

Town of Forest Heights Street Tree Analysis

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The Town of Forest Heights

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The data in this technical report are unique to Forest Heights and the analyses and implications can only be considered in the context of the Town. However, the structure for this report is based on several successful Forest Resource Analysis reports done by the Center for Urban Forests, in particular the *City of Indianapolis, Indiana Municipal Forest Resource Report*, by Paula J. Pepper, E. Gregory McPherson, James R. Simpson, Kelaine E. Vargas, Qingfu Xiao and the *City of the Pittsburgh, Pennsylvania Municipal Forest Resource Analysis* by the Davey Resource Group. I-Trees' STATRUM documentation also provided direction in documenting and analyzing the results. All photos are copyright of the authors.

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Executive Summary

While the Town of Forest Heights clearly recognizes the importance of street trees to the Town's identity, environment and quality of life, currently the city has no budget for tree maintenance. Recent events have brought the value of this resource to the forefront. Forest Heights submitted an NOI (Notice of Intent) for coverage under the NPDES Phase II stormwater general permit, in recognition of the EPA's increased enforcement of the Clean Water Act. A healthy tree canopy is one of many practices that Forest Heights is implementing to improve the quality of stormwater run-off. The Town commissioned a Report on the Town of Forest Heights' Existing and Possible Tree Canopy from the University of Vermont's Jarlath O'Neil-Dunne, from the Spatial Analysis Laboratory in the Rubenstein School of the Environment. This report found that Forest Heights' existing tree canopy coverage is 35% percent. Recent storms have brought trees to many citizens' attention. Older trees, lacking in appropriate maintenance lost limbs or fell into street, power lines and homes. To combat the public perception that trees are a source of destruction, the Town understands the need to educate citizens regarding this valuable resource as well as implement and find funding for a municipal tree management program.

This report has been commissioned by the Town of Forest Heights to inventory and analyze the street trees in the public right of way along all miles of road in Forest Heights. The analysis utilizes a benefit-cost modeling program (i-Tree STRATUM) to derive information on the resource's structure, function, value, and maintenance requirements.

Street Tree Resource Structure

For this analysis, a land use type identified as "overgrown areas" played a complex role in the Town's tree canopy. These areas primarily occurred alongside Indian Head Highway and due to lack of maintenance, yielded a high number of *Ailanthus altissima* and small caliper trees. While these areas do provide benefits, they skew the resource structure numbers significantly (see Appendix C for reports with all trees included). The Maryland Department of Natural Resources also recommends the immediate removal of all *Ailanthus altissima*, and this has been duly noted in the Excel database given to the Town for tree maintenance and tracking purposes. An outline of species, diversity, age distribution, condition, canopy coverage, and replacement value provides an understanding of the character of Forest Heights' street trees.

- 🌳 Forest Heights has 71 species, the three most common of which are Common crape Myrtle, Apple, and Willow Oak. There are 700 street trees.
- 🌳 54% of Forest Heights' street trees are immature, 40% are maturing, and 6% are mature. Currently there are not enough mature trees in Forest Heights.
- 🌳 Street tree canopy covers 17% of streets and sidewalks.
- 🌳 To replace Forest Heights' streets trees as they exist now would cost the Town \$1.36 million dollars.

Street Tree Resource Function and Value

Forest Heights' street trees provide cumulative benefits to the community valued at an average of \$47.60, for a gross total value of \$33,320 annually. The street trees provide this value by helping conserve and reduce energy use, reduce local carbon dioxide levels, improve air quality, mitigate stormwater runoff, and provide other benefits associated with aesthetics, property value increases, and quality of life. Some of these substantial benefits are:

- 🌳 Street trees reduce electricity and natural gas use in Forest Heights due to both shading and climate effects equal to 34 MWh and 1,284 therms, for a total savings valued at approximately \$3,920, or a Town average of \$5.60 per tree.
- 🌳 Forest Heights' street trees reduce atmospheric CO₂ by a net of 81.3 tons, valued at \$1,219 per year, with an average net benefit of \$1.74 per tree.
- 🌳 Street trees provide a net air quality improvement through the removal and avoidance of air pollutants valued at \$42 annually or \$.09 per tree.
- 🌳 By intercepting over 1 million gallons of stormwater annually, for an average of 1,553 gallons per tree. The total value of this benefit to the Town is \$10,781 per year, with an average of \$15.38 per tree.
- 🌳 The estimated total annual benefit associated with property value increases, aesthetics, and other less tangible improvements is \$17,466, with an average of \$24.92 per tree.
- 🌳 Given that Forest Heights currently has no expenditures related to tree management or maintenance, it only reaps the benefits (gross total value of \$33,320 annually with an average of \$47.60 per tree), however, continued neglect of this resource will likely result in a loss of benefits over time or even unanticipated costs to the city and citizens.

Street Tree Resource Management

Forest Heights' street trees are a resource and part of the Town's infrastructure. As such, street trees require management and investment. Forest Heights' street trees improve quality of life in the Town and help mitigate the Town's environmental impact. This resource is vulnerable to a variety of stressors and needs sound management practices to ensure the flow of benefits. Forest Heights can improve its resource management through:

- 🌳 Sustaining the benefits of the existing street tree resource through comprehensive maintenance, including new tree establishment and cyclical pruning. Develop a replacement plan for the Town's most mature trees (and top benefit producers) to replace them with trees of similar stature gradually before they must be removed.
- 🌳 Implement a Town wide tree planting program to expand the extent of the resource, distribute the resource more equitably across neighborhoods, and maintain the flow of the benefits. Focus on large-stature trees where growing conditions permit to maximize benefits.
- 🌳 Increase species selection to achieve greater diversity and guard against catastrophic losses. Achieve an appropriate age distribution by planting new trees to improve long-term resource sustainability.

- ✿ Select species and match them to existing site conditions to avoid conflicts with infrastructure. Consider the instances where proposed stormwater swales and tree plantings could work in tandem.
- ✿ Educate citizens regarding resource benefits and management. Encourage involvement in volunteer activities supportive of the resource.
- ✿ Strengthen the Town's network of partners to work together towards the common goal of an improved, more functional, and sustainable street tree resource.

The value of Forest Heights' street tree resource should increase as existing trees mature and new trees are planted. Proactive management is essential to ensure a high return on investment as this resource grows. It is not enough to simply plant new trees. Planning and funding for care and management must complement planting effort to ensure the success of new plantings. Existing trees must also be maintained as the greatest benefits are accrued from continued growth of existing canopy. While the notion that Forest Heights needs to account for funds required to care for its street trees may seem untenable in these unstable economic times, the Town can take full credit for improving its citizens quality of life, preventing possible maintenance failures, and ensuring futures benefits. In short, this resource is well worth the benefit.



Figure 1: Currently the Town has no allotted budget for tree management or maintenance. The electric utility handles the trimming of trees that conflict with lines. Citizens are responsible for the maintenance of trees that fall on their property in the right of way. The Town's Department of Public Works sometimes does tree maintenance in emergency situations.

Introduction

Primarily developed as new suburbia for soldiers returning from World War II, Forest Heights' developers in conjunction with the Army Corp of engineers culverted several streams and springs in keeping with the best practices of the time. Situated on the banks of the Oxon Run River and a short drive from DC, the Town is ideally located, both for commuters and those who appreciate the riverine ecology. Forest Heights recognizes the valuable resource both the Oxon Run waterfront and its tree canopy are. The relationship between trees and clean water plays an important role, as Forest Heights works to meet the Clean Water Act requirements as enforced by Maryland Department Environment, Water Management Administration (NPDES for municipalities of 100,000 or less).

Given the many benefits of healthy city trees, Forest Heights recognizes the important role its street trees play in helping the Town achieve many of its environmental goals. Urban trees can improve air quality, reduce energy consumption, and slow and reduce stormwater runoff. Trees can provide a sense of psychological well being, increase real estate values, and bring other intangibles benefits such as aesthetics and wildlife habitat. Trees in Forest Heights improve the experience of everyday life while mitigating the Town's environmental impact.

Though the Town currently has no budget for street tree planting, management and maintenance, it has sought grants and in kind funding to plant new trees and commission the tree overall canopy assessment from the University of Vermont, as well as this more in depth street tree report.

This report focuses on Forest Heights' street trees. No inventory existed, so data was collected in the field. I-Tree's Street Tree Resource Analysis Tool for Urban Forest Managers (STRATUM v3.3) was used to assess the value street trees provide to the Town and to help in analyzing the character of the resource. The information in this report provides the following:

- ✿ An inventory the current status of Forest Heights' street tree resource to serve as a baseline for future efforts and management to be measured against.
- ✿ A detailed cost-benefits description, to provide a baseline for comparing to potential costs of maintenance.
- ✿ A quantification of the value of environmental benefits of street trees.
- ✿ A description of the current condition of street tree resource to provide assistance in consideration/justification of a management program for Forest Heights' street trees.
- ✿ Quantifiable data to assist the Town in developing alternative funding sources to aid in resource management.

This report does not include Forest Heights' school grounds, church grounds, parks, or civic lands, and of course private residential trees. Only those trees that would be considered street trees (even it on the aforementioned property) are included in this analysis. Therefore, the results stated herein may not reflect the full benefits provided by Forest Heights' total urban forest.

Section 1: Methods

A tree canopy assessment was completed using *i-Tree STRATUM* software and following methods from the Urban Forest Effects (UFORE) Field Data Collection Manual and *i-Tree STRATUM* manual for data collection. The assessment was a complete inventory of all street trees along roads falling within the Town of Forest Heights, Maryland. Trees inventoried were in the public right of way determined to be, at least in part, within twelve feet of all public roads. Stumps and private trees were excluded from *i-Tree* analysis but were recorded and entered into the database of trees. Because of time constraints, a full inventory of institutional areas such as churches, schools and government buildings was not conducted as these were not considered strictly “street” trees. As the focus of the assessment was street trees and with the aim of exploring planting opportunities along the Town’s roads, this was seen by the assessors as consistent with the goals of the assessment.

An engineer’s measuring tape was used to determine each tree’s location within the public right of way or on private land. A standard diameter tape was used to record tree diameters at breast height (DBH). For trees with multiple stems, the tree’s diameter at root collar (DRC) was recorded instead. Additional data was collected for each tree regarding the drip line that was used as a measurement of the canopy coverage of the tree parallel to and along the street. This is a more accurate measure of canopy coverage than estimations based on DBH size as these do not reflect the spreading of branches, crowding from other trees, or the condition of the tree and its leaves.

Data was entered into *i-Tree* using Microsoft Office Suite. Unique ID numbers were given to each tree so that they could be mapped and were recorded as “location numbers” for the purposes of *i-Tree* software. Each tree’s drip line was recorded to provide an estimate of the linear amount of tree canopy that exists on each street.

Maintenance recommendations were primarily made from the perspective of the health of the tree canopy. Routine maintenance included tasks such as minor pruning, some thinning of neighboring trees, or addressing of vines or insects. Immediate maintenance included work that was needed to remove threats to the tree’s survival, such as removal of heavy vine or insect infestation, rotting of major stems or branches, the prior use of detrimental pruning methods, encroachment by other trees. Small trees were those of a height less than two stories. Special note was made of all *Ailanthus altissima* as Maryland’s Department of Natural Resources has indicated their desire to remove individual trees of this invasive species. Stumps were also noted in the Excel database for management purposes but were excluded from the *i-Tree* analysis of the benefits received by the Town.

Land use categories were defined by the surveyors to distinguish between a variety of different use types. The “area of special watershed interest” was assigned to trees that fell within the 12 foot right of way and which were located in stream drainage areas; “transportation area” was assigned for trees in the median of Indian Head Highway and Cree Drive, and for the sides of Indian Head Highway; “institutional” land use consisted of church, school or municipal grounds; “overgrown” land use indicated an overgrown area with an abundance of trees, shrubs, vines and/or herbaceous cover that did not fit the profile of the more closely maintained public right of

way in much of the rest of Town; “vacant” was used on lots that did not appear to be developed and did not fit the description of other land use categories.

Field data was collected by two surveyors, Owen Williams and Zoe Clarkwest, over the course of four weeks in August and September 2010. Species identifications were made with the assistance of *National Audobon Society Guide to Trees*, *National Wildlife Federation Guide to Trees of North America*, and *Peterson’s Guide to Eastern Trees* (see Appendix E for full citations).

Note on overgrown areas

Forest Heights contains some streets on which the public right of way consists of unmaintained areas that are heavily overgrown with vegetation. For *i-Tree*, these were coded as “overgrown areas.” Because of time constraints, data on the trees in these areas were recorded only for species and DBH. Through consultation with a member of the Maryland State Department of Natural Resources, it was deemed acceptable to record limited data for these sites because a comprehensive management plan would likely thin these areas, saving only the largest, healthiest trees to allow for healthy canopies to develop. In most of these overgrown areas, many of the trees were invasive species (the majority were *Ailanthus altissima*), and were unhealthy, crowded or strangled with vines and were not supplying the benefits that a tree of their species was capable of supplying to the Town. Many of the trees in these areas would likely be removed if new plantings were desired for these spaces.

These trees have been included in the database provided to Forest Heights but have been removed from most parts of the analysis of the tree canopy. The overgrown areas essentially constitute a data outlier. They occupy a very small geographic area of the Town but contain 60% of the street trees and nearly two times as many trees as in all the non-overgrown areas. They therefore alter the results of the analysis reports in a way that distorts the average and give an inaccurate picture of the current tree canopy in Forest Heights. As such, trees in the overgrown areas have been largely excluded from our analysis, except where noted otherwise. Table one shows the citywide distribution of street trees in Forest Heights according to land use categories.

Table 1: Tree count by land use type

| Land use type | Number of trees | Percentage of all trees in population |
|---|-----------------|---------------------------------------|
| Overgrown area | 1107 | 61.26 |
| Residential | 537 | 29.72 |
| Transportation area | 82 | 4.54 |
| Area of special watershed interest | 26 | 1.44 |
| Small commercial | 19 | 1.05 |
| Park | 16 | 0.89 |
| Industrial/Large commercial | 6 | 0.33 |
| Institutional | 6 | 0.33 |
| Vacant | 5 | 0.28 |
| Utility | 2 | 0.11 |

Because of limited data collection on these trees, their condition was not noted and could not provide information for the importance value, performance reports and other analyses. Many trees in overgrown areas were of diameters in the 0-3 inch class and might be lost over the next winter, by a citizen's lawnmower or pair of hedge clippers. These trees would bias the results of analyses on the best performing species, or with regard to how a particular species is contributing to the Town.

In addition, the focus of the current planning efforts of the Town of Forest Heights are in planting new trees in currently unoccupied sites along the more densely populated residential areas. Much of these overgrown areas are adjacent to Indian Head Highway along which there are few homes, or along Livingston Road and Sachem Road, which are relatively less densely populated with homes with Town managed right of way. Additional funding would be required to thin and clear these areas to maximize the benefits from the trees in these areas or to make room for new plantings that could be properly maintained. A simple clearing of these areas without a replacement plan would reduce benefits afforded to the Town immediately. Instead, it is recommended that priority is placed on adding trees to unoccupied sites and as resources permit in the future, addressing the health of these overgrown areas.



Figure 2: This section of Arapahoe Drive is an example of an “overgrown area.” Note the number of *Ailanthus altissima*.

Section 2: Forest Heights' Street Tree Resource Structure

Population

The Town was divided into two geographic zones, east and west of Indian Head Highway. Of the Town's 700 street trees (excluding overgrown areas), zone one, the western zone, contained 456, or 65% of the Town's trees. The eastern zone contained 244 trees, or 35%. When the overgrown areas are included in the population totals, the total number of trees increases to 1807. The western zone contains 810 trees and 45% of the total, while the eastern zone contains 997 trees and 55% of the street tree population. For the purposes of this section, overgrown areas will be excluded for the rest of the discussion.

Broadleaf deciduous trees comprise 87.6% of the Town's tree canopy, coniferous trees comprise 9.6% of the canopy and broadleaf evergreen trees comprise 2.9%. This represents 614 broad leaf deciduous trees, 67 coniferous trees and 20 broadleaf evergreen trees. Large growing broadleaf deciduous trees number 305 or 44%; those of a medium size are 133 or 19% and small 176 or 25%. Coniferous large growing trees number 49 or 7%, medium sized number 18 or 2.5% and broadleaf ever green trees comprise 20 or 2.9%.



Figure 3: Pitt Lane demonstrates the relatively small amount of tree canopy in Forest Heights on the Eastern side of Indian Head Highway



Figure 4: This portion of North Huron Drive demonstrates the greater canopy coverage on the Western side of the highway.

Species Richness and Composition

Forest Heights contains 71 species of street trees which is higher than the national average of 53 species of street tree reported by McPherson and Rowntree (1989) from 22 different U.S. cities. The top 10 most common street trees in Forest Heights make up 50.9% of all trees and the top 15 most common species make up 62% of all trees. The five most common trees are the Common crape Myrtle (*Lagerstroemia indica*, 9.7% of the population), Apple (*Malus sp.* 6.1%), Willow Oak (*Quercus phellos*, 6.0%), Red Maple (*Acer rubrum*, 5.8%) and Sweetgum (*Liquidambar styraciflua*, 5.4%). This distribution follows the generally accepted rule that no single species exceed 10% of the total population and no single genus more than 20% (Clark and others, 1997). The genus Oak (*Quercus*) makes up 16.4% of all trees, Crape Myrtle (*Lagerstroemia*) makes up 9.7% , Maple (*Acer*) makes up 9.3%, Apple (*Malus*) makes up 7.5%, Sweetgum (*Liquidambar*) makes up 5.4% and Mulberry (*Morus*) makes up 5.3%.

Table 2: 15 most common trees.

| Species | Percentage of total population |
|------------------|--------------------------------|
| Crape Myrtle | 9.7 |
| Apple | 6.1 |
| Willow Oak | 6.0 |
| Red Maple | 5.9 |
| Sweetgum | 5.4 |
| Black Cherry | 5.0 |
| White mulberry | 3.6 |
| Leyland cypress | 3.4 |
| Black Locust | 3.0 |
| White Oak | 2.6 |
| Northern Red Oak | 2.6 |
| American Elm | 2.4 |
| Pin Oak | 2.3 |
| Silver Maple | 2.1 |
| Red mulberry | 1.7 |

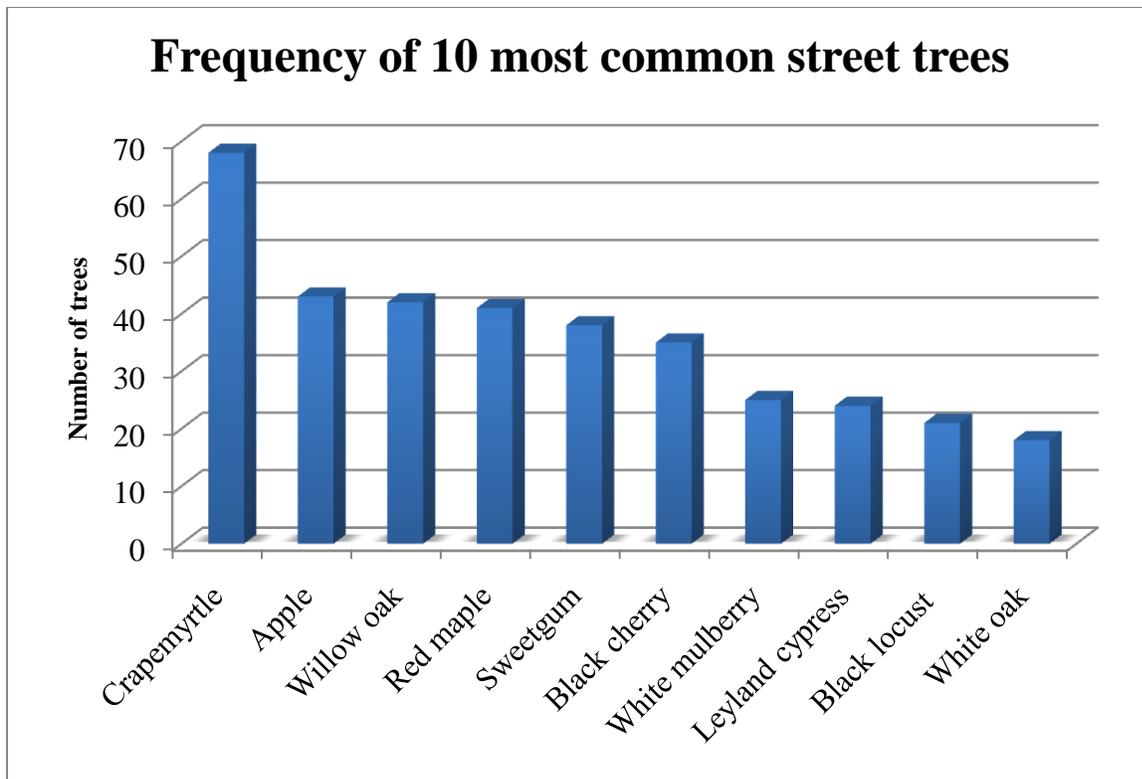


Figure 5: Frequency of 10 most common trees by number of trees.

Species Importance

I-Tree calculates the Importance Value (IV) of each species based on the average of percentage of total population, percentage of total leaf area and percentage of total canopy cover. This value offers an idea of the Town's dependence on a particular species to provide benefits. It therefore also provides an idea of the Town's vulnerability to storm, disease or pest infestation that could inflict damage on a particular species and reduce canopy benefits. The following IVs are on a scale of 0-100, with 0 indicating no reliance and 100 complete reliance on one species. With an even distribution of IVs between the top 10 to 15 most common street tree species, catastrophic loss of canopy benefits is less of a risk. These values should not be taken as an absolute rating of their suitability for conditions in Forest Heights, but just an idea of the Town's current dependence on a particular species.

The top 15 most common species in Forest Heights comprise 62% of all species in the population, 74.6% of total leaf area of all street trees, and 69.5% of total canopy coverage. Of these species, Red Maple scored the highest IV of 12.5 followed by White Oak (7.4) and Willow Oak (5.7). Red Maple's high IV rating results from its higher leaf area and canopy cover than all other species. It also has wide spread of age distribution including 22% of all Red Maples in a DBH class of 18-24 inches and 15% in a DBH class of 24-30 inches. White Oak and Willow Oak also represent a mature sample of trees in the population. White Oak has the largest range of

DBH classes, over 60% of all White Oak trees were mature, (DBH measurements greater than 12 inches) making it the species with the most mature individual trees in the population. In fact, per tree, the White Oak has the highest IV of 0.41 while the Red Maple has a value of 0.30 and the willow Oak only 0.14.

Smaller trees such as the crape Myrtle, the apple and black Tupelo had much lower IVs. The crape Myrtle, despite being the most common tree in the population, had an IV of only 4.0, and the apple of 4.2. This results from their very small leaf area and canopy coverage.

| Species | Importance Value (IV) |
|-------------------------|-----------------------|
| Red Maple | 12.5 |
| White Oak | 7.4 |
| Willow Oak | 5.7 |
| Sweetgum | 5.7 |
| Pin Oak | 5.2 |
| Black Locust | 5.1 |
| Apple | 4.3 |
| Black Cherry | 4.2 |
| Crape Myrtle | 4.1 |
| Silver Maple | 3.9 |
| White mulberry | 3.6 |
| Northern Red Oak | 2.6 |
| American Elm | 2.2 |
| Leyland cypress | 1.4 |
| Red mulberry | 0.8 |

Table 3: Importance values for 15 most common street trees

Stocking Level and Canopy Coverage

The current assessment does not provide details on the available spaces for planting new trees, or the stocking level. An estimate can be made roughly using a general rule of 50 feet for each tree along a street. However, this does not account for shrubs, over grown “overgrown” areas fences, utility wires, driveways, county managed land, proximity of trees on private property or other obstructions to a planting a new tree. Forest Heights contains approximately, 9.67 miles of street, with a total of 19.34 miles of public right of way along both sides of all streets. 19.34 miles of road would allow a theoretical maximum of 2042 street trees, suggesting that there is room to add over 1300 trees to the current amount of 700 street trees in Forest Heights (excluding overgrown areas). There is an average of 72 trees per mile of street when the over grown areas are excluded. (When including the overgrown areas, there is an average of 186 trees per mile of street.) This means that there is the potential to add approximately 139 trees per street mile, or a total of 1344 trees. These figures are not entirely accurate because they cannot account for the presence of many obstacles to planting such as driveways, shrubs, utility wires

and the need to remove existing vegetation in some overgrown areas that fall within the public right of way.

Additionally, assuming a population of 2585 (U.S. Census Bureau 2000) there are 0.27 trees for each person in Forest Heights, or approximately 1 street tree for every 3.7 people. The average for U.S. cities is approximately one tree for every 2.7 people. (McPherson and Rowntree, 1989) To reach this point, an additional 256 trees would need to be planted in Forest Heights.

Drip line data was recorded for individual trees not located in overgrown areas. The cumulative sum of the drip lines of the entire tree population is 8741 feet, or 1.66 miles, meaning that only 17% of Forest Heights’s streets and sidewalks are under its tree canopy and 83% or 8.01 miles of road are not covered by the tree canopy. If we assume that segments of streets that contain overgrown areas have canopy coverage for the entire length of the overgrown area, there is an additional estimated 9743 feet (1.85 miles) of canopy coverage minus 670 feet of redundant coverage from non-overgrown areas with street trees = 9073 feet or 1.72 miles. The total canopy coverage in linear miles in Forest Heights is then estimated at 3.38 miles or 35% of all linear streets with some street tree canopy coverage.

Table 4: Additional overgrown area canopy coverage

| Street name | Overgrown area canopy coverage in feet | Non-overgrown coverage across the street from a overgrown area in feet | Total additional feet in canopy coverage from overgrown areas |
|-------------------------|--|--|---|
| Arapahoe Drive | 2390 | 213 | 2177 |
| Arapahoe Terrace | 1113 | 317 | 796 |
| Black Hawk Lane | 990 | 0 | 990 |
| Cree Drive | 500 | 110 | 390 |
| Livingston Road | 2600 | 30 | 2570 |
| Sachem Drive | 1600 | 0 | 1600 |
| Talbert Drive | 500 | 0 | 500 |
| Tecumseh Drive | 50 | 0 | 50 |
| Total: | 9743 | 670 | 9073 |

Relative Age Distribution

Uneven age distribution among the trees in a population is ideal because it precludes a sudden loss in canopy cover if many trees reach the end of their life simultaneously. In addition, it allows management costs to remain more uniform through time. Additionally, having a high proportion of young trees is desirable to counteract difficulties with new tree establishment and the death of older trees. The “ideal” proportion indicates 40% of the total should be immature with DBH measurements of under 8 inches, and 10% should fall in larger categories over 24 inches. (Richards, 1982/83)

In Forest Heights, 54.14% of the street tree population is under 6 inches in diameter, 40.0% are maturing and 5.86% are mature trees over 24 inches. (When the overgrown areas are included, only 2.3% of trees are over 24 inches.) This distribution favors younger trees establishing but

may result in the Town receiving fewer benefits until these trees can reach maturity. For example, nearly 70% of all Willow Oaks, 42% of Red Maples and 28% of Sweetgum in the population are immature. It is important therefore to make sure these trees are maintained to ensure their longevity and health so that more mature trees may be established and an even flow of benefits can be ensured over the long term. It should be noted that many of the street trees in Forest Heights are small trees with small stature such as the Common Crape Myrtle, Apple, and others. Even mature individuals of these species may not reach large DBH classes and so they may alter the age distribution to appear younger than it may be in reality. In addition, the species that comprise the larger DBH classes such as the Red Maple, White Oak, Black Locust, Black Cherry, are not all in good condition and may need immediate maintenance attention to recover and provide maximum benefits to the Town and to ensure that an important portion of the Town's tree canopy is not lost prematurely.

Given that there is currently no Town budget for maintenance at the moment, this issue may be of concern and may require attention in the new section of codes titled Urban Tree Canopy Ordinances or in the Forest Heights Public Works Department.

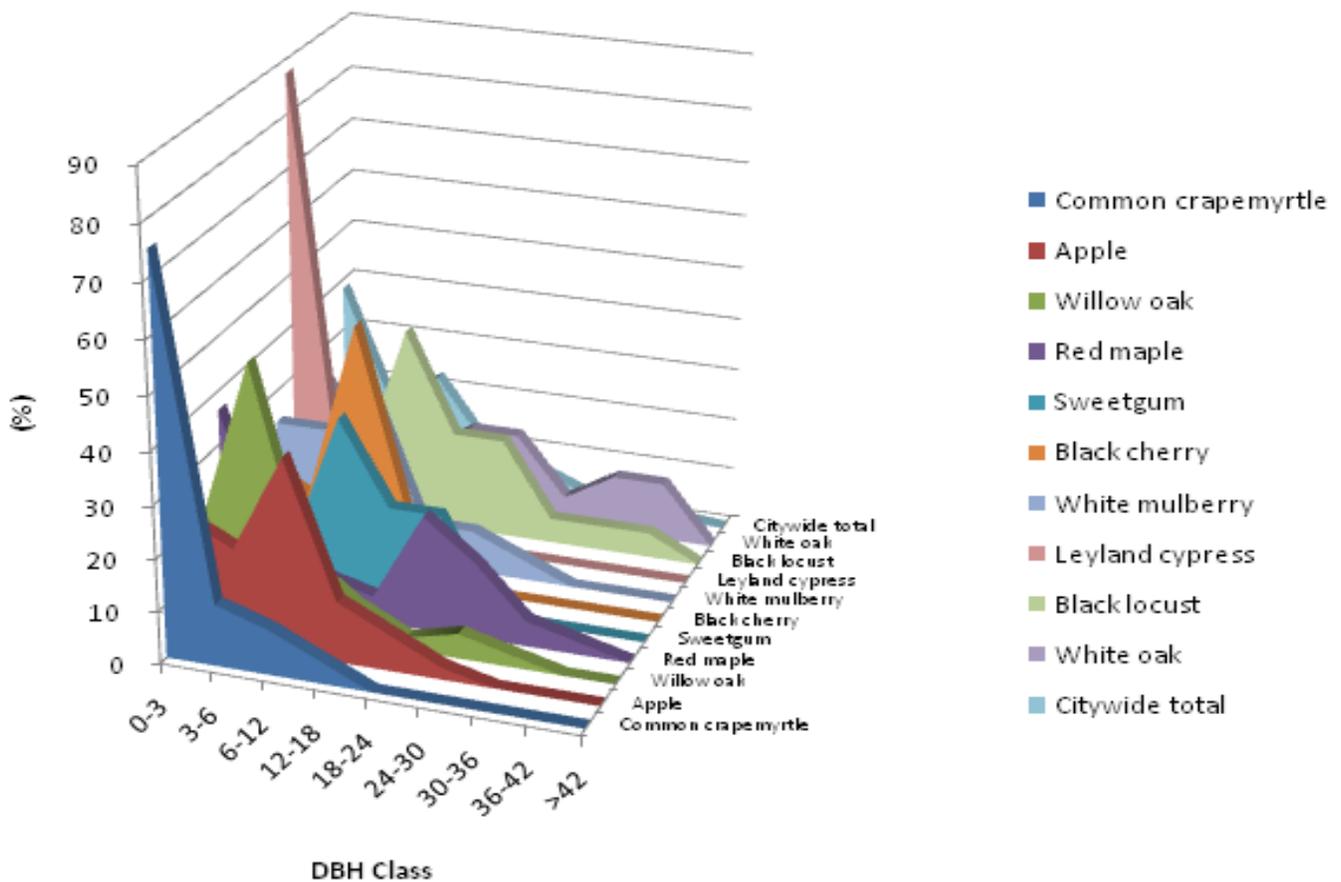


Figure 6: Relative age distribution

Figure six shows that the citywide total distribution of DBH classes generally favors maturing trees which is positive for the future of the Town’s canopy. It should be noted however, that several of the Town’s most common trees, the Common crape Myrtle and the apple are smaller trees and may be biasing this data. DBH class is not a direct indicator of the maturity of trees as trees have different growth patterns and may grow tall before growing wide, or may grow multiple stems instead of a single trunk. For example, the Common crape Myrtle displays large numbers of trees in the smaller DBH class which suggests that there are many maturing trees; however, this may be a result of its growth pattern as a small tree. Apples are concentrated in 6-18 inch DBH classes and this may reflect their stature as a middle size growing tree. To maintain the youthful character of the citywide total, planting and establishment of new trees should be a strong focus.

Red Maple population is weighted heavily towards the middle size DBH classes and also the very young with a gap between of several DBH classes. This raises the potential concern of a future drop off in benefits from this locally important tree when medium sized trees suffer age related mortality, by which time, the very young trees may not have fully matured to replace them. 44% of the Red Maples in DBH classes of 18 inches or greater are in poor or dying condition, or are already dead. Even more concerning, 72% of the Red Maples in DBH classes under 6 inches are in poor or dying condition. This does not bode well for the chances for these trees to establish and maintain an ideal age structure. The White Oak shows a more evenly distributed population in terms of age but there are low numbers of maturing trees that could potentially replace mature trees. The Town’s Willow Oaks display an age distribution that is heavily weighted to the smaller DBH classes which is a positive indicator for their role in the future of the Town’s canopy.

Condition and Performance

Forest Heights’ street trees are on average, approximately 35% in poor, dead or dying condition and 65% in fair or good condition, excluding trees in the overgrown areas.

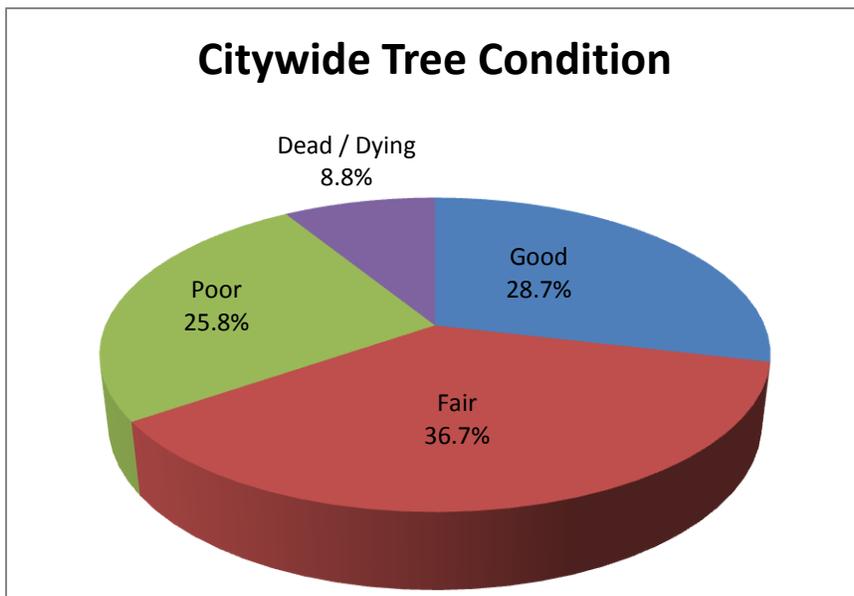


Figure 7: Citywide tree condition

Only 28.7% of Forest Heights' trees are in good condition. 34.6% of the Town's trees, over one-third, are in poor, dying or dead condition and 36.7% are in fair condition. This may suggest that trees have not been properly maintained over their lifetime to ensure health; that trees were chosen poorly for local conditions; or that planting site conditions in Forest Heights are of poor quality. The following indicate that better maintenance and planning for tree establishment would improve the condition of the canopy. Many trees were crowded by neighboring trees, pruned in such a way that they resembled hedges or to avoid utility wires, were overgrown with English ivy or Poison ivy vines. Many trees were also suffering from extended high temperatures and drought like conditions over the summer of 2010. The over grown areas are not included in the data on tree condition but their status as such suggests that maintenance of these areas would also help to maximize benefits from trees that could be saved from these areas.

