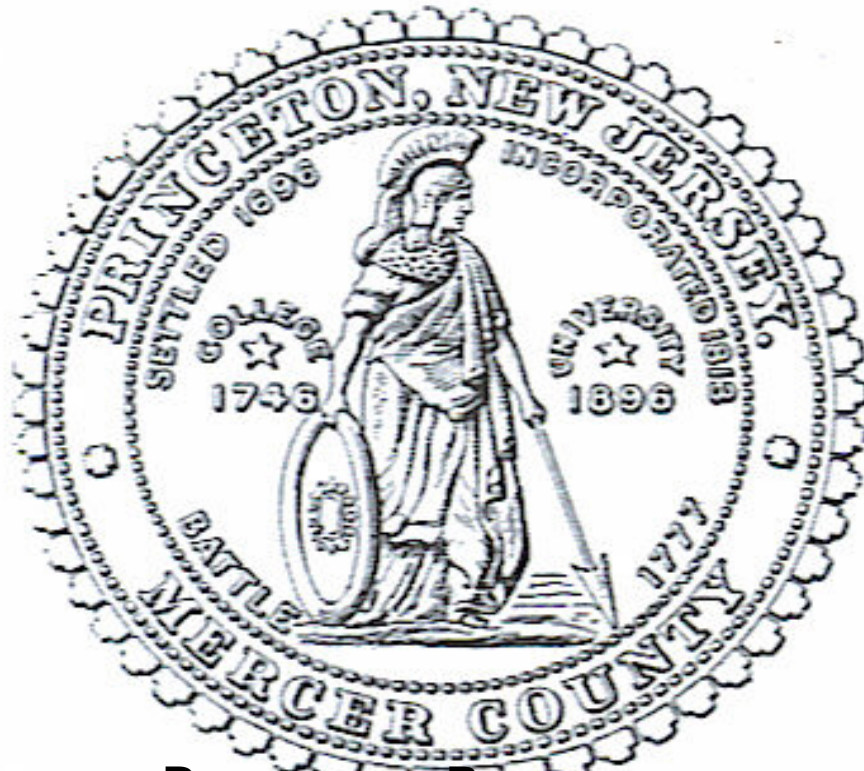


# COMMUNITY FORESTRY MANAGEMENT PLAN

2009 – 2013



**BOROUGH OF PRINCETON  
MONUMENT DRIVE  
P.O. Box 390  
PRINCETON, NEW JERSEY 08542**

*Prepared by*

**PRINCETON BOROUGH SHADE TREE COMMISSION**

and

Stephen M. Chisholm, Jr.  
NJ Certified Tree Expert #330

This Community Forestry Management Plan was prepared by the Princeton Borough Council Shade Tree Commission, with the assistance of Stephen M. Chisholm, Jr. NJ Certified Tree Expert #330. The members of the Commission contributed over 200 hours to the preparation of this document.

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November 7, 2008

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**I. MUNICIPAL INFORMATION**

***Municipal / County Information Form***

Municipality: Princeton Borough  
County: Mercer County  
Address: Borough Hall  
One Monument Drive, P.O. Box 390  
Princeton, NJ 08542  
Contact & Title: Sean Burns, Secretary  
Phone: 609-497-7630 Fax: 609-924-9714  
Organization Name: Princeton Borough Shade Tree Commission  
Mayor's Signature: \_\_\_\_\_  
Date of Management Plan: December 22, 2008  
Time Period Covered in Plan: 2009 – 2013  
Type of Government: Borough Mayor and Council  
Organization: Shade Tree Commission

Please check off the Community Stewardship Incentive Program (CSIP) practices identified in the Management Plan.

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> CSIP #1 Plan Preparation               | <input checked="" type="checkbox"/> CSIP #8 Tree Maintenance Mgmt.    |
| <input checked="" type="checkbox"/> CSIP #2 Training                       | <input checked="" type="checkbox"/> CSIP #9 Tree Recycling            |
| <input checked="" type="checkbox"/> CSIP #3 Public Education and Awareness | <input checked="" type="checkbox"/> CSIP #10 Ordinance Establishment  |
| <input checked="" type="checkbox"/> CSIP #4 Arbor Day Activities           | <input checked="" type="checkbox"/> CSIP #11 Tree-Care Disaster Plan  |
| <input checked="" type="checkbox"/> CSIP #5 Assessment/Inventory           | <input checked="" type="checkbox"/> CSIP #12 Insect and Disease Mgmt. |
| <input checked="" type="checkbox"/> CSIP #6 Tree Hazard Identification     | <input checked="" type="checkbox"/> CSIP #13 Other                    |
| <input checked="" type="checkbox"/> CSIP #7 Tree Planting                  |   |

***Official Use Only***

***Certification***

The above named community has made formal application to the New Jersey Forest Service. I am pleased to advise you that after our review, the NJ Forest Service has concluded that this plan meets the standards set forth by the State and the NJ Community Forestry Council and is approved for the period covered.

Signed

\_\_\_\_\_  
State Forester

\_\_\_\_\_  
Approved Date

## **II. INTRODUCTION**

This second five-year Community Forestry Management Plan for Princeton Borough (hereinafter, "Borough"), Mercer County, has been prepared, in accordance with the New Jersey Shade Tree and Community Forestry Act, P.L. 1996, Chapter 135, to guide the Borough in its efforts to protect, sustain, and manage a vigorous healthy tree resource. The emphasis of this plan is placed on the protection, enhancement, and safety of the community forest along streets, in parks and open spaces, and around municipal complexes and other properties.

Implementation of this plan will require increased participation of Shade Tree Commission (hereinafter, "STC") members, increased membership of the STC, fiscal commitment from the Borough, and the participation, awareness, and inclusion of Borough residents and civic organizations that have become involved in the shade tree management program (i.e. Princeton Parks Alliance, Princeton Friends of Open Space). Additional members may be added to the STC in order to better carry out the goals and objectives of this plan. The timing and availability of grants from the New Jersey Forest Service Community Forestry Program are essential to meeting some of the plan objectives.

Approval of this plan by the State Forester, upon favorable recommendation from the Community Forestry Council, will provide additional liability protection to the Borough under the New Jersey Shade Tree and Community Forestry Act, and will render the Borough eligible to receive grant money from the New Jersey Forest Service to assist in the implementation of this plan.

## **MISSION STATEMENT**

The mission of this plan is to improve an already active tree management program, and to promote a sustainable and productive community forest and shade tree resource that will improve the quality of life for Borough residents.

The goals and objectives outlined below were developed to build upon the goals and objectives included in the previous five-year plan and look ahead toward a long-range plan for the Borough's urban forest.

## **GOALS AND OBJECTIVES**

The Goals and Objectives of this plan are as follows:

### **GOAL 1: TREE INVENTORY / ASSESSMENT**

To continue to work with Borough residents and representatives to protect, care for, and enhance, the Borough's urban forest and shade trees, and ensure the safety of the general public as it relates to trees.

#### **OBJECTIVES:**

- 1A Evaluate and identify new tree inventory software with more efficient and user friendly features than contained in the current tree inventory software
- 1B Review existing tree inventory during data collection to ensure relevant data is captured
- 1C Train volunteers or hire a consultant to gather pertinent information necessary to produce a complete inventory of the Borough's tree resource
- 1D Prepare an annual report on diversity, age, condition, and vulnerability to disease and pest infestation of Borough trees
- 1E Produce an updated annual inventory of Borough trees to reflect tree removals and new plantings

### **GOAL 2: HAZARD TREE IDENTIFICATION**

To develop and implement initiatives to reduce risk resulting from hazardous, vulnerable, diseased or ailing Borough urban forest and shade trees.

#### **OBJECTIVES:**

- 2A Maintain and continuously update and improve a schedule of hazard tree identification and response
- 2B Identify and address hazardous trees and tree-related conditions (wires, damaged sidewalks and curbs, sidewalk obstruction) as they occur on Borough owned and maintained properties. The STC has developed guidelines for hazard tree assessment (Appendix A)

- 2C Develop a plan for the removal of hazardous and diseased trees (i.e., those affected by Bacterial Leaf Scorch) that are beyond the scope of the Borough's resources and submit this plan as part of a grant application to the State requesting funding for this work
- 2D Develop and follow a tree maintenance plan to improve tree vigor, aesthetics, and sustainability in order to reduce the risk of tree-related incidents
- 2E Develop tree maintenance zones with a view to establishing a ten-year maintenance cycle
- 2F Monitor and report on property loss expense related to Borough trees
- 2G Develop a working relationship with utility companies to oversee and care for Borough trees with limbs growing into utility wires

**GOAL 3: TREE PLANTING**

To develop guidelines for tree planting that will address issues of diversity and vulnerability to disease and insect infestation and that will increase success rate of tree plantings.

**OBJECTIVES:**

- 3A Introduce a diversity of trees and shrubbery that will provide for the long term coverage of public lands, parks, and recreation areas
- 3B Extract data from the Tree Inventory preparatory to developing a multi-year tree planting plan based on neighborhood needs, tree diversity goals, and budgetary constraints
- 3C Identify open spaces and recommend sites for new Borough tree plantings
- 3D Prepare an approved tree list, to be used by Borough Engineering and Public Works Department staff, the STC, and Borough residents, of recommended species based on appropriateness for particular sites (width of planting strip, overhead wires, variety of shape and height, cultural environment) – “the right tree in the right place”
- 3E Survey parking lots located in the Borough to determine if trees would be an appropriate addition, and inform lot owners of the benefits of trees
- 3F Expand upon tree plantings in public parks
- 3G Develop a cooperative program among Municipal, County and State entities to plant trees in Mercer County and State right-of-ways within the Borough

**GOAL 4: TREE MAINTENANCE AND CARE**

To develop guidelines for the maintenance and care of Borough trees, and provide Borough residents with information on proper tree care.

**OBJECTIVES:**

- 4A Identify maintenance deficiencies and propose corrective action for hazardous trees
- 4B Plant healthy trees into the existing landscape and with proper care help them establish as quickly as possible to ensure their longevity and to maximize their benefit to the community
- 4C Monitor the condition of the tree population through routine visual inspection
- 4D Identify and address vulnerable, diseased and ailing trees
- 4E Monitor the condition of the tree population during and post construction using the approved Tree & Construction Impacts handout as a guide (Appendix A)
- 4F Identify the current tree maintenance backlog and projected forward requirements
- 4G Propose a ten-year plan to address tree maintenance backlog and projected forward requirements
- 4H Seek out grants and other funding to supplement municipal funding of tree maintenance and care
- 4I Submit recommendations to Borough Council related to tree maintenance budgeting
- 4J Educate Borough residents regarding proper tree care on both public and private property
- 4K Review existing tree ordinances and, if necessary, recommend appropriate changes to Borough Council
- 4L Continue participating in a recycling program with Lawrence Township. Collect leaves, branches, and yard waste and deliver these materials to the Joseph H. Maher Ecological Center for processing. The resulting chips, mulch and compost are made available to the public at no charge and sold to commercial users to offset the costs of the facility.

**GOAL 5: EDUCATION AND TRAINING OF STC MEMBERS AND BOROUGH EMPLOYEES**

To maintain and increase expertise and effectiveness of STC members and Borough Employees as regards the care of trees.

**OBJECTIVES:**

- 5A Ensure that STC members have an effective understanding of the Tree Inventory Database system and operation

- 5B Expand training opportunities for STC members and Borough employees to include attendance at the annual Shade Tree Federation meeting; classes at Rutgers or other approved programs; in-house training in safety, tree ID, pruning; etc.
- 5C Meet or exceed State requirements for CORE training and continuing education credits (CEU)
- 5D Schedule attendance at a hazard tree identification course for STC members or Borough Public Works employees who have not yet received this training – one person per year until all those involved in the tree management program have been trained

**GOAL 6: PUBLIC EDUCATION / AWARENESS / OUTREACH**

To promote general tree awareness, appreciation and stewardship among Borough residents.

