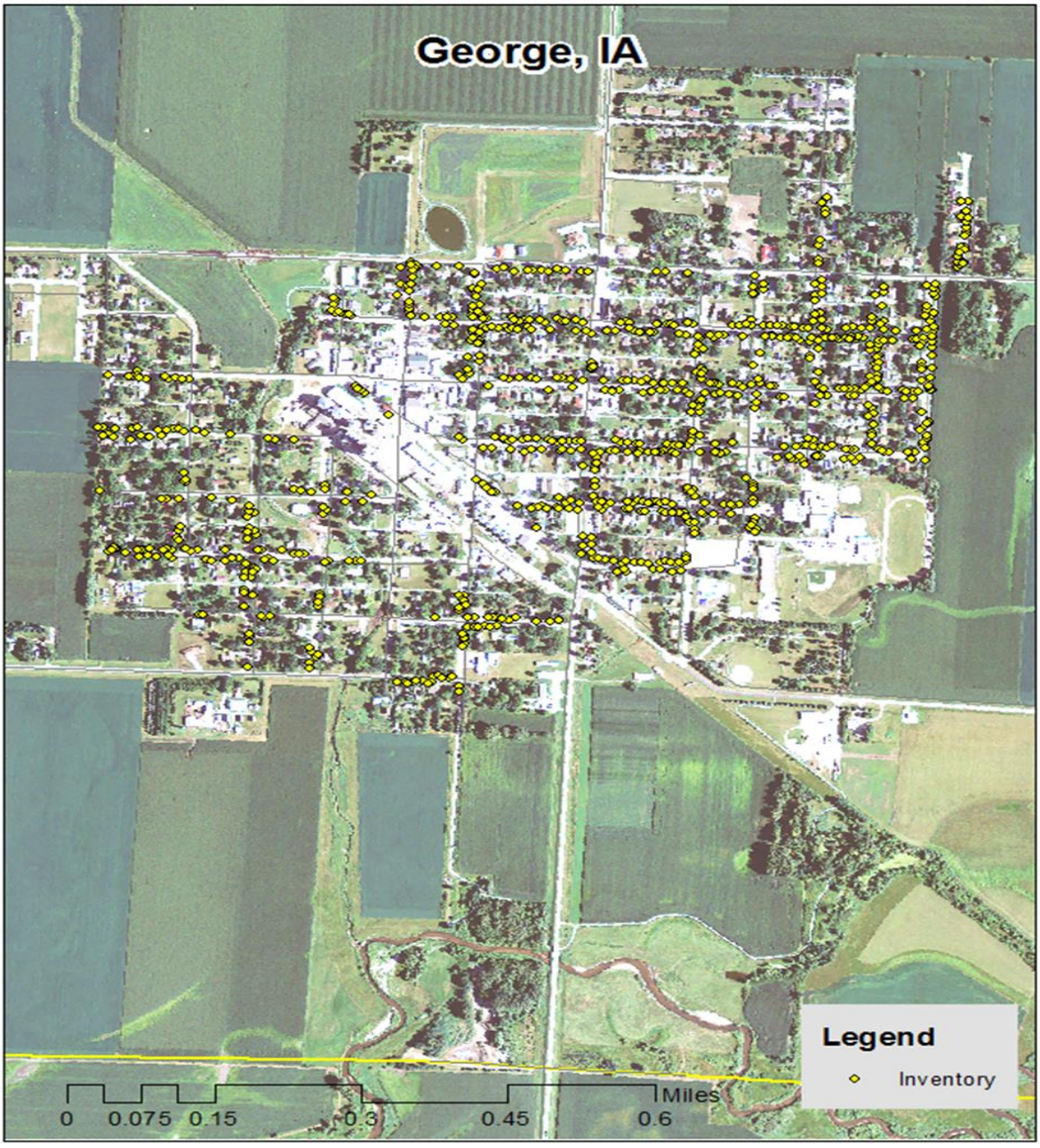
George, IA



2014 Management Plan
Prepared by Joe Schwartz
Bureau of Forestry, Iowa DNR

Table of Contents

Executive Summary

Overview

This plan was developed to assist the City of George with managing its urban forest, including budgeting and future planning. Trees can provide a multitude of benefits; and sound management allows a community to take advantage of these benefits. Management is especially important considering the serious threats posed by forest pests such as the emerald ash borer (EAB). EAB is an invasive insect imported from Eastern Asia on wood shipping crates that kills all species of ash trees (this does not include mountain ash). There is a strong possibility that 37% of George's city managed, street trees (Green and White ashes) will die once EAB becomes established in the community. With proper planning and management, the costs of removing dead and dying trees can be extended over years, mitigating public safety issues.

Inventory and Results

In 2013, a tree inventory was conducted using Global Positioning System (GPS) data collectors. The inventory was a complete inventory of street and park trees. Below are some key findings of the 691 city managed, street trees inventoried. George's trees provide $139,488 of benefits annually, or an average of $201 a tree. When street curbs and sidewalks were not present in any locale, an average parking width of 15 feet was applied. Any trees found under these conditions were tallied as 'privately' managed trees, and are listed in the main spreadsheet. BUT, they were not included in the percentages and values associated with George. Privately managed trees number 157.

- There are over 17 species of trees
- The top three genus are: ash 37%, maple 18%, and linden 9%
- 43% of trees are in need of some type of management
- 58 trees are recommended for removal

Recommendations

The core recommendations are detailed in the Recommendations Section. The Emerald Ash Borer Plan includes management recommendations as well. Below are some key recommendations.

- Of the 58 trees recommended for removal, 17 trees are ranked as 'critical concern' and range from 12 to over 42 inches in diameter at 4.5 ft and should be addressed immediately. *City ownership of the 'removal' trees should be verified prior to their removal.*
- 48 of the 245 ash trees are in need of follow up because they display three of the five signs or symptoms associated with EAB. See Appendix B, Figure 2 for map showing the locations of every tree showing some or all of the EAB symptoms.
- All trees should be pruned on a routine schedule- one third of the city every other year, or, stated another way; every street tree is carefully seen every six years.

- Plant a diverse mix of trees along streets that do not include: ash, cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut. Species listed here will change based on changes made to George's street tree code.
- Check ash trees with a visual survey yearly.
- With the current budget it could take 35 years to remove ash – Suggestion: request a budget increase to $5,000 annually and apply for grants to plant replacement trees.
- Read a section later in the plan entitled 'Other Hazardous Ash Trees with Decay.'

Introduction

This plan was developed to assist George with the management, budgeting and future planning of their urban forest. Across the state, forestry budgets continue to decrease with more and more of that money spent on tree removal. With the anticipated arrival of Emerald Ash Borer (EAB), an invasive pest that kills native ash trees, it is time to prepare for the increased costs of tree removal and replacement planting. With proper planning and management of the current canopy in George, these costs can be extended over years and public safety issues from dead and dying ash trees mitigated.

Trees are an important component of George's infrastructure and one of the greatest assets to the community. The benefits of trees are immense. Trees provide the community with improved air quality, stormwater runoff interception, energy conservation, lower traffic speeds, increased property values, reduced crime, improved mental health and create a desirable place to live, to name just a few benefits. It is essential that these benefits be maintained for the people of George and future generations through good urban forestry management.

Good urban forestry management involves setting goals and developing management strategies to achieve these goals. An essential part of developing management strategies is a comprehensive public tree inventory. The inventory supplies information that will be used for maintenance, removal schedules, tree planting and budgeting. Basing actions on this information will help meet George's urban forestry goals.

Inventory

In 2013, a tree inventory was conducted that included 100% of the city-owned trees along streets. The tree data was collected using a handheld Global Positioning System (GPS) receiver. The data collector gives Geographic Information Systems (GIS) coordinates with an accuracy of 3 meters, which can be used in Arc GIS as an active GIS data layer. Because the inventory is a digital document the data can be updated with new information and become a working document.

The programming used to collect tree information on the data collectors was written to be compatible with a state-of-the-art software suite called i-Tree. i-Tree was developed by the

USDA Forest Service to quantify the structure of community trees and the environmental services that trees provide. The i-Tree suite is a public domain which can be accessed for free.

To quantify the urban forest structure and benefits, specific data is collected for each tree. This data includes: location, land use, species, diameter at 4.5 ft, recommended maintenance, priority of that maintenance, leaf health, and wood condition. Additionally, signs and symptoms of EAB were noted for all ash trees. The signs and symptoms noted were canopy dieback, epicormic shoots (new sprouts along trunks and limbs), bark splitting, D-shaped borer exit holes, and wood pecker damage.

Inventory Results

The data collected for the 691 city managed, street trees were entered into the USDA Forest service program Street Tree Resource Analysis Tool for Urban Forestry Management (STRATUM), part of the i-Tree suite. The following are results from the i-Tree STRATUM analysis.

Annual Benefits

Annual Energy Benefits

Trees conserve energy by shading buildings and blocking winds. George's trees reduce energy related costs by approximately $36,648 annually (Appendix A, Table 1). These savings are both in Electricity (174.0 MWh) and in Natural Gas (23,916.8 Therms).

Annual Stormwater Benefits

George's trees intercept about 1,959,326 gallons of rainfall or snow-melt a year (Appendix A, Table 2). This interception provides $53,101 of benefits to the city.

Annual Air Quality Benefits

Air quality is a persistent public health issue in Iowa. The urban forest improves air quality by removing pollutants, lowering air temperature, and reducing energy consumption, which in turn reduces emissions from power plants, and emitting volatile organic matter (ozone). In George, it is estimated that street trees remove 2,273 lbs of air pollution (ozone [O_3], particulate matter less than 10 microns [PM10], carbon monoxide [CO], nitrogen dioxide [NO_2], and sulfur dioxide [SO_2]) per year with a net value of $6,442 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere. In George, street trees sequester about 437,986 lbs of carbon a year with an associated value of $3,285 (Appendix A, Table 5). In addition, the trees store 7,689,138 lbs of carbon, with a yearly benefit of $57,669 (Appendix A, Table 4).

Annual Aesthetics Benefits

Social benefits of trees are hard to capture. The analysis does have a calculation for this area that includes: aesthetic value, property values, lowered rates of mental illness and crime, city livability, and much more. George receives $38,101 in annual social benefits from trees (Appendix A, Table 6).

Financial Summary of all Benefits

According to the USDA Forest Service i-Tree STRATUM analysis, George's trees provide $139,488 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 691 trees in George provide approximately $201 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

George has over 16 principle tree species along city streets and parks (Appendix A, Figure 1 for a short list, and Appendix A, Table 7 for a longer list).

