
Chapter 32. Tree Canopy Conservation

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Chapter 32. Tree Canopy Conservation

ARTICLE I. – IN GENERAL

Title

The regulations contained herein shall be known as the “Town of Oak Island Tree Canopy Conservation Ordinance”, or “the tree ordinance.”

Authority

The provisions of this section operate under authorities granted to municipalities under G.S. 160A, Article 19 and are limited by provisions of G.S. 160A-458.5.

Effective Date

This ordinance shall take effect on the date of adoption by the town council.

Purpose and Goals

The purpose of these tree canopy conservation regulations is to conserve significant natural areas and maintain a healthy and sustainable amount of tree canopy cover across the community.

The goals of these regulations are to:

1. Maintain and enhance property values;
2. Increase the economic vitality and quality of life for citizens, visitors and businesses;
3. Encourage the conservation of existing trees, native plant communities and natural systems wherever possible while allowing quality development to take place;
4. Reduce the impacts of development on the town’s stormwater system;
5. Preserve unique and productive coastal habitats;
6. Preserve native wildlife food and habitat;
7. Protect the natural dune systems;
8. Preserve and enhance the quality of estuarine waters;
9. Utilize trees for their many environmental functions, which include moderating air temperatures, reducing energy usage, reducing ozone formation, filtering air pollutants and intercepting stormwater, and creating noise and visual buffers;
10. Reduce energy costs;
11. Preserve and enhance the visual appearance of the town;
12. Maintain no net loss of tree canopy cover across and throughout the town.

Applicability

This chapter applies to all town-owned or -controlled property including leased property and public rights-of-way with the town limits and all developed and undeveloped lots on private

property, and any and all protected trees growing on such properties, or otherwise as described herein.

Exemptions

The following are exempt from this article:

1. Bona fide farm and agricultural activities that do not involve artificial drainage of land or the maintenance, alteration or improvement of an existing structure that does not include a material increase in impervious surface;
2. Forestry activity on forestland that is taxed on the basis of its present-use value as forestland under Article 12 of Chapter 105 of the General Statutes and is conducted in accordance with a forest management plan that is prepared or approved by a forester registered in accordance with Chapter 89B of the North Carolina General Statutes;
3. Emergency management activities during and immediately after a wind storm, ice storm, or other disaster, if compliance would impede the rescue of life or property from immediate danger or the repair of utilities; any emergency work shall follow as closely as possible the technical standards required by this chapter;
4. Trees that pose an immediate risk to public health, safety and welfare;
5. Other trees and conditions as described further in this article.

These exemptions shall not be interpreted to be a general waiver of the purpose and goals of this chapter. The town shall regulate activity associated with development and may deny a building permit or refuse to approve a site or subdivision plan for either a period of up to:

1. Three (3) years after the completion of a timber harvest if the harvest results in the removal of all or substantially all of the trees that were protected by this chapter governing development from the tract of land for which the permit or approval is sought.
2. Five (5) years after the completion of a timber harvest if the harvest results in the removal of all or substantially all of the trees that were protected under this chapter from the tract of land for which the permit or approval is sought and the harvest was a willful violation of the city regulations.

Definitions

The following words, technical terms and phrases, when used in this chapter, shall have the meanings ascribed to them herein, except where the context clearly indicates a different meaning.

Actual tree canopy. For existing trees, the actual amount of cover projected directly onto the ground beneath a tree's or group of tree's canopy as measured in square feet.

ANSI standards. Industry developed, national consensus standards of practice for tree care operations (A300), safety (Z133), and nursery stock (Z60.1) developed and used by professional

arborists to guide tree care and write specifications; the standards are developed by the International Society of Arboriculture and the American Nursery and Landscape Association, and accredited by the American National Standards Institute (ANSI).

Building envelope. For the purposes of this chapter, the area inside and within 15 feet of the building footprint and within 5 feet of paved surfaces.

Bush hogging. The clearing of a lot using a Bush Hog or similar type mower for the purpose of removing vines and shrubs, but leaving trees not small enough to be cut (usually with a dbh of 4 inches or greater).

Caliper. A standard of measurement for nursery stock and replacement trees; caliper is the diameter of a tree's trunk measured in inches at 6 inches above the ground for trees up to and including 4-inch caliper and 12 inches above the ground for trees larger than 4-inch caliper.

Arborist. Professional who possesses the technical competence gained through experience and related training to provide for or supervise the management of trees and other woody plants in residential, commercial, and public landscapes.

Certified arborist. An arborist certified by the International Society of Arboriculture to have achieved a basic level of experience and knowledge in the care of trees and who engages in continuing education to retain certification.

Clearing. The permitted removal and proper disposal of any existing structures, rubble, soil, brush, trees as well as roots and other debris which might interfere with construction of a permitted building; this may be done only after the issuance of a clearing permit by the department of development services.

Clearing permit. A permit that must be obtained from the department of development services prior to the disturbance, damage, destruction or removal of a protected tree.

Conservable tree. A healthy tree at least two (2) inches dbh that can and will be protected in accordance with the technical standards.

Conserved tree. An existing tree that is retained, protected in accordance with the technical standards, and assigned tree canopy cover credit for the purpose of meeting minimum tree canopy cover requirements.

Crown. The totality of scaffold limbs, branches, twigs and leaves extending from the trunk or main stem of a tree.

Critical root zone. For a shrub, the soil 12 inches deep and all roots contained beneath the shrub's dripline; for a tree, the soil 24 inches deep and all roots contained within an area around the trunk with a radius equal to 1 foot for every 1 inch in dbh.

Dbh. A standard measurement of tree size for existing trees; measured as the diameter of the tree trunk in inches at breast height, or four and one-half feet above ground level; if a tree forks into multiple trunks below four and one-half feet, the trunk is measured at its narrowest point below the fork; for multiple trunk trees, the dominant trunk may be measured or all trunks that contribute substantially to the tree's canopy may be measured and added together.

Dripline. Imaginary boundary on the soil surfaced defined by the outer edge of the area beneath a tree's crown.

Establishment period. From the time of planting through three (3) years after planting.

Forestry activity. Any activity associated with the growing, managing, harvesting, and related transportation, reforestation, or protection of trees and timber, provided that such activities comply with existing State rules and regulations pertaining to forestry.

Grading. Altering the shape of the ground surface to a predetermined condition; this includes stripping, cutting, filling, stockpiling and shaping or any combination thereof and shall include the land in its cut or filled condition.

Growing season. The period of time during the year that the tree is actively growing and not dormant, generally occurring from late winter through mid-fall; February through October in Oak Island.

Hazardous tree. A tree that is at risk for failure because it is dead or structurally defective and in a location where that failure could result in personal injury or property damage.

Healthy tree. As determined by a certified arborist, a tree that is vigorous as indicated by leaf color and annual shoot extension, with a relatively symmetrical form typical of the species with 1/3 or more of its height in live crown (33 percent live crown ratio or more) with roots, trunk, and crown absent from extensive and significant signs of insect or disease infection, wounds or other mechanical damage, decay and structural defects; for a pine tree to be considered healthy the live crown ratio may be less than 30 percent but must otherwise meet the conditions defined herein.

Introduced plant. Any plant that does not exist on a site prior to development but is added during property development.

ISA. The International Society of Arboriculture, a professional educational organization serving arborists and allied professionals worldwide.

Land disturbance activity. Any activity that disturbs the soil or vegetation on a lot, including bush hogging, clearing, or grading.

Natural area. An area of at least 100 square feet comprised of native vegetation.

No net loss. A goal of maintaining at least as much tree canopy cover as currently exists across a site, neighborhood, zoning district, or community through managing, conserving, establishing, protecting and maintaining trees.

Open soil surface area. The area around and more or less centered on a tree trunk that must remain open and permeable, but should be mulched in accordance with the technical standards.

Overstory tree. Trees that at maturity typically exist in the mid- to upper levels of a natural forest ecosystem; trees listed as large and medium in the *Town of Oak Island Approved Tree Species List*.

Parking facility. An area used for the parking, storage or display of motor vehicles, boats, recreational vehicles, etc.; a parking lot or parking area.

Peninsula. A planting area that extends out into the parking area, and is bounded on three (3) sides by the parking area.

Permeable paving. Any paving which due to its inherent nature, or construction, allows fluids and gases to penetrate through it at least in some areas, as described in the North Carolina Stormwater BMP Manual.

Planted tree. A new tree that is established on a site to meet tree canopy cover requirements.

Protected tree. Any and all public trees; all existing trees 4 inches dbh and greater on any developed property within the town limits; all trees conserved or planted to meet minimum tree canopy cover requirements; and, all trees, regardless of size, on undeveloped properties within the town limits.

Public tree. A tree growing on town-owned or -controlled property, including leased property and public rights-of-way.

Pruning. The removal of live or dead branches from a tree's crown in accordance with the technical standards to improve tree structure or health, or to maintain clearance or public safety.

Topping. The severe cutting back of branches to a bud, stub, internode or lateral branch not large enough to assume the terminal role for the purpose of reducing tree size. Topping is not an accepted form of pruning.

Town arborist. The qualified, designated town employee or contractor who is assigned by the town manager the responsibility to carry out the provisions of this chapter applicable to private trees and property and who maintains credentials as a certified arborist.

Town tree care manager. The qualified, designated town employee who is assigned by the town manager the responsibility to carry out the provisions of this chapter on applicable on town trees and property and who maintains credentials as a certified arborist.

Tree. A woody perennial plant usually having one (1) dominant trunk, but sometimes multiple trunks, with the ability to achieve at a minimum a mature height of 15 feet and dbh of 3 inches.

Tree canopy cover percent. The portion of a lot covered with tree canopy, expressed as a percentage; for the purposes of complying with minimum tree canopy cover requirements, the total tree canopy cover percent include both actual tree canopy of conserved trees and tree canopy cover credit given to planted trees.

