</u>	<u>1.5</u>			<u>1.5</u>		
<u>'Legend'</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>		<u>1.5</u>	<u>1.5</u>			<u>1.5</u>		
<u><i>Ulmus americana</i> 'Valley Forge'/ American elm</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>	<u>D</u>	<u>1.</u>	<u>.5</u>	<u>1.5</u>	<u>1.25</u>		<u>1.5</u>	
<u><i>Ulmus carpinifolia</i> 'Groenveldt'/ Groenveldt elm</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LD</u>	<u>D</u>	<u>1.</u>	<u>.5</u>	<u>1.5</u>	<u>1.25</u>		<u>1.5</u>	
<u><i>Ulmus parvifolia</i>/ Chinese elm</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>			<u>1.5</u>	<u>1.5</u>				
<u><i>Zelkova serrata</i>/ Japanese zelkova</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G, PL</u>	<u>LD</u>			<u>1.5</u>					

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<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and height in Ft (m) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(5)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>6.0 (1.8)</u>	<u>8.0 (2.4)</u>	<u>10.0 (3.0)</u>										
		<u>CATEGORY I EVERGREEN TREES</u> <u>Trees generally less than 30 feet in height at maturity with a spread less than 15 feet</u>												
<u><i>Ilex x attenuata</i> 'Fosteri'/ Foster's holly</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>G</u>	<u>ME</u>	<u>SH</u>							
<u><i>Ilex x Nellie Stevens</i>'/ Nellie Stevens holly</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>G</u>	<u>ME</u>								
<u><i>Juniperus chinensis</i>/ Chinese juniper</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>G</u>		<u>D</u>							
<u>'Columnaris'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							
<u>'Denserecta'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							
<u>'Erecta Glauca'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							
<u>'Grey Gleam'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							
<u>'Hetzi columnaris'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							
<u>'Keteleeri'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							
<u>'Robusta green'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							
<u>'Torulosa'</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>		<u>D</u>							

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and height in Ft (m) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(5)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>6.0 (1.8)</u>	<u>8.0 (2.4)</u>	<u>10.0 (3.0)</u>										
		<u><i>Juniperus virginiana</i> 'Princeton Sentry'/Eastern redcedar</u>	<u>30 (3)</u>	<u>40 (4)</u>										
<u><i>Taxus baccata</i> 'Fastigiata'/ upright Irish yew</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>RA</u>									
<u><i>Thuja occidentalis</i> 'Nigra'/ dark green American arborvitae</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>G, RA</u>	<u>ME</u>	<u>W</u>							
<u><i>Thuja orientalis</i>/ Columnar oriental arborvitae</u>	<u>30 (3)</u>	<u>40 (4)</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>G, RA</u>		<u>PS, W</u>							
CATEGORY II														
EVERGREEN TREES														
Trees 30 to 40 feet in height at maturity with a spread of 15 to 20 feet														
<u><i>Abies conolor</i>/ white fir</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>								
<u><i>Calocedrus decurrens</i>/ incense cedar</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>W</u>							
<u><i>Chamaecyparis lawsoniana</i>/ Lawson falsecypress</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>PS</u>							
<u><i>Chamaecyparis obtusa</i>/ Hinoki false cypress</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>LE</u>	<u>W</u>							
<u><i>Chamaecyparis pisifera</i> 'Plumosa'/ plume sawara false cypress</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>W</u>							
<u><i>Chamaecyparis thyoides</i>/ Atlantic whitecedar</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>W</u>							
<u><i>Cryptomeria japonica</i>/ Japanese cryptomeria</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>LE</u>	<u>IS</u>							

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<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and height in Ft (m) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(5)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>6.0 (1.8)</u>	<u>8.0 (2.4)</u>	<u>10.0 (3.0)</u>										
		<u><i>Cunninghamia lanceolata</i>/ China fir</u>	<u>50 (5)</u>	<u>75 (7)</u>										
<u><i>Cupressocyparis leylandii</i>/ Leyland cypress</u>	<u>25 (2.5)</u>	<u>38 (3.5)</u>	<u>50 (4.5)</u>	<u>63 (6)</u>	<u>G</u>	<u>LE</u>	<u>PS, W</u>	<u>0.5</u>						
<u><i>Ilex aquafolium</i>/ English holly</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>SH</u>							
<u><i>Ilex opaca</i>/ American holly</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>IS, SH</u>			<u>1.25</u>	<u>1.5</u>	<u>1.5</u>		
<u><i>Juniperus scopulorum</i> 'Moonglow'/ Rocky Mt. Juniper</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>D</u>							
<u><i>Juniperus virginiana</i>/ Eastern redcedar</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>PS</u>					<u>1.5</u>		
<u>'Canaert'</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>D, IS</u>							
<u>'Manhattan Blue'</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>D, IS</u>							
<u><i>Picea glauca</i>/ white spruce</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>LE</u>	<u>D, PS, RZ</u>							
<u><i>Picea omorika</i>/ Serbian spruce</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>LE</u>								
<u><i>Picea orientalis</i>/ Oriental spruce</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>LE</u>	<u>SC</u>							
<u><i>Picea pungens</i>/ Colorado blue spruce</u>	<u>50 (5)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (12)</u>	<u>G</u>	<u>ME</u>	<u>D</u>							