The distribution of street, city-managed trees by common name is:

Green Ash	245	35.5%
Silver Maple	100	14.5%
Norway Maple	93	13.5%
American Basswood	33	4.8%
True Apple (and Crab)	29	4.2%
Littleleaf Linden	26	3.8%
Northern Hackberry	23	3.3%
Black Walnut	18	2.6%
Honeylocust	17	2.5%
White Ash	11	1.6%
Sugar Maple	11	1.5%
Northern White Cedar	11	1.5%
Amur Maple	9	1.3%
Red Maple	9	1.2%
American Sycamore	7	1.0%
Mountain Ash	7	1.0%
Other Street Trees	45	6.5%
	694	

The distribution of street, city-managed trees by GENUS is:

Ash species	37.1%
Maple	32.0%
Linden	8.5%
Apple and Crabs	4.2%
Hackberry	3.3%
Walnut	2.5%
Locust	2.4%
Northern White Cedar	1.5%
Sycamore	1.0%

Mountain Ash	1.0%
All other tree Species	6.5%
	100%

Age Class

Most of George's trees (60%) are between 12 and 30 inches in diameter measured at 4.5 ft above the ground (Appendix A, the Table for Figure 2). With respect to age, it is preferred that a larger amount of trees are found in the smaller diameter classes, and serve as replacements for natural mortality and to maintain partial canopy cover. George's size curve is in the middle range and entering into the large range, indicating a maturing stand. Many more saplings and whip-size will have to be planted in the next 20 years to replace the maturing and declining trees.

Condition: Wood and Foliage

Both wood condition and leaf condition are good indicators of the overall health of the urban forest. Forty-two (42) percent of the street trees have foliage or crowns rated in good health, and 16% of the foliage or crowns are in poor health, dead or dying (Appendix A, Figure 3 and Appendix B, Figure 3). Similarly, the 'woody' portion or trunks of 52% of the street trees are rated good or in good health (Appendix A, Figure 4). And, another 18% have their 'woody' portion or trunks rated poor (11%), and dead or dying (7%). This 18% is an estimate of trees that need management follow-up.

Management Needs

The following Appendix shows the location of poor or hazard trees on a color map of George (Appendix B, Figure 3 and Appendix A, Table 8 for list).

Crown Cleaning	263	38%
Crown Raising	11	2%
Tree Staking	0	0%
Tree Removal	58	8%
Crown Reduction	25	4%

Canopy Cover

According to the 2010 census, George occupies 1,542 acres. Thus the canopy cover on The canopy cover of George is approximately 20 acres (Appendix A, Figure 5). City land is about 1%.

Land Use and Location

The majority of street trees are in planting strips in single family residential neighborhoods. Appendix A Figure 6, and Appendix A Figure7 offer some insight. The following describes the land use and locations for the street trees.

Land Use	
Single family residential	99.5%
Small commercial	<1%

Location	
Planting strip	84%
Front yard	16%

Recommendations

Risk Management

Hazardous trees are a significant threat to people and property. Trees that are dead or dying, or have large, open cracks, in the main trunk, longer than 24 inches should be removed. A few trees have main trunks which are forked between 2 feet and 8 feet above the ground. A small portion of these forked trees have open splits in the forks and should be removed. Broken branches and branches that interfere with motorist's vision of pedestrians, vehicles, traffic signs and signals, etc. should be removed.

Hazardous trees

George has 17 critical concern trees of 58 trees that need immediate removal. These trees can be seen as dark purple diamonds on the map titled Location of Trees with Recommended Maintenance (Appendix B, Figure 4). It is recommended that you start with the largest diameter trees. Eleven (11) of the 17 critical concern trees are over 24 inches in diameter, measured at 4.5 ft or chest height. Please refer to the **Six Year Maintenance Plan** on the next page, years 1 and 2 for their removal. After the 17 critical concern trees are removed, continue removing the 41 remaining hazard trees (where trimming is not needed).

Poor tree species

After the removal of the critical concern trees, trees in poor health (without regard to the species) should be assessed for immediate removal or postponement (their locations are shown in Appendix B, Figure 3 and Appendix B, Figure 4). 'Poor' trees have woody parts or leaves in dead, dying or in poor condition as shown in Figure 3. Or, as shown in Figure 4, they are labeled young or mature and need 'immediate' maintenance. There are a total of 147 'poor' trees of all species. Of the 147 trees, 88 are Green ash, White ash, or a maple species. (The breakdown is: of the 58 dead/dying, there are 23 Green ash and 1 White ash. Of the 89 Poor, 36 are Green ash, 2 are White ash, and 26 are maples.) An important point, of the 62 'poor' ash trees (from above), 24 ash trees have signs and symptoms associated with EAB. The remaining 59 'poor' trees are 'other' species, such as, Honeylocust, apple, and Black walnut. See Appendix A, Table 9 for a breakdown of tree diameters and trees needing routine or immediate work. *City ownership of the trees recommended for removal should be verified prior to any removal*

Other Hazardous Green Ash trees with Decay

These trees are listed by their address, or house color, since ownership was unknown. In some cases, the entire tree is recommended for removal by the forester, or the homeowner should remove the ash tree since the main truck or the main forks are decaying. These trees are being brought to your attention because this fungus dissolves the cellulose portion of the wood fibers, resulting in weakened branches, large limbs, or main trunks. Once weak enough, they simply break off without the benefit of winds, ice or snow, and fall onto anything below it.
Tree number:

1. 211 East Dakota Avenue, A-34 blacktop, green house, private tree, next to driveway, east side, large branch over neighbor's house to the east.
2. Yellow house on the corner of N. Virginia and East (A-34) Dakota Avenue, 206 N. Virginia, two old ashes on A-34, hanging over the road.
3. 304 E. Iowa Avenue, large tree has a large limb over the side walk, this is church parsonage of the Ebenezer Presbyterian Church.
4. 111 North Baldwin Street, immense tree on the west side of house, one branch about 70 feet up, hanging over sidewalk and west parking.
5. 208 Michigan Avenue, white house, ash with storm damage, existing broken branch shows the whitish fungal mycelium/root system.
6. 400 E. Michigan Avenue, large ash to the southeast, on the southwest side of the sidewalk leading to the front door.
7. 217 E. Michigan Avenue, 28 inch diameter, broken top, large fungal conks (shelf fungi) on the main trunk.
8. Estimate 300 E. Indian Avenue, second house, tan color, no number on house, tree on the lot line, 36 inches diameter, with a dying top, honeybees in the main truck, fungus on the limbs hanging over the busy street.
9. Second house east of 300 E. Indiana Avenue, 1/3 of the top is infected and which hangs over Indiana Avenue, and a second ash tree, in front of house, fungal conks on main trunk at crotch, and on the large limb hanging over the road.
10. 401 E. Indiana Avenue, large limb hanging over the home.
11. 202 E. Boiler Avenue, second ash, north side of Indiana Avenue, limb hangs over road and sidewalk.
12. No house number, empty lot, Southwest corner of S. Hamilton Street, and West Indiana Avenue, middle ash tree on Indiana Avenue, conk on the mail trunk.
13. 209 W. Calumet Avenue, middle tree, fungus on branch stub over the sidewalk.

Pruning Cycle

Proper pruning can extend the life and good health of trees, as well as reduce public safety issues. In the Management Needs section of the Findings there are four main maintenance issues to be addressed: routine pruning, crown cleaning, crown raising, and crown reduction. Crown cleaning removes dead, diseased, and damaged limbs. Crown raising is the removal of lower branches that are 2 inches in diameter or larger in the case of providing clearance for pedestrians or vehicles. Crown reduction is removing individual limbs from structures or utility

wires. It is recommended that all trees be pruned on a routine schedule every five to seven years. Please refer to the six year maintenance plan for further information.

Proper Pruning

Proper pruning is now based on the ridge of bark located within the crotch of every limb or branch. After nearly forty years of research by Dr. Alex Shigo, U.S. Forest Service researcher, on how trees heal, internally and externally, some of the old rules of pruning are obsolete, or just plain wrong. This forester is recommending some minor changes to the Trimming or Pruning section (Article 9, 9.02, Section 2, parts And F initially) of the city's code, or adding new language to correct the old language.

Planting

Most of the planting over the next 5 years will replace the trees that are removed. It is recommended to plant 1.2 trees for every tree removed since survival rates will not be 100%. Please refer to the six year maintenance plan at the end of this section. It is not essential that the new trees be planted in the same location of the trees being removed. However, maintaining the same number of trees helps ensure continuation of the benefits of the existing forest in George.

It is important to plant a diverse mix of species in the urban forest to maintain canopy health, since most insects and diseases target a genus, such as, (ash) or species (green ash) of trees. Current diversity recommendations advise that a genus (i.e. maple, oak) not make up more than 20% of the urban forest; and a single species (i.e. silver maple, sugar maple, white oak, bur oak) not make up more than 10% of the total urban forest. Presently, the forest is heavily planted with Ashes (37%) and Maples (28% not including Sugar, Amur or Red Maples) (Appendix A, Figure 1). Any ash species and Silver maple and Norway maple should not be planted until their percentages can be lowered. Also, ash trees have not been recommended since 2002, due to the threat of EAB. Other species to avoid because they are public nuisances include: cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut which are not mentioned in your city code, (Appendix C). State Forestry recommends that you consult the State Tree Code and add those tree species to Article 9, Section 9.02, Number 1, Part e of George's code.

Continual Monitoring

Due to the threat of EAB, it is important to continuously check the health of ash trees. It is recommended that ash trees be checked with a visual survey every year for tree death and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Six Year Maintenance Plan with No Additional Funding

Year 1

Removal: 11 largest critical concern trees, 24 inches and larger.

Prune or remove: the ash trees showing decay.

Planting and Replacement: 9 trees to be planted in open locations.
Visual Survey for signs and symptoms of EAB.

Year 2

Removal: 6 remaining critical concern trees and 4 additional ash trees with poor health.
Prune or remove: any remaining ash trees showing decay sings.
Planting and Replacement: 6 trees in open locations.
Routine trimming: Contract to trim 1/4 of the city trees.
Visual Survey for signs and symptoms of EAB.

Year 3

Removal: 8 trees - removal of any new critical concern trees and ash in poor health.
Planting and Replacement: 9 trees to be planted in open locations and locations from previous removals.
Visual Survey for signs and symptoms of EAB.

Year 4

Removal: 6 trees - removal of any new critical concern trees and ash in poor health.
Planting and Replacement: 7 trees in open locations from previous removals.
Routine trimming: Contract to trim 1/4 of the city trees.
Visual Survey for signs and symptoms of EAB.

Year 5

Removal: 8 trees - removal of any new critical concern trees and ash in poor health.
Planting and Replacement: 9 trees to be planted in open locations and locations from previous removals.
Visual Survey for signs and symptoms of EAB.