**OBJECTIVES:**

- 6A Continue to celebrate and publicize the Borough’s Arbor Day program
- 6B Publicize the Commemorative Tree Program with a view to increasing participation by writing one article on the program annually for local papers
- 6C Continue to meet Tree City USA Standards and strive for “Growth Awards”
- 6D Prepare a schedule for public relations efforts to provide Borough residents with information about STC projects and events by creating a tree newsletter, submitting press releases to local papers, and adding relevant sections to Borough web site
- 6E Provide timely information on tree care and tree disease and pests to Borough residents by submitting at least three tree-related articles to local papers each year, writing letters to the editor, and preparing information and posting it on the Borough web site
- 6F Provide an Annual Report of STC activities to Borough Council and the general public
- 6G Establish, maintain and/or extend liaisons, either through regular attendance at scheduled meetings through review of minutes, or by other means, with groups in and around the Borough such as

D & R Greenway Land Trust Master Gardeners of Mercer County Princeton Friends of Open Space Princeton Parks Alliance Princeton Theological Seminary Princeton University Rider University (Westminster)
---

6H Improve program administration by maintaining and extending liaisons, either through regular attendance at scheduled meetings, review of minutes, or by other means, with Borough Municipal bodies such as

Princeton Depts. of Engineering and Public Works Princeton Joint Environmental Commission Princeton Regional Planning Board Princeton Site Plan Review Advisory Board Princeton Transportation & Circulation Committee Princeton Township Shade Tree Commission Princeton Zoning Board
--

- 6I Continue to attend Communiversity (a local town/gown event) and provide handouts on timely tree-related topics and distribute seedlings in tubes
- 6J Contribute advice and review to Public Projects where tree are involved
- 6K Improve the Shade Tree web site and explore possibility of making web site interactive to allow Borough residents to locate and identify trees in the Borough by uploading the Tree Inventory onto web site for use as a public education tool
- 6L Develop, publish and post on the web site a list of Significant Borough Trees
- 6M Develop, publish and post on the web site walking tours of Borough trees
- 6N Publicize proper stewardship for both Borough and privately owned trees by writing one article annually for local papers and providing tree follow-up care information for the home owner of property adjacent to each newly planted tree
- 6O Make presentations to schools, local groups and local businesses and organizations on an annual or as needed basis

**GOAL 7: MONITOR AND EVALUATE THE OBJECTIVES STATED IN THE FIVE-YEAR PLAN**

To review the goals and objectives of the five-year plan in light of changing needs, circumstances, and budget of the Borough Council and STC.

**OBJECTIVES:**

- 7A Review this five-year plan with STC on an annual basis to evaluate progress
- 7B Review this five-year plan with Borough Council to determine role of other Borough entities in helping to attain these goals
- 7C Ensure the relevance and efficacy of stated goals and objectives
- 7D Assess the success of activities to determine continuation and track budgetary expenses and income to ensure sufficient funding for proposed activities

## **LIABILITY STATEMENT**

Although street trees are an asset to the community, it is inevitable that they will mature and require care, maintenance and eventually, replacement. Care and maintenance, in addition to planting “the right tree in the right place,” can help ensure that community trees not only contribute to the environmental and economic vitality of the area, but also reduce potential hazards to public safety. The Borough must work within a reasonable budget which may not be able to cover immediately each and every need of our community forest. Therefore, it is the intent of this plan to focus available resources to the greatest need and work step-by-step towards a healthy forest with commensurate reduced risks to public safety.

The Borough believes that by taking the logical steps outlined in this Community Forestry Management Plan, the Borough will garner public support for plan implementation and demonstrate the long-term benefits to the environment and public safety.

The Borough also wants to become more pro-active in the management and care of its trees. Through inventory and hazard tree assessment, we will position our STC to take corrective action prior to structural tree failure and other hazardous tree-related conditions. It is acknowledged that not all hazardous tree conditions can or will be predicted. Good maintenance and care will reduce the probability, but unexpected events may still occur.

Following this Management Plan will demonstrate that the Borough is devoting reasonable levels of resources in a planned manner to reduce the number of tree related incidents and thereby reducing its exposure to liabilities and increase public safety.

### III. COMMUNITY OVERVIEW

#### HISTORIC PRINCETON BOROUGH AND ITS TREES

Princeton Borough is one of the oldest and most historic municipalities in the State, home to Princeton University. Known for its tree-lined streets and canopied parks, the Borough is an extremely desirable place to live and to visit.

With a rich history going back to before the Revolutionary War, the Borough is proud of its heritage and strives to maintain a Community Forest resource. The Borough is 1.76 square miles in size, with 26 miles of roadways, and approximately 3,000 street trees.

According to the most recent Shade Tree Inventory, dated January 22, 2001, the majority of Borough shade trees are of “very good” to “good” vigor. Although the Borough contains fifty-three American Elms (*Ulmus americana*) susceptible to Dutch Elm Disease (DED), these trees are very well maintained and represent a very small fraction of the trees that require action. The Borough also includes several varieties of oaks, which are highly susceptible to Bacterial Leaf Scorch. These trees represent another significant maintenance issue for the Borough.

The 2001 inventory revealed approximately 3,000 street trees in the Borough, consisting of approximately 156 different species. The most common trees are:

Sugar Maple ( <i>Acer saccharum</i> ) – 12%
Norway Maple ( <i>Acer platanoides</i> ) – 8%
Red Maple ( <i>Acer rubrum</i> ) – 6%
London Plane ( <i>Platanus acerifolia</i> ) – 5%
Callery Pear ( <i>Pyrus calleryana</i> ) – 1%
Red Oak ( <i>Quercus rubra</i> ) – 4%
Sweet Gum ( <i>Liquidambar styraciflua</i> ) 3%
Pin Oak ( <i>Quercus palustris</i> ) – 2%
Linden ( <i>Tilia</i> spp.) – 1%
Zelkova ( <i>Zelkova serrata</i> ) – 1%

Some of the least common trees are:

White Cedar ( <i>Chamaecyparis thyoides</i> )
Black Spruce ( <i>Picea mariana</i> )
Larch ( <i>Larix decidua</i> )
Red Spruce ( <i>Picea rubens</i> )
Bald Cypress ( <i>Taxodium distichum</i> )
Yellow Wood ( <i>Cladrastis lutea</i> )
Black Ash ( <i>Fraxinus</i> spp.)
Red Ash ( <i>Fraxinus</i> spp.)
American Chestnut ( <i>Castanea</i> spp.)
Common Lime ( <i>Tilia x europa</i> )

A sample page from the 2001 inventory is included as Appendix B. This inventory is a work-in-progress. One of the goals of the STC is to update the inventory.

## **PRINCETON COMMUNITY MASTER PLAN**

Princeton Borough has a current Princeton Community Master Plan (with Amendments through September 14, 2006) which was prepared by the Regional Planning Board of Princeton, and a Natural Resource Inventory which is being revised.

Throughout the Master Plan and Natural Resource Inventory, numerous references are made to retaining and improving the natural attributes of the Borough. Several policy statements reflect on preserving the open character of the landscape, protecting Borough residents from negative environmental impacts, and conservation of natural systems, environmental resources, rural appearance, and natural amenities.

Among the new goals and policies in the Master Plan emphasis is given to protecting the mature landscape and historic streetscape elements within Princeton. The Princeton Community Master Plan recognizes the importance of Princeton's trees to the community. "The aesthetic quality of the natural landscape surrounding Princeton, and of the landscape of street trees and neighborhood plantings should be preserved, enhanced and made an integral part of all plans and designs for improvements and changes in land use."

The Master Plan also outlines the geographical position of the Borough in Mercer County. There is little reference, however, for the need to manage or care for municipal trees. Therefore, this five-year Community Forestry Management Plan can be viewed as a complement to the Master Plan. The care and maintenance of these trees is a high priority of the STC. The STC will be available to provide advice on proper tree selection, care and maintenance.

Driving through the Borough and focusing on the trees, the following observation was made: many streets are lined with significant numbers of older trees, some of which would benefit from immediate maintenance. It is evident that the Borough has been unable to keep up with the maintenance of its numerous, aging trees. When the tree inventory is updated in Year One, a precise accounting of Borough trees and their condition will be made so that a ten-year plan for maintenance can be budgeted and put into place.

Progress has been made by the STC to address the goals and objectives listed in the first five-year Forestry Plan 2001 – 2006. This updated plan for the next five-year period intends to continue the efforts of the STC through an aggressive tree maintenance program.

## FIVE YEARS OF PROGRESS

The implementation of the 2001-2006 Community Forestry Management Plan has been a challenging and rewarding experience for the Borough. Notably, the composition of the STC membership and leadership has changed significantly. This change was handled efficiently and resulted in renewed enthusiasm and momentum. These changes required the formation of new working relationships and training for the new members. Not each and every objective of the original plan was achieved, but significant accomplishments were made. Annual accomplishment reports detailing the Borough's progress were filed. All goals and many objectives in the first plan are ongoing.

Highlighted achievements during the last plan period include:

- Effective and efficient administration and meeting of the STC.
- Employed paid secretary to the STC.
- Maintained CORE status and met CEU requirements throughout the plan period.
- Conducted annual Arbor Day programs, including planting a tree in front of Albert Einstein's house.
- Planted ~200 new shade trees from 2003 - 2008.
- Completed Phase I inventory and assessment of Borough trees.
- Met qualifications for Tree City, USA designation.
- Each year, distributed tree seedlings at Communiversity.
- Since 2007, the STC planted two trees in memory of two noted tree experts from the community: John Kuser and William Flemer, III.

In 2004

- The STC, in cooperation with the Princeton Township Shade Tree Commission, presented a free, public talk on tree diversity given by John Kuser.
- Two members of the STC (Barbara Trelstad and Jean Mahoney) organized, for the Princeton Adult School, a four tour / lecture series, The Trees Among Us.

In 2006

- The STC updated and revised the local tree removal ordinance in an effort to reduce unwarranted tree removal by residents. The Borough now requires that an application for tree removal be obtained prior to removing trees larger than 16" DBH from private property.
- Curtis Helm, a STC member, wrote and had published by a local newspaper an article explaining Bacterial Leaf Scorch. (Appendix A)
- The STC reviewed and subsequently went on record in support of the Route 206 Vision Plan for a proposed rebuilding of Route 206 that would incorporate a wide, planted median strip and traffic circles to calm traffic.
- The STC designed and provided information tags that were hung on the doorknobs of those residences where new street trees were planted. These tags provided the Latin and common names of the tree, as well as simple tips for maintaining the health of the trees. (Appendix A)

#### In 2007

- A new STC Chair was appointed: Polly Burlingham.
- STC negotiated with Borough Council to hire outside tree service to remove eight trees in the Jugtown area at a cost of \$19,000.00
- STC utilized Tree Replacement Trust Fund to plant trees around library
- Efforts were begun to develop a STC communication plan to further the efforts of the STC and publicize their work to the general public to educate, raise awareness and increase public support.
- Curtis Helm, a STC member, authored and submitted to Borough Engineering Department "Tree & Construction Impacts," a handout which is distributed to construction workers to raise awareness of the damage to trees when heavy equipment disturbs the environment. The handout sets out guidelines for appropriate care of trees at construction sites.
- In response to the State announcement of its plan to spray for Gypsy Moths, the STC advised Mayor and Borough Council and provided essential information about the damage caused by the moths and the importance of control.
- Public Works removed ~200 diseased trees.

#### In 2008

- One committee member attended a Hazardous Tree ID Seminar at Rutgers.
- STC received \$3,000 Green Communities Grant to update this Community Forestry Plan.
- Curtis Helm, a STC member, authored Hazardous Tree Assessment Guidelines which will be provided to Borough Engineering and Public Works employees, and STC members.
- William Flemer, IV, a STC member, received certification as a NJ Certified Tree Expert (#536).

