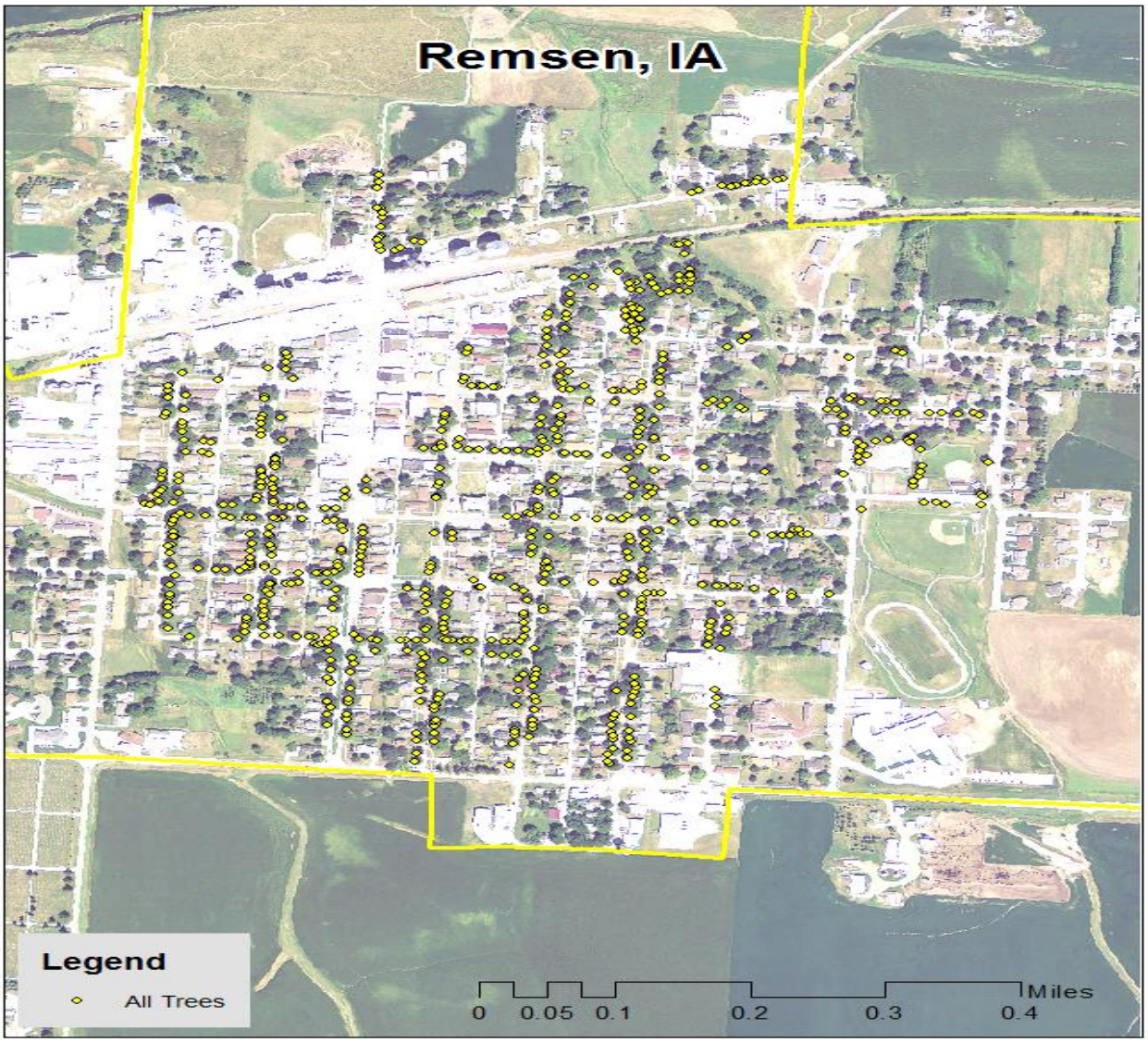
Emerald Ash Borer/Urban Plan
Remsen, IA



2015 Urban Forest Management Plan
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Executive Summary

Overview

This plan was developed to assist the City of Remsen with managing its urban forest, including budgeting and future planning. Trees can provide a multitude of benefits to Remsen, and sound management allows you 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 32% of Remsen's city owned trees (ash) will die once EAB becomes established in the community, unless preventative treatment is used. 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 2014, 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 675 trees inventoried.

- Remsen's trees provide $135,243 of benefits annually, an average of $200 a tree.
- There are over 33 species of trees.
- The top three genera are: Maple 42%, Ash 32%, and American Basswood 5%.
- 19% of trees are in need of some type of management.
- 23 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 23 trees needing removal, 9 trees are over 24 inches in diameter at 4.5 ft and must be addressed immediately. *City ownership of the trees recommended for removal should be verified prior to any removal*.
- 10 of the 218 ash trees should be carefully examined, as they have one or more symptoms that could be related to an EAB infestation
- All trees should be pruned on a routine schedule- one third of the city every other year
- Plant a diverse mix of trees that does not include: ash, maple, cottonwood, poplar, Box elder, Chinese elm, evergreen, willow or Black walnut.
- Check ash trees with a visual survey yearly.

Introduction

This plan was developed to assist Remsen 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 Remsen, these costs can be extended over years and public safety issues from dead and dying ash trees mitigated.