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<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and height in Ft (m) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(5)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>6.0 (1.8)</u>	<u>8.0 (2.4)</u>	<u>10.0 (3.0)</u>										
		<u><i>Pinus bungeana</i>/</u> <u>lacebark pine</u>	<u>50</u> <u>(5)</u>	<u>75</u> <u>(7)</u>										
<u><i>Pinus parviflora</i>/</u> <u>Japanese white pine</u>	<u>50</u> <u>(5)</u>	<u>75</u> <u>(7)</u>	<u>100</u> <u>(9)</u>	<u>125</u> <u>(12)</u>	<u>G</u>	<u>ME</u>								
<u><i>Pinus thunbergiana</i>/</u> <u>Japanese black pine</u>	<u>50</u> <u>(5)</u>	<u>75</u> <u>(7)</u>	<u>100</u> <u>(9)</u>	<u>125</u> <u>(12)</u>	<u>G</u>	<u>ME</u>	<u>D, IS, RZ</u>							
<u><i>Pseudotsuga menziesii</i>/</u> <u>Douglas fir</u>	<u>50</u> <u>(5)</u>	<u>75</u> <u>(7)</u>	<u>100</u> <u>(9)</u>	<u>125</u> <u>(12)</u>	<u>G</u>	<u>ME</u>								
<u><i>Taxus cuspidata</i> 'Capitata'/</u> <u>pyramidal Japanese yew</u>	<u>50</u> <u>(5)</u>	<u>75</u> <u>(7)</u>	<u>100</u> <u>(9)</u>	<u>125</u> <u>(12)</u>	<u>G</u>	<u>ME</u>								
<u><i>Tsuga canadensis</i>/</u> <u>Canadian hemlock</u>	<u>25</u> <u>(2.5)</u>	<u>38</u> <u>(3.5)</u>	<u>50</u> <u>(4.5)</u>	<u>63</u> <u>(6)</u>	<u>G</u>	<u>ME</u>	<u>SH</u>	<u>0.5</u>					<u>1.5</u>	
<u><i>Tsuga caroliniana</i>/</u> <u>Carolina hemlock</u>	<u>25</u> <u>(2.5)</u>	<u>38</u> <u>(3.5)</u>	<u>50</u> <u>(4.5)</u>	<u>63</u> <u>(6)</u>	<u>G</u>	<u>ME</u>	<u>SH</u>	<u>0.5</u>						
<u>CATEGORY III EVERGREEN TREES</u>	<u>Trees 40 to 50 in height at maturity with a spread of 20 to 30 feet</u>													
<u><i>Cedrus atlantica</i>/</u> <u>atlas cedar</u>	<u>90</u> <u>(8)</u>	<u>125</u> <u>(12)</u>	<u>150</u> <u>(14)</u>	<u>175</u> <u>(16)</u>	<u>G</u>	<u>LE</u>								
<u><i>Picea abies</i>/</u> <u>Norway spruce</u>	<u>90</u> <u>(8)</u>	<u>125</u> <u>(12)</u>	<u>150</u> <u>(14)</u>	<u>175</u> <u>(16)</u>	<u>G</u>	<u>LE</u>	<u>PS</u>							
<u><i>Pinus echinata</i>/</u> <u>shortleaf pine</u>	<u>90</u> <u>(8)</u>	<u>125</u> <u>(12)</u>	<u>150</u> <u>(14)</u>	<u>175</u> <u>(16)</u>	<u>G</u>	<u>LE</u>	<u>PS</u>					<u>1.5</u>		
<u><i>Pinus nigra</i>/</u> <u>Austrian pine</u>	<u>90</u> <u>(8)</u>	<u>125</u> <u>(12)</u>	<u>150</u> <u>(14)</u>	<u>175</u> <u>(16)</u>	<u>G</u>	<u>LE</u>								

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Table 12.17 Tree Selection And Canopy Cover Guide

<u>Botanical/ Common Name</u>	<u>Minimum Planting Area in ft² (m²)</u>	<u>Projected 10-yr Tree Canopy Area in ft² (m²) and height in Ft (m) at planting</u>			<u>Tree Uses</u>	<u>Screening Yard Use</u>	<u>Environmental Tolerances</u>	<u>Conditional Use or reduced credit</u>	<u>Air Quality 12-0510.4B(1)</u>	<u>Energy Conservation 12-0510.4B(2)</u>	<u>Water Quality 12-0510.4B(3)</u>	<u>Wildlife 12-0510.4B(5)</u>	<u>Native 12-0510.4B(5)</u>	<u>Improved Cult./Var. 12-0510.4B(6)</u>
		<u>6.0 (1.8)</u>	<u>8.0 (2.4)</u>	<u>10.0 (3.0)</u>										
		CATEGORY IV EVERGREEN TREES <u>Trees 50 feet in height or greater at maturity with a spread of over 30 feet</u>												
<u>Magnolia grandiflora/ Southern magnolia</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LE</u>	<u>PS, W</u>							
<u>Pinus rigida/ pitch pine</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LE</u>					<u>1.5</u>	<u>1.5</u>		
<u>Pinus strobus/ white pine</u>	<u>65 (6)</u>	<u>75 (7)</u>	<u>100 (9)</u>	<u>125 (11.5)</u>	<u>G</u>	<u>LE</u>	<u>PS</u>	<u>0.5</u>						
<u>Pinus sylvestris/ Scotch pine</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LE</u>	<u>D</u>							
<u>Pinus taeda/ loblolly pine</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>G</u>	<u>LE</u>	<u>W</u>		<u>1.</u>		<u>25</u>	<u>1.5</u>	<u>1.5</u>	
<u>Pinus virginiana Virginia pine</u>	<u>130 (12)</u>	<u>150 (14)</u>	<u>200 (18)</u>	<u>250 (23)</u>	<u>LE</u>	<u>—</u>	<u>PS</u>					<u>1.5</u>	<u>1.5</u>	