Tree canopy cover credit. For planted trees, the square feet of tree canopy cover credited to a tree at time of planting, based on the mature size the tree is anticipated to achieve at maturity. For existing trees, the square feet of actual tree canopy cover credited to a tree as measured on the ground.

Tree canopy mitigation fund. A fund established for the purpose of receiving payments in lieu of meeting tree canopy cover requirements and used to mitigate tree canopy loss through tree establishment and maintenance on public property.

Tree conservation. The planned management of a tree, group of trees, or forested area to prevent damage or destruction and the loss of environmental functions and human benefits they provide.

Tree canopy conservation plan. A site plan or drawing required to be submitted with any development permit application; the plan must show the location, size and description of trees pre- and post-development, tree protection methodology and location, and construction details such as grading, utilities, structures and other required information.

Tree canopy management plan. A written plan developed and updated annually by the town tree care manager with input and recommendations from the Tree City USA Committee that contains annual work plans for tree care operations and public information and education.

Tree establishment. The process of selecting, planting, and maintaining a new tree in the landscape.

Tree establishment period. The minimum amount of time that it takes for a tree to become well-established in the landscape and have a good chance for survival; for the purposes of this

chapter, the tree establishment period is considered to be three (3) years from the time of planting.

Tree protection. The active and ongoing protection of a tree from damage to its roots, trunk and crown.

Tree protection zone. The area around a tree that includes the critical root zone and the entirety of the tree's trunk and crown.

Tree canopy impact permit. A permit required before any protected tree can be removed or any construction or other potentially harmful activities can take place within the tree protection zone of a protected tree.

Tree replacement. The establishment of new trees to replace the canopy lost when protected trees are removed from a site.

Tree value. For the purposes of this chapter, the appraised value of a tree as determined by an certified arborist and based on the latest edition of the *Guide for Plant Appraisal* developed by the Council of Tree and Landscape Appraisers and published by ISA.

Understory tree. Trees that at maturity typically exist in the lower levels of a natural forest ecosystem, beneath overstory trees; trees listed as small and very small in the *Town of Oak Island Approved Tree Species List*.

Utility. Public utilities, businesses or organizations that supply communication services, electrical energy, gas, heat, steam, water or sewage disposal and treatment.

Protected Trees

There is hereby established a category of trees that shall be known as protected trees and shall include all public trees regardless of size, all trees 4.0 inches dbh and larger on any developed lot or tract, and all trees regardless of size on undeveloped lots or tracts.

Tree Canopy Impact Permit

No person, group, agency, or business shall damage, destroy or remove a protected tree, or cause a protected tree to be damaged, destroyed, or removed without first having an approved tree canopy impact permit. A tree canopy impact permit is also required prior to the approval of any permit for activities that will take place within 50 feet of a public tree or a protected tree on non-residential property.

The town tree care manager shall establish requirements for the content and form of the tree canopy impact permit applications and shall amend and update those requirements from time to time. The tree canopy impact permit application shall be submitted to the town tree care

manager who shall act upon the application within 10 working days of submittal and shall have the authority to review the application and grant, deny, or attach reasonable conditions to it.

An approved tree canopy impact permit shall be applicable only to those activities and those trees specifically described in the permit application or otherwise described in writing to the applicant by the town tree care manager.

An approved tree canopy conservation plan, when required by this chapter, constitutes an approved tree canopy impact permit for development purposes. The town tree care manager may also require the submittal of a tree canopy conservation plan showing how trees will be protected before a tree canopy impact permit application can be approved.

Tree Canopy Mitigation Fund

There is hereby established a tree canopy mitigation fund to receive payments for tree canopy mitigation when it is determined by the town tree care manager or town arborist that the minimum tree canopy cover requirements set forth in this chapter cannot be reasonably met by the property owner or permit applicant. For tree canopy cover that cannot be reasonably conserved or planted on the site to meet requirements, the property owner shall pay the town the amount listed on the town's fee schedule for the tree canopy cover deficit.

Tree canopy mitigation funds shall be used for the establishment of trees on public property and for the maintenance of those trees during the establishment period; and, up to 40 percent of the funds received annually may be used to pay for the services of a consulting arborist to assist the town in tree canopy cover management, with the approval of the town manager.

ARTICLE II. –TOWN TREE MANAGEMENT

Administration

The public works department director or his/her designee shall be the administrator of this article. All other town departments shall cooperate fully with the public works department in carrying out the responsibilities of this section.

Applicability

This article applies to all town-owned or -controlled property including leased property and public rights-of-way within the town limits, all developed lots on private property, and all protected trees growing on such properties.

Town Tree Care Manager

There is hereby established the position of town tree care manager which shall be assigned by the town manager to a town employee or his/her designee. The town tree care manager shall report

to the public works department director. The town tree care manager shall be an ISA Certified Arborist.

The town tree care manager shall have the following duties and responsibilities:

1. Preserve and enhance the town's community forest and tree canopy through the management of public trees and administration and implementation of the town tree canopy plan;
2. Develop and revise annually, considering recommendations made by the Tree City USA advisory board, the town tree canopy management plan and approved tree species list and present for adoption to the town council;
3. Define the town's annual tree establishment needs for new projects, enhancements of the town's tree canopy and replacement of diseased or damaged trees on town property;
4. Prepare an annual tree management budget request that defines the cost of tree planting and maintenance, as well as other program costs, in conjunction with development of the town's annual budget;
5. Design, implement and provide maintenance specifications for all landscaping on town property;
6. Supervise the conservation, establishment, protection, maintenance and removal of trees on public property in coordination with affected town departments;
7. Direct town employees in tree conservation, establishment, protection, maintenance and removal and manage contractors hired to assist in these activities;
8. Provide administrative staff services and technical assistance to the Tree City USA Advisory Board;
9. Provide technical assistance to town staff and officials;
10. Review all development plans submitted by the town to ensure compliance with this chapter;
11. Make on-site inspections prior to the approval of any tree conservation plan, issuance of any development permit, or approval of any tree canopy impact permit and recommend specific changes to ensure compliance with this section;
12. Enforce the provisions of this chapter in conjunction with development services staff.

Tree City USA Advisory Board

The Oak Island Tree City USA Advisory Board or its designated successor shall be the advisory body charged with the task of carrying out advisory responsibilities of this article. The responsibilities of the advisory board shall include the following activities:

1. Conduct the town's annual Arbor Day celebration;
2. Apply annually for certification as a Tree City and for the Tree City USA Growth Award;

3. Annually review the town's tree canopy management plan and make recommendations for revisions to the town tree care manager;
4. Annually review the town's approved tree species list and make recommendations for revisions to the town tree care manager;
5. Advise and make recommendations to the town tree care manager and town arborist on all matters related to tree canopy conservation;
6. Promote tree canopy conservation within the community;
7. Provide regular community tree educational opportunities for citizens, visitors and businesses within the town.

Protection of Public Trees

It shall be unlawful to intentionally damage, destroy or remove any public tree, except as a part of a town-authorized improvement program or unless a tree canopy impact permit has been approved. It shall also be a violation of this code to attach or place any rope, wire, sign, poster, handbill or anything such material to any public tree, except for staking newly planted trees when necessary and authorized by the town tree care manager.

A person damaging or destroying any public tree shall be liable to the town for any loss of tree value. In the event damage is significant enough to require the treatment or removal of such tree, the person damaging such tree shall be liable for the cost of treatment or removal, in addition to any loss of tree value.

Any violation of the provisions of this article shall be deemed a misdemeanor making the violation subject to punishment in accordance with section 1-7 of this code in addition to the recovery of damage assessed and/or tree value loss.

Tree Canopy Management Plan

The town shall have in place a written, comprehensive tree canopy management plan to guide the town's tree management activities. The plan shall include:

1. Tree canopy cover goals for the town overall and for each zoning district;
2. Tree canopy cover measurement program;
3. Public tree inventory program;
4. Annual tree canopy management work plan;
5. Community awareness program;
6. Arbor Day celebration;
7. Approved tree species list;
8. Public tree maintenance program;
9. Standards for tree care;

Annual Tree Canopy Work Plan

The town shall establish and implement an annual tree canopy work plan to include a budget to support the program. Tree management shall include, at a minimum, tree conservation, establishment, maintenance, protection, removal, education, and assessment.

Community Awareness Program

The town shall undertake programs, as may be determined by the Tree City USA Advisory Board or its designated successor and the public works director, which enhance the community's awareness of the value of trees.

Arbor Day Celebration

The town shall annually hold an Arbor Day celebration that focuses attention to the value of trees in the urban environment.

Approved Tree Species List

The town shall maintain a list of approved tree species for planting in town as required by this chapter; the list shall be known as the "tree species list." The species list shall include, at a minimum, the species common name, Latin name, mature tree size, salt tolerance, drought tolerance, and light requirements for each species on the list. The tree species list may be amended from time to time as additional information and experience with tree species is gained. The tree species list shall be made available in the town clerk's office, the public works department, and the development services department.

Public Tree Maintenance Program

The public works department shall be responsible for the maintenance of all trees on town property. All maintenance shall be completed in accordance with the tree care standards outlined in this chapter.

The town shall have the right to prune, maintain and remove any tree on town property which interferes with the safe flow of traffic or any traffic control device or sign.

It shall be unlawful for any person to top, head or severely cut back to stubs the crown of any public tree, except when trees severely damaged by storms or other causes where pruning is impractical or ineffective in reducing tree risk, as determined by the town tree care manager. This includes dead, dying or diseased trees that pose a threat to the public health, safety and welfare as determined by the town tree care manager.

Standards for Public Tree Care

Any department, person, agency, contractor, or business, or their agents, that engage in public tree conservation, establishment, protection, maintenance, or removal shall conduct such tree care activities in accordance with American National Standards Institute (ANSI) A300 *Standards for Tree Care Operations*, ANSI Z133 *Safety Standards*, and Z60.1 *American*

Standard for Nursery Stock, Best Management Practices published by International Society of Arboriculture, and the additional standards outlined in Article III.