Trees are an important component of Remsen'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 Remsen 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 Remsen's urban forestry goals.

Inventory

In 2014, a tree inventory was conducted that included 100% of the city-owned trees along streets and in parks. 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 associated with EAB were noted for all ash trees. The signs and symptoms noted were canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Inventory Results

The data collected for the 675 city trees was 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. Remsen's trees reduce energy related costs by approximately $36,324 annually (Appendix A, Table 1). These savings are both in Electricity (170.9 MWh) and in Natural Gas (23,826.1 Therms).

Annual Stormwater Benefits

Remsen's trees intercept about 1,851,962 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides $50,188 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 Remsen, it is estimated that trees remove 2,275 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 $6,429 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Remsen, trees sequester about 372,132 lbs. of carbon a year with an associated value of $2,791 (Appendix A, Table 5). In addition, the trees store 6,458,225 lbs. of carbon, with a yearly benefit of $48,437 (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. Remsen receives $39,511 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, Remsen's trees provide $135,243 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 675 trees in Remsen provide approximately $200 annually (Appendix A, Table 7).

Forest Structure

Species Distribution

Remsen has over 33 different tree species along city streets and parks (Appendix A, Figure 1). The distribution of trees by genera is as follows:

Maple	282	42%
Ash	218	32%
Linden/Basswood	42	6%
Oak	22	6%
Locust	17	3%
Walnut	15	2%
Spruce/large evergreen	14	2%
Poplar	14	2%
Hackberry	11	1%
Elm	7	1%
Apple	6	<1%
Arborvitae	4	<1%
Pear	4	<1%
Mulberry	3	<1%
Lilac	3	<1%
Mountain ash	2	<15
Sycamore	2	<1%
Birch	2	<1%
Prunus-Cherry/plum	1	<1%
Catalpa	1	<1%
Large deciduous	1	<1%
Redbud	1	<1%
Unknown	4	<1%

Age Class

Most of Remsen's trees (60%) are between 12 and 30 inches in diameter at 4.5 ft (Appendix A, Figure 2). With regard to age/size, it is preferred that the highest numbers of trees have smaller trunk diameters, so younger and smaller trees will replace natural mortality and to maintain canopy cover. Remsen's size curve is average indicating that you have an equal number of trees reaching maturity as young trees starting out.

Condition: Wood and Foliage

Both wood condition and leaf condition are good indicators of the overall health of the urban forest. The foliage condition of 96% of the trees is good with only 4% of the foliage in fair, poor, or dead and dying (Appendix A, Figure). Similarly, the wood condition of 96% of the trees is good and fair with only 4% in poor health, dead, or dying.

Management Needs

The following outlines the specific management needs of the street and park trees by number of trees and percent of canopy. The location of those trees needing Crown cleaning, Crown reduction and complete Removal are shown in Appendix B, Figure 5. Appendix A, Table 8 shows another breakdown of these trees by trunk diameters and the numbers of each.

No Work	550	81%
Tree Staking/Training	0	0%
Crown Cleaning	100	15%
Crown Raising	0	0%
Crown Reduction	2	<1%
Tree Removal	23	4%

Canopy Cover

The canopy cover of Remsen is approximately 19.5 acres (Appendix B, Figure5). According to the 2010 census, Remsen occupies 810 acres. Thus the canopy cover is about 2.4%.

Land Use and Location

The majority of Remsen's city and park trees are in planting strips in single family residential neighborhoods (Appendix A, Figure 6 & Appendix A, Figure7). The following describes the land use and locations for the street and park trees.

Land Use	
Single family residential	92%
Park/vacant/other	8%
Industrial/Large commercial	0%
Small commercial	0%
Multifamily residential	0%

Location	
Planting strip	100%
Other maintained locations	0%
Cutout (surrounded by pavement)	0%
Front yard	0%

Recommendations

Risk Management

Hazardous trees can be a significant threat to both people and property. Trees that are dead or dying, or that have large issues such as trunk cracks longer than 24 inches should be removed. Forked trees with open splits exposing interior wood 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

Remsen has 1 'critical concern' tree that needs immediate appraisal for maintenance or removal. This single ash tree is shown on (Appendix B, Figure 4) as a red diamond and east of the grain elevator. Remsen has 23 trees needing 'removal' regardless of the tree species. They are shown in Figure 5, Appendix B, as red circles with black X's in them. Of the 23 trees, 8 are maples, 9 are ashes, 3 are Hackberry, and 1 Honeylocust tree.

Poor, Dead or Dying Trees

Remsen has only a few trees in these categories. Eleven trees have wood rated as 'poor' and only 1 tree is rated as 'dead and dying' which is an ash tree. The foliage condition is much better in Remsen. One ash tree is rated as poor and no trees at all have foliage rated as 'dead and dying.' Appendix B, Figure 3 shows the locations of these trees.

There are a total of 218 ash trees only 10 trees show 3 or more signs and symptoms that have been associated with EAB. *City ownership of the trees recommended for removal should be verified prior to any removal*.

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.

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%. 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 Remsen's urban forest.