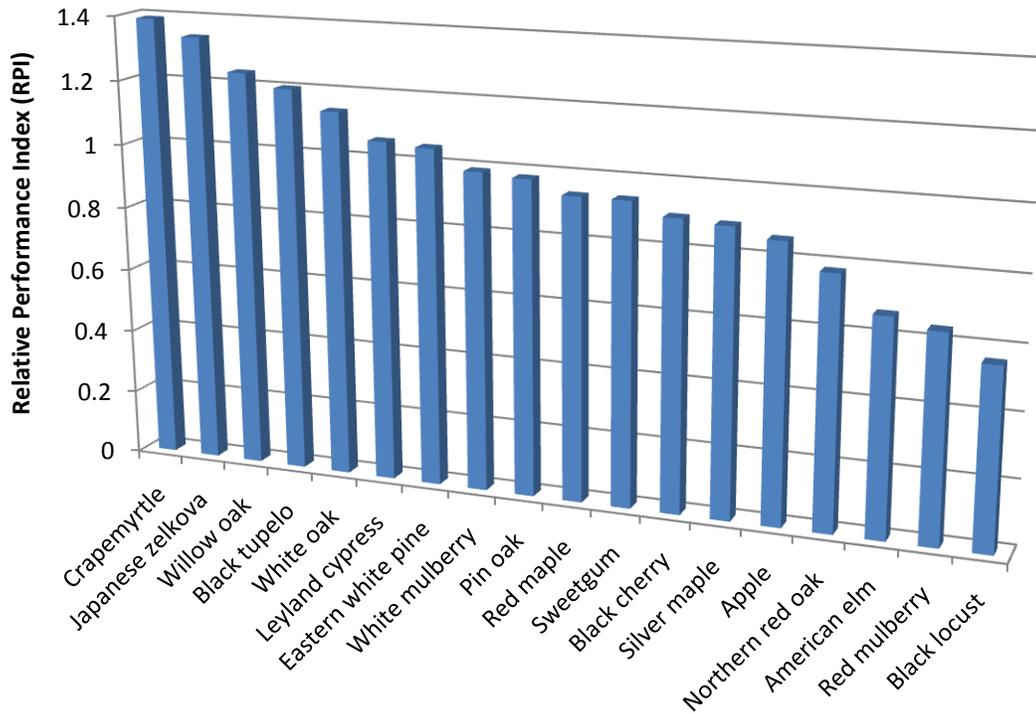
Nearly 10% of the total population are dead or dying condition. Ideally, there would be zero dead or dying trees and though there were several large storms which damaged the Town's trees, the majority of the street trees that were dead or dying had been in this condition prior to these storms.

Approximately 39% of the trees in the area west of Indian Head Highway are in poor, dying or dead condition, excluding the overgrown areas, and 61% are in fair or good condition. In the area east of Indian Head Highway, approximately 36% of trees are in poor, dying or dead condition and 64% are in fair or good condition. These figures are relatively close and do not suggest a significant difference on one side of the highway or another.

Relative Performance

Relative performance index (RPI) is calculated by *i-Tree* to compare the condition of each tree to the condition of the total tree population. This can give an idea about the successful performance of one species of tree versus another. The calculation is made by dividing the percentage of each species that are in good condition by the percentage of the total population that is in good condition. Species with RPI values above 1.0 are performing at least as well as the average. Species with RPI values below 1.0 may not be the best choices for local conditions and consideration should be taken when exploring species options for new plantings. The RPI should not be used as an absolute measure of suitability for planting as DBH and benefit provision are important factors as well. For example, a high performing tree may not provide the desired level of benefits for the Town's stormwater goals. This will be discussed further in the benefits and conclusion sections.

Figure 8: Relative Performance Index (RPI) values for the most common trees



Seven of the eighteen most common street trees in Forest Heights have an RPI greater than 1.0. The best performers of these are the Common crape Myrtle (1.39), Willow Oak (1.24), Black Tupelo (1.20), White Oak (1.14), Leyland cypress (1.06) and Eastern white pine (1.05). Many of the Crape Myrtles are young and in small DBH classes and this may help to account for their excellent relative performance. Similarly, the Willow Oaks are in smaller DBH classes (nearly 70% are 6 inches or less) as well as the Black Tupelos (66% are under 6 inches or less), the Leyland Cypress (over 90% are 6 inches or less) and the Eastern White Pines (75% under 6 inches). This does not discount their potential ability to outperform other species but recognizes that their relative youth promotes good health as they have not experienced many of the stresses of older trees, nor have they begun to senesce as they age. Additional species are performing well such as the Beech, Tulip Tree and Japanese Zelkova. Because the sample size of these trees is small, it is more difficult to conclude that this is statistically significant.

White Oaks are performing relatively well and have a more even age distribution. Approximately 28% of White Oaks are less than 6 inches. The majority of trees in this species are in larger DBH classes and this suggests they may be well adapted to conditions in Forest Heights and should be considered for future planting. Neither of these trees displays the ideal age distribution and new trees would be needed to maintain an even flow of benefits to the Town. As these trees are performing relatively well and also score high importance values (IVs) as discussed earlier, they should be considered for new establishment.

More poorly performing trees include the Black Locust (0.56), Red Mulberry (0.64), American Elm (0.67), Northern Red Oak (0.78), Apple (0.86) and Black Cherry (0.90). The Red Maple, Sweetgum and Silver Maple are performing below average as well, although many of these trees are also in the larger size classes and this may depress their RPI values.

These RPI values can be used to help decide which species the Town wants to plant. Choosing good performers can help to reduce long term maintenance and planting costs. It can identify good performers that may not have been recognized or under performers that the Town may wish to stop planting. For example, the presence of many young Willow Oaks and Black Tupelos suggest that their good performance has been recognized by previously planting programs (although they are still underutilized based on their small percentage of the total population). However, good performance by White Oaks (2.6% of the total population) may have been overlooked. On the other hand, Apple trees, the 2nd most common tree in Forest Heights, are performing below average and the Town may wish to explore their performance further before planting additional trees.

Table 5: Top 5 performers in top 15 most common species

| Species | RPI | % of total tree population in FH | Number of trees |
|----------------------------|------|----------------------------------|-----------------|
| Common Crape Myrtle | 1.39 | 9.6 | 67 |
| Japanese Zelkova | 1.34 | 1.71 | 12 |
| Willow Oak | 1.24 | 6.0 | 42 |
| Black Tupelo | 1.20 | 1.71 | 12 |
| White Oak | 1.14 | 2.6 | 18 |

Table 6: Potentially under-utilized species with high RPI values.

| Species | RPI | % of total tree population in FH | Number of trees |
|---------------------------|------|----------------------------------|-----------------|
| American Beech | 1.51 | 0.29 | 2 |
| Little Leaf Linden | 1.51 | 0.29 | 2 |
| Black Tupelo | 1.20 | 1.7 | 12 |
| American Basswood | 1.44 | 0.43 | 3 |
| Japanese Zelkova | 1.34 | 1.71 | 12 |
| English Holly | 1.32 | 1.0 | 7 |
| Tulip Poplar | 1.19 | 1.3 | 9 |
| White Oak | 1.14 | 2.6 | 18 |
| Pin Oak | 1.14 | 2.3 | 16 |

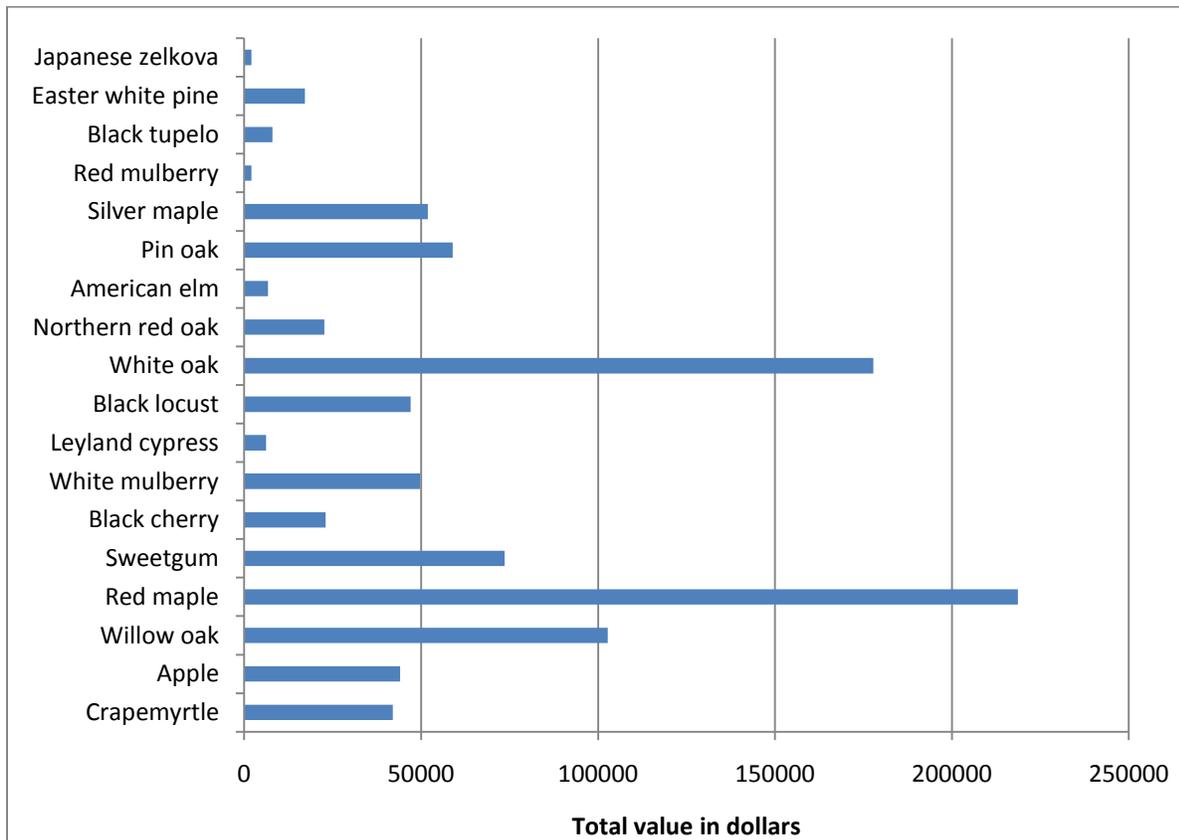
Replacement Value

The current value of Forest Heights’s street trees is \$1.36 million based on what it would cost to replace these trees. This valuation is based on their number and condition and is not a measurement of the annual benefits provided to the Town. The average value of each tree is \$1942 excluding the overgrown areas. The portion of Forest Heights west of Indian Head Highway accounts for 67% of the value of the Town’s trees at \$915,894 and the eastern portion

accounts for the remaining 33% at \$444,003. Overall, Red Maple trees account for 16% of the total replacement value, White Oaks account for 13%, and Willow Oaks account for 7.6%. After these species, the value drops off quickly to Sweetgum accounting for 5% and Pin Oak at 4%. Smaller trees that are more common such as the Crape Myrtles, Apples and Leyland Cypress account for much less of the total at 3%, 3% and 0.5% each.

The trees in the overgrown areas add an additional \$ 1.29 million dollars to the total value of the Town’s street tree assets, very nearly doubling the figure without the overgrown areas, and bringing the Town’s total street tree replacement value to \$ 2.65 million. This suggests that these areas have a great deal of potential in providing benefits and value to the Town. However, in their current state, they cannot reach their full potential and without accurately accounting for their condition, their true value will remain unknown. With the overgrown areas included, the average replacement value per tree drops from \$1,942 to \$1,466, nearly \$500 per tree. Intensive maintenance measures would be required to address these areas it may be desirable to conduct a separate assessment of these areas when choosing how to address them. The results of the current assessment recommend leaving these trees in place for now and to address these areas when resources can be made available for future efforts. For example, if residents across from overgrown areas do not wish to have trees planted on their side of the street, it may be possible to redirect some funds to addressing overgrown areas instead.

Figure 9: Total replacement value of the most common trees



Section 3: Costs of Managing Forest Heights' Street Trees

Currently Forest Heights relies on a loose consortium of partners to manage the Town's street trees. Citizens are required to care for the trees in the 12 foot right of way in their own property. Pepco electric utility company trims or prunes trees that conflict with utility lines. The Town's department of Public Works manages trees on municipal property, sometimes including the street trees in the right of way after storms or other significant events impacting the trees. Because the Town has assigned no budget for the trees, it does not mean that the street resource does not cost the Town in some manner. Delayed maintenance can mean tree related emergencies for citizens and the Town that result in more significant costs in the long run. It can also mean a negative perception of street trees among the citizens, instead of a public understanding of the benefits of this resource. These opportunity costs should not be under appreciated.

Section 4: Benefits of Forest Heights' Street Trees

What do the Town's street trees do for Forest Heights? The street trees do many things including: helping conserve and reduce energy use, improving air quality, and mitigating stormwater runoff. They also provide many non-ecological benefits related to their aesthetic qualities and psychological and social impacts. Quantifying the benefits of street trees in financial terms provides the Town of Forest Heights with data that allows the Town to assess the resource value as an investment.

This report uses *i-Tree STRATUM* software model to quantify and assess a monetary value on the beneficial functions the street tree resource provides annually. To understand how *i-tree STRATUM* calculated the benefits refer to the *New York City, New York Municipal Forest Resource Guide Analysis* (Pepper and others, 2007) and the *Northeast Community Tree Guide* (McPherson and others, 2007).

Energy Savings

There are three primary ways in which trees conserve energy and modify climate:

- 🌳 *Tree shade reduces the amount of radiant energy absorbed and stored by built surfaces.*
- 🌳 *Transpiration converts moisture to water vapor and, thus, cools the air by using solar energy that would otherwise result in heating of the air.*
- 🌳 *Wind-speed reduction reduces the movement of outside air into interior spaces and conductive heat loss where thermal conductivity is relatively high, for example, glass window (Peper and others, 2008).*

Shade and transpiration provided by trees in the built environment can lower air temperatures and reduce cooling requirements for buildings. By reducing air movement around buildings, trees protect buildings from conductive heat loss which translates into energy savings.

Electricity and Natural Gas Result

The electricity and natural gas saved annually in Forest Heights from both shading and climate effects equal 33.2 MWh (\$2,522) and 1,268.8 therms (\$1,327) for a total annual savings of \$3,849 or an average of \$5.50 per tree. Red Maple accounts for 12.2% of the energy savings, though it represents only 5.9% of the total tree numbers. No other species comes close to the savings accounted for by Red Maples. This may be due to the relatively small numbers of other large trees which tend to be the better energy saving trees. The two most prevalent tree species, Common Crepe Myrtle and Apple are smaller statured trees which together only account for 8.2% of the energy savings generated by all street trees.

By examining the savings per tree, we see that numbers and species matter. Table 7 shows the top seven species as regards percent of total energy savings. Red Maple, Apple, and Sweetgum are in the top five in terms of total population numbers. However the Red Maple provides almost twice the energy savings per tree (\$11.45) as the Sweet Gum (\$6.22). Whereas Apple, though the highest percent of population in the table (6.1%), provides the lowest energy savings per tree (\$5.27). Understand which species are performing well in terms of energy savings can help the Town, not only assess the resource benefits, but increase them with future plantings. For the full table see Appendix B.

Table 7: Energy savings by species in relation to the percentage of the total street tree population.

| Species | Percent of Total Energy Cost Savings | Percent of Street Tree Population | Energy Savings per Tree |
|--------------|--------------------------------------|-----------------------------------|-------------------------|
| Red Maple | 12.20% | 6% | \$11.45 |
| Black Locust | 6.50% | 3% | \$11.82 |
| Willow Oak | 6.50% | 2.60% | \$13.97 |
| Sweetgum | 6.10% | 5.40% | \$6.22 |
| Apple | 5.10% | 6.10% | \$5.27 |
| Pin Oak | 5.50% | 2.30% | \$13.20 |
| Silver Maple | 5.30% | 2.10% | \$13.54 |

Atmospheric Carbon Dioxide Reduction

As the understanding of the environmental impacts of Carbon Dioxide grows, a wide variety of programs have considered ways to reduce this pollutant in the atmosphere. Trees are often one part of the solution, because trees can reduce atmospheric carbon dioxide (CO₂) in two ways:

-  Directly: trees sequester CO₂ in their wood and leaves.

- ✿ Indirectly, trees moderate the environment so that the demand for heating and air conditioning decreases which reduces the emissions associated with the power used.

It is important to recognize that the full life cycle of trees and their maintenance must be accounted for when calculating the CO2 reduction benefits of trees, because CO2 is released by the vehicles and equipment that maintain trees, as well as by the tree itself when it decomposes.

Avoided and Sequestered Carbon Dioxide

Forest Heights’ street trees directly reduce 69 tons of CO2 and indirectly reduces 14 tons of CO2 each year for a monetary value of \$1,247 of annual benefits. After accounting for CO2 emissions (-2.7 tons) from tree decomposition, and tree maintenance (-0.2 tons) for a net of 2.9 tons, the street trees reduce atmospheric CO2 by a net of 80 tons valued at \$1,203. On a per tree basis, the net benefit is \$1.72. Northern Red Oak (\$4.88), White Oak (\$4.76) and Black Locust (\$4.76) give the highest per tree benefits. Red Maple gives the greatest total benefit, however, as it is more prevalent than the other high performing trees.

Table 8: Carbon Dioxide reduction benefits: the top five trees in Forest Heights. Again note the difference between species and how the total population of a given species plays role in the species total benefit to the Town.

| Species | Percent Total CO2 Benefits Savings | Percent of Street Tree Population | Savings per Tree |
|----------------|------------------------------------|-----------------------------------|------------------|
| Red Maple | 14% | 5.90% | \$4.09 |
| Black Locust | 8.30% | 3% | \$4.76 |
| White Oak | 7.30% | 2.60% | \$4.88 |
| White Mulberry | 5.80% | 3.60% | \$2.81 |
| Pin Oak | 5.50% | 2.30% | \$4.10 |

Air Quality Improvement

The relationship between trees and air quality is often considered straightforward. The variety of ways trees influence air quality must be understood to get a full picture of how Forest Heights’ street tree resource functions and ways in which the resource can be improved.

Trees improve air quality in the following ways:

- ✿ *Absorbing gaseous pollutants, such as ozone (O3) and nitrogen dioxide (NO2), through leaf surfaces.*
- ✿ *Intercepting particulate matter (PM10), such as dust, ash, dirt, pollen, and smoke.*

- 🌳 *Reducing emissions from power generation by reducing generation by reducing energy consumption.*
- 🌳 *Releasing oxygen through photosynthesis.*
- 🌳 *Transpiring water and providing shade, resulting in lower local air temperatures, thereby reducing O3 levels (Peper and others, 2008).*

So trees create oxygen, absorb pollutants and moderate temperatures. Trees are source of pollution as well in the form of biogenic volatile organic compounds (BVOCs). BVOCs can add to ozone formation. The net benefit numbers account for BVOCs emissions of Forest Heights' street trees.

Deposition and Interception

157 lbs of the above mentioned pollutants are deposited or intercepted annually, the value of which is \$733. White Oak (\$47) and Black Locust (\$42) provide the highest value, but Red Maples (\$83), due to their prevalence provide the most value to the Town.

Avoided Air Pollutants

248 lbs of such pollutants are avoided annually, the value of which is \$871. Again the Red Maples provided the highest value (\$110). Several species performed admirably: White Oak, Black Locust, Sweetgum, Pin Oak, Silver Maple, Apple and Willow Oak all performed in the \$45-\$59 annually range.

BVOC Emissions

The total BVOCs emitted by Forest Heights' street trees is 250 lbs annually (\$1,563). The largest emitters tend to be trees in poor condition. The more one species had of older trees in poor condition the more BVOCs that species contributed. Sweetgum (39lbs), Pin Oak (34.6lbs), and Green Ash (20lbs) are the highest annual emitters by species. They also have the greatest negative per tree value once all Air Quality numbers (deposition, avoided and BVOCs) are combined. Pin Oaks are -\$8.13, and Green Ash are -\$7.29. Fortunately, the net annual benefit works out in Forest Heights favor in the sum of \$.09 per tree.

The low amount of this benefit derives primarily from the number of street trees that rate below Fair in terms of their condition. As Forest Heights' street canopy improves, it can be reasonably expected that this annual benefit will increase as well. See Appendix B for the full STRATUM report of this data.

Stormwater Runoff Reductions

As mentioned earlier, Forest Heights sits on the banks of the Oxon Run River. Like all municipalities the Town is taking steps to comply with Clean Water Act regulations. In identifying BMPs (Best Management Practices) and ESDs (Environmental Site Designs) that the

Town will implement to help reduce pollutants in its stormwater runoff, Forest Heights recognizes the value of street trees. Healthy urban trees can reduce the amount of runoff and pollutants in stormwater runoff in the following ways:

- 🌿 *Leaves and branch surfaces intercept and store rainfall, thereby reducing runoff volumes and delaying the onset of peak flows.*
- 🌿 *Root growth and decomposition increase the capacity and rate of soil infiltration by rainfall and reduce overland flow.*
- 🌿 *Tree canopies reduce soil erosion and surface transport by diminishing the impact of raindrops on barren surfaces (Peper and others, 2008).*

Forest Heights' street trees intercept just over one million gallons of water each year or 1,496 gallons per tree on average. The total value of this benefit to the Town is \$10,384. The best performing species, based on a benefits per tree basis are the White Oak (\$58.34) and the Pin Oak (\$44.75). However, once again, the prevalence of the Red Maple makes that species important to the overall interception benefit of the street trees to the Town.



Figure 10: Seeps are common in Forest Heights and add an extra dimension to the Town's stormwater needs. Some areas of the Town are already continually saturated and cannot participate in infiltration. Trees can help mitigate some of these issues.

Table 9: Annual Stormwater Benefits of Street Trees by Species

| Species | Total rainfall interception (Gal) | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|-----------------------------------|------------|----------------|------------------|---------------|--------------|
| Common crapemyrtle | 10,004 | 99 | (N/A) | 9.7 | 1.0 | 1.46 |
| Apple | 27,086 | 268 | (N/A) | 6.1 | 2.6 | 6.24 |
| Willow oak | 57,907 | 573 | (N/A) | 6.0 | 5.5 | 13.65 |
| Red maple | 168,795 | 1,671 | (N/A) | 5.9 | 16.1 | 40.76 |
| Sweetgum | 62,804 | 622 | (N/A) | 5.4 | 6.0 | 16.36 |
| Black cherry | 39,630 | 392 | (N/A) | 5.0 | 3.8 | 11.21 |
| White mulberry | 36,645 | 363 | (N/A) | 3.6 | 3.5 | 14.51 |
| Leyland cypress | 4,354 | 43 | (N/A) | 3.4 | 0.4 | 1.80 |
| Black locust | 64,350 | 637 | (N/A) | 3.0 | 6.1 | 30.34 |
| White oak | 106,061 | 1,050 | (N/A) | 2.6 | 10.1 | 58.34 |
| Northern red oak | 28,281 | 280 | (N/A) | 2.6 | 2.7 | 15.56 |
| American elm | 22,884 | 227 | (N/A) | 2.4 | 2.2 | 13.33 |
| Pin oak | 72,318 | 716 | (N/A) | 2.3 | 6.9 | 44.75 |
| Silver maple | 49,425 | 489 | (N/A) | 2.1 | 4.7 | 32.62 |
| Red mulberry | 3,012 | 30 | (N/A) | 1.7 | 0.3 | 2.48 |
| Black tupelo | 7,874 | 78 | (N/A) | 1.7 | 0.8 | 6.50 |
| Eastern white pine | 14,586 | 144 | (N/A) | 1.7 | 1.4 | 12.03 |
| Japanese zelkova | 847 | 8 | (N/A) | 1.7 | 0.1 | 0.70 |
| Tree of heaven | 10,163 | 101 | (N/A) | 1.6 | 1.0 | 9.15 |
| Green ash | 40,792 | 404 | (N/A) | 1.6 | 3.9 | 36.72 |
| Mimosa | 2,836 | 28 | (N/A) | 1.4 | 0.3 | 2.81 |
| River birch | 754 | 7 | (N/A) | 1.4 | 0.1 | 0.75 |
| Crabapple | 6,833 | 68 | (N/A) | 1.4 | 0.7 | 6.77 |
| Shortleaf pine | 13,311 | 132 | (N/A) | 1.4 | 1.3 | 13.18 |
| Callery pear | 9,061 | 90 | (N/A) | 1.4 | 0.9 | 8.97 |
| unknown | 5,687 | 56 | (N/A) | 1.4 | 0.5 | 5.63 |
| White ash | 2,846 | 28 | (N/A) | 1.3 | 0.3 | 3.13 |
| American holly | 7,475 | 74 | (N/A) | 1.3 | 0.7 | 8.22 |
| Tulip tree | 34,713 | 344 | (N/A) | 1.3 | 3.3 | 38.19 |
| Kousa dogwood | 3,035 | 30 | (N/A) | 1.1 | 0.3 | 3.76 |
| Eastern red cedar | 9,400 | 93 | (N/A) | 1.1 | 0.9 | 11.63 |
| Chestnut oak | 18,471 | 183 | (N/A) | 1.1 | 1.8 | 22.86 |
| English holly | 1,168 | 12 | (N/A) | 1.0 | 0.1 | 1.65 |
| Southern red oak | 14,602 | 145 | (N/A) | 1.0 | 1.4 | 20.65 |
| OTHER STREET TREES | 90,852 | 900 | (N/A) | 12.0 | 8.7 | 10.71 |
| Citywide total | 1,048,862 | 10,384 | (N/A) | 100.0 | 100.0 | 14.83 |

Aesthetic, Property Value, Social, Economic, and Other Benefits

Recently, in determinations of value for natural resources or living organisms, the trend has been away from assigning a dollar value and using equivalencies. For example, in the recent BP spill, any one Heron lost was worth one Heron. In this way, the environment in the gulf cannot be shortchanged. (So, if, say, \$200 is not enough to settle a Heron in the gulf and assure its survival, the company is on the monetary hook until a Heron is established in the gulf.)

However, such a method of equivalencies, while morally and, in certain instances, fiscally, sound, does not help a municipality quantify the value its trees provide to the community for budgetary or funding purposes. Many of the benefits of trees are considered intangible; they provide a pleasant atmosphere which in turn increases shop visits, or property values, or park beauty, or improves mental health, etc. *I-Tree STRATUM* estimates the value of these intangible benefits by using research comparing differences in housing prices and the associated contribution associated with trees. A variety of factors are taken into consideration, such as location of tree on property, single or multi-family residence, and land use.

Maturity of the tree also impacts the value; an older tree being worth more than a younger. As this report captures only one moment in time, it is important to recognize that some trees will continue to increase in their value, while others are at their peak and will likely continue to provide maximum aesthetic value for many years if properly managed.

The estimated total annual benefit associated with property value increases and other less tangible benefits is \$17,355 or an average of \$24.76 per tree. The species providing the highest per tree values were White Oak (\$76.25) and Pin Oak (\$63.91). It is important to note that a species may rank high due to their size and growth rates, but tree may not be desirable for other reasons.

Table 10: Annual Aesthetic/Other Benefits of Street Trees by Species

| Species | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|------------|----------------|------------------|---------------|--------------|
| Common crapemyrtle | 144 | (N/A) | 9.7 | 0.8 | 2.12 |
| Apple | 326 | (N/A) | 6.1 | 1.9 | 7.59 |
| Willow oak | 1,145 | (N/A) | 6.0 | 6.6 | 27.26 |
| Red maple | 2,371 | (N/A) | 5.9 | 13.7 | 57.82 |
| Sweetgum | 1,498 | (N/A) | 5.4 | 8.6 | 39.42 |
| Black cherry | 1,144 | (N/A) | 5.0 | 6.6 | 32.69 |
| White mulberry | 713 | (N/A) | 3.6 | 4.1 | 28.51 |
| Leyland cypress | 124 | (N/A) | 3.4 | 0.7 | 5.17 |
| Black locust | 1,033 | (N/A) | 3.0 | 6.0 | 49.20 |
| White oak | 1,372 | (N/A) | 2.6 | 7.9 | 76.25 |
| Northern red oak | 426 | (N/A) | 2.6 | 2.5 | 23.67 |
| American elm | 442 | (N/A) | 2.4 | 2.6 | 25.97 |
| Pin oak | 1,023 | (N/A) | 2.3 | 5.9 | 63.91 |
| Silver maple | 768 | (N/A) | 2.1 | 4.4 | 51.23 |
| Red mulberry | 123 | (N/A) | 1.7 | 0.7 | 10.29 |
| Black tupelo | 223 | (N/A) | 1.7 | 1.3 | 18.57 |
| Eastern white pine | 150 | (N/A) | 1.7 | 0.9 | 12.48 |
| Japanese zelkova | 38 | (N/A) | 1.7 | 0.2 | 3.16 |
| Tree of heaven | 249 | (N/A) | 1.6 | 1.4 | 22.64 |
| Green ash | 480 | (N/A) | 1.6 | 2.8 | 43.59 |
| Mimosa | 44 | (N/A) | 1.4 | 0.3 | 4.38 |
| River birch | 60 | (N/A) | 1.4 | 0.4 | 6.01 |
| Crabapple | 78 | (N/A) | 1.4 | 0.5 | 7.82 |
| Shortleaf pine | 209 | (N/A) | 1.4 | 1.2 | 20.91 |
| Callery pear | 161 | (N/A) | 1.4 | 0.9 | 16.12 |
| unknown | 165 | (N/A) | 1.4 | 1.0 | 16.51 |
| White ash | 117 | (N/A) | 1.3 | 0.7 | 13.02 |
| American holly | 56 | (N/A) | 1.3 | 0.3 | 6.18 |
| Tulip tree | 292 | (N/A) | 1.3 | 1.7 | 32.46 |
| Kousa dogwood | 35 | (N/A) | 1.1 | 0.2 | 4.42 |
| Eastern red cedar | 50 | (N/A) | 1.1 | 0.3 | 6.24 |
| Chestnut oak | 386 | (N/A) | 1.1 | 2.2 | 48.22 |
| English holly | 11 | (N/A) | 1.0 | 0.1 | 1.56 |
| Southern red oak | 281 | (N/A) | 1.0 | 1.6 | 40.13 |
| OTHER STREET TREES | 1,598 | (N/A) | 12.0 | 9.2 | 19.02 |
| Citywide total | 17,335 | (N/A) | 100.0 | 100.0 | 24.76 |

Net Benefits and Benefit-Cost Ratio (BCR)

Because Forest Heights does not have a budget for tree management at this point in time, it is not possible to do a realistic Benefit-Cost Ratio. It would look as though the \$32,813 in benefits currently derived from the Town street tree resource comes at no cost. While it is true that the Town's budget does not have line item for tree management, it does not mean that there are not costs associated with the street tree resource. Currently, individual citizens are picking up the cost of street tree maintenance, along with Pepco's occasional trimming. This has been the Town's long standing policy and may continue to serve the Town well as citizens and the Town work together for a healthy, well maintained street tree resource. However, not all citizens can or wish to be responsible for their street trees. The potential lack of maintenance must be considered when contemplating policy and budgetary decisions regarding this resource. If it is not properly managed, the current level of benefit cannot be expected to remain level nor increase.

Section 5: Management Implications

The urban forest of Town of Forest Heights has the potential to show great improvement given the proper care and long term planning. This section discusses the types of management activities warranted by the current state of the canopy. The recommendations of this report prioritize two activities for enhancing the tree canopy: continued planting of new trees and increasing maintenance of existing trees. The current population is not properly balanced with young trees and existing trees are generally not in good condition and need proper attention to become healthier and continue to provide benefits to the Town. Without this important maintenance component, valuable trees may die early and it will be many years before enough trees have become mature enough to fill their shoes. Additionally, maturing trees that have been more recently planted must receive the right kind of maintenance to ensure they will reach maturity in the best possible shape.

Resource structure challenges and management

-  **Stocking Level:** This assessment reveals that the Town has fewer trees per street mile and per capita than national averages. Adequate planting is needed to correct this situation. The area of Town lying to the west of Indian Head Highway also has greater coverage and the eastern area should receive proper attention as part of this planting program.

-  **Canopy Cover:** The Town should follow through on its goal to increase canopy coverage, set with regard to watershed goals. Actions to reach this goal should include a tree planting program; creating an active maintenance program to ensure maximum tree health; and on-going monitoring of the tree canopy. All these things contribute to sustainability of street trees as a resource. Large trees provide the largest canopy and greatest benefits and should therefore be a greater focus of planting efforts than it has

been up to the present. Specific species to be considered for planting are discussed below.

- ❖ **Species Distribution:** Forest Heights has a well balanced mixture of tree species. However, it does not have a very large population of trees. As planting takes place and the street tree population grows, careful planning is required to ensure that this species balance is retained. Planting underutilized species that are performing well could be an effective strategy at the current stage. In addition, choosing new trees to plant could also provide insight into what trees are best suited to the conditions in Forest Heights. Trees that are small and make up a large part of the population, such as the Crape Myrtle and Apple, should not be aggressively planted. If more of these species are desired, they should be planted in balance with other species.

As the forest stands now, a loss of Red Maple trees would be most devastating to the Town’s street tree assets. Large stature trees are needed to support the role that the Red Maple now plays. Wherever necessary, large trees should be replaced as they age and die. Higher maintenance costs of larger trees will be paid off by the much larger annual benefits received. In addition, costs can be more evenly distributed over time with a well organized planting program.

Figure 11: *Ailanthus altissima*

- ❖ **Relative Age Distribution:** Forest Heights should seek to plant a diversity of young trees to offset the mature population of large trees that are currently providing the most benefits to the Town. As these trees age, new trees must be ready to take their place, otherwise there will be an interruption in benefits while new trees mature. Achieving an uneven age distribution for each species that the Town wishes to retain should be a goal of any planting program. A suitable goal would be to have roughly four young trees for every one mature tree of any species.

Maintenance Activities:

- ❖ **Removal of dead and invasive trees:** Ideally, there would be no dead street trees and the entire



population would consist of native trees. Any trees that pose a hazard to property, utility wires, other healthy trees, etc. should be removed by the Town's maintenance program. In addition, invasive trees such as the *Ailanthus altissima* should be removed because of their detrimental effect on other desirable native species. The Maryland Department of Natural Resources can provide more information about treatment of invasives. The photo in figure eleven is of an *Ailanthus altissima* on the corner of Arapahoe Drive and Pitt Lane. When the overgrown areas of Forest Heights are included, the *Ailanthus altissima* becomes the Town's most populous street tree; however it also has the smallest average DBH.