TREE USES: G=general, PL=parking lot, RA=for restricted areas

SCREENING YARD USE, LD=large deciduous, ME=medium evergreen, LE=large evergreen (see Sect. 13-303 of the Zoning Ordinance)

ENVIRONMENTAL TOLERANCES: AP=air pollution, D=drought, IS=de-icing salts, PS=partial shade, RZ=restricted root zone, SC=poor soil conditions, SH=full shade, W=wet soil (see § 12-0601.1E)

CONDITIONAL USE OR REDUCED CREDIT (see § 12-0509.3D(2))

12-0700 STANDARDS FOR FIELD PRACTICE

12-0701 Preconstruction

12-0701.1 Prior to the preconstruction meeting, all activities prescribed on an approved Tree Conservation Plan that are to occur prior to construction shall be completed.

12-0701.2 When areas shown on the approved plans to be preserved do not contain any significant vegetation, it shall be the responsibility of the permittee to obtain approval from the Director for an exemption from preservation and protection requirements prior to clearing the area.

12-0701.3 ~~All trees located outside of the limits of clearing and within areas designated to be preserved that have been pre-identified~~ labeled on the approved tree preservation plan ~~tree inventory~~ as “Assessed as Ddead”, “Assessed in Poor Ccondition” or “Assessed as Ppotential Hhazardous” as provided in § 12-05067 shall be evaluated by Urban Forest Management Division Staff (or alternative staff as determined by the Director) prior to, or during the preconstruction walk-through for removal or other arboricultural treatments during the development site’s initial land clearing operations.

12-0701.4 The Director may require the removal or treatment of any tree or tree condition described in § 12-0507 and 12-0701.3 that has not been identified on the approved plans but is observed during the preconstruction walk-through, or during any other inspection of the site. If, during the preconstruction walk-through, or during any other inspection of the site, t~~The Director identifies additional trees~~ may also require the removal or treatment of any tree or portion thereof that has that have become hazardous or a maintenance nuisance due to the introduction of a target such as a structure, open space frequented by people, or other improvement, removal of these trees shall be required. Trees shall be removed by hand with a chain saw and the stump shall be left in place unless it too is deemed a hazard or a maintenance nuisance. The removal of the trunk or branches of the felled tree(s) is not required within wooded areas, unless specifically required by the Director.

12-0701.5 If demolition of existing site features (houses, structures, etc.) is to occur next to trees to be preserved, tree protection shall be installed before a demolition permit can be issued.

12-0702 Land Clearing Operations

12-0702.1 Prior to land disturbing activities, root pruning with a vibratory plow, trencher or other device approved by the Director shall be conducted along the limits of clearing adjacent to tree preservation areas (see Plate 7-12(7M-12)).

12-0702.2 Trees being removed shall not be felled, pushed or pulled into tree preservation areas. Equipment operators shall not clean any part of their equipment by slamming it against the trunks of trees to be retained.

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12-0702.3 Trees on the edge of the limits of clearing shall be cut down by hand with a chain saw. Remaining stumps shall either be left in place or ground down with a stump grinder.

12-0702.4 Unless otherwise determined by the Director ~~Trees approved to be removed~~ by Urban Forest Management Division staff to be removed during pre-construction walk-through as provided by § 12-0701.3 and § 12-0701.4 shall be removed in conjunction with the development site's initial land clearing operation .

12-0702.5 The permittee may preserve individual trees or groups of trees over and above that required by the approved plan. However, any additional tree preservation area(s) shall be protected from construction activity in accordance with the methods allowed in § 12-0703.

12-0702.6 The removal of any individual trees or tree preservation areas designated for preservation on the tree preservation plan and narrative must be pre-approved by the Director by means of a revision to the approved Tree Conservation Plan.

12-0703 Tree and Forested Area Protection

12-0703.1 Tree Protection Devices. The permittee shall protect the above and below-ground portions of all vegetation shown on the approved plan to be preserved within and contiguous to the site. Protective devices shall be installed prior to any clearing and grading with heavy equipment if specified in the tree preservation plan or required by proffered conditions, development plans, conceptual/final development plans, PRC plans, special permits, special exceptions or variance approvals.