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 (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 maple (42%) and ash (32%) (Appendix A, Figure 1). Maples and ash trees should not be planted

until their percentages are lowered. Ash trees have not been recommended for urban planting 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, as outlined in Section 151.02 of the city ordinance (Appendix C). All trees planted must meet the restrictions in your adopted city ordinance.

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 decline and for the following signs and symptoms: canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

Emerald Ash Borer Plan

Ash Tree Removal

Tree removal can be prioritized first with 'removal' trees shown on Figure 5, Appendix B with the red circles and black X's within them. Then move on to those needing 'immediate care' shown on Figure 4 in Appendix B. This work is followed by appraising and dealing with poor, dead, and dying trees (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 tool for communities to spread removal costs out over several years while allowing trees to continue to provide benefits. However, 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 millions of 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 since Remsen is not affected by EAB. At this time, the entire State of Iowa is under quarantine for EAB, and the moving of all types of firewood, nursery stock, and ash logs.

Canopy Replacement

As budget permits, all removed trees will be replaced. And updated, sample city tree code can be found in Appendix C covering public and private trees, past and present insect and disease problems, and sampling of trees for insect and disease problems. The new plantings should 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 genera 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 151.06 states “If it is determined with reasonable certainty that any such condition exists (trees or shrubs in the City reported or suspected to be infected with or damaged by any disease or insect or disease pests) on private property and that the danger to other trees or to adjoining property or passing motorists or pedestrians is imminent, the Council shall notify by certified mail the owner, occupant or person in charge of such property to correct such condition by treatment or removal within fourteen (14) days of

said notification. If such owner, occupant or person in charge of said property fails to comply within 14 days of receipt of notice, the Council may cause the condition to be corrected and the cost assessed against the property."

Budget

Past and current budget information for trees was not available at the time of the street survey. Each year, the number of trees needing maintenance or removal will vary. Costs become extremely high during and after severe winter storms, spring ice storms as we had in 2013, and summer storms and tornadoes. The following annual expenditures are recommendations for tree removal, tree trimming, and replanting. Tree removal cost estimates are based on a cost of $550 per tree, average, state wide. Local tree removal costs may be higher.

Current Budget

FY 2016 Budget

Removal: $3,000
Planting: $500
Watering & Maintenance: $500

FY 2017 Budget

Removal: $3,500
Planting: $500
Routine trimming: $1,700 to 2,000 to trim ash crowns and park trees.
Watering & Maintenance: $500

FY 2018 Budget

Removal: $4,000
Planting: $900
Watering & Maintenance: $500

FY 2019 Budget

Removal: $4,200
Planting: $600
Routine trimming: $1,700 for anticipated storms.
Watering & Maintenance: $500

FY 2020 Budget

Removal: $4,000
Planting: $900
Watering & Maintenance: $500

FY 2021 Budget

Removal: $4,000
Planting: $600
Routine trimming: $1,700 for unexpected storm damage.
Watering & Maintenance: $500

Purposed Budget Increase

EAB could potentially kill all ash trees in Remsen within 4 years of its arrival. To remove all 218 PUBLIC ash trees within 6 years the budget would need to be increased to $19,500 a year. If

the budget were increased to $10,000 a year all ash could be removed within 12 years. Additionally, it is recommended that Remsen 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.

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Appendix A: i-Tree Data

Table 1: Annual Energy Benefits

Remsen

Annual Energy Benefits of Public Trees

1/13/2015

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Ash	57.3	4,353	8,399.4	8,231	12,584	(N/A)	32.2	34.6	57.73
Maple	35.5	2,697	4,783.3	4,688	7,385	(N/A)	24.1	20.3	45.30
Silver maple	37.2	2,820	4,870.6	4,773	7,593	(N/A)	16.7	20.9	67.20
American basswood	10.6	807	1,569.9	1,539	2,346	(N/A)	5.2	6.5	67.03
Honeylocust	5.3	401	704.9	691	1,092	(N/A)	2.5	3.0	64.23
Black walnut	4.3	323	600.4	588	911	(N/A)	2.2	2.5	60.75
Pin oak	4.5	345	601.6	590	934	(N/A)	1.9	2.6	71.87
Northern hackberry	3.1	235	450.8	442	677	(N/A)	1.6	1.9	61.52
Conifer Evergreen Large	0.9	72	125.7	123	195	(N/A)	1.5	0.5	19.49
Cottonwood	1.8	139	260.4	255	394	(N/A)	1.2	1.1	49.23
Elm	2.4	182	332.8	326	509	(N/A)	1.0	1.4	72.65
Quaking aspen	0.8	62	95.7	94	156	(N/A)	1.0	0.4	22.28
Littleleaf linden	1.3	96	188.8	185	281	(N/A)	1.0	0.8	40.12
Apple	0.6	45	88.5	87	132	(N/A)	0.9	0.4	21.95
Northern white cedar	0.2	17	38.0	37	54	(N/A)	0.6	0.1	13.58
UNKNOWN	0.0	0	0.0	0	0	(N/A)	0.6	0.0	0.00
Pear	0.2	15	33.3	33	47	(N/A)	0.6	0.1	11.80
Northern red oak	0.8	59	110.4	108	167	(N/A)	0.6	0.5	41.83
Bur oak	0.8	62	108.1	106	168	(N/A)	0.6	0.5	41.88
Mulberry	0.1	9	20.4	20	29	(N/A)	0.4	0.1	9.67
Red maple	0.3	20	38.2	37	57	(N/A)	0.4	0.2	19.00
Amur maple	0.4	34	62.2	61	94	(N/A)	0.4	0.3	31.49
Lilac	0.0	1	1.9	2	3	(N/A)	0.4	0.0	0.87
Spruce	0.2	13	28.5	28	41	(N/A)	0.4	0.1	13.58
Mountain ash	0.1	7	16.6	16	24	(N/A)	0.3	0.1	11.80
American sycamore	0.9	66	118.0	116	182	(N/A)	0.3	0.5	91.02
Birch	0.4	28	56.4	55	83	(N/A)	0.3	0.2	41.58
Black cherry	0.0	0	0.6	1	1	(N/A)	0.1	0.0	0.87
Catalpa	0.2	18	27.0	26	44	(N/A)	0.1	0.1	44.23
Blue spruce	0.1	11	19.5	19	30	(N/A)	0.1	0.1	29.65
Broadleaf Deciduous Large	0.4	29	53.7	53	82	(N/A)	0.1	0.2	82.02
Eastern redbud	0.0	2	3.8	4	5	(N/A)	0.1	0.0	5.40
Swamp white oak	0.1	8	16.9	17	24	(N/A)	0.1	0.1	24.47
Total	170.9	12,974	23,826.1	23,350	36,324	(N/A)	100.0	100.0	53.65