Hazardous Trees

The owner of any tree overhanging a street or sidewalk within the town is responsible for pruning the branches so that such branches shall not obstruct the passage or visibility for vehicles or pedestrians or obstruct the visibility of traffic, directional or emergency signs or signals. All property owners within the town shall be required to cause the removal of any dead or diseased trees on their property whenever such trees threaten public health, safety or welfare, or harbor insects or diseases which constitute a potential threat to other trees, as determined by the town tree care manager.

If the owner or owners of any lot or other real property within the town, after the giving of two (2) days' notice in writing by the town manager or his/her designee, shall refuse or neglect to perform the duties in connection with his/her tree as specified above, the town manager or his/her designee is hereby authorized to enter upon the property and have said tree and/or branches cut and removed. The cost of such actions shall be charged against said premises and shall constitute a lien thereon.

In case the owner of any lot or other real property is unknown or his/her whereabouts are not known or is a nonresident of this state, then a copy of the written notice herein above referenced shall be posted upon the premises for a period of 48 hours and, before any action to enforce such lien shall be had, the town clerk shall make an affidavit setting out the facts as to the unknown address or whereabouts of nonresidents; and, thereupon, service of the publication as now provided for by law against a nonresident defendant may be had, and an authority ad litem shall be appointed to notify the defendant by registered letter addressed to his/her last known place of residence if same can be found.

Utility Vegetation Management

Public and semi-public utilities shall exercise reasonable care and comply with ANSI standards and ISA Best Management Practices and other standards contained in this article, to avoid the damage, destruction or death of protected trees as a result of the installation and maintenance of its facilities. The town tree care manager or his/her designee will provide assistance on any utility project to see that the utilities can be installed or maintained with minimal damage to any protected trees.

Work near Town Trees

No person or business shall perform any grading, excavation, place any fill, compact the soil or construct any building, structure, street, sidewalk, driveway, pavement or public utility within 50 feet of any public tree without a tree canopy impact permit. Any such work shall be conducted

in accordance with the technical standards contained in this chapter. A tree canopy management plan may be required by the town tree care manager if more than one (1) tree will be impacted.

ARTICLE III. TREE CANOPY CONSERVATION

Administration

The development services department director or his/her designee shall be responsible for the administration of this article.

Applicability

This article applies to all town-owned or -controlled property including leased property and public rights-of-way within the town limits, all developed and undeveloped lots on private property, and all protected trees growing on such properties.

Town Arborist

There is hereby established a town arborist position assigned by the town manager to a town employee within the development services department or other designee. The town arborist shall be an ISA Certified Arborist. The town arborist shall have the following duties and responsibilities:

1. Review all development plans and tree canopy conservation plans submitted to the town to ensure compliance with this article;
2. Make on-site inspections prior to the approval of tree canopy conservation plans and prior to the issuance of any development permits;
3. Recommend specific changes to tree canopy conservation plans for compliance with this chapter;
4. Monitor and inspect construction and utility work sites to ensure compliance with tree canopy conservation plans and this chapter;
5. Issue stop-work orders and assess penalties for violations of this chapter in conjunction with development services staff;
6. Develop and periodically update, in conjunction with the town tree care manager, technical standards and specifications for tree conservation, establishment, maintenance (pruning, mulching, fertilization, supplemental support and lightning protection), removal and assessment; standards and specifications shall be based on the most current ANSI standards and the additional standards contained in this chapter.
7. Conduct site assessments of tree canopy conservation ordinance implementation results, including assessments of completed developments to evaluate outcomes and determine recommended changes to existing regulations.

Tree Canopy Cover

All undeveloped and developed lots within the town shall be required to meet minimum tree canopy cover requirements as described in this chapter. If inadequate tree canopy cover exists at the time of application or after proposed tree removal, then additional tree canopy shall be established to meet minimum tree canopy cover requirements.

An approved tree canopy management plan stating how tree canopy cover requirements shall be met shall be required prior to the issuance of any permit for land use, building, or demolition, approval of a major or minor subdivision preliminary or final plat, or the issuance of any other development permit.

Tree Canopy Cover Requirements

A minimum amount of tree canopy cover, based on the development type, zoning district of the lot and the status of development on the lot, shall be required on any and all lots within the town, as described herein. The required tree canopy cover shall remain on the lot in perpetuity, unless otherwise stated in this chapter.

Oceanfront Properties

Oceanfront single- and two-family residential properties shall conserve or plant a combination of trees, shrubs and grasses that are salt spray tolerant in contiguous natural or landscaped areas of at least 50 square feet for each 700 square feet of heated area or a minimum of 20 percent of the lot area, whichever is greater.

Oceanfront non-residential and multi-family properties shall conserve or plant a combination of trees, shrubs and grasses that are salt spray tolerant in contiguous natural or landscaped areas of at least 50 square feet for each 700 square feet of heated area or a minimum of 20 percent of the lot area; trees required in a parking facility on such properties shall not be counted toward the 20 percent minimum.

Subdivisions

Major and minor subdivisions shall be required to conserve as much of the existing tree canopy cover on the site as possible and shall meet the minimum tree canopy cover requirement across the entire site, and in addition each individual lot shall be meet the minimum tree canopy cover requirements for the zoning district.

Tree canopy cover requirements shall include the planting of one (1) overstory tree per 50 linear feet of frontage in the front yard within 10 feet of the property line of individual lots within a subdivision or on the public street right-of-way if the available space meets tree placement standards.

Undeveloped Property

For individual undeveloped lots and subdivisions, the minimum amount of tree canopy cover required across the site or on each lot shall be as listed in Table 1.

Table 1. Minimum Amount of Tree Canopy Cover Required by Zoning District

<i>Zoning District</i>	<i>Minimum Tree Canopy Cover Required as Percent of Total Lot Area</i>
R-20: Low Density Residential	55%
R-9: Medium Density Residential	50%
R-7.5: Medium Density Residential	50%
R-7: Medium Density Residential	50%
R-6A: Higher Density Residential	45%
R-6B: Higher Density Residential	45%
R-6MH: Higher Density Residential	45%
R-6MF: Higher Density Residential	45%
AD: Airport District	0%
CB: Community Business	30%
C-LD: Commercial Low Density	45%
CR: Commercial Recreation	30%
CUCB: Conditional Use Commercial Business	35%
O&I: Office and Institutional	60%
OS: Open Space	60%*
Parking Facilities	50%
TBD Area	60%*
Oceanfront Lots (supersedes other zoning district tree canopy cover requirements)	20%

* = goal, not a requirement

Developed Non-Residential and Multi-family Lots

For developed non-residential lots and multi-family residential lots, the minimum amount of tree canopy cover required shall be the amount existing on the date of adoption of this ordinance. A tree canopy impact permit shall be required for the removal of any protected tree. If tree removal is approved, then the amount of tree canopy cover lost as a result of the removal must be established on the lot as a condition of tree removal and enough additional tree canopy cover to meet the minimum requirements in Table X. Tree removal shall not be approved unless it meets the tree removal standards found in the technical standards.

Individual Developed Single- and Two-family Residential Lots

For developed single- and two-family residential lots, the minimum amount of tree canopy cover required shall be the amount existing on the date of adoption of this ordinance. A tree canopy impact permit shall be required for the removal of any protected tree. If tree removal is approved, then the amount of tree canopy cover lost as a result of the removal must be

established on the lot as a condition of the tree removal, unless the residual canopy remaining after removal meets the minimum tree canopy requirements for the zoning district. Tree removal shall not be approved unless it meets the tree removal standards found in the technical standards.

Tree Canopy Cover Credit

Existing trees that will be conserved to meet minimum tree canopy cover requirements shall be given credit for their actual tree canopy cover, except that in some cases a tree canopy cover credit bonus shall apply. That portion of a tree's canopy that projects over the property boundary shall be excluded from the measurement of actual tree canopy cover, unless that canopy projects over the public street right-of-way or other public property. The portion of public street trees that project over and into the lot may be included in the measurement of actual tree canopy cover.

Trees planted to meet minimum tree canopy cover requirements shall be given credit at time of planting for the average tree canopy cover area expected at maturity. The amount of the credit shall be based on the size categories listed in the tree species list. At time of planting, trees shall be credited with the following amounts of mature tree canopy:

1. Large trees -1,600 square feet;
2. Medium trees – 900 square feet;
3. Small trees – 400 square feet;
4. Very small trees – 150 square feet.

However, these credits shall only apply if the tree will be provided with the amount of open soil surface area listed in the tree placement standards. When the required amount of open soil surface area cannot be fully achieved, then the amount of tree canopy cover credit given each tree shall be reduced to the percent of open soil surface area that can be achieved.

For example, if 75 percent of the required open soil surface area can be achieved, then the amount of tree canopy cover credit given each tree shall be 75 percent of the credit listed above for the mature size of the species as shown on the tree species list.

If the amount of open soil surface area available to a tree is less than 50 percent of that listed in the tree placement standards, then the tree shall not be eligible for tree canopy cover credit.

On non-residential and multi-family lots, tree canopy cover credit shall be revoked for trees that are not maintained, are unhealthy, or have been topped; additional tree planting shall be required if the revocation results in a tree canopy cover percentage below the minimum required.

Measuring Actual Tree Canopy Cover and Calculating Tree Canopy Cover Percent

Measuring actual tree canopy and calculating tree canopy cover shall be done using the methods described below. All actual tree canopy cover amounts shall be expressed to the nearest whole foot and all tree canopy cover percentages shall be expressed to the nearest whole percent.

For existing trees, the actual tree canopy cover shall be measured by the applicant or his/her agent, and tree canopy cover percent calculated for the lot. The actual tree canopy cover can be measured on the site (most accurate) or estimated using a geographic information system (GIS) and digital aerial photography available online. The town shall confirm tree canopy cover information provided by applicants either on site or by using GIS and digital aerial photography.