The benefits to the Borough of a five-year Community Forestry Management Plan include, but are not necessarily limited to:

- Define the roles of various Borough entities relative to shade trees
- Establish Goals and Objectives for five-year "plan of work" and focus for STC activities and responsibilities
- Establish an annual tree planting program
- Facilitate communications among the Mayor and Borough Council, Planning Board, Engineering Department, Public Works and the STC
- Provide a basis for increased liability protection
- Maintain "basic" training for persons responsible for sustaining Borough tree resources
- Enable the Borough to apply for State grants
- Implement and support elements of the Princeton Community Master Plan

## **IV. COMMUNITY FORESTRY PROGRAM ADMINISTRATION**

### **ESTABLISHMENT OF THE SHADE TREE COMMISSION**

Princeton Borough Code, as adopted in 1974, states that “the borough engineer, subject to the immediate control of the Public Buildings and Property Committee and to the ultimate control of the Mayor and Council, shall have power and authority over all trees or plants now planted and growing or hereafter to be planted and grown in or upon any lands owned or controlled by the borough, and in or upon all public highways in the borough” (Section 33 – 12).

The Code also calls for a Shade Tree Commission to be made up of five Borough residents, each serving a five-year term. Their powers include: “policy-making responsibility in the regulation, planting, care, and control of shade and ornamental trees and shrubbery upon and in the streets, highways, public places, parks, and parkways of the borough” (Section 32.28).

In a 1997 Borough resolution, the Code was further refined: “the Shade Tree Commission and the Borough Engineer shall confer regularly with respect to the planting, care, control, and planned removal of shade and ornamental trees and shrubbery and lands and rights-of-way controlled by the Borough, that the Commission shall prepare and maintain a planned program and schedule providing, to the extent that budgetary appropriations allow, for the replacement of shade trees, ornamental trees, and shrubbery on lands and rights-of-way controlled by the Borough, including such trees as the Borough Engineer shall determine because of disease or reason of safety require removal; and that the Commission together with the Borough Engineer shall from time to time report to Mayor and Council on shade tree planting and maintenance in the Borough.”

In addition to the five regular citizen members, the STC also includes a representative from Borough Council, and a member of the Borough Department of Engineering staff, who serves as the Secretary and liaison to the Borough Engineer. There is also a Technical Advisory Board (hereinafter, “TAB”), composed of three tree professionals, who serve without compensation. The TAB members advise the STC as well as the Borough Engineer on technical matters involving shade trees, choice of species, diseases, insects, hazard trees, and other problems as they arise. A detailed listing of the members of Princeton Borough Council, the STC members and the TAB is included in Appendix C.

### **COMMISSION ACTIVITIES**

The activities of the STC involve advising on three areas: tree planting, tree maintenance, and tree removal.

For planting, the STC makes recommendations for regularly scheduled plantings of trees in the spring and fall; provides information and recommendations for placement and planting of trees during reconstruction of Borough streets; provides input in the choice and planting of trees in parks and other public properties in the Borough, and is called upon to advise the Mayor and Borough Council when required by special circumstances.

Each member of the STC is assigned a sector of the Borough to monitor for problems and to make recommendations relating to the need for new street trees. The planting recommendations are combined in a master list along with requests from Borough residents from each sector. The STC reviews the list and decides on the recommended plantings for that season.

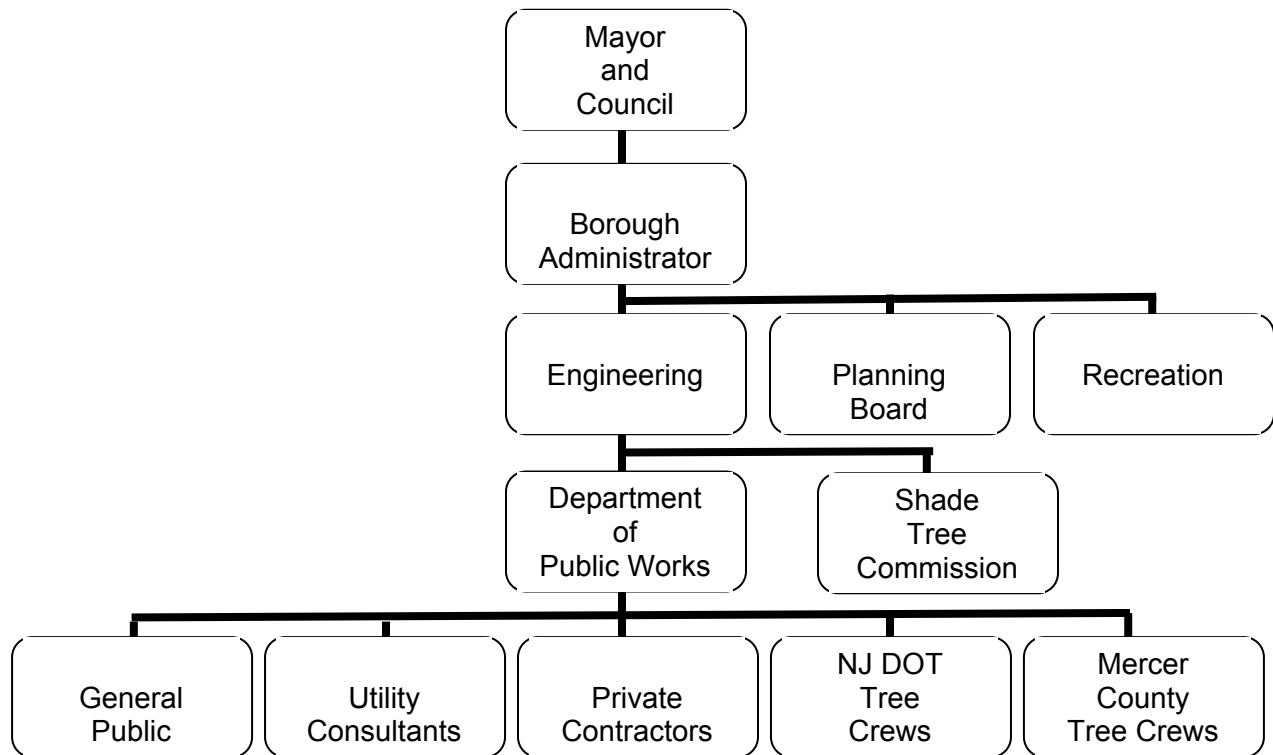
The STC members also monitor their sectors and respond to individual calls about trees and tree-related issues. If a particular species of tree needs special attention, an effort is made to provide training specific to the problem to relevant parties, i.e., Mayor, Borough Council, Engineering Department, Public Works and the public.

With regard to the removal of trees, the following procedure is followed. Trees that are clearly hazardous or dying are removed by the Public Works Department. In questionable cases, members of the STC and the TAB are called upon to inspect a tree deemed hazardous by the Borough or the neighboring property owner. In some cases, an outside tree professional is called in to assist in the assessment, after which the STC recommends an action to the Borough Engineer.

## ORGANIZATION CHART

### IV. Community Forestry Program Administration

The STC advises the Mayor and Council, Planning Board, Engineering Department and Department of Public Works on shade tree concerns on public property and along public right-of-ways. The following chart depicts the relationship of those involved in the shade tree management process.



#### A. The Mayor and Council

1. Appoint the members of the STC
2. Review the policies and plans of the STC
3. Approve annual budgets for the STC, Engineering and the Department of Public Works.

#### B. Borough Administrator

1. Reviews plans and policies submitted by the STC and makes recommendations to the Mayor and Council
2. Recommends the annual budget of the STC and the Department of Public Works to the Mayor and Council
3. Hires an outside consultant to review site development plans and provide advice to the Planning Board regarding trees and other environmental issues.

### C. Shade Tree Commission (STC)

The STC is a five member volunteer board appointed by the Mayor and Council. The STC is the advisory agency for all community trees on municipal streets, right-of-ways, parks, or other properties. The STC's duties may include:

1. Provide advice regarding the planting, removal and general maintenance of Borough trees
2. Develop and recommend the policies and goals that will preserve and develop the Borough's tree resource
3. Perform public outreach to foster better understanding and care for the Borough's trees on both public and private properties
4. Propose tree related items for inclusion in the annual budget

### D. Department of Public Works

1. Maintains through public employees and private contractors all trees on public property concerning tree hazards and other problems
2. Responsible for tree removal, pruning and brush clean-up along municipal roadways and on Borough properties

### E. Township Engineer

1. Oversees the STC budget, which is a line item account placed through the Engineering Department
2. Inspects all the work performed by utility contractors on Borough properties
3. Oversees the Department of Public Works
4. Reviews requests for tree planting, removal or maintenance and makes the necessary inspections in conjunction with the STC
5. Inspects work performed by private contractors for the Borough
6. Develops annual plans and budget requests for tree maintenance
7. Grants permits for tree removal

### F. Planning Board

1. Reviews and approves all landscape and tree planting plans submitted to the Borough

### G. Department of Recreation

1. Responsible for upkeep of newly planted and young trees in Borough Parks, i.e. mulching, watering, fertilizing, trimming

#### H. Private Tree Contractors

Generally, most tree care and maintenance activities are handled by the Department of Public Works, Mercer County or utility tree crews. Private contractors are used on a case by case basis for difficult or large scale jobs beyond the scope of the Borough's capabilities. Contractors are responsible for the following:

1. Provide proof of appropriate insurance, certifications and licenses as necessary to the appropriate department heads
2. Report prior to and following all work performed to the appropriate department supervisor
3. Complete all work in a safe and timely manner according to all applicable safety standards set by OSHA or ANSI, as they pertain to tree care operations
4. Follow all current arboricultural practices and recommendations
5. Report all hazards or problems directly to appropriate department head immediately

#### I. Utility Contractors

1. Must notify the Borough Engineer prior to the start of any non-emergency work in the Borough
2. Must follow all current arboricultural practices and recommendations
3. May assist Public Works Department Tree Crews in clearing trees to a safe distance from their facilities when necessary

#### J. General Public

1. Reports all requests for planting, removal or maintenance to the Department of Public Works, the Engineering Department, or the STC
2. Assists in follow-up care to the newly planted trees on adjacent properties or in Mercer County or Borough right-of-ways

