



# CITY OF EASTON Emerald Ash Borer Management Plan

2015-2024

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Bureau of Forestry <http://www.dcnr.state.pa.us/forestry/index.aspx>.

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## Administration

The City of Easton Emerald Ash Borer Management Plan is administrated by the City Forester through the Department of Public Works. The Director of Public Works reports to the City Council on this subject matter. City residents are encouraged to contact the City Forester regarding any questions or concerns related to this program.

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## Executive Summary

The City of Easton recognizes the benefits of urban trees to the quality of life, air pollution remediation, energy conservation, storm water mitigation, property value, and quality of life for its residents. Ash trees are an integral part of our urban forests, with 75 inventoried public street and park ash trees citywide and uncounted private ash trees. An additional estimated 1,000 are found in public natural areas and woodlots, as well as private properties. The emergence of the emerald ash borer in recent years, however, threatens the health of these trees.

To protect our precious forest resources and to mitigate potential damages, we have adopted a moderate and measured approach toward the management of this invasive pest over the next 10 years (2015-2025) within the city limits. A total of 43 high-value ash trees on public streets and parks will be eligible to be protected through chemical treatment with Tree-äge. The remaining 32 street and park trees will be removed and replaced with non-host tree species gradually over the next 5 years to reduce safety risks and to prevent sudden loss of canopy cover in the community. Minimum tree removal is also planned in public natural areas and woodlots when dead or dying trees along the margins of playing fields, picnic and play areas, hiking trails, and property boundaries become hazardous.

The total cost for this program is estimated at \$76,690 over 10 years, with an annual cost of \$4200 to \$11,138. This represents about 87% of the total compensatory value of all public ash trees and includes total City cost for chemical treatment, tree removal, and replanting. Awards and grants from federal, state, and local agencies, organizations, and institutions will be actively sought by the City to offset a portion of the cost for this program.

The program is administrated by the City Forester under the direction of the Director of Public Works. Annual auditing of the program will be conducted by the City Council. Necessary adjustments will be recommended each year based on progress reports on the status of forest conditions and EAB infestations within the City.

Activities of community outreach will be carried out throughout the program period, as public support is the key to the success of this kind of program. The City will inform the public about the progress of the program in a timely fashion. Recommendations and suggestions on how to deal with this natural disaster of the ash forests are welcome. Furthermore, city residents are encouraged to be part of this program through volunteering to serve on ad hoc committees, attending education and outreach events, and participating in community replanting efforts.

## Authority

**1. Declaration of policy.** The health of the ash trees in the city is threatened by the emerald ash borer. Damages to those trees will have a negative impact on public safety and quality of life for city residents. Federal and state regulations provide local authority to manage this pest and mitigate its damage in Pennsylvania.

**2. Jurisdiction.** The City shall regulate all street trees now or here-after in any street, park, public right-of-way or easement, or other public place within the city limits, and shall have the power to plant, care for, maintain, remove, and replace such trees. Private trees may fall under city jurisdiction when they become concerns of public safety. (See City of Easton Shade Tree Ordinance, Chpt. 554 of City Code)

**3. Declaration Public Nuisance.** The City has determined that the health of ash trees are threatened by the destructive emerald ash borer and hereby declares the following to be a public nuisance:

Any living or standing public tree or part thereof infested by this pest;

Any dead public tree or part thereof, including infested logs, branches, stumps, or other materials;

**4. Abatement of Nuisance.** If the City Forester upon inspection or examination determines that any public nuisance as herein defined exists in or upon any public street, alley, park, or other public place within the city, and that the danger to public safety is imminent, he/she shall:

Immediately cause it to be treated or removed; or otherwise abate the nuisance in such a manner as to destroy/prevent the spread of this pest.

**5. Cost of Abatement.** The city shall bear the cost of such abatement within City Parks or City-owned properties. Property owners will bear the cost of abatements for street trees.

**6. Interference with City Forester Prohibited.** No person, firm, or corporation shall prevent, delay or interfere with the City Forester or his/her staff while they are engaging in the performance of their duties.

**7. Violations.** Any person who violates this ordinance shall be subjected to a penalty as prescribed by S. 554-12 of the City Code.

