



Lawrence Township
Community Forestry Management Plan
2019-2024

Mayor

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Township Council

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Project Manager

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Assisted by:

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NJ Approved Consulting Forester
NJ Licensed Tree Expert, LTE #375
Society of American Foresters- Fellow 2006

6th DRAFT
March 22, 2019

Table of Contents

Table of Contents	2
1) Municipal Information Form	3
2) Introduction	4
a) Mission Statement	4
b) Goals and Objectives	4
c) Tree Hazard and Liability Statement	4
3) Community Overview	4-7
4) Community Forestry Program Administration.....	7-10
5) Community Map.....	11
6) Training Plan.....	12
7) Public Education/Awareness/Outreach	12-13
8) Statement of Tree Budget	13
9) Statement of Plan Implementation	
a) Tree Inventory/Assessment.....	14
b) Hazard Tree Management	14
c) Tree Planting	14
d) Tree Maintenance and Care	14
10) Community Stewardship Incentive Program	14-16
11) Appendix	17-30
1. Tree Removal Application	17
2. Ash Removal Efforts	18-19
3. Sidewalk Ordinance	20-30

Shade Tree Advisory Committee (STAC)

David Bosted - Chairman

Sheila Grant

Edward Sproles

3 vacancies

Michael Powers – Liaison to the Township Council

Kim Y. Taylor – Planning Board Liaison

Andrew Kim – Liaison to Township Staff

Community Forestry Management Plan

MUNICIPAL/COUNTY INFORMATION FORM

Municipality _____

County _____

Address _____

Contact Name and Title _____

Phone # _____

Fax # and E-mail _____

Organization Name _____

Mayor/County
Freeholder's Signature _____

Date of Management
Plan Submission _____

Time Period Covered
in Management Plan _____

Community
Stewardship Incentive
Program (CSIP)
Practices Identified in
Management Plan

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

I certify that this Community Forestry Management Plan was developed specifically and exclusively for our municipality / county.

Official Use Only Certification

The above named municipality/county 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 _____

2. INTRODUCTION

- a. **Mission Statement:** The Township of Lawrence desires to maintain and promote a healthy, safe and sustainable shade tree resource that will physically and aesthetically benefit the community and its residents in the most cost effective manner possible.

b. **Goals (i) and Objectives(1):**

- i. Maintain Tree City USA status
 1. Conduct an Arbor Day Celebration.
 2. Successfully complete the NADF application form for Tree City USA. 2019 will be our 23rd year of Tree City status.
- ii. Increase tree cover on public and private lands.
 1. Using CSIP, municipal and private funding, continue tree planting for Ash tree replacement.
 2. Plant trees when possible to maintain and increase Lawrence Township's canopy cover.
 3. Access the NJ Tree Nursery to promote tree planting on private lands
- iii. Properly maintain the existing tree resource.
 1. Update the Township tree planting list to reduce conflicts with utilities, and sidewalks.
 2. Continue the mutual aid agreement with Princeton Township for pruning and removal assistance.
 3. Train employees and volunteers on proper tree pruning techniques. Schedule training for DPW employees and STAC members.
 4. Take actions as needed to reduce the impacts of Spotted Lantern Fly.
- iv. Continue the cooperation and coordination efforts between STAC, DPW and Planning.
 1. Train employees and volunteers on tree risk assessment. Schedule training for DPW employees and STAC members.
 2. Include tree information in the Township quarterly newsletter (Lawrence Link), minimum 1 per year. Include Emerald Ash Borer (EAB) information for residents to make informed decisions.
 3. Revise, update and disseminate the preferred tree species list to residents.
 4. Apply for additional USDA-NRCS funds for Ash removal and invasive plant removal at Drexel Woods.
 5. Keep informed and inform residents of the threat posed by Spotted Lantern Fly.
- v. Fully support the Shade Tree Advisory Committee to assist the Township on tree related issues, including training and education.

c. **Liability Statement:**

The Township of Lawrence (Lawrence) recognizes the benefits provided to the community by its tree resources. As trees are living entities, it is inevitable that as they mature they eventually require care, maintenance, removal and replacement. It is the intent of this plan to focus available Township resources to reducing tree hazards on Municipal property while creating a feeling of community by the proper care of the Township's trees.

Since it is impossible to predict or prevent all hazardous conditions that may arise, Lawrence is developing this plan to become more proactive in its tree maintenance. Proactive tree management should reduce the occurrence of hazardous events. Following this plan will demonstrate Lawrence's commitment to proper tree management within the Township's rights-of-way and public holdings.

3. COMMUNITY OVERVIEW – Accomplishments pursuant to the last 5-year Plan:

1. Planting efforts revolved around replacing the removal of 60 Ash trees around the Dix Lane development. These removals and subsequent replacements were conducted over a three year period with a third of the 60 Ash trees removed (20 trees) and then replanted with trees designed to reduce impacts to utilities and sidewalks and address local climate and soil limitations. **See Appendix 2 - Ash Removal summaries.** ///////////////77
2. Lawrence Township continued their on-going tree removal and maintenance program as a mutual-aid agreement with Mercer County and Princeton. A better relationship is sought with PSE and G and NJDOT regarding both ANSI pruning standards and tree risk concerning hazardous Ash in the utility lines and along non Township ROW's.
3. Lawrence Township does maintain an inventory of newly planted trees along municipal streets and periodic inspections are conducted to set priority pruning efforts and removals.
4. Lawrence Township reviews their tree-related ordinances periodically and continues to improve their tree species selected for planting based on current science and growth patterns. Mature tree size will become smaller as trees selected for planting seem to be small-mid-size trees that reduce safety conflicts.
5. Multiple tree-related links are included on the Townships website. <http://lawrencetwp.com/> Information on Emerald Ash Borer (EAB) and Spotted Lantern Fly is available. Additional tree related information is available on the Shade Tree Advisory Committee's page:
<http://lawrencetwp.com/com-tree.html>
6. Lawrence Township accesses mutual-aid with neighboring communities at every possibility to advance their proactive role in managing the Townships public tree resource. Equipment from Mercer County and Princeton licensed professionals when needed. Mercer County and PSE and G have partnered with Lawrence Township on Ash removals along County Roads and utility ROW's.
7. Lawrence Township acted proactively to identify Ash along its ROW's and took steps to remove 60 trees over a 3-year period. Replacement trees were installed to restore the lost canopy. Additional Ash were identified by Lawrence Township and subsequently removed by Mercer County along their ROW's within Lawrence Township. Hazard trees on Township property or along municipal ROW's are identified on a continuous basis and scheduled for risk reduction pruning or removal.
8. Master Plan compatibility? The CFMP is linked through the Open Space Master Plan through the established controls on tree clearing (Appendix 3) and the objective to maintain community facilities (parks and public trees). See attached Open Space Plan.
9. 2010 Sustainability Amendment to the Master Plan connects the CFMP to tree preservation through the Land Use Tree Preservation Ordinance.
<http://lawrencetwp.com/documents/planning/Lawrence%20Sustainability%20Element.pdf>
10. Lawrence Township has continually support both CORE and CEU training by both STAC members and Municipal employees
11. Lawrence Township accesses mutual-aid with neighboring communities at every possibility to advance their proactive role in managing the Townships public tree resource. Equipment from Mercer County and Princeton licensed professionals when needed.

Existing Tree Resource

The existing tree resource is estimated to be approximately 3000-5000 trees. Recently constructed subdivisions (after 2000) include the tree plantings inside the sidewalk on private property approximately 10' from the edge of curb. This includes the Meadow Glen, Waverly, Powell's Mills and Coventry Glen developments. Trees planted in these subdivisions include multiple species planted in blocks. Species include *Zelkova serrulata*, *Japanese zelkova* *Quercus accutissima*, Sawtooth oak, *Pyrus calleryana*, (probably *Redspire*), *Redspire Callary pear*, *Fraxinus pennsylvanica*, Green ash and *Quercus palustris*, Pin oak.