Table 2: Annual Stormwater Benefits

Remsen

Annual Stormwater Benefits of Public Trees

1/13/2015

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Ash	584,494	15,840	(N/A)	32.2	31.6	72.66
Maple	299,490	8,116	(N/A)	24.1	16.2	49.79
Silver maple	525,071	14,229	(N/A)	16.7	28.4	125.92
American basswood	120,642	3,269	(N/A)	5.2	6.5	93.41
Honeylocust	53,312	1,445	(N/A)	2.5	2.9	84.99
Black walnut	47,156	1,278	(N/A)	2.2	2.5	85.20
Pin oak	51,877	1,406	(N/A)	1.9	2.8	108.14
Northern hackberry	29,574	801	(N/A)	1.6	1.6	72.86
Conifer Evergreen Large	12,101	328	(N/A)	1.5	0.7	32.79
Cottonwood	20,139	546	(N/A)	1.2	1.1	68.22
Elm	33,953	920	(N/A)	1.0	1.8	131.45
Quaking aspen	5,083	138	(N/A)	1.0	0.3	19.68
Littleleaf linden	13,602	369	(N/A)	1.0	0.7	52.66
Apple	2,134	58	(N/A)	0.9	0.1	9.64
Northern white cedar	2,382	65	(N/A)	0.6	0.1	16.14
UNKNOWN	0	0	(N/A)	0.6	0.0	0.00
Pear	666	18	(N/A)	0.6	0.0	4.51
Northern red oak	9,110	247	(N/A)	0.6	0.5	61.72
Bur oak	8,172	221	(N/A)	0.6	0.4	55.36
Mulberry	402	11	(N/A)	0.4	0.0	3.63
Red maple	1,388	38	(N/A)	0.4	0.1	12.54
Amur maple	1,598	43	(N/A)	0.4	0.1	14.43
Lilac	22	1	(N/A)	0.4	0.0	0.20
Spruce	1,787	48	(N/A)	0.4	0.1	16.14
Mountain ash	333	9	(N/A)	0.3	0.0	4.51
American sycamore	14,478	392	(N/A)	0.3	0.8	196.17
Birch	3,065	83	(N/A)	0.3	0.2	41.53
Black cherry	7	0	(N/A)	0.1	0.0	0.20
Catalpa	1,466	40	(N/A)	0.1	0.1	39.72
Blue spruce	2,312	63	(N/A)	0.1	0.1	62.66
Broadleaf Deciduous Large	5,491	149	(N/A)	0.1	0.3	148.79
Eastern redbud	69	2	(N/A)	0.1	0.0	1.86
Swamp white oak	586	16	(N/A)	0.1	0.0	15.88
Citywide total	1,851,962	50,188	(N/A)	100.0	100.0	74.13