12-0703.1A Along all limits of clearing adjacent to areas of vegetation to be preserved, a device shall be used which effectively protects the above and below-ground portions of the trees and other vegetation to be preserved.

12-0703.1A(1) The device(s) used shall be installed in conformance with the approved tree preservation plan and narrative and all construction personnel shall be instructed to honor these devices. The protection devices described below in § 12-0703.1B shall be installed and maintained on sites with the exception of the silt controls listed in § 12-0703.1C through § 12-0703.1D which may be used as tree protection devices if proposed for installation at the limits of clearing on the approved erosion and sedimentation control plan. The Director may also require the placement of one of the tree protective devices listed in § 12-0703.1B to supplement the erosion and sediment control devices listed in § 12-0703.1C through § 12-0703.1D if these are not deemed to provide adequate protection. Other devices affording effective protection may be used subject to the Director's approval.

12-0703.1B Orange plastic fence, welded wire fence, chain link fence, silt fence or super silt fence may be used as devices to protect trees and forested areas. The protective device shall be placed within the disturbed area at the limits of clearing and erected at a minimum height of 4

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feet (1.2 meters), except for super silt fence where height may be 3.5 feet (1.1 meters). The fencing material shall be mounted on 6-foot (1.8-meter) tall steel posts driven 1.5 feet (0.5 meters) into the ground and placed a maximum of 6 feet (1.8 meters) apart, except for welded wire fence and chain link fence where steel posts may be placed a maximum of 10 feet (3.0 meters) apart (see Plate 6-12(6M-12)).

12-0703.1C Filter fabric fence or silt fence. This fencing may be used for tree protection when placed at the limits of grading and constructed as specified in the Virginia Erosion and Sediment Control Handbook. The Director may also require the placement of one of the tree protective devices listed in § 12-0703.1B if the filter fabric fence is not deemed adequate to protect the trees shown on the approved plan to be preserved.

12-0703.1D Berm. A temporary perimeter dike which has been constructed for erosion and sediment control may double as a protective device for vegetation to be preserved. The dike shall be constructed as specified in the Virginia Erosion and Sediment Control Handbook and shall be constructed entirely within the disturbed area immediately adjacent to the limits of clearing. Prior to construction of the dike, or if the dike is removed before the construction is completed, the Director ~~may~~shall require the installation of tree protection fence and/or erosion and sediment control devices.

12-0703.2 Once clearing is completed and protective devices have been installed according to the approved Phase I erosion and sediment control plan (see § 11-0104.1), an inspection shall be requested by the permittee or their designee. The Phase I clearing and erosion and sediment control devices shall be approved by the Director before additional clearing begins.

12-0703.3 The permittee shall post and maintain bilingual signs at the limits of clearing at a minimum of 50-foot (15.2-meter) intervals that clearly states that trees and forested areas must be protected and left undisturbed. For example, such signage could read “Tree Protection Zone - Keep Out – Off limits to Construction Equipment, Materials and Workers.” Signs shall be posted in English and Spanish; or, shall be posted in any other combination of languages that the Director determines necessary to protect trees and forested areas. Signs shall remain posted throughout all phases of construction; shall be attached to the tree protection fencing; and, shall not be nailed or in any manner attached to the trees or vegetation to be preserved.

12-0704 Treatment of Trees and Forested Areas During Construction

12-0704.1 Trees and forested areas shall be protected and managed during all phases of construction in accordance with the provisions of this section and any site-specific guidance provided within the approved tree preservation plan and narrative.

12-0704.2 Trees and forested areas shall be protected and managed during all phases of construction in a manner that will ensure that these resources conform to the post-development Tree and Forested Area standards provided in §§ 12-0403 and 12-0404 at the end of construction. These standards require that trees survive construction in a manner that substantially retains their pre-develop level of biological function, health and structural condition; and require that forested areas survive construction in a manner that preserves the ecological functionality, health, and condition of super- and sub-canopy tree species; woody shrubs, herbaceous plants, vines, non-vascular plants and epiphytes; decaying leaf litter, root mass, fungi, soil biota and soil conditions that may be present.

12-0704.3 In addition to protecting trees, the permittee shall protect all understory plants, leaf litter and soil conditions found in forested areas designated to be left preserved except as may be allowed by the approved tree preservation plan and narrative.

12-0704.4 The permittee shall actively monitor the construction site to ensure that inappropriate activities such as the storage of construction materials, dumping of construction debris, and traffic by construction equipment and personnel do not occur within areas shown to be preserved outside of the limits of clearing.

12-0704.5 Any work allowed by the approved tree preservation plan and narrative to occur adjacent to trees or within forested areas to be preserved, such as root pruning; installation of tree protection fencing and silt control devices; removal of trash or debris; or extraction of trees designated to be removed to eliminate hazardous conditions shall be performed in a manner that minimizes damage to trees, understory shrubs, herbaceous plants, leaf litter, roots systems and soil conditions.

12-0704.6 The permittee shall restore understory plant materials, leaf litter and soil conditions to the satisfaction of the Director if these are found to be damaged, removed or altered in a manner not specifically allowed by the provisions of this Chapter or not specifically addressed within the approved tree preservation plan and narrative.