Year 6

Removal: 6 trees - removal of any new critical concern trees and ash in poor health.
Planting and Replacement: 7 trees in open locations from previous removals.
Routine trimming: Contract to trim 1/4 of the city trees.
Visual Survey for signs and symptoms of EAB.

Year 7 (*) (**)

*Reduction of Green ash over 6 years: Removing 45 Green ash trees is 18% of the total number of street trees. It will take approximately 35 years to remove all ash with the current budget. EAB could potentially kill all ash within 4 years of its arrival.
** To remove all ash trees within 6 years (41 trees per year at $543/tree), the tree budget would need to be increased to $22,172 a year. If the budget were increased to $10,000 a year all ash could be removed in 13 years.

Emerald Ash Borer Plan

Ash Tree Removal

Tree removal will be prioritized with dead, dying, hazardous trees to be removed first (Appendix B, Figure 4). Next will be all ash in poor condition and displaying signs and symptoms

of EAB (Appendix B, Figure 2 & Appendix B, Figure 3). *City ownership of the tree recommended for removal should be verified prior to any removal*

Treatment of Ash Trees

Chemical treatment can be effective, spreading removal costs out over several years while allowing trees to continue to provide benefits before their eventual removal. Chemical treatment is being used on the better ash trees in Burlington, Iowa, to postpone their immediate removal. Each ash street tree in Burlington was appraised for immediate removal or for treatment and located by GPS coordinates or by street address. George has the benefit of not finding any actual infestations of EAB, so the yearly removal of the worst trees now can lower future removal costs. Chemical treatment is not recommended if EAB is more than 15 miles away from the community. For more information on the cost of treatment strategies visit http://extension.entm.purdue.edu/treecomputer/

EAB Quarantines

EAB is an extremely destructive plant pest and it is responsible for the death and decline of over 25 million ash trees. Ash in both forested and urban settings constitute a significant portion of the canopy cover in the United States. Current tools to detect, control, suppress and eradicate this pest are not as robust as the USDA would desire. In order to stay ahead of this hard to detect beetle, the USDA is attempting to contain the beetle before it spreads beyond its known positions by regulating articles.

A regulated article under the USDA's quarantine includes any of the following items:

- emerald ash borer
- firewood of all hardwood species (for example ash, oak, maple and hickory)
- nursery stock and green lumber of ash
- any other ash material, whether living, dead, cut or fallen, including logs, stumps, roots, branches, as well as composted and not composted chips of the genus ash (Mountain ash is not included)

In addition, any other article, product or means of conveyance not listed above may be designated as a regulated article if a USDA inspector determines that it presents a risk of spreading EAB once a quarantine is in effect for your county.

Wood Disposal

A very important aspect of planning is determining how wood infested with EAB will be handled, keeping in mind that quarantines will restrict its movement. Consider who will cut and haul the dead and dying trees? Is there an accessible, secured site big enough to store and sort the hundreds of trees and the associated brush and chips? How will wood be disposed of or utilized? Do you have equipment capable of handling the amount and size of ash trees your tree inventory has identified? Once your county is under quarantine for EAB, contact USDA-APHIS-PPQ at 515-251-4083 or visit the website http://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/regulatory.shtml.

Wood waste can be disposed of as you normally would if your county is not part of a quarantine.

Canopy Replacement

As budget permits, all removed ash trees will be replaced. All trees will meet the restrictions in the city ordinance if amended. The new plantings will be a diverse mix and should not include ash, maple, cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut.

Postponed Work

While finances, staffing and equipment are focused on the management of ash, usual services may be delayed. Tree removal requests on trees other than ash will be prioritized by hazardous or emergency situations only.

Monitoring

It is recommended that ash trees be checked with a visual survey every year for tree death and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Private Ash Trees

It is strongly recommended that private property owners start removing ash trees on their property upon arrival of EAB. City Code states:

Article 10-Disease Control:
10.01 TREES SUBJECT TO REMOVAL. The council having determined that the health of any tree within the city is threatened by a fatal disease hereby declares the following shall be removed:

1. LIVING OR STANDING TREES. Any living or standing tree or part thereof infected with a disease fungus or which harbors any of the elm back beetles and Emerald Ash Borer that is Scolytus multistriatus (eichb.) or Hylurgopinus rufipes (marsh.).
2. DEAD TREE. Any dead tree or part thereof including logs, branches, stumps, firewood or other material from which the has not been removed and burned or sprayed with an effective destroying insecticide.

10.02 DUTY TO REMOVE. No person, firm or corporation shall permit any tree or material infected with Dutch Elm disease or Emerald Ash Borer to remain on the premises owned, controlled or occupied by him or her within the city. (Code of Iowa, Sec, 357.2 (12))

10.03 INSPECTION. As written in the city code.

10.05 REMOVAL FROM PRIVATE PROPERTY. STATES “If the City upon inspection or examination, in person or by some qualified person acting for the city, shall determine with reasonable certainty that any condition as herein defined exists in or upon private premises, and that the danger to other trees within the city is imminent, he or she shall immediately notify by certified mail the occupant or person in charge of such property, to correct such condition within 14 days of said notification. If such owner, occupant or person in charge of

said property fails to comply within 14 days of receipt thereof, the Council may cause the nuisance to be corrected and the cost assessed against the property for collection in the same manner as a property tax. " (Code of Iowa, Sec. 364.12 (3b & h))

Budget

Budget Status for 2012 and 2013.
The current annual budget for George does not contain a line item for street trees, their removal, stump removal, or re-planting. Up to the year 2012, George had a local chapter of Trees Forever and in 2012 it was disbanded. Up to 2012, the city budgeted $1000 per year to the local chapter. In 2012, George budgeted $3,800 in funds for the Miscellaneous Protection line item which was spent on tree removals. Seven trees were removed and the stumps ground out giving an average cost of $543 per tree. In April of 2013, George was hit with a devastating ice storm; pulling down or destroying utilities and trees. Actual tree trimming and removal costs were, city wide, $32,275. This included 16 tree removals and stumps ground out; plus pruning hanging branches on all other street trees. Since the cost was spread out over the entire city, arriving at a cost per tree is not possible (but just for the 16 trees, cost per tree is $2017). None of the $32,275 was budgeted but it was paid by the city. George is fortunate that FEMA reimbursed 75% of the cost.

Current Budget
Total $22,800 over 6 years ($3,800/year)

FY 2012 Budget $3,800
Removal: $3,800 at seven trees
Planting: $0
Routine trimming: $0
Watering & Maintenance: $0

FY 2013 Budget $3,800
Removal: $32,275
FEMA Reimbursement: 75% or $24,206
Planting: $0
Routine trimming: estimate $500
Watering & Maintenance: $0

FY 2014 Budget $3,800
Removal: $3,800 or seven trees
Planting: $0
Routine trimming: $500
Watering & Maintenance: $0

FY 2015 Budget $3,800
Removal: $3,800 or seven trees

Routine trimming: $500
Planting: $0
Watering & Maintenance: $0

FY 2016 Budget $3,800

Removal: $3,800
Planting: $0
Routine trimming: $500
Watering & Maintenance: $0

*Reduction of ash over 6 years: approximately 40 to 45 ash trees removed (approximately 18% of ash). **It will take approximately 35 years to remove all ash with the current budget.**

Purposed Budget Increase

EAB could potentially kill all ash trees in George within 4 years of its arrival. To remove all ash trees within 6 years the budget would need to be increased to $22,172 a year. If the budget were increased to $10,000 a year all ash could be removed within 13 years. Additionally, it is recommended that George apply for grants to fund replacement trees. Utility Company grants are usually between $500 and $10,000 for community-based, tree-planting projects that include parks, gateways, cemeteries, nature trails, libraries, nursing homes, and schools. Please remember, these costs do not include any other sort of tree planting or maintenance, no future storm damage, and no other natural decay or death to any other tree species along George's streets.

Works Cited

Census Bureau. 2010. http://censtats.census.gov/data/IA/1601964290.pdf (April, 2013)

USDA Forest Service, et al. 2006. i-Tree Software Suite v1.0 User's Manual. Pp. 27-40.

McPherson EG, Simpson JR, Peper PJ, Gardner SL, Vargas KE, Ho J, Maco S, Xiao Q. 2005b. City of Charleston, South Carolina, municipal forest resource analysis. Internal Tech Rep. Davis, CA: U.S. Department of Agriculture, Center for Urban Forest Research. p. 57

Nowak, D.J. and J.F. Dwyer. 2007. Understanding the benefits and costs of urban forest ecosystems. In: Kuser, J. (ed.) Urban and Community Forestry in the Northeast. New York: Springer. Pp. 25-46.

Peper, Paula J.; McPherson, E. Gregory; Simpson, James R.; Vargas, Kelaine E.; Xiao, Qingfu 2009. Lower Midwest community tree guide: benefits, costs, and strategic planting. Gen.

Tech. Rep. PSW-GTR-219. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. p.115

Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

George

Annual Energy Benefits of Public Trees by Species

12/4/2013

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	69.6	5,284	9,562.4	9,371	14,655	(N/A)	35.5	40.0	59.82
Silver maple	31.0	2,357	4,099.0	4,017	6,374	(N/A)	14.5	17.4	63.74
Norway maple	22.9	1,740	3,289.8	3,224	4,964	(N/A)	13.5	13.5	53.37
American basswood	8.3	633	1,223.6	1,199	1,832	(N/A)	4.8	5.0	55.52
Apple	1.8	137	299.1	293	431	(N/A)	4.2	1.2	14.84
Littleleaf linden	4.7	356	619.7	607	963	(N/A)	3.8	2.6	37.05
Northern hackberry	7.5	568	1,054.8	1,034	1,602	(N/A)	3.3	4.4	69.65
Black walnut	5.2	395	716.4	702	1,097	(N/A)	2.6	3.0	60.93
Honeylocust	4.9	368	639.9	627	995	(N/A)	2.5	2.7	58.55
White ash	1.4	106	166.9	164	270	(N/A)	1.6	0.7	24.54
Sugar maple	2.8	214	370.7	363	577	(N/A)	1.5	1.6	57.69
Northern white cedar	1.1	87	136.0	133	220	(N/A)	1.5	0.6	22.02
Amur maple	1.0	73	146.5	144	217	(N/A)	1.3	0.6	24.07
Red maple	0.6	48	87.0	85	134	(N/A)	1.2	0.4	16.70
American sycamore	2.3	174	318.7	312	486	(N/A)	1.0	1.3	69.42
Mountain ash	0.7	52	104.5	102	154	(N/A)	1.0	0.4	22.06
Other street trees	8.1	617	1,082.0	1,060	1,677	(N/A)	6.5	4.6	37.28
Citywide total	174.0	13,210	23,916.8	23,438	36,648	(N/A)	100.0	100.0	53.04