To accurately determine the percent of tree canopy cover that currently exists on a site divide the actual amount of tree canopy as measured on the site by the total square footage of the lot and multiplied by 100. The result equals the tree canopy cover percent.

A site visit shall be made to measure the total square footage of actual tree canopy cover on the lot, including all individual trees, tree groups and forested areas. This may be done through a survey or by breaking the coverage area into smaller geometric areas and using standard formulas to calculate area. For a square or rectangular area or portion of an area, multiply width by length. For triangular areas, multiply width by length and divide by 2. For individual tree canopies, the area beneath the crown shall be calculated the same as the area of a circle using the following formula:

$$\text{Area} = \text{radius squared} \times 3.14 \text{ (pi, a constant)}$$

To determine the radius of a tree's crown, measure the diameter of the crown at its widest point (with the trunk in the center) and then the diameter of the crown in a perpendicular direction 90 degrees from the original diameter. Add the two measurements and divide by 2 to get the average diameter, and then divide the average diameter by 2 again to get the radius.

For example, the diameter of a tree's crown measures 56 feet in at its widest point and 44 feet in the perpendicular direction. These two diameters added together equal 100 feet, resulting in an average diameter of 50 feet. The average radius for the tree is 25 feet.

The radius is squared (25 feet times 25 feet) and equals 625 square feet, which is multiplied by 3.14 to get the square foot area of the more or less circular tree canopy of 1,962.5, which is rounded to 1963 feet.

If the lot size is 6,600 square feet and this tree is the only tree on the lot and all canopy cover falls within the lot, then the percent of tree canopy cover on the lot is 30 percent (1,963/6,600 times 100).

To determine the percent of a site that will be covered by tree canopy after development or other permitted activity takes place, add the total square footage of actual tree canopy cover proposed for conservation to the tree canopy cover credit given to proposed new planted trees, divide by the total square footage of the lot and multiply by 100 to get the total tree canopy cover percent on the lot.

Using GIS, tree canopy cover can be estimated using a dot grid superimposed over a current aerial photograph of the lot and the number of dots falling on tree canopy divided by the total number of dots falling within the lot boundaries will result in the percent tree canopy cover on the lot (multiply by 100 to get percent). The dots on the grid shall be no farther than 10 feet from one another for lots 2 acres or less in size, and no farther than 25 feet from one another for lots greater than 2 acres. Alternatively, the GIS measuring tool can be used to draw a polygon around each and all of the tree canopies to measure their square foot area. When added together and divided by the total square footage of the lot, the result will be the percent tree canopy cover on the lot (multiply by 100 to get percent).

For example, if the total lot size is 6,600 square feet, and there exists 2,400 square feet of tree canopy cover, then the tree canopy cover percent is 2,400 divided by 6,600 which equals .36 rounded to the nearest hundredth, which is then multiplied by 100 to get a total tree canopy cover percent of 34 for this example.

Tree Conservation

Natural areas and existing trees shall be conserved to the greatest extent possible on all lots within the town to maintain a healthy native forest that is, as much as possible, interconnected, diverse and an asset to both humans and wildlife alike. Owners of oceanfront properties are encouraged to preserve existing specimen trees, vegetation, and dunes.

The allowable building area on each lot or parcel may be moved toward one side lot line and either the rear lot line or the front street line a distance of up to 25 percent of the required setback for the zoning district for the purpose of conserving existing tree canopy.

Trees conserved to meet minimum tree canopy cover requirements shall be protected according to the technical standards included in this chapter to remain eligible for tree canopy cover credit.

Tree Establishment

When all of the tree canopy cover required cannot be met by conserved trees, then trees shall be planted on the lot to meet minimum tree canopy cover requirements. All planted trees shall be established according to the technical standards contained in this chapter.

Trees in Buffers

Trees planted in required buffers may be counted toward minimum tree canopy cover requirements, but in no case shall these trees account for more than one-third (1/3) of the minimum tree canopy cover requirements.

Required buffers composed of existing tree groups or forested areas may be counted toward minimum tree canopy cover requirements, but in no case shall these areas account for more than two-thirds (2/3) of the minimum tree canopy cover requirements.

Tree Canopy Cover Bonuses

If all of the tree canopy cover requirement for a lot will be met by conserved trees, then the amount of tree canopy cover required may be reduced by 5 percent. However, should any of the conserved trees be damaged, destroyed, or removed during or after the development process and as a result the lot is no longer in compliance with minimum tree canopy cover requirements, then an additional tree canopy cover to meet the minimum shall be established.

For individual healthy, conservable trees 18 inches dbh and larger that are protected according to the technical standards, a bonus tree canopy cover credit of 5 percent shall be added to the actual tree canopy cover as measured on the site.

For example, if a tree is 27 inches dbh and has 2,100 square feet of tree canopy cover, then an additional 105 square feet of bonus tree canopy cover shall be added for a total actual tree canopy cover of 2,205 square feet.

Removal of Vegetation

On all undeveloped properties, bush hogging, mowing, underbrushing or vegetation removal of any type shall not be permitted without an approved tree canopy impact permit. Vegetation removal shall only be permitted for herbaceous vegetation and woody vegetation less than 4 inches in diameter to eradicate invasive species, to provide line of sight clearance for surveying, to develop footpaths, and for responsible property maintenance. Vegetative material cut will be disposed of properly as required in section 24-65 of the town code.

Parking Area Landscaping

For new development and redevelopment projects requiring more than ten (10) off-street parking spaces, an approved tree canopy conservation plan shall be required prior to the issuance of any development permits for the parking area. The parking area landscaping shall comply with the following requirements:

1. All parking facilities shall be required to have a minimum tree canopy cover of 50 percent.

2. For lots 15,000 square feet or greater, at least 10 percent of the gross area of the parking area shall consist of landscape islands; except that for lots less than 15,000 square feet at least 6 percent of the gross area of the parking area shall consist of landscape islands;
3. At least one (1) overstory tree with a minimum caliper of 2 inches shall be planted in each landscape island;
4. Each landscape island shall have a minimum of 160 square feet of open soil surface area and shall be at least 8 feet wide in any direction;
5. All planting islands shall be filled to a depth of at least 24 inches with soil that meets technical standards;
6. Trees shall be well distributed throughout the parking area and immediately adjacent to the parking area;
7. All interior plantings shall be protected by raised concrete curbing or other devices such as wheel stops; where bioretention areas, swales, or rain gardens are incorporated into the parking area design raised concrete curbing shall not be required;
8. Consecutive parking spaces shall incorporate landscape peninsulas no more than 10 spaces apart and at least on the ends of all parking rows;
9. When a parking facility is within 50 feet of the public right-of-way, a perimeter planting strip no less than 5 feet in width shall be installed and incorporated into the street yard; if tree placement standards can be met, overstory trees shall be planted within the perimeter planting strip and shall count toward the tree canopy cover requirements for the parking facility and the lot; understory trees shall be planted if tree placement standards can be met where site restrictions prohibit the planting of overstory trees.

For any parking area that is limited to periodic or intermittent use for vehicular parking, such as parking areas for churches or recreational facilities, where the parking area is completely covered by grass or otherwise presents a landscaped appearance, landscape islands shall not be required; however, at least 50 percent of the parking area shall be covered in tree canopy or shall be planted with trees that will provide at least 50 percent tree canopy cover at maturity.

The development services staff may waive the requirements of this section for temporary parking areas when it is determined that a waiver is necessary to relieve hardship and will not violate the purposes of this section; and, all protected trees on the site shall be actively protected during use as a parking area according to the technical standards. Any such waiver shall not exceed one (1) year.

Tree Canopy Conservation Plan

An approved tree canopy conservation plan shall be required before any development permit can be issued, unless otherwise described herein. The tree canopy conservation plan shall provide a mechanism for the review, approval and inspection of the approach to be used for meeting minimum tree canopy cover requirements.

The tree canopy conservation plan shall be submitted to the department of development services under the following conditions:

1. Prior to any land disturbance activity;
2. Prior to the commencement of timber harvesting involving the removal of protected trees, if development permits are desired within three (3) years following the completion of tree removal;
3. Prior to preliminary plat approval for a major subdivision;
4. Prior to final plat approval for a minor subdivision;
5. Prior to any alteration of an existing drainage system;
6. With an application for a land use permit;
7. With an application for a building permit;
8. With an application for a demolition permit;
9. With an application for a swimming pool permit;
10. With an application for a well permit.

For undeveloped residential lots and all non-residential lots, developed or undeveloped, the plan shall be prepared and signed by a professional registered forester, certified arborist, or registered landscape architect. For developed residential lots, the tree canopy conservation plan may be prepared by the property owner or his/her agent.

The tree canopy conservation plan may be separate or may be part of other required site plans. The following information shall be clearly delineated, depicted or written on the plan, as applicable and required by this chapter:

1. Owner's name and contact information;
2. Property address;
3. Property boundaries;
4. Lot width and length;
5. Front, rear and side setbacks;
6. Location and footprint of buildings, driveway, walkways, accessory buildings, and parking facilities;
7. Location of the outer extent of the building envelope;
8. Trunk location, species, dripline and critical root zone location of existing individual trees and contiguous tree groups and forested areas less than 5,000 square feet, and the individual tree or combined tree canopy cover in square feet;
9. For existing groups and natural forested areas greater than 5,000 square feet in size, the outer extent of the contiguous tree canopy driplines, the amount of actual tree canopy cover for the area and a table of the number of trees by species and dbh found within the tree group or forested area

10. Depiction of which individual trees, tree groups, and forested areas are proposed for conservation, in conjunction with the identification of these trees, tree groups, and boundaries of forested areas on the ground using a high-visibility flagging tape;
11. Location of trunk and critical root zone, species and dbh of any public tree within 50 feet of the property boundary;
12. Location and type of tree protection to be installed for each tree or tree group proposed for conservation;
13. Limits of land disturbance and grading;
14. Location and identification of existing and proposed utilities;
15. Location of new trees to be planted to meet minimum tree canopy cover requirements;
16. Table including actual tree canopy cover by individual tree, tree group or forested area; tree canopy cover credit for planted trees by number of trees, species, credit per tree and total for all trees of the species; and, total tree canopy cover proposed for the site in square feet and percent tree canopy on the site;
17. For non-residential and multi-family residential sites, a three (3) year new tree maintenance schedule to include required tree maintenance activity and frequency;
18. A note indicating that a pre-construction meeting with the town arborist shall be required after tree protection fencing has been installed and prior to land disturbance or commencement of work on a site.