Master Plan Linkage

There is no language that directly links the Master Plan to Community Forestry and this CFMP. However there are several opportunities to link them when the next “re-examination report” is authorized. The most recent re-examination was developed in 2009 by Marc R. Schuster, AICP, PP #1746 and includes 14 revised *Land Use* Goals and Objectives that can include Community Forestry language that will help to meet the goals in 5 of the 14 that are listed. Those Goals are numbers 4, 5, 7, 9, 10. See Appendix 3. In addition, the 2002 re-examination includes 3 goals and objectives for “*Recreation, Conservation and Farmland Preservation*” that could include a community forestry component that may help to achieve the three stated goals. See Appendix 1. The Lawrence Township Master Plan can be accessed here:

<https://www.ecode360.com/documents/LU1362/public/322313847.pdf>

Ordinances

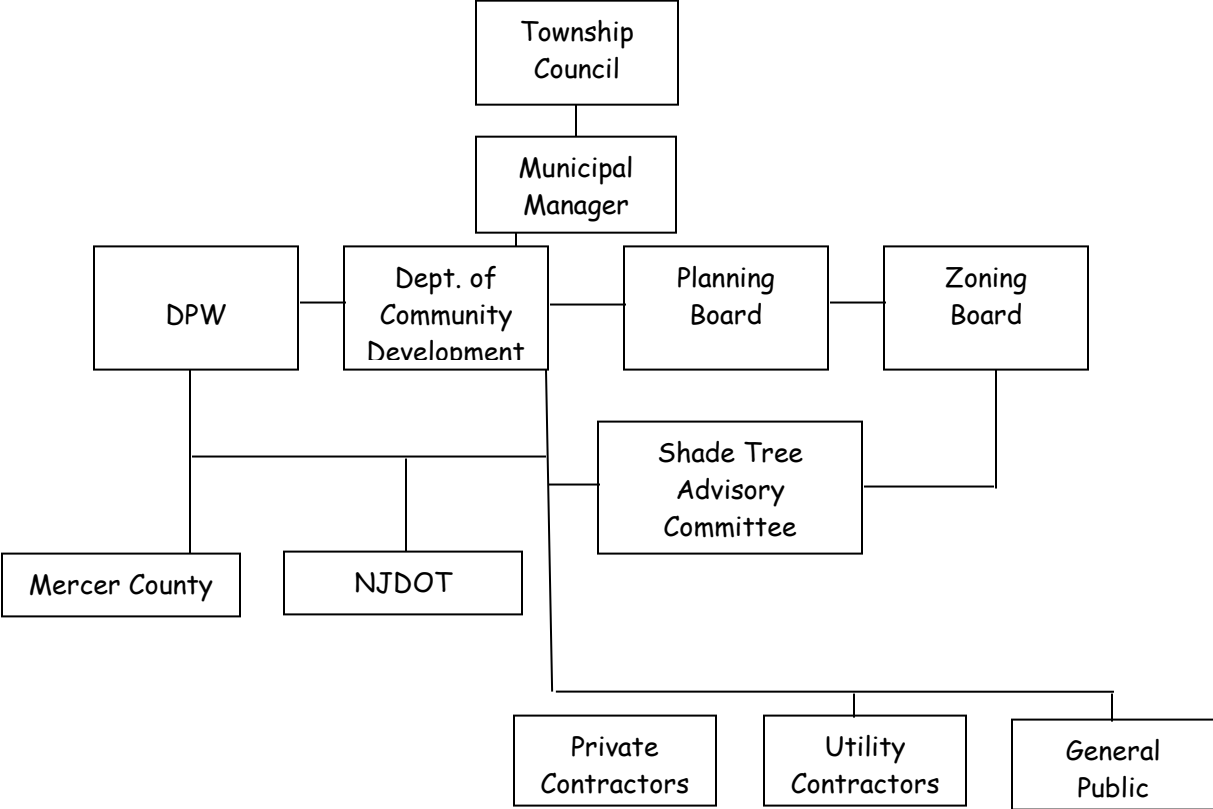
Shade Trees are specifically outlined in Ordinance No. 1511-97of the Townships Land Use Regulations. See Appendix Figure 3.

4. PROGRAM ADMINISTRATION

The administration of the program will be conducted by the Community Development and Andrew Link’s Office. Implementation of the plan will be performed by the Townships Department of Public Works (DPW) and assisted by the Shade Tree Advisory Committee (STAC). The implementation of the Community Forestry Management Plan will be a working cooperative of the Lawrence Township Council, Business Administrator, DPW and the Shade Tree Advisory Board.

-  Township Municipal Manager
-  Community Development
-  Shade Tree Advisory Board

Lawrence Township Organizational Chart



A. The Township Council:

- a. The Township Council is responsible for appointing the members of the Lawrence Township Shade Tree Advisory Committee (STAC) along with one liaison to the Committee from the Township Council.
- b. The Township Council is responsible for establishing the responsibilities and duties of the Lawrence Township STAC.
- c. The Township Council approves annual budgets for the Lawrence Township Shade Tree Committee (STAC) and the Department of Public Works (DPW).

B. Lawrence Township Shade Tree Advisory Committee:

The Lawrence Township (STAC) is a seven member volunteer committee appointed by the Township Council. They are the advisory committee for all public trees on Municipal streets, ROW's, parks and other public properties. The duties of the Committee typically include the following.

- a. Provide advice regarding the planting, removal and general maintenance of Township trees.
- b. Develop and recommend the policies and goals that will preserve and develop Lawrence Township's tree resource.
- c. Perform public outreach to foster better understanding and care for Lawrence Township's trees on both public and private property.
- d. Propose tree related items for inclusion in the annual township budget.
- e. Review site plans and make recommendations pertaining to landscape materials and trees.

C. Municipal Manager:

- a. Reviews plans and policies submitted by STAC and makes recommendations to Council.
- b. Recommends the annual budget for STAC to the Township Council.

D. Director of Public Works:

- a. Reviews any requests for tree planting, removal or maintenance and makes the necessary inspections.
- b. Supervises all work done by the Department of Public Works (DPW).
- c. Inspects work performed by private contractors.
- d. Develops annual plans and budget requests for tree maintenance.
- e. Maintains through public employees and private contractors all trees on private property.
- f. Apply fertilizers and pesticides as needed in parks and sports fields.

E. Department of Community Development Principal Planner:

- a. Advise the Municipal Manager of tree issues.
- b. Manage the street tree planting program
- c. Serve as staff liaison to the STAC.
- d. Apply for and manage any awarded tree related grants.
- e. Maintain the Tree City USA Certification.
- f. Handle inquiries from the public regarding municipal trees.
- g. Make determinations for tree removal.
- h. Write grants for tree purposes.
- i. Perform any tree related tasks assigned by the Municipal Manager.
- j. Manage annual Arbor Day activities.

F. Department of Community Development Assistant Municipal Engineer:

- a. Approves requests for tree removal that are allowable under the Land Use Ordinance after field verification.

- b. Issues permits for tree removal that exceeds what is allowable under the Land-use Ordinance.
- c. Issues permits for removal of specimen trees.
- d. Issues permits for the removal of hazardous trees.
- e. Oversees projects requiring the landscape issues are met to keep within plan approvals.

G. Planning Board:

- a. Works with the Department of Community Development and STAC to ensure street trees and landscaping are installed as part of all new development.

H. Zoning Board:

- a. Works with the Department of Community Development and STAC to ensure that street trees and landscaping are installed as part of all new development.

I. Private Tree Contractors:

Generally, most tree care and maintenance activities are done in-house or by county tree crews, but when difficult or large climbing jobs arise, private contractors may be deemed necessary on a case-by-case basis.

Private contractors are responsible for the following:

- a. Provide proof of appropriate and adequate insurance, certifications and licenses as necessary to the appropriate Department heads.
- b. Report prior to and following all work performed to the appropriate department supervisor.
- c. 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.
- d. Follow all current arboriculture practices and recommendations.
- e. Report all hazards or problems directly to the appropriate department head immediately.