12-0704.7 Tree protection devices shall be maintained until all work in the vicinity has been completed and shall not be removed or relocated without the consent of the Director. If the Director deems that the protective devices are insufficient, installation of additional protective devices ~~may~~shall be required.

12-0704.8 Heavy equipment, vehicular traffic, stockpiling of materials or deposition of sediment shall not be permitted within tree preservation areas.

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12-0704.9 Any power equipment use prescribed by the approved tree preservation plan narrative within tree preservation areas shall be limited to small hand-operated equipment such as chainsaws.

12-0704.10 Any work within tree preservation areas requiring the use of larger motorized equipment such as, but not limited to, tree transplanting spades, skid loaders, tractors, trucks, stump-grinders, or any accessory or attachment connected to such equipment shall not occur unless approved in writing by the Director, or unless the activity has been specifically addressed within the approved tree preservation plan narrative.

12-0704.11 No toxic materials shall be stored within 100 feet (30.5 meters) of vegetation to be retained.

12-0704.12 Fires authorized by Fairfax County Air Pollution Control Ordinance, Fire Code, or any other State or County law shall not be permitted within 100 feet (30.5 meters) of vegetated areas retained unless approved by the Director in accordance with the ordinance, code or law. If authorized, fires shall be limited in size so as not to adversely affect the vegetation.

12-0704.13 No protective devices, signs, utility boxes or other objects shall be nailed or affixed to trees to be preserved.

12-0704.14 In the event that the Director determines that a tree or portion thereof is dead, declining, hazardous, or a property maintenance burden due to construction or environmental changes resulting from construction; or, is hazardous to life or property because of conditions not related to construction, the Director shall require the permittee to remove the tree or portion thereof. The permittee shall take such action as necessary to eliminate the tree or portion thereof carefully. The permittee shall notify the Director of any actions taken or proposed to be taken under this Section.

12-0704.15 The main trunks of dead trees may be allowed to remain on sites where the Director determines that a "trunk snag" may provide habitat or other wildlife benefits and have little or no potential to cause personal injury or property damage, or to obstruct streams or other drainage.

12-0704.16 When excavating, trenching, or tunneling, all tree roots greater than 1 inch (2.5 centimeters) in diameter that are exposed and/or damaged shall be trimmed cleanly, and covered with organic mulch, topsoil, or other suitable material to prevent the exposed roots from drying out.

12-0704.17 Retaining walls shall be provided when necessary to maintain the limits of clearing and tie into existing grades. A certified arborist should be consulted to determine the proper tree wall location to protect the structural integrity of the tree's root system, to help ensure the tree's survival and public safety. Once a grade has been lowered for the construction of a tree wall, the wall shall be constructed as soon as possible, but, in any event, within two weeks. If the wall is over 2 feet (0.6 meters) in height, a building permit is required according to § 2-0205.

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12-0704.18 Any damage inflicted to the above or below-ground portions of the trees shown to be preserved shall be repaired immediately. All damaged branches in the crown shall be repaired, as specified in § ~~12-0706.4~~ 12-0706.2 using standards identified in § 12-0706.4.

12-0704.19 Any portion of a tree preservation area that is disturbed without prior approval of the Director shall be mulched immediately with a minimum of 4-inches (10.2 centimeters) of wood chips or other suitable material as approved by the Director.

12-0704.20 Trenching shall be done only within the areas shown to be disturbed on the approved plan, unless otherwise approved by the Director prior to commencing work (see Plate 7-12(7M-12)).

12-0704.21 Trees or preservation areas that are damaged by trenching or tunneling shall be inspected within 24 hours by to assess any structural damage to the above or below ground portions of trees. If it is determined by the Director that the damaged trees should be retained, trees shall be mulched with wood chips mulch or other suitable material immediately after the work is completed. Mulch shall be placed 4-inches (10.2 centimeters) deep and cover the entire area of disturbance to mitigate the impacts of disturbance.

12-0705 Tree and Shrub Planting

12-0705.1 Materials

12-0705.1A The trees and shrubs that are planted shall be of the species and size specified on the approved plans unless substitutions are approved in accordance with this section.

12-0705.1B All tree and shrub sizes shall meet the standards specified in the latest edition of the American Association of Nurserymen's American Standard for Nursery Stock, (ANSI Z60.1).

12-0705.1C Tree substitutions within the tree categories listed in Table 12.19~~7~~are generally accepted unless post development conditions conflict with the environmental tolerances of the substituted species; or unless otherwise specified by proffered conditions, development conditions, special exceptions, special permits, or variances and shall be in conformance with the following:

12-0705.1C(1) The use of substitutions shall not result in exceeding the genus and species diversity limits specified in § 12-0515.1L ~~12-0514.1L~~.

12-0705.1C(2) A letter signed by the permittee shall be provided to the Director acknowledging any proposed substitutions to trees or shrubs shown on the approved Tree Conservation Plan.

12-0705.1C(3) Substitution of a tree shown on the approved plan from one tree category with a tree from another category shall require the approval of the Director.