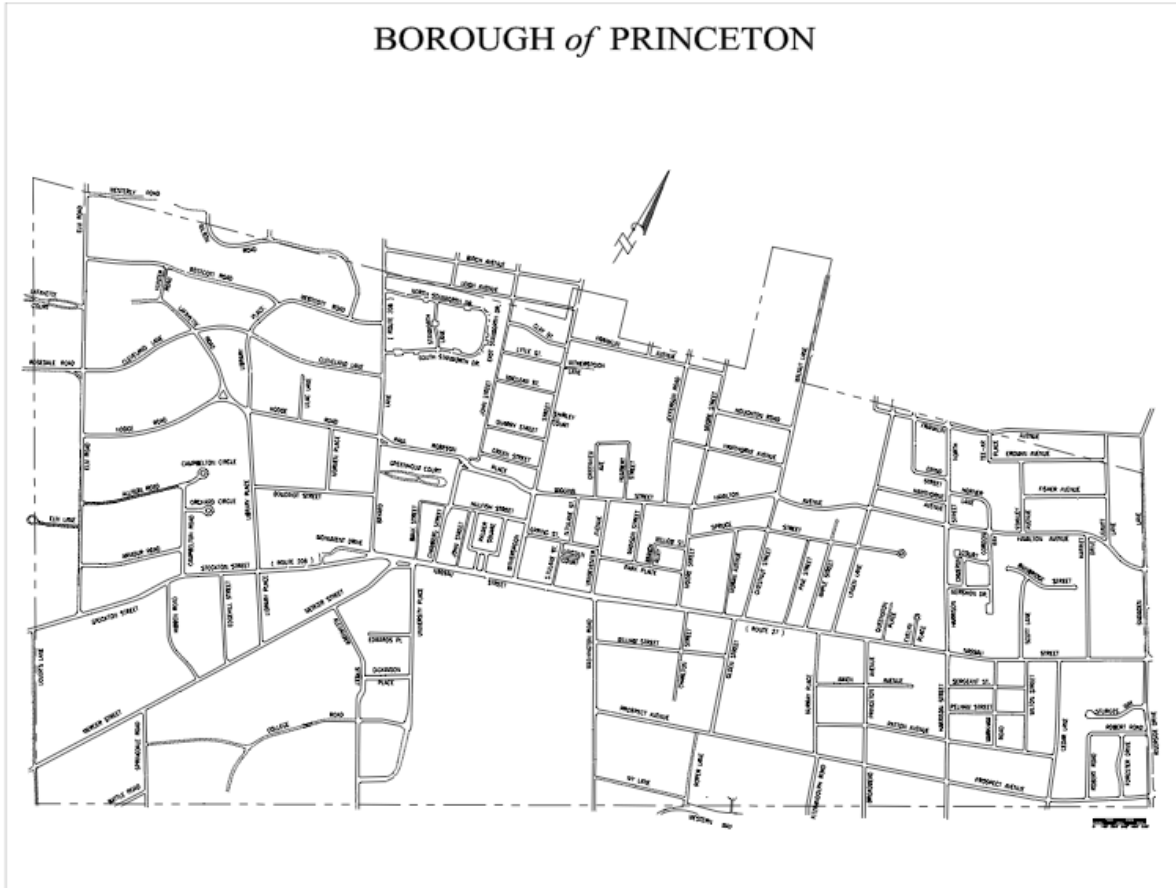
#### K. Mercer County Tree Crews

1. Maintains or removes trees on county rights-of-way, at the request of the STC, the Department of Public Works or the Borough Engineer

#### L. NJ DOT Tree Crews

1. Responsible for maintaining trees on state roadways

# V. MAP OF PRINCETON BOROUGH



## **VI. TRAINING PLAN**

Because arboriculture constantly changes as a result of fast-paced technological and scientific innovations, the Borough recognizes the need for a broad based and ongoing training program for individuals at all levels of the Community Forestry Management Program. Engineering and Public Works employees, municipal administrators, and STC members and administrators all need to receive continued technical and managerial information to benefit the Borough's tree resource.

The STC encourages and provides opportunities for its members to participate in continuing education classes and CORE training as required by the New Jersey Shade Tree & Community Forestry Assistance Act.

### **CURRENT TRAINING**

The STC utilizes a portion of its budget for ongoing training of its members, committee liaisons, and employees in the Engineering and Public Works Departments.

At the time of this writing, four STC members, Curtis Helm, Polly Burlingham, Nancy Greenspan and William Flemer and one municipal employee, Sean Burns, have completed CORE training. Two members of the TAB are NJ Certified Tree Experts.

Several members of the Department of Public Works have attended continuing education classes at Rutgers and Princeton Universities on tree pruning.

One Engineering Department employee, Sean Burns, attended a Hazard Tree Identification class. and one STC member, One STC member, Alexandra Radbil, attended a Municipal Shade Tree Management Course.

The Department of Public Works will send employees to relevant training classes to help them maintain their credentials.

### **GOALS**

The STC will maintain at least the minimum number of CORE trained individuals in accordance with the requirements of the Community Forestry Assistance Act.

The STC will meet at least the minimum requirements for CEUs (eight per year) as per the Community Forestry Assistance Act.

The Borough will increase the quality of care given to the Borough's trees by providing tree maintenance crews and STC members with the most current technical arboricultural information.

The Borough will ensure the safety of tree maintenance crews and residents by providing current and advanced training in hazard tree identification, equipment safety, and electrical hazard awareness.

## **OBJECTIVES**

Four members of the STC are currently CORE trained, at least two additional individuals from the STC and/or the Engineering, and Public Works Departments will be sent to the annual meeting of the NJ Shade Tree Federation or a similar program to obtain CORE training and CEU's on an annual basis.

Identify and provide financial support for individuals from the STC and/or the Engineering and Public Works Departments to attend relevant courses or programs. Topics of special interest to the Shade Tree Commission are: Volunteer Recruitment, Budgeting / Money Concerns.

Develop a schedule and budget to enable Public Works tree crews and STC members to obtain specialized tree care and safety information from approved programs.

## **VII. PUBLIC EDUCATION / AWARENESS / OUTREACH**

The Borough has and will continue actively to publicize its tree resource as described below. While this activity provides a valuable service to the community at large, it also encourages public support for the STC and its activities. In the past, the STC has provided community forestry education through some of the following public outreach methods, and it hopes to expand this effort to include each of these objectives. Appendix D contains copies of newspaper articles and photographs that document some recent STC activities.

### **TREE CITY USA**

Continue to achieve Tree City USA status by meeting the required elements of the program and strive for "Growth Awards."

### **ARBOR DAY**

Continue the observance of Arbor Day with a resolution passed by the Mayor and Council, and an official tree planting. Articles and photographs will be provided to local papers publicize the event. In recent years, Arbor Day trees were planted on Borough land at the following sites:

Arts Council of Princeton Princeton Theological Seminary Barbara Sigmund Memorial Parks & Gardens Clay Street Learning Center Mercer Street Erdman Avenue Nassau Street
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### **PUBLICITY AND NEWS RELEASES**

The STC has included an initiative in this second five-year plan to provide Borough residents with more tree-related information. Such information might include a map of Borough trees with brief descriptions and history; general information on tree care, pests and diseases; "tree-of-the-month" profile. This information may be provided via a newsletter, newspaper articles, and/or the Borough web site. In addition, the STC will continue to invite local news media to tree-related events.

### **TREE GIVE-AWAY**

Each year, the STC participates in Communiversy Day, the annual Princeton University and Princeton Community festival. At Communiversy, the STC distributes free seedlings and tree-related literature. Over 400 trees were distributed in 2008. In addition, the STC provides handouts on timely tree-related topics and care.

## COMMEMORATIVE TREE PROJECT

Continue the Commemorative Tree Project. In 1998, the STC launched a Memorial (now Commemorative) Tree Project, which affords Borough residents the opportunity to plant a tree in honor of a relative or friend. Donations for such trees are placed in the Shade Tree Trust, and the final choice of tree is left to the STC, with input from the donor. Most recently, the following Memorial Trees were planted:

2007	October Glory Maple in memory of Victoria McCarthy	Mercer Street
2005	Eastern Redbud in memory of Margen Penick	Marquand Park
2007	October Glory Maple in memory of William Flemer, III	Barbara Sigmund Park
2008	Dawn Redwood in memory of John Kuser	#8 Princeton Avenue

The STC will write at least one article per year for local papers to publicize this program or other tree related topics.

## COMMISSION OUTREACH

Individual members of the STC will continue to respond to citizen inquiries and comments regarding trees in their appointed sectors, thus increasing awareness by serving as a liaison between the public and the Mayor, Borough Council, and the Engineering Department.

The STC will prepare a schedule for public relations efforts to provide Borough residents with information about STC projects and events. These efforts would include writing articles for local papers; making presentations to schools, local groups and businesses; and developing the Shade Tree portion of the Borough web site.

The STC will also explore ways to provide home owners information as part of the annual tax packet about trees and tree-related issues such as leaf collection, composting, care of trees, remodeling and construction damage to trees.

The STC will continue to submit an Annual Accomplishment Report to the State for review and will provide an Annual Report of STC activities to Borough Council and the general public that includes an evaluation of the STC's progress and success in meeting the goals and objectives outlined in the Five-Year Plan.

The STC will enter into a dialogue with the appropriate County and State bodies to achieve a memorandum of understanding with respect to tree-related issues and responsibilities in respective right-of-ways.

In addition, the STC will develop, maintain and/or extend liaisons with groups in and around the Borough such as:

D&R Greenway Land Trust Master Gardeners of Mercer County Princeton Friends of Open Space Princeton Joint Environmental Commission Princeton Parks Alliance Princeton Regional Planning Board Princeton Site Plan Review Advisory Board Princeton Transportation & Circulation Committee Princeton Township Shade Tree Commission Princeton University Princeton Zoning Board
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The STC will develop an on-going working relationship with local utility representatives to help ensure that proper pruning standards are followed, to provide an observer for utility pruning, and to identify for the utility any historic or specimen trees that require special attention.

The STC will explore how best to expand and take advantage of the Borough web site in order to provide information to the public on the following:

- Significant Borough trees

- Self-guided walking tours of Borough trees

- Interactive maps that allow site visitors to locate and identify Borough trees.

## VIII. STATEMENT OF TREE BUDGET

Princeton Borough maintains a yearly operating budget of \$3,000 for the purchase of trees and for tree management. The Borough budget is similar to that of other communities in that the majority of the budget is expended on tree planting, removal, maintenance, leaf-pickup, and debris removal.

The Secretary of the STC handles the daily business of the STC, including the purchase of trees. The Borough STC is budgeted about \$15,000 per year. A full statement of this budget is on the following page.

The challenge for the next five-years is for the STC to use inventory data and assessment reports to document and communicate to the Borough Council and Borough residents the need to maintain a greater number of trees each year.

The Borough employs two full-time tree service workers. These are skilled positions, whose duties include difficult pruning, tree climbing, and cabling.

In addition, the five members of Borough STC donate their time at the rate of \$19.51 / hour\*. In 2008, this amounted to over 250 hours, for a total of \$4,877.50 of in-kind value to our budget. It is estimated that STC members will spend a total of 350 hours per year over the course of the five years of the plan.

\*Per Todd Wyckoff, representing NJ State Forestry Office. This rate is the 2007 figure developed by Independent Sector and published on their website:  
[http://www.independentsector.org/PROGRAMS/RESEARCH/VOLUNTEER\\_TIME.HTML](http://www.independentsector.org/PROGRAMS/RESEARCH/VOLUNTEER_TIME.HTML)

## STATEMENT OF TREE BUDGET

The following is a Statement of the Borough's Annual Budget for Tree Services in 2007.

### SALARIES AND WAGES

Public Works Superintendent (10% allocation)	\$5,567.00
Foreman (25% allocation )	\$11,691.00
Tree Crew (2 men)	\$99,206.00
Shade Tree Commission Secretary (10% allocation)	\$6,400.00
Employee Benefits (at 35% allocation)	\$43,002.00
Employee Training	\$1,000.00
Subtotal	\$166,866.00

### OPERATING EXPENSES

Equipment and Machinery	\$1,000.00
Horticultural Materials	\$3,500.00
Dues	\$100.00
Equipment Repair and Maintenance	\$1,700.00
Contracted Tree Services	\$19,000.00
Subtotal	\$25,300.00

### OTHER PROGRAMS AND EXPENSES

Leaf Collection (labor and fuel)	\$130,922.96
Sidewalk Repair Program (contract cost only)	\$5,000.00
Subtotal	\$135,922.96

### SHADE TREE COMMISSION

No expenses incurred in 2007	\$0.00
Volunteer Hours for Management of Tree Programs in 2007 (~100 hours @ \$19.51 / hr)	\$1951.00
Subtotal	\$0.00

TOTAL	\$328,033.00
	\$1951.00

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Submitted by: Christopher Budzinski  
Borough Engineer

## **IX. STATEMENT OF PLAN IMPLEMENTATION**

This is the second Five-Year Community Forestry Management Plan to be prepared for the Borough. The current program boasts Tree City, USA status and has a good volunteer hazard tree detection program. Currently much of STC volunteer time is spent on planning for tree inventory, recommending new plantings, responding to resident concerns, and providing guidance to Borough municipal entities when requested.