J. Utility Contractors:

- a. They must notify the Lawrence Township Director of Public Works prior to the start of any non-emergency work in the Township.
- b. They must follow all current arboriculture practices and recommendations.
- c. May assist DPW tree crews in clearing trees to a safe distance from their facilities when necessary.

K. General Public:

- a. Continue to report all requests for planting, removal or maintenance to the Municipal Manager, DPW, STAC or the Department of Community Development.
- b. Assist in the follow-up care to the newly planted trees on adjacent properties or in the County/Township ROW.

L. Mercer County Tree Crews:

- a. Responsible for maintaining trees in their ROW along county roads.

M. NJDOT Tree Crews:

- a. Responsible for maintaining trees in their ROW along state roads.

Tree Service Request Procedure

When a request for tree work is received by Lawrence Township, (Mayor or Committee, Municipal Office, or STAC) it is referred to the Department of Public Works. Tree work within the municipal right of way is conducted by DPW in a first come, first served process. A running log of tree requests is kept on file at the DPW office.

Shared Services Agreement between Princeton and Lawrence Township

Lawrence Township and Princeton continue to share certain services. Lawrence Township previously benefitted from the assistance of Princeton's tree crews for emergencies and occasional work that was beyond the capability of what Lawrence crews could accomplish. Lawrence Township and Princeton share the responsibility of operating and maintaining the joint ecological facility. Lawrence Township owns the land and the licensing for the facility. The equipment is jointly owned with Princeton and the facility is jointly staffed. Excess products beyond what the residents use, are sold and save the communities over \$1 million dollars.



Lawrence Township's Drexel Woods property (51 acres) is being managed under a Forest Stewardship Plan that identifies hazard reduction, (Ash removal) and invasive control (Multi-flora rose) as priorities. With USDA-NRCS cost share, 5 acres of Ash removal has been completed (100+ trees cut down) and 7 acres of invasive species control.



Ash cut material was used to create brush-piles for wildlife habitat on the Drexel Woods property.



Lawrence Township Arbor Day Celebration 2017

6. Training Plan

Since arboriculture is constantly changing with fast-paced technological innovations, Lawrence Township recognizes the need for a broad-based on on-going training programs for individuals at all levels of the Community Forestry Program.

A. Training Program:




- a. Lawrence Township allocates a portion of their budget for annual training of STAC members, committee liaisons, and DPW staff.
- b. The Lawrence Township STAC encourages participation in NJ Community Forestry Program training opportunities such as CORE and continuing Education (CEU's). Currently two Township employees and two volunteers are CORE trained.
- c. Lawrence Township's number one concern for its staff is safety and they religiously attend ASHA training on grounds maintenance, tree trimming and aerial bucket truck training. They also have a policy for personal protective equipment through OSHA. These training programs are available to all individuals involved in managing Lawrence Township's tree resource.
- d. DPW has arranged when needed, to have staff attend pruning classes performed by the staff Horticulturalist at the Mercer County Extension Service.

B. Goals and Objectives:

- a. To have all individuals involved in the community forestry program be CORE trained and receiving CEU credits in accordance with the Shade Tree and Community Forestry Assistance Act.
- b. Reduce with a goal to eliminate, any safety related accidents to the tree crews through training and policy implementation.
- c. Increase the quality of tree care by having tree crews trained to current science.

7. Public Education Awareness and Outreach

Since the beginning, (1996) Lawrence Township's STAC has supported educating the public regarding tree care. This public education component of the Community Forestry Program serves two purposes:

-  Educates the community at large regarding proper tree care to reduce maintenance costs.
-  Encourages support for the tree program.
-  Partners with and helps provide outreach and awareness lessons with the Lawrence Nature Center.

The STAC would like to provide the following education, awareness and outreach opportunities to Lawrence Township's residents over the next 5-year planning period:

1. Working with the Garden Clubs to maintain and beautify Municipal public spaces.
2. Provide arboriculture advice to residents at no cost.
3. Provide tree seed and seedlings to school children during Arbor Day celebrations.
4. Continue to advise the Planning and Zoning Boards on proposed tree selection on development projects.
5. Better involve schools and scouts in the Arbor Day celebrations.
6. Continue to contact local newspapers regarding tree related events.
7. Publish 2 tree related articles from the National Arbor Day Foundation annually in the Lawrence Ledger.
8. Continue the tradition of Tree City USA certification.
9. Hold an annual seminar on current tree related issues.
10. Have STAC participate in Community Day activities.
11. Continue to provide tree related literature at the Lawrence Township Branch of the Mercer County Library.
12. Continue to publicize the Memorial Tree Program.

13. EAB management and Invasive plant removal initiative taken with the Lawrence Nature Center at Drexel Woods.

Wildfire Protection

Lawrence Township has not been selected by the NJ Forest Fire Service as an “at-risk” community in need of a Community Wildfire Protection Plan (CWPP). There are currently no certified Firewise Communities in Lawrence Township. Lawrence Township lies outside the NJ Forest Fire Service’s primary response area.

Tree Recycling

Lawrence Township recycles all leaves and brush on local residents property and recycles them as valued added mulch and compost at their ecological facility

Sidewalk Maintenance Program

Lawrence currently has no sidewalk maintenance program. Trees in the ROW on Municipal streets are the Township’s responsibility with the sidewalk and associated maintenance belonging to the homeowner. Lawrence Township selects tree species to minimize sidewalk conflicts when planting between curb and sidewalk.

Stormwater Management

Lawrence Township has a comprehensive leaf and brush pickup program reducing impacts to Stormwater infrastructure. It has a Stormwater management plan as required by NJDEP.

8. Statement of Tree Budget

Activity	Department	Cost	
		Hours	Labor
Leaf/Brush Collection	DPW	3,662.5	\$92,475.18
Tree Removals, Lawrence Township	DPW	1,752	\$38,128.00
Tree Removals Contract Services	Private Contractors	768	\$14,027.60
Planting	Township	25	\$2,246.00
*Volunteer Activity (\$24.69/hour)			
Planting	STAC	20	\$493.80
Meetings and Arbor Day	STAC	400	\$9,876.00
Lawrence Community Day (all volunteer hours)	Shade Tree Advisory Committee (STAC)	70	\$1,728.30
	Total	6,207.50	490*
			\$158,974.88

9. Statement of Plan Implementation

- a. **Maintain Tree City USA status (2019-2023)**
 1. Conduct an Arbor Day Celebration at an annually selected school.
 2. Successfully complete the NADF application form for Tree City USA. 2019 will be our 23rd year of Tree City status.
- b. **Increase tree cover on public and private lands. (2019-2013)**
 1. Using CSIP, municipal and private funding, continue tree planting for Ash tree replacement.
 2. Plant trees when possible to maintain and increase Lawrence Township's canopy cover.
 3. Access the NJ Tree Nursery to promote tree planting on private lands
- c. **Properly maintain the existing tree resource. (2019-2023)**
 1. Update the Township tree planting list to reduce conflicts with utilities, and sidewalks.
 2. Continue the mutual aid agreement with Princeton Township for pruning and removal assistance.
 3. Train employees and volunteers on proper tree pruning techniques. Schedule training for DPW employees and STAC members.
 4. Apply for additional USDA-NRCS funds for Ash removal and invasive plant removal at Drexel Woods.
 5. Take actions as needed to reduce the impacts of Spotted Lantern Fly.
- d. **Continue the cooperation and coordination efforts between STAC, DPW and Planning. (2019-2023)**
 1. Train employees and volunteers on tree risk assessment. Schedule training for DPW employees and STAC members.
 2. Include tree information in the Township quarterly newsletter (Lawrence Link), minimum 1 per year. Include Emerald Ash Borer (EAB) information for residents to make informed decisions.
 3. Revise, update and disseminate the preferred tree species list to residents.
 4. Keep informed and inform residents of the threat posed by Spotted Lantern Fly.
- e. **Fully support the Shade Tree Advisory Committee to assist the Township on tree related issues, including training and education. (2019-2023)**

10. CSIP

CSIP #1 Training

Lawrence Township is committed to training paid and volunteer staff on an annual basis at the NJ Shade Tree Federation Meetings. They sent staff and volunteers to the 2018 meeting and completed the CORE and CEU requirements for 2019. Lawrence plans to continue to support training for volunteers and staff through the life of this management plan. Pages 12.