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12-0705.1D Trees and shrubs shall be nursery grown unless otherwise approved and shall be healthy and vigorous, and the root crown shall be located at the top of the root ball. Plants shall be free from defects, decay, disfiguring roots, sun-scald, injuries, abrasions, diseases, insect pests, and all forms of infestations or objectionable disfigurements as determined by the Director. Plants shall be in conformance with the latest edition of American Standard for Nursery Stock, (ANSI Z60.1).

12-0705.1E Balled and burlapped trees and shrubs shall be dug using standard sizes with firm, natural balls of earth and securely wrapped in accordance with the latest edition of American Standard for Nursery Stock, (ANSI Z60.1).

12-0705.1F Bare root trees and shrubs shall be dug with adequate fibrous roots which shall be protected during handling and planting to guard against drying and physical damage.

12-0705.1G Container grown stock shall have grown in a container long enough for the root system to hold its soil together, but not so long as to become root bound.

12-0705.1H The permittee shall provide the Director with a letter certifying that all native trees planted on the site for additional 10-year tree canopy credits as provided by § 12-051009.4B(5) have been propagated from seed or non-genetically modified germoplasm collected within the mid-Atlantic region.

12-0705.2 Delivery and Temporary Storage

12-0705.2A Plants shall be protected during delivery to prevent desiccation of leaves.

12-0705.2B Trees and shrubs should be planted on day of delivery. If this is not possible, the contractor shall protect unplanted plants by keeping them in shade, watered and protected with soil, mulch or other acceptable material.

12-0705.2C Trees and shrubs shall not remain unplanted for more than two weeks.

12-0705.3 Planting of Nursery Stock

12-0705.3A All trees and shrubs shall be planted as specified in the latest edition of the "Tree and Shrub Planting Guidelines" prepared by the Virginia Cooperative Extension, Virginia Polytechnic Institute and State University.

12-0705.3B If planting in areas that have been previously compacted, the soil shall be properly prepared (tilled and amended as needed based on soil samples) to a depth of 1 foot (0.3 meters), prior to installation of landscape material. Soil within individual planting holes shall not be amended.

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12-0705.3C The staking and guying of trees is not required except where the Director determines that site conditions warrant their use. Examples of conditions where these methods may be necessary include: planting in windy locations, on steep slopes, or where vandalism may be a concern. All stakes and guys must be removed within one year of plant installation.

12-0705.3D Mulching. All trees and shrubs shall be mulched after planting, to a minimum depth of 2 inches (5.1 centimeters), but no more than 3 inches (7.6 centimeters), with an appropriate mulch material such as pine bark, pine needles, wood chips or shredded bark. Mulch shall cover the entire root area and saucer; however, mulch shall not be placed within 6 inches (15.3 centimeters) of the trunk.

12-0705.4 Planting of Transplanted Trees and Shrubs

12-0705.4A Selection. Trees to be transplanted shall be full and healthy without any significant defects and should be able to overcome root disturbance. The proposed transplant location(s) shall approximate the environmental tolerances the species is able to withstand.

12-0705.4B Timing. Relocating deciduous trees is best carried out in late fall or early spring. Relocating evergreen trees is best carried out in the early spring. Moving trees at less than ideal times of the year can only be successful if extraordinary after-care measures are taken. Such measures shall be detailed in the tree transplanting plan.

12-0705.4C Treatment before, during and after Transplantation. Trees to be transplanted shall be pruned to clean dead, broken, and diseased limbs and watered heavily before lifting. Immediately after planting, the tree shall be well watered and top dressed with 2-3 inches (5.1-7.6 centimeters) of mulch. A monitoring and maintenance schedule shall be specified in the tree transplanting plan with written reports submitted to the Director.

12-0705.4D Storage. Trees to be transplanted should be placed in their permanent locations immediately. If this is not possible, root balls of lifted balled and burlapped trees should be placed in a storage area in temporary trenches dug deep enough to entirely surround the root ball, or encased in a minimum of 12 inches (0.3 meters) of composted mulch. Root balls of trees lifted with a tree spade shall be placed in temporary storage holes that are created with the same size tree spade. The storage area shall be well protected from construction equipment and personnel, located in a shady environment and have a water source nearby. A monitoring and maintenance schedule shall be specified in the tree transplanting plan with written reports submitted to the Director.

12-0705.5 ~~Planting of Seedlings, Shrubs and Woody Seed Mix~~ 12-0705.5 Seedling and Shrub Planting Specifications

12-0705.5A ~~Seedlings, and shrubs, and woody seed mix~~ shall be planted where shown on the Tree Conservation Plan.

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12-0705.5B Density. Seedlings and shrubs shall be planted at a density of approximately 400 seedlings per acre (10 seedlings per 100 square meters) unless otherwise specified in other Chapters such as found in § 6-1311 (Reforestation).

12-0705.5C Size and Age. Seedlings shall be at least three years old and 12 inches (0.3 meters) in height. Any age configuration in terms of initial seedbed age - to - transplant bed age such as 3-0, 2-1, 1-2, etc. is permissible so long as the total age is 3 years. Seedlings of a greater age may be used provided they conform to the specifications outlined under this Section.

12-0705.5D Quality. Planting stock shall be healthy and free from insect and disease pests and have a single leader. The root system is to be well developed, fibrous, and kept moist until planted.