Table 2: Annual Stormwater Benefits

George

Annual Stormwater Benefits of Public Trees by Species

12/4/2013

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	791,284	21,445	(N/A)	35.5	40.4	87.53
Silver maple	456,693	12,377	(N/A)	14.5	23.3	123.77
Norway maple	221,015	5,990	(N/A)	13.5	11.3	64.41
American basswood	94,278	2,555	(N/A)	4.8	4.8	77.43
Apple	6,393	173	(N/A)	4.2	0.3	5.97
Littleleaf linden	40,934	1,109	(N/A)	3.8	2.1	42.67
Northern hackberry	65,560	1,777	(N/A)	3.3	3.4	77.25
Black walnut	54,689	1,482	(N/A)	2.6	2.8	82.34
Honeylocust	48,685	1,319	(N/A)	2.5	2.5	77.62
White ash	9,806	266	(N/A)	1.6	0.5	24.16
Sugar maple	30,694	832	(N/A)	1.5	1.6	83.19
Northern white cedar	13,499	366	(N/A)	1.5	0.7	36.59
Amur maple	4,355	118	(N/A)	1.3	0.2	13.11
Red maple	3,652	99	(N/A)	1.2	0.2	12.37
American sycamore	30,850	836	(N/A)	1.0	1.6	119.44
Mountain ash	2,460	67	(N/A)	1.0	0.1	9.52
Other street trees	84,480	2,290	(N/A)	6.5	4.3	50.88
Citywide total	1,959,326	53,101	(N/A)	100.0	100.0	76.85

Table 3: Annual Air Quality Benefits

George

Annual Air Quality Benefits of Public Trees by Species

12/4/2013

Species	Deposition (lb) O_3	NO_2	PM_{10}	SO_2	Total Depos. ($)	Avoided (lb) NO_2	PM_{10}	VOC	SO_2	Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($)	Standard Error	% of Total Trees	Avg. $/tree
Green ash	99.5	15.9	47.4	4.5	529	332.7	48.4	46.2	315.5	2,072	0.0	0	910.1	2,601	(N/A)	35.5	10.62
Silver maple	82.1	13.9	40.0	3.6	442	146.5	21.4	20.5	140.4	916	-43.2	-162	425.3	1,196	(N/A)	14.5	11.96
Norway maple	46.2	8.0	22.6	2.0	249	111.0	16.1	15.3	104.0	688	-10.7	-40	314.4	897	(N/A)	13.5	9.64
American basswood	12.8	2.2	6.3	0.6	69	40.6	5.9	5.6	37.8	251	-10.9	-41	100.8	279	(N/A)	4.8	8.46
Apple	1.2	0.2	0.7	0.1	7	9.1	1.3	1.2	8.2	56	0.0	0	22.0	62	(N/A)	4.2	2.15
Littleleaf linden	6.5	1.1	3.3	0.3	35	22.2	3.3	3.1	21.3	139	-3.2	-12	57.9	162	(N/A)	3.8	6.24
Northern hackberry	9.5	1.7	5.0	0.4	52	36.1	5.2	5.0	34.0	224	0.0	0	96.9	276	(N/A)	3.3	12.02
Black walnut	6.4	1.0	3.1	0.3	34	24.9	3.6	3.4	23.6	155	0.0	0	66.3	189	(N/A)	2.6	10.49
Honeylocust	9.3	1.5	4.3	0.4	49	22.9	3.4	3.2	22.0	143	-7.1	-27	59.8	166	(N/A)	2.5	9.75
White ash	0.7	0.1	0.4	0.0	4	6.5	1.0	0.9	6.4	41	0.0	0	16.0	45	(N/A)	1.6	4.09
Sugar maple	4.1	0.7	2.0	0.2	22	13.3	1.9	1.9	12.7	83	-3.2	-12	33.6	93	(N/A)	1.4	9.32
Northern white cedar	1.5	0.3	1.3	0.2	10	5.3	0.8	0.7	5.2	33	-4.7	-18	10.5	26	(N/A)	1.4	2.55
Amur maple	1.4	0.2	0.6	0.1	7	4.7	0.7	0.6	4.4	29	0.0	0	12.7	36	(N/A)	1.3	4.05
Red maple	0.6	0.1	0.3	0.0	3	3.0	0.4	0.4	2.9	19	-0.2	-1	7.5	21	(N/A)	1.2	2.65
American sycamore	4.3	0.7	2.0	0.2	23	11.0	1.6	1.5	10.4	68	0.0	0	31.6	91	(N/A)	1.0	13.00
Mountain ash	0.6	0.1	0.3	0.0	3	3.4	0.5	0.5	3.1	21	0.0	0	8.5	24	(N/A)	1.0	3.43
Other street trees	13.8	2.4	7.7	0.9	78	38.5	5.6	5.4	36.8	241	-11.2	-42	99.9	276	(N/A)	6.5	6.14
Citywide total	300.4	50.1	147.3	13.8	1,617	831.6	121.0	115.4	788.6	5,179	-94.5	-354	2,273.8	6,442	(N/A)	100.0	9.32

Table 4: Annual Carbon Stored

George

Stored CO2 Benefits of Public Trees by Species

12/4/2013

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	3,255,860	24,419	(N/A)	35.5	42.3	99.67
Silver maple	1,934,317	14,507	(N/A)	14.5	25.2	145.07
Norway maple	762,329	5,717	(N/A)	13.5	9.9	61.48
American	468,371	3,513	(N/A)	4.8	6.1	106.45
Apple	22,959	172	(N/A)	4.2	0.3	5.94
Littleleaf linden	140,800	1,056	(N/A)	3.8	1.8	40.62
Northern	139,213	1,044	(N/A)	3.3	1.8	45.40
Black walnut	204,641	1,535	(N/A)	2.6	2.7	85.27
Honeylocust	118,685	890	(N/A)	2.5	1.5	52.36
White ash	21,620	162	(N/A)	1.6	0.3	14.74
Sugar maple	116,896	877	(N/A)	1.5	1.5	87.67
Northern white	9,875	74	(N/A)	1.5	0.1	7.41
Amur maple	21,745	163	(N/A)	1.3	0.3	18.12
Red maple	7,195	54	(N/A)	1.2	0.1	6.75
American	142,353	1,068	(N/A)	1.0	1.9	152.52
Mountain ash	9,884	74	(N/A)	1.0	0.1	10.59
Other street trees	141,701	2,343	(N/A)	6.5	4.1	52.07
Citywide total	7,689,138	57,669	(N/A)	100.0	100.0	83.46

Table 5: Annual Carbon Sequestered

George

Annual CO_2 Benefits of Public Trees by Species

12/4/2013

Species	Sequestered (lb)	Sequestered ($)	Decomposition Release (lb)	Maintenance Release (lb)	Total Released ($)	Avoided (lb)	Avoided ($)	Net Total (lb)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	164,774	1,236	-15,628	-48	-118	116,781	876	265,880	1,994	(N/A)	35.5	38.4	8.14
Silver maple	136,632	1,025	-9,285	-20	-70	52,080	391	179,407	1,346	(N/A)	14.5	25.9	13.46
Norway maple	28,368	213	-3,659	-18	-28	38,451	288	63,142	474	(N/A)	13.5	9.1	5.09
American basswood	27,453	206	-2,248	-6	-17	13,990	105	39,188	294	(N/A)	4.8	5.7	8.91
Apple	2,792	21	-110	-6	-1	3,036	23	5,712	43	(N/A)	4.2	0.8	1.48
Littleleaf linden	14,447	108	-676	-5	-5	7,868	59	21,634	162	(N/A)	3.8	3.1	6.24
Northern hackberry	8,838	66	-668	-4	-5	12,558	94	20,724	155	(N/A)	3.3	3.0	6.76
Black walnut	12,603	95	-982	-4	-7	8,723	65	20,339	153	(N/A)	2.6	2.9	8.47
Honeylocust	9,495	71	-570	-3	-4	8,140	61	17,062	128	(N/A)	2.5	2.5	7.53
White ash	2,900	22	-104	-2	-1	2,352	18	5,146	39	(N/A)	1.6	0.7	3.51
Sugar maple	6,125	46	-561	-2	-4	4,720	35	10,283	77	(N/A)	1.5	1.5	7.71
Northern white cedar	1,030	8	-47	-2	0	1,921	14	2,901	22	(N/A)	1.5	0.4	2.18
Amur maple	1,804	14	-104	-2	-1	1,615	12	3,313	25	(N/A)	1.3	0.5	2.76
Red maple	1,026	8	-35	-2	0	1,068	8	2,058	15	(N/A)	1.2	0.3	1.93
American sycamore	5,516	41	-683	-1	-5	3,837	29	8,668	65	(N/A)	1.0	1.3	9.29
Mountain ash	1,029	8	-47	-1	0	1,151	9	2,131	16	(N/A)	1.0	0.3	2.28
Other street trees	13,153	99	-1,500	-9	-11	13,636	102	25,281	190	(N/A)	6.5	3.7	4.21
Citywide total	437,986	3,285	-36,908	-135	-278	291,928	2,189	692,871	5,197	(N/A)	100.0	100.0	7.52

Table 6: Annual Social and Aesthetic Benefits

George

Annual Aesthetic/Other Benefits of Public Trees by Species

12/4/2013

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	13,477	(N/A)	35.5	35.4	55.01
Silver maple	10,426	(N/A)	14.5	27.4	104.26
Norway maple	2,689	(N/A)	13.5	7.1	28.91
American basswood	1,985	(N/A)	4.8	5.2	60.14
Apple	156	(N/A)	4.2	0.4	5.39
Littleleaf linden	1,488	(N/A)	3.8	3.9	57.22
Northern hackberry	1,244	(N/A)	3.3	3.3	54.08
Black walnut	1,048	(N/A)	2.6	2.8	58.24
Honeylocust	2,185	(N/A)	2.5	5.7	128.50
White ash	403	(N/A)	1.6	1.1	36.60
Sugar maple	642	(N/A)	1.5	1.7	64.25
Northern white cedar	289	(N/A)	1.5	0.8	28.94
Amur maple	106	(N/A)	1.3	0.3	11.72
Red maple	163	(N/A)	1.2	0.4	20.35
American sycamore	410	(N/A)	1.0	1.1	58.57
Mountain ash	59	(N/A)	1.0	0.2	8.38
Other street trees	1,332	(N/A)	6.5	3.5	29.61
Citywide total	38,101	(N/A)	100.0	100.0	55.14

Table 7: Summary of Benefits in Dollars
Average Annual Benefits of Public Trees
by Species