## Introduction

Trees are an integral part of the City of Easton's infrastructure and identity, with an average of 25% canopy cover in its urban area. A recent tree inventory indicates there are more than 4,000 trees along city streets, park trails, and natural areas, including 75 ash trees. At least 20 times more trees are found in woodlands and private properties within the City.

The emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae), an exotic wood-borer from northeast Asia, was first discovered attacking ash trees in Michigan in 2002. Since then, it has been found in 14 additional U. S. states and two Canadian provinces across the Great Lakes region and beyond. Larval feeding in the cambial region disrupts water and nutrient transportation inside the tree, resulting in 99% tree mortality within 4-5 years. An estimated 20 to 55 million ash trees have been killed by this pest in the infested areas. The potential economic damage may exceed \$10 billion in 25 states expected to be affected within in the next 10 years.

To date there have been no documented infestations of the EAB within city limits or within 15 miles of city limits. The borer has been documented in Bucks and Berks Counties, however, and infestation is likely within the next year or so. A management plan is urgently needed for the City to protect its ash trees from EAB damage in the future.

The City of Easton is committed to preserving its urban forest resources as a designated "Tree City USA" community. The *Easton Emerald Ash Management Plan* is to serve as the master plan for the city to manage its urban ash trees on public lands over the next 10 years. Property owners are encouraged to manage their ash trees according to the guidelines set by this document.

There are five goals for this plan:

- Protect eligible public urban ash trees for their economic, social, and environmental benefits;
- Encourage the protection of eligible private ash trees for their similar benefits
- Manage removal of public ash trees that are not eligible for treatment
- Minimize public safety and liability risk from EAB infestation within the community;
- Replace public canopy cover that will be lost to EAB infestation.

The Following actions will be carried out in the next 10 years:

- Maintain an updated ash inventory within the City;
- Monitor EAB infestation on city trees yearly;
- Remove dead or dying ash trees from roadways and public areas;
- Utilize ash wood from tree removal activities;
- Dispose ash-related material properly;
- Treat valuable ash trees with chemical insecticides;
- Replant non-host tree species at locations where ash trees were removed;
- Conduct outreach and public education;
- Involve private property owners.

## Ash Resources

An ash inventory in the City was conducted by the city forester in September of 2013. A total of 75 ash trees are recorded from city streets and parks, with a total diameter-at-breast-height (DBH) of 1236 inches, ranging from 3.0 to 34 inches for individual trees (Table 1). The majority of trees are less than 20 inches in diameter, while 15% are between 20-30 inches. Most (80%) ash trees are in good condition (5-25% crown dieback), whereas 17% are in fair (25-50% dieback) or poor (>50% dieback) condition. The total compensatory value of the street ash trees is estimated at \$88,047 based on the landscape tree valuation formula developed by the Council of Tree & Landscape Appraisers (CTLA). On average, a 15-inch street ash is valued at \$917 in Easton, and a park ash at \$2671. (See Updated 2013 Ash Inventory)

The City of Easton has not surveyed the unmanaged portions of public parks to determine percent ash, however visual estimates place that percent around 10%. It is assumed that ash constitute a similar percent of private woodlots within the city. Property owners are strongly encouraged to survey ash trees on their lands for better management.

**Table 1. Diameter and condition of street and park ash trees in Easton**

Condition	Diameter DBH (inches)				Total
	<10"	10-19"	20-29"	30" or above	
Excellent	6	0	0	0	<b>6</b>
Good	20	620	304	67	<b>1011</b>
Fair	0	71	110	0	<b>181</b>
Poor	0	13	25	0	<b>38</b>
<b>Total</b>	<b>26</b>	<b>704</b>	<b>439</b>	<b>67</b>	<b>1236</b>

## Management Options

Trees are valuable natural resources in urban communities (Dwyer et al. 1992, Nowak et al. 2002), with compensatory values on shade, air quality, storm water discharge, heating/cooling costs, and aesthetic or property value. With the arrival of EAB, all communities will be forced to respond to the infestations in some degree, regardless of the strategies they choose to adopt. Dead trees on streets and in community parks present real threats to public safety. Removing ash from the local ecosystem will permanently alter the natural habitats for related species. Sudden changes in urban canopy cover may result in negative impacts to local communities. Addressing some or all of these concerns requires a well conceived management plan with specific goals and implementable mechanisms.