12-0705.5E Time of planting. Seedlings shall be planted between the dates of March 1 and May 15, and November 15 and December 15 unless otherwise approved by the Director.

12-0705.5F Soil and Bed Preparation. In areas of undisturbed, uncompacted soil, seedlings may be planted with a dibble bar, shovel, or auger. See Plate 3.37-4 in the Virginia Erosion and Sediment Control Handbook for a description of the dibble bar method. See Plate 8-12(8M-12) for an illustration of the shovel or auger method.

12-0705.5F(1) In areas of compacted soil or fill, the soil throughout the area shall be amended with 3-6 inches (7.6-15.2 centimeters) of organic matter and thoroughly tilled to a depth of 12 inches (0.3 meters) before planting. After the soil has been prepared and allowed to settle, the seedlings may be planted using the dibble bar, shovel or auger method.

12-0705.5F(2) Tree seedlings and shrubs providing 10-year tree canopy credits as provided in § 12-051009.4D shall be planted in contiguous mulch beds. The mulch bed shall consist of minimum of 2 inches (5.1 centimeters) of organic mulch that shall be placed on the topsoil layer at final grade. Mulch shall consist of wood chips, bark chips, or shredded bark that has been aged for a minimum of 4 months. Mulch beds must be kept free of any grass, weeds, vines and any other plant or condition that might hinder the establishment of the tree canopy.

12-0705.5G Pre-planting Treatment. Seedlings shall be kept moist, fresh, and protected from wind and sun to prevent stress before planting. Seedlings shall be carried in a pail or bucket filled with sufficient mud and/or water to puddle the roots until planting. However, seedling roots which have been clay dipped for moisture protection may be wrapped in wet burlap until planted instead of being carried in a bucket.

12-0705.5H Planting Method. Seedlings shall be planted at approximately the same depth as growing in the nursery, i.e., the root collar should be at ground level.

12-0705.5H(1) Seedlings shall be planted erect.

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12-0705.5H(2) Seedling roots shall be spread carefully in a natural position in the planting hole.

12-0705.5H(3) Seedlings shall be securely planted with the soil firmly packed around the roots.

12-0705.5I Protective Tubing. Deciduous seedlings shall be planted with 4-foot tall tree protection tubes, mulch, and netting when required by the Director.

12-0705.5J Watering. Seedlings shall be watered the day they are planted and thereafter as necessary to insure that the minimum viability percentages identified in § 12-0705.8B and C are met.

12-0705.6 Shrubs planted to supplement tree seedlings for tree canopy credits as provided in § 12-051009.4D shall be planted at the same density as seedlings (400 plants per acre (10 seedlings per 100 square meters)) and shall be planted in 5-18 inch (12.7-45.7 centimeters) spread or larger size or in sizes the species normally obtains when distributed as 3 gallon (11.4 liter) container stock. Shrubs shall be planted in accordance with the latest edition of the "Tree and Shrub Planting Guidelines" prepared by Virginia Cooperative Extension, Virginia Polytechnic Institute and State University.

~~12-0705.7 Woody Seed Mix. Native woody seed mix composition, coverage and mulch specifications will be approved by the Director on a requested basis.~~

12-0705.87 Mortality Rates and Replacement Procedures. Planting of tree seedlings, woody shrubs and woody seed mix must be well established prior to release of the conservation deposit. The conservation deposit will be held for a minimum of two years after the initial installation of the plantings.

12-0705.87A Ninety percent or more of the ~~minimum number~~ of nursery stock trees and shrubs required by the approved plan shall be healthy and capable of developing a trunk and branch structure typical for their species at the time the conservation deposit is released.

12-0705.87B Sixty-seven percent or more of the initial tree seedling and shrub density required by the approved plan shall be viable at the time the conservation deposit is released.

12-0705.87C If these minimum percentages are not met at the time of inspection, additional seedlings, woody shrubs, or woody seed mix shall be re-established at densities necessary to achieve the required minimum percentages of viability ~~of the initial plantings based on the observed mortality rates. For example, if the plan called for 500 seedlings to be planted, a minimum of 335 seedlings (67%) must be viable more than 2 years after installation. If 250 seedlings were viable (a deficit of 85 viable plants) at the time of inspection (2.5 years after installation), 170 replacement seedlings would need to be planted, based on the observed mortality rate (50%), prior to release of the conservation deposit.~~ identified in §§ 12-0705.87A and 12-0705.87B above.

12-0706 End of Construction

12-0706.1 Inspection. The developer shall request an inspection when construction is completed to ensure that all work is in accordance with the approved plans.

12-0706.2 Repair. All trees that have been damaged as a result of construction activity shall be repaired ~~as specified~~ using standards identified in § 12-0706.4.

12-0706.3 Tree Removal

12-0706.3A In the event that the Director determines that a tree or portion thereof is dead, declining, hazardous, or a property maintenance burden due to construction or environmental changes resulting from construction; or, is a hazardous to life or property because of conditions not related to construction, the Director shall require the permittee to remove the tree or portion thereof. The permittee shall take such action as necessary to eliminate the tree or portion thereof carefully. The permittee shall notify the Director of any actions taken or proposed to be taken under this Section.