Species	Energy	CO2	Air Quality	Stormwater	Aesthetic/Other	Total ($)	Standard Error	% of Total $
Green ash	14,655	1,994	2,601	21,445	13,477	$54,172.80	(±0)	38.84
Silver maple	6,374	1,346	1,196	12,377	10,426	$31,718.92	(±0)	22.74
Norway maple	4,964	474	897	5,990	2,689	$15,012.94	(±0)	10.76
American basswood	1,832	294	279	2,555	1,985	$6,945.19	(±0)	4.98
Apple	431	43	62	173	156	$865.23	(±0)	0.62
Littleleaf linden	963	162	162	1,109	1,488	$3,885.03	(±0)	2.79
Northern hackberry	1,602	155	276	1,777	1,244	$5,054.46	(±0)	3.62
Black walnut	1,097	153	189	1,482	1,048	$3,968.74	(±0)	2.85
Honeylocust	995	128	166	1,319	2,185	$4,793.18	(±0)	3.44
White ash	270	39	45	266	403	$1,021.84	(±0)	0.73
Sugar maple	577	77	93	832	642	$2,221.52	(±0)	1.59
Northern white cedar	220	22	26	366	289	$922.74	(±0)	0.66
Amur maple	217	25	36	118	106	$501.41	(±0)	0.36
Red maple	134	15	21	99	163	$432.00	(±0)	0.31
American sycamore	486	65	91	836	410	$1,888.01	(±0)	1.35
Mountain ash	154	16	24	67	59	$319.71	(±0)	0.23
Other street trees	1,677	190	276	2,290	1,332	$5,765.17	(±0)	4.13
Citywide total	36,648	5,197	6,442	53,101	38,101	$139,488.89	(±0)	100.00

Appendix A continued:

Appendix A, Table 8

Priority Task Summary for Public Trees, 12/4/2013

Type of Maintenance	Tree Diameter Classes in inches										
	0-3	3-6 in	6-12 in	12-18in	18-24in	24-30in	30-36in	36-42in	>42in	total	%
None	21	40	48	87	53	52	23	8	2	334	48.3
Stake/Train	0	0	0	0	0	0	0	0	0	0	0
Clean crown	1	2	12	35	62	72	44	21	14	263	38.1
Raise crown	0	0	0	1	3	4	1	1	1	11	1.59
Reduce crown	0	0	2	5	3	7	5	1	2	25	3.62
Remove Tree	3	5	5	12	15	6	7	4	1	58	8.39
Treat Pest/Disease	0	0	0	0	0	0	0	0	0	0	0
City wide total	25	47	67	140	136	141	80	35	20	691	100

Appendix A, Table 9

Recommended Maintenance for Public Trees

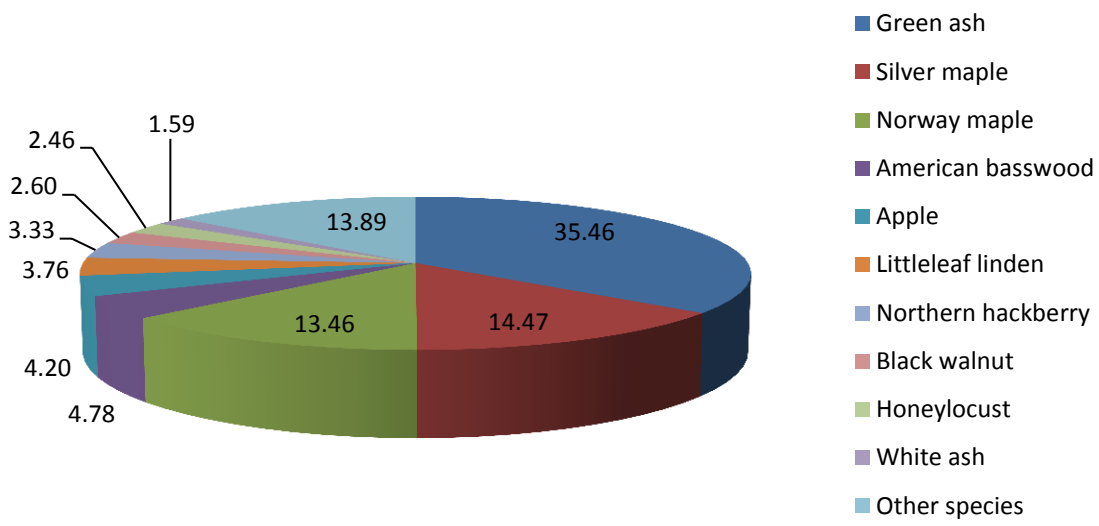
Data from 12/4/2013

Maintenance Type	Tree Diameter Classes in inches										
	0-3in	3-6in	6-12in	12-18in	18-24in	24-30in	30-36in	36-42in	>42in	Total	% total
Young Tree (routine)	19	32	31	24	5	0	0	0	0	111	16.06
Young Tree (immediate)	1	4	6	10	0	0	0	0	0	21	3.04
Mature Tree (routine)	4	10	28	91	101	96	49	22	15	416	60.2
Mature Tree (immediate)	1	1	2	13	26	41	26	12	4	126	18.23
Critical Concern (public safety)	0	0	0	2	4	4	5	1	1	17	2.46
City Wide total	25	47	67	140	136	141	80	35	20	691	100

Add the number of mature tree 'immediate' 126 plus young tree 'immediate' 21 for a tota of 147 'poor' trees. This number is noted in the city plan under the topic 'Poor Tree Species' in the risk management portion of the Recommendations Section.

Appendix A, Figure 1

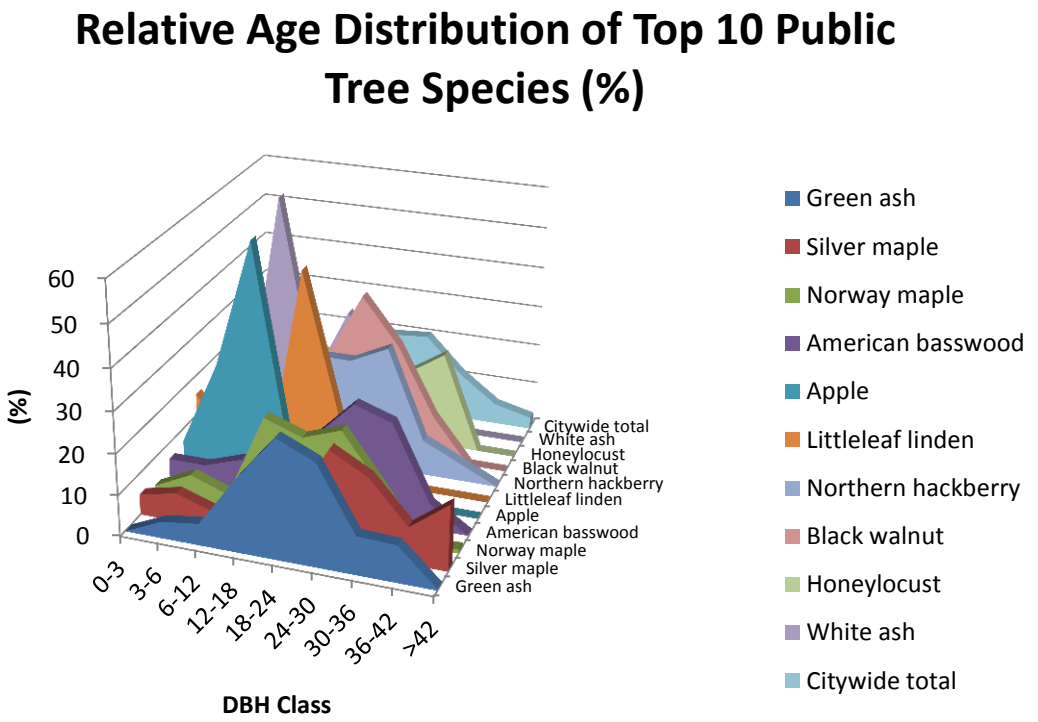
Figure 1: Species Distribution



George
Species Distribution of Public Trees (%)
12/4/2013

Species	Percent
Green ash	35.46
Silver maple	14.47
Norway maple	13.46
American basswood	4.78
Apple	4.20
Littleleaf linden	3.76
Northern hackberry	3.33
Black walnut	2.60
Honeylocust	2.46
White ash	1.59
Other species	13.89
Total	100.00

Appendix A, Figure 2
Figure 2: Relative Age Class



Relative Age Distribution of Top 10 Public Tree Species for Zone 1 (%)

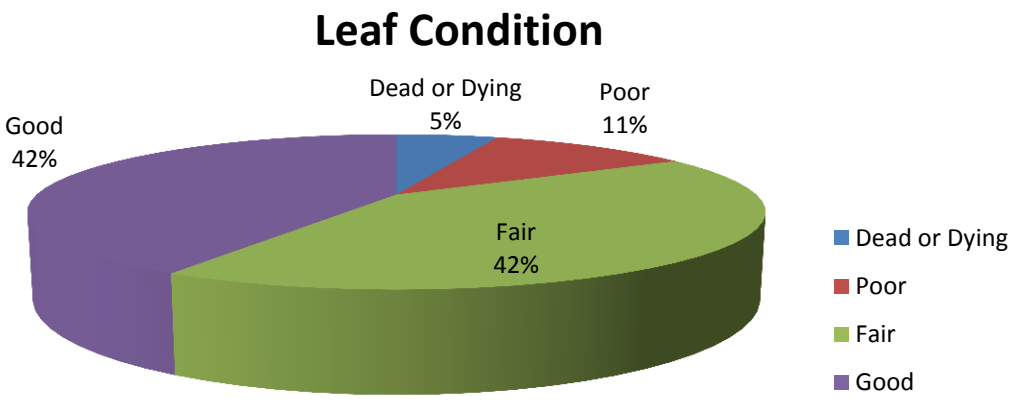
DBH class (in)

Species Name	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42
Green ash	0.00	4.08	5.31	17.96	28.98	24.90	9.39	8.98	0.41
Silver maple	5.00	7.00	4.00	7.00	9.00	24.00	19.00	9.00	16.00
Norway maple	3.23	7.53	4.30	24.73	21.51	24.73	12.90	0.00	1.08
American basswood	6.06	6.06	9.09	3.03	18.18	27.27	24.24	6.06	0.00
Apple	6.90	27.59	58.62	6.90	0.00	0.00	0.00	0.00	0.00
Littleleaf linden	15.38	3.85	0.00	50.00	15.38	15.38	0.00	0.00	0.00
Northern hackberry	0.00	0.00	4.35	26.09	26.09	30.43	8.70	4.35	0.00
Black walnut	0.00	0.00	0.00	22.22	38.89	27.78	11.11	0.00	0.00
Honeylocust	0.00	0.00	23.53	17.65	17.65	17.65	23.53	0.00	0.00
White ash	0.00	54.55	9.09	27.27	9.09	0.00	0.00	0.00	0.00
Zone 1 total	3.62	6.80	9.70	20.26	19.68	20.41	11.58	5.07	2.89