Table 3: Annual Air Quality Benefits

Remsen

Annual Air Quality Benefits of Public Trees

1/13/2015

Species	Deposition (lb)				Total Depos. ($)	Avoided (lb)				Total Avoided ($)	BVOC Emissions (lb)	BVOC Emissions ($)	Total (lb)	Total ($)	Standard Error	% of Total Trees	Avg. $/tree
	O_3	NO_2	PM_{10}	SO_2		NO_2	PM_{10}	VOC	SO_2								
Ash	124.8	21.5	60.6	5.5	672	279.2	40.3	38.3	260.2	1,726	-28.8	-108	801.7	2,291	(N/A)	32.2	10.51
Maple	71.1	12.1	33.3	3.1	379	168.7	24.6	23.5	161.0	1,053	-24.0	-90	473.5	1,342	(N/A)	24.1	8.23
Silver maple	87.7	14.9	43.3	3.9	474	175.0	25.6	24.5	168.1	1,095	-44.6	-167	498.3	1,401	(N/A)	16.7	12.40
American basswood	16.2	2.8	8.0	0.7	88	51.9	7.5	7.1	48.3	321	-13.9	-52	128.6	356	(N/A)	5.2	10.18
Honeylocust	10.2	1.7	4.7	0.5	54	25.0	3.7	3.5	23.9	156	-7.6	-28	65.6	182	(N/A)	2.5	10.70
Black walnut	5.6	0.9	2.7	0.3	30	20.5	3.0	2.8	19.3	127	0.0	0	55.1	157	(N/A)	2.2	10.48
Pin oak	9.3	1.6	4.8	0.4	51	21.5	3.1	3.0	20.6	134	-17.2	-65	47.1	121	(N/A)	1.9	9.29
Northern hackberry	4.5	0.8	2.3	0.2	24	15.0	2.2	2.1	14.0	93	0.0	0	41.0	117	(N/A)	1.6	10.68
Conifer Evergreen Large	1.3	0.3	1.1	0.2	9	4.5	0.7	0.6	4.3	28	-4.4	-16	8.5	20	(N/A)	1.5	2.01
Cottonwood	2.4	0.4	1.1	0.1	13	8.8	1.3	1.2	8.3	55	0.0	0	23.6	67	(N/A)	1.2	8.41
Elm	4.9	0.8	2.2	0.2	26	11.5	1.7	1.6	10.9	72	0.0	0	33.8	97	(N/A)	1.0	13.92
Quaking aspen	0.3	0.1	0.2	0.0	2	3.8	0.6	0.5	3.7	24	0.0	0	9.2	26	(N/A)	1.0	3.68
Littleleaf linden	2.3	0.4	1.2	0.1	13	6.2	0.9	0.8	5.7	38	-1.1	-4	16.5	47	(N/A)	1.0	6.65
Apple	0.6	0.1	0.3	0.0	3	2.9	0.4	0.4	2.7	18	0.0	0	7.3	21	(N/A)	0.9	3.48
Northern white cedar	0.2	0.0	0.2	0.0	1	1.1	0.2	0.2	1.0	7	-0.7	-2	2.3	6	(N/A)	0.6	1.48
UNKNOWN	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0	(N/A)	0.6	0.00
Pear	0.1	0.0	0.1	0.0	1	1.0	0.1	0.1	0.9	6	0.0	0	2.3	7	(N/A)	0.6	1.63
Northern red oak	2.0	0.3	1.0	0.1	11	3.7	0.5	0.5	3.5	23	-2.9	-11	8.8	23	(N/A)	0.6	5.79
Bur oak	1.0	0.2	0.5	0.0	5	3.8	0.6	0.5	3.7	24	0.0	0	10.2	29	(N/A)	0.6	7.28
Mulberry	0.1	0.0	0.0	0.0	0	0.6	0.1	0.1	0.5	4	0.0	0	1.4	4	(N/A)	0.4	1.32
Red maple	0.2	0.0	0.1	0.0	1	1.3	0.2	0.2	1.2	8	-0.1	0	3.0	8	(N/A)	0.4	2.80
Amur maple	0.5	0.1	0.2	0.0	2	2.1	0.3	0.3	2.0	13	0.0	0	5.5	16	(N/A)	0.4	5.22
Lilac	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.0	0	0.0	0	0.1	0	(N/A)	0.4	0.11
Spruce	0.2	0.0	0.2	0.0	1	0.9	0.1	0.1	0.8	5	-0.5	-2	1.7	4	(N/A)	0.4	1.48
Mountain ash	0.0	0.0	0.0	0.0	0	0.5	0.1	0.1	0.4	3	0.0	0	1.1	3	(N/A)	0.3	1.63
American sycamore	2.3	0.4	1.0	0.1	12	4.2	0.6	0.6	4.0	26	0.0	0	13.1	38	(N/A)	0.3	19.04
Birch	0.5	0.1	0.3	0.0	3	1.8	0.3	0.2	1.7	11	-0.1	-1	4.8	14	(N/A)	0.3	6.81
Black cherry	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0	(N/A)	0.1	0.11
Catalpa	0.1	0.0	0.1	0.0	1	1.1	0.2	0.2	1.1	7	0.0	0	2.6	7	(N/A)	0.1	7.42
Blue spruce	0.4	0.1	0.3	0.0	2	0.7	0.1	0.1	0.6	4	-0.9	-3	1.3	3	(N/A)	0.1	3.10
Broadleaf Deciduous Large	0.8	0.1	0.4	0.0	4	1.9	0.3	0.3	1.8	12	0.0	0	5.5	16	(N/A)	0.1	15.71
Eastern redbud	0.0	0.0	0.0	0.0	0	0.1	0.0	0.0	0.1	1	0.0	0	0.3	1	(N/A)	0.1	0.71
Swamp white oak	0.1	0.0	0.0	0.0	0	0.5	0.1	0.1	0.5	3	0.0	0	1.2	3	(N/A)	0.1	3.47
Citywide total	349.7	59.6	170.1	15.7	1,882	819.7	119.1	113.5	774.6	5,097	-146.8	-550	2,275.1	6,429	(N/A)	100.0	9.50