- ✿ Maintenance - pruning: A proper pruning program will help to ensure that individual trees reach their fullest potential to provide benefits through maintaining good structure and form and to prevent unmanaged trees from become a problem to homes, utility wires, other trees, etc. A regular pruning program will require more frequent pruning but will reduce the amount of time spent overall. Individual species and site conditions will vary for each tree.



Figure 12: Believe it or not, these three shrub-like plants are an elm species. With proper care, these trees could have provided a large amount of canopy coverage.

- ✿ New tree establishment: Care is needed to ensure the survival of newly planted trees. Measures such as pruning, mulching, and trunk protection help young trees to survive the critical years after planting. In 2010, Forest Heights experienced a hot, dry summer and many young trees appeared to be wilting or dying. A participatory citizen watering program could be a helpful way to assist these young trees survive.

- ✿ Additional maintenance concerns: Forest Heights has sidewalks on a number of streets and fortunately, very few of them have significant heaving due to tree root growth. Many streets do not have sidewalks and if the Town plans to install sidewalks in the future, coordination with the tree planting and maintenance program should be carried out to reduce damage to trees during installation, and to ensure that sidewalks can remain undamaged as street trees continue to grow. Many options exist to accommodate street trees when building sidewalks such as flexible sidewalk materials, routing paths around roots, and other innovations in green infrastructure.

Section 6: Conclusion and Recommendations

Forest Heights' 700 street trees are a valuable resource. To replace them would require \$1.36 million, an average of \$1,942. This resource also provides the Town \$33,320 in benefits (\$47.60 per tree) from cleaner stormwater to decreased energy costs. Quantifying the benefits of Forest Heights' street tree resource is important as this data reveals how valuable the street trees are to the Town; how much more valuable they can be; and how important it is to manage the resource appropriately. The Town will be able to use the data in this report to consider next steps on both a policy and practical front for addressing the management of the resource.

Recommendations:

- ✿ Create a cyclical pruning program to improve the health of existing trees and extend their lifetime.
- ✿ Implement a planting program to increase the numbers of street trees, to increase the Town's total canopy cover, to increase large stature trees and to achieve an uneven age distribution for desirable species.
- ✿ Identifying sites suitable for large stature, broadleaf deciduous trees and plant as many as possible.
- ✿ Identifying sites suitable only for medium or small trees, such as spaces under utility wires, sites in close proximity to buildings or which will grow in the shade of large neighboring trees.
- ✿ Create goal for uneven age distribution – 4 young to 1 mature
- ✿ Suggestions for species to be involved in a planting program. It is difficult to definitively say which trees are best performers in Forest Heights because the sample size is small. However, based on which trees appear to be performing well, and those known to perform well in other cities, a list of potential options is presented in Appendix A. This list should not be used on its own and it is recommended that the Town consult with a certified arborist/horticulturist regarding species and siting before purchasing any new trees to plant.
- ✿ Carry out an establishment program to increase survival chances for newly planted trees.
- ✿ Maintain an inventory of trees – update new plantings and removals in this database in excel/access and periodically reassess the canopy. Build a GIS database of the Town. Add maintenance costs, track success or failures of new species.

- ✿ Continue citizen education programs to encourage participation in development of Forest Height's street tree resource.

Appendix A: Basic Tree Recommendations Based on Existing Trees

The following tree recommendations are suggested for consideration in Forest Heights for future planting programs. These suggestions are based on the results of the tree canopy assessment conducted for this report in August and September 2010 and reflect results found in both the structural resource assessment and the cost-benefit assessment of the Town's canopy. Recommendation of the trees in this document should be used only as a starting point for considering appropriate tree species and consultation with a certified arborist or other professional is highly recommended to ensure species suitability for site conditions, current disease outbreaks, utility conflicts, etc. It would be ideal to focus on native species, but in recognition of the variety that citizens prefer, some suitable non-natives are included.

Large growing trees: These trees are suitable for locations with no potential conflicts with utility wires or other large trees.

- **Tuliptree** (*Liriodendron tulipifera*) – Attractive tree with excellent canopy coverage. A relatively good performer in Forest Heights and underutilized. Provides relatively high level of benefits per tree.
- **White Oak** (*Quercus alba*) – A good performer with a high importance value in Forest Heights and underutilized, making up only 2.3% of the population. The white Oak population needs additional young trees to balance its age distribution. White Oaks provide the most benefits per tree of all species in the population and are especially good in providing storm water and energy benefits.
- **Red Maple** (*Acer rubrum*) – Red Maples make up the backbone of Forest Heights's street trees and need additional young trees to balance the age distribution of the population. Their relative performance would likely improve with better maintenance throughout their lives.
- **Japanese Zelkova** (*Zelkova serrata*) – This tree has become a popular substitution for elm trees which continue to suffer from Dutch Elm disease throughout the country. They resemble elms and also grow large and withstand the stresses of urban environments fairly well. Zelkovas are good performers in Forest Heights and are underutilized.
- **American Beech** (*Fagus grandifolia*) - There are few beech trees in Forest Heights but those present have performed well. An attractive tree with a wide canopy and capable of providing excellent benefits.
- **Black Tupelo** (*Nyssa sylvatica*) – A good performer in Forest Heights that is underutilized. These trees are also somewhat tolerant of wet soils.
- **Southern Magnolias** (*Magnolia grandiflora*)—Some of these trees are successful on private land in Forest Heights and as street trees. They are underutilized.

Medium and small growing trees: These trees may be suitable for planting in areas where there is not enough room for a large tree, such as in closer proximity to utility wires or between other trees.

- **Serviceberry** (*Amelanchier sp.*) -- Several young trees have already been planted. It will be important to track their progress.
- **Eastern Redbud** (*Cercis Canadensis*) – There are few of these planted as street trees, but these perform well in Maryland/Virginia generally and provide year-round visual interest.
- **American Hornbeam** (*Carpinus caroliniana*) -- A slow growing tree, that may do well Forest Heights.
- **Sweetbay Magnolia** (*Magnolia virginiana*) -- A native magnolia with a smaller profile and can handle wetter soils.
- **Smoketree** (*Cotinus coggygria*) -- Small tree with year round visual interest.
- **White fringetree** (*Chionanthus virginicus*) -- Prefers moist, fertile soils and full sun. Excellent specimen tree or in groups, borders or near large buildings.
- **Flowering dogwood** (*Cornus florida*) -- Place in well drained soil. Full sun to partial shade. Has character in all four seasons. Excellent as specimen tree or used on the corner of a house or in a woodland group setting.
- **Washington hawthorn** (*Crataegus phaenopyrum*) -- Excellent specimen tree or for borders and hedges. Should not be used in high traffic areas. Dense thorns make excellent nesting sites for songbirds.
- **Common witchhazel** (*Hamamelis virginiana*) -- Small tree or multistemmed shrub with yellow flowers in winter. Prefers moist soils in full sun or partial shade. Excellent for foundations, hedges, mass plantings and as an accent plant.
- **American holly** (*Ilex opaca*)-- Plant in moist, well drained soil. Full sun or partial shade. Use one male for every three females. Use as specimen plant or in groupings. Many cultivars.

Appendix B: i-Tree STRATUM Output Reports for the Street Trees (“overgrown” areas excluded)

Forest Heights

Annual Energy Benefits of Public Trees By Species

9/22/2010

| Species | Total Electricity (MWh) | Electricity (\$) | Total Natural Gas (Therms) | Natural Gas (\$) | Total Standard Error (\$) | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|----------------------------|---------------------|-------------------------------|---------------------|------------------------------------|---------------------|------------------|-----------------|
| Common crapemyrtle | 0.7 | 50 | 35.9 | 38 | 87 (N/A) | 9.7 | 2.3 | 1.28 |
| Apple | 1.8 | 133 | 89.2 | 93 | 227 (N/A) | 6.1 | 5.9 | 5.27 |
| Willow oak | 1.7 | 129 | 65.8 | 69 | 198 (N/A) | 6.0 | 5.1 | 4.71 |
| Red maple | 4.3 | 324 | 139.0 | 145 | 470 (N/A) | 5.9 | 12.2 | 11.45 |
| Sweetgum | 2.0 | 154 | 79.3 | 83 | 236 (N/A) | 5.4 | 6.1 | 6.22 |
| Black cherry | 1.4 | 107 | 60.3 | 63 | 170 (N/A) | 5.0 | 4.4 | 4.85 |
| White mulberry | 1.4 | 107 | 56.0 | 59 | 165 (N/A) | 3.6 | 4.3 | 6.61 |
| Leyland cypress | 0.2 | 14 | 7.7 | 8 | 22 (N/A) | 3.4 | 0.6 | 0.90 |
| Black locust | 2.2 | 165 | 79.6 | 83 | 248 (N/A) | 3.0 | 6.5 | 11.82 |
| White oak | 2.3 | 174 | 73.9 | 77 | 252 (N/A) | 2.6 | 6.5 | 13.97 |
| Northern red oak | 0.8 | 62 | 27.5 | 29 | 91 (N/A) | 2.6 | 2.4 | 5.04 |
| American elm | 0.7 | 52 | 26.4 | 28 | 79 (N/A) | 2.4 | 2.1 | 4.67 |
| Pin oak | 1.9 | 142 | 66.4 | 69 | 211 (N/A) | 2.3 | 5.5 | 13.20 |
| Silver maple | 1.8 | 135 | 64.8 | 68 | 203 (N/A) | 2.1 | 5.3 | 13.54 |
| Red mulberry | 0.1 | 10 | 6.8 | 7 | 17 (N/A) | 1.7 | 0.5 | 1.43 |
| Black tupelo | 0.4 | 30 | 18.4 | 19 | 50 (N/A) | 1.7 | 1.3 | 4.13 |
| Eastern white pine | 0.5 | 34 | 17.2 | 18 | 52 (N/A) | 1.7 | 1.4 | 4.35 |
| Japanese zelkova | 0.0 | 4 | 3.2 | 3 | 7 (N/A) | 1.7 | 0.2 | 0.58 |
| Tree of heaven | 0.3 | 25 | 14.3 | 15 | 40 (N/A) | 1.6 | 1.0 | 3.61 |
| Green ash | 1.0 | 75 | 33.5 | 35 | 110 (N/A) | 1.6 | 2.9 | 9.97 |
| Mimosa | 0.2 | 13 | 8.9 | 9 | 22 (N/A) | 1.4 | 0.6 | 2.20 |
| River birch | 0.0 | 3 | 2.8 | 3 | 6 (N/A) | 1.4 | 0.2 | 0.58 |
| Crabapple | 0.4 | 27 | 18.1 | 19 | 46 (N/A) | 1.4 | 1.2 | 4.63 |
| Shortleaf pine | 0.5 | 41 | 18.4 | 19 | 60 (N/A) | 1.4 | 1.6 | 6.00 |
| Callery pear | 0.4 | 33 | 18.2 | 19 | 52 (N/A) | 1.4 | 1.4 | 5.23 |
| unknown | 0.3 | 22 | 13.3 | 14 | 36 (N/A) | 1.4 | 0.9 | 3.56 |
| White ash | 0.1 | 9 | 6.1 | 6 | 16 (N/A) | 1.3 | 0.4 | 1.75 |
| American holly | 0.4 | 29 | 11.0 | 11 | 40 (N/A) | 1.3 | 1.1 | 4.49 |
| Tulip tree | 0.8 | 57 | 22.4 | 23 | 81 (N/A) | 1.3 | 2.1 | 8.94 |
| Kousa dogwood | 0.2 | 12 | 7.9 | 8 | 20 (N/A) | 1.1 | 0.5 | 2.48 |
| Eastern red cedar | 0.4 | 34 | 10.9 | 11 | 45 (N/A) | 1.1 | 1.2 | 5.62 |
| Chestnut oak | 0.6 | 42 | 22.4 | 23 | 66 (N/A) | 1.1 | 1.7 | 8.21 |
| English holly | 0.1 | 5 | 3.4 | 4 | 9 (N/A) | 1.0 | 0.2 | 1.25 |
| Southern red oak | 0.4 | 34 | 17.3 | 18 | 52 (N/A) | 1.0 | 1.4 | 7.47 |
| OTHER STREET TREES | 3.1 | 237 | 122.3 | 128 | 365 (N/A) | 12.0 | 9.5 | 4.35 |
| Citywide total | 33.2 | 2,522 | 1,268.8 | 1,327 | 3,849 (N/A) | 100.0 | 100.0 | 5.50 |

Forest Heights

Annual Stormwater Benefits of Public Trees by Species

9/22/2010

| Species | Total rainfall interception (Gal) | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|-----------------------------------|------------|----------------|------------------|---------------|--------------|
| Common crapemyrtle | 10,004 | 99 | (N/A) | 9.7 | 1.0 | 1.46 |
| Apple | 27,086 | 268 | (N/A) | 6.1 | 2.6 | 6.24 |
| Willow oak | 57,907 | 573 | (N/A) | 6.0 | 5.5 | 13.65 |
| Red maple | 168,795 | 1,671 | (N/A) | 5.9 | 16.1 | 40.76 |
| Sweetgum | 62,804 | 622 | (N/A) | 5.4 | 6.0 | 16.36 |
| Black cherry | 39,630 | 392 | (N/A) | 5.0 | 3.8 | 11.21 |
| White mulberry | 36,645 | 363 | (N/A) | 3.6 | 3.5 | 14.51 |
| Leyland cypress | 4,354 | 43 | (N/A) | 3.4 | 0.4 | 1.80 |
| Black locust | 64,350 | 637 | (N/A) | 3.0 | 6.1 | 30.34 |
| White oak | 106,061 | 1,050 | (N/A) | 2.6 | 10.1 | 58.34 |
| Northern red oak | 28,281 | 280 | (N/A) | 2.6 | 2.7 | 15.56 |
| American elm | 22,884 | 227 | (N/A) | 2.4 | 2.2 | 13.33 |
| Pin oak | 72,318 | 716 | (N/A) | 2.3 | 6.9 | 44.75 |
| Silver maple | 49,425 | 489 | (N/A) | 2.1 | 4.7 | 32.62 |
| Red mulberry | 3,012 | 30 | (N/A) | 1.7 | 0.3 | 2.48 |
| Black tupelo | 7,874 | 78 | (N/A) | 1.7 | 0.8 | 6.50 |
| Eastern white pine | 14,586 | 144 | (N/A) | 1.7 | 1.4 | 12.03 |
| Japanese zelkova | 847 | 8 | (N/A) | 1.7 | 0.1 | 0.70 |
| Tree of heaven | 10,163 | 101 | (N/A) | 1.6 | 1.0 | 9.15 |
| Green ash | 40,792 | 404 | (N/A) | 1.6 | 3.9 | 36.72 |
| Mimosa | 2,836 | 28 | (N/A) | 1.4 | 0.3 | 2.81 |
| River birch | 754 | 7 | (N/A) | 1.4 | 0.1 | 0.75 |
| Crabapple | 6,833 | 68 | (N/A) | 1.4 | 0.7 | 6.77 |
| Shortleaf pine | 13,311 | 132 | (N/A) | 1.4 | 1.3 | 13.18 |
| Callery pear | 9,061 | 90 | (N/A) | 1.4 | 0.9 | 8.97 |
| unknown | 5,687 | 56 | (N/A) | 1.4 | 0.5 | 5.63 |
| White ash | 2,846 | 28 | (N/A) | 1.3 | 0.3 | 3.13 |
| American holly | 7,475 | 74 | (N/A) | 1.3 | 0.7 | 8.22 |
| Tulip tree | 34,713 | 344 | (N/A) | 1.3 | 3.3 | 38.19 |
| Kousa dogwood | 3,035 | 30 | (N/A) | 1.1 | 0.3 | 3.76 |
| Eastern red cedar | 9,400 | 93 | (N/A) | 1.1 | 0.9 | 11.63 |
| Chestnut oak | 18,471 | 183 | (N/A) | 1.1 | 1.8 | 22.86 |
| English holly | 1,168 | 12 | (N/A) | 1.0 | 0.1 | 1.65 |
| Southern red oak | 14,602 | 145 | (N/A) | 1.0 | 1.4 | 20.65 |
| OTHER STREET TREES | 90,852 | 900 | (N/A) | 12.0 | 8.7 | 10.71 |
| Citywide total | 1,048,862 | 10,384 | (N/A) | 100.0 | 100.0 | 14.83 |

Forest Heights

Annual CO Benefits of Public Trees by Species

9/22/2010

| Species | Sequestered (lb) | Sequestered (\$) | Decomposition Release (lb) | Maintenance Release (lb) | Total Released (\$) | Avoided (lb) | Avoided (\$) | Net Total (lb) | Total Standard (\$) | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|------------------|------------------|----------------------------|--------------------------|---------------------|--------------|--------------|----------------|---------------------|------------------|---------------|--------------|
| Common crapemyrtle | 1,003 | 8 | -21 | -16 | 0 | 552 | 4 | 1,518 | 11 (N/A) | 9.7 | 1.0 | 0.17 |
| Apple | 6,769 | 51 | -207 | -27 | -2 | 1,485 | 11 | 8,020 | 60 (N/A) | 6.1 | 5.0 | 1.40 |
| Willow oak | 6,982 | 52 | -291 | -23 | -2 | 1,437 | 11 | 8,106 | 61 (N/A) | 6.0 | 5.1 | 1.45 |
| Red maple | 19,666 | 147 | -854 | -41 | -7 | 3,609 | 27 | 22,381 | 168 (N/A) | 5.9 | 14.0 | 4.09 |
| Sweetgum | 5,812 | 44 | -169 | -29 | -1 | 1,710 | 13 | 7,324 | 55 (N/A) | 5.4 | 4.6 | 1.45 |
| Black cherry | 6,430 | 48 | -153 | -21 | -1 | 1,187 | 9 | 7,443 | 56 (N/A) | 5.0 | 4.6 | 1.59 |
| White mulberry | 8,348 | 63 | -170 | -15 | -1 | 1,187 | 9 | 9,351 | 70 (N/A) | 3.6 | 5.8 | 2.81 |
| Leyland cypress | 507 | 4 | -12 | -4 | 0 | 151 | 1 | 641 | 5 (N/A) | 3.4 | 0.4 | 0.20 |
| Black locust | 11,839 | 89 | -339 | -23 | -3 | 1,838 | 14 | 13,315 | 100 (N/A) | 3.0 | 8.3 | 4.76 |
| White oak | 10,396 | 78 | -611 | -23 | -5 | 1,940 | 15 | 11,702 | 88 (N/A) | 2.6 | 7.3 | 4.88 |
| Northern red oak | 3,355 | 25 | -166 | -10 | -1 | 690 | 5 | 3,869 | 29 (N/A) | 2.6 | 2.4 | 1.61 |
| American elm | 2,784 | 21 | -111 | -9 | -1 | 577 | 4 | 3,242 | 24 (N/A) | 2.4 | 2.0 | 1.43 |
| Pin oak | 7,577 | 57 | -382 | -20 | -3 | 1,578 | 12 | 8,753 | 66 (N/A) | 2.3 | 5.5 | 4.10 |
| Silver maple | 6,984 | 52 | -263 | -17 | -2 | 1,506 | 11 | 8,210 | 62 (N/A) | 2.1 | 5.1 | 4.10 |
| Red mulberry | 581 | 4 | -9 | -3 | 0 | 112 | 1 | 680 | 5 (N/A) | 1.7 | 0.4 | 0.43 |
| Black tupelo | 1,490 | 11 | -24 | -5 | 0 | 337 | 3 | 1,797 | 13 (N/A) | 1.7 | 1.1 | 1.12 |
| Eastern white pine | 1,566 | 12 | -63 | -6 | -1 | 382 | 3 | 1,879 | 14 (N/A) | 1.7 | 1.2 | 1.17 |
| Japanese zelkova | 149 | 1 | -2 | -2 | 0 | 41 | 0 | 186 | 1 (N/A) | 1.7 | 0.1 | 0.12 |
| Tree of heaven | 1,468 | 11 | -43 | -5 | 0 | 276 | 2 | 1,696 | 13 (N/A) | 1.6 | 1.1 | 1.16 |
| Green ash | 3,779 | 28 | -232 | -10 | -2 | 832 | 6 | 4,369 | 33 (N/A) | 1.6 | 2.7 | 2.98 |
| Mimosa | 542 | 4 | -21 | -3 | 0 | 140 | 1 | 658 | 5 (N/A) | 1.4 | 0.4 | 0.49 |
| River birch | 57 | 0 | -1 | -1 | 0 | 31 | 0 | 86 | 1 (N/A) | 1.4 | 0.1 | 0.06 |
| Crabapple | 1,534 | 12 | -76 | -7 | -1 | 305 | 2 | 1,757 | 13 (N/A) | 1.4 | 1.1 | 1.32 |
| Shortleaf pine | 1,809 | 14 | -46 | -8 | 0 | 454 | 3 | 2,208 | 17 (N/A) | 1.4 | 1.4 | 1.66 |
| Callery pear | 1,662 | 12 | -45 | -7 | 0 | 370 | 3 | 1,981 | 15 (N/A) | 1.4 | 1.2 | 1.49 |
| unknown | 1,065 | 8 | -17 | -3 | 0 | 241 | 2 | 1,286 | 10 (N/A) | 1.4 | 0.8 | 0.96 |
| White ash | 556 | 4 | -9 | -3 | 0 | 104 | 1 | 648 | 5 (N/A) | 1.3 | 0.4 | 0.54 |
| American holly | 1,087 | 8 | -55 | -7 | 0 | 323 | 2 | 1,347 | 10 (N/A) | 1.3 | 0.8 | 1.12 |
| Tulip tree | 2,499 | 19 | -227 | -7 | -2 | 635 | 5 | 2,900 | 22 (N/A) | 1.3 | 1.8 | 2.42 |
| Kousa dogwood | 43 | 0 | -44 | -2 | 0 | 129 | 1 | 126 | 1 (N/A) | 1.1 | 0.1 | 0.12 |
| Eastern red cedar | 1,222 | 9 | -65 | -7 | -1 | 374 | 3 | 1,524 | 11 (N/A) | 1.1 | 1.0 | 1.43 |
| Chestnut oak | 2,461 | 18 | -83 | -7 | -1 | 470 | 4 | 2,841 | 21 (N/A) | 1.1 | 1.8 | 2.66 |
| English holly | 208 | 2 | -7 | -2 | 0 | 58 | 0 | 256 | 2 (N/A) | 1.0 | 0.2 | 0.27 |
| Southern red oak | 1,888 | 14 | -65 | -5 | -1 | 380 | 3 | 2,198 | 16 (N/A) | 1.0 | 1.4 | 2.35 |
| OTHER STREET TREES | 14,039 | 105 | -468 | -44 | -4 | 2,640 | 20 | 16,167 | 121 (N/A) | 12.0 | 10.1 | 1.44 |
| Citywide total | 138,157 | 1,036 | -5,352 | -419 | -43 | 28,078 | 211 | 160,464 | 1,203 (N/A) | 100.0 | 100.0 | 1.72 |

Forest Heights

Annual Air Quality Benefits of Public Trees by Species

9/22/2010

| Species | Deposition (lb) | | | | Total Depos. (\$) | Avoided (lb) | | | | Total Avoided (\$) | BVOC Emissions (lb) | BVOC Emissions (\$) | Total (lb) | Total Standard (\$ Error) | % of Total Trees | Avg. \$/tree |
|--------------------|-----------------|-----------------|------------------|-----------------|-------------------|-----------------|------------------|------|-----------------|--------------------|---------------------|---------------------|------------|---------------------------|------------------|--------------|
| | O ₃ | NO ₂ | PM ₁₀ | SO ₂ | | NO ₂ | PM ₁₀ | VOC | SO ₂ | | | | | | | |
| Common crapemyrtle | 1.2 | 0.4 | 1.1 | 0.2 | 14 | 1.5 | 0.3 | 0.3 | 3.0 | 18 | 0.0 | 0 | 7.9 | 31 (N/A) | 9.7 | 0.46 |
| Apple | 3.2 | 1.1 | 3.0 | 0.5 | 37 | 3.9 | 0.7 | 0.7 | 8.0 | 47 | 0.0 | 0 | 21.1 | 84 (N/A) | 6.1 | 1.95 |
| Willow oak | 2.7 | 1.3 | 3.1 | 0.6 | 35 | 3.6 | 0.7 | 0.7 | 7.8 | 45 | -26.2 | -164 | -5.8 | -84 (N/A) | 6.0 | -2.01 |
| Red maple | 7.2 | 2.6 | 6.7 | 1.1 | 83 | 8.7 | 1.7 | 1.7 | 19.4 | 110 | -12.3 | -77 | 36.9 | 116 (N/A) | 5.9 | 2.83 |
| Sweetgum | 3.1 | 1.1 | 2.9 | 0.5 | 36 | 4.3 | 0.8 | 0.8 | 9.3 | 54 | -39.0 | -244 | -16.2 | -155 (N/A) | 5.4 | -4.08 |
| Black cherry | 2.1 | 1.0 | 2.4 | 0.5 | 28 | 3.0 | 0.6 | 0.6 | 6.5 | 37 | -16.0 | -100 | 0.7 | -35 (N/A) | 5.0 | -1.01 |
| White mulberry | 2.4 | 0.9 | 2.2 | 0.4 | 28 | 3.0 | 0.6 | 0.6 | 6.4 | 37 | -0.1 | -1 | 16.2 | 64 (N/A) | 3.6 | 2.55 |
| Leyland cypress | 0.8 | 0.3 | 0.6 | 0.2 | 8 | 0.4 | 0.1 | 0.1 | 0.8 | 5 | -0.5 | -3 | 2.6 | 10 (N/A) | 3.4 | 0.42 |
| Black locust | 3.7 | 1.3 | 3.4 | 0.6 | 42 | 4.5 | 0.9 | 0.9 | 9.9 | 57 | -0.3 | -2 | 24.9 | 97 (N/A) | 3.0 | 4.64 |
| White oak | 3.6 | 1.7 | 4.2 | 0.8 | 47 | 4.7 | 0.9 | 0.9 | 10.4 | 59 | -15.6 | -98 | 11.7 | 9 (N/A) | 2.6 | 0.48 |
| Northern red oak | 1.4 | 0.5 | 1.3 | 0.2 | 16 | 1.7 | 0.3 | 0.3 | 3.7 | 21 | -5.5 | -34 | 3.9 | 2 (N/A) | 2.6 | 0.13 |
| American elm | 1.1 | 0.5 | 1.2 | 0.2 | 14 | 1.4 | 0.3 | 0.3 | 3.1 | 18 | -10.3 | -64 | -2.1 | -32 (N/A) | 2.4 | -1.91 |
| Pin oak | 2.9 | 1.4 | 3.4 | 0.7 | 38 | 3.9 | 0.8 | 0.8 | 8.5 | 49 | -34.6 | -217 | -12.4 | -130 (N/A) | 2.3 | -8.13 |
| Silver maple | 3.0 | 1.1 | 2.8 | 0.5 | 35 | 3.7 | 0.7 | 0.7 | 8.1 | 47 | -2.7 | -17 | 17.9 | 64 (N/A) | 2.1 | 4.28 |
| Red mulberry | 0.2 | 0.1 | 0.2 | 0.0 | 3 | 0.3 | 0.1 | 0.1 | 0.6 | 4 | -1.0 | -6 | 0.7 | 0 (N/A) | 1.7 | 0.03 |
| Black tupelo | 0.7 | 0.2 | 0.6 | 0.1 | 8 | 0.9 | 0.2 | 0.2 | 1.8 | 11 | 0.0 | 0 | 4.7 | 18 (N/A) | 1.7 | 1.54 |
| Eastern white pine | 2.0 | 0.7 | 1.5 | 0.4 | 22 | 0.9 | 0.2 | 0.2 | 2.1 | 12 | -1.9 | -12 | 6.0 | 22 (N/A) | 1.7 | 1.82 |
| Japanese zelkova | 0.1 | 0.0 | 0.1 | 0.0 | 1 | 0.1 | 0.0 | 0.0 | 0.2 | 1 | -0.1 | -1 | 0.5 | 2 (N/A) | 1.7 | 0.13 |
| Tree of heaven | 0.5 | 0.2 | 0.6 | 0.1 | 7 | 0.7 | 0.1 | 0.1 | 1.5 | 9 | -4.3 | -27 | -0.3 | -11 (N/A) | 1.6 | -1.03 |
| Green ash | 1.6 | 0.7 | 1.8 | 0.4 | 20 | 2.0 | 0.4 | 0.4 | 4.5 | 26 | -20.1 | -126 | -8.4 | -80 (N/A) | 1.6 | -7.29 |
| Mimosa | 0.4 | 0.1 | 0.3 | 0.1 | 4 | 0.4 | 0.1 | 0.1 | 0.8 | 5 | 0.0 | 0 | 2.1 | 9 (N/A) | 1.4 | 0.87 |
| River birch | 0.1 | 0.0 | 0.1 | 0.0 | 1 | 0.1 | 0.0 | 0.0 | 0.2 | 1 | 0.0 | 0 | 0.5 | 2 (N/A) | 1.4 | 0.20 |
| Crabapple | 0.8 | 0.3 | 0.7 | 0.1 | 9 | 0.8 | 0.2 | 0.1 | 1.6 | 10 | 0.0 | 0 | 4.6 | 19 (N/A) | 1.4 | 1.88 |
| Shortleaf pine | 2.1 | 0.7 | 1.5 | 0.4 | 23 | 1.1 | 0.2 | 0.2 | 2.5 | 14 | -1.6 | -10 | 7.1 | 27 (N/A) | 1.4 | 2.66 |
| Callery pear | 0.9 | 0.4 | 0.9 | 0.2 | 11 | 0.9 | 0.2 | 0.2 | 2.0 | 12 | 0.0 | 0 | 5.7 | 23 (N/A) | 1.4 | 2.27 |
| unknown | 0.5 | 0.2 | 0.5 | 0.1 | 6 | 0.6 | 0.1 | 0.1 | 1.3 | 8 | 0.0 | 0 | 3.4 | 13 (N/A) | 1.4 | 1.33 |
| White ash | 0.2 | 0.1 | 0.2 | 0.0 | 3 | 0.3 | 0.1 | 0.1 | 0.6 | 3 | -0.9 | -6 | 0.6 | 0 (N/A) | 1.3 | 0.00 |
| American holly | 1.6 | 0.5 | 1.1 | 0.3 | 17 | 0.8 | 0.2 | 0.2 | 1.7 | 10 | 0.0 | 0 | 6.4 | 27 (N/A) | 1.3 | 2.99 |
| Tulip tree | 1.2 | 0.6 | 1.4 | 0.3 | 16 | 1.5 | 0.3 | 0.3 | 3.4 | 19 | -18.2 | -114 | -9.3 | -79 (N/A) | 1.3 | -8.80 |
| Kousa dogwood | 0.4 | 0.1 | 0.3 | 0.1 | 4 | 0.3 | 0.1 | 0.1 | 0.7 | 4 | 0.0 | 0 | 2.0 | 8 (N/A) | 1.1 | 1.02 |
| Eastern red cedar | 2.0 | 0.7 | 1.4 | 0.4 | 22 | 0.9 | 0.2 | 0.2 | 2.0 | 11 | -0.5 | -3 | 7.1 | 29 (N/A) | 1.1 | 3.67 |
| Chestnut oak | 0.9 | 0.4 | 1.0 | 0.2 | 11 | 1.2 | 0.2 | 0.2 | 2.6 | 15 | -8.2 | -51 | -1.5 | -25 (N/A) | 1.1 | -3.16 |
| English holly | 0.3 | 0.1 | 0.2 | 0.1 | 4 | 0.1 | 0.0 | 0.0 | 0.3 | 2 | 0.0 | 0 | 1.3 | 5 (N/A) | 1.0 | 0.78 |
| Southern red oak | 0.7 | 0.3 | 0.8 | 0.2 | 9 | 0.9 | 0.2 | 0.2 | 2.1 | 12 | -6.5 | -41 | -1.2 | -20 (N/A) | 1.0 | -2.89 |
| OTHER STREET TREES | 6.4 | 2.5 | 6.0 | 1.2 | 75 | 6.5 | 1.3 | 1.3 | 14.3 | 82 | -23.1 | -145 | 16.3 | 13 (N/A) | 12.0 | 0.15 |
| Citywide total | 61.7 | 24.1 | 59.5 | 11.7 | 733 | 69.4 | 13.6 | 13.4 | 151.8 | 871 | -249.7 | -1,563 | 155.6 | 42 (N/A) | 100.0 | 0.06 |

Forest Heights

Annual Aesthetic/Other Benefits of Public Trees by Species

9/22/2010

| Species | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|------------|----------------|------------------|---------------|--------------|
| Common crapemyrtle | 144 | (N/A) | 9.7 | 0.8 | 2.12 |
| Apple | 326 | (N/A) | 6.1 | 1.9 | 7.59 |
| Willow oak | 1,145 | (N/A) | 6.0 | 6.6 | 27.26 |
| Red maple | 2,371 | (N/A) | 5.9 | 13.7 | 57.82 |
| Sweetgum | 1,498 | (N/A) | 5.4 | 8.6 | 39.42 |
| Black cherry | 1,144 | (N/A) | 5.0 | 6.6 | 32.69 |
| White mulberry | 713 | (N/A) | 3.6 | 4.1 | 28.51 |
| Leyland cypress | 124 | (N/A) | 3.4 | 0.7 | 5.17 |
| Black locust | 1,033 | (N/A) | 3.0 | 6.0 | 49.20 |
| White oak | 1,372 | (N/A) | 2.6 | 7.9 | 76.25 |
| Northern red oak | 426 | (N/A) | 2.6 | 2.5 | 23.67 |
| American elm | 442 | (N/A) | 2.4 | 2.6 | 25.97 |
| Pin oak | 1,023 | (N/A) | 2.3 | 5.9 | 63.91 |
| Silver maple | 768 | (N/A) | 2.1 | 4.4 | 51.23 |
| Red mulberry | 123 | (N/A) | 1.7 | 0.7 | 10.29 |
| Black tupelo | 223 | (N/A) | 1.7 | 1.3 | 18.57 |
| Eastern white pine | 150 | (N/A) | 1.7 | 0.9 | 12.48 |
| Japanese zelkova | 38 | (N/A) | 1.7 | 0.2 | 3.16 |
| Tree of heaven | 249 | (N/A) | 1.6 | 1.4 | 22.64 |
| Green ash | 480 | (N/A) | 1.6 | 2.8 | 43.59 |
| Mimosa | 44 | (N/A) | 1.4 | 0.3 | 4.38 |
| River birch | 60 | (N/A) | 1.4 | 0.4 | 6.01 |
| Crabapple | 78 | (N/A) | 1.4 | 0.5 | 7.82 |
| Shortleaf pine | 209 | (N/A) | 1.4 | 1.2 | 20.91 |
| Callery pear | 161 | (N/A) | 1.4 | 0.9 | 16.12 |
| unknown | 165 | (N/A) | 1.4 | 1.0 | 16.51 |
| White ash | 117 | (N/A) | 1.3 | 0.7 | 13.02 |
| American holly | 56 | (N/A) | 1.3 | 0.3 | 6.18 |
| Tulip tree | 292 | (N/A) | 1.3 | 1.7 | 32.46 |
| Kousa dogwood | 35 | (N/A) | 1.1 | 0.2 | 4.42 |
| Eastern red cedar | 50 | (N/A) | 1.1 | 0.3 | 6.24 |
| Chestnut oak | 386 | (N/A) | 1.1 | 2.2 | 48.22 |
| English holly | 11 | (N/A) | 1.0 | 0.1 | 1.56 |
| Southern red oak | 281 | (N/A) | 1.0 | 1.6 | 40.13 |
| OTHER STREET TREES | 1,598 | (N/A) | 12.0 | 9.2 | 19.02 |
| Citywide total | 17,335 | (N/A) | 100.0 | 100.0 | 24.76 |