Appendix A, Figure 3

Condition (Foliage) of Public Trees by Species (%)

Species Name	Dead or Dying	Poor	Fair	Good
Green ash	8.64	18.93	54.32	18.11
Silver maple	0.00	6.00	36.00	58.00
Norway maple	5.38	3.23	32.26	59.14
American basswood	0.00	0.00	36.36	63.64
Apple	3.45	6.90	31.03	58.62
Littleleaf linden	0.00	0.00	15.38	84.62
Northern hackberry	0.00	21.74	60.87	17.39
Black walnut	5.56	0.00	33.33	61.11
Honeylocust	0.00	25.00	62.50	12.50
White ash	0.00	0.00	18.18	81.82
Sugar maple	10.00	0.00	10.00	80.00
Northern white cedar	0.00	0.00	90.00	10.00
Amur maple	11.11	0.00	44.44	44.44
Red maple	12.50	0.00	12.50	75.00
American sycamore	0.00	0.00	57.14	42.86
Mountain ash	28.57	0.00	14.29	57.14
Citywide total	5.52	11.05	41.86	41.57

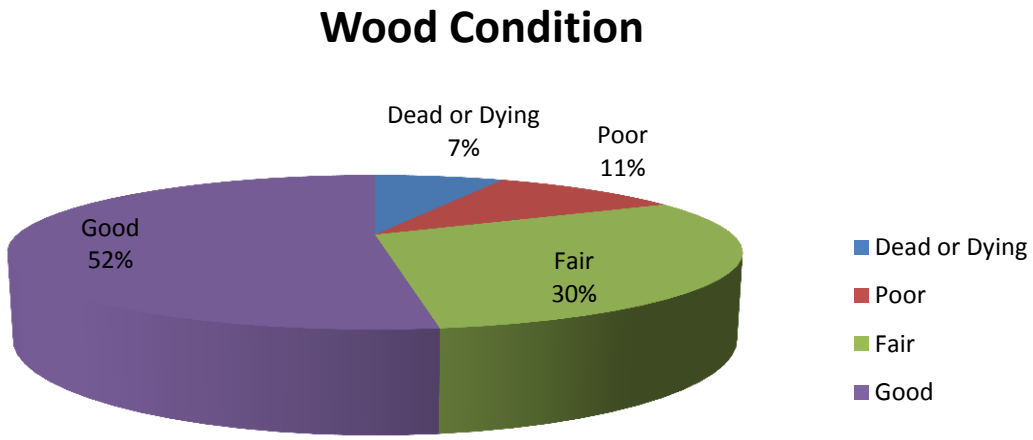


Appendix A, Figure 4

Condition (Woody) of Public Trees by Species (%)

12/4/2013

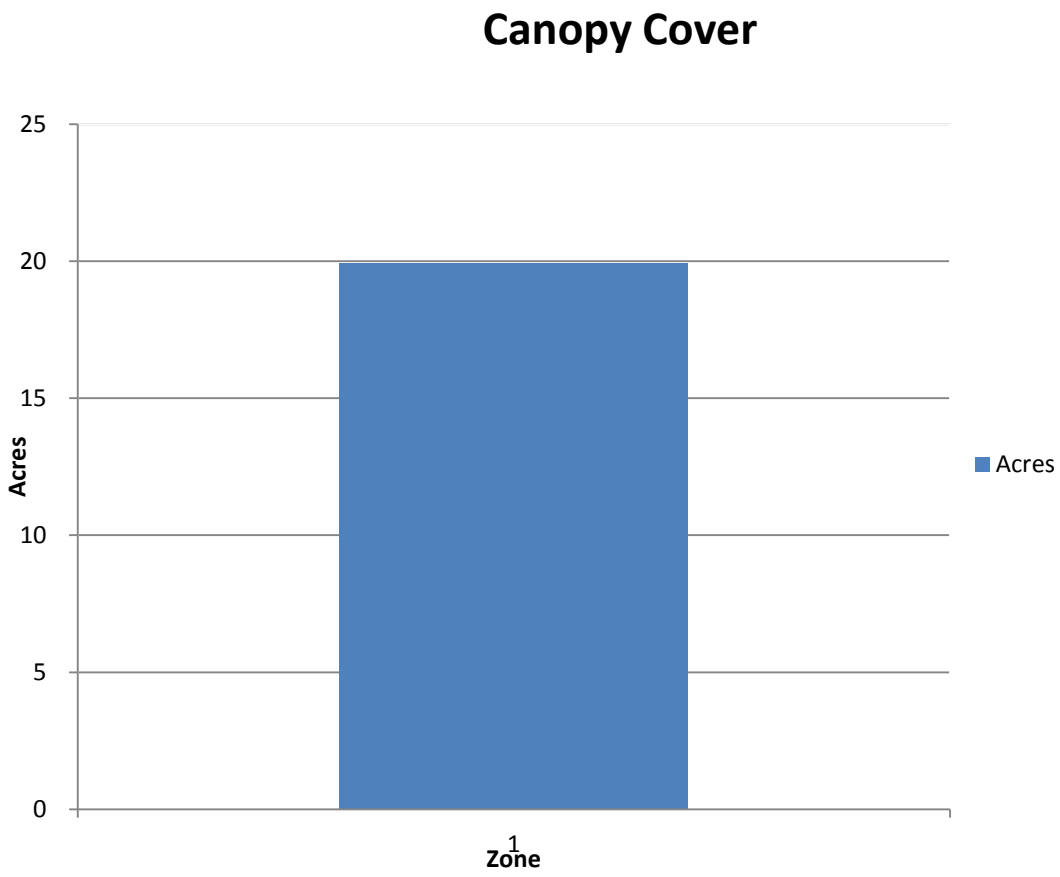
Species Name	Dead or Dying	Poor	Fair	Good
Green ash	7.35	12.24	32.24	48.16
Silver maple	2.00	4.00	36.00	58.00
Norway maple	12.90	13.98	29.03	44.09
American basswood	0.00	9.09	33.33	57.58
Apple	3.45	6.90	27.59	62.07
Littleleaf linden	3.85	3.85	38.46	53.85
Northern hackberry	17.39	13.04	30.43	39.13
Black walnut	5.56	0.00	11.11	83.33
Honeylocust	0.00	29.41	5.88	64.71
White ash	9.09	18.18	9.09	63.64
Sugar maple	10.00	0.00	30.00	60.00
Northern white cedar	0.00	0.00	100.00	0.00
Amur maple	0.00	33.33	22.22	44.44
Red maple	12.50	0.00	12.50	75.00
American sycamore	0.00	0.00	14.29	85.71
Mountain ash	28.57	28.57	0.00	42.86
Citywide total	7.09	10.42	30.25	52.24



Appendix A, Figure 5

Canopy Cover of Public Trees (Acres)

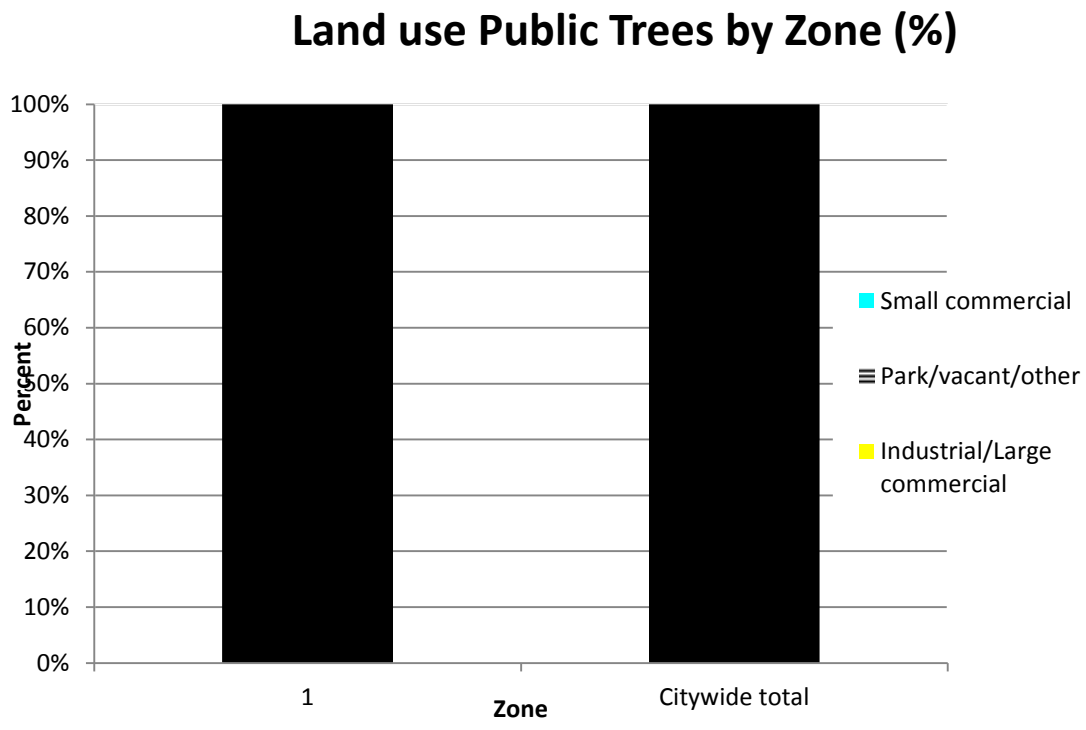
	Total Land Area	Total Street and Sidewalk Area	Total Canopy Cover	Total Land Area	Canopy Cover as % of Total Land Area
Citywide total	0.00	0.00	19.94	1,542 ac	1.3%