CSIP #2 Community Forestry Ordinance Establishment

Lawrence has completed the process of establishing a Shade Tree Advisory Board and developing ordinances to support the board. See appendix 2. They have reached out to the NJ Forest Service to obtain recommendations and model ordinances and have discussed this with neighboring towns at the Shade Tree Federation Meeting in October in support of strengthening the Board. The STAC wishes to amend the Shade Tree ordinance to remove White and Green ash as a preferred species for planting. Pages 20-30.

CSIP #3 Public Education and Awareness

Lawrence Township produces a resident newsletter and has agreed to include Shade Tree information in the newsletter on an annual basis. They wish to expand the Shade Tree portion of the website to include EAB information for residents. Pages 12-13.

CSIP #4 Arbor Day Activities

Lawrence Township plans to maintain their Tree City USA certification and will conduct Arbor Day Activities in support of that goal. They have held Arbor Day activities in the past and the Mayor has signed proclamations observing Arbor Day. Page 12.

 **CSIP #5 Tree Inventory**

Lawrence plans to locate the Ash trees Identified in the RAS and key them to street addresses. Then inform the residents of their options in regards to removal or treatment at a public meeting. They would apply for a CSIP grant to address the tree planting need from a loss of Ash trees in their canopy. Most but not all of the street trees are located on private property. If the assessment/inventory is completed they will have a more accurate picture of the state of the resource and can budget and plan to manage it on a consistent basis. Pages 14.

 **CSIP #6 Tree Hazard Assessment**

Hazardous trees will be a priority to be identified as part of the shade tree assessment/inventory. An accurate assessment of the age/condition of Lawrence's tree resource will be the cornerstone of their management plan implementation to properly manage the existing tree resource. Page 14

 **CSIP #7 Storm Damage Assessment**

Lawrence Township's street trees lie mostly on private property. Any storm damage assessment should identify a location to take debris (DPW yard) and emergency numbers for contacting Mercer County and NJDOT. (in place)

 **CSIP #8 Tree Maintenance and Removals**

Tree maintenance is an on-going struggle in Lawrence Township with a lack a sufficient resources. They hope to first educate themselves on proper pruning techniques. In addition they wish to become more pro-active with the completion of the shade tree assessment/inventory on Municipal property and in so doing make Lawrence a safer community. They are educating paid and volunteer staff to the risks of hazardous trees and hope to use this new found knowledge to institute proactive tree pruning/removals if the inventory reveals a need. Page 14.

 **CSIP #9 Insect and Disease Management**

RAS follow-up with an Ash inventory and resident outreach to affected addresses. Lawrence Township participates in the Gypsy Moth Bt cost share suppression program through the NJ Forest Service. They will continue to participate as the need is identified, areas are determined that qualify and funds permit. Page 18-19.

 **CSIP #10 Wildfire Protection**

Lawrence Township lies outside the NJ Forest Fire Service's primary response area with wildfire not a priority in this plan.

 **CSIP #11 Tree Planting**

Lawrence has a long standing commitment to tree planting and demonstrates they have the knowledge and resources to plant the right tree in the right spot. They are committed to submitting (1) CSIP tree planting request to address this need. Page 14.

 **CSIP #12 Tree Recycling**


Lawrence already has a large brush, leaf recycling program as do most NJ Municipalities. They recycle their brush into chips and leaves into compost. This will continue through the life of the management plan and this process will help them meet the budget requirements for Tree City USA status. See page 13 tree budget.

 **CSIP #13 Sidewalk Maintenance Program**

There is currently no sidewalk maintenance program in Lawrence's as sidewalk is the responsibility of the homeowner. Tree planting in these areas that has occurred inside the sidewalk has minimized root impacts to the sidewalks.

 **CSIP #14 Storm Water Management**

Lawrence Township has a comprehensive leaf and brush pickup program reducing impacts to Stormwater infrastructure. It has a Stormwater management plan as required by NJDEP. Page 14.

 **CSIP #15 Other**

There are no other practices that Lawrence identified as a need that are not part of the 14 above.

Lawrence Township has some impressive old street trees like these American Beech along its municipal roads.



Lawrence Township has some planting strips with large trees on the utility free side of the road and some vacancies and smaller trees on the utility side of the road. It is apparent that they have been planting the "right tree" in the right spot for a long time.

Appendix 1

Township of Lawrence
Engineering Department
609.844.7087

TREE REMOVAL APPLICATION

Permit No. _____

Name: _____

Address of Work: _____

Block _____ Lot _____

Number of Trees to be Removed: _____

Size(s) _____

Contractor: _____

Address: _____

Phone: _____

Owners Name: _____

Print

Signature

Fee Information: \$ 50.00 for site 10 acres
 \$100.00 for site 10 acres

(do not write below this line)

Inspection:

Date: _____

Inspector: _____

Notes: _____

s:\tree removal application.doc

APPENDIX 2

ASH REMOVALS & REPLACEMENTS

Ash Removals

Phase 1

46 Ash removed and stumps ground out. Dix Lane, Bergen Street and other streets
Award: 9/8/2016 Greenscape Tree Services \$44,125 .00

Phase 2

42 Ash removed and stumps ground out. Province Line Road and other streets.
Award: 12/2/2016 Rich Tree \$15,300.00

Phase 3

55 Ash removed and 53 stumps ground out. Flannigan Street, Baker Street, Canal View Drive, Morrell Road, Vacarro Road, Mink Court, Tamar Court, Dayna Lane, Anthony Lane, Bergen Street, and Province Line Road
Award: 12/2/2016 Mazza Mulch \$11,764.00

Phase 4

111 Ash removed and 77 stumps ground out. Dix Lane, Overlook Way, Woodlane Road, Flannigan Street, Baker Street, Canalview Drive, Morrell Road, Mink Court, Roxboro Road, Van Kirk Road, Province Line Road, and Village Park
Award: 9/19/2016 U.S. Athletic Fields \$28,900.00

Phase 5

73 Ash removed and 76 stumps ground out on Alexandria Court, White Pine Circle, Province Line Road, Millerick Ave.
Award: 12/4/2017 Mazza Mulch \$23,400.00

Ash Tree Replacement

53 Street Trees – Flannigan Street, Baker Street, Morrell Road, Canalview Drive, Tamar Court, Mink Court, Dayna Lane, and Anthony Lane
Award: 12/6/2016 Sussman Enterprises \$16,430.00

60 Street Trees on Dix Lane (Phase 1)

Award 4/25/2017 Twin Cedars Landscape Construction Group \$23,280.00

58 Street Trees on Dix Lane Replacement Planting (Phase 2), Overlook Way, Alexandria Court, Flannigan Street, Baker Street, Canal View Drive, Morrell Road, Mink Court.

Award: 10/4/2018 Sunset Creations \$27,202.00

Trees Treated for Emerald Ash Borer

2016 systemic soil injection 39 Ash on Gordon Ave. and 5 Ash in Village Park (Bergen Street end)
Bartlett Tree Experts \$1,850.00

2017 39 Ash on Gordon Ave., 6 Ash Village Park (Bergen Street end), 40 Ash on Tomlyn Drive, , 2 Ash on Anthony Lane, 5 Ash on Dayna Lane. 2-year systemic trunk injection. Bartlett Tree Experts \$7,020.00

4/27/18 - 19 Ash Dorchester Court 1-year systemic soil injection . Bartlett Tree Experts \$555.75

Ash Replacement Street Tree Planting List for constrained locations:

Scientific Name	Common Name	Notes
Acer campestre	Hedge Maple	
Acer griseum	Paperbark Maple	
Amelanchier grandiflora "Autumn Brilliance"	Autumn Brilliance Serviceberry	
Carpinus betulus "Fastigiata"	Columnar European Hornbeam	
Maackia amurensis	Amur Maackia	
Syringa reticulata "Ivory Silk"	Ivory Silk Tree Lilac	
Craetaegus viridis "Winter King Hawthorn"	Winter King Hawthorn	
Cornus Rutgersii "Stellar Pink"	Stellar Pink Rutgers Dogwood	

Appendix 3: Land Use and Tree Replacement Ordinances

**Land Use Ordinance
Lawrence Township, Mercer County §525**

§ 525 Landscaping.