There are four management options a community can choose from, each with its own pros and cons:

### **Option A. No Special Actions.**

The result will be that most ash trees will be killed by the end of the infestation.

### **Option B. Preemptive Management.**

In this option, ash trees on streets and in the parks will be re-moved preemptively and replaced with non-host species. No EAB survey activity will be conducted. As a result, treatment areas will contain no ash trees, with no concerns over EAB in the future either. The initial cost of this option could be very high because of expenses associated with tree removal and replacement. Streets and parks also need to deal with major canopy gaps temporarily at the beginning before replacement trees become well established. However, no annual cost will be incurred after the completion of the project.

### **Option C. Aggressive Management.**

In this option, all ash trees in the community will be managed actively with all available management tools. EAB survey activities will be carried out on both road-ways, parks and in people's yards. Information from the surveys will be used to determine proper management actions across the Borough. Chemical control will be actively pursued to protect the maximum portion of ash trees and their canopy. Only dead or dying ash trees will be replaced with non-host species. As a result, most high value ash trees will be saved from EAB damage, whereas a small portion will be replaced with non-host species. Community suffers the least socially and environmentally from the infestation, with less risk of losing urban canopy cover. However, annual cost to the community is the highest among all options.

**Option D. Selective Management.** In this option, high-value ash trees in selected areas (streets and parks) within the community will be managed actively, whereas those in other private property will be left to the property owners' discretion. Public ash trees will be monitored for their health and levels of EAB infestation. Chemical control and tree removal will be applied wherever appropriate in a cost-effective manner. Tree re-placement (1:1) will be done. As a result, most ash trees in private yards will be killed by the end of the infestation, whereas a large portion of high-value ash trees are protected for future generations to enjoy. Monitoring of tree health and for the borer will be done as needed.

The City of Easton has selected Option D.

## EAB Infestation

There are currently no documented active EAB infestations within the City of Easton, however the borer has been documented in Berks and Bucks Counties. As infestations occur, ash trees will be intensively surveyed using pest signs and symptoms during this summer. All inventoried ash trees on city streets and in parks will be examined at least once each year, and ash trees within public woodlots will be spot surveyed annually. A pest status component will be added to routine maintenance and sanitation operations for the Departments of Public Works. Branch sampling may be used on tall trees in the woodlots. Residents are encouraged to report suspicious pest activities on their private ash trees to the city forester.

## Management Approaches

A selective management option has been adopted by the City after careful consideration. Two major management options will be pursued: chemical treatment for eligible trees, and staggered tree removals for street trees not eligible for treatment. Biological control will not be pursued within the City.

### Chemical Treatment

Eligible ash trees in the city will be treated with Tree-age. This pesticide provides 99% protection against EAB larvae for 2-3 years with a single application. Only trees in excellent and good condition, greater than 10 inches DBH, and with no sidewalk or overhead utility conflicts are considered for this treatment. Large diameter trees are favored over small diameter trees as they typically have higher value and provide more benefits to the community. Other factors such as cost, location, logistics, and local support are also considered during the process. A total of 43 trees with an accumulative total DBH of 778 inches have been selected to receive five treatments over the next 10 years (year 1, 3, 5, 7, and 7)

**Table 2. Proposed ash trees for chemical treatment in Easton**

Condition	Diameter DBH (inches)			Total
	10-19"	20-29"	30" or above	
Excellent	0	0	0	<b>0</b>
Good	435	276	67	<b>778</b>
Fair	0	0	0	<b>0</b>
Poor	0	0	0	<b>0</b>
<b>Total</b>	<b>435</b>	<b>276</b>	<b>67</b>	<b>778</b>

## **Tree Removal**

EAB kills 99% of ash trees after several years of infestation. Assuming all untreated ash trees in the city will be dead or dying within the next decade, a total of 32 remaining public trees on streets and in parks will need to be removed to protect public safety and reduce liability. To accomplish this goal, an average of 6-10 inventoried trees will be removed each year over the next 5 years. However, preemptive removal of healthy trees is not recommended by this plan. Only trees that are dead, or in poor or fair conditions will be selected for removal each year. Removal of other trees that are currently in good or excellent condition in the following years will be determined by city staff based on the progression of the infestation at the beginning of each year. Priorities are given to trees in areas where heavy EAB infestations are located, trees with potential high hazard, and trees with small diameters. A block-by-block tree removal strategy may be adopted to improve efficacy.