Appendix A, Figure 6

Land use Public Trees by Zone (%)
12/4/2013

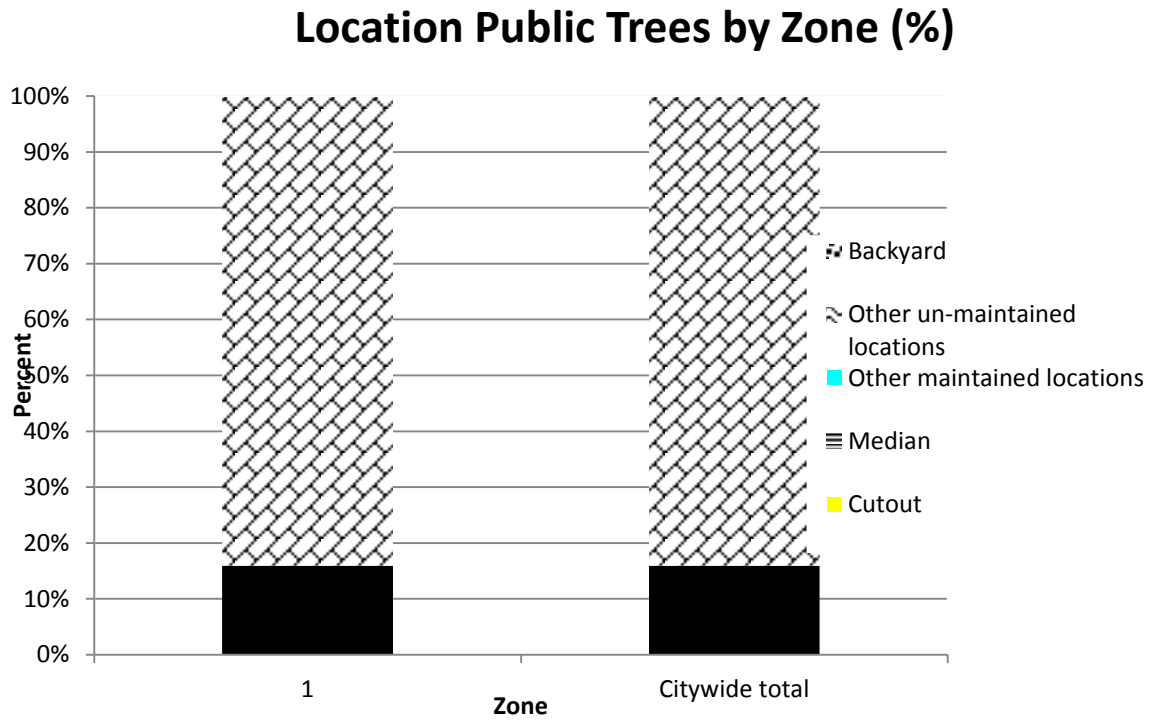
Zone	Single family residential	Multi-family residential	Industrial/Large commercial	Park/vacant/other	Small commercial
1	100.00	0.00	0.00	0.00	0.00
Citywide total	100.00	0.00	0.00	0.00	0.00



Appendix a, Figure 7

Location Public Trees by Zone (%)
12/4/2013

Zone	Front yard	Planting strip	Cutout	Median	Other maintained locations	Other un-maintained locations	Backyard
1	15.92	83.94	0.00	0.14	0.00	0.00	0.00
Citywide total	15.92	83.94	0.00	0.14	0.00	0.00	0.00