Forest Heights

Total Annual Benefits, Net Benefits, and Costs for Public Trees

9/22/2010

| Benefits | Total (\$) Standard Error | \$/tree Standard Error | \$/capita Standard Error |
|---------------------------|---------------------------|------------------------|--------------------------|
| Energy | 3,849 (N/A) | 5.50 (N/A) | 1.49 (N/A) |
| CO2 | 1,203 (N/A) | 1.72 (N/A) | 0.47 (N/A) |
| Air Quality | 42 (N/A) | 0.06 (N/A) | 0.02 (N/A) |
| Stormwater | 10,384 (N/A) | 14.83 (N/A) | 4.02 (N/A) |
| Aesthetic/Other | 17,335 (N/A) | 24.76 (N/A) | 6.71 (N/A) |
| Total Benefits | 32,813 (N/A) | 46.88 (N/A) | 12.69 (N/A) |
| Costs | | | |
| Planting | 0 | 0.00 | 0.00 |
| Contract Pruning | 0 | 0.00 | 0.00 |
| Pest Management | 0 | 0.00 | 0.00 |
| Irrigation | 0 | 0.00 | 0.00 |
| Removal | 0 | 0.00 | 0.00 |
| Administration | 0 | 0.00 | 0.00 |
| Inspection/Service | 0 | 0.00 | 0.00 |
| Infrastructure Repairs | 0 | 0.00 | 0.00 |
| Litter Clean-up | 0 | 0.00 | 0.00 |
| Liability/Claims | 0 | 0.00 | 0.00 |
| Other Costs | 0 | 0.00 | 0.00 |
| Total Costs | 0 | 0.00 | 0.00 |
| Net Benefits | 32,813 (N/A) | 46.88 (N/A) | 12.69 (N/A) |
| Benefit-cost ratio | 0.00 (N/A) | | |

Forest Heights

Annual Benefits of Public Trees by Species (\$/tree)

9/22/2010

| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error |
|--------------------|--------|-----------------|-------------|------------|-----------------|------------|----------------|
| Common crapemyrtle | 1.28 | 0.17 | 0.46 | 1.46 | 2.12 | 5.49 | (N/A) |
| Apple | 5.27 | 1.40 | 1.95 | 6.24 | 7.59 | 22.45 | (N/A) |
| Willow oak | 4.71 | 1.45 | -2.01 | 13.65 | 27.26 | 45.06 | (N/A) |
| Red maple | 11.45 | 4.09 | 2.83 | 40.76 | 57.82 | 116.97 | (N/A) |
| Sweetgum | 6.22 | 1.45 | -4.08 | 16.36 | 39.42 | 59.37 | (N/A) |
| Black cherry | 4.85 | 1.59 | -1.01 | 11.21 | 32.69 | 49.34 | (N/A) |
| White mulberry | 6.61 | 2.81 | 2.55 | 14.51 | 28.51 | 54.98 | (N/A) |
| Leyland cypress | 0.90 | 0.20 | 0.42 | 1.80 | 5.17 | 8.49 | (N/A) |
| Black locust | 11.82 | 4.76 | 4.64 | 30.34 | 49.20 | 100.76 | (N/A) |
| White oak | 13.97 | 4.88 | 0.48 | 58.34 | 76.25 | 153.91 | (N/A) |
| Northern red oak | 5.04 | 1.61 | 0.13 | 15.56 | 23.67 | 46.02 | (N/A) |
| American elm | 4.67 | 1.43 | -1.91 | 13.33 | 25.97 | 43.49 | (N/A) |
| Pin oak | 13.20 | 4.10 | -8.13 | 44.75 | 63.91 | 117.84 | (N/A) |
| Silver maple | 13.54 | 4.10 | 4.28 | 32.62 | 51.23 | 105.77 | (N/A) |
| Red mulberry | 1.43 | 0.43 | 0.03 | 2.48 | 10.29 | 14.66 | (N/A) |
| Black tupelo | 4.13 | 1.12 | 1.54 | 6.50 | 18.57 | 31.86 | (N/A) |
| Eastern white pine | 4.35 | 1.17 | 1.82 | 12.03 | 12.48 | 31.86 | (N/A) |
| Japanese zelkova | 0.58 | 0.12 | 0.13 | 0.70 | 3.16 | 4.68 | (N/A) |
| Tree of heaven | 3.61 | 1.16 | -1.03 | 9.15 | 22.64 | 35.53 | (N/A) |
| Green ash | 9.97 | 2.98 | -7.29 | 36.72 | 43.59 | 85.97 | (N/A) |
| Mimosa | 2.20 | 0.49 | 0.87 | 2.81 | 4.38 | 10.75 | (N/A) |
| River birch | 0.58 | 0.06 | 0.20 | 0.75 | 6.01 | 7.60 | (N/A) |
| Crabapple | 4.63 | 1.32 | 1.88 | 6.77 | 7.82 | 22.40 | (N/A) |
| Shortleaf pine | 6.00 | 1.66 | 2.66 | 13.18 | 20.91 | 44.40 | (N/A) |
| Callery pear | 5.23 | 1.49 | 2.27 | 8.97 | 16.12 | 34.08 | (N/A) |
| unknown | 3.56 | 0.96 | 1.33 | 5.63 | 16.51 | 27.99 | (N/A) |
| White ash | 1.75 | 0.54 | 0.00 | 3.13 | 13.02 | 18.45 | (N/A) |
| American holly | 4.49 | 1.12 | 2.99 | 8.22 | 6.18 | 23.01 | (N/A) |
| Tulip tree | 8.94 | 2.42 | -8.80 | 38.19 | 32.46 | 73.21 | (N/A) |
| Kousa dogwood | 2.48 | 0.12 | 1.02 | 3.76 | 4.42 | 11.80 | (N/A) |
| Eastern red cedar | 5.62 | 1.43 | 3.67 | 11.63 | 6.24 | 28.60 | (N/A) |
| Chestnut oak | 8.21 | 2.66 | -3.16 | 22.86 | 48.22 | 78.79 | (N/A) |
| English holly | 1.25 | 0.27 | 0.78 | 1.65 | 1.56 | 5.52 | (N/A) |
| Southern red oak | 7.47 | 2.35 | -2.89 | 20.65 | 40.13 | 67.72 | (N/A) |
| OTHER STREET TRE | 4.35 | 1.44 | 0.15 | 10.71 | 19.02 | 35.67 | (N/A) |

Forest Heights

Total Annual Benefits of Public Trees by Species (\$)

9/22/2010

| Species | Energy | CO ₂ | Air Quality | Stomwater | Aesthetic/Other | Total (\$) | Standard Error | % of Total \$ |
|--------------------|--------|-----------------|-------------|-----------|-----------------|------------|----------------|---------------|
| Common crapemyrtle | 87 | 11 | 31 | 99 | 144 | 373 | (±0) | 1.1 |
| Apple | 227 | 60 | 84 | 268 | 326 | 965 | (±0) | 2.9 |
| Willow oak | 198 | 61 | -84 | 573 | 1,145 | 1,893 | (±0) | 5.8 |
| Red maple | 470 | 168 | 116 | 1,671 | 2,371 | 4,796 | (±0) | 14.6 |
| Sweetgum | 236 | 55 | -155 | 622 | 1,498 | 2,256 | (±0) | 6.9 |
| Black cherry | 170 | 56 | -35 | 392 | 1,144 | 1,727 | (±0) | 5.3 |
| White mulberry | 165 | 70 | 64 | 363 | 713 | 1,375 | (±0) | 4.2 |
| Leyland cypress | 22 | 5 | 10 | 43 | 124 | 204 | (±0) | 0.6 |
| Black locust | 248 | 100 | 97 | 637 | 1,033 | 2,116 | (±0) | 6.4 |
| White oak | 252 | 88 | 9 | 1,050 | 1,372 | 2,770 | (±0) | 8.4 |
| Northern red oak | 91 | 29 | 2 | 280 | 426 | 828 | (±0) | 2.5 |
| American elm | 79 | 24 | -32 | 227 | 442 | 739 | (±0) | 2.3 |
| Pin oak | 211 | 66 | -130 | 716 | 1,023 | 1,885 | (±0) | 5.7 |
| Silver maple | 203 | 62 | 64 | 489 | 768 | 1,587 | (±0) | 4.8 |
| Red mulberry | 17 | 5 | 0 | 30 | 123 | 176 | (±0) | 0.5 |
| Black tupelo | 50 | 13 | 18 | 78 | 223 | 382 | (±0) | 1.2 |
| Eastern white pine | 52 | 14 | 22 | 144 | 150 | 382 | (±0) | 1.2 |
| Japanese zelkova | 7 | 1 | 2 | 8 | 38 | 56 | (±0) | 0.2 |
| Tree of heaven | 40 | 13 | -11 | 101 | 249 | 391 | (±0) | 1.2 |
| Green ash | 110 | 33 | -80 | 404 | 480 | 946 | (±0) | 2.9 |
| Mimosa | 22 | 5 | 9 | 28 | 44 | 107 | (±0) | 0.3 |
| River birch | 6 | 1 | 2 | 7 | 60 | 76 | (±0) | 0.2 |
| Crabapple | 46 | 13 | 19 | 68 | 78 | 224 | (±0) | 0.7 |
| Shortleaf pine | 60 | 17 | 27 | 132 | 209 | 444 | (±0) | 1.4 |
| Callery pear | 52 | 15 | 23 | 90 | 161 | 341 | (±0) | 1.0 |
| unknown | 36 | 10 | 13 | 56 | 165 | 280 | (±0) | 0.9 |
| White ash | 16 | 5 | 0 | 28 | 117 | 166 | (±0) | 0.5 |
| American holly | 40 | 10 | 27 | 74 | 56 | 207 | (±0) | 0.6 |
| Tulip tree | 80 | 22 | -79 | 344 | 292 | 659 | (±0) | 2.0 |
| Kousa dogwood | 20 | 1 | 8 | 30 | 35 | 94 | (±0) | 0.3 |
| Eastern red cedar | 45 | 11 | 29 | 93 | 50 | 229 | (±0) | 0.7 |
| Chestnut oak | 66 | 21 | -25 | 183 | 386 | 630 | (±0) | 1.9 |
| English holly | 9 | 2 | 5 | 12 | 11 | 39 | (±0) | 0.1 |
| Southern red oak | 52 | 16 | -20 | 145 | 281 | 474 | (±0) | 1.4 |
| OTHER STREET TREE | 365 | 121 | 13 | 900 | 1,598 | 2,996 | (±0) | 9.1 |
| Citywide Total | 3,849 | 1,203 | 42 | 10,384 | 17,335 | 32,814 | (±0) | 100.0 |

Population Summary of Public Trees

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Willow oak | 8 | 21 | 6 | 3 | 1 | 2 | 1 | 0 | 0 | 42 |
| Sweetgum | 8 | 3 | 13 | 7 | 7 | 0 | 0 | 0 | 0 | 38 |
| Black cherry | 7 | 5 | 17 | 5 | 1 | 0 | 0 | 0 | 0 | 35 |
| White oak | 4 | 1 | 2 | 3 | 3 | 1 | 2 | 2 | 0 | 18 |
| Northern red oak | 9 | 3 | 3 | 1 | 0 | 1 | 1 | 0 | 0 | 18 |
| American elm | 5 | 8 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 17 |
| Pin oak | 1 | 2 | 3 | 2 | 3 | 5 | 0 | 0 | 0 | 16 |
| Silver maple | 0 | 2 | 4 | 3 | 4 | 2 | 0 | 0 | 0 | 15 |
| Red mulberry | 8 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Japanese zelkova | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Tree of heaven | 6 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 11 |
| Green ash | 5 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 11 |
| White ash | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Tulip tree | 6 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 9 |
| Chestnut oak | 1 | 0 | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 8 |
| Southern red oak | 3 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 7 |
| BDL OTHER | 8 | 3 | 8 | 6 | 1 | 0 | 0 | 1 | 0 | 27 |
| Total | 95 | 54 | 68 | 38 | 26 | 14 | 6 | 4 | 0 | 305 (±NaN) |
| Broadleaf Deciduous Medium (BDM) | | | | | | | | | | |
| Red maple | 15 | 3 | 3 | 2 | 9 | 6 | 2 | 1 | 0 | 41 |
| White mulberry | 6 | 6 | 8 | 2 | 2 | 1 | 0 | 0 | 0 | 25 |
| Black locust | 0 | 2 | 8 | 4 | 4 | 1 | 1 | 1 | 0 | 21 |
| Black tupelo | 3 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| River birch | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| unknown | 4 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| BDM OTHER | 4 | 6 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 15 |
| Total | 42 | 25 | 27 | 9 | 17 | 9 | 3 | 2 | 0 | 134 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |
| Common crapemyrtle | 51 | 8 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 68 |
| Apple | 10 | 8 | 16 | 5 | 3 | 1 | 0 | 0 | 0 | 43 |
| Mimosa | 5 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 10 |
| Crabapple | 1 | 1 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 10 |
| Callery pear | 2 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 10 |
| Kousa dogwood | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 |
| BDS OTHER | 19 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 27 |
| Total | 95 | 27 | 35 | 13 | 4 | 1 | 1 | 0 | 0 | 176 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| BEL OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| BEM OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| American holly | 0 | 1 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 9 |
| English holly | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| BES OTHER | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 4 | 2 | 8 | 6 | 0 | 0 | 0 | 0 | 0 | 20 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| Leyland cypress | 21 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 24 |
| Eastern white pine | 8 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 12 |
| Shortleaf pine | 0 | 1 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 10 |
| CEL OTHER | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Total | 29 | 3 | 9 | 5 | 3 | 0 | 0 | 0 | 0 | 49 (±NaN) |

Population Summary of Public Trees

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---------------------------------------|----------------|------------|------------|-----------|-----------|-----------|-----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Eastern red cedar | 0 | 1 | 5 | 1 | 0 | 0 | 1 | 0 | 0 | 8 |
| CEM OTHER | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Total | 2 | 1 | 11 | 1 | 0 | 0 | 1 | 0 | 0 | 16 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| CES OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Large (PEL) | | | | | | | | | | |
| PEL OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Medium (PEM) | | | | | | | | | | |
| PEM OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Small (PES) | | | | | | | | | | |
| PES OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Grand Total | 267 | 112 | 158 | 72 | 50 | 24 | 11 | 6 | 0 | 700 (±0) |

Forest Heights

Complete Population of Public Trees

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Willow oak | 8 | 21 | 6 | 3 | 1 | 2 | 1 | 0 | 0 | 42 |
| Sweetgum | 8 | 3 | 13 | 7 | 7 | 0 | 0 | 0 | 0 | 38 |
| Black cherry | 7 | 5 | 17 | 5 | 1 | 0 | 0 | 0 | 0 | 35 |
| White oak | 4 | 1 | 2 | 3 | 3 | 1 | 2 | 2 | 0 | 18 |
| Northern red oak | 9 | 3 | 3 | 1 | 0 | 1 | 1 | 0 | 0 | 18 |
| American elm | 5 | 8 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 17 |
| Pin oak | 1 | 2 | 3 | 2 | 3 | 5 | 0 | 0 | 0 | 16 |
| Silver maple | 0 | 2 | 4 | 3 | 4 | 2 | 0 | 0 | 0 | 15 |
| Red mulberry | 8 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Japanese zelkova | 11 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Tree of heaven | 6 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 11 |
| Green ash | 5 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 11 |
| White ash | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Tulip tree | 6 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 9 |
| Chestnut oak | 1 | 0 | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 8 |
| Southern red oak | 3 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 7 |
| Pecan | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 5 |
| American basswood | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Norway maple | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| American beech | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| Black walnut | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Oak | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Scarlet oak | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Sugar maple | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Southern catalpa | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pignut hickory | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Shellbark hickory | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Ash | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Cucumber tree | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Sycamore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Pin cherry | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Swamp white oak | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 95 | 54 | 68 | 38 | 26 | 14 | 6 | 4 | 0 | 305 (±NaN) |
| Broadleaf Deciduous Medium (BDM) | | | | | | | | | | |
| Red maple | 15 | 3 | 3 | 2 | 9 | 6 | 2 | 1 | 0 | 41 |
| White mulberry | 6 | 6 | 8 | 2 | 2 | 1 | 0 | 0 | 0 | 25 |
| Black locust | 0 | 2 | 8 | 4 | 4 | 1 | 1 | 1 | 0 | 21 |
| Black tupelo | 3 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| River birch | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| unknown | 4 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Boxelder | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 6 |
| Southern redcedar | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Magnolia | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| Littleleaf linden | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Blackjack oak | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Sassafras | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Chinese elm | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 42 | 25 | 27 | 9 | 17 | 9 | 3 | 2 | 0 | 134 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |
| Common crapemyrtle | 51 | 8 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 68 |
| Apple | 10 | 8 | 16 | 5 | 3 | 1 | 0 | 0 | 0 | 43 |
| Mimosa | 5 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 10 |
| Crabapple | 1 | 1 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 10 |
| Callery pear | 2 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 10 |
| Kousa dogwood | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 |
| Service berry | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| Dwarf Serviceberry | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |

Forest Heights

Complete Population of Public Trees

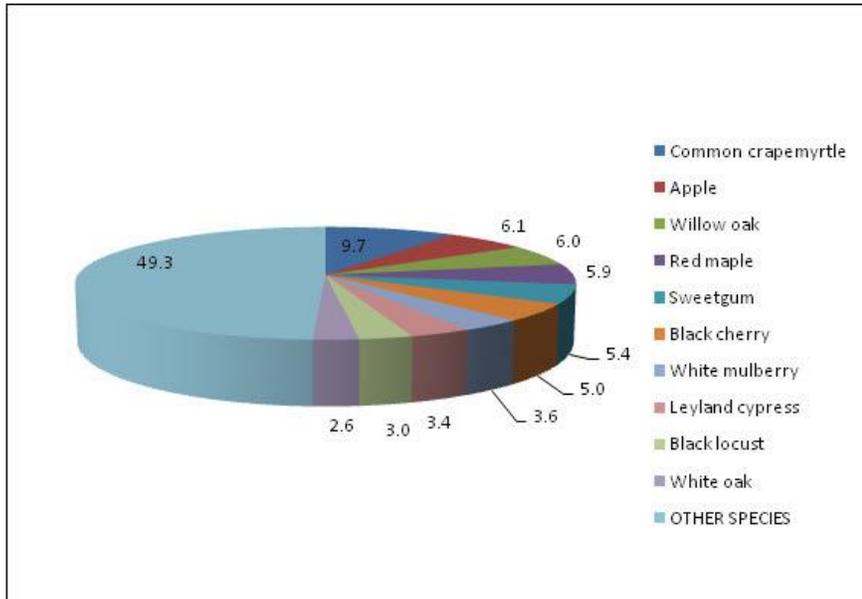
9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|------------|------------|-----------|-----------|-----------|-----------|----------|----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Eastern redbud | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Japanese maple | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Flowering dogwood | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Fig | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Plum | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 95 | 27 | 35 | 13 | 4 | 1 | 1 | 0 | 0 | 176 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| American holly | 0 | 1 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 9 |
| English holly | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Carolina laurelcherry | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 4 |
| Total | 4 | 2 | 8 | 6 | 0 | 0 | 0 | 0 | 0 | 20 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| Leyland cypress | 21 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 24 |
| Eastern white pine | 8 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 12 |
| Shortleaf pine | 0 | 1 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 10 |
| Norway x Chinese spruce | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Norway spruce | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 29 | 3 | 9 | 5 | 3 | 0 | 0 | 0 | 0 | 49 (±NaN) |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Eastern red cedar | 0 | 1 | 5 | 1 | 0 | 0 | 1 | 0 | 0 | 8 |
| Spruce | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Atlantic white cedar | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Eastern hemlock | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Juniper | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 2 | 1 | 11 | 1 | 0 | 0 | 1 | 0 | 0 | 16 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Large (PEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Medium (PEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Small (PES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Grand Total | 267 | 112 | 158 | 72 | 50 | 24 | 11 | 6 | 0 | 700 (±0) |

Forest Heights

Species Distribution of Public Trees (%)

9/22/2010

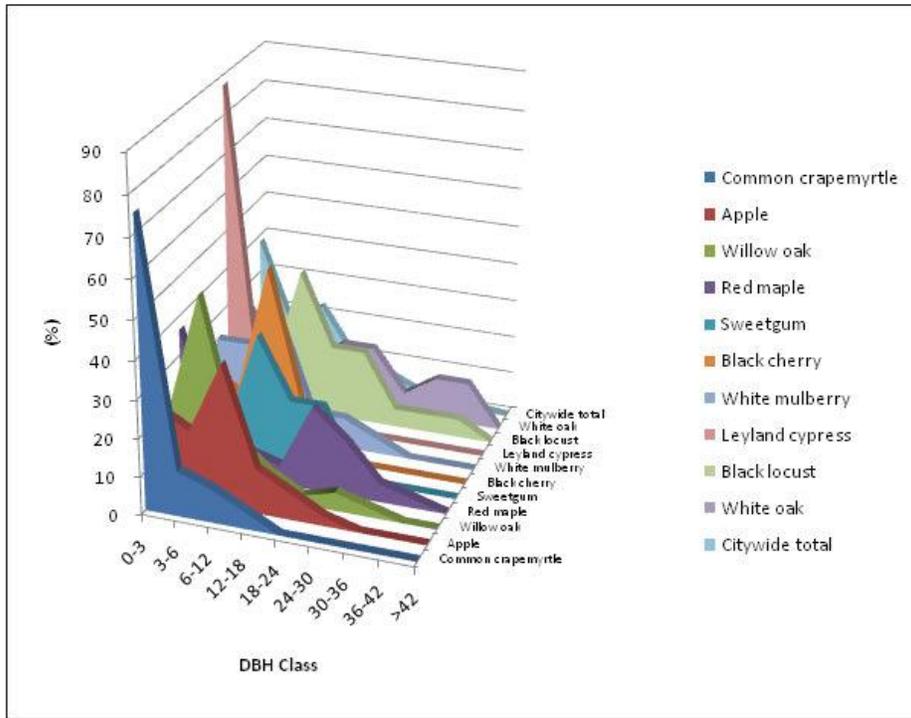


| Species | Percent |
|--------------------|---------|
| Common crapemyrtle | 9.7 |
| Apple | 6.1 |
| Willow oak | 6.0 |
| Red maple | 5.9 |
| Sweetgum | 5.4 |
| Black cherry | 5.0 |
| White mulberry | 3.6 |
| Leyland cypress | 3.4 |
| Black locust | 3.0 |
| White oak | 2.6 |
| OTHER SPECIES | 49.3 |
| Total | 100.0 |

Forest Heights

Relative Age Distribution of Top 10 Public Tree Species (%)

9/22/2010



| | DBH class (in) | | | | | | | | |
|--------------------|----------------|-------|-------|-------|-------|-------|-------|-------|------|
| Species | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 |
| Common crapemyrtle | 75.00 | 11.76 | 8.82 | 4.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apple | 23.26 | 18.60 | 37.21 | 11.63 | 6.98 | 2.33 | 0.00 | 0.00 | 0.00 |
| Willow oak | 19.05 | 50.00 | 14.29 | 7.14 | 2.38 | 4.76 | 2.38 | 0.00 | 0.00 |
| Red maple | 36.59 | 7.32 | 7.32 | 4.88 | 21.95 | 14.63 | 4.88 | 2.44 | 0.00 |
| Sweetgum | 21.05 | 7.89 | 34.21 | 18.42 | 18.42 | 0.00 | 0.00 | 0.00 | 0.00 |
| Black cherry | 20.00 | 14.29 | 48.57 | 14.29 | 2.86 | 0.00 | 0.00 | 0.00 | 0.00 |
| White mulberry | 24.00 | 24.00 | 32.00 | 8.00 | 8.00 | 4.00 | 0.00 | 0.00 | 0.00 |
| Leyland cypress | 87.50 | 4.17 | 4.17 | 4.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Black locust | 0.00 | 9.52 | 38.10 | 19.05 | 19.05 | 4.76 | 4.76 | 4.76 | 0.00 |
| White oak | 22.22 | 5.56 | 11.11 | 16.67 | 16.67 | 5.56 | 11.11 | 11.11 | 0.00 |
| Citywide total | 38.14 | 16.00 | 22.57 | 10.29 | 7.14 | 3.43 | 1.57 | 0.86 | 0.00 |