The town arborist shall establish requirements for the content and form of the tree canopy conservation plan and shall amend and update those requirements from time to time. The tree canopy conservation plan shall be submitted to the town arborist who shall act upon the application within 10 working days of submittal and shall have the authority to review the application and grant, deny, or attach reasonable conditions to it.

No land disturbance activity shall take place and no development permits shall be issued until a tree canopy conservation plan has been submitted as required, reviewed, and approved by the town arborist. Proposed changes to an approved tree management plan during the construction process or permit period must be approved and documented by the town arborist prior to those changes taking place.

Tree Maintenance

The property owner and/or their agent shall jointly and severally be responsible for the maintenance of protected trees according to the technical standards required herein, except that the technical standards shall not apply to single-family residential properties after a certificate of occupancy has been issued.

Trees that die, are determined to be in poor health, become hazardous, or have been topped shall be removed and replaced during the next dormant season (December through January) if their removal reduces the site's tree canopy cover below the minimum required.

Technical Standards

Technical standards for tree conservation, establishment, protection, pruning, maintenance and removal are hereby established. All tree care activities for protected trees shall comply with the standards contained in this chapter and the most current *American National Standards Institute (ANSI) A300 Standards for Tree Care Operations*, *ANSI Z133 Safety Standards*, and *ANSI Z60.1 Standards for Nursery Stock*.

When standards are not met and the town tree care manager or town arborist determines that the lack of compliance jeopardizes the health or safety of a protected tree, he/she may refuse tree canopy cover credit or rescind tree canopy cover credit for the tree. In such cases additional planting shall be required to meet minimum tree canopy cover requirements.

Any person or firm subject to the requirements of this chapter is strongly encouraged to seek professional assistance from a registered forester or certified arborist. A list of consulting foresters and is available from the North Carolina Forest Service at www.ncforestservice.gov and certified arborists can be located online on the International Society of Arboriculture website at www.isa-arbor.com.

Any person or firm subject to the requirements of this chapter is encouraged to hire only qualified, established businesses to perform arboricultural services, require references for similar work before hiring, and require adequate insurance for property damage, personal liability, vehicles, and workers compensation. The hiring of arboricultural businesses and tree services that employ certified arborists who can supervise the requested work is highly recommended.

The town tree care manager or town arborist may waive any technical standard to best meet the purpose and intent of this chapter. When granted, waivers shall be recorded in writing on the tree canopy impact permit or tree canopy conservation plan.

Tree Conservation Standards

For stands of trees conserved, the following standards shall apply:

1. At least 50 percent of the conserved area shall be contiguous;
2. Each area shall be a minimum of 10 feet wide in any one direction and five (5) feet wide in the perpendicular direction;
3. Each area shall include the critical root zones of all trees and the trees shall be protected according to standards;

4. Areas of naturally occurring conserved trees shall remain in a natural, undisturbed condition;
5. Turf is not permitted;
6. Mowing is not permitted;
7. Bush hogging and clearing of underbrush is not permitted, except as otherwise described in this chapter;
8. No new tree maintenance shall be required, except for that necessary to maintain a healthy and structurally sound stand of trees;
9. Tree removal without a tree impact permit is not permitted, except for hazard trees.

For individual trees conserved, the following standards shall apply:

1. Each tree must meet the definition of a conservable tree;
2. The critical root zone of each tree shall be protected according to standards;
3. On non-residential sites, conserved trees shall be mulched and mulch maintained at all times according to standards.

Tree Protection Standards

Protected trees shall be actively protected during development or construction and passively protected throughout their life in accordance with the standards described in this chapter.

The following activities and conditions, as well as any other activities and conditions harmful to a tree's roots within the critical root zone or the entirety of the tree's trunk and crown, are prohibited:

1. Vehicle or equipment traffic, parking or storage;
2. Installing, depositing, placing, storing or maintaining any stone, brick, sand, concrete or other construction materials which may impede the free unobstructed growth of or passage of water or air to the roots;
3. Placement of temporary or permanent structures;
4. Equipment maintenance or washout;
5. Wounding of trunk;
6. Wounding or breakage of scaffold limbs or branches greater than four (4) inches in diameter;
7. Topping or other improper pruning;
8. Fires or excessive heat from equipment exhaust pipes;
9. Attaching any sign, poster, notice or other object, or fastening any guy wire, cable, rope, nail, screw, or other device to any protected plant for any reason other than that of a protective nature to the tree.

The following activities and conditions within the critical root zone shall be limited to one side of the tree in the outer ½ of the critical root zone, but in no case closer than three (3) feet to the trunk of a planted tree or eight (8) feet to the trunk of a conserved tree:

1. Site or lot clearing or grubbing;
2. Soil excavation;
3. Soil cuts;
4. Soil fill;
5. Grading;
6. Trenching;
7. Tilling;
8. Edging;
9. Soil compaction;
10. Top dressing with soil greater than two (2) inches in depth;
11. Paving.

Active tree protection shall meet the following minimum criteria:

1. Tree protection fencing shall be installed prior to any land development or land disturbance activity around a tree at the location of the outer edge of the critical root zone;
2. Tree protection fencing shall remain in place until construction activities have been completed or a certificate of occupancy is issued, whichever is later;
3. Tree protection fencing shall be four (4) feet high, made of high-visibility polypropylene fencing, and shall be erected with sturdy posts;
4. No prohibited activities or conditions shall take place within the critical root zone;
5. Where roots within the critical root zone will be affected by soil removal, the affected roots shall be cut cleanly with pruning equipment at a point at least one (1) foot outside of the tree protection fencing;
6. Low hanging limbs that may be damaged by construction activities shall be pruned in accordance with standards prior to any land development or land disturbance activities take place;
7. When equipment movement is such that damage to tree trunks is possible, then tree trunks shall be wrapped vertically with one layer of two (2) inch by four (4) inch lumber spaced a maximum of 12 inches apart, and covered with corrugated cardboard secured with strapping; the wrapping shall remain throughout the period of potential damage.

Prior to any land development or land disturbance activity and after tree protection fencing is installed, tree protection area signs shall be installed. Signs shall be installed along the perimeter of all tree protection zones at least every 50 feet and shall include, at a minimum, the following

text: “Tree Protection Area, Entry Prohibited. No Construction Activity, Materials or Equipment Storage, Equipment Washout, or Vehicle Traffic Allowed”.

The sign shall be fabricated out of a sturdy weatherproof material, shall be at least 18 inches wide by 24 inches high, and shall be placed on a sturdy post with the bottom of the sign a minimum of 30 inches above the ground. The signs must remain present at all times during construction.

Passive tree protection shall be required throughout the life of a protected tree and shall require, at a minimum, the avoidance of all prohibited activities within the tree protection area.

Tree Establishment Standards

Tree establishment involves a series of steps that includes tree placement, species selection, quality tree selection, site preparation, tree planting and new tree maintenance.

Tree Placement Standards

Trees shall be placed such that they have adequate space to grow unobstructed to maturity and they do not create a conflict with other infrastructure as they grow larger; minimum distances, at the time of planting as measured from the tree trunk, to structures and infrastructure shall be required as listed in Table 2.

Table 2. Minimum Distances in Feet Required for Tree Placement

<i>Structure/Infrastructure Description</i>	<i>Tree Canopy Size on Approved Tree Species List</i>			
	<i>Large</i>	<i>Medium</i>	<i>Small</i>	<i>Very Small</i>
Street intersections, measured from the right-of-way boundary	35	35	35	35
Traffic signs	20	20	20	20
Light poles	20	20	15	15
Overhead utility lines	30	20	0	0
Mailboxes	5	5	5	5
Fire hydrants, electrical transmission boxes, water meters, other similar structures	5	5	5	5
Curb, sidewalk, boundary lines, property corners or pavement edge	2.5	2.5	1.5	1.5
Planting site width in any one direction	3	3	3	3
Minimum open soil surface area (square feet)	400	225	100	35

Species Selection Standards

Species to be planted to satisfy the requirements of this chapter shall be selected from the *Town of Oak Island Approved Tree Species List*. Species selected shall also conform to the following:

1. The planting of native trees is preferred;
2. Trees selected for planting shall be the largest size the site will accommodate;
3. Where obstructions to growth exist for large canopy trees, medium canopy trees shall be planted; where obstructions to growth exist for medium canopy trees, small or very small canopy trees shall be planted;
4. For street trees and trees planted in front yards, where no obstructions to growth or potential for future conflicts with infrastructure exist at the planting site, large canopy trees shall be planted;
5. When one (1) tree to four (4) trees will be planted to meet requirements, at least 50 percent of the trees shall be overstory trees; when five (5) or more trees will be planted to meet requirements, at least 75 percent of the trees shall be overstory trees;
6. Species selected shall be tolerant of growing conditions found at the planting site, including growing space, sunlight, soil moisture, temperature and soil volume;
7. When more than three (3) trees are planted on a site to meet tree canopy cover requirements no one species shall comprise more than 33 percent of all planted trees.