This section of the plan focuses on the primary implementation steps regarding:

- Tree inventory and assessment
- Hazard tree identification and management
- Tree planting
- Tree care and maintenance

Implementation steps for three of the initiatives are outlined in the section covering that initiative and will not be covered here: Education and Training – Section VI; Public Education -- Section VII; and Monitoring and Evaluating the Objectives – Section II.

### **TREE INVENTORY AND ASSESSMENT**

Over the five years covered by the plan, the STC plans to refine the process of maintaining and making use of the tree inventory database that exists. The existing tree inventory created in 2001, has been exported to Excel spreadsheets for ease of use because the original ArcView software is outdated and difficult to use. The inventory has been updated to reflect new plantings and tree removals. Changes in the condition of the trees, however, have not been kept up to date. It is the intent of the STC to hire and train an intern to perform this update. Emphasis will be placed on identifying trees requiring immediate attention or close monitoring.

The STC will evaluate I-Tree software, available from the US Forest Service, and explore the possibility of purchasing additional software and hardware to identify trees by GIS. Once a decision on the software is made, data about the trees can be imported and then manipulated to provide reports on a variety of characteristics: condition, diversity, disease susceptibility, curb and street issues, utility wire issues, etc. Having GIS coordinates will make it easier for Princeton Borough employees to locate trees requiring attention, and to identify locations that would benefit from a tree planting.

STC members and Borough employees will receive regular training on whatever software and hardware is acquired or purchased so that the database will be maintained continuously.

## **HAZARD TREE IDENTIFICATION AND MANAGEMENT**

Potentially hazardous trees continue to be identified systematically by STC members, Borough employees, and individual citizens. The STC has prepared a Hazard Tree Assessment information sheet which provides guidance on hazard tree assessment methodology and technique. Information about hazardous trees collected by visual inspection and extracted from the tree database will form the basis for grant applications to the State for assistance with management of hazardous trees.

The goal of the STC is to establish a community urban forest tree pruning cycle whereby each community tree is visited and pruned at least once every ten years. Trees identified as weak, diseased, disrupting sidewalks or street surfaces, will be put on a tighter monitoring schedule and removed when they are in decline or pose an unacceptable degree of risk.

It is the plan of the STC to develop a working relationship with utility companies, especially PSE&G, to oversee and care for those Borough trees with limbs growing in utility wires. The STC will also work with the utility companies to define the parameters for replacement trees so that as they grow future tree / line conflicts will be reduced or avoided.

The STC will monitor and collect data on property loss or injury that results from tree “events” – falling limbs, falling trees, heaved sidewalks and curbs, etc. This data will be summarized in the Annual Report.

## **TREE PLANTING**

Each year, the Borough plants approximately forty trees, twenty in the spring and twenty in the fall. Planting sites are identified by STC members and Borough employees and generally are where trees have been removed. At present, the number of empty sites exceeds the planting schedule. The STC will explore the possibility of obtaining a “Cool Cities” grant to complement Borough funding for additional new tree planting to enable the Borough to fill empty spaces more rapidly.

Data extracted from the tree inventory database will enable STC members to develop a multi-year tree planting plan based on neighborhood needs, tree diversity goals, and budgetary options. Selection of tree species will be based on this data recommendations provided by the Forestry Commission. The STC will prepare a list, to be used by Borough Engineering and Public Works Departments staff and Borough residents, of recommended species based on appropriateness for particular sites (width of planting strip, overhead wires, variety of shape and height, cultural environment) – “the right tree in the right place.” Wherever possible tree species native to New Jersey will be planted.

## TREE CARE AND MAINTENANCE

Planting a tree is only the first of many steps involved in creating and maintaining an urban forest. Trees are a resource that must be attended to constantly. Storms, lightning, and ice are not the only reason that trees fail. Improper planting, improper site preparation, and lack of proper maintenance will also kill trees. The first years are critical for newly planted trees. Regular watering, mulching, and pruning to ensure a single central stem and proper branching structure are critical.

The STC has prepared a letter of information and instructions for home owners that is sent prior to the time a tree is planted in front of their homes that asks them to become stewards of “their” tree. In addition, for trees not in front of private property, Borough employees follow a schedule of watering and maintenance. STC members, as a result of their annual visual inspection of their districts, report on trees in distress. STC members will develop a plan for increased monitoring and care of newly planted trees, as well as for established trees.

STC members will use the tree inventory database to help prepare a maintenance plan for Borough trees to:

- identify vulnerable, diseased, and ailing trees
- prepare reports on the condition and requirements of the Borough’s urban forest
- identify Borough tree maintenance backlog and projected forward requirements
- propose a ten-year plan to address tree maintenance backlog and projected forward requirements.

STC members will rely on visual inspections to:

- monitor the condition of Borough tree population
- monitor the condition of Borough trees during and after construction.

Based on reports obtained from the database and from visual inspections, STC members will submit recommendations to Borough Council related to tree maintenance budgeting.

In addition, the STC will seek out grants and other funding to supplement municipal funding for Borough tree care and maintenance.

Because the composition of the STC is expected to change shortly with the addition of new members and rotation of old members, the activities listed in the implementation plan that follows have been assigned generically to the STC as a whole. Once the new membership of the STC is in place, specific assignments will be made to individuals to carry out the activities listed in the time line.

## **YEAR 1 – 2009**

### **NEW INITIATIVES**

- 1A Evaluate and identify new tree inventory software with more efficient and user friendly features than contained in the current tree inventory software
- 2C Develop a plan for the removal of hazardous and diseased trees (i.e., those affected by Bacterial Leaf Scorch) that are beyond the scope of the Borough's resources and submit this plan as part of a grant application to the State requesting funding for this work
- 3A Introduce a diversity of trees and shrubbery that will provide for the long term coverage of public lands, parks, and recreation areas
- 7A Review this five-year plan with STC on an annual basis to evaluate progress
- 7B Review this five-year plan with Borough Council to determine role of other Borough entities in helping to attain these goals

### **ON-GOING INITIATIVES**

- 1E Produce an updated annual inventory of Princeton Borough trees to reflect tree removals and new plantings
- 2A Maintain and continuously update and improve a schedule of hazard tree identification and response
- 2B Using guidelines developed by the STC for hazard tree assessment, identify and address hazardous trees and tree-related conditions (wires, damaged sidewalks and curbs, sidewalk obstruction) as they occur on Borough owned and maintained properties
- 3C Identify open spaces and recommend sites for new Borough tree plantings
- 4B Plant healthy trees into the existing landscape and with proper care help them establish themselves as quickly as possible to ensure their longevity and to maximize their benefit to the community
- 4C Monitor the condition of the tree population through routine visual inspection
- 4E Monitor the condition of the tree population during and post construction using the approved Construction Impacts Information handout as a guide
- 5B Expand training opportunities for STC members and Borough employees to include attendance at the annual Shade Tree Federation meeting; classes at Rutgers or other approved programs; in-house training in safety, tree ID, pruning; etc.
- 5C Meet or exceed State requirements for CORE training and continuing education credits (CEUs)
- 5D Schedule attendance at a hazard tree identification course for STC members or Borough Public Works employees who have not yet received this training – one person per year until all those involved in the tree management program have been trained

- 6A Continue to celebrate and publicize the Borough's Arbor Day program
- 6C Continue to meet Tree City USA standards and strive for "Growth Awards"
- 6E Provide timely information on tree care and tree diseases and pests to Borough residents by submitting at least three tree-related articles to local papers each year, writing letters to the editor, and preparing information and posting it on the Borough web site
- 6F Provide an annual report of STC activities to the Borough Council and the general public
- 6G Establish, maintain and/or extend liaisons, either through regular attendance at scheduled meetings through review of minutes, or by other means, with groups in and around the Borough such as

D & R Greenway Land Trust  
 Master Gardeners of Mercer County  
 Princeton Friends of Open Space  
 Princeton Parks Alliance  
 Princeton Theological Seminary  
 Princeton University  
 Rider University (Westminster)

- 6H Improve program administration by maintaining and extending liaisons, either through regular attendance at scheduled meetings, review of minutes, or by other means, with Borough Municipal bodies such as

Princeton Depts. of Engineering and Public Works  
 Princeton Joint Environmental Commission  
 Princeton Regional Planning Board  
 Princeton Site Plan Review Advisory Board  
 Princeton Transportation & Circulation Committee  
 Princeton Township Shade Tree Commission  
 Princeton Zoning Board

- 6I Continue to attend Communiversity (a local town/gown event) and provide handouts on timely tree-related topics and distribute seedlings in tubes
- 6J Contribute advice and review to Public Projects where trees are involved
- 4M Continue participating in a recycling program with Lawrence Township. Collect leaves, branches, and yard waste and deliver these materials to the Joseph H. Maher Ecological Center for processing. The resulting chips, mulch and compost are made available to the public at no charge and sold to commercial users to off set the costs of the facility

## **YEAR 2 – 2010**

### **NEW INITIATIVES**

- 1B Review existing tree inventory during data collection to ensure relevant data is captured
- 1C Train volunteers or hire a consultant to gather pertinent information necessary for a complete inventory of Princeton's tree resource
- 2E Develop tree maintenance zones with a view to establishing a ten-year maintenance cycle
- 2G Develop a working relationship with local utility companies to oversee and care for Borough trees with limbs growing into utility wires
- 3G Develop a cooperative program among Municipal, County and State entities to plant trees in Mercer County and State right-of-ways within the Borough
- 4A Identify maintenance deficiencies and propose corrective action for hazardous trees
- 4D Identify and address vulnerable, diseased and ailing trees
- 4K Review existing tree ordinances and recommend appropriate changes to Borough Council if necessary

### **ON-GOING INITIATIVES**

Continue activities outlined in New Initiatives and On-Going Activities, Year 1, including:

- 2B Using guidelines developed by the STC for hazard tree assessment, identify and address hazardous trees and tree-related conditions (wires, damaged sidewalks and curbs, sidewalk obstruction) as they occur on Borough owned and maintained properties
- 3C Identify open spaces and recommend sites for new Borough tree plantings
- 5C Meet or exceed State requirements for CORE training and continuing education credits (CEUs)
- 6A Continue to celebrate and publicize the Borough's Arbor Day program
- 6C Continue to meet Tree City USA standards and strive for "Growth Awards"
- 6E Provide timely information on tree care and tree diseases and pests to Borough residents by submitting at least three tree-related articles to local papers each year, writing letters to the editor, and preparing information and posting it on the Borough web site

## **YEAR 3 – 2011**

### **NEW INITIATIVES**

- 1D Prepare an annual report on diversity, age, condition, and vulnerability to disease and pest infestation of Princeton Borough trees
- 2D Develop and follow a tree maintenance plan to improve tree vigor, aesthetics, and sustainability in order to reduce the risk of tree-related incidents
- 2F Monitor and report on property loss expense related to Borough trees
- 3B Extract data from the Tree Inventory preparatory to developing a multi-year tree planting plan based on neighborhood needs, tree diversity goals, and budgetary constraints
- 3D Prepare an approved tree list, to be used by Borough Engineering and Public Works Department staff, the STC, and Borough residents, of recommended species based on appropriateness for particular sites (width of planting strip, overhead wires, variety of shape and height, cultural environment) – “the right tree in the right place”
- 4F Identify the current tree maintenance backlog and projected forward requirements
- 4H Seek out grants and other funding to supplement municipal funding of tree maintenance and care
- 4I Submit recommendations to Borough Council related to tree maintenance budgeting
- 4J Educate Borough residents regarding proper tree care on both public and private property

### **ON-GOING INITIATIVES**

Continue activities outlined in New Initiatives and On-Going Activities, Year 2, including:

- 2B Using guidelines developed by the STC for hazard tree assessment, identify and address hazardous trees and tree-related conditions (wires, damaged sidewalks and curbs, sidewalk obstruction) as they occur on Borough owned and maintained properties
- 3C Identify open spaces and recommend sites for new Borough tree plantings
- 5C Meet or exceed State requirements for CORE training and continuing education credits (CEUs)
- 6A Continue to celebrate and publicize the Borough's Arbor Day program
- 6C Continue to meet Tree City USA standards and strive for "Growth Awards"
- 6E Provide timely information on tree care and tree diseases and pests to Borough residents by submitting at least three tree-related articles to local papers each year, writing letters to the editor, and preparing information and posting it on the Borough web site
- 2G Develop a working relationship with local utility companies to oversee and care for Borough trees with limbs growing into utility wires

## **YEAR 4 – 2012**

### **NEW INITIATIVES**

- 5A Ensure that STC members have an effective understanding of the Tree Inventory Database system and operation
- 6B Publicize the Commemorative Tree Program with a view to increasing participation by writing one article on the program annually for local papers
- 6D Prepare a schedule for public relations efforts to provide Borough residents with information about STC projects and events by creating a tree newsletter, submitting press releases to local papers, and adding relevant sections to Borough web site
- 4G Propose a ten-year plan to address tree maintenance backlog and projected forward requirements
- 6K Improve the Shade Tree web site and explore possibility of making web site interactive to allow Borough residents to locate and identify trees in the Borough by uploading the Tree Inventory onto the web site for use as a public education tool
- 6N Publicize proper stewardship for both Borough and privately owned trees by writing one article annually for local papers and providing follow up care information for the property owner adjacent to each newly planted tree
- 7C Ensure the relevance and efficacy of stated goals and objectives
- 7D Assess the success of activities to determine continuation, and track budgetary expenses and income to ensure sufficient funding for proposed activities

### **ON-GOING INITIATIVES**

Continue activities outlined in New Initiatives and On-Going Activities, Year 3, including:

- 2B Using guidelines developed by the STC for hazard tree assessment, identify and address hazardous trees and tree-related conditions (wires, damaged sidewalks and curbs, sidewalk obstruction) as they occur on Borough owned and maintained properties
- 3C Identify open spaces and recommend sites for new Borough tree plantings
- 5C Meet or exceed State requirements for CORE training and continuing education credits (CEUs)
- 6A Continue to celebrate and publicize the Borough's Arbor Day program
- 6C Continue to meet Tree City USA standards and strive for "Growth Awards"
- 6E Provide timely information on tree care and tree diseases and pests to Borough residents by submitting at least three tree-related articles to local papers each year, writing letters to the editor, and preparing information and posting it on the Borough web site
- 2G Develop a working relationship with local utility companies to oversee and care for Borough trees with limbs growing into utility wires
- 2D Develop and follow a tree maintenance plan to improve tree vigor, aesthetics, and sustainability in order to reduce the risk of tree-related incidents

## **YEAR 5 – 2013**

### **NEW INITIATIVES**

- 3E Survey parking lots located in the Borough to determine if trees would be an appropriate addition, and inform lot owners of the benefits of trees
- 3F Expand upon tree plantings in public parks
- 6L Develop, publish and post on the web site a list of Significant Borough Trees
- 6M Develop, publish and post on the web site walking tours of Borough trees
- 6O Make presentations to schools, local groups and local businesses and organizations at least annually on an as needed basis

### **ON-GOING INITIATIVES**

Continue activities outlined in New Initiatives and On-Going Activities, Year 4, including:

- 2B Using guidelines developed by the STC for hazard tree assessment, identify and address hazardous trees and tree-related conditions (wires, damaged sidewalks and curbs, sidewalk obstruction) as they occur on Borough owned and maintained properties
- 3C Identify open spaces and recommend sites for new Borough tree plantings
- 5C Meet or exceed State requirements for CORE training and continuing education credits (CEUs)
- 6A Continue to celebrate and publicize the Borough's Arbor Day program
- 6C Continue to meet Tree City USA standards and strive for "Growth Awards"
- 6E Provide timely information on tree care and tree diseases and pests to Borough residents by submitting at least three tree-related articles to local papers each year, writing letters to the editor, and preparing information and posting it on the Borough web site
- 2G Develop a working relationship with local utility companies to oversee and care for Borough trees with limbs growing into utility wires
- 2D Develop and follow a tree maintenance plan to improve tree vigor, aesthetics, and sustainability in order to reduce the risk of tree-related incidents
- 6N Publicize proper stewardship for both Borough and privately owned trees by writing one article annually for local papers and providing follow up care information for the property owner adjacent to each newly planted tree

## **X. COMMUNITY STEWARDSHIP INCENTIVE PROGRAM**

<b>CSIP #1 Plan Preparation</b>	<b>CSIP #8 Tree Maintenance Mgmt.</b>
<b>CSIP #2 Training</b>	<b>CSIP #9 Tree Recycling</b>
<b>CSIP #3 Public Education and Awareness</b>	<b>CSIP #10 Ordinance Establishment</b>
<b>CSIP #4 Arbor Day Activities</b>	<b>CSIP #11 Tree-Care Disaster Plan</b>
<b>CSIP #5 Assessment/Inventory</b>	<b>CSIP #12 Insect and Disease Mgmt.</b>
<b>CSIP #6 Tree Hazard Identification</b>	<b>CSIP #13 Other</b>
<b>CSIP #7 Tree Planting</b>	

The purpose of this section is to identify those areas of the Community Stewardship Incentive Program (CSIP) that are most in need of improvement by the Borough, and possibly funding from the Borough to meet the incentive.

### **#1. PLAN PREPARATION**

This Community Forestry Plan was prepared by the STC and Stephen M. Chisholm, Jr. Over 200 volunteer hours were spent on the plan. The writing of the plan was funded by a Green Grant from the State and matching in-kind funds from STC member volunteer hours and Princeton Borough employee hours.

### **#2. TRAINING (SECTIONS II AND VI)**

To meet State requirements for CORE training and CEU requirements as outlined in the Community Forestry Act, the STC has and will continue to take advantage of tree-related training programs offered by the State or other recognized institutions or organizations. Attendance at these programs may require payment of tuition fees.

### **#3. PUBLIC EDUCATION AND AWARENESS (SECTIONS II AND VII)**

As the STC develops and puts into place the programs and activities, described in Sections II and VII, to promote public awareness and involvement, the STC may request financial assistance to prepare and produce supporting materials such as a newsletter, illustrated guide to Borough trees, etc.

### **#4. ARBOR DAY ACTIVITIES (SECTION II AND VII)**

The STC will continue to celebrate Arbor Day by selecting and planting a tree in a public ceremony. The STC will also continue to meet the requirements of the Tree City USA program and strive for "Growth Awards."

### **#5. ASSESSMENT / INVENTORY (SECTIONS II AND IX)**

The Borough's tree inventory is in need of an upgrade in order to make it compatible with the GIS program used by the Borough Engineer's office and to make easy for STC members and Borough employees to update and extract data and reports. This is identified as an urgent need, which can be met by obtaining I-Tree software, free of charge, from the US Forest Service. In addition, it would be useful to purchase a handheld GIS device and relevant software to ease data entry and increase data accuracy. The STC will seek Borough funding or CSIP grants for this purchase.

#### **#6. TREE HAZARD IDENTIFICATION (SECTIONS II AND IX)**

For the safety of Borough citizens and to protect property and avoid law suits, it is vitally important that our trees be well maintained and hazard trees be identified and managed before problems or damage or injury occurs. Because the Borough's urban forest contains both young and aging trees, it not always possible to anticipate problems. It is, however, incumbent upon the Borough to demonstrate good faith efforts to identify and manage hazard trees, and to allocate resources to this effort. The STC has targeted this as a priority. Funding for this effort would come from Borough budget monies and from future CSIP grants.

#### **#7. TREE PLANTING (SECTIONS II AND IX)**

The STC has a mandate from the Mayor and Borough Council to replace all trees that are removed, as well as to plant trees in the Borough right of way for the enjoyment of future generations. In this capacity, the STC has been proactive, but wishes to increase this effort in the future by developing a long range plan for planting trees. Ideally we would like to obtain funding for the implementation of this project by applying for a Cool Cities grant or future CSIP grants.

#### **#8. TREE MAINTENANCE MANAGEMENT (SECTIONS II AND IX)**

This is closely related to CSIP #6 above. Pruning is important, and training programs for special maintenance programs are necessary in order to maintain the Borough's tree resource in a responsible manner. The STC will encourage Borough Public Works employees to attend relevant courses. Increased funding for this training will be required. CSIP grants may be requested to supplement future training needs.

#### **#9. TREE RECYCLING (SECTIONS II AND IX)**

The Borough currently participates in a recycling program with Lawrence Township. Leaves, branches, and yard waste are collected by Borough employees and delivered to the Joseph H. Maher Ecological Center where the materials are processed. The resulting chips, mulch and compost are made available to the public at no charge and sold to commercial users to off set the costs of the facility.

#### **#10. ORDINANCE ESTABLISHMENT (SECTIONS II, III AND IX)**

The previous STC worked to establish ordinances governing Borough trees. These ordinances met with legal hurdles. Current ordinances will be reviewed and revised with guidance from the State during the next five years.

#### **#11. TREE CARE DISASTER PLAN**

The Borough does not currently have a Tree Care Disaster Plan. At present, tree emergencies are handled by Mercer County, NJ DOT, utility or Public Works tree crews with assistance from Borough Police and Fire Departments. In case of any large scale tree emergencies, the Borough would follow plans developed by Mercer County, FEMA, or the Office of Emergency Management. No future plans are being considered at this time.

**#12. INSECT AND DISEASE MANAGEMENT (SECTIONS II AND IX)**

In addition to the special care given to the fifty-three elm trees maintained by the Borough because of the prevalence of Dutch Elm Disease, there are several other significant pests that may affect the Borough urban forest: Bacterial Leaf Scorch, gypsy moths, and possibly in the near future, the Emerald Ash Borer. The STC will work with the State Forest Service, Department of Agriculture, and Rutgers Cooperative Extension to obtain up-to-date information on treatment, life-cycle, prevention, etc. Such information will be shared with relevant Municipal bodies and the public. In the event of an outbreak, State or Federal assistance would be requested.

**#13. OTHER**

This open item is included should an additional topic require to be addressed in the next five years.

## **APPENDIX A**

### **PRINCETON BOROUGH HAZARD TREE ASSESSMENT GUIDELINES**

Hazard tree evaluation is the systematic process of assessing the potential for a tree or one of its parts to fail. The primary objective is to identify potential hazards and provide treatment before the trees fail. However, note that all hazards cannot be identified. Structural weaknesses may not be visible from the ground or may be located internally, enclosed within woody tissue and therefore not observable. Hazards should be rated based on their severity so that treatment can be prioritized. The following list of common structural defects often lead to partial or complete tree failure. This list of defects will help familiarize the Princeton Borough Shade Tree Commission with Hazard Tree Assessment techniques. All borough trees will be assessed annually by Borough Shade Tree Commission members. Any suspected hazards will be brought to the attention of the municipal engineers office for further evaluation by their trained professionals.