Forest Heights

Importance Values for Most Abundant Public Trees

9/22/2010

| Species | Number of Trees | % of Total Trees | Leaf Area (ft ²) | % of Total Leaf Area | Canopy Cover (ft ²) | % of Total Canopy Cover | Importance Value |
|--------------------|-----------------|------------------|------------------------------|----------------------|---------------------------------|-------------------------|------------------|
| Common crapemyrtle | 68 | 9.7 | 3,873 | 0.3 | 6,105 | 2.1 | 4.1 |
| Apple | 43 | 6.1 | 12,452 | 1.1 | 16,490 | 5.7 | 4.3 |
| Willow oak | 42 | 6.0 | 66,430 | 5.9 | 14,736 | 5.1 | 5.7 |
| Red maple | 41 | 5.9 | 211,235 | 18.7 | 37,256 | 12.9 | 12.5 |
| Sweetgum | 38 | 5.4 | 68,826 | 6.1 | 16,157 | 5.6 | 5.7 |
| Black cherry | 35 | 5.0 | 40,612 | 3.6 | 11,697 | 4.0 | 4.2 |
| White mulberry | 25 | 3.6 | 33,719 | 3.0 | 12,443 | 4.3 | 3.6 |
| Leyland cypress | 24 | 3.4 | 2,442 | 0.2 | 1,560 | 0.5 | 1.4 |
| Black locust | 21 | 3.0 | 65,147 | 5.8 | 19,086 | 6.6 | 5.1 |
| White oak | 18 | 2.6 | 142,752 | 12.6 | 19,979 | 6.9 | 7.4 |
| Northern red oak | 18 | 2.6 | 31,818 | 2.8 | 7,068 | 2.4 | 2.6 |
| American elm | 17 | 2.4 | 26,042 | 2.3 | 5,845 | 2.0 | 2.2 |
| Pin oak | 16 | 2.3 | 87,919 | 7.8 | 16,163 | 5.6 | 5.2 |
| Silver maple | 15 | 2.1 | 47,779 | 4.2 | 15,584 | 5.4 | 3.9 |
| Red mulberry | 12 | 1.7 | 2,427 | 0.2 | 1,190 | 0.4 | 0.8 |
| Black tupelo | 12 | 1.7 | 5,294 | 0.5 | 3,597 | 1.2 | 1.1 |
| Eastern white pine | 12 | 1.7 | 9,680 | 0.9 | 4,067 | 1.4 | 1.3 |
| Japanese zelkova | 12 | 1.7 | 364 | 0.0 | 492 | 0.2 | 0.6 |
| Tree of heaven | 11 | 1.6 | 10,841 | 1.0 | 2,850 | 1.0 | 1.2 |
| Green ash | 11 | 1.6 | 51,116 | 4.5 | 8,661 | 3.0 | 3.0 |
| Mimosa | 10 | 1.4 | 1,359 | 0.1 | 1,570 | 0.5 | 0.7 |
| River birch | 10 | 1.4 | 340 | 0.0 | 427 | 0.1 | 0.5 |
| Crabapple | 10 | 1.4 | 3,992 | 0.4 | 3,420 | 1.2 | 1.0 |
| Shortleaf pine | 10 | 1.4 | 8,180 | 0.7 | 4,207 | 1.5 | 1.2 |
| Callery pear | 10 | 1.4 | 6,602 | 0.6 | 3,762 | 1.3 | 1.1 |
| unknown | 10 | 1.4 | 3,838 | 0.3 | 2,591 | 0.9 | 0.9 |
| White ash | 9 | 1.3 | 2,367 | 0.2 | 1,088 | 0.4 | 0.6 |
| American holly | 9 | 1.3 | 3,550 | 0.3 | 3,167 | 1.1 | 0.9 |
| Tulip tree | 9 | 1.3 | 46,267 | 4.1 | 6,657 | 2.3 | 2.6 |
| Kousa dogwood | 8 | 1.1 | 1,783 | 0.2 | 1,518 | 0.5 | 0.6 |
| Eastern red cedar | 8 | 1.1 | 4,470 | 0.4 | 3,965 | 1.4 | 1.0 |
| Chestnut oak | 8 | 1.1 | 20,729 | 1.8 | 4,735 | 1.6 | 1.5 |
| English holly | 7 | 1.0 | 333 | 0.0 | 668 | 0.2 | 0.4 |
| Southern red oak | 7 | 1.0 | 16,514 | 1.5 | 3,676 | 1.3 | 1.2 |
| OTHER TREES | 84 | 12.0 | 91,372 | 8.1 | 27,259 | 9.4 | 9.8 |
| Total | 700 | 100.0 | 1,132,463 | 100.0 | 289,735 | 100.0 | 100.0 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|---------------|-------------------|
| American basswood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 3 | (N/A) | 100.00 | 0.43 |
| | Total | 3 | (N/A) | 100.00 | 0.43 |
| American beech | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.29 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| American elm | Dead or Dying | 6 | (N/A) | 35.29 | 0.86 |
| | Poor | 6 | (N/A) | 35.29 | 0.86 |
| | Fair | 4 | (N/A) | 23.53 | 0.57 |
| | Good | 1 | (N/A) | 5.88 | 0.14 |
| | Total | 17 | (N/A) | 100.00 | 2.43 |
| American holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 11.11 | 0.14 |
| | Fair | 7 | (N/A) | 77.78 | 1.00 |
| | Good | 1 | (N/A) | 11.11 | 0.14 |
| | Total | 9 | (N/A) | 100.00 | 1.29 |
| Apple | Dead or Dying | 6 | (N/A) | 13.95 | 0.86 |
| | Poor | 17 | (N/A) | 39.53 | 2.43 |
| | Fair | 10 | (N/A) | 23.26 | 1.43 |
| | Good | 10 | (N/A) | 23.26 | 1.43 |
| | Total | 43 | (N/A) | 100.00 | 6.14 |
| Ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Atlantic white cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.14 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Black cherry | Dead or Dying | 5 | (N/A) | 14.29 | 0.71 |
| | Poor | 12 | (N/A) | 34.29 | 1.71 |
| | Fair | 9 | (N/A) | 25.71 | 1.29 |
| | Good | 9 | (N/A) | 25.71 | 1.29 |
| | Total | 35 | (N/A) | 100.00 | 5.00 |
| Black locust | Dead or Dying | 10 | (N/A) | 47.62 | 1.43 |
| | Poor | 3 | (N/A) | 14.29 | 0.43 |
| | Fair | 6 | (N/A) | 28.57 | 0.86 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 19 | (N/A) | 90.48 | 2.71 |
| Black tupelo | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 16.67 | 0.29 |
| | Fair | 4 | (N/A) | 33.33 | 0.57 |
| | Good | 6 | (N/A) | 50.00 | 0.86 |
| | Total | 12 | (N/A) | 100.00 | 1.71 |
| Black walnut | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.14 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|------------------------------|---------------|------------|----------------|---------------|-------------------|
| Blackjack oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Boxelder | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 66.67 | 0.57 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 33.33 | 0.29 |
| | Total | 6 | (N/A) | 100.00 | 0.86 |
| Callery pear | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 40.00 | 0.57 |
| | Fair | 4 | (N/A) | 40.00 | 0.57 |
| | Good | 2 | (N/A) | 20.00 | 0.29 |
| | Total | 10 | (N/A) | 100.00 | 1.43 |
| Carolina laurelcherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 4 | (N/A) | 100.00 | 0.57 |
| | Total | 4 | (N/A) | 100.00 | 0.57 |
| Chestnut oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 25.00 | 0.29 |
| | Fair | 5 | (N/A) | 62.50 | 0.71 |
| | Good | 1 | (N/A) | 12.50 | 0.14 |
| | Total | 8 | (N/A) | 100.00 | 1.14 |
| Chinese elm | Dead or Dying | 1 | (N/A) | 100.00 | 0.14 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Common crapemyrtle | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 7.35 | 0.71 |
| | Fair | 8 | (N/A) | 11.76 | 1.14 |
| | Good | 54 | (N/A) | 79.41 | 7.71 |
| | Total | 67 | (N/A) | 98.53 | 9.57 |
| Crabapple | Dead or Dying | 1 | (N/A) | 10.00 | 0.14 |
| | Poor | 5 | (N/A) | 50.00 | 0.71 |
| | Fair | 3 | (N/A) | 30.00 | 0.43 |
| | Good | 1 | (N/A) | 10.00 | 0.14 |
| | Total | 10 | (N/A) | 100.00 | 1.43 |
| Cucumber tree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Dwarf Serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 5 | (N/A) | 100.00 | 0.71 |
| | Total | 5 | (N/A) | 100.00 | 0.71 |
| Eastern hemlock | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 1 | (N/A) | 50.00 | 0.14 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|---------------------------|---------------|------------|----------------|---------------|-------------------|
| Eastern red cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 37.50 | 0.43 |
| | Fair | 4 | (N/A) | 50.00 | 0.57 |
| | Good | 1 | (N/A) | 12.50 | 0.14 |
| | Total | 8 | (N/A) | 100.00 | 1.14 |
| Eastern redbud | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 20.00 | 0.14 |
| | Fair | 2 | (N/A) | 40.00 | 0.29 |
| | Good | 2 | (N/A) | 40.00 | 0.29 |
| | Total | 5 | (N/A) | 100.00 | 0.71 |
| Eastern white pine | Dead or Dying | 2 | (N/A) | 16.67 | 0.29 |
| | Poor | 1 | (N/A) | 8.33 | 0.14 |
| | Fair | 4 | (N/A) | 33.33 | 0.57 |
| | Good | 5 | (N/A) | 41.67 | 0.71 |
| | Total | 12 | (N/A) | 100.00 | 1.71 |
| English holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 42.86 | 0.43 |
| | Good | 4 | (N/A) | 57.14 | 0.57 |
| | Total | 7 | (N/A) | 100.00 | 1.00 |
| Fig | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.14 |
| | Good | 2 | (N/A) | 66.67 | 0.29 |
| | Total | 3 | (N/A) | 100.00 | 0.43 |
| Flowering dogwood | Dead or Dying | 1 | (N/A) | 25.00 | 0.14 |
| | Poor | 1 | (N/A) | 25.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 50.00 | 0.29 |
| | Total | 4 | (N/A) | 100.00 | 0.57 |
| Green ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 9.09 | 0.14 |
| | Fair | 10 | (N/A) | 90.91 | 1.43 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 11 | (N/A) | 100.00 | 1.57 |
| Japanese maple | Dead or Dying | 1 | (N/A) | 25.00 | 0.14 |
| | Poor | 2 | (N/A) | 50.00 | 0.29 |
| | Fair | 1 | (N/A) | 25.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 4 | (N/A) | 100.00 | 0.57 |
| Japanese zelkova | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 8.33 | 0.14 |
| | Good | 11 | (N/A) | 91.67 | 1.57 |
| | Total | 12 | (N/A) | 100.00 | 1.71 |
| Juniper | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Kousa dogwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 62.50 | 0.71 |
| | Fair | 1 | (N/A) | 12.50 | 0.14 |
| | Good | 2 | (N/A) | 25.00 | 0.29 |
| | Total | 8 | (N/A) | 100.00 | 1.14 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------------|---------------|------------|----------------|--------------|-------------------|
| Leyland cypress | Dead or Dying | 1 | (N/A) | 4.17 | 0.14 |
| | Poor | 1 | (N/A) | 4.17 | 0.14 |
| | Fair | 21 | (N/A) | 87.50 | 3.00 |
| | Good | 1 | (N/A) | 4.17 | 0.14 |
| | Total | | 24 | (N/A) | 100.00 |
| Littleleaf linden | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.29 |
| | Total | | 2 | (N/A) | 100.00 |
| Magnolia | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 1 | (N/A) | 50.00 | 0.14 |
| | Total | | 2 | (N/A) | 100.00 |
| Mimosa | Dead or Dying | 1 | (N/A) | 10.00 | 0.14 |
| | Poor | 3 | (N/A) | 30.00 | 0.43 |
| | Fair | 5 | (N/A) | 50.00 | 0.71 |
| | Good | 1 | (N/A) | 10.00 | 0.14 |
| | Total | | 10 | (N/A) | 100.00 |
| Northern red oak | Dead or Dying | 2 | (N/A) | 11.11 | 0.29 |
| | Poor | 11 | (N/A) | 61.11 | 1.57 |
| | Fair | 3 | (N/A) | 16.67 | 0.43 |
| | Good | 2 | (N/A) | 11.11 | 0.29 |
| | Total | | 18 | (N/A) | 100.00 |
| Norway maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.14 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Norway spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.14 |
| | Total | | 1 | (N/A) | 100.00 |
| Norway x Chinese spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 1 | (N/A) | 50.00 | 0.14 |
| | Total | | 2 | (N/A) | 100.00 |
| Oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 100.00 | 0.29 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Pecan | Dead or Dying | 2 | (N/A) | 40.00 | 0.29 |
| | Poor | 1 | (N/A) | 20.00 | 0.14 |
| | Fair | 2 | (N/A) | 40.00 | 0.29 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Pignut hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------|---------------|------------|----------------|--------------|-------------------|
| Pin cherry | Dead or Dying | 1 | (N/A) | 100.00 | 0.14 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Pin oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 7 | (N/A) | 43.75 | 1.00 |
| | Fair | 6 | (N/A) | 37.50 | 0.86 |
| | Good | 3 | (N/A) | 18.75 | 0.43 |
| | Total | | 16 | (N/A) | 100.00 |
| Plum | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Red maple | Dead or Dying | 3 | (N/A) | 7.32 | 0.43 |
| | Poor | 14 | (N/A) | 34.15 | 2.00 |
| | Fair | 17 | (N/A) | 41.46 | 2.43 |
| | Good | 7 | (N/A) | 17.07 | 1.00 |
| | Total | | 41 | (N/A) | 100.00 |
| Red mulberry | Dead or Dying | 3 | (N/A) | 25.00 | 0.43 |
| | Poor | 7 | (N/A) | 58.33 | 1.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 16.67 | 0.29 |
| | Total | | 12 | (N/A) | 100.00 |
| River birch | Dead or Dying | 2 | (N/A) | 20.00 | 0.29 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 30.00 | 0.43 |
| | Good | 5 | (N/A) | 50.00 | 0.71 |
| | Total | | 10 | (N/A) | 100.00 |
| Sassafras | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Scarlet oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 100.00 | 0.29 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Service berry | Dead or Dying | 2 | (N/A) | 40.00 | 0.29 |
| | Poor | 2 | (N/A) | 40.00 | 0.29 |
| | Fair | 1 | (N/A) | 20.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Shellbark hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Shortleaf pine | Dead or Dying | 1 | (N/A) | 10.00 | 0.14 |
| | Poor | 1 | (N/A) | 10.00 | 0.14 |
| | Fair | 7 | (N/A) | 70.00 | 1.00 |
| | Good | 1 | (N/A) | 10.00 | 0.14 |
| | Total | | 10 | (N/A) | 100.00 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------|---------------|------------|----------------|---------------|-------------------|
| Silver maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 10 | (N/A) | 66.67 | 1.43 |
| | Fair | 3 | (N/A) | 20.00 | 0.43 |
| | Good | 2 | (N/A) | 13.33 | 0.29 |
| | Total | 15 | (N/A) | 100.00 | 2.14 |
| Southern catalpa | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Southern red oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 57.14 | 0.57 |
| | Fair | 2 | (N/A) | 28.57 | 0.29 |
| | Good | 1 | (N/A) | 14.29 | 0.14 |
| | Total | 7 | (N/A) | 100.00 | 1.00 |
| Southern redcedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.29 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Spruce | Dead or Dying | 2 | (N/A) | 66.67 | 0.29 |
| | Poor | 1 | (N/A) | 33.33 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 3 | (N/A) | 100.00 | 0.43 |
| Sugar maple | Dead or Dying | 1 | (N/A) | 100.00 | 0.14 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Swamp white oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Sweetgum | Dead or Dying | 1 | (N/A) | 2.63 | 0.14 |
| | Poor | 16 | (N/A) | 42.11 | 2.29 |
| | Fair | 17 | (N/A) | 44.74 | 2.43 |
| | Good | 4 | (N/A) | 10.53 | 0.57 |
| | Total | 38 | (N/A) | 100.00 | 5.43 |
| Sycamore | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Tree of heaven | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 6 | (N/A) | 54.55 | 0.86 |
| | Fair | 3 | (N/A) | 27.27 | 0.43 |
| | Good | 2 | (N/A) | 18.18 | 0.29 |
| | Total | 11 | (N/A) | 100.00 | 1.57 |
| Tulip tree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 11.11 | 0.14 |
| | Fair | 4 | (N/A) | 44.44 | 0.57 |
| | Good | 4 | (N/A) | 44.44 | 0.57 |
| | Total | 9 | (N/A) | 100.00 | 1.29 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------|---------------|------------|----------------|--------------|-------------------|
| unknown | Dead or Dying | 6 | (N/A) | 60.00 | 0.86 |
| | Poor | 3 | (N/A) | 30.00 | 0.43 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 10.00 | 0.14 |
| | Total | | 10 | (N/A) | 100.00 |
| White ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 8 | (N/A) | 88.89 | 1.14 |
| | Fair | 1 | (N/A) | 11.11 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 9 | (N/A) | 100.00 |
| White mulberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 10 | (N/A) | 40.00 | 1.43 |
| | Fair | 12 | (N/A) | 48.00 | 1.71 |
| | Good | 3 | (N/A) | 12.00 | 0.43 |
| | Total | | 25 | (N/A) | 100.00 |
| White oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 6 | (N/A) | 33.33 | 0.86 |
| | Fair | 6 | (N/A) | 33.33 | 0.86 |
| | Good | 6 | (N/A) | 33.33 | 0.86 |
| | Total | | 18 | (N/A) | 100.00 |
| Willow oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 11.90 | 0.71 |
| | Fair | 17 | (N/A) | 40.48 | 2.43 |
| | Good | 20 | (N/A) | 47.62 | 2.86 |
| | Total | | 42 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|---------------|-------------------|
| American basswood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.14 |
| | Good | 2 | (N/A) | 66.67 | 0.29 |
| | Total | 3 | (N/A) | 100.00 | 0.43 |
| American beech | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.29 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| American elm | Dead or Dying | 5 | (N/A) | 29.41 | 0.71 |
| | Poor | 4 | (N/A) | 23.53 | 0.57 |
| | Fair | 7 | (N/A) | 41.18 | 1.00 |
| | Good | 1 | (N/A) | 5.88 | 0.14 |
| | Total | 17 | (N/A) | 100.00 | 2.43 |
| American holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 5 | (N/A) | 55.56 | 0.71 |
| | Good | 4 | (N/A) | 44.44 | 0.57 |
| | Total | 9 | (N/A) | 100.00 | 1.29 |
| Apple | Dead or Dying | 6 | (N/A) | 13.95 | 0.86 |
| | Poor | 16 | (N/A) | 37.21 | 2.29 |
| | Fair | 13 | (N/A) | 30.23 | 1.86 |
| | Good | 8 | (N/A) | 18.60 | 1.14 |
| | Total | 43 | (N/A) | 100.00 | 6.14 |
| Ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Atlantic white cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.14 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Black cherry | Dead or Dying | 4 | (N/A) | 11.43 | 0.57 |
| | Poor | 11 | (N/A) | 31.43 | 1.57 |
| | Fair | 14 | (N/A) | 40.00 | 2.00 |
| | Good | 6 | (N/A) | 17.14 | 0.86 |
| | Total | 35 | (N/A) | 100.00 | 5.00 |
| Black locust | Dead or Dying | 10 | (N/A) | 47.62 | 1.43 |
| | Poor | 1 | (N/A) | 4.76 | 0.14 |
| | Fair | 7 | (N/A) | 33.33 | 1.00 |
| | Good | 1 | (N/A) | 4.76 | 0.14 |
| | Total | 19 | (N/A) | 90.48 | 2.71 |
| Black tupelo | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 25.00 | 0.43 |
| | Fair | 3 | (N/A) | 25.00 | 0.43 |
| | Good | 6 | (N/A) | 50.00 | 0.86 |
| | Total | 12 | (N/A) | 100.00 | 1.71 |
| Black walnut | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 100.00 | 0.29 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|------------------------------|---------------|------------|----------------|---------------|-------------------|
| Blackjack oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Boxelder | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 50.00 | 0.43 |
| | Fair | 2 | (N/A) | 33.33 | 0.29 |
| | Good | 1 | (N/A) | 16.67 | 0.14 |
| | Total | 6 | (N/A) | 100.00 | 0.86 |
| Callery pear | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 10.00 | 0.14 |
| | Fair | 7 | (N/A) | 70.00 | 1.00 |
| | Good | 2 | (N/A) | 20.00 | 0.29 |
| | Total | 10 | (N/A) | 100.00 | 1.43 |
| Carolina laurelcherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 4 | (N/A) | 100.00 | 0.57 |
| | Total | 4 | (N/A) | 100.00 | 0.57 |
| Chestnut oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 25.00 | 0.29 |
| | Fair | 6 | (N/A) | 75.00 | 0.86 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 8 | (N/A) | 100.00 | 1.14 |
| Chinese elm | Dead or Dying | 1 | (N/A) | 100.00 | 0.14 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Common crapemyrtle | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 7.35 | 0.71 |
| | Fair | 7 | (N/A) | 10.29 | 1.00 |
| | Good | 55 | (N/A) | 80.88 | 7.86 |
| | Total | 67 | (N/A) | 98.53 | 9.57 |
| Crabapple | Dead or Dying | 1 | (N/A) | 10.00 | 0.14 |
| | Poor | 4 | (N/A) | 40.00 | 0.57 |
| | Fair | 5 | (N/A) | 50.00 | 0.71 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 10 | (N/A) | 100.00 | 1.43 |
| Cucumber tree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.14 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Dwarf Serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 20.00 | 0.14 |
| | Fair | 1 | (N/A) | 20.00 | 0.14 |
| | Good | 3 | (N/A) | 60.00 | 0.43 |
| | Total | 5 | (N/A) | 100.00 | 0.71 |
| Eastern hemlock | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.14 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|---------------------------|---------------|------------|----------------|---------------|-------------------|
| Eastern red cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 37.50 | 0.43 |
| | Fair | 4 | (N/A) | 50.00 | 0.57 |
| | Good | 1 | (N/A) | 12.50 | 0.14 |
| | Total | 8 | (N/A) | 100.00 | 1.14 |
| Eastern redbud | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 20.00 | 0.14 |
| | Fair | 2 | (N/A) | 40.00 | 0.29 |
| | Good | 2 | (N/A) | 40.00 | 0.29 |
| | Total | 5 | (N/A) | 100.00 | 0.71 |
| Eastern white pine | Dead or Dying | 2 | (N/A) | 16.67 | 0.29 |
| | Poor | 2 | (N/A) | 16.67 | 0.29 |
| | Fair | 3 | (N/A) | 25.00 | 0.43 |
| | Good | 5 | (N/A) | 41.67 | 0.71 |
| | Total | 12 | (N/A) | 100.00 | 1.71 |
| English holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 42.86 | 0.43 |
| | Good | 4 | (N/A) | 57.14 | 0.57 |
| | Total | 7 | (N/A) | 100.00 | 1.00 |
| Fig | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.14 |
| | Good | 2 | (N/A) | 66.67 | 0.29 |
| | Total | 3 | (N/A) | 100.00 | 0.43 |
| Flowering dogwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 75.00 | 0.43 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 25.00 | 0.14 |
| | Total | 4 | (N/A) | 100.00 | 0.57 |
| Green ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 18.18 | 0.29 |
| | Fair | 9 | (N/A) | 81.82 | 1.29 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 11 | (N/A) | 100.00 | 1.57 |
| Japanese maple | Dead or Dying | 1 | (N/A) | 25.00 | 0.14 |
| | Poor | 2 | (N/A) | 50.00 | 0.29 |
| | Fair | 1 | (N/A) | 25.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 4 | (N/A) | 100.00 | 0.57 |
| Japanese zelkova | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 8 | (N/A) | 66.67 | 1.14 |
| | Good | 4 | (N/A) | 33.33 | 0.57 |
| | Total | 12 | (N/A) | 100.00 | 1.71 |
| Juniper | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Kousa dogwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 7 | (N/A) | 87.50 | 1.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 12.50 | 0.14 |
| | Total | 8 | (N/A) | 100.00 | 1.14 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------------|---------------|------------|----------------|---------------|-------------------|
| Leyland cypress | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 23 | (N/A) | 95.83 | 3.29 |
| | Good | 1 | (N/A) | 4.17 | 0.14 |
| | Total | 24 | (N/A) | 100.00 | 3.43 |
| Littleleaf linden | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.29 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Magnolia | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 1 | (N/A) | 50.00 | 0.14 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Mimosa | Dead or Dying | 1 | (N/A) | 10.00 | 0.14 |
| | Poor | 3 | (N/A) | 30.00 | 0.43 |
| | Fair | 3 | (N/A) | 30.00 | 0.43 |
| | Good | 3 | (N/A) | 30.00 | 0.43 |
| | Total | 10 | (N/A) | 100.00 | 1.43 |
| Northern red oak | Dead or Dying | 2 | (N/A) | 11.11 | 0.29 |
| | Poor | 9 | (N/A) | 50.00 | 1.29 |
| | Fair | 4 | (N/A) | 22.22 | 0.57 |
| | Good | 3 | (N/A) | 16.67 | 0.43 |
| | Total | 18 | (N/A) | 100.00 | 2.57 |
| Norway maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.14 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Norway spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.14 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Norway x Chinese spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 1 | (N/A) | 50.00 | 0.14 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 100.00 | 0.29 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Pecan | Dead or Dying | 2 | (N/A) | 40.00 | 0.29 |
| | Poor | 1 | (N/A) | 20.00 | 0.14 |
| | Fair | 2 | (N/A) | 40.00 | 0.29 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 5 | (N/A) | 100.00 | 0.71 |
| Pignut hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------|---------------|------------|----------------|--------------|-------------------|
| Pin cherry | Dead or Dying | 1 | (N/A) | 100.00 | 0.14 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Pin oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 31.25 | 0.71 |
| | Fair | 8 | (N/A) | 50.00 | 1.14 |
| | Good | 3 | (N/A) | 18.75 | 0.43 |
| | Total | | 16 | (N/A) | 100.00 |
| Plum | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Red maple | Dead or Dying | 5 | (N/A) | 12.20 | 0.71 |
| | Poor | 8 | (N/A) | 19.51 | 1.14 |
| | Fair | 20 | (N/A) | 48.78 | 2.86 |
| | Good | 8 | (N/A) | 19.51 | 1.14 |
| | Total | | 41 | (N/A) | 100.00 |
| Red mulberry | Dead or Dying | 5 | (N/A) | 41.67 | 0.71 |
| | Poor | 4 | (N/A) | 33.33 | 0.57 |
| | Fair | 1 | (N/A) | 8.33 | 0.14 |
| | Good | 2 | (N/A) | 16.67 | 0.29 |
| | Total | | 12 | (N/A) | 100.00 |
| River birch | Dead or Dying | 2 | (N/A) | 20.00 | 0.29 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 30.00 | 0.43 |
| | Good | 5 | (N/A) | 50.00 | 0.71 |
| | Total | | 10 | (N/A) | 100.00 |
| Sassafras | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Scarlet oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.14 |
| | Fair | 1 | (N/A) | 50.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Service berry | Dead or Dying | 2 | (N/A) | 40.00 | 0.29 |
| | Poor | 2 | (N/A) | 40.00 | 0.29 |
| | Fair | 1 | (N/A) | 20.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Shellbark hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Shortleaf pine | Dead or Dying | 1 | (N/A) | 10.00 | 0.14 |
| | Poor | 1 | (N/A) | 10.00 | 0.14 |
| | Fair | 7 | (N/A) | 70.00 | 1.00 |
| | Good | 1 | (N/A) | 10.00 | 0.14 |
| | Total | | 10 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------|---------------|------------|----------------|---------------|-------------------|
| Silver maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 33.33 | 0.71 |
| | Fair | 9 | (N/A) | 60.00 | 1.29 |
| | Good | 1 | (N/A) | 6.67 | 0.14 |
| | Total | 15 | (N/A) | 100.00 | 2.14 |
| Southern catalpa | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Southern red oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 57.14 | 0.57 |
| | Fair | 3 | (N/A) | 42.86 | 0.43 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 7 | (N/A) | 100.00 | 1.00 |
| Southern redcedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.29 |
| | Total | 2 | (N/A) | 100.00 | 0.29 |
| Spruce | Dead or Dying | 1 | (N/A) | 33.33 | 0.14 |
| | Poor | 1 | (N/A) | 33.33 | 0.14 |
| | Fair | 1 | (N/A) | 33.33 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 3 | (N/A) | 100.00 | 0.43 |
| Sugar maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Swamp white oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.14 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Sweetgum | Dead or Dying | 2 | (N/A) | 5.26 | 0.29 |
| | Poor | 9 | (N/A) | 23.68 | 1.29 |
| | Fair | 22 | (N/A) | 57.89 | 3.14 |
| | Good | 5 | (N/A) | 13.16 | 0.71 |
| | Total | 38 | (N/A) | 100.00 | 5.43 |
| Sycamore | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.14 |
| Tree of heaven | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 36.36 | 0.57 |
| | Fair | 5 | (N/A) | 45.45 | 0.71 |
| | Good | 2 | (N/A) | 18.18 | 0.29 |
| | Total | 11 | (N/A) | 100.00 | 1.57 |
| Tulip tree | Dead or Dying | 1 | (N/A) | 11.11 | 0.14 |
| | Poor | 1 | (N/A) | 11.11 | 0.14 |
| | Fair | 2 | (N/A) | 22.22 | 0.29 |
| | Good | 5 | (N/A) | 55.56 | 0.71 |
| | Total | 9 | (N/A) | 100.00 | 1.29 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------|---------------|------------|----------------|--------------|-------------------|
| unknown | Dead or Dying | 7 | (N/A) | 70.00 | 1.00 |
| | Poor | 2 | (N/A) | 20.00 | 0.29 |
| | Fair | 1 | (N/A) | 10.00 | 0.14 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 10 | (N/A) | 100.00 |
| White ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 7 | (N/A) | 77.78 | 1.00 |
| | Fair | 2 | (N/A) | 22.22 | 0.29 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 9 | (N/A) | 100.00 |
| White mulberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 8 | (N/A) | 32.00 | 1.14 |
| | Fair | 11 | (N/A) | 44.00 | 1.57 |
| | Good | 6 | (N/A) | 24.00 | 0.86 |
| | Total | | 25 | (N/A) | 100.00 |
| White oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 5.56 | 0.14 |
| | Fair | 10 | (N/A) | 55.56 | 1.43 |
| | Good | 7 | (N/A) | 38.89 | 1.00 |
| | Total | | 18 | (N/A) | 100.00 |
| Willow oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 7.14 | 0.43 |
| | Fair | 18 | (N/A) | 42.86 | 2.57 |
| | Good | 21 | (N/A) | 50.00 | 3.00 |
| | Total | | 42 | (N/A) | 100.00 |

Forest Heights

Relative Performance Index for Public Trees

9/22/2010

| Species | Dead or Dying | Poor | Fair | Good | RPI | # of Standard Trees Error | % of Public |
|-------------------------|---------------|-------|-------|--------|------|---------------------------|-------------|
| Common crapemyrtle | 0.00 | 7.46 | 11.19 | 81.34 | 1.39 | 67 (N/A) | 9.57 |
| Apple | 13.95 | 38.37 | 26.74 | 20.93 | 0.86 | 43 (N/A) | 6.14 |
| Willow oak | 0.00 | 9.52 | 41.67 | 48.81 | 1.24 | 42 (N/A) | 6.00 |
| Red maple | 9.76 | 26.83 | 45.12 | 18.29 | 0.94 | 41 (N/A) | 5.86 |
| Sweetgum | 3.95 | 32.89 | 51.32 | 11.84 | 0.94 | 38 (N/A) | 5.43 |
| Black cherry | 12.86 | 32.86 | 32.86 | 21.43 | 0.90 | 35 (N/A) | 5.00 |
| White mulberry | 0.00 | 36.00 | 46.00 | 18.00 | 0.99 | 25 (N/A) | 3.57 |
| Leyland cypress | 2.08 | 2.08 | 91.67 | 4.17 | 1.06 | 24 (N/A) | 3.43 |
| Black locust | 52.63 | 10.53 | 34.21 | 2.63 | 0.56 | 19 (N/A) | 2.71 |
| White oak | 0.00 | 19.44 | 44.44 | 36.11 | 1.14 | 18 (N/A) | 2.57 |
| Northern red oak | 11.11 | 55.56 | 19.44 | 13.89 | 0.78 | 18 (N/A) | 2.57 |
| American elm | 32.35 | 29.41 | 32.35 | 5.88 | 0.67 | 17 (N/A) | 2.43 |
| Pin oak | 0.00 | 37.50 | 43.75 | 18.75 | 0.98 | 16 (N/A) | 2.29 |
| Silver maple | 0.00 | 50.00 | 40.00 | 10.00 | 0.89 | 15 (N/A) | 2.14 |
| Red mulberry | 33.33 | 45.83 | 4.17 | 16.67 | 0.64 | 12 (N/A) | 1.71 |
| Black tupelo | 0.00 | 20.83 | 29.17 | 50.00 | 1.20 | 12 (N/A) | 1.71 |
| Eastern white pine | 16.67 | 12.50 | 29.17 | 41.67 | 1.05 | 12 (N/A) | 1.71 |
| Japanese zelkova | 0.00 | 0.00 | 37.50 | 62.50 | 1.34 | 12 (N/A) | 1.71 |
| Tree of heaven | 0.00 | 45.45 | 36.36 | 18.18 | 0.94 | 11 (N/A) | 1.57 |
| Green ash | 0.00 | 13.64 | 86.36 | 0.00 | 1.01 | 11 (N/A) | 1.57 |
| unknown | 65.00 | 25.00 | 5.00 | 5.00 | 0.40 | 10 (N/A) | 1.43 |
| Mimosa | 10.00 | 30.00 | 40.00 | 20.00 | 0.93 | 10 (N/A) | 1.43 |
| River birch | 20.00 | 0.00 | 30.00 | 50.00 | 1.11 | 10 (N/A) | 1.43 |
| Crabapple | 10.00 | 45.00 | 40.00 | 5.00 | 0.80 | 10 (N/A) | 1.43 |
| Shortleaf pine | 10.00 | 10.00 | 70.00 | 10.00 | 0.98 | 10 (N/A) | 1.43 |
| Callery pear | 0.00 | 25.00 | 55.00 | 20.00 | 1.04 | 10 (N/A) | 1.43 |
| White ash | 0.00 | 83.33 | 16.67 | 0.00 | 0.70 | 9 (N/A) | 1.29 |
| American holly | 0.00 | 5.56 | 66.67 | 27.78 | 1.16 | 9 (N/A) | 1.29 |
| Tulip tree | 5.56 | 11.11 | 33.33 | 50.00 | 1.19 | 9 (N/A) | 1.29 |
| Kousa dogwood | 0.00 | 75.00 | 6.25 | 18.75 | 0.82 | 8 (N/A) | 1.14 |
| Eastern red cedar | 0.00 | 37.50 | 50.00 | 12.50 | 0.95 | 8 (N/A) | 1.14 |
| Chestnut oak | 0.00 | 25.00 | 68.75 | 6.25 | 0.98 | 8 (N/A) | 1.14 |
| English holly | 0.00 | 0.00 | 42.86 | 57.14 | 1.32 | 7 (N/A) | 1.00 |
| Southern red oak | 0.00 | 57.14 | 35.71 | 7.14 | 0.84 | 7 (N/A) | 1.00 |
| Boxelder | 0.00 | 58.33 | 16.67 | 25.00 | 0.92 | 6 (N/A) | 0.86 |
| Service berry | 40.00 | 40.00 | 20.00 | 0.00 | 0.53 | 5 (N/A) | 0.71 |
| Dwarf Serviceberry | 0.00 | 10.00 | 10.00 | 80.00 | 1.38 | 5 (N/A) | 0.71 |
| Pecan | 40.00 | 20.00 | 40.00 | 0.00 | 0.62 | 5 (N/A) | 0.71 |
| Eastern redbud | 0.00 | 20.00 | 40.00 | 40.00 | 1.15 | 5 (N/A) | 0.71 |
| Japanese maple | 25.00 | 50.00 | 25.00 | 0.00 | 0.62 | 4 (N/A) | 0.57 |
| Flowering dogwood | 12.50 | 50.00 | 0.00 | 37.50 | 0.90 | 4 (N/A) | 0.57 |
| Carolina laurelcherry | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 4 (N/A) | 0.57 |
| Fig | 0.00 | 0.00 | 33.33 | 66.67 | 1.36 | 3 (N/A) | 0.43 |
| Spruce | 50.00 | 33.33 | 16.67 | 0.00 | 0.47 | 3 (N/A) | 0.43 |
| American basswood | 0.00 | 0.00 | 16.67 | 83.33 | 1.44 | 3 (N/A) | 0.43 |
| Norway maple | 0.00 | 50.00 | 50.00 | 0.00 | 0.84 | 2 (N/A) | 0.29 |
| Atlantic white cedar | 0.00 | 50.00 | 50.00 | 0.00 | 0.84 | 2 (N/A) | 0.29 |
| American beech | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 2 (N/A) | 0.29 |
| Black walnut | 0.00 | 25.00 | 75.00 | 0.00 | 0.95 | 2 (N/A) | 0.29 |
| Southern redcedar | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 2 (N/A) | 0.29 |
| Magnolia | 0.00 | 0.00 | 50.00 | 50.00 | 1.29 | 2 (N/A) | 0.29 |
| Norway x Chinese spruce | 0.00 | 0.00 | 50.00 | 50.00 | 1.29 | 2 (N/A) | 0.29 |
| Oak | 0.00 | 50.00 | 50.00 | 0.00 | 0.84 | 2 (N/A) | 0.29 |
| Scarlet oak | 0.00 | 75.00 | 25.00 | 0.00 | 0.73 | 2 (N/A) | 0.29 |
| Littleleaf linden | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 2 (N/A) | 0.29 |
| Eastern hemlock | 0.00 | 25.00 | 50.00 | 25.00 | 1.07 | 2 (N/A) | 0.29 |
| Sugar maple | 50.00 | 0.00 | 50.00 | 0.00 | 0.62 | 1 (N/A) | 0.14 |

Relative Performance Index for Public Trees

9/22/2010

| Species | Dead or Dying | Poor | Fair | Good | RPI | # of Standard Trees Error | % of Public |
|-------------------|---------------|--------|--------|--------|------|---------------------------|-------------|
| Southern catalpa | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.14 |
| Pignut hickory | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.14 |
| Shellbark hickory | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.14 |
| Ash | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.14 |
| Juniper | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.14 |
| Cucumber tree | 0.00 | 0.00 | 50.00 | 50.00 | 1.29 | 1 (N/A) | 0.14 |
| Norway spruce | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 1 (N/A) | 0.14 |
| Sycamore | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.14 |
| Plum | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.14 |
| Pin cherry | 100.00 | 0.00 | 0.00 | 0.00 | 0.18 | 1 (N/A) | 0.14 |
| Swamp white oak | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.14 |
| Blackjack oak | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.14 |
| Sassafras | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.14 |
| Chinese elm | 100.00 | 0.00 | 0.00 | 0.00 | 0.18 | 1 (N/A) | 0.14 |
| Citywide | 8.82 | 25.82 | 36.73 | 28.62 | 1.00 | 697 (N/A) | 99.57 |

Forest Heights

Summary of Available Planting Sites for Public Trees

9/22/2010

| Zone | No. of Unplanted Sites | No. of Planted Sites | Total No. of Sites | Stocking (%) | No. of Unplanted Sites | | | |
|----------------|---------------------------|-------------------------|-----------------------|-----------------|------------------------|--------|-------|-----------|
| | | | | | Small | Medium | Large | Undefined |
| 3 | 0 | 456 | 456 | 100 | 0 | 0 | 0 | 0 |
| 4 | 0 | 244 | 244 | 100 | 0 | 0 | 0 | 0 |
| Citywide total | 0 | 700 | 700 | 100 | 0 | 0 | 0 | 0 |

Land Use of Public Trees by Zone

9/22/2010

| Zone | Land Use | Tree Count | Standard Error | % of Zone | % of Public Trees |
|----------|--|------------|----------------|---------------|-------------------|
| 3 | Single family residential | 360 | (N/A) | 78.95 | 51.43 |
| | Area of special watershed interest | 0 | (N/A) | 0.00 | 0.00 |
| | Small commercial | 12 | (N/A) | 2.63 | 1.71 |
| | Industrial/Large commercial | 0 | (N/A) | 0.00 | 0.00 |
| | Park | 16 | (N/A) | 3.51 | 2.29 |
| | Transportation area (median, side of highw | 60 | (N/A) | 13.16 | 8.57 |
| | Institutional (church, school, gov. buildi | 6 | (N/A) | 1.32 | 0.86 |
| | Overgrown area | 0 | (N/A) | 0.00 | 0.00 |
| | Vacant | 1 | (N/A) | 0.22 | 0.14 |
| | Utility | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 455 | (N/A) | 99.78 | 65.00 |
| 4 | Single family residential | 177 | (N/A) | 72.54 | 25.29 |
| | Area of special watershed interest | 26 | (N/A) | 10.66 | 3.71 |
| | Small commercial | 7 | (N/A) | 2.87 | 1.00 |
| | Industrial/Large commercial | 6 | (N/A) | 2.46 | 0.86 |
| | Park | 0 | (N/A) | 0.00 | 0.00 |
| | Transportation area (median, side of highw | 22 | (N/A) | 9.02 | 3.14 |
| | Institutional (church, school, gov. buildi | 0 | (N/A) | 0.00 | 0.00 |
| | Overgrown area | 0 | (N/A) | 0.00 | 0.00 |
| | Vacant | 4 | (N/A) | 1.64 | 0.57 |
| | Utility | 2 | (N/A) | 0.82 | 0.29 |
| | Total | 244 | (N/A) | 100.00 | 34.86 |
| Citywide | Single family residential | 537 | (N/A) | 76.71 | 76.71 |
| | Area of special watershed interest | 26 | (N/A) | 3.71 | 3.71 |
| | Small commercial | 19 | (N/A) | 2.71 | 2.71 |
| | Industrial/Large commercial | 6 | (N/A) | 0.86 | 0.86 |
| | Park | 16 | (N/A) | 2.29 | 2.29 |
| | Transportation area (median, side of highw | 82 | (N/A) | 11.71 | 11.71 |
| | Institutional (church, school, gov. buildi | 6 | (N/A) | 0.86 | 0.86 |
| | Overgrown area | 0 | (N/A) | 0.00 | 0.00 |
| | Vacant | 5 | (N/A) | 0.71 | 0.71 |
| | Utility | 2 | (N/A) | 0.29 | 0.29 |
| | Total | 699 | (N/A) | 99.86 | 99.86 |

Site Type of Public Trees by Zone

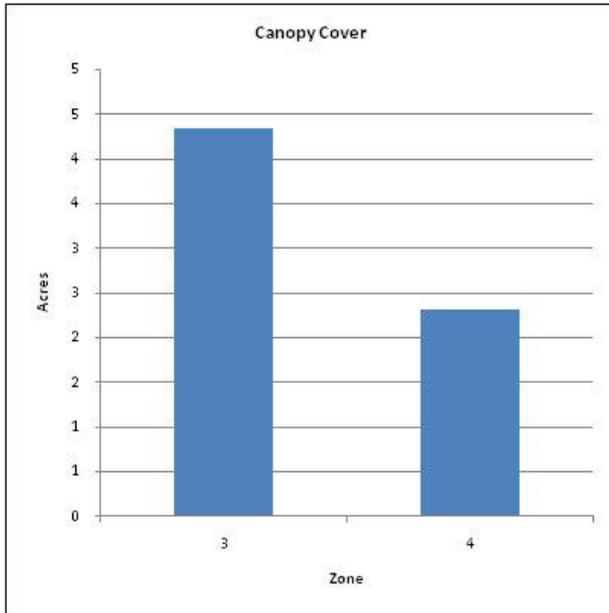
9/22/2010

| Zone | Site Type | Tree Count | Standard Error | % of Zone | % of Public Trees |
|----------|-------------------------------|------------|----------------|--------------|-------------------|
| 3 | Front yard | 326 | (N/A) | 71.49 | 46.57 |
| | Planting strip | 5 | (N/A) | 1.10 | 0.71 |
| | Cutout | 6 | (N/A) | 1.32 | 0.86 |
| | Median | 41 | (N/A) | 8.99 | 5.86 |
| | Other maintained locations | 35 | (N/A) | 7.68 | 5.00 |
| | Other un-maintained locations | 4 | (N/A) | 0.88 | 0.57 |
| | Backyard | 38 | (N/A) | 8.33 | 5.43 |
| | Total | | 455 | (N/A) | 99.78 |
| 4 | Front yard | 64 | (N/A) | 26.23 | 9.14 |
| | Planting strip | 92 | (N/A) | 37.70 | 13.14 |
| | Cutout | 0 | (N/A) | 0.00 | 0.00 |
| | Median | 0 | (N/A) | 0.00 | 0.00 |
| | Other maintained locations | 17 | (N/A) | 6.97 | 2.43 |
| | Other un-maintained locations | 43 | (N/A) | 17.62 | 6.14 |
| | Backyard | 28 | (N/A) | 11.48 | 4.00 |
| | Total | | 244 | (N/A) | 100.00 |
| Citywide | Front yard | 390 | (N/A) | 55.71 | 55.71 |
| | Planting strip | 97 | (N/A) | 13.86 | 13.86 |
| | Cutout | 6 | (N/A) | 0.86 | 0.86 |
| | Median | 41 | (N/A) | 5.86 | 5.86 |
| | Other maintained locations | 52 | (N/A) | 7.43 | 7.43 |
| | Other un-maintained locations | 47 | (N/A) | 6.71 | 6.71 |
| | Backyard | 66 | (N/A) | 9.43 | 9.43 |
| | Total | | 699 | (N/A) | 99.86 |