Tree Size and Quality Standards

Trees planted to satisfy the requirements of this chapter shall meet minimum quality standards as established here and in the *ANSI Z60.1 American Standard for Nursery Stock* published by the American Nursery and Landscape Association and as officially revised and as amended from time to time. Trees shall also conform to the following standards to be eligible for tree canopy cover credit:

1. At the time of planting, trees shall be a minimum of two (2) inches caliper for deciduous trees on residential properties and three (3) inches caliper for non-residential properties, eight (8) feet in height for evergreen trees, and one (1) inch caliper per trunk for multi-trunked trees;
2. Trees shall be container grown or balled and burlapped;
3. Trees shall be free from forked stems and included bark;
4. Trees shall be free from major wounds and insect or disease infestations;
5. Trees that require staking to stand upright shall be prohibited.

Soil Quality Standards

The soil in which trees are planted to satisfy the requirements of this chapter shall meet the following minimum standards:

1. The soil within the open soil surface area shall be well aerated to a depth of eight (8) inches, except that in tree planting islands surrounded by pavement it shall be well aerated to a depth of 24 inches;

2. The soil shall contain at least 5 percent organic matter;
3. Soil pH shall be within a range of 5.8 to 7.0;
4. An approved structural soil mix containing 80 percent rock aggregate, 15 percent mineral soil and a sticking agent may be used within parking lots beneath paved areas to increase the rooting volume available to trees;
5. Within a parking area or other paved area if a structural soil mix is used to expand the rooting zone or a permeable or porous pavement is used to increase water infiltration to the soil and tree roots, then the open soil surface area required may be reduced by a maximum of 20 percent without losing tree canopy cover credit.

Tree Planting Standards

The following standards shall apply to container grown or balled and burlapped trees:

1. The roots of trees shall remain moist at all times prior to planting;
2. In undisturbed and non-compacted soils and in prepared soils the planting hole shall be at least two (2) times as wide and no deeper than the root ball of the tree; it shall have sides sloping inward toward the bottom; and, the bottom shall be firm soil;
3. In compacted soils, the planting hole shall be at least three (3) times as wide as and no deeper than the root ball of the tree; it shall have sides sloping inward toward the bottom; and, the bottom shall be firm soil;
4. The tree shall be planted no deeper than it was growing in the container or field and the trunk flare shall be visible above the ground; the first root shall be no more than 1 inch below ground level;
5. All strapping, webbing, twine, strings, and other such material shall be removed from the root ball;
6. The burlap and wire basket, if present, shall be removed to a minimum depth of 12 inches and to a greater extent if possible;
7. In no case shall any burlap be located above the soil surface;
8. Tree staking is not required and in many cases is not recommended as newly planted trees should be able to stand upright on their own; however, if tree staking is installed, it shall be removed no later than one (1) year after planting;
9. Tree staking shall conform to standards and no wires, strings, or strapping shall be installed in such a manner to cause wounding on the tree trunk;
10. Tree staking shall consist of soft, flexible ties located on the trunk 3 to 4 feet above the ground and tied horizontally to at least two (2) sturdy supports, such as metal fence posts, 3 feet from the tree trunk are preferred.

New Tree Maintenance Standards

The following standards shall apply to all trees planted to satisfy the requirements of this chapter throughout the establishment period:

1. Trees shall be mulched immediately after planting in accordance with standards;
2. When natural rainfall is less than one (1) inch per week, trees shall be provided with supplemental watering in the amount of one (1) inch per week within the entire open soil surface area, and throughout the growing season for the first three (3) growing seasons;
3. Trees shall be pruned immediately after planting to remove only dead, diseased, dying crossed, broken, or rubbing branches; otherwise, live branches shall not be removed in the first growing season after planting;
4. Tree pruning shall be done as necessary to removed dead branches, train tree structure, and maintain clearance over walkways and vehicles in accordance with tree pruning standards.

Tree Pruning Standards

Protected trees shall be pruned in accordance with the most current ANSI A300 standards and the associated best management practices. In addition, the following standards shall apply to the pruning of protected trees:

1. Pruning activities shall not disturb nesting, rare or endangered wildlife to the greatest extent possible;
2. Co-dominant stems less than four (4) inches in diameter at the fork shall be pruned off and one (1) main stem shall remain;
3. Pruning shall be done such that a tree's natural form is maintained to the greatest extent possible;
4. Tree topping, heading, or severe cutting back shall not be permitted; tree canopy cover credit shall be revoked for trees that have been topped or improperly pruned in such a manner;
5. Reasons for which tree pruning is not permitted are:
 - a. Sign installation, clearance or visibility, excluding traffic, directional, warning or information signs owned by any public or semi-public agency;
 - b. Clearance for temporary or permanent equipment traffic or storage, the erection of a temporary structure, or materials storage within the tree protection zone.

Mulching Standards

Individual planted trees, individual conserved trees and groups of ten (10) or less conserved trees shall be mulched. For conserved groups of more than ten (10) trees and forested areas, the addition of mulch is not required; however, the ground surface and natural leaf litter within these

areas shall remain present and undisturbed. Mulching shall be done in accordance with the following:

1. Mulch shall be composed of organic materials only and may include, but is not limited to: pine straw, leaves, wood chips aged at least three (3) months, compost and pine bark;
2. Grass clippings, plastic sheeting, and rocks or gravel shall not be used as mulch and shall not be applied within the critical root zone;
3. All trees shall be mulched out from the trunk at least one-third (1/3) the distance to the outer edge of the critical root zone, except that no mulch ring shall have a radius less than 3.0 feet or shall be required to be greater than ten feet; the mulch ring radius shall be increased annually as the tree grows and the critical root zone increases;
4. Mulch shall be three (3) to four (4) inches in depth, and shall be spread in an even layer from six (6) inches out from the trunk to the required extent of the mulched area;
5. Mulch is not allowed closer than six (6) inches to the tree trunk;
6. Mulch shall be applied at least annually, preferably during the months of February through April.

Tree Maintenance Standards

In addition to pruning and mulching, other tree maintenance includes fertilization, supplemental support (cabling and bracing), and lightning protection. When required for protected trees as set forth herein, these activities shall be done in accordance with ANSI A300 standards and the standards set forth below.

1. Fertilization is not required for protected trees. However, if protected trees are fertilized, they shall be fertilized in accordance with ANSI A300 standards; newly planted trees shall not be fertilized until after the end of the first growing season;
2. Any tree support system placed in protected trees shall be designed, installed and maintained in accordance with current ANSI A300 standards;
3. Any lightning protection system placed in a protected tree shall be designed, installed and maintained in accordance with current ANSI A300 standards.

Tree Removal Standards

The removal of a protected tree shall be done in accordance with the following:

1. Tree removal shall not disturb nesting, rare or endangered wildlife to the greatest extent possible and removal shall be delayed until nesting wildlife is safely removed;
2. Removal shall be approved or may be required on non-residential properties if a tree meets one or more of the following conditions:
 - a. Dead;
 - b. Unhealthy condition;
 - c. Dieback of 50 percent or greater of the crown;

- d. Insect infestation or diseases condition for which treatment is impractical, causing tree decline and with a high probability of spread to other trees;
 - e. Trunk wounds greater than one-third (1/3) of the circumference of the trunk;
 - f. Trunk cavity greater than two-thirds (2/3) of the diameter of the trunk at the point of the cavity;
 - g. Structural defects in scaffold limbs, where defect correction through pruning will result in removal of 50 percent or greater of the tree's crown;
 - h. Litter originating from the tree that creates an unsafe condition or poses a hazard to public health, safety and welfare;
 - i. Irresolvable conflict with infrastructure that is creating an unsafe condition or poses a hazard to public health, safety and welfare;
 - j. The tree is located within the building envelope.
 - k. Tree precludes the ability of the owner to use the growing site for other permitted purposes, represents tree canopy that is above the minimum required, and removal will not cause the site tree canopy to be reduced below the minimum required;
3. Reasons and conditions for which tree removal is not permitted include, but are not limited to:
- a. Sign installation, clearance or visibility, excluding traffic, directional, warning or information signs owned by any public or semipublic agency;
 - b. Unwanted production of leaves, fruit or other organic litter that does not create an unsafe condition or that is not a hazard to public health, safety and welfare;
 - c. Removal will cause the site tree canopy cover to be reduced below the minimum required and replacement of the tree canopy lost with planted trees to achieve the minimum is not possible.

Inspections

Inspections of proposed or ongoing projects by the town tree care manager or town arborist or their designee shall be required to ensure that the purpose, intent and provisions of this chapter are met. At a minimum, the following inspections shall be required for all activities regulated by this chapter:

Preliminary Inspection

The site shall be inspected by the town tree care manager or town arborist with the applicant or his/her agent prior to the submittal of a tree canopy conservation plan for the purpose of discussing options for tree conservation, compliance with technical standards and enforcement procedures. In no case shall any development plan be approved without a preliminary inspection and approved tree canopy conservation plan.

Tree Protection Inspection

The site shall be inspected by the town tree care manager or town arborist with the applicant or his/her agent after the approval of the tree canopy conservation plan and prior to any development activities or land disturbance for the purpose of insuring that all tree protection standards have been met. The approval of tree protection measures shall be required before any development or land disturbance activities take place.

Periodic Inspections

Additional site inspections may take place periodically and at any time during construction or the permit period to ensure that all technical standards and conditions of the tree canopy conservation plan are being met.

Inspections may be made at any time after a certificate of occupancy has been issued to ensure that tree canopy cover is maintained on a site or lot as required by this chapter.

Certificate of Occupancy Inspection

An inspection of the site by the town tree care manager or town arborist shall be required prior to the issuance of a certificate of occupancy for the purpose of making sure that all applicable requirements of this chapter have been met. No certificate of occupancy shall be issued until all requirements of this chapter have been met.

Enforcement

Failure to comply with any of the requirements of this chapter shall result in a citation and/or one of the following actions to enforce compliance.