Appendix B: ArcGIS Mapping

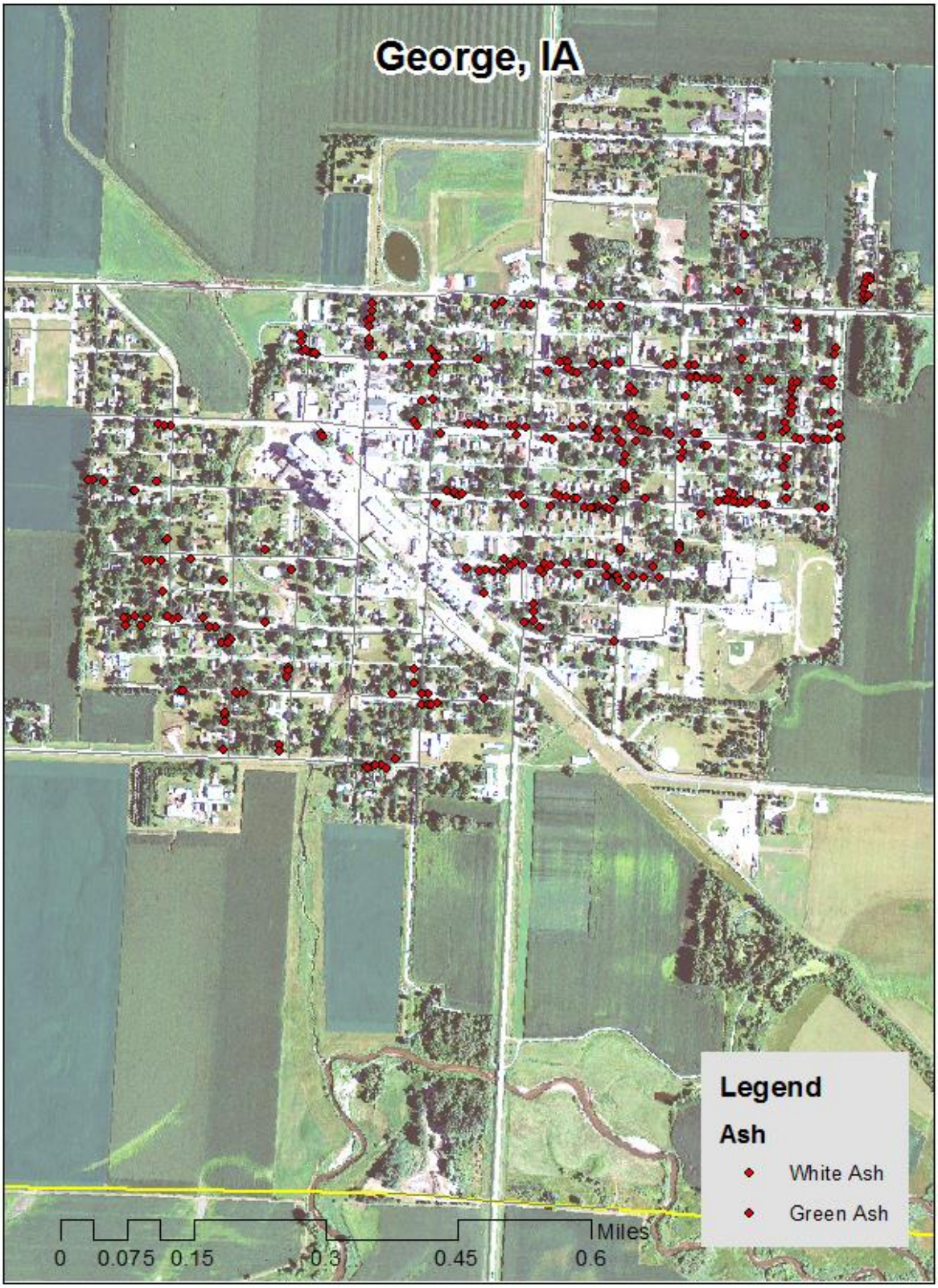


Figure 1: Location of Ash Trees

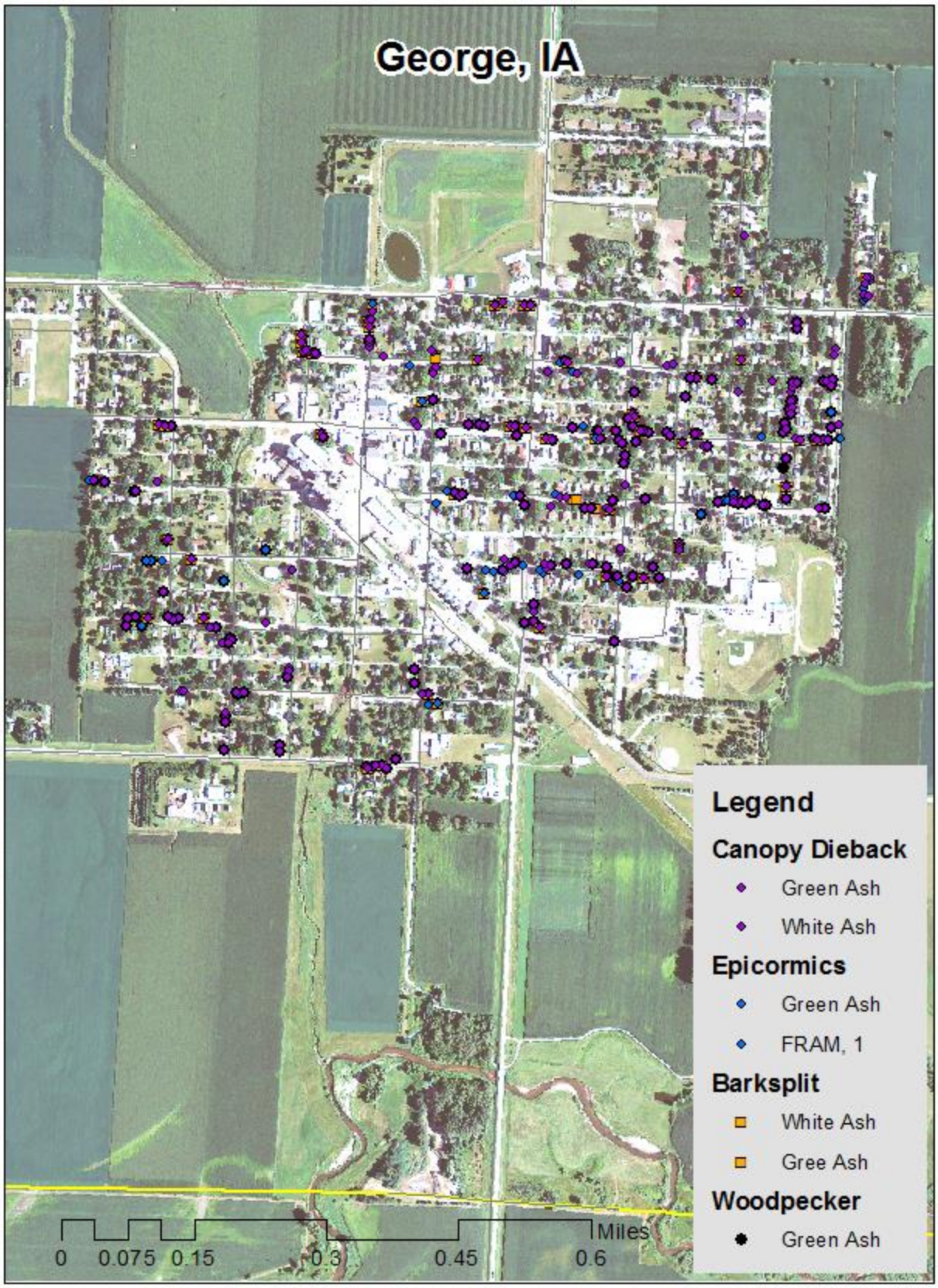


Figure 2: Location of EAB symptoms

Figure 3: Location of Poor Condition Trees

Figure 4: Location of Trees with Recommended Maintenance

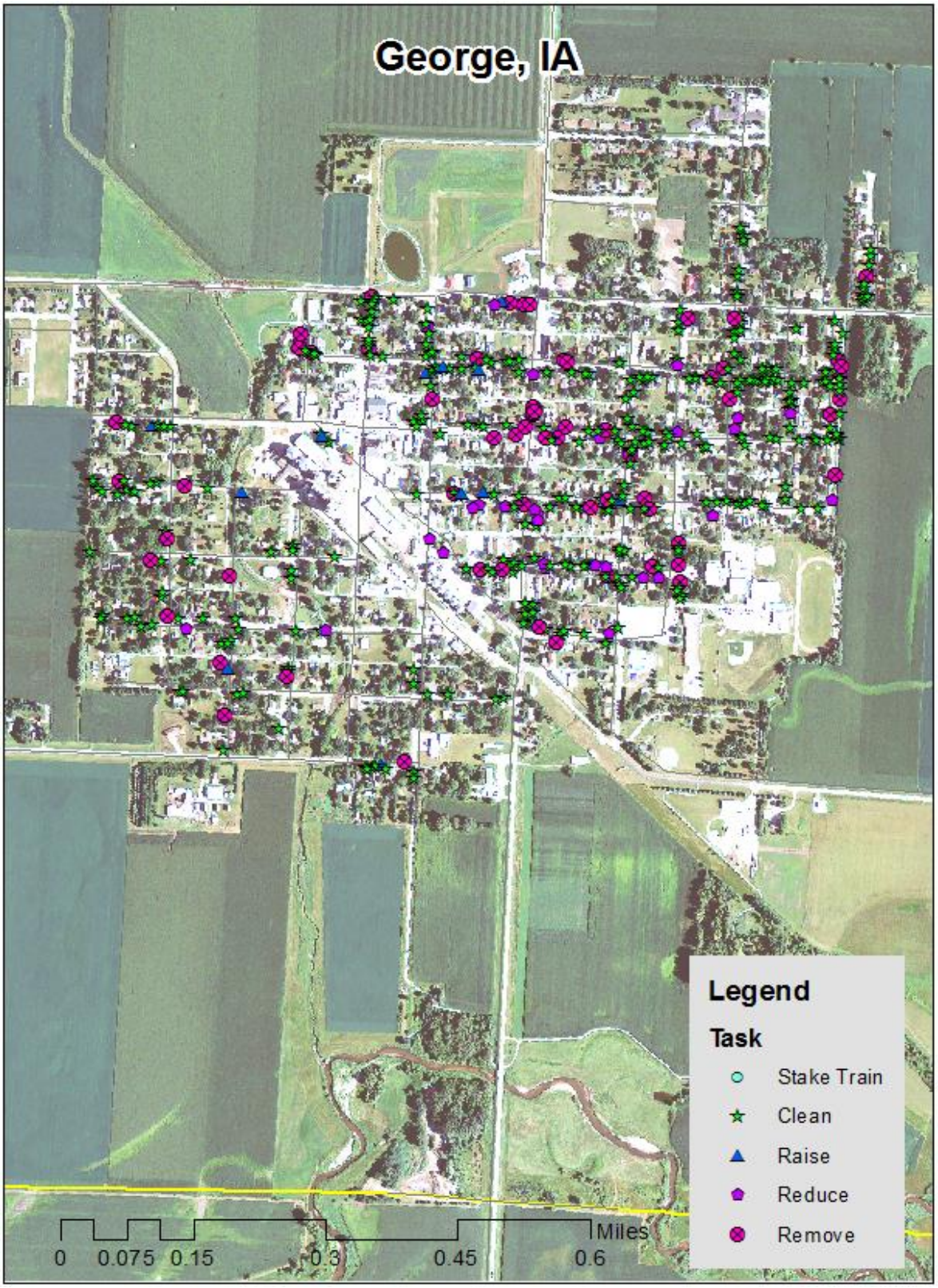


Figure 5: Maintenance Tasks *City ownership of the trees recommended for removal should be verified prior to any removal*

Appendix C: George Tree Ordinances

CHAPTER 4
TREES

ARTICLE 9 – GENERAL PROVISIONS

9.01 DEFINITIONS. For use in this chapter, the following term is defined:

1. "Parking" means that part of the street, avenue or highway in the city not covered by sidewalk and lying between the lot line and the curb line, or, on unpaved streets, that part of the street, avenue or highway lying between the lot line and that portion of the street usually traveled by vehicular traffic.
2. "Superintendent" means the superintendent of streets or such other person as may be designated by the council.

9.02 ARBORICULTURAL SPECIFICATIONSAND STANDARDS OF PRACTICE.

1. PLANTING. The following regulations shall be followed in the planting of trees within the city property.

   a. Size. All trees planted on the streets shall be of sufficient size to warrant satisfactory results and stand the abuse common to street trees.

   b. Grade. Unless otherwise allowed for substantial reasons, all standard sized trees shall have comparatively straight trunks, well-developed leaders, and tip and root characteristics of the species or variety showing evidence of proper nursery pruning. All trees must be free of insect, disease, mechanical injuries and other objectionable features at the time of planting. To compensate for any serious loss of roots, the top of the tree should be reduced by thinning or cutting back as determined by the growth characteristics of the tree species. The leader shall not be cut off in such trimming.

   c. Planting. Trees shall not be planted on the parking if it is less than nine (9) feet in width, or contains less than eighty-one (81) square feet of exposed soil surface. Trees shall not be planted closer than twenty (20) feet to street intersections (property lines extended) and ten (10) feet to driveways.

   d. Method of support. Trees may be guyed or supported in an upright position according to accepted arboricultural practices. The guys or supports shall be fastened in such a way that they will not girdle or cause serious injury to the trees or endanger public safety.

2. TRIMMING OR PRUNING. Trees shall be trimmed or pruned with prior approval from the tree board according to the following:

a. All cuts are to be made sufficiently close to the parent stem so that healing can readily start under normal conditions.

b. All dead and diseased wood shall be removed.

c. All limbs one inch in diameter or more must be precut to prevent splitting.

d. A crossed or rubbing branch shall be removed where practicable, but removal shall not leave large holes in the general outline of the tree. Crossed or rubbing branches may be cabled apart.

e. Where there is a known danger of transmitting disease by tolls, said tools shall be disinfected with alcohol before use on another tree.

f. No topping or dehorning of trees shall be permitted except by special written permission of the city. Trees becoming stag-headed may have the dead portions removed back to sound green wood, with a proper forty-five (45) degree cut only.

g. Elm wood trimmed, pruned or removed shall not be used for any purpose, but shall be disposed of immediately by burning or burying.

9.03 REMOVAL OF TREES. The city shall have removed, on the order of the tree board, any tree on the streets of the city which interferes with the making of improvements or with travel thereon. They shall additionally remove any trees on the street, not on private property, which have become diseased, or which constitute a danger to the public or which may otherwise be declared a nuisance. (Code of Iowa, Sec. 364.12(2c))

9.04 DUTY TO TRIM TREES. The owner or agent of the abutting property shall keep the trees on or overhanging the street, trimmed so that all branches will be at least fifteen (15) feet above the surface of the street and eight (8) feet above the sidewalks. (Code of Iowa, Sec. 364.12(2c))

9.05 REMOVAL OF TREES TO BE SUPERVISED. It shall be unlawful for any person to kill or remove any tree in a street or public place unless the work is done with prior approval of the tree board.

9.06 ASSESSMENT. If the abutting property owner fails to trim the trees as required in this chapter, the city may serve notice on the abutting property owner requiring him or her to do within thirty (30) days. If he or she fails to trim the trees within that time, the city may perform the required action and assess the costs against the abutting property for collection in the same manner as a property tax. (Code of Iowa, Sec. 364.12(2d&e))

ARTICLE 10 – DISEASE CONTROL

10.01 TREES SUBJECT TO REMOVAL. The council having determined that the health of any tree within the city is threatened by a fatal disease hereby declares the following shall be removed:

1. LIVING OR STANDING TREES. Any living or standing tree or part thereof infected with a disease fungus or which harbors any of the elm back beetles and Emerald Ash Borer that is Scolysis multistriatus or Hylurgopinus rifipes (marsh.).

2. DEAD TREES. Any dead tree or part thereof including logs, branches, stumps, Firewood or other material from which the bark has not been removed and Burned or sprayed with an effective destroying insecticide.

10.02 DUTY TO REMOVE. No person, firm or corporation shall permit any tree or material infected with Dutch Elm disease or Emerald Ash borer to remain on the premises owned, controlled or occupied by him or her within the city. (Code of Iowa, Sec.357.2 (12))

10.03 INSPECTION. The city shall inspect or cause to be inspected all premises and places within the city to determine whether any condition as defined in Section 10.01 of this chapter exists thereon, and shall also inspect or cause to be inspected any tree reported or suspected to be infected with a disease or any elm bark or ash bearing material reported or suspected to be infected with the Elm Bark beetles or Ash Borer beetle.

10.04 REMOVAL FROM CITY PROPERTY. If the city, upon inspection or examination, in person or by some qualified person acting for the city, shall determine that any condition as herein defined exists in or upon any public street, alley, park or any public place, including the strip between the curb and the lot line of private property within the city, and that the danger of other trees within the city is imminent, he or she shall immediately cause it to be removed and burned or otherwise correct the same in such manner as to destroy or prevent as fully as possible the spread of disease or the insect pests or vectors known to carry such disease fungus.

10.05 REMOVAL FROM PRIVATE PROPERTY. If the City upon inspection or examination, in person or by some qualified person acting for the city, shall determine with reasonable certainty that any condition as herein defined exists in or upon private premises, and that the danger to other trees within the city is imminent, he or she shall immediately notify by certified mail the occupant or person in charge of such property, to correct such condition within 14 days of said notification. If such owner, occupant or person in charge of said property fails to comply within 14 days of receipt thereof, the council may cause the nuisance to be removed and the cost assessed against the property for collection in the same manner as a property tax. (Code of Iowa, Sec.364.12(3b & h))

10.06 REASONABLE CERTAINTY. If the city is unable to determine with reasonable certainty whether or not a tree in or upon private premises is infected with a disease, a city representative is authorized to remove or cut specimens from said tree, and obtain diagnosis of such specimens.

CITY OF GEORGE, IOWA – 2012 CODE OF ORDINANCES

The State of Iowa is an Equal Opportunity Employer and provider of ADA services.

Federal law prohibits employment discrimination on the basis of race, color, age, religion, national origin, sex or disability. State law prohibits employment discrimination on the basis of race, color, creed, age, sex, sexual orientation, gender identity, national origin, religion, pregnancy, or disability. State law also prohibits public accommodation (such as access to services or physical facilities) discrimination on the basis of race, color, creed, religion, sex, sexual orientation, gender identity, religion, national origin, or disability. If you believe you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please contact the Iowa Civil Rights Commission, 1-800-457-4416, or write to the Iowa Department of Natural Resources, Wallace State Office Bldg., 502 E. 9th St., Des Moines, IA 50319.

If you need accommodations because of disability to access the services of this Agency, please contact the Director at 515-281-5918.