Tree removal in the woodlots of city parks and natural areas will be minimal given the number of ash trees found in those areas. Dead or dying ash trees along trails or boundary lines are hazardous to trail users and neighboring properties. An estimated 50 ash trees (5% of estimated ash trees) will need to be cut or removed to reduce risk in the next 10 years.

## **Wood Utilization & Material Disposal**

The 32 ash trees to be removed from city streets and parks have minimal value as timber and landscape mulch. The City will enter into an agreement with area sawmill operators for usable ash wood as it becomes available, and any residue value recovered from these trees by the city will be used for re-planting efforts each year. Ash material from the city will be disposed of according to established guidelines.

## **Replanting**

All removed ash trees will be replaced for canopy cover in the community. A 1:1 replacement ratio will be used in all neighborhoods. Temporary reduction of canopy cover is expected in affected streets and parks as replacement trees are usually small and not guaranteed at 100% survival rate. The City will work with Arbor Day Foundation, Tree City USA, TreeVitalize, Master Gardeners, other nonprofit organizations, and private citizens for the replanting efforts.

## **Community Outreach**

Information about EAB, ash trees, quarantine regulations, tree removal, chemical control, biological control, wood utilization, replanting, and other program activities will be disseminated through news conferences, seminars, public hearings, trainings, demonstrations, community events, neighborhood meetings, and awareness campaigns throughout the program period. Interested individuals are encouraged to contact the city forester or other administrators for more information.

Ash trees on private properties are the responsibility of the property owners. It's up to the property owner to decide whether he/she wants to treat his/her ash trees, or to remove and replace their hazardous trees. The city will make the technical staff available to assist property owners on EAB and ash related problems, and will require property owners to remove private ash trees that pose a hazard in the public right-of-way.

## Cost/Benefit Analysis

The total cost for this program is estimated at \$76,689.65 over 10 years, about 87% of the total compensatory value of all ash trees. It is assumed that all management activities will be conducted by contracted commercial companies under city supervision, including \$21,189.65 estimated for chemical treatment, \$40,500 for tree removal, and \$15,000 for replanting.

### Chemical Treatment

A total of five treatments (year 1, 3, 5, 7, and 9) are needed for the project period since Tree-age is effective against EAB larvae for at least two years (up to three years). At the higher estimated application cost of \$10/inch DBH, the total cost for chemical treatment is estimated at \$21,189.65 over 10 years, with \$4237.93 per treatment. Chemical treatment is for the 9 park ashes that are eligible for treatment. Property owners must pay for their own street tree treatments, however the City will offer a buy-in to a large-scale treatment program. It is expected that only about 10% of property owners will choose treatment over removal, with a projected 61 street ashes being removed. A public bidding process will be conducted to select a tree care company with the lowest reasonable bid for this activity. (See DCNR Cost Analysis 2015 Easton UPDATED)

**Table 4. Cost of tree removal in Easton for 10 years (2015-2024)**

Street Trees				Park and Woodlot Trees				Total
Year	No. trees	Unit Price	Cost	Year	No. trees	Unit Price	Cost	
2015	6	\$500	\$3000	2016				\$3000
2016	6	\$500	\$3000	2017				\$3000
2017	6	\$500	\$3000	2018	2	\$800	\$1600	\$4600
2018	6	\$500	\$3000	2019	2	\$1000	\$2000	\$5000
2019	7	\$500	\$3500	2020	2	\$800	\$1600	\$5100
2020	6	\$500	\$3000	2021	2	\$800	\$1600	\$4600
2021	6	\$500	\$3000	2022	2	\$800	\$1600	\$4600
2022	6	\$500	\$3000	2023	2	\$800	\$1600	\$4600
2023	6	\$500	\$3000	2024				\$3000
2024	6	\$500	\$3000	2025				\$3000
<b>Total</b>	<b>61</b>		<b>\$30,500</b>				<b>\$10,000</b>	<b>\$40,500</b>

## Tree Removal

A total of 2 park trees and an estimate of 61 street trees and 10 margin ash trees in unmanaged public areas will be removed within the next 10 years (2015-2024). The City will offer property owners a one-time \$500 subsidy toward the cost of removing street ashes, resulting in an estimated \$30,500 (for 61 trees), or about \$3000 (6 trees) per year in subsidies. The City estimates \$800 per tree for 10 margin ashes at a total estimated cost of \$8000. (Table 4 – previous page).