Stop Work Order

Upon notice from the town, work on any project that is being done contrary to the requirements of this chapter shall be immediately stopped. Such notice shall be in writing and shall be given to the owner of the property, his/her authorized agent or the person or persons in charge of the activity on the property and shall state the conditions under which work may resume. Where an emergency exists, either a written notice to comply or a written notice to stop work is not required.

Withholding of Certificate of Occupancy

If the person engaged in development activity fails to comply with a written notice to comply within the time specified, he/she shall be deemed in violation of this chapter and, in addition to other penalties, the town tree care manager or town arborist may request that the building inspections department refuse to issue a certificate of occupancy for the building or other

improvements constructed or being constructed on the site until the measures necessary to achieve compliance with this chapter have been completed and all violations of this chapter have been brought into compliance.

Fines

Any person damaging, destroying or removing trees in violation of any of the requirements of this chapter shall be subject to a civil penalty of \$500.00 as permitted by G.S. 14-4. The department of development services may stay enforcement of the civil penalty if the offender replants the damaged, destroyed or removed trees in accordance with the approved tree canopy management plan or otherwise meets the requirements of this chapter.

Appeals

Appeals of decisions of the department of development services concerning enforcement of this article may be made to the board of adjustments within ten days of the decision by the town tree care manager or town arborist. Appeals to the board of adjustments shall be made in accordance with section 18-334 of the town code.

Proposed Fee Schedule

The proposed fees for permits, plans review, and tree mitigation required by this chapter are listed in Table 3.

Table 3. Proposed Fees for Required Tree Canopy Conservation

<i>Permit/Approval/Activity Description</i>	<i>Fee</i>	<i>Unit</i>
Tree canopy impact permit – developed single and two-family residential property (includes 2 inspections)	\$25	per tree
Tree canopy impact permit – developed non-residential and multi-family residential properties (includes 2 inspections)	\$50	per tree
Tree canopy impact permit – individual or business working near public trees (includes 2 inspections)	\$50	per tree
Tree canopy conservation plan approval – undeveloped single and two-family residential lots (includes 4 required inspections)	\$250	per lot
Tree canopy conservation plan approval – undeveloped non-residential and multi-family residential properties (includes 4 required inspections)	\$250	per lot plus \$50 per site acre
Tree canopy conservation plan approval – minor subdivision (includes 4 required site inspections)	\$250	per subdivision
Tree canopy conservation plan approval – major subdivision (includes 4 required site inspections)	\$350	per subdivision plus \$50 per site acre
Tree canopy mitigation	\$2.50	each square foot of tree canopy deficit
Re-inspection fee after non-compliance	\$50	per inspection

The following draft approved tree species list has been developed for use in the new Town of Oak Island tree ordinance. This draft is being provided for review and comment by Town staff, community boards, and the public. The following notes are pertinent to the development of the species list and should be considered as you review the list.

- Species have been listed with important or useful characteristics.
- Some species were removed as they are considered to be shrubs (mature height of less than 15 feet).
- All possible trees *without* major negative characteristics, such as invasive or pest susceptible, have been retained or placed on the list to increase the potential for greater tree species diversity and provide a larger palette of species for use by the development community.
- Potentially invasive species have been removed.
- Native species are promoted.
- Non-native species with proven performance under urban conditions have been included or added.
- The mature size of some of the trees has been changed, with primarily smaller trees moved to the medium category, but other changes made as well.
- Some name corrections have been made.
- Some trees with unknown performance can be tested, and removed from the list if their performance is poor.

Two primary sources have been used for creating the species characteristic entries:

Tree Species Fact Sheets, Edward F. Gilman and Dennis G. Watson, University of Florida, Institute of Food and Agricultural Sciences, Environmental Horticulture Department, Florida Cooperative Extension Service, November 1993.

http://hort.ifas.ufl.edu/database/trees/trees_scientific.shtml

PLANTS Database, United States Department of Agriculture, Natural Resource Conservation Service.

<http://plants.usda.gov>

SPECIES CHARACTERISTICS		Mature Tree Size	Salt Tolerance	Drought Tolerance	Light Requirement	Construction Tolerance	Wildlife Value	Canopy/Shade Tree	Street Tree	Screen	Urban Conditions	Overhead Utility Lines	Parking Lots	Tree Wells	Specimen	Flowers	Fall Color	Excessive Litter
SPECIES COMMON NAME	LATIN NAME	SZ	ST	DT	LR	CT	WL	CS	SR	SC	UR	UT	PL	TW	SP	FL	FC	EL
Ash, Carolina	<i>Fraxinus caroliniana</i>	M	U	L	FS	U	X											
Ash, Green	<i>Fraxinus pennsylvanica</i>	L	M	H	FS	G	X	X	X		X		X	X	X		X	
Baccharis, Eastern	<i>Baccharis halimifolia</i>	S	H	M	FS	G				X	X	X				X		
Baldcypress	<i>Taxodium distichum</i>	L	M	H	FS	G	X	X	X	X	X		X		X		X	
Beech, American	<i>Fagus grandifolia</i>	L	L	M	PS	P	X	X							X		X	
Birch, River	<i>Betula nigra</i>	L	L	M	SS	MG			X	X					X			
Blackgum; Black Tupelo	<i>Nyssa sylvatica</i>	L	M	L	PS	G	X	X	X								X	
Buckeye, Bottlebrush	<i>Aesculus sylvatica</i>	S	U	L	SS	U	X					X				X		
Buckeye, Red	<i>Aesculus pavia</i>	S	M	L	FS	M	X		X			X			X	X		
Buttonbush, Common	<i>Cephalanthus occidentalis</i>	S	U	L	FS	G				X		X				X		
Cedar, Japanese; Japanese Cryptomeria	<i>Cryptomeria japonica</i>	L	U	H	FS	G				X	X		X		X			
Chastetree	<i>Vitex agnus-castus</i>	S	M	H	FS	U	X		X	X	X	X	X		X	X		
Cherry, Black	<i>Prunus serotina</i>	L	M	H	FS	P	X			X						X	X	
Cherry, Higan Cherry 'Autumnalis'	<i>Prunus x subhirtella 'Autumnalis'</i>	M	U	M	FS	U			X							X	X	
Cherry, Okame	<i>Prunus x incamp 'Okame'</i>	S	U	M	PS	U			X			X				X		
Chinkapin, Allegheny	<i>Castanea pumila</i>	S	N	H	FS	U	X					X						
Cottonwood, Eastern	<i>Populus deltoides</i>	L	M	M	FS	U	X	X							X			X
Crapemyrtle, Common	<i>Lagerstroemia indica</i>	S	N	H	FS	U	X		X	X	X	X	X	X	X	X	X	
Cypress, Leyland	<i>Cupressocyparis leylandii</i>	M	M	M	FS	G				X								
Cyrilla, Swamp	<i>Cyrilla racemiflora</i>	S	L	L	SS	M	X			X		X				X		
Devilwood	<i>Osmanthus americana</i>	S	H	L	PS	M	X		X			X			X	X		
Dogwood, Flowering	<i>Cornus florida</i>	M	L	L	SS	P	X		X						X	X	X	
Dogwood, Kousa	<i>Cornus kousa</i>	S	M	M	PS	U	X		X	X		X			X	X	X	
Dogwood, Swamp	<i>Cornus stricta</i>	S	U	U	PS	U	X			X		X			X	X		
Elm, Chinese; Lacebark Elm	<i>Ulmus parvifolia</i>	M	M	H	PS	G		X	X		X		X	X	X			
Elm, Water; Planertree	<i>Planera aquatica</i>	M	U	U	PS	U												
Elm, Winged	<i>Ulmus alata</i>	L	M	M	PS	G		X	X		X							
Fringetree; Grancy Graybeard	<i>Chionanthus virginicus</i>	S	N	L	PS	M	X					X			X	X		
Goldenraintree	<i>Koelrueteria paniculata</i>	M	M	H	FS	U			X	X	X	X	X	X		X	X	

SPECIES CHARACTERISTICS		Mature Tree Size	Salt Tolerance	Drought Tolerance	Light Requirement	Construction Tolerance	Wildlife Value	Canopy/Shade Tree	Street Tree	Screen	Urban Conditions	Overhead Utility Lines	Parking Lots	Tree Wells	Specimen	Flowers	Fall Color	Excessive Litter
SPECIES COMMON NAME	LATIN NAME	SZ	ST	DT	LR	CT	WL	CS	SR	SC	UR	UT	PL	TW	SP	FL	FC	EL
Hickory, Mockernut	<i>Carya tomentosa</i>	L	U	H	FS	M	X	X									X	
Hickory, Pignut	<i>Carya glabra</i>	L	M	H	PS	MG	X	X									X	
Holly, American	<i>Ilex opaca</i>	M	H	H	PS	G	X		X	X	X		X	X	X	X		
Holly, Dahoon	<i>Ilex cassine</i>	M	M	L	SS	G	X		X	X	X	X			X	X		
Holly, Foster	<i>Ilex x attenuata 'Fosteri'</i>	S	L	M	PS	U	X		X	X	X	X		X	X	X		
Holly, Myrtle Dahoon	<i>Ilex myrtifolia</i>	S	U	L	FS	U			X			X						
Holly, Nellie R. Stevens	<i>Ilex x 'Nellie R. Stevens'</i>	S	U	H	FS	G			X	X	X	X	X	X				
Holly, Possumhaw; Winterberry	<i>Ilex decidua</i>	S	U	H	PS	U	X		X	X		X						
Holly, Yaupon	<i>Ilex vomitoria</i>	S	H	H	PS	G	X		X	X	X	X	X	X	X	X		
Honeylocust, Thornless	<i>Gleditsia triacanthos var. inermis</i>	L	H	H	FS	G			X		X		X	X				X
Hophornbeam, American	<i>Ostrya virginiana</i>	M	N	H	SS	M	X		X		X			X	X			
Hoptree, Common	<i>Ptelea trifoliata</i>	S	U	H	PS	U	X		X			X						
Hornbeam, American	<i>Carpinus caroliniana</i>	M	N	M	SS	M	X		X					X				
Laurelcherry, Carolina	<i>Prunus caroliniana</i>	M	H	H	PS	M	X		X	X	X			X		X		X
Loblolly-bay	<i>Gordonia lasianthus</i>	M	N	M	PS	G			X						X	X		
Locust, Black	<i>Robinia pseudoacacia</i>	L	M	H	FS	U	X	X								X		
Magnolia, Little Gem	<i>Magnolia grandiflora 'Little Gem'</i>	S	M	H	SS	U	X		X	X		X			X	X		X
Magnolia, Southern	<i>Magnolia grandiflora</i>	L	M	M	PS	M	X	X	X	X					X	X		X
Magnolia, Sweetbay	<i>Magnolia virginiana</i>	M	L	L	PS	G	X	X	X	X					X	X		
Maple, Chalk	<i>Acer leucoderme</i>	M	U	H	PS	U			X								X	
Maple, Red	<i>Acer rubrum</i>	L	L	L	FS	MG	X	X	X						X		X	
Maple, Southern Sugar; Florida Sugar Maple	<i>Acer barbatum</i>	M	N	M	PS	M		X	X						X		X	
Maple, Trident	<i>Acer buergeranum</i>	M	M	M	FS	U			X	X	X		X		X		X	
Oak, Black	<i>Quercus velutina</i>	L	U	M	FS	U	X	X	X								X	
Oak, Blackjack	<i>Quercus marilandica</i>	M	U	M	FS	U	X		X									
Oak, Bluejack	<i>Quercus incana</i>	M	U	H	FS	U	X											
Oak, Cherrybark	<i>Quercus pagoda</i>	L	M	H	FS	G	X	X	X						X			
Oak, Darlington	<i>Quercus hemisphaerica</i>	L	L	H	FS	M	X	X	X				X		X			