A. General Provisions. The following general provisions shall apply to the installation and design of landscapes:

1. All land areas not covered with buildings, parking, or other impervious surfaces shall be landscaped with suitable materials. Landscaping shall consist of trees, shrubs, ground cover, perennials, and annuals singly or in common as well as other inanimate materials such as rocks, water, sculpture, art, walls, fences, and paving materials.
2. A landscape design shall be provided as part of site plan and subdivision submissions in accordance with Article VIII. Every applicant for subdivision or site plan approval shall comply with the minimum standards as set forth in this section.
3. The Board of Jurisdiction may require additional landscaping to create an appropriate landscaping scheme for the site given the nature of the site and the proposed development.
4. Where subdivisions only are applied for, the minimum standards shall apply only to street trees and to common open space and areas proposed to be dedicated to the public.
5. All landscape plants shall be typical in size and weight for their species and shall conform to the standards of the American Association of Nurserymen for quality and installation.
6. Plants with pervasive root systems shall not be located where they may cause damage to drainage pipes or other underground utilities and storm water management facilities and should generally be no closer than 10 feet measured horizontally.
7. All plants shall be tolerant of specific site conditions. The use of indigenous species is strongly encouraged. Exotic, non-native invasive plant species shall not be permitted.
8. Visual screening is required to buffer all trash enclosures, above ground propane tanks and other similar structures as identified by the Zoning Officer. [Ord.1585-99, 9/7/1999]

B. Landscape Design Guidelines.

1. Landscaping shall be conceived holistically and be designed to achieve a thorough integration of the various elements of site design, including building and parking placement, the natural features of the site and the preservation of pleasing or aesthetic views. Landscaping shall be used to accent and complement the form and type of building proposed.
2. In the landscape design of sites, areas shall be designated for retaining existing trees and the replacement of trees cleared from the site in accordance with §541.
3. Landscaping shall be located to provide effective climatic control. The east and west walls of a building should be the most heavily vegetated to shade for summer sun and the north to northwest area for winter prevailing winds. The southerly facing side of a building should be shaded from summer sun but open for solar gain during the winter.
4. Plant's susceptibility to disease, their colors, textures, shapes, blossoms, and foliage characteristics shall be considered in the overall design of a landscape plan.
5. Local soil conditions and water availability shall be considered in the choice of landscaping.
6. In the design process, the eventual maturity of the plant shall be considered for its effect on circulation patterns, solar access, site lighting, drainage, emergency access and relationship to buildings and the streetscape.

C. Street Trees.

1. Location. Street trees shall be installed on both sides of all streets in accordance with an approved landscape plan. Trees shall be spaced evenly along the street between the curb and sidewalk. Where the distance between the curb and sidewalk is less than 5 feet, sidewalks should be placed in a public access easement outside of the right-of-way to create a planting strip at least 5 feet wide to facilitate street tree growth. In commercial areas with wider sidewalks that extend to the curb, trees shall be placed in tree wells with root guard systems. Such tree wells shall have sufficient soil volume to support tree growth as follows:

Tree Size at Maturity Height in Feet	Soil Volume Cubic Feet
Large Trees (45' +)	200
Medium Trees (30-45')	150
Small Trees (to 30')	100

2. Areas under sidewalks may be used to meet the soil volume requirement provided no more than 50% of the volume is located under such hard paving.

Spacing. When trees are planted at predetermined intervals along streets, spacing shall depend on tree size. Trees may be planted closer together in order to avoid interference with utilities, roadways, sidewalks, sight easements, and street lights.

Tree Size at Maturity	Planting Interval
Large Trees (45' +)	40
Medium Trees (30-45')	30
Small Trees (to 30')	20

3. Street tree type. Tree type may vary depending on overall effect desired but as a general rule, all trees shall be large deciduous trees except as needed to achieve special effects.

Table 5.4 Recommended Small Street Trees.

Scientific Name	Common Name	Minimum Planting Size
<i>Acer campestre</i>	Hedge Maple	2½ -3" cal.
<i>Acer ginnala</i>	Amur Maple	2½ -3" cal.
<i>Amelanchier x hybrida</i> 'Cumulus'	Shadblow 'Cumulus'	2-2½" cal.
<i>Acer buergeranum</i>	Trident Maple	2½ -3" cal.
<i>Crataegus phaenopyrum x. fastigiata</i>	Washington Hawthorne	2½ -3" cal.
<i>Crataegus viridis</i>	Green Hawthorne	2½ -3" cal.
<i>Magnolia x lobneri</i> 'Merrill'	Merrill Magnolia	10'-12'
<i>Malus baccata</i>	Siberian Crabapple	3"-3½" cal.
<i>Malus x zumi</i> 'Calocarpa'	Zumi Crabapple	3"-3½" cal.
<i>Syringa reticulata</i>	Japanese Tree Lilac	10'-12'

Table 5.5 Recommended Medium Street Trees.

Scientific Name	Common Name	Minimum Planting Size
<i>Acer rubrum</i> 'Northwood'	Northwood Red Maple	2½ -3" cal.
<i>Acer rubrum</i> 'Scanlon'	Scanlon Red Maple	3"-3½" cal.
<i>Acer saccharum</i> 'Goldspire'	Goldspire Sugar Maple	3"-3½" cal.
<i>Celtis bungeana</i>	Bunge Hackberry	2½ -3" cal.
<i>Cladratis kentukea</i>	Yellowwood	2-2½" cal.
<i>Carpinus caroliniana</i>	American Hornbeam	2½ -3" cal.
<i>Malus baccata</i> 'Manchurian'	Manchurian Crabapple	3"-3½" cal.
<i>Phellodendron amurense</i>	Amur Corktree	2½ -3 ½" cal.
<i>Tilia cordata</i> x. 'Whitehouse'	Whitehouse Linden	3"-3½" cal.

Table 5.6 Recommended Large Street Trees.

Scientific Name	Common Name	Minimum Planting Size
<i>Acer rubrum</i> 'October Glory'	October Glory red maple	3"-3 1/2" cal.
<i>Acer rubrum</i> 'Red Sunset'	Red Sunset red maple	3"-3½" cal.
<i>Celtis occidentalis</i> 'Magnifica'	Hackberry	3"-3½" cal.
<i>Fraxinus americana</i> 'Autumn Purple'	Autumn purple ash	3"-3½" cal.
<i>Ginkgo biloba</i> (male only)	Ginkgo	3"-3½" cal.
<i>Platanus acerifolia</i>	London Planetree	3"-3½" cal.
<i>Platanus occidentalis</i>	American Sycamore	3"-3½" cal.
<i>Quercus coccinea</i>	Scarlet Oak	3"-3½" cal.
<i>Quercus macrocarpa</i>	Bur Oak	3"-3½" cal.
<i>Quercus phellos</i>	Willow Oak	3"-3½" cal.
<i>Quercus rubra</i>	Red Oak	3"-3½" cal.
<i>Sophora japonica</i> 'Regent'	Scholartree	3"-3½" cal.
<i>Tilia x euchlora</i>	Crimean linden	3"-3½" cal.
<i>Tilia tomentosa</i> , 'Green Mountain'	Silver linden	3"-3½" cal.
<i>Ulmus parvifolia</i>	Chinese elm	3"-3½" cal.
<i>Zelkova serrata</i> 'Village Green'	Japanese zelkova	3"-3½" cal.

Table 5.7 Additional Recommended Trees.