## Replanting

A total of 75 trees will be replanted with non-host species to replace the lost ash trees, with a total cost of \$15,000 over 10 years, estimating an average cost of \$200 per tree over 10 years. Replanting cost includes cost of trees only. Labor is supplied by City crew.

## Fiscal Planning

Because the number of ash trees is relatively low, the City of Easton will not need to create a new line item in its budget for this management plan. The City will aggressively explore potential cost saving measures such as public bidding and auction, in-house absorption and service, corporate and private donations, volunteering, etc. to lower the fiscal burden. In addition, the City will work diligently with federal, state, and local government agencies, organizations, and institutions to secure awards and grants to fund a portion or an entire project in chemical treatment, tree removal, or replanting.

**Table 6. Annual cost of Easton EAB management plan for 10 years (2015-2024)**

Year	Chemical Treatment	Tree Removal	Replanting	Total
2015	\$4238	\$3000	\$1200	<b>\$8438</b>
2016		\$3000	\$1200	<b>\$4200</b>
2017	\$4238	\$4600	\$1600	<b>\$10,438</b>
2018		\$5000	\$1600	<b>\$6600</b>
2019	\$4238	\$5100	\$1800	<b>\$11,138</b>
2020		\$4600	\$1600	<b>\$6200</b>
2021	\$4238	\$4600	\$1600	<b>\$10,438</b>
2022		\$4600	\$1600	<b>\$6200</b>
2023	\$4238	\$3000	\$1200	<b>\$8438</b>
2024		\$3000	\$1200	<b>\$4200</b>
<b>Total</b>	<b>\$21,190</b>	<b>\$40,500</b>	<b>\$15,000</b>	<b>\$76,690</b>

## Time Table

A 10-year time table is developed to specify program objectives and procedures for each year. Activities such as tree inventory, EAB monitoring, chemical treatment, tree removal, re-planting, efficacy evaluation, etc. will be included. Necessary adjustments will be made at the beginning of each year to reflect the changes of the field situation. The 10-year plan is written to begin in 2016 because the EAB has not yet reached Easton in 2015 and because drought conditions in May 2015 will render trunk injections much less effective.

## Data Collection & Reporting

All data from the program are collected according to established guidelines and entered electronically into a centralized database. Status reports are required for all aspects of the program. An annual re-port is used to summarize the progress of the program for the current year. A final report will be issued by the end of the program.

## Contacts and Information

Pennsylvania Department of Conservation and Natural Resources  
([www.dcnr.state.pa.us/forestry/fpm\\_invasives\\_EAB.aspx](http://www.dcnr.state.pa.us/forestry/fpm_invasives_EAB.aspx))

Pennsylvania Department of Agriculture EAB hotline: 1-866-253-7189 or [Badbug@state.pa.us](mailto:Badbug@state.pa.us)

Pennsylvania State University Extension

(<http://ento.psu.edu/extension/trees-shrubs/emerald-ash-borer>)

Emerald Ash Borer ([www.emeraldashborer.info](http://www.emeraldashborer.info))

USDA APHIS

([http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/emerald\\_ash\\_b/regulatory.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/regulatory.shtml))

USDA Forest Service (<http://na.fs.fed.us/fhp/eab/>)

i-Tree - Tools for Assessing and Managing Community Forests (<http://www.itreetools.org/>)

TreeVitalize - A partnership to restore tree cover in Pa. communities

(<http://treevitalize.net/TreeCare/SelectingTrees.aspx>)

EAB Cost Calculator (<http://extension.entm.purdue.edu/treecomputer/index.php>)

National Tree Benefit Calculator (<http://extension.entm.purdue.edu/treecomputer/index.php>)

## References

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