**Wood Decay and Tree Defects** – Decay in wood is caused by fungi and bacteria that digest woody tissue. Wounds provide the entrance for decay organisms. Decay is usually more rapid in older, slower growing trees rather than in younger, more vigorously growing trees. Decay is the critical factor in determining the stability of the tree or branch. Trunk decay in excess of 25-33% of cross-section area or tree diameter has variously been identified as a critical threshold for failure. Many factors contribute to failure such as species (wood strength), weight distribution, branch structure, lean and exposure. Signs of decay may include cracks, ribs or bulges in the trunk, nest cavities, bee hives, presence of fungal fruiting bodies, and carpenter ants. *Check trunk for decay and assess hazard relative to interacting variables.*

**Stem Taper** – Trees should exhibit normal stem taper and the trunks should be free of abnormal growths such as cracks, ribs, bulges, cankers, swelling or other deformities. Trees with normal taper and free of defects distribute stresses evenly along their length. Abnormal growths typically occur in response to wounding, structural defect or internal decay. Cracks and splits are often signs of significant structural weakness and should be critically evaluated. *Assess trees for normal taper and deformities.*

**Root Crown Inspection** – The interface between the tree trunk and the root system is the root crown. The health of the tree can often be determined through defects found at this juncture. In urban settings, root crown damage commonly occurs as a result of reduced growing substrate volume, physical damage from vehicles, and root cutting during curb and sidewalk replacement. If root crown issues are suspected, carefully excavate around the base of the tree to expose major roots and look for evidence of decay or damage to major structural roots. Look for changes in bark texture at the base of the tree, such as from smooth to rough bark, which can indicate internal decay. Check for a flat or depressed area at ground level which may indicate the presence of a girdling root below. Look for basal wounds, loose or cracked bark, frass or sawdust at the base of the tree, conks or mushrooms and asymmetry. *Always inspect the root crown for a variety of potential problems.*

**Branch Attachment** – Strong branch attachment is critical to the structural integrity of the tree. Strong branches occur when (1) the branch and trunk are unequal in size; (2) there is vertical and radial space available for branch growth; (3) the branch angle is broad enough to permit the branch bark ridge to form, and, (4) there is no included bark. Branches should be well spaced vertically and radially along the tree trunk and not be crowded. Weakly attached branches occur when there are sharp (acute) branch angles, codominant stems, and included bark). *Carefully observe branch attachments to assess poorly attached limbs or weak leaders.*

**Asymmetric Crowns** – There are trees exhibiting crowns that are asymmetric, having a disproportionate percentage of the branched canopy on one side of the tree. This often results from growth toward greater access to sunlight. These trees will develop “reaction wood” in response to the disproportionate stresses placed on the trunk bole. Tree boles will often be arched in the direction of the greater source of light. Reaction wood can tolerate normal stresses but may be incapable of supporting the additional weight of ice or snow loading. *Inspect the canopy for symmetry.*

**Heavy Lateral Branches** – Trees may develop heavy lateral branches that are disproportionately large as compared to the trunk. These branches may be more prone to breakage from wind or snow loading. *Inspect for branch symmetry and tree structure.*

**Codominant Stems** – Trees with codominant stems are trees that have two or more stems developing from the same point along the trunk. Codominant stems often have similar diameters and will have very narrow angled branch attachment. These narrow attachments will exhibit “included” bark which further diminishes the strength of attachment between codominant stems. *Observe trees for codominant stems and narrow angles of branch attachment.*

**Epicormic Sprouts** – Epicormic sprouts are shoots that emerge along the trunk or branch. They often develop as a result of excessive pruning, which allows light to penetrate and stimulate buds to sprout, or in response to branch or trunk dieback. *Look for epicormic sprouts and determine if the cause is from excessive pruning or a result of tissue dieback.*

**Tree Age** – Larger, older trees tend to fail more often than younger, smaller trees. Larger trees have greater potential due to greater heights (stronger winds), greater weights and stresses and greater likelihood of having developed defects as tissue growth slows. Note that urban trees rarely achieve their normal life spans due to additional environmental stress. *Larger trees should be inspected more carefully and more frequently than smaller trees.*

**Tree Species** – Certain species of trees are known to be more prone to failure than are other species. This is usually associated with tree growth rate and habit. For instance, Silver maple is known to be “weak wooded” and larger older trees are identified as having a high hazard. Bradford pear trees are also fast growing and weak wooded and scaffold limbs often fail due to poor attachment. Bradford pear is a high hazard tree. Sugar maple is a slower growing tree and usually suffers decline and dieback before a significant failure occurs. Sugar maple may be considered a moderate to low hazard tree. *Always consider the tree species when assessing hazard potential.*

**Storm Events** – Most tree failures occur as a result of storm events, including high wind, excessively wet soils, and snow or ice loading. In the Princeton, New Jersey region, the prevailing and strongest winds usually come from the west or northwest. Open grown trees or those without protection from the west/northwest will be subject to greater stresses. Trees with arched trunks or asymmetric crowns in the east/south east will be prone to greater hazards from high winds. *Observe tree setting and consider asymmetry in terms of storm events.*

**Targets** – Most trees that will be evaluated by the Princeton Borough Shade Tree Commission can be assumed to be located in the vicinity of a target (i.e., pedestrian, vehicle, structure, etc.). However, in some instances targets may not be present, and trees exhibiting cavities or dead wood may be left in place to benefit wildlife. *Always consider the potential for “targets” when assessing a hazard. Where there are no targets there are no hazards.*

## TREES & CONSTRUCTION IMPACTS

90 percent of a tree's roots occur in the top 2 feet of the soil and most of the feeder roots are in the top 6 inches.

Open grown trees may extend roots two to three times the radius of the canopy, while most forest trees extend roots 1.5 times the radius of the canopy. In general, the roots may be thought to extend a distance equal to the height of the tree.

Trees can typically withstand removal of 30 to 50% of their roots, but stability may be compromised after about 30% is removed.

Younger, actively growing trees can withstand damage better than older, established trees.

Trees vary in their ability to withstand root damage:

**TOLERANT:** red oak, silver maple, red maple, sycamore, American linden, willow, river birch, sweetgum, honey locust, elm, white pine, black gum, box elder, Eastern red cedar

**INTERMEDIATE:** black cherry, dogwood, Norway maple, ash, black oak, red bud, serviceberry, sugar maple

**SENSITIVE:** beech, hickories, black walnut, white oak, pin oak, tulip poplar, spruces, firs

Cutting the roots of a tree at a line tangent to the drip line will remove somewhat less than 15% of the roots (see figure next page).

Cutting the roots a tree at a line that is half the distance between the tree trunk and the drip line will remove about 30% of the roots (see figure - next page).

A tree will usually have four to eleven major structural support roots (framework roots) that originate at the trunk collar. These begin to branch and taper at from 3 to 15 feet from the base of the tree.

There is no standard, but the minimum distance for cutting roots close to the base of the tree is three times (3X) the diameter of the tree. For example, cut no closer than within 6 feet of a 24 inch DBH tree. This should avoid severing major structural support roots.

Roots that must be cut should be cut off cleanly with a sharp saw and should not be broken, ripped or shattered. Cleanly cut roots will regenerate new roots from the cut ends. Roots over 3" in diameter should be protected from drying with a plastic bag and rubber band placed over the cut ends. Backfill around cut roots as soon as possible to prevent drying.

## Tree Protection Zones (TPZ)

Tree Protection Zones can be established around trees to protect them during construction. For open grown trees, the drip line is often a suitable point to establish the TPZ. The minimum TPZ can be determined by establishing a circle with a diameter in feet that is equal the diameter in inches at breast height (DBH). For example, a 10" DBH tree would have a TPZ that is 10 feet in diameter with tree in the center.

Fencing should be placed protect the TPZ and all vehicles, materials, stockpiles and construction equipment must be kept out of the TPZ.

Soil consists of approximately 50% pore space, which holds water and air. Soil compaction destroys soil structure, affecting aeration, internal drainage and water holding capacity. Tree roots need oxygen to survive.

90% of the damage from compaction occurs the first time heavy equipment passes over the soil. One time is too much. An inexpensive temporary access road can be constructed using heavyweight geotextile with 4 inch thick layer of wood chips.

Recommendations for trees damaged as a result of construction activities:

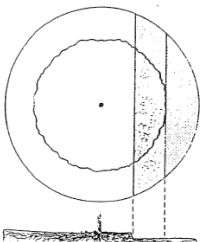
- Keep the trees well watered\*
- Lightly fertilize\*\*
- Provide a covering of mulch, depth is adequate
- Prune out large deadwood

\* - Injured trees should be watered the first growing season after damage. irrigation should be performed if there is a two week period during July or August with no substantial rainfall. Apply 20 gallons of water per inch of tree diameter.

\*\* - Apply 2 lbs of slow release nitrogen per 1000 sq ft. of canopy. Fertilize in late summer or early fall.

It may take several years for the results of construction damage to become apparent. Symptoms of damage may appear as:

- Reduced canopy density
- Reduced leaf size
- Branch/twig die back
- Premature development of fall color or early leaf drop



This plan sketch of a tree outlines the drip line, and the circle indicates the extent of most of the roots. Lowering the soil grade back to the drip line on one side would cut off less than 15 percent of the roots; lowering the grade halfway from the drip line to the trunk on one side would eliminate about 30 percent of the shallow roots.

## FOLLOW-UP CARE INFORMATION FOR THE HOME OWNER OF PROPERTY ADJACENT TO EACH NEWLY PLANTED TREE

### **YOUR NEW TREE IS A**

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There are 5 essential ways you can contribute to the initial care of your new tree in order to keep it alive and healthy.

#### **WATERING:**

Your tree needs a deep watering once a week. If there has not been enough rain, use your hose. A slow trickle for an hour over the entire root area will suffice.

#### **WATCH YOUR STEP:**

Tree roots need air, water, and open space in the soil. Driving over the soil or lots of foot traffic will collapse the open space in the soil and block the flow of air and water to the roots.

#### **MULCH:**

A two to three inch thick layer of mulch surrounding the tree trunk will prevent weeds from invading and will eliminate the need to mow closely to the tree. The roots of weeds and lawn grass rob tree roots of nutrients. Do not place mulch directly against the tree bark. A mountain of mulch piled high against the tree trunk can kill a tree. Make a well of mulch around the trunk to catch water.

#### **PROTECT THE BARK:**

Scrapes or cuts in the bark of the tree may allow pests to attack the tree. Be extra careful when using weed-wackers and lawn mowers near your tree.

#### **KEEP THE SOIL CLEAN:**

Weed-killers and excess fertilizer can harm the roots of the tree. Read labels carefully before spraying or feeding.

Thank you for your assistance in caring for this tree.