Scientific Name	Common Name	Minimum Planting Size
<i>Acer palmatum</i>	Japanese Maple	6'-7'
<i>Acer saccharum</i>	Sugar Maple	3"-3 ½" cal.
<i>Betula pendula</i>	Weeping Birch	12'-14'
<i>Cedrus atlantica glauca</i>	Blue Atlas Cedar	6'-8'
<i>Cercidiphyllum japonicum</i>	Katsura-tree	3"-3 ½" cal.
<i>Cercis canadensis</i>	Eastern Redbud	6'-8'
<i>Cornus kousa</i>	Chinese Dogwood	2"-2 ½" cal.
<i>Crataegus crusgalli inermis</i>	Thornless Cockspur Hawthorn	2"-2 ½" cal.
<i>Cryptomeria japonica</i>	Japanese redcedar	5'-6'
<i>Fagus grandifolia</i>	American Beech	3"-3 ½" cal.
<i>Fagus atropinicea</i>	Copper Beech	3"-3 ½" cal.
<i>Gleditsia triacanthos inermis</i>	Thornless Honeylocust	3"-3 ½" cal.
<i>Ilex opaca</i>	American Holly	6'-7'
Scientific Name	Common Name	Minimum Planting Size
<i>Koelreuteria paniculata</i>	Golden Rain Tree	2"-2 ½" cal.
<i>Liquidambar styraciflua</i>	Sweetgum	3"-3 ½" cal.

Liriodendron tulipifera	Tulip Poplar	2"-2 ½" cal.
Metasequoia glyptostroboides	Dawn Redwood	8'-10'
Oxydendrum arboreum	Sourwood	6'-8'
Picea abies (excelsa)	Norway Spruce	5'-6'
Picea omorika	Serbian Spruce	5'-6'
Pinus strobus	White Pine	5'-6'
Pinus thunbergiana	Japanese Black Pine	5'-6'
Pinus virginiana	Virginia Pine	5'-6'
Populus balsamifera	Balsam Poplar	2 ½"-3" cal
Prunus cerasifera	Flowering Plum	2 ½"-3" cal.
Prunus serrulata	White Cherry	2 ½"-3" cal.
Pseudolarix kaempferi	Golden Larch	8'-10'
Pseudotsuga menziesii	Douglas Fir	5'-6'
Quercus acutissima	Sawtooth Oak	3" -3 ½" cal.
Quercus palustris	Pin Oak	3" -3 ½" cal.
Tilia cordata 'Greenspire'	Greenspire Linden	3" -3 ½" cal.
Tilia tomentosa 'Green Mountain'	Silver Linden	3" -3 ½" cal.
Tsuga canadensis	Canadian Hemlock	5'-6'
Ulmus americana 'Delaware'	American Elm, 'Delaware'	3" -3 ½" cal.

E. Fall Planting Hazard. Certain trees have been identified as having a high degree of transplantation failure if planted during the Fall season. These should be noted on landscape plans as Spring planting season only. The Fall planting hazard trees include the following genus and in some cases particular species:

Betula	Pyrus	Carpinus	Quercus, excluding Q. palustris
Crataegus	Salix	Salix babylonica	Ilex opaca
Tilia tomentosa	Liquidambar styraciflua	Zelkova	Liriodendron tulipifera

F. Buffers. Landscaping buffers are areas required to minimize and visually screen any adverse impacts or nuisances on a site or from any adjacent area.

1. General requirements.

- a. Landscape buffers shall consist of a combination of deciduous trees, conifers, shrubs, berms, and if appropriate, fences or walls in sufficient quantities and sizes to perform their necessary screening function.
- b. Buffers may be installed in required yard areas except for reverse frontage buffers where they shall be in addition to the required yard area.
- c. Buffers shall be continuous except for access drives as approved by the Board. Storm water management facilities, parking, dumpster enclosures, accessory building or above ground structures, and similar encroachments shall not be permitted in the required buffer area.
- d. The minimum width of a landscape buffer shall be dependent on the proposed use of a property and the land uses adjacent to it in accordance with Table 5.10.

2. Plant densities and structure requirements. The density of plantings and the requirements for structures shall vary with the width of the buffer in accordance with the following and Table 5.11:

- a. Any buffer 15 feet or less in width shall incorporate a fence or wall into the landscape design. The fence or wall shall be located on the side of the buffer with the most intensive use.
- b. Fences and walls may be used to reduce the required width of and number of plants in the buffer in accordance with Table 5.12.

3. Existing vegetation may substitute for all or part of the required buffer plantings and may be accepted in lieu of new plantings at the discretion of the Board.

**Land Use Ordinance
Lawrence Township, Mercer County §541**

§ 541 Tree Removal and Tree Cutting.

A. Purpose. The purpose of this section is to control and regulate indiscriminate or excessive removal, cutting, and destruction of trees, and to control, regulate, and prevent conditions which cause an increase in storm water runoff, sedimentation, soil erosion, reflected heat, air or noise pollution, or inhibit aquifer recharge. The regulations which follow are designed to limit such adverse impacts.

B. Permit or Board Approval Required. No person directly or indirectly shall, without either first obtaining a zoning permit or an approval in the site plan or subdivision application process, remove or relocate to another site any tree within a tree save area; or, remove any specimen tree regardless of location. "Removal" shall include, but not be limited to, damage inflicted to the root system by machinery, storage of materials and soil compaction, change of natural grade above or below the root system or around the trunk; damage inflicted on the tree permitting fungus, pest, or other infestation; excessive pruning or thinning leading to a failure to thrive; and paving over the root system with an impervious material within such proximity as to be fatally harmful to the tree.

C. Exemptions. The following tree cutting and tree removal activities shall be exempt, unless it is a specimen tree, from the provisions of this section:

1. Individual lot owners may remove up to 5 trees of 8" or more in caliper in any one year period. There is no restriction on the number of trees removed less than 8" in caliper. [Ord. 1585-99, 9/7/1999]
 2. Any tree growing on property approved to operate as a nursery or garden center.
 3. Any tree growing on property actively operated as a farm, which is removed to create fields for crops or forage and not sold for profit.
 4. Trees which, in the opinion of the Township, its employees or agents, constitute an immediate threat to the health, safety or welfare of the general public.
 5. Public or local utilities maintaining easements or rights-of-way in the normal course of business.
 6. Communications companies regulated by the Federal Communications Commission maintaining communications lines and equipment.
 7. Approved game management practice, as recommended by the State of New Jersey, Department of Environmental Protection, Division of Fish, Game and Wildlife.
 8. Properties devoted to the practice of silviculture for which farmland assessment has been approved.
- D. Application Procedures. Any person wishing to cut and remove trees within the municipality, unless exempted, shall file with the Township a tree protection plan prior to soil disturbance, the issuance of a building permit, or as part of the site plan and subdivision submittal process pursuant to Article VIII.

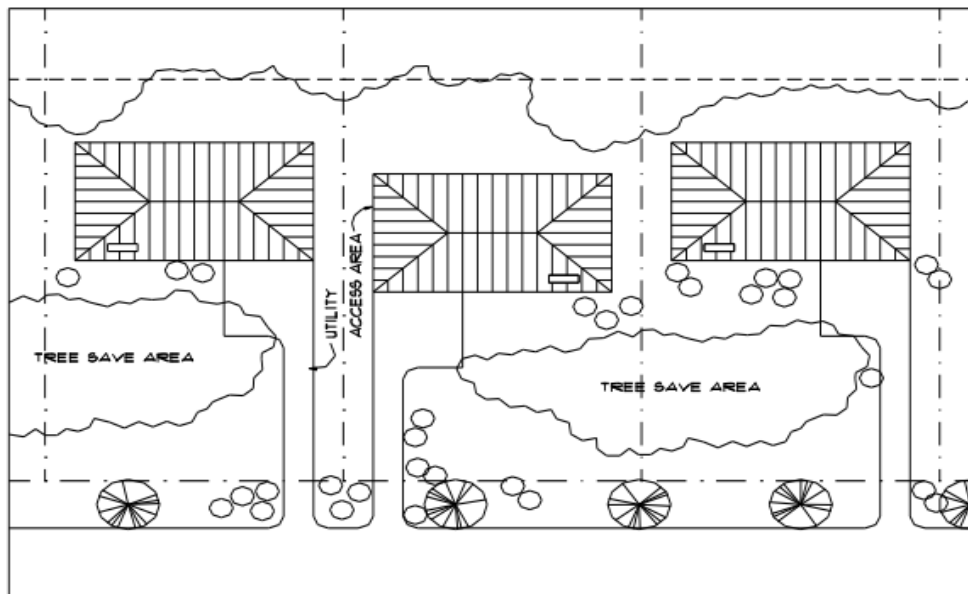
The tree protection plan shall include the following information:

1. Tax map, lot and block number.
2. Area of tract.
3. Location upon the lot of trees or wooded area.
4. The location upon the lot where tree removal is to take place.
5. A survey of the size (8" caliper or larger), species and quantity of trees which are to be removed. Where the area to be surveyed is greater than 10,000 square feet, a representative wooded rectangular area 100' x 100' may be surveyed and its results extrapolated to the remaining wooded area. A minimum of one sample plot per five (5) acres of total wooded area identified for the tree removal project shall be surveyed. The location of the sample plots shall be subject to the approval of the Board engineer, who may seek recommendations from the Board's planning consultant and/or the Township Shade Tree Advisory Committee. Notwithstanding the above, the tree survey shall individually locate each specimen tree on the entire site. [Ord. 1585-99, 9/7/1999]
6. A description of the type of tree removal project, that is:

- a. Thinning;
 - b. Selective cutting;
 - c. Clear cutting; or
 - d. Aesthetic improvement cut.
7. General slope and topography taken from either a survey of the property or official Township mapping.
 8. Location of streams and wetlands, as depicted on Township mapping.
 9. Specific proposals for replanting or reforestation, if applicable, including a list of trees to be planted, selected from the recommended trees lists pursuant to §525.
 10. The tree removal or tree replacement plan shall be overlaid on a map or survey depicting existing conditions of the site.
 11. Location of buildings.
 12. Location of roads, driveways, parking lots, staging areas, recreation areas, and garden areas.
 13. Grading plan.
 14. Schedule for tree removal and planting.
 15. Provision for removal of excess stumps and branches from the property.

E. Tree Protection Zone. Tree protection zones shall be established on all areas of a site contemplated for development; or, tree removal in the absence of an application for development. The tree protection zone shall be that area exclusive of buildings, parking, driveways, streets, storm water management facilities including swales, and utilities plus an additional width at the perimeter of such uses of land of 15 feet for a building and 10 feet for all other classes to permit appropriate grading. The intent is to create an area or areas in which trees shall be retained, planted initially, or are to be planted with replacement trees for areas that have been cleared for site development. Special attention should be given to placing old growth woodland into the tree protection zone. Utilities should be grouped into common easements to maximum tree save areas as illustrated in Figure 5.1.

Figure 5.1 Schematic Tree Save Areas and Location of Utilities.



1. Trees protection shall be grouped into tree save areas wherein retention is required unless waived by the Board of Jurisdiction or by the Administrative Officer, as the case may be. For permits that do not require an application for major subdivision or major site plan, the Administrative Officer shall determine the adequacy of the management plan. The Administrative Officer may consult with the Environmental within tree zones

Resources Committee, Shade Tree Commission or appropriate professional staff in his or her decision.

2. Tree protection zones and any tree save area within such zone for individual single family detached lots not subject to major subdivision approval shall be delineated on a plot plan or lot grading plan pursuant to §1202.C in order to determine compliance with this section.

F. Standards for Tree Retention. The following standards shall apply to all trees regardless of location:

1. Existing trees on a site contemplated for development shall be retained to the greatest feasible extent.

2. In off-street parking areas and storm water management facilities, islands of trees shall be retained. These requirements shall not pertain to individual single family detached and two-family dwellings.

3. No paving of any impervious nature shall be placed within the dripline of any tree, and the grade shall be such that drainage of rainwater will water the root area without pooling or exceeding the requirements of the species. Excess water shall be admitted to storm sewers in the parking lot or drained by other means acceptable to the Municipal Engineer.

4. Any live tree which is substantially damaged as a result of grading or general construction shall be replaced with another tree. A tree shall be substantially damaged when one-half trunk is girdled.

5. Any tree used in a required planting, or to replace a damaged tree, shall have a trunk or main stem which is at least 2.5 inches in caliper, unless the tree is used for storm water management facility plantings, and shall meet the specifications of the American Nurserymen's Association standards.

6. Existing trees are encouraged to be used for the required buffer zone of trees and shrubs to be established in accordance with §525.H.

7. Trees in the area between the street line and the setback line of the building shall be preserved to the greatest extent possible (see Figure 5.1).

8. Specimen trees shall not be removed unless diseased or constitute a hazard to the general public.

9. No trees on public rights-of-way, parks, or public areas are to be removed by private individuals except as approved by the Administrative Officer or other officer designated by the governing body. The removal of trees shall not be permitted from a Master Plan right-of-way unless trees are dead, diseased, or endanger life or property, or a letter of approval is obtained from the governing body or Administrative Officer. Conversely, no trees are to be planted on public rights-of-way without express approval granted as part of a site plan or subdivision application or by the Administrative Officer.

G. Methods of Tree Protection. All persons shall exercise due care to protect trees which are to be retained from damage during construction. Critical root zones shall be protected by the use of fencing located at the dripline in accordance with the Lawrence Township Engineering Standards. The procedures in this subsection shall be observed in order to protect retained trees, as follows:

1. Protection from mechanical injury.

a. Prior to any grubbing or clearing, all trees in the tree protection zone from its edge to a depth of 25 feet into the zone shall be protected from equipment damage by enclosing the area at the dripline. Individual trees to be retained shall be completely encircled as required herein. All exposed roots, trunks, and low lying branches shall be equally protected. Groups of trees in a tree save area may be protected by fencing the entire area where they are located. Compaction of the ground by mechanical, vehicular, storage of materials, or other means within the dripline shall not be permitted.

b. Feeder roots shall not be cut within the dripline; however, if feeder root cutting is waived in order to further other objectives of this section, such cuts shall be made by hand with pruning shears to reduce sharp, clean cuts. Removal of feeder roots by mechanized equipment shall not be permitted.

c. Tree trunks and exposed roots shall not be damaged. However, accidental damage shall be addressed and action taken to avoid further injury to the tree. Damaged branches shall be sawed off at the branch collar. No shellac or pruning paint shall be used. When the portion of the tree that is damaged or diseased, pruning equipment shall be dipped in alcohol to prevent further spread of disease.

d. Deciduous trees shall be given a liquid, slow-release, low-nitrogen, all-purpose fertilizer to aid in their recovery from potential damage from construction activities. Such application shall be made at a distance of 1 foot from the trunk extending out in concentric circles to the dripline. The fertilizer shall be injected into the ground at the time of the cease of construction and one year thereafter.