Table 4: Annual Carbon Stored

Remsen

Stored CO2 Benefits of Public Trees

1/13/2015

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Ash	2,056,653	15,425	(N/A)	32.2	31.8	70.76
Maple	773,491	5,801	(N/A)	24.1	12.0	35.59
Silver maple	1,884,133	14,131	(N/A)	16.7	29.2	125.05
American basswood	589,939	4,425	(N/A)	5.2	9.1	126.42
Honeylocust	128,891	967	(N/A)	2.5	2.0	56.86
Black walnut	181,743	1,363	(N/A)	2.2	2.8	90.87
Pin oak	245,500	1,841	(N/A)	1.9	3.8	141.63
Northern hackberry	64,804	486	(N/A)	1.6	1.0	44.18
Conifer Evergreen La	9,307	70	(N/A)	1.5	0.1	6.98
Cottonwood	75,918	569	(N/A)	1.2	1.2	71.17
Elm	162,983	1,222	(N/A)	1.0	2.5	174.63
Quaking aspen	11,757	88	(N/A)	1.0	0.2	12.60
Littleleaf linden	49,988	375	(N/A)	1.0	0.8	53.56
Apple	8,812	66	(N/A)	0.9	0.1	11.01
Northern white cedar	1,027	8	(N/A)	0.6	0.0	1.93
UNKNOWN	0	0	(N/A)	0.6	0.0	0.00
Pear	2,171	16	(N/A)	0.6	0.0	4.07
Northern red oak	45,729	343	(N/A)	0.6	0.7	85.74
Bur oak	31,684	238	(N/A)	0.6	0.5	59.41
Mulberry	1,263	9	(N/A)	0.4	0.0	3.16
Red maple	2,420	18	(N/A)	0.4	0.0	6.05
Amur maple	6,982	52	(N/A)	0.4	0.1	17.46
Lilac	41	0	(N/A)	0.4	0.0	0.10
Spruce	770	6	(N/A)	0.4	0.0	1.93
Mountain ash	1,086	8	(N/A)	0.3	0.0	4.07
American sycamore	78,517	589	(N/A)	0.3	1.2	294.44
Birch	9,046	68	(N/A)	0.3	0.1	33.92
Black cherry	14	0	(N/A)	0.1	0.0	0.10
Catalpa	3,672	28	(N/A)	0.1	0.1	27.54
Blue spruce	2,661	20	(N/A)	0.1	0.0	19.96
Broadleaf Deciduous	25,943	195	(N/A)	0.1	0.4	194.57
Eastern redbud	178	1	(N/A)	0.1	0.0	1.33
Swamp white oak	1,101	8	(N/A)	0.1	0.0	8.26
Citywide total	6,458,225	48,437	(N/A)	100.0	100.0	71.55

Table 5: Annual Carbon Sequestered

Remsen

Annual CO Benefits of Public Trees

1/13/2015

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
Ash	63,671	478	-9,877	-641	-5	0	0	53,153	399 (N/A)	32.2	14.3	1.83
Maple	80,876	607	-3,713	-327	-2	0	0	76,836	576 (N/A)	24.1	20.6	3.54
Silver maple	147,409	1,106	-9,045	-401	-3	0	0	137,964	1,035 (N/A)	16.7	37.1	9.16
American basswood	34,853	261	-2,832	-125	-1	0	0	31,896	239 (N/A)	5.2	8.6	6.83
Honeylocust	15,521	116	-619	-43	0	0	0	14,859	111 (N/A)	2.5	4.0	6.56
Black walnut	10,524	79	-872	-45	0	0	0	9,607	72 (N/A)	2.2	2.6	4.80
Pin oak	22,373	168	-1,178	-48	0	0	0	21,147	159 (N/A)	1.9	5.7	12.20
Northern hackberry	4,072	31	-311	-29	0	0	0	3,732	28 (N/A)	1.6	1.0	2.54
Conifer Evergreen Large	913	7	-45	-16	0	0	0	852	6 (N/A)	1.5	0.2	0.64
Cottonwood	4,604	35	-364	-20	0	0	0	4,219	32 (N/A)	1.2	1.1	3.96
Elm	5,666	42	-782	-27	0	0	0	4,857	36 (N/A)	1.0	1.3	5.20
Quaking aspen	1,633	12	-56	-8	0	0	0	1,568	12 (N/A)	1.0	0.4	1.68
Littleleaf linden	3,367	25	-240	-17	0	0	0	3,110	23 (N/A)	1.0	0.8	3.33
Apple	886	7	-42	-8	0	0	0	836	6 (N/A)	0.9	0.2	1.04
Northern white cedar	211	2	-5	-5	0	0	0	201	2 (N/A)	0.6	0.1	0.38
UNKNOWN	0	0	0	0	0	0	0	0	0 (N/A)	0.6	0.0	0.00
Pear	304	2	-10	-4	0	0	0	290	2 (N/A)	0.6	0.1	0.54
Northern red oak	375	3	-220	-11	0	0	0	145	1 (N/A)	0.6	0.0	0.27
Bur oak	1,823	14	-152	-9	0	0	0	1,662	12 (N/A)	0.6	0.4	3.12
Mulberry	190	1	-6	-2	0	0	0	181	1 (N/A)	0.4	0.0	0.45
Red maple	369	3	-12	-3	0	0	0	355	3 (N/A)	0.4	0.1	0.89
Amur maple	649	5	-34	-5	0	0	0	611	5 (N/A)	0.4	0.2	1.53
Lilac	26	0	0	-1	0	0	0	25	0 (N/A)	0.4	0.0	0.06
Spruce	158	1	-4	-4	0	0	0	151	1 (N/A)	0.4	0.0	0.38
Mountain ash	152	1	-5	-2	0	0	0	145	1 (N/A)	0.3	0.0	0.54
American sycamore	1,824	14	-377	-10	0	0	0	1,437	11 (N/A)	0.3	0.4	5.39
Birch	694	5	-43	-4	0	0	0	647	5 (N/A)	0.3	0.2	2.42
Black cherry	9	0	0	0	0	0	0	8	0 (N/A)	0.1	0.0	0.06
Catalpa	445	3	-18	-2	0	0	0	426	3 (N/A)	0.1	0.1	3.19
Blue spruce	147	1	-13	-3	0	0	0	132	1 (N/A)	0.1	0.0	0.99
Broadleaf Deciduous Larg	960	7	-125	-4	0	0	0	831	6 (N/A)	0.1	0.2	6.23
Eastern redbud	38	0	-1	-1	0	0	0	37	0 (N/A)	0.1	0.0	0.27