12-0706.3A(1) The main trunks of dead trees may be allowed to remain on sites where the Director determines that a “trunk snag” may provide habitat or other wildlife benefits and have little or no potential to cause personal injury or property damage, or to obstruct streams or other drainage.

12-0706.3A(2) Trees that are required to be removed shall be removed in such a way that the surrounding trees, vegetation, landscaping, structures, and site features are not damaged.

12-0706.3A(3) With the exception of trees that are left “trunk snags” as provided in § 12-0706.3A(1) above, trees that are required to be removed shall be cut down flush with the ground (within 2 inches (5.1 centimeters) of the soil), and cut into movable lengths, to prevent the creation of a new hazard. If site conditions interfere with the permittee's ability to do this, an inspection by the Director will be necessary to determine if the remaining stump can be left or must be removed by other means.

12-0706.3A(4) If a stump created by the removal of a hazardous tree is determined by the Director to pose a hazard (i.e., jagged stumps, ~~stumps or holes resulting from hollow trees~~) then the Director may also require the stump shall be removed by acceptable means in conjunction with the removal of the tree in a manner that eliminates the hazard.

12-0706.3A(5) When trees must be taken down or pruned to comply with the provisions of this Section, the resulting wood shall remain the property of the property owner. Limbs 3 inches (7.6 centimeters) in diameter and smaller shall be removed from the site unless approval is granted by the Director to leave limbs in a wooded area.

12-0706.3B ~~G~~ Replacement trees

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12-0706.3BG(1) The tree canopy lost due to the removal of trees that have died or are in serious decline due to construction shall be replaced by the planting of replacement trees, except as provided for in § 12-0706.3BG(4). Replacement trees shall be planted in the vicinity of the dead or dying tree which was removed unless other arrangements are agreed to by the owner and the permittee and approved by the Director. Replacement trees shall duplicate the species composition of the surrounding forest as closely as possible.

12-0706.3BG(2) Forested areas that no longer meet the minimum forested area size and dimensions of § 12-0404.4 because of fragmentation or reduction in size due to unapproved construction or clearing activities shall forfeit any additional tree canopy area accredited to those areas within the approved 10-year tree canopy calculations. Although tree replacement may be required for remediating unapproved clearing as provided in § 12-~~0802.20516~~, tree planting shall not constitute remediation for failure to maintain minimum forested area size and dimensions

12-0706.3BG(3) If unapproved clearing results in forested areas no longer meeting minimum area size and dimensions, the Director may require the permittee to submit a revision to the approved Tree Conservation Plan that re-examines the site's conformance with 10-year Tree Canopy Requirements.

12-0706.3BG(4) Except for trees required to be preserved because of applicable proffered conditions, development conditions, special exceptions, special permits, variances or other County requirements, replacement trees may not be required when individual trees or groups of trees shown on the approved plans to be preserved need to be removed for a reason clearly demonstrated to the Director prior to their removal. However, the Director may determine that ~~Replacement trees may be~~ required to bring the site into conformance with 10-year canopy provision of § 12-0000 *et seq.* and Chapter 122 of the Code *et seq.*

12-0706.3CH The permittee shall obtain written permission from the property owner or his/her agent before entering the subject property to comply with the requirements of this Section. In the event that such permission is denied and such denial is demonstrated to the satisfaction of the Director, the permittee may be required to plant replacement trees elsewhere onsite, or to provide an equivalent area of 10-year tree canopy provided by the trees through one of the offsite mechanisms provided in § 12-0512~~4~~.

12-0706.4 Pruning

12-0706.4A All pruning shall be done in accordance with the latest edition American National Standards Institute (ANSI) A300 pruning standards. Pruning shall be done by personnel who, through training and on-the-job experience, understand the techniques and hazards of tree care work and understand the safety requirements outlined in the latest edition of the ANSI Z133.1 standards. Refer to the ANSI standards listed above, and Plate 9-12(9M-12) for a graphical depiction of proper pruning technique.

12-0000 TREE CONSERVATION

12-0706.4A(1) Cuts and wounds shall not be treated with tree wound dressing unless approved by the Director.

12-0706.4A(2) Climbing spikes. Climbing or tree spikes shall not be used to climb live trees unless the tree is being removed. The holes left by such spikes provide access points for insects and disease to enter the tree.

12-0706.4B Newly planted vegetation

12-0706.4B(1) Any vegetation required by the approved conservation plan or the Director, which in the opinion of the Director is dead or is not healthy, shall be replaced by the permittee.

12-0706.4B(2) Trees shall be restaked by the permittee if necessary. All stakes and supporting wires shall be removed within one year of planting, or if earlier than one year, before the release of the conservation deposit.

12-0706.5 Conveying tree and forested area management plan information to property owners

12-0706.5A Any permittee that will convey ownership of common open space to a homeowner or civic association, or intends to sell a newly constructed development site to new property owners should take steps to convey any long-term tree, forested area or invasive plant management information that was prepared to satisfy tree conservation plan requirements of § 12-0508. The new property owners will then have these documents as a resource to help ensure the long-term viability of trees and forested areas located on their property.