Borough of Princeton

# APPENDIX B

## Sample Page from Inventory of Princeton Borough Trees

ID	LOCATION ID	B-P. S-C.	ST #1 STREET NAME	COMMONNAME	LATIN NAME	LAST UPDATE	COMMENTS	HGT	DBH	BRK SIDE	UTIL	CRACKD CURB	LOW LIMB	REMOVAL DATE	PLANT DATE
363	301 Elm Rd		Harrison St, 2nd half of divided	Green Ash		2002		50	16	y				2003	F-2003
2369	9 Aiken Ave	B	9 Aiken Ave	European Linden		2002		90	24	n				2003	F-2004
2763	9 Aiken Ave	B	9 Aiken Ave	Sugar Maple		2002		20	3	n			4.0	2003	S-2003
2768	12 Aiken Ave	B	12 Aiken Ave	Red Maple		2002		40	12	n			7.0	2003	S-2004
2767	14 Aiken Ave	B	14 Aiken Ave	Hackberry		2002		40	20	n				2003	S-2005
2766	18 Aiken Ave	B	18 Aiken Ave	Bradford Pear		2002		40	8	n			4.0	2003	
2942	50 Aiken Ave	B	50 Aiken Ave	Sugar Maple		2002	touch lines	12	2	n			4.0	2003	
2939	51 Aiken Ave	B	51 Aiken Ave	Sugar Maple		2002	touch lines	22	3	n			5.0	2003	
2941	52 Aiken Ave	B	52 Aiken Ave	Sugar Maple		2002	touch lines	22	4	n			5.0	2003	
2940	53 Aiken Ave	B	53 Aiken Ave	Honey Locust		2002	touch lines	22	5	n			5.0	2003	
3377	11 Alexander St	B	11 Alexander St	Littleleaf Linden		2002	touch lines	55	42	n				2006	F-2006
3376	11 Alexander St	B	11 Alexander St	Ginkgo (female)		2002		60	36	n				W2002	F-2003
3371	20 Alexander St	B	20 Alexander St	Ginkgo		2008	not identified								
3370	20 Alexander St	B	20 Alexander St	Ginkgo		2008	50' Maple removed F-2005	15	2	n			5.0	5/3/00	S-2008
3372	22 Alexander St	B	22 Alexander St	Ginkgo		2002	50' S. Maple removed S-2005	15	2	n			5.0	5/5/00	
3373	26 Alexander St	B	26 Alexander St	Chinese Elm		2002		20	3	n			3.0	1/22/03	
3374	31 Alexander St	B	31 Alexander St	London Planetree		2002		70	60	n				1/29/03	
3375	31 Alexander St	B	31 Alexander St	Sugar Maple		2002		20	3	n			5.0	2/26/03	
3374	44 Alexander St	B	44 Alexander St	Norway Maple		2007		40	27	n			6.0	2/27/03	
3353	70 Alexander St	B	70 Alexander St	Littleleaf Linden		2002		14	4	n			5.0	3/12/03	
3355	76 Alexander St	B	76 Alexander St	Honey Locust		2002		30	6	n			7.0	3/14/03	
3363	79 Alexander St	B	79 Alexander St	Ginkgo		2002	touch lines	20	5	n			6.0	3/20/03	
3366	80 Alexander St	B	80 Alexander St	Littleleaf Linden		2002		22	5	n			8.0	3/26/03	
3357	80 Alexander St	B	80 Alexander St	Littleleaf Linden		2002		23	5	n			8.0	4/2/03	
3362	81 Alexander St	B	81 Alexander St	Ginkgo		2002		60	16	n			6.0	4/17/03	
3358	84 Alexander St	B	84 Alexander St	Ginkgo		2002		50	22	n			6.0	5/1/03	
3359	90 Alexander St	B	90 Alexander St	Ginkgo		2002		50	22	n			9.0	5/16/03	F-2007
3360	94 Alexander St	B	94 Alexander St	Ginkgo		2002		60	24	n				5/16/03	
3361	99 Alexander St	B	99 Alexander St	Ginkgo (female)		2002	touch lines	50	14	n				5/16/03	
3306	106 Alexander St	B	106 Alexander St	Sugar Maple		2002		30	6	n			6.0	5/16/03	
3308	115 Alexander St	B	115 Alexander St	Eastern White Pine		2002		50	28	n			8.0	8/12/03	
3309	115 Alexander St	B	115 Alexander St	Eastern White Pine		2002		50	12	n				8/30/03	
3310	115 Alexander St	B	115 Alexander St	Eastern White Pine		2002		55	28	n				9/4/03	
3311	115 Alexander St	B	115 Alexander St	Eastern White Pine		2002		30	17	n				9/17/03	
3312	115 Alexander St	B	115 Alexander St	Eastern White Pine		2002		55	18	n				9/19/03	

## **APPENDIX C**

### **PRINCETON BOROUGH COUNCIL**

Mildred Trotman, Mayor

David Goldfarb

Margaret Karcher

Andrew Koontz

Roger Martindell

Barbara Trelstad

Kevin Wilkes

### **PRINCETON BOROUGH ADMINISTRATION**

Borough Administrator	Robert W. Bruschi
Borough Attorney	Karen L Cayci
Borough Clerk	Andrea L. Quilty
Borough Engineer	Christopher Budzinski
Finance Chief	Sandra Webb
Health Officer	David Henry
Library Director	Leslie Burger
Municipal Court Administrator	Susan F. Shapiro
Police Chief	Anthony Federico
Recreation Department Director	Jack Roberts

## PRINCETON BOROUGH SHADE TREE COMMISSION

MEMBER NAME	MEMBER TITLE	MEMBER ADDRESS
Polly Burlingham	Chair Municipal Volunteer Master Gardener of Mercer County VP, Princeton Parks Alliance Caretaker, Barbara Sigmund Park	28 Scott Lane Princeton, NJ 08540
Sean Burns	Secretary Recycling Coordinator Engineering Department Princeton Borough Municipal Employee	Borough Hall PO Box 390 Princeton, NJ 08542
Curtis W. Helm	Municipal Volunteer Certified Tree Expert #296 NJ State Approved Forester	136 Spruce Street Princeton, NJ 08542
Nancy Greenspan	Municipal Volunteer Master Gardener of Mercer County	5 Cleveland Lane Princeton, NJ 08540
Alexandra Radbil	Municipal Volunteer Master Gardener of Mercer County	116 Moore Street Princeton, NJ 08540
Marie T. Rickman	Municipal Volunteer VP, Master Gardeners of Mercer County	45 Patton Avenue Princeton, NJ 08540
Kevin Wilkes	Liaison with Princeton Borough Council Member of Princeton Borough Council	Maclean Street Princeton, NJ 08542

### TECHNICAL ADVISORY BOARD (TAB)

MEMBER NAME	MEMBER AFFILIATION	MEMBER ADDRESS
James Consolloy	Manager of Grounds Princeton University	Princeton University Princeton, NJ 08540
William Flemer, IV	Certified Tree Expert #536	558 Ewing Street Princeton, NJ 08540
Pepper de Turo	President Woodwinds Associates	Woodwinds Associates, Inc. Princeton, NJ 08540

## APPENDIX D

### Examples of Tree-Related Publicity

#### **Trees of the Princeton Region Hit by Bacterial Leaf Scorch**

An epidemic has spread through our region largely unnoticed, but it's not hard to spot if you're able to tell the trees from the forest.

Bacterial leaf scorch, or BLS, is a devastating infectious disease that has moved up from the South to the Mid-Atlantic states and is slowly killing many of our urban trees. In Princeton, for example, several trees on Hamilton Avenue north of Harrison Street are afflicted. They have a sparse canopy, with many dead branches and leafy growth or "suckers" growing along some of the larger stems.

Caused by the bacterium (*Xylella fastidiosa*) that clogs the tree's water transporting tissue, or xylem, the disease is transmitted by xylem-feeding insects such as leafhoppers, treehoppers, and spittlebugs.

In Princeton, pin oak appears to be the primary species affected, but a broad range of trees are susceptible: red oak, scarlet oak, black oak, shingle oak, American elm, London plane, and red maple. The disease has also been found in a broad range of "weedy" plants such as golden-rod, clover, blackberry, and grasses. These herbaceous plants likely serve as reservoirs from which the insects may transmit the disease. The bacterium is also responsible for "Pierce's" disease, which is destroying grape vines in California.

BLS typically starts in a portion of the crown and then progresses slowly throughout the tree. Once infected, small trees may succumb in several years while large, mature trees may not die for 10 years or more. Infected trees are often susceptible to other diseases and insect attack, which accelerate their decline. Drought and heat, will exacerbate the symptoms. Although "wild" trees are susceptible, they seem to be less affected than their urban counterparts.

This epidemic also comes as bad news for homeowners, who sometimes have to spend hundreds or thousands of dollars to prune branches from dying trees or to remove dead trees. Jim Irish, owner of a local tree care company, has observed a drastic increase in the number of afflicted pin oaks, but laments that homeowners typically delay dealing with the problem. He noted that tree removals become more dangerous for the workers, and consequently more costly, if they are left until the tree is entirely dead.

BLS is distinguishable from ordinary drought stress. When a tree has BLS, the leaves on its infected branches will look brown (or scorched) along their margins. The scorching often appears irregular and may extend deep into the leaf toward the mid-rib. The transition zone between the brown, dead leaf tissue and the healthy, green leaf tissue is often discolored yellow or reddish. By way of contrast, the leaves of healthy trees suffering from ordinary drought stress will have a more even brown margin without the discolored zone. In addition, the canopy on BLS-infected trees — or at least the afflicted portions — may leaf out later in the spring, and the branches may display smaller, discolored leaves. Infected branches will leaf out or re-foliate for several successive years before they die back to the main stem.

Unfortunately, no cure exists for BLS, only palliative measures. The New Jersey Division of Parks and Forestry along with Bartlett Tree Research Labs recently performed trials with the antibiotic Oxytetracycline (OTC) and the growth regulator Paclobutrazole (PBZ) on infected pin oaks and red oaks in Burlington and Mercer counties. The OTC was injected directly into the trunk at the base of the tree, while PBZ was applied to the soil around the base of the tree. The results of the study found that the OTC suppressed the symptoms of BLS during the year of treatment. The study also found that trees in the early stages of disease (with less than 50 percent of the canopy involved) were much more likely to benefit from the injections of OTC. In other words, treatment must be performed annually, and it will not be effective on trees in advanced stages of the disease.

The Princeton Boro Shade Tree Commission recommends that homeowners avoid planting trees considered a host for BLS, such as those mentioned above. Princeton Boro employees will be planting approximately 20 new trees this fall within the street right-of-way. At the recommendation of the Shade Tree Commission, the species selected for planting this year will be ginkgo and willow oak, neither of which has shown susceptibility to BLS. During future planting efforts, the Shade Tree Commission will recommend a variety of species in order to increase diversity and reduce the potential impact that a tree disease might have on our urban tree resource.

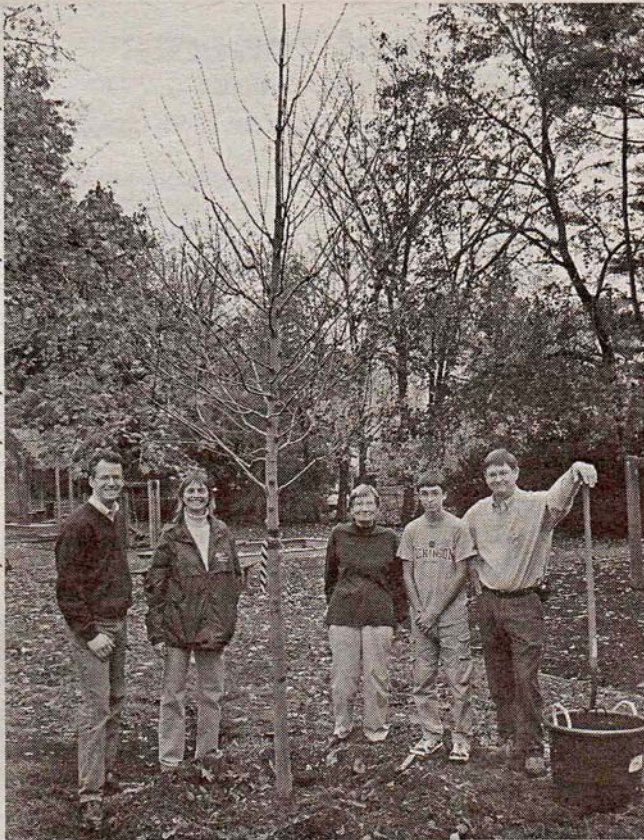
To learn more about this issue, the public is welcome to attend the Princeton Borough Shade Tree Commission meetings at Borough Hall (1 Monument Drive) on the third Tuesday of each month beginning at 5:30 p.m.

—Curtis Helm

Mr. Helm is an environmental consultant with Amy S. Greene Environmental Consultants, Inc. and serves as a volunteer on the Princeton Borough Shade Tree Commission.

Curtis W. Helm, Town Topics, September 13, 2006

TOWN TOPICS, PRINCETON, N.J., WEDNESDAY, NOVEMBER 28, 2007 • 34



**OCTOBER GLORY:** Andrew Koontz of the Borough Council and the Princeton Parks Alliance and Polly Burlingham from the Princeton Borough Shade Tree Commission are joined by members of the Flemer family (from left) Lib, Will, and Bill Flemer in planting an October Glory maple in memory of William Flemer III. Princeton Parks Alliance donated the funds for the tree as part of the Shade Tree Commission's memorial tree program.

Memorial Tree Planted Honoring John Kuser, Town Toics, October 22, 2008