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
Swamp white oak	224	2	-5	-1	0	0	0	217	2 (N/A)	0.1	0.1	1.63
Citywide total	404,962	3,037	-31,006	-1,824	-14	0	0	372,132	2,791 (N/A)	100.0	100.0	4.12

Table 6: Annual Social and Aesthetic Benefits

Remsen

Annual Aesthetic/Other Benefits of Public Trees

1/13/2015

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Ash	5,943	(N/A)	32.2	15.0	27.26
Maple	10,290	(N/A)	24.1	26.0	63.13
Silver maple	11,679	(N/A)	16.7	29.6	103.35
American basswood	2,533	(N/A)	5.2	6.4	72.37
Honeylocust	3,544	(N/A)	2.5	9.0	208.47
Black walnut	867	(N/A)	2.2	2.2	57.79
Pin oak	1,667	(N/A)	1.9	4.2	128.24
Northern hackberry	533	(N/A)	1.6	1.3	48.43
Conifer Evergreen Large	253	(N/A)	1.5	0.6	25.35
Cottonwood	392	(N/A)	1.2	1.0	49.05
Elm	410	(N/A)	1.0	1.0	58.52
Quaking aspen	197	(N/A)	1.0	0.5	28.07
Littleleaf linden	363	(N/A)	1.0	0.9	51.80
Apple	50	(N/A)	0.9	0.1	8.37
Northern white cedar	62	(N/A)	0.6	0.2	15.42
UNKNOWN	0	(N/A)	0.6	0.0	0.00
Pear	17	(N/A)	0.6	0.0	4.23
Northern red oak	25	(N/A)	0.6	0.1	6.35
Bur oak	170	(N/A)	0.6	0.4	42.39
Mulberry	11	(N/A)	0.4	0.0	3.51
Red maple	67	(N/A)	0.4	0.2	22.32
Amur maple	37	(N/A)	0.4	0.1	12.46
Lilac	0	(N/A)	0.4	0.0	0.03
Spruce	46	(N/A)	0.4	0.1	15.42
Mountain ash	8	(N/A)	0.3	0.0	4.23
American sycamore	117	(N/A)	0.3	0.3	58.34
Birch	69	(N/A)	0.3	0.2	34.64
Black cherry	0	(N/A)	0.1	0.0	0.03
Catalpa	46	(N/A)	0.1	0.1	45.86
Blue spruce	20	(N/A)	0.1	0.1	19.97
Broadleaf Deciduous Large	67	(N/A)	0.1	0.2	66.60
Eastern redbud	2	(N/A)	0.1	0.0	2.06
Swamp white oak	26	(N/A)	0.1	0.1	26.22
Citywide total	39,511	(N/A)	100.0	100.0	58.36

Table 7: Summary of Benefits in Dollars

Remsen

Total Annual Benefits of Public Trees by Species ($)