- e. Trees shall not be used for roping, cabling, signs, or fencing. Nails and other fastening devices shall not be driven or attached to the tree.
 - f. The area in the critical root zone under the dripline shall be left open to provide access for water and nutrients. No impervious cover, storage of equipment, materials, debris or fill shall be allowed within this area except as specifically approved by the Board of Jurisdiction or Administrative Officer.
 - g. Trees being removed under the allowances in this section shall not be felled, pushed, or pulled into a tree protection or tree save area.
2. Protection from grade change.
- a. Increase in grade. If an increase in the grade of the land is proposed, the applicant shall install either:
 - (1) A system of gravel and drains at the old soil level which opens into a dry well built around the trunk and individually designed for the contour of the land to provide aeration and drainage in accordance with the Lawrence Township Engineering Standards.
 - (2) A retaining wall between the existing grade and higher grade to the satisfaction of the Municipal Engineer.
 - b. Lowering the grade. If a lowering of the grade is proposed one of the following methods to protect the tree shall be followed:
 - (1) Terracing the grade at the dripline and out from the tree in accordance with the Lawrence Township Engineering Standards.
 - (2) A retaining wall between the existing grade and lower grade to the satisfaction of the Municipal Engineer.
3. Protection from excavation. Trenches for utility lines or other similar uses shall adhere to the following, listed in descending order of preference:
- a. Trenches shall bypass the critical root area unless the approving authority determines that no other practical alternative exists; in which case:
 - b. Trenches should be tunneled under the feeder roots a minimum of two feet from existing grade, in accordance with the Lawrence Township Engineering Standards, unless the approving authority determines that no other practical alternative exists; in which case:
 - c. Trenches may be dug within the dripline of the tree, provided that the following provisions shall be observed:
 - (1) Trenches shall be no closer to the trunk than half the distance to the dripline.
 - (2) Roots shall be cut with sharp hand tools to reduce feeder root damage.
 - (3) The trench shall be backfilled within the shortest amount of time possible and the soil shall not be compacted.
 - d. Protection during cleanup.
 - (1) All construction debris shall be hauled to an approved landfill and shall not be buried or burned.
 - (2) Snow fences, barriers or other tree protection devices shall be the final item to be removed from the site prior to occupancy.
- H. Required Tree Density and Replacement From Development.
1. Each lot for which a major site plan application and approval pursuant to Article VIII is required shall have, after development, a minimum density of trees per acre of the gross area of the tract. The number of trees required to achieve the minimum density required shall be as set forth in this subsection. If a site initially lacks the sufficient density of trees required or if site clearing reduces the tree density to below the minimum required, the developer shall plant additional trees to meet the minimum. These trees are termed "replacement" trees regardless of whether they are for initial planting to meet minimum requirements or for replanting after site clearing has occurred. Trees otherwise required to be planted for landscape buffer areas or parking lots pursuant to §525, as the case may be, may be counted towards the required tree density. The planting of replacement trees shall be required under the following conditions:
- a. To establish the minimum tree density requirements for the site;
 - b. Where grading occurs in the tree protection zone;
 - c. If areas permitted to be cleared leave no tree protection zone;
 - d. If no trees are present within the tree protection zone.

- e. Where specimen trees outside the tree protection zone are to be removed;
 - f. Where trees are illegally removed or irreparably damaged during the construction process.
2. The quantity of replacement trees shall be sufficient to produce a total Required Tree Density (RTD) of at least 15 units per acre as described herein. Units shall be determined based on the conversion factors in Tables 5.19, 5.20 and 5.21.
 3. The spacing of replacement trees shall be compatible with areal limitations and the characteristics of the species that are planted.
 4. When the Administrative Officer or his designee has determined that areal constraints result in an absolute inability to provide the required tree density, as many trees as possible shall be planted on the site. The remaining balance of trees shall be provided in the form of payment of 80% of the Uniform Unit Prices for Bond Estimates as prepared by the Division of Engineering and shall be placed in a shade tree account.

I. Calculations for RTD. Calculations for determining the Required Tree Density (RTD) are as follows:

1. Step 1. Required Tree Density shall be calculated by multiplying the factor of 15 by the gross tract area.

EXAMPLE: 2 acre site has a RTD of 30 (2 x 15 = 30)

2. Step 2. The Existing Tree Density (ETD) of the trees that are to remain within the tree save area of the tree protection zone shall be calculated by converting the caliper from the tree survey (see paragraph -D.4 and -D.6 above) to tree density units as indicated in Table 5.19.

EXAMPLE: The tree survey identifies 15 trees that will remain on the site in the Step 1 example after development, as follows:

- 7 - 12" locusts
- 3 - 14" maples
- 3 - 18" oaks
- 1 - 20" oak
- 1 - 30" sycamore

Converting the caliper to tree density units yields the following values:

Caliper Density Units No. Trees ETD

- 12" .8 x 7 = 5.6
- 14" 1.1 x 3 = 3.3
- 18" 1.8 x 3 = 5.4
- 20" 2.2 x 1 = 2.2
- 30" 4.9 x 1 = 4.9
- Total = 21.4

This total represents the Existing Tree Density on site.

3. Step 3. Calculation of the replacement trees is determined by subtracting the Existing Tree Density from the Required Tree Density.

EXAMPLE: RTD-ETD = replacement tree units

Or 30 - 21.4 = 8.6 replacement tree units

Table 5.19 Conversion of Caliper to Tree Density Units for Existing Trees.

Caliper (inches)	Density Units	Caliper (inches)	Density Units	Caliper (inches)	Density Units
8-9	.5	27	4.0	45	11.0
10	.6	28	4.3	46	11.5
11	.7	29	4.6	47	12.0

12	.8	30	4.9	48	12.6
13	.9	31	5.2	49	13.2
14	1.1	32	5.6	50	13.8
15	1.2	33	5.9	51	14.4
16	1.4	34	6.3	52	15.1
17	1.6	35	6.7	53	15.8
18	1.8	36	7.1	54	16.5
19	2.0	37	7.5	55	17.2
20	2.2	38	7.9	56	18.0
21	2.4	39	8.3	57	18.8
22	2.6	40	8.7	58	19.6
23	2.9	41	9.1	59	20.2
24	3.1	42	9.5	60+	21.0
25	3.4	43	10.0		
26	3.7	44	10.5		

4. Step 4. The number of replacement trees that would need to be planted, if any, is determined by converting the replacement tree units to caliper inches or tree height based on Tables 5.20 and 5.21. Any number or combination of trees that meets the minimum required for replacement may be used; however, coniferous evergreens shall be limited to no more than 40% of the total required replacement trees.

EXAMPLE: 10 – 3” red oaks = 6.0 tree units; 2 – 4” sycamores = 1.4 tree units; and 3 – 2” river birch = 1.5 tree units for a total of 8.9. Since 8.9 is greater than 8.6, the minimum replacement trees requirement has been met.

Table 5.20 Conversion from Caliper to Tree Density Units for Deciduous Replacement Trees.

Caliper (inches)	Density Units	Caliper (inches)	Density Units
1*	.4	8	1.3
2*	.5	9	1.5
3	.6	10	1.7
4	.7	11	1.9
5	.9	12	2.1
6	1.0	13	2.3
7	1.2	14	2.5

* Permitted only when approved as an exception or for storm water management basin plantings.

Table 5.21 Conversion from Height to Tree Density Units for Coniferous Replacement Trees.

Height (feet)	Density Units	Height (feet)	Density Units
3-4*	.6	6-8	1.0
4-5*	.7	8-10	1.3
5-6	.8	10-12	1.7

* - Permitted only when approved as an exception or for storm water management basin plantings.

J. Plan Review and Enforcement. All applications for a tree removal permit not a part of a site plan or subdivision application are to be submitted to the Department of Community Development. The Department shall review all applications to insure compliance with the requirements of this section. Applications will be approved or denied within 20 days of receipt of a complete application.

K. Revocation. The Administrative Officer may revoke the approval where there has been false or misleading application or there is a noncompliance with the approved management plan.

L. Fees. The application and escrow fees for tree cutting and tree removal shall be in accordance with Article IX.

M. Appeals. Any person aggrieved by the decision of any officer, pursuant to the provisions of this section, may appeal to the Zoning Board of Adjustment within 10 days of receipt of such decision. Such appeal shall follow the procedures as set forth in N.J.S.A. 40:55D-70a.

N. Violations and Penalties. In addition to any other penalties that may be assessed for violation of this Ordinance, any person violating any provisions of this section shall be liable to a not to exceed 500.00 or to imprisonment for a term not to exceed 90 days, or both, for each offense. The destruction or substantial damage/destruction of an individual tree shall be construed to be a separate offense. In addition, any tree(s) removed without a permit shall be replaced by the violator with nursery stock, equal, whenever possible, to the caliper of the tree(s) unlawfully removed. Replanting shall be completed in one year of the non-permitted removal if the land is not to be lawfully developed. In addition to the foregoing, the municipality may institute and maintain a civil action for injunctive relief restraining the continuance of any unlawful tree removal project.