Forest Heights

Canopy Cover of Public Trees (Acres)

9/22/2010



| Zone | Acres | % of Total Canopy Cover |
|----------------|-------|-------------------------|
| 3 | 4 | 65.3 |
| 4 | 2 | 34.7 |
| Citywide total | 7 | 100.0 |

| | Total Land Area | Total Street and Sidewalk Area | Total Canopy Cover | Canopy Cover as % of Total Land Area | Canopy Cover as % of Total Streets and Sidewalks |
|----------------|-----------------|--------------------------------|--------------------|--------------------------------------|--|
| Citywide total | 402 | 36 | 7 | 1.65 | 18.42 |

Forest Heights

Replacement Value for Public Trees by Species

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|--------------------|----------------|--------|--------|--------|--------|--------|--------|--------|-----|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Common crapemyrtle | 5,963 | 4,928 | 12,177 | 18,924 | 0 | 0 | 0 | 0 | 0 | 41,992 (±0) | 3.09 |
| Apple | 1,348 | 3,480 | 13,413 | 8,782 | 10,488 | 6,527 | 0 | 0 | 0 | 44,038 (±0) | 3.24 |
| Willow oak | 761 | 10,870 | 12,857 | 17,069 | 8,683 | 31,630 | 20,880 | 0 | 0 | 102,751 (±0) | 7.56 |
| Red maple | 1,205 | 1,034 | 3,105 | 6,827 | 84,360 | 77,347 | 23,636 | 21,160 | 0 | 218,675 (±0) | 16.08 |
| Sweetgum | 851 | 785 | 13,341 | 16,080 | 42,554 | 0 | 0 | 0 | 0 | 73,611 (±0) | 5.41 |
| Black cherry | 1,420 | 1,402 | 10,899 | 6,133 | 3,153 | 0 | 0 | 0 | 0 | 23,007 (±0) | 1.69 |
| White mulberry | 604 | 2,099 | 9,725 | 9,838 | 13,031 | 14,468 | 0 | 0 | 0 | 49,764 (±0) | 3.66 |
| Leyland cypress | 2,515 | 558 | 1,044 | 2,049 | 0 | 0 | 0 | 0 | 0 | 6,167 (±0) | 0.45 |
| Black locust | 0 | 388 | 3,711 | 5,455 | 9,462 | 7,273 | 12,598 | 8,127 | 0 | 47,014 (±0) | 3.46 |
| White oak | 350 | 448 | 2,635 | 14,588 | 34,005 | 20,735 | 42,678 | 62,390 | 0 | 177,829 (±0) | 13.08 |
| Northern red oak | 874 | 801 | 3,003 | 2,409 | 0 | 1,604 | 13,994 | 0 | 0 | 22,685 (±0) | 1.67 |
| American elm | 642 | 1,567 | 0 | 2,957 | 585 | 951 | 0 | 0 | 0 | 6,703 (±0) | 0.49 |
| Pin oak | 87 | 618 | 3,018 | 5,145 | 14,768 | 35,246 | 0 | 0 | 0 | 58,883 (±0) | 4.33 |
| Silver maple | 0 | 417 | 2,982 | 6,668 | 20,448 | 21,362 | 0 | 0 | 0 | 51,877 (±0) | 3.81 |
| Red mulberry | 516 | 332 | 1,224 | 0 | 0 | 0 | 0 | 0 | 0 | 2,073 (±0) | 0.15 |
| Black tupelo | 395 | 2,692 | 4,922 | 0 | 0 | 0 | 0 | 0 | 0 | 8,009 (±0) | 0.59 |
| Eastern white pine | 1,193 | 201 | 0 | 0 | 15,794 | 0 | 0 | 0 | 0 | 17,189 (±0) | 1.26 |
| Japanese zelkova | 1,441 | 593 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,033 (±0) | 0.15 |
| Tree of heaven | 1,034 | 0 | 2,338 | 0 | 1,775 | 0 | 0 | 0 | 0 | 5,147 (±0) | 0.38 |
| Green ash | 549 | 394 | 0 | 2,781 | 6,803 | 22,379 | 16,290 | 0 | 0 | 49,196 (±0) | 3.62 |
| Mimosa | 819 | 1,149 | 0 | 350 | 0 | 0 | 0 | 0 | 0 | 2,318 (±0) | 0.17 |
| River birch | 1,171 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,171 (±0) | 0.09 |
| Crabapple | 90 | 443 | 7,687 | 0 | 6,874 | 0 | 0 | 0 | 0 | 15,094 (±0) | 1.11 |
| Shortleaf pine | 0 | 62 | 5,813 | 12,171 | 0 | 0 | 0 | 0 | 0 | 18,046 (±0) | 1.33 |
| Callery pear | 281 | 223 | 4,705 | 10,516 | 0 | 0 | 0 | 0 | 0 | 15,725 (±0) | 1.16 |
| unknown | 169 | 626 | 990 | 0 | 0 | 0 | 0 | 0 | 0 | 1,785 (±0) | 0.13 |
| White ash | 399 | 542 | 1,539 | 0 | 0 | 0 | 0 | 0 | 0 | 2,480 (±0) | 0.18 |
| American holly | 0 | 627 | 7,211 | 17,811 | 0 | 0 | 0 | 0 | 0 | 25,650 (±0) | 1.89 |
| Tulip tree | 718 | 0 | 0 | 3,983 | 0 | 0 | 18,585 | 29,720 | 0 | 53,006 (±0) | 3.90 |
| Kousa dogwood | 566 | 0 | 0 | 0 | 0 | 0 | 11,371 | 0 | 0 | 11,937 (±0) | 0.88 |
| Eastern red cedar | 0 | 394 | 4,947 | 3,513 | 0 | 0 | 23,077 | 0 | 0 | 31,931 (±0) | 2.35 |
| Chestnut oak | 72 | 0 | 6,191 | 3,525 | 17,366 | 0 | 0 | 0 | 0 | 27,153 (±0) | 2.00 |
| English holly | 475 | 627 | 3,265 | 0 | 0 | 0 | 0 | 0 | 0 | 4,367 (±0) | 0.32 |
| Southern red oak | 204 | 0 | 0 | 9,317 | 8,447 | 0 | 0 | 0 | 0 | 17,969 (±0) | 1.32 |
| Boxelder | 190 | 380 | 331 | 995 | 3,245 | 0 | 0 | 0 | 0 | 5,141 (±0) | 0.38 |
| Service berry | 184 | 244 | 0 | 664 | 0 | 0 | 0 | 0 | 0 | 1,092 (±0) | 0.08 |

| Species | DBH Class (in) | | | | | | | | | Total | Standard Error | % of Total |
|-------------------------|----------------|--------|---------|---------|---------|---------|---------|---------|-----|-----------|----------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | | |
| Dwarf Serviceberry | 584 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 584 | (±0) | 0.04 |
| Pecan | 0 | 0 | 3,198 | 664 | 4,517 | 0 | 0 | 0 | 0 | 8,378 | (±0) | 0.62 |
| Eastern redbud | 448 | 399 | 788 | 0 | 0 | 0 | 0 | 0 | 0 | 1,635 | (±0) | 0.12 |
| Japanese maple | 211 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 211 | (±0) | 0.02 |
| Flowering dogwood | 271 | 166 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 437 | (±0) | 0.03 |
| Carolina laurelcherry | 0 | 0 | 3,516 | 9,287 | 0 | 0 | 0 | 0 | 0 | 12,803 | (±0) | 0.94 |
| Fig | 0 | 1,070 | 2,313 | 0 | 0 | 0 | 0 | 0 | 0 | 3,383 | (±0) | 0.25 |
| Spruce | 95 | 0 | 715 | 0 | 0 | 0 | 0 | 0 | 0 | 809 | (±0) | 0.06 |
| American basswood | 543 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 543 | (±0) | 0.04 |
| Norway maple | 0 | 258 | 1,633 | 0 | 0 | 0 | 0 | 0 | 0 | 1,891 | (±0) | 0.14 |
| Atlantic white cedar | 74 | 0 | 1,241 | 0 | 0 | 0 | 0 | 0 | 0 | 1,315 | (±0) | 0.10 |
| American beech | 0 | 0 | 0 | 12,217 | 0 | 0 | 0 | 0 | 0 | 12,217 | (±0) | 0.90 |
| Black walnut | 0 | 0 | 2,223 | 0 | 0 | 0 | 0 | 0 | 0 | 2,223 | (±0) | 0.16 |
| Southern redcedar | 0 | 1,151 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,151 | (±0) | 0.08 |
| Magnolia | 0 | 575 | 0 | 0 | 0 | 11,973 | 0 | 0 | 0 | 12,549 | (±0) | 0.92 |
| Norway x Chinese spruce | 0 | 0 | 2,810 | 0 | 0 | 0 | 0 | 0 | 0 | 2,810 | (±0) | 0.21 |
| Oak | 143 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 143 | (±0) | 0.01 |
| Scarlet oak | 0 | 223 | 0 | 2,595 | 0 | 0 | 0 | 0 | 0 | 2,818 | (±0) | 0.21 |
| Littleleaf linden | 423 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 423 | (±0) | 0.03 |
| Eastern hemlock | 0 | 0 | 2,482 | 0 | 0 | 0 | 0 | 0 | 0 | 2,482 | (±0) | 0.18 |
| Sugar maple | 0 | 0 | 0 | 1,912 | 0 | 0 | 0 | 0 | 0 | 1,912 | (±0) | 0.14 |
| Southern catalpa | 0 | 0 | 0 | 4,453 | 0 | 0 | 0 | 0 | 0 | 4,453 | (±0) | 0.33 |
| Pignut hickory | 0 | 0 | 1,429 | 0 | 0 | 0 | 0 | 0 | 0 | 1,429 | (±0) | 0.11 |
| Shellbark hickory | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | (±0) | 0.00 |
| Ash | 0 | 443 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 443 | (±0) | 0.03 |
| Juniper | 0 | 0 | 770 | 0 | 0 | 0 | 0 | 0 | 0 | 770 | (±0) | 0.06 |
| Cucumber tree | 0 | 0 | 1,594 | 0 | 0 | 0 | 0 | 0 | 0 | 1,594 | (±0) | 0.12 |
| Norway spruce | 0 | 0 | 1,647 | 0 | 0 | 0 | 0 | 0 | 0 | 1,647 | (±0) | 0.12 |
| Sycamore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27,643 | 0 | 27,643 | (±0) | 2.03 |
| Plum | 149 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 149 | (±0) | 0.01 |
| Pin cherry | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | (±0) | 0.00 |
| Swamp white oak | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | (±0) | 0.00 |
| Blackjack oak | 0 | 0 | 0 | 0 | 7,273 | 0 | 0 | 0 | 0 | 7,273 | (±0) | 0.53 |
| Sassafras | 70 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70 | (±0) | 0.01 |
| Chinese elm | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 | (±0) | 0.01 |
| Citywide total | 30,227 | 43,281 | 169,433 | 219,677 | 313,631 | 251,496 | 183,109 | 149,042 | 0 | 1,359,897 | (±0) | 100.00 |

Appendix C: i-Tree STRATUM Output Reports for the Street Trees inclusive of “overgrown” Areas

Forest Heights

Annual Energy Benefits of Public Trees By Species

9/22/2010

| Species | Total Electricity (MWh) | Electricity (\$) | Total Natural Gas (Therms) | Natural Gas (\$) | Total Standard (\$) Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|----------------------------|---------------------|-------------------------------|---------------------|---------------------------------|---------------------|------------------|-----------------|
| Tree of heaven | 15.1 | 1,150 | 499.7 | 523 | 1,672 (N/A) | 21.6 | 10.3 | 7.18 |
| Sweetgum | 36.2 | 2,749 | 947.5 | 991 | 3,740 (N/A) | 11.2 | 22.9 | 30.91 |
| Shortleaf pine | 22.5 | 1,708 | 655.1 | 685 | 2,393 (N/A) | 7.9 | 14.7 | 28.16 |
| Green ash | 14.2 | 1,076 | 405.6 | 424 | 1,500 (N/A) | 7.5 | 9.2 | 18.52 |
| Black locust | 5.6 | 424 | 192.8 | 202 | 626 (N/A) | 5.2 | 3.8 | 11.18 |
| Chestnut oak | 8.8 | 670 | 268.1 | 280 | 950 (N/A) | 4.9 | 5.8 | 17.93 |
| Red maple | 3.6 | 277 | 115.7 | 121 | 398 (N/A) | 3.9 | 2.4 | 9.48 |
| Black cherry | 7.7 | 584 | 220.4 | 231 | 815 (N/A) | 3.6 | 5.0 | 20.90 |
| Willow oak | 7.1 | 540 | 209.5 | 219 | 759 (N/A) | 3.5 | 4.7 | 19.98 |
| American elm | 3.8 | 291 | 123.1 | 129 | 420 (N/A) | 3.2 | 2.6 | 12.36 |
| White oak | 7.3 | 551 | 208.5 | 218 | 769 (N/A) | 3.1 | 4.7 | 23.31 |
| White mulberry | 2.1 | 160 | 74.4 | 78 | 238 (N/A) | 2.4 | 1.5 | 9.14 |
| Northern red oak | 2.1 | 163 | 74.4 | 78 | 241 (N/A) | 2.4 | 1.5 | 9.26 |
| Eastern red cedar | 3.2 | 242 | 69.8 | 73 | 315 (N/A) | 1.9 | 1.9 | 15.76 |
| Common crapemyrtle | 0.3 | 20 | 13.1 | 14 | 33 (N/A) | 1.5 | 0.2 | 2.08 |
| Norway maple | 1.8 | 134 | 61.0 | 64 | 198 (N/A) | 1.4 | 1.2 | 13.19 |
| OTHER STREET TREES | 11.0 | 836 | 381.0 | 399 | 1,235 (N/A) | 15.0 | 7.6 | 7.62 |
| Citywide total | 152.5 | 11,576 | 4,519.9 | 4,728 | 16,304 (N/A) | 100.0 | 100.0 | 15.10 |

Forest Heights

Annual Stormwater Benefits of Public Trees by Species

9/22/2010

| Species | Total rainfall interception (Gal) | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|-----------------------------------|------------|----------------|------------------|---------------|--------------|
| Tree of heaven | 644,604 | 6,382 | (N/A) | 21.6 | 10.3 | 27.39 |
| Sweetgum | 1,557,564 | 15,421 | (N/A) | 11.2 | 25.0 | 127.45 |
| Shortleaf pine | 757,382 | 7,499 | (N/A) | 7.9 | 12.2 | 88.22 |
| Green ash | 669,787 | 6,631 | (N/A) | 7.5 | 10.8 | 81.87 |
| Black locust | 204,626 | 2,026 | (N/A) | 5.2 | 3.3 | 36.18 |
| Chestnut oak | 394,714 | 3,908 | (N/A) | 4.9 | 6.3 | 73.73 |
| Red maple | 142,266 | 1,409 | (N/A) | 3.9 | 2.3 | 33.54 |
| Black cherry | 362,775 | 3,592 | (N/A) | 3.6 | 5.8 | 92.10 |
| Willow oak | 326,980 | 3,237 | (N/A) | 3.5 | 5.3 | 85.19 |
| American elm | 162,780 | 1,612 | (N/A) | 3.2 | 2.6 | 47.40 |
| White oak | 363,300 | 3,597 | (N/A) | 3.1 | 5.8 | 109.00 |
| White mulberry | 68,707 | 680 | (N/A) | 2.4 | 1.1 | 26.16 |
| Northern red oak | 63,867 | 632 | (N/A) | 2.4 | 1.0 | 24.32 |
| Eastern red cedar | 66,857 | 662 | (N/A) | 1.9 | 1.1 | 33.10 |
| Common crapemyrtle | 4,476 | 44 | (N/A) | 1.5 | 0.1 | 2.77 |
| Norway maple | 67,682 | 670 | (N/A) | 1.4 | 1.1 | 44.67 |
| OTHER STREET TREES | 373,088 | 3,694 | (N/A) | 15.0 | 6.0 | 22.80 |
| Citywide total | 6,231,456 | 61,696 | (N/A) | 100.0 | 100.0 | 57.13 |

Forest Heights

Annual CO Benefits of Public Trees by Species

9/22/2010

| Species | Sequestered (lb) | Sequestered (\$) | Decomposition Release (lb) | Maintenance Release (lb) | Total Released (\$) | Avoided (lb) | Avoided (\$) | Net Total (lb) | Total Standard (\$ Error) | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|------------------|------------------|----------------------------|--------------------------|---------------------|--------------|--------------|----------------|---------------------------|------------------|---------------|--------------|
| Tree of heaven | 53,789 | 403 | -4,022 | -165 | -31 | 12,802 | 96 | 62,404 | 468 (N/A) | 21.6 | 10.9 | 2.01 |
| Sweetgum | 100,962 | 757 | -6,493 | -296 | -51 | 30,614 | 230 | 124,788 | 936 (N/A) | 11.2 | 21.9 | 7.73 |
| Shortleaf pine | 43,913 | 329 | -4,366 | -183 | -34 | 19,019 | 143 | 58,383 | 438 (N/A) | 7.9 | 10.2 | 5.15 |
| Green ash | 46,085 | 346 | -4,511 | -128 | -35 | 11,983 | 90 | 53,429 | 401 (N/A) | 7.5 | 9.4 | 4.95 |
| Black locust | 18,070 | 136 | -1,315 | -61 | -10 | 4,725 | 35 | 21,418 | 161 (N/A) | 5.2 | 3.8 | 2.87 |
| Chestnut oak | 30,581 | 229 | -2,512 | -81 | -19 | 7,458 | 56 | 35,445 | 266 (N/A) | 4.9 | 6.2 | 5.02 |
| Red maple | 17,590 | 132 | -799 | -35 | -6 | 3,084 | 23 | 19,839 | 149 (N/A) | 3.9 | 3.5 | 3.54 |
| Black cherry | 25,270 | 190 | -2,423 | -68 | -19 | 6,508 | 49 | 29,287 | 220 (N/A) | 3.6 | 5.1 | 5.63 |
| Willow oak | 23,565 | 177 | -2,163 | -65 | -17 | 6,013 | 45 | 27,350 | 205 (N/A) | 3.5 | 4.8 | 5.40 |
| American elm | 13,871 | 104 | -1,001 | -39 | -8 | 3,245 | 24 | 16,076 | 121 (N/A) | 3.2 | 2.8 | 3.55 |
| White oak | 33,422 | 251 | -2,321 | -64 | -18 | 6,138 | 46 | 37,175 | 279 (N/A) | 3.1 | 6.5 | 8.45 |
| White mulberry | 11,419 | 86 | -405 | -23 | -3 | 1,780 | 13 | 12,771 | 96 (N/A) | 2.4 | 2.2 | 3.68 |
| Northern red oak | 8,140 | 61 | -334 | -21 | -3 | 1,814 | 14 | 9,599 | 72 (N/A) | 2.4 | 1.7 | 2.77 |
| Eastern red cedar | 8,019 | 60 | -533 | -37 | -4 | 2,697 | 20 | 10,146 | 76 (N/A) | 1.9 | 1.8 | 3.80 |
| Common crapemyrtle | 237 | 2 | -12 | -6 | 0 | 218 | 2 | 437 | 3 (N/A) | 1.5 | 0.1 | 0.20 |
| Norway maple | 6,913 | 52 | -372 | -18 | -3 | 1,493 | 11 | 8,016 | 60 (N/A) | 1.4 | 1.4 | 4.01 |
| OTHER STREET TREES | 37,210 | 279 | -2,418 | -131 | -19 | 9,309 | 70 | 43,970 | 330 (N/A) | 15.0 | 7.7 | 2.04 |
| Citywide total | 479,053 | 3,593 | -35,998 | -1,422 | -281 | 128,900 | 967 | 570,533 | 4,279 (N/A) | 100.0 | 100.0 | 3.96 |

Forest Heights

Annual Air Quality Benefits of Public Trees by Species

9/22/2010

| Species | Deposition (lb) | | | | Total Depos. (\$) | Avoided (lb) | | | | Total Avoided (\$) | BVOC Emissions (lb) | BVOC Emissions (\$) | Total (lb) | Total Standard Error (\$) | % of Total Trees | Avg. \$/tree |
|--------------------|-----------------|-----------------|------------------|-----------------|-------------------|-----------------|------------------|------|-----------------|--------------------|---------------------|---------------------|------------|---------------------------|------------------|--------------|
| | O ₃ | NO ₂ | PM ₁₀ | SO ₂ | | NO ₂ | PM ₁₀ | VOC | SO ₂ | | | | | | | |
| Tree of heaven | 24.4 | 11.5 | 28.0 | 5.6 | 315 | 30.9 | 6.1 | 6.1 | 68.9 | 391 | -328.7 | -2,058 | -147.3 | -1,351 (N/A) | 21.6 | -5.80 |
| Sweetgum | 61.1 | 21.8 | 56.8 | 9.7 | 703 | 71.5 | 14.5 | 14.3 | 164.0 | 917 | -1,087.4 | -6,807 | -673.7 | -5,186 (N/A) | 11.2 | -42.86 |
| Shortleaf pine | 100.4 | 34.0 | 73.1 | 20.0 | 1,102 | 45.0 | 9.0 | 8.9 | 101.8 | 574 | -102.2 | -640 | 290.1 | 1,036 (N/A) | 7.9 | 12.18 |
| Green ash | 22.8 | 10.7 | 26.2 | 5.3 | 296 | 28.3 | 5.7 | 5.6 | 64.2 | 361 | -357.2 | -2,236 | -188.3 | -1,579 (N/A) | 7.5 | -19.50 |
| Black locust | 9.6 | 3.4 | 8.9 | 1.5 | 111 | 11.5 | 2.3 | 2.2 | 25.5 | 145 | -1.0 | -6 | 64.0 | 250 (N/A) | 5.2 | 4.46 |
| Chestnut oak | 14.0 | 6.6 | 16.1 | 3.2 | 182 | 17.8 | 3.6 | 3.5 | 40.1 | 226 | -205.3 | -1,285 | -100.4 | -877 (N/A) | 4.9 | -16.55 |
| Red maple | 6.1 | 2.2 | 5.7 | 1.0 | 70 | 7.4 | 1.5 | 1.5 | 16.6 | 94 | -10.3 | -64 | 31.6 | 100 (N/A) | 3.9 | 2.38 |
| Black cherry | 12.4 | 5.8 | 14.2 | 2.9 | 160 | 15.4 | 3.1 | 3.1 | 34.9 | 196 | -193.0 | -1,208 | -101.3 | -852 (N/A) | 3.6 | -21.83 |
| Willow oak | 11.3 | 5.3 | 13.0 | 2.6 | 147 | 14.3 | 2.9 | 2.8 | 32.3 | 182 | -173.2 | -1,084 | -88.6 | -756 (N/A) | 3.5 | -19.88 |
| American elm | 6.1 | 2.9 | 7.0 | 1.4 | 79 | 7.8 | 1.6 | 1.5 | 17.5 | 99 | -82.9 | -519 | -37.2 | -341 (N/A) | 3.1 | -10.04 |
| White oak | 11.7 | 5.5 | 13.4 | 2.7 | 151 | 14.5 | 2.9 | 2.9 | 32.9 | 185 | -55.3 | -346 | 31.3 | -9 (N/A) | 3.1 | -0.28 |
| White mulberry | 3.6 | 1.3 | 3.3 | 0.6 | 41 | 4.3 | 0.9 | 0.8 | 9.6 | 55 | -0.3 | -2 | 24.1 | 94 (N/A) | 2.4 | 3.61 |
| Northern red oak | 3.4 | 1.2 | 3.2 | 0.5 | 40 | 4.4 | 0.9 | 0.9 | 9.8 | 56 | -11.5 | -72 | 12.9 | 24 (N/A) | 2.4 | 0.91 |
| Eastern red cedar | 13.9 | 4.7 | 10.1 | 2.8 | 153 | 6.2 | 1.3 | 1.3 | 14.5 | 80 | -3.8 | -24 | 51.0 | 209 (N/A) | 1.9 | 10.45 |
| Common crapemyrtle | 0.5 | 0.2 | 0.4 | 0.1 | 6 | 0.6 | 0.1 | 0.1 | 1.2 | 7 | 0.0 | 0 | 3.1 | 13 (N/A) | 1.5 | 0.78 |
| Norway maple | 2.7 | 1.3 | 3.1 | 0.6 | 35 | 3.6 | 0.7 | 0.7 | 8.1 | 46 | -32.9 | -206 | -12.0 | -125 (N/A) | 1.4 | -8.30 |
| OTHER STREET TREES | 23.5 | 9.0 | 21.8 | 4.6 | 277 | 22.6 | 4.5 | 4.4 | 50.1 | 286 | -89.4 | -559 | 51.2 | 3 (N/A) | 15.0 | 0.02 |
| Citywide total | 327.6 | 127.4 | 304.6 | 65.1 | 3,867 | 306.1 | 61.5 | 60.6 | 692.0 | 3,900 | -2,734.3 | -17,117 | -789.4 | -9,349 (N/A) | 100.0 | -8.66 |

Forest Heights

Annual Aesthetic/Other Benefits of Public Trees by Species

9/22/2010

| Species | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|--------------------|------------|----------------|------------------|---------------|--------------|
| Tree of heaven | 7,343 | (N/A) | 21.6 | 12.3 | 31.52 |
| Sweetgum | 15,866 | (N/A) | 11.2 | 26.6 | 131.12 |
| Shortleaf pine | 3,938 | (N/A) | 7.9 | 6.6 | 46.33 |
| Green ash | 5,356 | (N/A) | 7.5 | 9.0 | 66.13 |
| Black locust | 2,797 | (N/A) | 5.2 | 4.7 | 49.94 |
| Chestnut oak | 3,683 | (N/A) | 4.9 | 6.2 | 69.49 |
| Red maple | 1,858 | (N/A) | 3.9 | 3.1 | 44.25 |
| Black cherry | 2,899 | (N/A) | 3.6 | 4.9 | 74.34 |
| Willow oak | 2,807 | (N/A) | 3.5 | 4.7 | 73.86 |
| American elm | 1,824 | (N/A) | 3.2 | 3.1 | 53.64 |
| White oak | 3,757 | (N/A) | 3.1 | 6.3 | 113.86 |
| White mulberry | 1,047 | (N/A) | 2.4 | 1.8 | 40.27 |
| Northern red oak | 1,003 | (N/A) | 2.4 | 1.7 | 38.57 |
| Eastern red cedar | 139 | (N/A) | 1.9 | 0.2 | 6.95 |
| Common crapemyrtle | 64 | (N/A) | 1.5 | 0.1 | 4.03 |
| Norway maple | 951 | (N/A) | 1.4 | 1.6 | 63.37 |
| OTHER STREET TREES | 4,325 | (N/A) | 15.0 | 7.3 | 26.70 |
| Citywide total | 59,657 | (N/A) | 100.0 | 100.0 | 55.24 |

Forest Heights

Total Annual Benefits, Net Benefits, and Costs for Public Trees

9/22/2010

| Benefits | Total (\$) Standard Error | \$/tree Standard Error | \$/capita Standard Error |
|---------------------------|---------------------------|------------------------|--------------------------|
| Energy | 16,304 (N/A) | 15.10 (N/A) | 6.31 (N/A) |
| CO2 | 4,279 (N/A) | 3.96 (N/A) | 1.66 (N/A) |
| Air Quality | -9,349 (N/A) | -8.66 (N/A) | -3.62 (N/A) |
| Stormwater | 61,696 (N/A) | 57.13 (N/A) | 23.87 (N/A) |
| Aesthetic/Other | 59,657 (N/A) | 55.24 (N/A) | 23.08 (N/A) |
| Total Benefits | 132,587 (N/A) | 122.77 (N/A) | 51.29 (N/A) |
| Costs | | | |
| Planting | 0 | 0.00 | 0.00 |
| Contract Pruning | 0 | 0.00 | 0.00 |
| Pest Management | 0 | 0.00 | 0.00 |
| Irrigation | 0 | 0.00 | 0.00 |
| Removal | 0 | 0.00 | 0.00 |
| Administration | 0 | 0.00 | 0.00 |
| Inspection/Service | 0 | 0.00 | 0.00 |
| Infrastructure Repairs | 0 | 0.00 | 0.00 |
| Litter Clean-up | 0 | 0.00 | 0.00 |
| Liability/Claims | 0 | 0.00 | 0.00 |
| Other Costs | 0 | 0.00 | 0.00 |
| Total Costs | 0 | 0.00 | 0.00 |
| Net Benefits | 132,587 (N/A) | 122.77 (N/A) | 51.29 (N/A) |
| Benefit-cost ratio | 0.00 (N/A) | | |

Forest Heights

Annual Benefits of Public Trees by Species (\$/tree)

9/22/2010

| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error |
|--------------------|--------|-----------------|-------------|------------|-----------------|------------|----------------|
| Tree of heaven | 7.18 | 2.01 | -5.80 | 27.39 | 31.52 | 62.29 | (N/A) |
| Sweetgum | 30.91 | 7.73 | -42.86 | 127.45 | 131.12 | 254.35 | (N/A) |
| Shortleaf pine | 28.16 | 5.15 | 12.18 | 88.22 | 46.33 | 180.04 | (N/A) |
| Green ash | 18.52 | 4.95 | -19.50 | 81.87 | 66.13 | 151.97 | (N/A) |
| Black locust | 11.18 | 2.87 | 4.46 | 36.18 | 49.94 | 104.62 | (N/A) |
| Chestnut oak | 17.93 | 5.02 | -16.55 | 73.73 | 69.49 | 149.61 | (N/A) |
| Red maple | 9.48 | 3.54 | 2.38 | 33.54 | 44.25 | 93.19 | (N/A) |
| Black cherry | 20.90 | 5.63 | -21.83 | 92.10 | 74.34 | 171.13 | (N/A) |
| Willow oak | 19.98 | 5.40 | -19.88 | 85.19 | 73.86 | 164.55 | (N/A) |
| American elm | 12.36 | 3.55 | -10.04 | 47.40 | 53.64 | 106.91 | (N/A) |
| White oak | 23.31 | 8.45 | -0.28 | 109.00 | 113.86 | 254.34 | (N/A) |
| White mulberry | 9.14 | 3.68 | 3.61 | 26.16 | 40.27 | 82.88 | (N/A) |
| Northern red oak | 9.26 | 2.77 | 0.91 | 24.32 | 38.57 | 75.83 | (N/A) |
| Eastern red cedar | 15.76 | 3.80 | 10.45 | 33.10 | 6.95 | 70.06 | (N/A) |
| Common crapemyrtle | 2.08 | 0.20 | 0.78 | 2.77 | 4.03 | 9.86 | (N/A) |
| Norway maple | 13.19 | 4.01 | -8.30 | 44.67 | 63.37 | 116.94 | (N/A) |
| OTHER STREET TRI | 7.62 | 2.04 | 0.02 | 22.80 | 26.70 | 59.17 | (N/A) |

Forest Heights

Total Annual Benefits of Public Trees by Species (\$)

9/22/2010

| Species | Energy | CO ₂ | Air Quality | Stormwater | Aesthetic/Other | Total Standard (\$) | % of Total |
|--------------------|--------|-----------------|-------------|------------|-----------------|---------------------|------------|
| Tree of heaven | 1,672 | 468 | -1,351 | 6,382 | 7,343 | 14,514 (±0) | 10.9 |
| Sweetgum | 3,740 | 936 | -5,186 | 15,421 | 15,866 | 30,777 (±0) | 23.2 |
| Shortleaf pine | 2,393 | 438 | 1,036 | 7,499 | 3,938 | 15,304 (±0) | 11.5 |
| Green ash | 1,500 | 401 | -1,579 | 6,631 | 5,356 | 12,309 (±0) | 9.3 |
| Black locust | 626 | 161 | 250 | 2,026 | 2,797 | 5,859 (±0) | 4.4 |
| Chestnut oak | 950 | 266 | -877 | 3,908 | 3,683 | 7,930 (±0) | 6.0 |
| Red maple | 398 | 149 | 100 | 1,409 | 1,858 | 3,914 (±0) | 3.0 |
| Black cherry | 815 | 220 | -852 | 3,592 | 2,899 | 6,674 (±0) | 5.0 |
| Willow oak | 759 | 205 | -756 | 3,237 | 2,807 | 6,253 (±0) | 4.7 |
| American elm | 420 | 121 | -341 | 1,612 | 1,824 | 3,635 (±0) | 2.7 |
| White oak | 769 | 279 | -9 | 3,597 | 3,757 | 8,393 (±0) | 6.3 |
| White mulberry | 238 | 96 | 94 | 680 | 1,047 | 2,155 (±0) | 1.6 |
| Northern red oak | 241 | 72 | 24 | 632 | 1,003 | 1,972 (±0) | 1.5 |
| Eastern red cedar | 315 | 76 | 209 | 662 | 139 | 1,401 (±0) | 1.1 |
| Common crapemyrtle | 33 | 3 | 13 | 44 | 64 | 158 (±0) | 0.1 |
| Norway maple | 198 | 60 | -125 | 670 | 951 | 1,754 (±0) | 1.3 |
| OTHER STREET TREE | 1,235 | 330 | 3 | 3,694 | 4,325 | 9,586 (±0) | 7.2 |
| Citywide Total | 16,304 | 4,279 | -9,349 | 61,696 | 59,657 | 132,586 (±0) | 100.0 |