SPECIES CHARACTERISTICS		Mature Tree Size	Salt Tolerance	Drought Tolerance	Light Requirement	Construction Tolerance	Wildlife Value	Canopy/Shade Tree	Street Tree	Screen	Urban Conditions	Overhead Utility Lines	Parking Lots	Tree Wells	Specimen	Flowers	Fall Color	Excessive Litter
SPECIES COMMON NAME	LATIN NAME	SZ	ST	DT	LR	CT	WL	CS	SR	SC	UR	UT	PL	TW	SP	FL	FC	EL
Oak, Laurel	<i>Quercus laurifolia</i>	L	L	M	PS	M	X	X	X						X			X
Oak, Live	<i>Quercus virginiana</i>	L	H	H	FS	G	X	X	X		X		X		X			X
Oak, Nuttall	<i>Quercus nuttallii</i>	L	U	M	FS	U	X	X	X		X		X		X		X	X
Oak, Overcup	<i>Quercus lyrata</i>	L	N	M	PS	G	X	X	X						X			X
Oak, Post	<i>Quercus stellata</i>	L	M	H	FS	L	X	X	X						X			X
Oak, Sand Live	<i>Quercus geminata</i>	M	H	H	FS	U	X			X								
Oak, Shumard	<i>Quercus shumardii</i>	L	M	H	FS	G	X	X	X		X		X		X		X	X
Oak, Southern Red	<i>Quercus falcata</i>	L	M	H	FS	MG	X	X	X						X		X	X
Oak, Swamp Chestnut	<i>Quercus michauxii</i>	L	N	M	FS	G	X	X	X						X		X	X
Oak, Turkey	<i>Quercus laevis</i>	M	U	H	FS	U	X											X
Oak, Water	<i>Quercus nigra</i>	L	L	H	FS	G	X	X	X		X				X		X	X
Oak, White	<i>Quercus alba</i>	L	H	M	FS	P	X	X	X						X		X	X
Oak, Willow	<i>Quercus phellos</i>	L	H	H	FS	MG	X	X	X		X				X		X	X
Palmetto, Cabbage; Sabal Palm	<i>Sabal palmetto</i>	M	H	H	PS	U	X	X	X		X		X	X	X			X
Pawpaw	<i>Asimina triloba</i>	S	U	M	FS	U	X		X			X			X		X	
Persimmon, Common	<i>Diospyros virginiana</i>	L	H	H	FS	U	X				X				X		X	X
Pinckneya; Fevertree	<i>Pinckneya pubens</i>	S	U	M	FS	U				X						X		
Pine, Japanese Black	<i>Pinus thunbergiana</i>	S	H	H	FS	U				X	X		X		X			
Pine, Loblolly	<i>Pinus taeda</i>	L	M	M	FS	MG	X	X		X	X		X		X			
Pine, Longleaf	<i>Pinus palustris</i>	L	H	H	FS	MG	X	X			X		X		X			
Pine, Slash	<i>Pinus elliotii</i>	L	H	H	FS	G	X	X		X	X		X		X			
Pine, Spruce	<i>Pinus glabra</i>	L	L	M	PS	U	X	X	X	X					X			
Pistache, Chinese	<i>Pistacia chinensis</i>	M	N	H	FS	U		X	X		X		X	X	X		X	
Plum, American	<i>Prunus americana</i>	S	L	L	FS	U	X		X			X				X		
Plum, Chickasaw	<i>Prunus angustifolia</i>	S	U	H	FS	U	X					X				X		
Plum, Purpleleaf	<i>Prunus cerasifera</i> 'Atropurpurea'	S	M	M	FS	U	X			X	X	X			X	X		
Redbud, Eastern	<i>Cercis canadensis</i>	M	N	M	SS	M	X		X						X	X	X	
Redbud, Forest Pansy	<i>Cercis canadensis</i> 'Forest Pansy'	M	N	H	PS	U	X		X		X	X	X	X	X	X	X	

SPECIES CHARACTERISTICS		Mature Tree Size	Salt Tolerance	Drought Tolerance	Light Requirement	Construction Tolerance	Wildlife Value	Canopy/Shade Tree	Street Tree	Screen	Urban Conditions	Overhead Utility Lines	Parking Lots	Tree Wells	Specimen	Flowers	Fall Color	Excessive Litter
SPECIES COMMON NAME	LATIN NAME	SZ	ST	DT	LR	CT	WL	CS	SR	SC	UR	UT	PL	TW	SP	FL	FC	EL
Redbud, Oklahoma	<i>Cercis reniformis</i> 'Oklahoma'	S	N	H	PS	U	X		X		X	X	X	X	X	X	X	
Redbud, Texas White	<i>Cercis canadensis</i> var. <i>texensis</i>	S	N	H	PS	U	X		X		X	X	X	X	X	X	X	
Redcedar, Eastern	<i>Juniperus virginiana</i>	L	H	H	PS	G	X		X	X	X		X		X	X		
Redcedar, Southern	<i>Juniperus silicicola</i>	L	H	H	PS	G	X		X	X	X		X		X	X		
Sassafras	<i>Sassafras albidum</i>	M	N	H	FS	G	X			X	X				X	X	X	
Serviceberry, Downy	<i>Amelanchier arborea</i>	M	M	L	SS	M	X		X			X			X	X		
Silverbell, Carolina	<i>Halesia carolina</i>	M	L	M	FS	U			X						X	X	X	
Sweetgum	<i>Liquidambar styraciflua</i>	L	M	M	FS	P	X	X							X		X	X
Sweetleaf	<i>Symplocos tinctoria</i>	S	U	U	PS	U	X		X			X				X		
Sycamore, American	<i>Platanus occidentalis</i>	L	M	H	FS	MG		X			X							X
Tree Sparkleberry	<i>Vaccinium arboreum</i>	S	U	H	PS	U	X		X			X				X	X	
Tupelo, Water	<i>Nyssa aquatica</i>	L	U	L	PS	G	X	X	X								X	
Walnut, Black	<i>Juglans nigra</i>	L	H	H	FS	U	X	X							X			X
Waxmyrtle, Southern; Southern Bayberry	<i>Myrica cerifera</i>	S	H	M	SS	G	X			X	X	X	X	X	X	X		
White-cedar, Atlantic	<i>Chamaecyparis thyoides</i>	M	N	N	PS	U	X			X								
Willow, Black	<i>Salix nigra</i>	M	M	L	FS	U												
Willow, Coastal Plain	<i>Salix caroliniana</i>	M	M	L	PS	U												
Witchhazel, Common	<i>Hamamelis virginiana</i>	M	N	M	SS	M	X			X		X			X	X	X	
Yellowpoplar, Tuliptree	<i>Liriodendron tulipifera</i>	L	N	M	FS	PM	X	X									X	

APPROVED TREE SPECIES LIST CODE KEY

CHARACTERISTIC	CODE	DATA ENTRY CODES AND DESCRIPTIONS
Mature Tree Size	SZ	small (S) (<25 feet), medium (M) (25 - 50 feet), large (L) (>50 feet)
Salt Tolerance	ST	none (N), low (L), moderate (M), high (H), or unknown (U)
Drought Tolerance	DT	low (L), moderate (M), or high (H)
Light Requirement	LR	semi-shade (SS), partial sun (PS), or full sun (FS)
Construction Tolerance	CT	good (G), moderate (M), or poor (P), combinations of these, or unknown (U)
Wildlife Value	WL	yes (X) or no (blank)
Canopy/Shade Tree	CS	yes (X) or no (blank)
Street Tree	SR	yes (X) or no (blank)
Screen	SC	yes (X) or no (blank)
Urban Conditions	UR	yes (X) or no (blank)
Overhead Utility Lines	UT	yes (X) or no (blank)
Parking Lots	PL	yes (X) or no (blank)
Tree Wells	TW	yes (X) or no (blank)
Specimen	SP	yes (X) or no (blank)
Flowers	FL	yes (X) or no (blank)
Fall Color	FC	yes (X) or no (blank)
Excessive Litter	EL	yes (X) or no (blank)