Population Summary of Public Trees

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Tree of heaven | 89 | 59 | 28 | 6 | 24 | 3 | 10 | 3 | 11 | 233 |
| Sweetgum | 3 | 2 | 0 | 1 | 11 | 34 | 7 | 20 | 43 | 121 |
| Green ash | 8 | 19 | 5 | 2 | 7 | 12 | 6 | 12 | 10 | 81 |
| Chestnut oak | 9 | 4 | 0 | 9 | 9 | 9 | 2 | 8 | 3 | 53 |
| Black cherry | 6 | 2 | 3 | 2 | 5 | 6 | 2 | 10 | 3 | 39 |
| Willow oak | 4 | 3 | 0 | 6 | 11 | 2 | 1 | 5 | 6 | 38 |
| American elm | 3 | 9 | 5 | 6 | 1 | 5 | 2 | 1 | 2 | 34 |
| White oak | 3 | 1 | 2 | 4 | 2 | 4 | 9 | 1 | 7 | 33 |
| Northern red oak | 11 | 1 | 0 | 7 | 5 | 2 | 0 | 0 | 0 | 26 |
| Norway maple | 1 | 1 | 2 | 6 | 2 | 2 | 0 | 1 | 0 | 15 |
| BDL OTHER | 15 | 6 | 10 | 4 | 3 | 0 | 2 | 4 | 2 | 46 |
| Total | 152 | 107 | 55 | 53 | 80 | 79 | 41 | 65 | 87 | 719 (±NaN) |
| Broadleaf Deciduous Medium (BDM) | | | | | | | | | | |
| Black locust | 16 | 10 | 0 | 0 | 8 | 4 | 15 | 1 | 2 | 56 |
| Red maple | 20 | 2 | 3 | 3 | 10 | 0 | 1 | 1 | 2 | 42 |
| White mulberry | 8 | 5 | 1 | 3 | 4 | 2 | 0 | 2 | 1 | 26 |
| BDM OTHER | 6 | 11 | 8 | 3 | 2 | 5 | 4 | 0 | 1 | 40 |
| Total | 50 | 28 | 12 | 9 | 24 | 11 | 20 | 4 | 6 | 164 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |
| Common crapenyrtille | 5 | 9 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 16 |
| BDS OTHER | 12 | 12 | 13 | 2 | 0 | 3 | 1 | 4 | 1 | 48 |
| Total | 17 | 21 | 14 | 2 | 0 | 4 | 1 | 4 | 1 | 64 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| BEL OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| BEM OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| BES OTHER | 5 | 3 | 0 | 0 | 1 | 2 | 0 | 1 | 1 | 13 |
| Total | 5 | 3 | 0 | 0 | 1 | 2 | 0 | 1 | 1 | 13 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| Shortleaf pine | 0 | 0 | 0 | 5 | 4 | 32 | 15 | 18 | 11 | 85 |
| CEL OTHER | 8 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 11 |
| Total | 8 | 0 | 1 | 5 | 4 | 32 | 16 | 18 | 12 | 96 (±NaN) |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Eastern red cedar | 0 | 0 | 1 | 1 | 2 | 15 | 0 | 0 | 1 | 20 |
| CEM OTHER | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| Total | 0 | 1 | 3 | 1 | 2 | 16 | 0 | 0 | 1 | 24 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| CES OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Large (PEL) | | | | | | | | | | |
| PEL OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Medium (PEM) | | | | | | | | | | |
| PEM OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Small (PES) | | | | | | | | | | |
| PES OTHER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Population Summary of Public Trees

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|--------------------|----------------|-----|------|-------|-------|-------|-------|-------|-----|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Grand Total | 232 | 160 | 85 | 70 | 111 | 144 | 78 | 92 | 108 | 1,080 (±0) |

Forest Heights

Complete Population of Public Trees

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Broadleaf Deciduous Large (BDL) | | | | | | | | | | |
| Tree of heaven | 89 | 59 | 28 | 6 | 24 | 3 | 10 | 3 | 11 | 233 |
| Sweetgum | 3 | 2 | 0 | 1 | 11 | 34 | 7 | 20 | 43 | 121 |
| Green ash | 8 | 19 | 5 | 2 | 7 | 12 | 6 | 12 | 10 | 81 |
| Chestnut oak | 9 | 4 | 0 | 9 | 9 | 9 | 2 | 8 | 3 | 53 |
| Black cherry | 6 | 2 | 3 | 2 | 5 | 6 | 2 | 10 | 3 | 39 |
| Willow oak | 4 | 3 | 0 | 6 | 11 | 2 | 1 | 5 | 6 | 38 |
| American elm | 3 | 9 | 5 | 6 | 1 | 5 | 2 | 1 | 2 | 34 |
| White oak | 3 | 1 | 2 | 4 | 2 | 4 | 9 | 1 | 7 | 33 |
| Northern red oak | 11 | 1 | 0 | 7 | 5 | 2 | 0 | 0 | 0 | 26 |
| Norway maple | 1 | 1 | 2 | 6 | 2 | 2 | 0 | 1 | 0 | 15 |
| Red mulberry | 5 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 9 |
| Tulip tree | 2 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 8 |
| White ash | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| Black walnut | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 4 |
| Pin oak | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 4 |
| Elm species | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| Beech | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Oak | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Silver maple | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Southern catalpa | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Pecan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Shellbark hickory | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| American beech | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Swamp white oak | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Southern red oak | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Japanese zelkova | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Sugar maple | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pignut hickory | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ash | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cucumber tree | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sycamore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pin cherry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Scarlet oak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American basswood | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 152 | 107 | 55 | 53 | 80 | 79 | 41 | 65 | 87 | 719 (±NaN) |
| Broadleaf Deciduous Medium (BDM) | | | | | | | | | | |
| Black locust | 16 | 10 | 0 | 0 | 8 | 4 | 15 | 1 | 2 | 56 |
| Red maple | 20 | 2 | 3 | 3 | 10 | 0 | 1 | 1 | 2 | 42 |
| White mulberry | 8 | 5 | 1 | 3 | 4 | 2 | 0 | 2 | 1 | 26 |
| Blackjack oak | 0 | 0 | 0 | 2 | 1 | 5 | 0 | 0 | 0 | 8 |
| Sassafras | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| River birch | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Unknown | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| Boxelder | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Roundleaf serviceberry | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| Gray birch | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 |
| Black tupelo | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| Sassafras sp | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Chinese elm | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Magnolia | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Littleleaf linden | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 50 | 28 | 12 | 9 | 24 | 11 | 20 | 4 | 6 | 164 (±NaN) |
| Broadleaf Deciduous Small (BDS) | | | | | | | | | | |
| Common crapemyrtle | 5 | 9 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 16 |
| Mimosa | 2 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Eastern redbud | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Flowering dogwood | 1 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |

Forest Heights

Complete Population of Public Trees

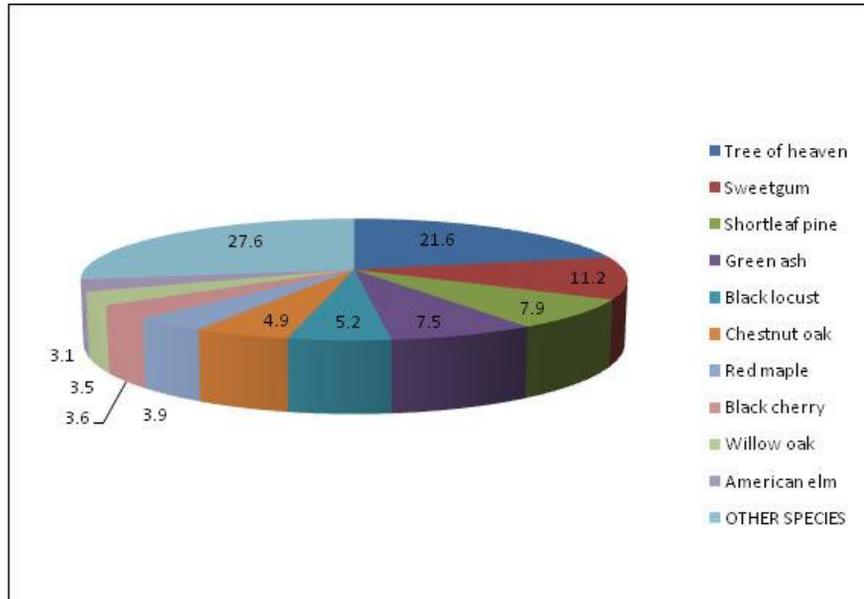
9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error |
|---|----------------|------------|-----------|-----------|------------|------------|-----------|-----------|------------|----------------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | |
| Callery pear | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 3 | 0 | 7 |
| Apple | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 5 |
| Kousa dogwood | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Japanese maple | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Service berry | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Dwarf Serviceberry | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Fig | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Crabapple | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Plum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 17 | 21 | 14 | 2 | 0 | 4 | 1 | 4 | 1 | 64 (±NaN) |
| Broadleaf Evergreen Large (BEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Medium (BEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Broadleaf Evergreen Small (BES) | | | | | | | | | | |
| American holly | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 7 |
| English holly | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 6 |
| Carolina laurelcherry | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 5 | 3 | 0 | 0 | 1 | 2 | 0 | 1 | 1 | 13 (±NaN) |
| Conifer Evergreen Large (CEL) | | | | | | | | | | |
| Shortleaf pine | 0 | 0 | 0 | 5 | 4 | 32 | 15 | 18 | 11 | 85 |
| Eastern white pine | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 9 |
| Leyland cypress | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| Norway spruce | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Noway x Chinese spruce | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 8 | 0 | 1 | 5 | 4 | 32 | 16 | 18 | 12 | 96 (±NaN) |
| Conifer Evergreen Medium (CEM) | | | | | | | | | | |
| Eastern red cedar | 0 | 0 | 1 | 1 | 2 | 15 | 0 | 0 | 1 | 20 |
| Atlantic white cedar | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| Southern redcedar | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Juniper | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spruce | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Eastern hemlock | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 1 | 3 | 1 | 2 | 16 | 0 | 0 | 1 | 24 (±NaN) |
| Conifer Evergreen Small (CES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Large (PEL) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Medium (PEM) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Palm Evergreen Small (PES) | | | | | | | | | | |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 (±NaN) |
| Grand Total | 232 | 160 | 85 | 70 | 111 | 144 | 78 | 92 | 108 | 1,080 (±0) |

Forest Heights

Species Distribution of Public Trees (%)

9/22/2010

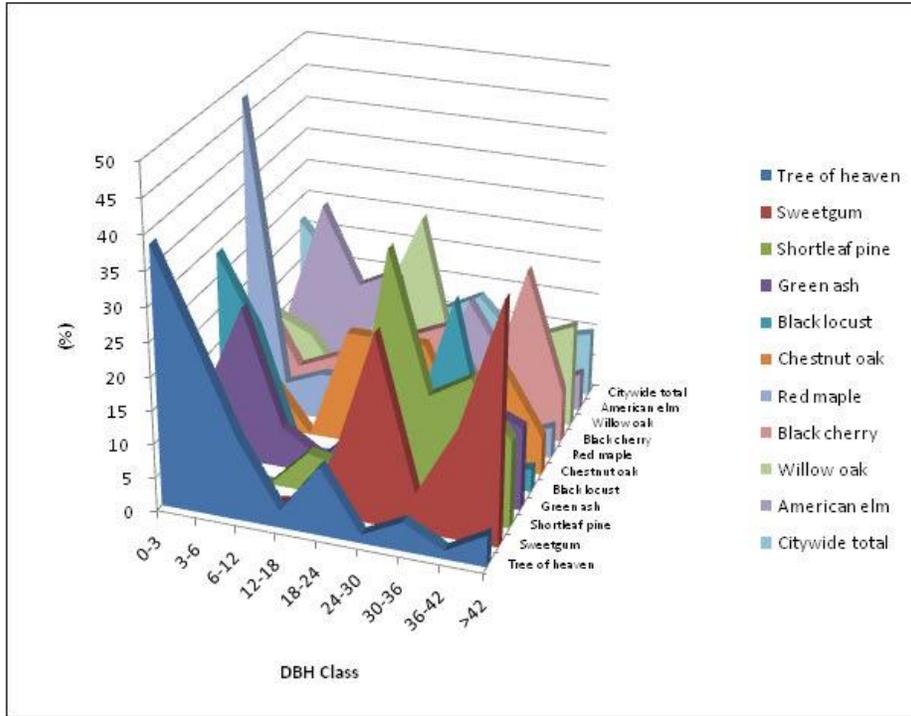


| Species | Percent |
|----------------|---------|
| Tree of heaven | 21.6 |
| Sweetgum | 11.2 |
| Shortleaf pine | 7.9 |
| Green ash | 7.5 |
| Black locust | 5.2 |
| Chestnut oak | 4.9 |
| Red maple | 3.9 |
| Black cherry | 3.6 |
| Willow oak | 3.5 |
| American elm | 3.1 |
| OTHER SPECIES | 27.6 |
| Total | 100.0 |

Forest Heights

Relative Age Distribution of Top 10 Public Tree Species (%)

9/22/2010



| Species | DBH class (in) | | | | | | | | |
|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 |
| Tree of heaven | 38.20 | 25.32 | 12.02 | 2.58 | 10.30 | 1.29 | 4.29 | 1.29 | 4.72 |
| Sweetgum | 2.48 | 1.65 | 0.00 | 0.83 | 9.09 | 28.10 | 5.79 | 16.53 | 35.54 |
| Shortleaf pine | 0.00 | 0.00 | 0.00 | 5.88 | 4.71 | 37.65 | 17.65 | 21.18 | 12.94 |
| Green ash | 9.88 | 23.46 | 6.17 | 2.47 | 8.64 | 14.81 | 7.41 | 14.81 | 12.35 |
| Black locust | 28.57 | 17.86 | 0.00 | 0.00 | 14.29 | 7.14 | 26.79 | 1.79 | 3.57 |
| Chestnut oak | 16.98 | 7.55 | 0.00 | 16.98 | 16.98 | 16.98 | 3.77 | 15.09 | 5.66 |
| Red maple | 47.62 | 4.76 | 7.14 | 7.14 | 23.81 | 0.00 | 2.38 | 2.38 | 4.76 |
| Black cherry | 15.38 | 5.13 | 7.69 | 5.13 | 12.82 | 15.38 | 5.13 | 25.64 | 7.69 |
| Willow oak | 10.53 | 7.89 | 0.00 | 15.79 | 28.95 | 5.26 | 2.63 | 13.16 | 15.79 |
| American elm | 8.82 | 26.47 | 14.71 | 17.65 | 2.94 | 14.71 | 5.88 | 2.94 | 5.88 |
| Citywide total | 21.48 | 14.81 | 7.87 | 6.48 | 10.28 | 13.33 | 7.22 | 8.52 | 10.00 |

Forest Heights

Importance Values for Most Abundant Public Trees

9/22/2010

| Species | Number of Trees | % of Total Trees | Leaf Area (ft ²) | % of Total Leaf Area | Canopy Cover (ft ²) | % of Total Canopy Cover | Importance Value |
|--------------------|-----------------|------------------|------------------------------|----------------------|---------------------------------|-------------------------|------------------|
| Tree of heaven | 233 | 21.6 | 834,259 | 11.3 | 133,943 | 9.9 | 14.3 |
| Sweetgum | 121 | 11.2 | 1,917,838 | 25.9 | 317,144 | 23.6 | 20.2 |
| Shortleaf pine | 85 | 7.9 | 512,299 | 6.9 | 202,799 | 15.1 | 9.9 |
| Green ash | 81 | 7.5 | 906,684 | 12.2 | 125,494 | 9.3 | 9.7 |
| Black locust | 56 | 5.2 | 231,471 | 3.1 | 49,964 | 3.7 | 4.0 |
| Chestnut oak | 53 | 4.9 | 521,114 | 7.0 | 77,125 | 5.7 | 5.9 |
| Red maple | 42 | 3.9 | 177,050 | 2.4 | 31,735 | 2.4 | 2.9 |
| Black cherry | 39 | 3.6 | 489,729 | 6.6 | 67,949 | 5.0 | 5.1 |
| Willow oak | 38 | 3.5 | 439,567 | 5.9 | 62,291 | 4.6 | 4.7 |
| American elm | 34 | 3.1 | 210,484 | 2.8 | 33,392 | 2.5 | 2.8 |
| White oak | 33 | 3.1 | 505,317 | 6.8 | 64,315 | 4.8 | 4.9 |
| White mulberry | 26 | 2.4 | 73,688 | 1.0 | 18,538 | 1.4 | 1.6 |
| Northern red oak | 26 | 2.4 | 66,616 | 0.9 | 17,896 | 1.3 | 1.5 |
| Eastern red cedar | 20 | 1.9 | 31,839 | 0.4 | 28,102 | 2.1 | 1.5 |
| Common crapemyrtle | 16 | 1.5 | 2,199 | 0.0 | 2,502 | 0.2 | 0.6 |
| Norway maple | 15 | 1.4 | 83,406 | 1.1 | 14,935 | 1.1 | 1.2 |
| OTHER TREES | 162 | 15.0 | 403,970 | 5.5 | 98,465 | 7.3 | 9.3 |
| Total | 1,080 | 100.0 | 7,407,530 | 100.0 | 1,346,587 | 100.0 | 100.0 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|---------------|-------------------|
| American basswood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 3 | (N/A) | 100.00 | 0.17 |
| | Total | 3 | (N/A) | 100.00 | 0.17 |
| American beech | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 66.67 | 0.11 |
| | Total | 2 | (N/A) | 66.67 | 0.11 |
| American elm | Dead or Dying | 6 | (N/A) | 12.24 | 0.33 |
| | Poor | 6 | (N/A) | 12.24 | 0.33 |
| | Fair | 4 | (N/A) | 8.16 | 0.22 |
| | Good | 1 | (N/A) | 2.04 | 0.06 |
| | Total | 17 | (N/A) | 34.69 | 0.94 |
| American holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 7.69 | 0.06 |
| | Fair | 7 | (N/A) | 53.85 | 0.39 |
| | Good | 1 | (N/A) | 7.69 | 0.06 |
| | Total | 9 | (N/A) | 69.23 | 0.50 |
| Apple | Dead or Dying | 6 | (N/A) | 13.95 | 0.33 |
| | Poor | 17 | (N/A) | 39.53 | 0.94 |
| | Fair | 10 | (N/A) | 23.26 | 0.55 |
| | Good | 10 | (N/A) | 23.26 | 0.55 |
| | Total | 43 | (N/A) | 100.00 | 2.38 |
| Ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.06 |
| Atlantic white cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.06 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.11 |
| Beech | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 0 | (N/A) | 0.00 | 0.00 |
| Black cherry | Dead or Dying | 5 | (N/A) | 6.10 | 0.28 |
| | Poor | 12 | (N/A) | 14.63 | 0.66 |
| | Fair | 9 | (N/A) | 10.98 | 0.50 |
| | Good | 9 | (N/A) | 10.98 | 0.50 |
| | Total | 35 | (N/A) | 42.68 | 1.94 |
| Black locust | Dead or Dying | 10 | (N/A) | 10.99 | 0.55 |
| | Poor | 3 | (N/A) | 3.30 | 0.17 |
| | Fair | 6 | (N/A) | 6.59 | 0.33 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 19 | (N/A) | 20.88 | 1.05 |
| Black tupelo | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 14.29 | 0.11 |
| | Fair | 4 | (N/A) | 28.57 | 0.22 |
| | Good | 6 | (N/A) | 42.86 | 0.33 |
| | Total | 12 | (N/A) | 85.71 | 0.66 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|------------------------------|---------------|------------|----------------|--------------|-------------------|
| Black walnut | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 20.00 | 0.06 |
| | Fair | 1 | (N/A) | 20.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 40.00 |
| Blackjack oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 10.00 | 0.06 |
| | Fair | 1 | (N/A) | 10.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 20.00 |
| Boxelder | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 57.14 | 0.22 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 28.57 | 0.11 |
| | Total | | 6 | (N/A) | 85.71 |
| Callery pear | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 25.00 | 0.22 |
| | Fair | 4 | (N/A) | 25.00 | 0.22 |
| | Good | 2 | (N/A) | 12.50 | 0.11 |
| | Total | | 10 | (N/A) | 62.50 |
| Carolina laurelcherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 4 | (N/A) | 100.00 | 0.22 |
| | Total | | 4 | (N/A) | 100.00 |
| Chestnut oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 1.35 | 0.06 |
| | Fair | 5 | (N/A) | 6.76 | 0.28 |
| | Good | 1 | (N/A) | 1.35 | 0.06 |
| | Total | | 7 | (N/A) | 9.46 |
| Chinese elm | Dead or Dying | 1 | (N/A) | 100.00 | 0.06 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Common crapemyrtle | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 7.14 | 0.28 |
| | Fair | 8 | (N/A) | 11.43 | 0.44 |
| | Good | 54 | (N/A) | 77.14 | 2.99 |
| | Total | | 67 | (N/A) | 95.71 |
| Crabapple | Dead or Dying | 1 | (N/A) | 10.00 | 0.06 |
| | Poor | 5 | (N/A) | 50.00 | 0.28 |
| | Fair | 3 | (N/A) | 30.00 | 0.17 |
| | Good | 1 | (N/A) | 10.00 | 0.06 |
| | Total | | 10 | (N/A) | 100.00 |
| Cucumber tree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Dwarf Serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 5 | (N/A) | 100.00 | 0.28 |
| | Total | | 5 | (N/A) | 100.00 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|---------------------------|---------------|------------|----------------|--------------|-------------------|
| Eastern hemlock | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 1 | (N/A) | 50.00 | 0.06 |
| | Total | | 2 | (N/A) | 100.00 |
| Eastern red cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 12.00 | 0.17 |
| | Fair | 4 | (N/A) | 16.00 | 0.22 |
| | Good | 1 | (N/A) | 4.00 | 0.06 |
| | Total | | 8 | (N/A) | 32.00 |
| Eastern redbud | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 10.00 | 0.06 |
| | Fair | 2 | (N/A) | 20.00 | 0.11 |
| | Good | 2 | (N/A) | 20.00 | 0.11 |
| | Total | | 5 | (N/A) | 50.00 |
| Eastern white pine | Dead or Dying | 2 | (N/A) | 12.50 | 0.11 |
| | Poor | 1 | (N/A) | 6.25 | 0.06 |
| | Fair | 4 | (N/A) | 25.00 | 0.22 |
| | Good | 5 | (N/A) | 31.25 | 0.28 |
| | Total | | 12 | (N/A) | 75.00 |
| Elm species | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 0 | (N/A) | 0.00 |
| English holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 42.86 | 0.17 |
| | Good | 4 | (N/A) | 57.14 | 0.22 |
| | Total | | 7 | (N/A) | 100.00 |
| Fig | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.06 |
| | Good | 2 | (N/A) | 66.67 | 0.11 |
| | Total | | 3 | (N/A) | 100.00 |
| Flowering dogwood | Dead or Dying | 1 | (N/A) | 11.11 | 0.06 |
| | Poor | 1 | (N/A) | 11.11 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 22.22 | 0.11 |
| | Total | | 4 | (N/A) | 44.44 |
| Gray birch | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 0 | (N/A) | 0.00 |
| Green ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 0.83 | 0.06 |
| | Fair | 10 | (N/A) | 8.26 | 0.55 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 11 | (N/A) | 9.09 |
| Japanese maple | Dead or Dying | 1 | (N/A) | 25.00 | 0.06 |
| | Poor | 2 | (N/A) | 50.00 | 0.11 |
| | Fair | 1 | (N/A) | 25.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 4 | (N/A) | 100.00 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------------|---------------|------------|----------------|--------------|-------------------|
| Japanese zelkova | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 8.33 | 0.06 |
| | Good | 11 | (N/A) | 91.67 | 0.61 |
| | Total | | 12 | (N/A) | 100.00 |
| Juniper | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Kousa dogwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 62.50 | 0.28 |
| | Fair | 1 | (N/A) | 12.50 | 0.06 |
| | Good | 2 | (N/A) | 25.00 | 0.11 |
| | Total | | 8 | (N/A) | 100.00 |
| Leyland cypress | Dead or Dying | 1 | (N/A) | 4.17 | 0.06 |
| | Poor | 1 | (N/A) | 4.17 | 0.06 |
| | Fair | 21 | (N/A) | 87.50 | 1.16 |
| | Good | 1 | (N/A) | 4.17 | 0.06 |
| | Total | | 24 | (N/A) | 100.00 |
| Littleleaf linden | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.11 |
| | Total | | 2 | (N/A) | 100.00 |
| Magnolia | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 1 | (N/A) | 50.00 | 0.06 |
| | Total | | 2 | (N/A) | 100.00 |
| Mimosa | Dead or Dying | 1 | (N/A) | 6.25 | 0.06 |
| | Poor | 3 | (N/A) | 18.75 | 0.17 |
| | Fair | 5 | (N/A) | 31.25 | 0.28 |
| | Good | 1 | (N/A) | 6.25 | 0.06 |
| | Total | | 10 | (N/A) | 62.50 |
| Northern red oak | Dead or Dying | 2 | (N/A) | 5.26 | 0.11 |
| | Poor | 11 | (N/A) | 28.95 | 0.61 |
| | Fair | 3 | (N/A) | 7.89 | 0.17 |
| | Good | 2 | (N/A) | 5.26 | 0.11 |
| | Total | | 18 | (N/A) | 47.37 |
| Norway maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 6.67 | 0.06 |
| | Fair | 1 | (N/A) | 6.67 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 13.33 |
| Norway spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.06 |
| | Total | | 1 | (N/A) | 100.00 |
| Noway x Chinese spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 1 | (N/A) | 50.00 | 0.06 |
| | Total | | 2 | (N/A) | 100.00 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------------|---------------|------------|----------------|--------------|-------------------|
| Oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 100.00 | 0.11 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Pecan | Dead or Dying | 2 | (N/A) | 40.00 | 0.11 |
| | Poor | 1 | (N/A) | 20.00 | 0.06 |
| | Fair | 2 | (N/A) | 40.00 | 0.11 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Pignut hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Pin cherry | Dead or Dying | 1 | (N/A) | 100.00 | 0.06 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Pin oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 7 | (N/A) | 41.18 | 0.39 |
| | Fair | 6 | (N/A) | 35.29 | 0.33 |
| | Good | 3 | (N/A) | 17.65 | 0.17 |
| | Total | | 16 | (N/A) | 94.12 |
| Plum | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Red maple | Dead or Dying | 3 | (N/A) | 4.05 | 0.17 |
| | Poor | 14 | (N/A) | 18.92 | 0.77 |
| | Fair | 17 | (N/A) | 22.97 | 0.94 |
| | Good | 7 | (N/A) | 9.46 | 0.39 |
| | Total | | 41 | (N/A) | 55.41 |
| Red mulberry | Dead or Dying | 3 | (N/A) | 25.00 | 0.17 |
| | Poor | 7 | (N/A) | 58.33 | 0.39 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 16.67 | 0.11 |
| | Total | | 12 | (N/A) | 100.00 |
| River birch | Dead or Dying | 2 | (N/A) | 20.00 | 0.11 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 30.00 | 0.17 |
| | Good | 5 | (N/A) | 50.00 | 0.28 |
| | Total | | 10 | (N/A) | 100.00 |
| Roundleaf serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 0 | (N/A) | 0.00 |
| Sassafras | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 12.50 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 12.50 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------|---------------|------------|----------------|--------------|-------------------|
| Sassafras sp | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 0 | (N/A) | 0.00 |
| Scarlet oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 100.00 | 0.11 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Service berry | Dead or Dying | 2 | (N/A) | 40.00 | 0.11 |
| | Poor | 2 | (N/A) | 40.00 | 0.11 |
| | Fair | 1 | (N/A) | 20.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Shelbark hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Shortleaf pine | Dead or Dying | 1 | (N/A) | 0.83 | 0.06 |
| | Poor | 1 | (N/A) | 0.83 | 0.06 |
| | Fair | 7 | (N/A) | 5.83 | 0.39 |
| | Good | 1 | (N/A) | 0.83 | 0.06 |
| | Total | | 10 | (N/A) | 8.33 |
| Silver maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 10 | (N/A) | 62.50 | 0.55 |
| | Fair | 3 | (N/A) | 18.75 | 0.17 |
| | Good | 2 | (N/A) | 12.50 | 0.11 |
| | Total | | 15 | (N/A) | 93.75 |
| Southern catalpa | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 33.33 |
| Southern red oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 57.14 | 0.22 |
| | Fair | 2 | (N/A) | 28.57 | 0.11 |
| | Good | 1 | (N/A) | 14.29 | 0.06 |
| | Total | | 7 | (N/A) | 100.00 |
| Southern redcedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.11 |
| | Total | | 2 | (N/A) | 100.00 |
| Spruce | Dead or Dying | 2 | (N/A) | 66.67 | 0.11 |
| | Poor | 1 | (N/A) | 33.33 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| Sugar maple | Dead or Dying | 1 | (N/A) | 100.00 | 0.06 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |

Structural (Woody) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|------------------------|---------------|------------|----------------|---------------|-------------------|
| Swamp white oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.06 |
| Sweetgum | Dead or Dying | 1 | (N/A) | 0.48 | 0.06 |
| | Poor | 16 | (N/A) | 7.69 | 0.89 |
| | Fair | 17 | (N/A) | 8.17 | 0.94 |
| | Good | 4 | (N/A) | 1.92 | 0.22 |
| | Total | 38 | (N/A) | 18.27 | 2.10 |
| Sycamore | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 25.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 25.00 | 0.06 |
| Tree of heaven | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 6 | (N/A) | 2.36 | 0.33 |
| | Fair | 3 | (N/A) | 1.18 | 0.17 |
| | Good | 2 | (N/A) | 0.79 | 0.11 |
| | Total | 11 | (N/A) | 4.33 | 0.61 |
| Tulip tree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 6.67 | 0.06 |
| | Fair | 4 | (N/A) | 26.67 | 0.22 |
| | Good | 4 | (N/A) | 26.67 | 0.22 |
| | Total | 9 | (N/A) | 60.00 | 0.50 |
| Unknown | Dead or Dying | 6 | (N/A) | 60.00 | 0.33 |
| | Poor | 3 | (N/A) | 30.00 | 0.17 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 10.00 | 0.06 |
| | Total | 10 | (N/A) | 100.00 | 0.55 |
| White ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 8 | (N/A) | 88.89 | 0.44 |
| | Fair | 1 | (N/A) | 11.11 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 9 | (N/A) | 100.00 | 0.50 |
| White mulberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 10 | (N/A) | 20.83 | 0.55 |
| | Fair | 12 | (N/A) | 25.00 | 0.66 |
| | Good | 3 | (N/A) | 6.25 | 0.17 |
| | Total | 25 | (N/A) | 52.08 | 1.38 |
| White oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 6 | (N/A) | 9.38 | 0.33 |
| | Fair | 6 | (N/A) | 9.38 | 0.33 |
| | Good | 6 | (N/A) | 9.38 | 0.33 |
| | Total | 18 | (N/A) | 28.13 | 1.00 |
| Willow oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 7.46 | 0.28 |
| | Fair | 17 | (N/A) | 25.37 | 0.94 |
| | Good | 20 | (N/A) | 29.85 | 1.11 |
| | Total | 42 | (N/A) | 62.69 | 2.32 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-----------------------------|---------------|------------|----------------|---------------|-------------------|
| American basswood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.06 |
| | Good | 2 | (N/A) | 66.67 | 0.11 |
| | Total | 3 | (N/A) | 100.00 | 0.17 |
| American beech | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 66.67 | 0.11 |
| | Total | 2 | (N/A) | 66.67 | 0.11 |
| American elm | Dead or Dying | 5 | (N/A) | 10.20 | 0.28 |
| | Poor | 4 | (N/A) | 8.16 | 0.22 |
| | Fair | 7 | (N/A) | 14.29 | 0.39 |
| | Good | 1 | (N/A) | 2.04 | 0.06 |
| | Total | 17 | (N/A) | 34.69 | 0.94 |
| American holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 5 | (N/A) | 38.46 | 0.28 |
| | Good | 4 | (N/A) | 30.77 | 0.22 |
| | Total | 9 | (N/A) | 69.23 | 0.50 |
| Apple | Dead or Dying | 6 | (N/A) | 13.95 | 0.33 |
| | Poor | 16 | (N/A) | 37.21 | 0.89 |
| | Fair | 13 | (N/A) | 30.23 | 0.72 |
| | Good | 8 | (N/A) | 18.60 | 0.44 |
| | Total | 43 | (N/A) | 100.00 | 2.38 |
| Ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.06 |
| Atlantic white cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.06 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.11 |
| Beech | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 0 | (N/A) | 0.00 | 0.00 |
| Black cherry | Dead or Dying | 4 | (N/A) | 4.88 | 0.22 |
| | Poor | 11 | (N/A) | 13.41 | 0.61 |
| | Fair | 14 | (N/A) | 17.07 | 0.77 |
| | Good | 6 | (N/A) | 7.32 | 0.33 |
| | Total | 35 | (N/A) | 42.68 | 1.94 |
| Black locust | Dead or Dying | 10 | (N/A) | 10.99 | 0.55 |
| | Poor | 1 | (N/A) | 1.10 | 0.06 |
| | Fair | 7 | (N/A) | 7.69 | 0.39 |
| | Good | 1 | (N/A) | 1.10 | 0.06 |
| | Total | 19 | (N/A) | 20.88 | 1.05 |
| Black tupelo | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 21.43 | 0.17 |
| | Fair | 3 | (N/A) | 21.43 | 0.17 |
| | Good | 6 | (N/A) | 42.86 | 0.33 |
| | Total | 12 | (N/A) | 85.71 | 0.66 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|------------------------------|---------------|------------|----------------|--------------|-------------------|
| Black walnut | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 2 | (N/A) | 40.00 | 0.11 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 40.00 |
| Blackjack oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 10.00 | 0.06 |
| | Fair | 1 | (N/A) | 10.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 20.00 |
| Boxelder | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 42.86 | 0.17 |
| | Fair | 2 | (N/A) | 28.57 | 0.11 |
| | Good | 1 | (N/A) | 14.29 | 0.06 |
| | Total | | 6 | (N/A) | 85.71 |
| Callery pear | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 6.25 | 0.06 |
| | Fair | 7 | (N/A) | 43.75 | 0.39 |
| | Good | 2 | (N/A) | 12.50 | 0.11 |
| | Total | | 10 | (N/A) | 62.50 |
| Carolina laurelcherry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 4 | (N/A) | 100.00 | 0.22 |
| | Total | | 4 | (N/A) | 100.00 |
| Chestnut oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 1.35 | 0.06 |
| | Fair | 6 | (N/A) | 8.11 | 0.33 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 7 | (N/A) | 9.46 |
| Chinese elm | Dead or Dying | 1 | (N/A) | 100.00 | 0.06 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Common crapemyrtle | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 7.14 | 0.28 |
| | Fair | 7 | (N/A) | 10.00 | 0.39 |
| | Good | 55 | (N/A) | 78.57 | 3.04 |
| | Total | | 67 | (N/A) | 95.71 |
| Crabapple | Dead or Dying | 1 | (N/A) | 10.00 | 0.06 |
| | Poor | 4 | (N/A) | 40.00 | 0.22 |
| | Fair | 5 | (N/A) | 50.00 | 0.28 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 10 | (N/A) | 100.00 |
| Cucumber tree | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.06 |
| | Total | | 1 | (N/A) | 100.00 |
| Dwarf Serviceberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 20.00 | 0.06 |
| | Fair | 1 | (N/A) | 20.00 | 0.06 |
| | Good | 3 | (N/A) | 60.00 | 0.17 |
| | Total | | 5 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|---------------------------|---------------|------------|----------------|---------------|-------------------|
| Eastern hemlock | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.06 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 2 | (N/A) | 100.00 | 0.11 |
| Eastern red cedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 12.00 | 0.17 |
| | Fair | 4 | (N/A) | 16.00 | 0.22 |
| | Good | 1 | (N/A) | 4.00 | 0.06 |
| | Total | 8 | (N/A) | 32.00 | 0.44 |
| Eastern redbud | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 10.00 | 0.06 |
| | Fair | 2 | (N/A) | 20.00 | 0.11 |
| | Good | 2 | (N/A) | 20.00 | 0.11 |
| | Total | 5 | (N/A) | 50.00 | 0.28 |
| Eastern white pine | Dead or Dying | 2 | (N/A) | 12.50 | 0.11 |
| | Poor | 2 | (N/A) | 12.50 | 0.11 |
| | Fair | 3 | (N/A) | 18.75 | 0.17 |
| | Good | 5 | (N/A) | 31.25 | 0.28 |
| | Total | 12 | (N/A) | 75.00 | 0.66 |
| Elm species | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 0 | (N/A) | 0.00 | 0.00 |
| English holly | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 3 | (N/A) | 42.86 | 0.17 |
| | Good | 4 | (N/A) | 57.14 | 0.22 |
| | Total | 7 | (N/A) | 100.00 | 0.39 |
| Fig | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.06 |
| | Good | 2 | (N/A) | 66.67 | 0.11 |
| | Total | 3 | (N/A) | 100.00 | 0.17 |
| Flowering dogwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 33.33 | 0.17 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 11.11 | 0.06 |
| | Total | 4 | (N/A) | 44.44 | 0.22 |
| Gray birch | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 0 | (N/A) | 0.00 | 0.00 |
| Green ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 2 | (N/A) | 1.65 | 0.11 |
| | Fair | 9 | (N/A) | 7.44 | 0.50 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 11 | (N/A) | 9.09 | 0.61 |
| Japanese maple | Dead or Dying | 1 | (N/A) | 25.00 | 0.06 |
| | Poor | 2 | (N/A) | 50.00 | 0.11 |
| | Fair | 1 | (N/A) | 25.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 4 | (N/A) | 100.00 | 0.22 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------------|---------------|------------|----------------|--------------|-------------------|
| Japanese zelkova | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 8 | (N/A) | 66.67 | 0.44 |
| | Good | 4 | (N/A) | 33.33 | 0.22 |
| | Total | | 12 | (N/A) | 100.00 |
| Juniper | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Kousa dogwood | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 7 | (N/A) | 87.50 | 0.39 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 12.50 | 0.06 |
| | Total | | 8 | (N/A) | 100.00 |
| Leyland cypress | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 23 | (N/A) | 95.83 | 1.27 |
| | Good | 1 | (N/A) | 4.17 | 0.06 |
| | Total | | 24 | (N/A) | 100.00 |
| Littleleaf linden | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.11 |
| | Total | | 2 | (N/A) | 100.00 |
| Magnolia | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 1 | (N/A) | 50.00 | 0.06 |
| | Total | | 2 | (N/A) | 100.00 |
| Mimosa | Dead or Dying | 1 | (N/A) | 6.25 | 0.06 |
| | Poor | 3 | (N/A) | 18.75 | 0.17 |
| | Fair | 3 | (N/A) | 18.75 | 0.17 |
| | Good | 3 | (N/A) | 18.75 | 0.17 |
| | Total | | 10 | (N/A) | 62.50 |
| Northern red oak | Dead or Dying | 2 | (N/A) | 5.26 | 0.11 |
| | Poor | 9 | (N/A) | 23.68 | 0.50 |
| | Fair | 4 | (N/A) | 10.53 | 0.22 |
| | Good | 3 | (N/A) | 7.89 | 0.17 |
| | Total | | 18 | (N/A) | 47.37 |
| Norway maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 6.67 | 0.06 |
| | Fair | 1 | (N/A) | 6.67 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 13.33 |
| Norway spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 1 | (N/A) | 100.00 | 0.06 |
| | Total | | 1 | (N/A) | 100.00 |
| Noway x Chinese spruce | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 1 | (N/A) | 50.00 | 0.06 |
| | Total | | 2 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|-------------------------------|---------------|------------|----------------|--------------|-------------------|
| Oak | Dead or Dying | 0 (N/A) | | 0.00 | 0.00 |
| | Poor | 0 (N/A) | | 0.00 | 0.00 |
| | Fair | 2 (N/A) | | 100.00 | 0.11 |
| | Good | 0 (N/A) | | 0.00 | 0.00 |
| | Total | | 2 (N/A) | | 100.00 |
| Pecan | Dead or Dying | 2 (N/A) | | 40.00 | 0.11 |
| | Poor | 1 (N/A) | | 20.00 | 0.06 |
| | Fair | 2 (N/A) | | 40.00 | 0.11 |
| | Good | 0 (N/A) | | 0.00 | 0.00 |
| | Total | | 5 (N/A) | | 100.00 |
| Pignut hickory | Dead or Dying | 0 (N/A) | | 0.00 | 0.00 |
| | Poor | 0 (N/A) | | 0.00 | 0.00 |
| | Fair | 1 (N/A) | | 100.00 | 0.06 |
| | Good | 0 (N/A) | | 0.00 | 0.00 |
| | Total | | 1 (N/A) | | 100.00 |
| Pin cherry | Dead or Dying | 1 (N/A) | | 100.00 | 0.06 |
| | Poor | 0 (N/A) | | 0.00 | 0.00 |
| | Fair | 0 (N/A) | | 0.00 | 0.00 |
| | Good | 0 (N/A) | | 0.00 | 0.00 |
| | Total | | 1 (N/A) | | 100.00 |
| Pin oak | Dead or Dying | 0 (N/A) | | 0.00 | 0.00 |
| | Poor | 5 (N/A) | | 29.41 | 0.28 |
| | Fair | 8 (N/A) | | 47.06 | 0.44 |
| | Good | 3 (N/A) | | 17.65 | 0.17 |
| | Total | | 16 (N/A) | | 94.12 |
| Plum | Dead or Dying | 0 (N/A) | | 0.00 | 0.00 |
| | Poor | 0 (N/A) | | 0.00 | 0.00 |
| | Fair | 1 (N/A) | | 100.00 | 0.06 |
| | Good | 0 (N/A) | | 0.00 | 0.00 |
| | Total | | 1 (N/A) | | 100.00 |
| Red maple | Dead or Dying | 5 (N/A) | | 6.76 | 0.28 |
| | Poor | 8 (N/A) | | 10.81 | 0.44 |
| | Fair | 20 (N/A) | | 27.03 | 1.11 |
| | Good | 8 (N/A) | | 10.81 | 0.44 |
| | Total | | 41 (N/A) | | 55.41 |
| Red mulberry | Dead or Dying | 5 (N/A) | | 41.67 | 0.28 |
| | Poor | 4 (N/A) | | 33.33 | 0.22 |
| | Fair | 1 (N/A) | | 8.33 | 0.06 |
| | Good | 2 (N/A) | | 16.67 | 0.11 |
| | Total | | 12 (N/A) | | 100.00 |
| River birch | Dead or Dying | 2 (N/A) | | 20.00 | 0.11 |
| | Poor | 0 (N/A) | | 0.00 | 0.00 |
| | Fair | 3 (N/A) | | 30.00 | 0.17 |
| | Good | 5 (N/A) | | 50.00 | 0.28 |
| | Total | | 10 (N/A) | | 100.00 |
| Roundleaf serviceberry | Dead or Dying | 0 (N/A) | | 0.00 | 0.00 |
| | Poor | 0 (N/A) | | 0.00 | 0.00 |
| | Fair | 0 (N/A) | | 0.00 | 0.00 |
| | Good | 0 (N/A) | | 0.00 | 0.00 |
| | Total | | 0 (N/A) | | 0.00 |
| Sassafras | Dead or Dying | 0 (N/A) | | 0.00 | 0.00 |
| | Poor | 1 (N/A) | | 12.50 | 0.06 |
| | Fair | 0 (N/A) | | 0.00 | 0.00 |
| | Good | 0 (N/A) | | 0.00 | 0.00 |
| | Total | | 1 (N/A) | | 12.50 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|--------------------------|---------------|------------|----------------|--------------|-------------------|
| Sassafras sp | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 0 | (N/A) | 0.00 |
| Scarlet oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 50.00 | 0.06 |
| | Fair | 1 | (N/A) | 50.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 2 | (N/A) | 100.00 |
| Service berry | Dead or Dying | 2 | (N/A) | 40.00 | 0.11 |
| | Poor | 2 | (N/A) | 40.00 | 0.11 |
| | Fair | 1 | (N/A) | 20.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 5 | (N/A) | 100.00 |
| Shelbark hickory | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |
| Shortleaf pine | Dead or Dying | 1 | (N/A) | 0.83 | 0.06 |
| | Poor | 1 | (N/A) | 0.83 | 0.06 |
| | Fair | 7 | (N/A) | 5.83 | 0.39 |
| | Good | 1 | (N/A) | 0.83 | 0.06 |
| | Total | | 10 | (N/A) | 8.33 |
| Silver maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 5 | (N/A) | 31.25 | 0.28 |
| | Fair | 9 | (N/A) | 56.25 | 0.50 |
| | Good | 1 | (N/A) | 6.25 | 0.06 |
| | Total | | 15 | (N/A) | 93.75 |
| Southern catalpa | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 33.33 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 33.33 |
| Southern red oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 57.14 | 0.22 |
| | Fair | 3 | (N/A) | 42.86 | 0.17 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 7 | (N/A) | 100.00 |
| Southern redcedar | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 2 | (N/A) | 100.00 | 0.11 |
| | Total | | 2 | (N/A) | 100.00 |
| Spruce | Dead or Dying | 1 | (N/A) | 33.33 | 0.06 |
| | Poor | 1 | (N/A) | 33.33 | 0.06 |
| | Fair | 1 | (N/A) | 33.33 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 3 | (N/A) | 100.00 |
| Sugar maple | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 100.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | | 1 | (N/A) | 100.00 |

Functional (Foliage) Condition of Public Trees by Species

9/22/2010

| Species | Condition | Tree Count | Standard Error | % of Species | % of Public Trees |
|------------------------|---------------|------------|----------------|---------------|-------------------|
| Swamp white oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 100.00 | 0.06 |
| | Fair | 0 | (N/A) | 0.00 | 0.00 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 100.00 | 0.06 |
| Sweetgum | Dead or Dying | 2 | (N/A) | 0.96 | 0.11 |
| | Poor | 9 | (N/A) | 4.33 | 0.50 |
| | Fair | 22 | (N/A) | 10.58 | 1.22 |
| | Good | 5 | (N/A) | 2.40 | 0.28 |
| | Total | 38 | (N/A) | 18.27 | 2.10 |
| Sycamore | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 0 | (N/A) | 0.00 | 0.00 |
| | Fair | 1 | (N/A) | 25.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 1 | (N/A) | 25.00 | 0.06 |
| Tree of heaven | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 4 | (N/A) | 1.57 | 0.22 |
| | Fair | 5 | (N/A) | 1.97 | 0.28 |
| | Good | 2 | (N/A) | 0.79 | 0.11 |
| | Total | 11 | (N/A) | 4.33 | 0.61 |
| Tulip tree | Dead or Dying | 1 | (N/A) | 6.67 | 0.06 |
| | Poor | 1 | (N/A) | 6.67 | 0.06 |
| | Fair | 2 | (N/A) | 13.33 | 0.11 |
| | Good | 5 | (N/A) | 33.33 | 0.28 |
| | Total | 9 | (N/A) | 60.00 | 0.50 |
| Unknown | Dead or Dying | 7 | (N/A) | 70.00 | 0.39 |
| | Poor | 2 | (N/A) | 20.00 | 0.11 |
| | Fair | 1 | (N/A) | 10.00 | 0.06 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 10 | (N/A) | 100.00 | 0.55 |
| White ash | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 7 | (N/A) | 77.78 | 0.39 |
| | Fair | 2 | (N/A) | 22.22 | 0.11 |
| | Good | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 9 | (N/A) | 100.00 | 0.50 |
| White mulberry | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 8 | (N/A) | 16.67 | 0.44 |
| | Fair | 11 | (N/A) | 22.92 | 0.61 |
| | Good | 6 | (N/A) | 12.50 | 0.33 |
| | Total | 25 | (N/A) | 52.08 | 1.38 |
| White oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 1 | (N/A) | 1.56 | 0.06 |
| | Fair | 10 | (N/A) | 15.63 | 0.55 |
| | Good | 7 | (N/A) | 10.94 | 0.39 |
| | Total | 18 | (N/A) | 28.13 | 1.00 |
| Willow oak | Dead or Dying | 0 | (N/A) | 0.00 | 0.00 |
| | Poor | 3 | (N/A) | 4.48 | 0.17 |
| | Fair | 18 | (N/A) | 26.87 | 1.00 |
| | Good | 21 | (N/A) | 31.34 | 1.16 |
| | Total | 42 | (N/A) | 62.69 | 2.32 |

Forest Heights

Relative Performance Index for Public Trees

9/22/2010

| Species | Dead or Dying | Poor | Fair | Good | RPI | # of Standard Trees Error | % of Public |
|------------------------|---------------|-------|-------|--------|------|---------------------------|-------------|
| Common crapemyrtle | 0.00 | 7.46 | 11.19 | 81.34 | 1.39 | 67 (N/A) | 3.71 |
| Apple | 13.95 | 38.37 | 26.74 | 20.93 | 0.86 | 43 (N/A) | 2.38 |
| Willow oak | 0.00 | 9.52 | 41.67 | 48.81 | 1.24 | 42 (N/A) | 2.32 |
| Red maple | 9.76 | 26.83 | 45.12 | 18.29 | 0.94 | 41 (N/A) | 2.27 |
| Sweetgum | 3.95 | 32.89 | 51.32 | 11.84 | 0.94 | 38 (N/A) | 2.10 |
| Black cherry | 12.86 | 32.86 | 32.86 | 21.43 | 0.90 | 35 (N/A) | 1.94 |
| White mulberry | 0.00 | 36.00 | 46.00 | 18.00 | 0.99 | 25 (N/A) | 1.38 |
| Leyland cypress | 2.08 | 2.08 | 91.67 | 4.17 | 1.06 | 24 (N/A) | 1.33 |
| Black locust | 52.63 | 10.53 | 34.21 | 2.63 | 0.56 | 19 (N/A) | 1.05 |
| White oak | 0.00 | 19.44 | 44.44 | 36.11 | 1.14 | 18 (N/A) | 1.00 |
| Northern red oak | 11.11 | 55.56 | 19.44 | 13.89 | 0.78 | 18 (N/A) | 1.00 |
| American elm | 32.35 | 29.41 | 32.35 | 5.88 | 0.67 | 17 (N/A) | 0.94 |
| Pin oak | 0.00 | 37.50 | 43.75 | 18.75 | 0.98 | 16 (N/A) | 0.89 |
| Silver maple | 0.00 | 50.00 | 40.00 | 10.00 | 0.89 | 15 (N/A) | 0.83 |
| Red mulberry | 33.33 | 45.83 | 4.17 | 16.67 | 0.64 | 12 (N/A) | 0.66 |
| Black tupelo | 0.00 | 20.83 | 29.17 | 50.00 | 1.20 | 12 (N/A) | 0.66 |
| Eastern white pine | 16.67 | 12.50 | 29.17 | 41.67 | 1.05 | 12 (N/A) | 0.66 |
| Japanese zelkova | 0.00 | 0.00 | 37.50 | 62.50 | 1.34 | 12 (N/A) | 0.66 |
| Tree of heaven | 0.00 | 45.45 | 36.36 | 18.18 | 0.94 | 11 (N/A) | 0.61 |
| Green ash | 0.00 | 13.64 | 86.36 | 0.00 | 1.01 | 11 (N/A) | 0.61 |
| Unknown | 65.00 | 25.00 | 5.00 | 5.00 | 0.40 | 10 (N/A) | 0.55 |
| Mimosa | 10.00 | 30.00 | 40.00 | 20.00 | 0.93 | 10 (N/A) | 0.55 |
| River birch | 20.00 | 0.00 | 30.00 | 50.00 | 1.11 | 10 (N/A) | 0.55 |
| Crabapple | 10.00 | 45.00 | 40.00 | 5.00 | 0.80 | 10 (N/A) | 0.55 |
| Shortleaf pine | 10.00 | 10.00 | 70.00 | 10.00 | 0.98 | 10 (N/A) | 0.55 |
| Callery pear | 0.00 | 25.00 | 55.00 | 20.00 | 1.04 | 10 (N/A) | 0.55 |
| White ash | 0.00 | 83.33 | 16.67 | 0.00 | 0.70 | 9 (N/A) | 0.50 |
| American holly | 0.00 | 5.56 | 66.67 | 27.78 | 1.16 | 9 (N/A) | 0.50 |
| Tulip tree | 5.56 | 11.11 | 33.33 | 50.00 | 1.19 | 9 (N/A) | 0.50 |
| Kousa dogwood | 0.00 | 75.00 | 6.25 | 18.75 | 0.82 | 8 (N/A) | 0.44 |
| Eastern red cedar | 0.00 | 37.50 | 50.00 | 12.50 | 0.95 | 8 (N/A) | 0.44 |
| English holly | 0.00 | 0.00 | 42.86 | 57.14 | 1.32 | 7 (N/A) | 0.39 |
| Southern red oak | 0.00 | 57.14 | 35.71 | 7.14 | 0.84 | 7 (N/A) | 0.39 |
| Chestnut oak | 0.00 | 14.29 | 78.57 | 7.14 | 1.03 | 7 (N/A) | 0.39 |
| Boxelder | 0.00 | 58.33 | 16.67 | 25.00 | 0.92 | 6 (N/A) | 0.33 |
| Service berry | 40.00 | 40.00 | 20.00 | 0.00 | 0.53 | 5 (N/A) | 0.28 |
| Dwarf Serviceberry | 0.00 | 10.00 | 10.00 | 80.00 | 1.38 | 5 (N/A) | 0.28 |
| Pecan | 40.00 | 20.00 | 40.00 | 0.00 | 0.62 | 5 (N/A) | 0.28 |
| Eastern redbud | 0.00 | 20.00 | 40.00 | 40.00 | 1.15 | 5 (N/A) | 0.28 |
| Japanese maple | 25.00 | 50.00 | 25.00 | 0.00 | 0.62 | 4 (N/A) | 0.22 |
| Flowering dogwood | 12.50 | 50.00 | 0.00 | 37.50 | 0.90 | 4 (N/A) | 0.22 |
| Carolina laurelcherry | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 4 (N/A) | 0.22 |
| Fig | 0.00 | 0.00 | 33.33 | 66.67 | 1.36 | 3 (N/A) | 0.17 |
| Spruce | 50.00 | 33.33 | 16.67 | 0.00 | 0.47 | 3 (N/A) | 0.17 |
| American basswood | 0.00 | 0.00 | 16.67 | 83.33 | 1.44 | 3 (N/A) | 0.17 |
| Norway maple | 0.00 | 50.00 | 50.00 | 0.00 | 0.84 | 2 (N/A) | 0.11 |
| Atlantic white cedar | 0.00 | 50.00 | 50.00 | 0.00 | 0.84 | 2 (N/A) | 0.11 |
| American beech | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 2 (N/A) | 0.11 |
| Black walnut | 0.00 | 25.00 | 75.00 | 0.00 | 0.95 | 2 (N/A) | 0.11 |
| Southern redcedar | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 2 (N/A) | 0.11 |
| Magnolia | 0.00 | 0.00 | 50.00 | 50.00 | 1.29 | 2 (N/A) | 0.11 |
| Noway x Chinese spruce | 0.00 | 0.00 | 50.00 | 50.00 | 1.29 | 2 (N/A) | 0.11 |
| Oak | 0.00 | 50.00 | 50.00 | 0.00 | 0.84 | 2 (N/A) | 0.11 |
| Scarlet oak | 0.00 | 75.00 | 25.00 | 0.00 | 0.73 | 2 (N/A) | 0.11 |
| Blackjack oak | 0.00 | 50.00 | 50.00 | 0.00 | 0.84 | 2 (N/A) | 0.11 |
| Littleleaf linden | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 2 (N/A) | 0.11 |
| Eastern hemlock | 0.00 | 25.00 | 50.00 | 25.00 | 1.07 | 2 (N/A) | 0.11 |

Relative Performance Index for Public Trees

9/22/2010

| Species | Dead or Dying | Poor | Fair | Good | RPI | # of Standard Trees Error | % of Public |
|------------------------|---------------|--------|--------|--------|------|---------------------------|-------------|
| Sugar maple | 50.00 | 0.00 | 50.00 | 0.00 | 0.62 | 1 (N/A) | 0.06 |
| Southern catalpa | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.06 |
| Pignut hickory | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.06 |
| Shellbark hickory | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.06 |
| Ash | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.06 |
| Juniper | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.06 |
| Cucumber tree | 0.00 | 0.00 | 50.00 | 50.00 | 1.29 | 1 (N/A) | 0.06 |
| Norway spruce | 0.00 | 0.00 | 0.00 | 100.00 | 1.51 | 1 (N/A) | 0.06 |
| Sycamore | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.06 |
| Plum | 0.00 | 0.00 | 100.00 | 0.00 | 1.07 | 1 (N/A) | 0.06 |
| Pin cherry | 100.00 | 0.00 | 0.00 | 0.00 | 0.18 | 1 (N/A) | 0.06 |
| Swamp white oak | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.06 |
| Sassafras | 0.00 | 100.00 | 0.00 | 0.00 | 0.62 | 1 (N/A) | 0.06 |
| Chinese elm | 100.00 | 0.00 | 0.00 | 0.00 | 0.18 | 1 (N/A) | 0.06 |
| Roundleaf serviceberry | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 (N/A) | 0.00 |
| Gray birch | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 (N/A) | 0.00 |
| Beech | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 (N/A) | 0.00 |
| Sassafras sp | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 (N/A) | 0.00 |
| Elm species | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0 (N/A) | 0.00 |
| Citywide | 8.82 | 25.82 | 36.73 | 28.62 | 1.00 | 697 (N/A) | 38.57 |

Forest Heights

Summary of Available Planting Sites for Public Trees

9/22/2010

| Zone | No. of Unplanted Sites | No. of Planted Sites | Total No. of Sites | Stocking (%) | No. of Unplanted Sites | | | |
|----------------|---------------------------|-------------------------|-----------------------|-----------------|------------------------|--------|-------|-----------|
| | | | | | Small | Medium | Large | Undefined |
| 3 | 0 | 416 | 416 | 100 | 0 | 0 | 0 | 0 |
| 4 | 0 | 664 | 664 | 100 | 0 | 0 | 0 | 0 |
| Citywide total | 0 | 1,080 | 1,080 | 100 | 0 | 0 | 0 | 0 |

Land Use of Public Trees by Zone

9/22/2010

| Zone | Land Use | Tree Count | Standard Error | % of Zone | % of Public Trees |
|----------|--|--------------|----------------|---------------|-------------------|
| 3 | Single family residential | 360 | (N/A) | 44.44 | 19.92 |
| | Area of special watershed interest | 0 | (N/A) | 0.00 | 0.00 |
| | Small commercial | 12 | (N/A) | 1.48 | 0.66 |
| | Industrial/Large commercial | 0 | (N/A) | 0.00 | 0.00 |
| | Park | 16 | (N/A) | 1.98 | 0.89 |
| | Transportation area (median, side of hwy) | 60 | (N/A) | 7.41 | 3.32 |
| | Institutional (church, school, gov. buildi | 6 | (N/A) | 0.74 | 0.33 |
| | Overgrown area | 354 | (N/A) | 43.70 | 19.59 |
| | Vacant | 1 | (N/A) | 0.12 | 0.06 |
| | Utility | 0 | (N/A) | 0.00 | 0.00 |
| | Total | 809 | (N/A) | 99.88 | 44.77 |
| 4 | Single family residential | 177 | (N/A) | 17.75 | 9.80 |
| | Area of special watershed interest | 26 | (N/A) | 2.61 | 1.44 |
| | Small commercial | 7 | (N/A) | 0.70 | 0.39 |
| | Industrial/Large commercial | 6 | (N/A) | 0.60 | 0.33 |
| | Park | 0 | (N/A) | 0.00 | 0.00 |
| | Transportation area (median, side of hwy) | 22 | (N/A) | 2.21 | 1.22 |
| | Institutional (church, school, gov. buildi | 0 | (N/A) | 0.00 | 0.00 |
| | Overgrown area | 753 | (N/A) | 75.53 | 41.67 |
| | Vacant | 4 | (N/A) | 0.40 | 0.22 |
| | Utility | 2 | (N/A) | 0.20 | 0.11 |
| | Total | 997 | (N/A) | 100.00 | 55.17 |
| Citywide | Single family residential | 537 | (N/A) | 29.72 | 29.72 |
| | Area of special watershed interest | 26 | (N/A) | 1.44 | 1.44 |
| | Small commercial | 19 | (N/A) | 1.05 | 1.05 |
| | Industrial/Large commercial | 6 | (N/A) | 0.33 | 0.33 |
| | Park | 16 | (N/A) | 0.89 | 0.89 |
| | Transportation area (median, side of hwy) | 82 | (N/A) | 4.54 | 4.54 |
| | Institutional (church, school, gov. buildi | 6 | (N/A) | 0.33 | 0.33 |
| | Overgrown area | 1,107 | (N/A) | 61.26 | 61.26 |
| | Vacant | 5 | (N/A) | 0.28 | 0.28 |
| | Utility | 2 | (N/A) | 0.11 | 0.11 |
| | Total | 1,806 | (N/A) | 99.94 | 99.94 |

Site Type of Public Trees by Zone

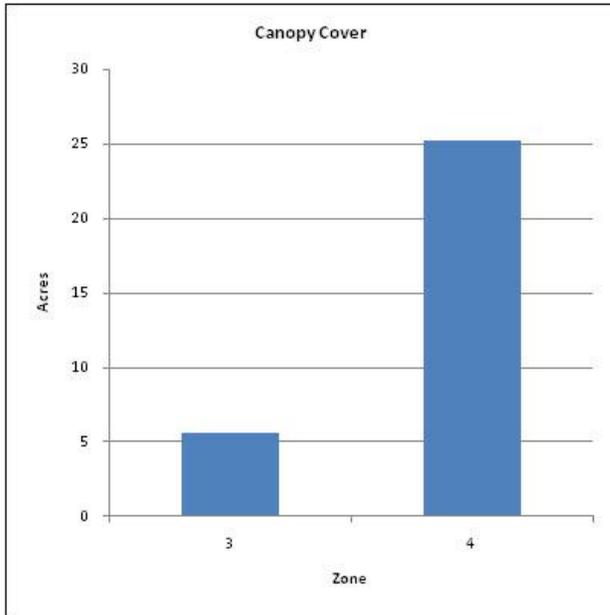
9/22/2010

| Zone | Site Type | Tree Count | Standard Error | % of Zone | % of Public Trees |
|----------|-------------------------------|------------|----------------|-----------|-------------------|
| 3 | Front yard | 326 | (N/A) | 40.25 | 18.04 |
| | Planting strip | 5 | (N/A) | 0.62 | 0.28 |
| | Cutout | 6 | (N/A) | 0.74 | 0.33 |
| | Median | 41 | (N/A) | 5.06 | 2.27 |
| | Other maintained locations | 35 | (N/A) | 4.32 | 1.94 |
| | Other un-maintained locations | 125 | (N/A) | 15.43 | 6.92 |
| | Backyard | 38 | (N/A) | 4.69 | 2.10 |
| | Total | | 576 | (N/A) | 71.11 |
| 4 | Front yard | 64 | (N/A) | 6.42 | 3.54 |
| | Planting strip | 92 | (N/A) | 9.23 | 5.09 |
| | Cutout | 0 | (N/A) | 0.00 | 0.00 |
| | Median | 0 | (N/A) | 0.00 | 0.00 |
| | Other maintained locations | 17 | (N/A) | 1.71 | 0.94 |
| | Other un-maintained locations | 43 | (N/A) | 4.31 | 2.38 |
| | Backyard | 28 | (N/A) | 2.81 | 1.55 |
| | Total | | 244 | (N/A) | 24.47 |
| Citywide | Front yard | 390 | (N/A) | 21.58 | 21.58 |
| | Planting strip | 97 | (N/A) | 5.37 | 5.37 |
| | Cutout | 6 | (N/A) | 0.33 | 0.33 |
| | Median | 41 | (N/A) | 2.27 | 2.27 |
| | Other maintained locations | 52 | (N/A) | 2.88 | 2.88 |
| | Other un-maintained locations | 168 | (N/A) | 9.30 | 9.30 |
| | Backyard | 66 | (N/A) | 3.65 | 3.65 |
| | Total | | 820 | (N/A) | 45.38 |

Forest Heights

Canopy Cover of Public Trees (Acres)

9/22/2010



| Zone | Acres | % of Total Canopy Cover |
|----------------|-------|-------------------------|
| 3 | 6 | 18.3 |
| 4 | 25 | 81.7 |
| Citywide total | 31 | 100.0 |

| | Total Land Area | Total Street and Sidewalk Area | Total Canopy Cover | Canopy Cover as % of Total Land Area | Canopy Cover as % of Total Streets and Sidewalks |
|----------------|-----------------|--------------------------------|--------------------|--------------------------------------|--|
| Citywide total | 402 | 36 | 31 | 7.69 | 85.63 |

Forest Heights

Replacement Value for Public Trees by Species

9/22/2010

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|---------------------|----------------|--------|--------|--------|--------|---------|---------|---------|-----------|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Tree of heaven | 18,389 | 20,266 | 22,626 | 11,429 | 85,196 | 17,230 | 84,851 | 35,326 | 150,589 | 445,902 (+0) | 4.83 |
| Sweetgum | 382 | 558 | 0 | 3,385 | 68,365 | 356,204 | 111,215 | 439,620 | 1,104,736 | 2,084,466 (+0) | 22.59 |
| Shortleaf pine | 0 | 0 | 0 | 17,749 | 27,360 | 359,259 | 250,656 | 419,233 | 298,322 | 1,372,579 (+0) | 14.87 |
| Green ash | 1,078 | 8,667 | 7,476 | 8,196 | 55,557 | 156,656 | 116,713 | 325,550 | 315,970 | 995,864 (+0) | 10.79 |
| Black locust | 2,921 | 3,882 | 0 | 0 | 37,107 | 33,940 | 167,370 | 17,533 | 40,810 | 303,563 (+0) | 3.29 |
| Chestnut oak | 949 | 1,901 | 0 | 46,754 | 91,171 | 150,394 | 46,309 | 278,450 | 121,651 | 737,579 (+0) | 7.99 |
| Red maple | 1,687 | 1,016 | 4,625 | 15,091 | 98,011 | 0 | 24,113 | 33,655 | 78,415 | 256,613 (+0) | 2.78 |
| Black cherry | 1,195 | 694 | 2,336 | 4,556 | 23,233 | 45,427 | 16,840 | 111,526 | 54,500 | 260,307 (+0) | 2.82 |
| Willow oak | 392 | 1,550 | 0 | 31,355 | 95,513 | 31,630 | 24,936 | 188,948 | 243,303 | 617,626 (+0) | 6.69 |
| American elm | 399 | 2,877 | 4,369 | 13,074 | 4,098 | 33,286 | 19,712 | 13,694 | 31,857 | 123,366 (+0) | 1.34 |
| White oak | 277 | 522 | 3,883 | 20,461 | 20,699 | 68,304 | 229,357 | 35,574 | 290,121 | 669,197 (+0) | 7.25 |
| White mulberry | 1,078 | 2,302 | 815 | 10,931 | 29,698 | 23,447 | 0 | 53,947 | 29,002 | 151,219 (+0) | 1.64 |
| Northern red oak | 1,289 | 369 | 0 | 24,849 | 34,200 | 22,454 | 0 | 0 | 0 | 83,161 (+0) | 0.90 |
| Eastern red cedar | 0 | 0 | 1,539 | 4,098 | 14,740 | 182,766 | 0 | 0 | 15,798 | 218,941 (+0) | 2.37 |
| Common crape myrtle | 490 | 5,278 | 2,313 | 0 | 0 | 14,323 | 0 | 0 | 0 | 22,404 (+0) | 0.24 |
| Norway maple | 105 | 517 | 2,857 | 31,169 | 20,260 | 33,421 | 0 | 29,834 | 0 | 118,164 (+0) | 1.28 |
| Mimosa | 287 | 841 | 5,804 | 0 | 0 | 0 | 0 | 0 | 0 | 6,932 (+0) | 0.08 |
| Red mulberry | 301 | 74 | 952 | 0 | 1,447 | 0 | 0 | 4,972 | 0 | 7,747 (+0) | 0.08 |
| Eastern white pine | 1,193 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22,643 | 23,837 (+0) | 0.26 |
| Tulip tree | 188 | 593 | 5,166 | 9,293 | 0 | 0 | 0 | 0 | 0 | 15,240 (+0) | 0.17 |
| Blackjack oak | 0 | 0 | 0 | 8,745 | 8,485 | 62,859 | 0 | 0 | 0 | 80,089 (+0) | 0.87 |
| Sassafras | 349 | 1,379 | 3,078 | 0 | 0 | 0 | 0 | 0 | 0 | 4,807 (+0) | 0.05 |
| River birch | 0 | 2,674 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,674 (+0) | 0.03 |
| Eastern redbud | 282 | 0 | 7,879 | 0 | 0 | 0 | 0 | 0 | 0 | 8,161 (+0) | 0.09 |
| Flowering dogwood | 105 | 2,252 | 1,905 | 0 | 0 | 0 | 0 | 0 | 0 | 4,262 (+0) | 0.05 |
| American holly | 211 | 1,033 | 0 | 0 | 0 | 28,646 | 0 | 36,049 | 0 | 65,940 (+0) | 0.71 |
| Callery pear | 0 | 0 | 1,448 | 0 | 0 | 24,282 | 18,081 | 68,427 | 0 | 112,238 (+0) | 1.22 |
| English holly | 384 | 443 | 0 | 0 | 12,301 | 0 | 0 | 0 | 34,758 | 47,886 (+0) | 0.52 |
| White ash | 140 | 230 | 1,044 | 0 | 0 | 0 | 9,726 | 0 | 0 | 11,140 (+0) | 0.12 |
| Apple | 215 | 0 | 0 | 8,489 | 0 | 13,521 | 0 | 0 | 0 | 22,225 (+0) | 0.24 |
| Kousa dogwood | 119 | 758 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 878 (+0) | 0.01 |
| Black walnut | 0 | 445 | 0 | 0 | 7,388 | 0 | 0 | 21,609 | 29,359 | 58,801 (+0) | 0.64 |
| Pin oak | 87 | 0 | 1,216 | 0 | 0 | 0 | 13,969 | 0 | 11,322 | 26,593 (+0) | 0.29 |
| Elm species | 0 | 0 | 5,714 | 5,195 | 0 | 0 | 0 | 0 | 0 | 10,909 (+0) | 0.12 |
| Unknown | 0 | 237 | 1,922 | 0 | 1,212 | 0 | 0 | 0 | 0 | 3,371 (+0) | 0.04 |
| Boxelder | 190 | 0 | 993 | 0 | 0 | 0 | 0 | 0 | 0 | 1,183 (+0) | 0.01 |

| Species | DBH Class (in) | | | | | | | | | Total Standard Error | % of Total |
|----------------|----------------|--------|---------|---------|---------|-----------|-----------|-----------|-----------|----------------------|------------|
| | 0-3 | 3-6 | 6-12 | 12-18 | 18-24 | 24-30 | 30-36 | 36-42 | >42 | | |
| Citywide total | 35,524 | 63,190 | 100,123 | 284,222 | 746,171 | 1,668,455 | 1,233,082 | 2,171,321 | 2,927,266 | 9,229,354 (+0) | 100.00 |

Appendix D: References and Additional Resources

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