1/13/2015

Species	Energy	CO_2	Air Quality	Stormwater	Aesthetic/Other	Total ($)	Standard Error	% of Total $
Ash	12,584	399	2,291	15,840	5,943	37,057	(N/A)	27.4
Maple	7,385	576	1,342	8,116	10,290	27,709	(N/A)	20.5
Silver maple	7,593	1,035	1,401	14,229	11,679	35,938	(N/A)	26.6
American basswood	2,346	239	356	3,269	2,533	8,744	(N/A)	6.5
Honeylocust	1,092	111	182	1,445	3,544	6,374	(N/A)	4.7
Black walnut	911	72	157	1,278	867	3,285	(N/A)	2.4
Pin oak	934	159	121	1,406	1,667	4,287	(N/A)	3.2
Northern hackberry	677	28	117	801	533	2,156	(N/A)	1.6
Conifer Evergreen Large	195	6	20	328	253	803	(N/A)	0.6
Cottonwood	394	32	67	546	392	1,431	(N/A)	1.1
Elm	509	36	97	920	410	1,972	(N/A)	1.5
Quaking aspen	156	12	26	138	197	528	(N/A)	0.4
Littleleaf linden	281	23	47	369	363	1,082	(N/A)	0.8
Apple	132	6	21	58	50	267	(N/A)	0.2
Northern white cedar	54	2	6	65	62	188	(N/A)	0.1
UNKNOWN	0	0	0	0	0	0	(N/A)	0.0
Pear	47	2	7	18	17	91	(N/A)	0.1
Northern red oak	167	1	23	247	25	464	(N/A)	0.3
Bur oak	168	12	29	221	170	600	(N/A)	0.4
Mulberry	29	1	4	11	11	56	(N/A)	0.0
Red maple	57	3	8	38	67	173	(N/A)	0.1
Amur maple	94	5	16	43	37	195	(N/A)	0.1
Lilac	3	0	0	1	0	4	(N/A)	0.0
Spruce	41	1	4	48	46	141	(N/A)	0.1
Mountain ash	24	1	3	9	8	45	(N/A)	0.0
American sycamore	182	11	38	392	117	740	(N/A)	0.5
Birch	83	5	14	83	69	254	(N/A)	0.2
Black cherry	1	0	0	0	0	1	(N/A)	0.0
Catalpa	44	3	7	40	46	140	(N/A)	0.1
Blue spruce	30	1	3	63	20	116	(N/A)	0.1
Broadleaf Deciduous La	82	6	16	149	67	319	(N/A)	0.2
Eastern redbud	5	0	1	2	2	10	(N/A)	0.0
Swamp white oak	24	2	3	16	26	72	(N/A)	0.1
Citywide Total	36,324	2,791	6,429	50,188	39,511	135,243	(N/A)	100.0

Table 8: Priority Task Summary for Public Trees

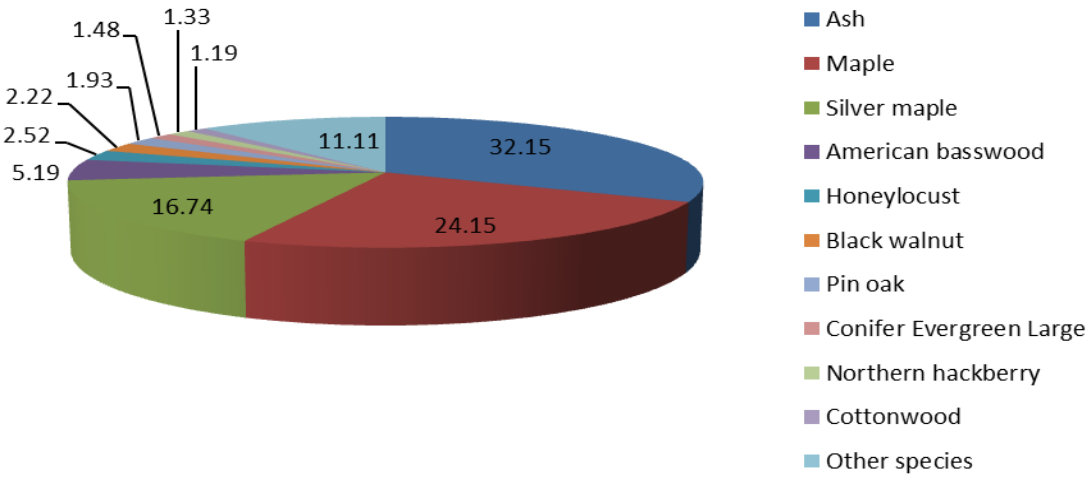
Remsen												
	Priority Task Summary for Public Trees											
	DBH Class (DBH means trunk diameter at chest/breast height)											
Maintenance Type	0 to 3 inches	3 to6 inches	6 to12 inches	12 to 18 inches	18 to 24 inches	24 to 30 inches	30 to 36 inches	36 to 42 inches	<42 inches	Total number	% of Total Population
No work	15	31	86	85	139	90	80	24	0	550	81.48
Stake and Train	0	0	0	0	0	0	0	0	0	0	0
Clean Crown	0	1	3	8	26	33	25	4	0	100	14.81
Raise Crown	0	0	0	0	0	0	0	0	0	0	0
Reduce Crown	0	1	0	1	0	0	0	0	0	2	0.3
Remove Tree	1	0	0	2	11	7	1	1	0	23	3.41
Treat Pest or Disease	0	0	0	0	0	0	0	0	0	0	0
City wide Total	16	33	89	96	176	130	106	29	0	675	100

Table 9: Recommended Maintenance for Public Trees

Remsen											
	Recommended Maintenance for Public Trees										
	DCBH Class (DBH means trunk diameter at chest/breast height)										
Maintenance Type	0 to 3 inches	3 to 6 inches	6 to 12 inches	12 to 18 inches	18 to 24 inches	24 to 30 inches	30 to 36 inches	36 to 42 inches	<42 inches	Total number	% of Total Population
No work	0	0	0	0	1	0	0	0	0	1	0.15
Young Tree (routine)	7	4	0	0	0	0	0	0	0	11	1.63
Young Tree (immediate)	1	0	0	0	0	0	0	0	0	1	0.15
Mature Tree (routine)	8	29	88	93	161	120	103	28	0	630	93.33
Mature Tree (immediate)	0	0	1	3	13	10	3	1	0	31	4.59
Critical Concern (Public Safety)	0	0	0	0	1	0	0	0	0	1	0.15
City wide Total	16	33	89	96	176	130	106	29	0	675	100

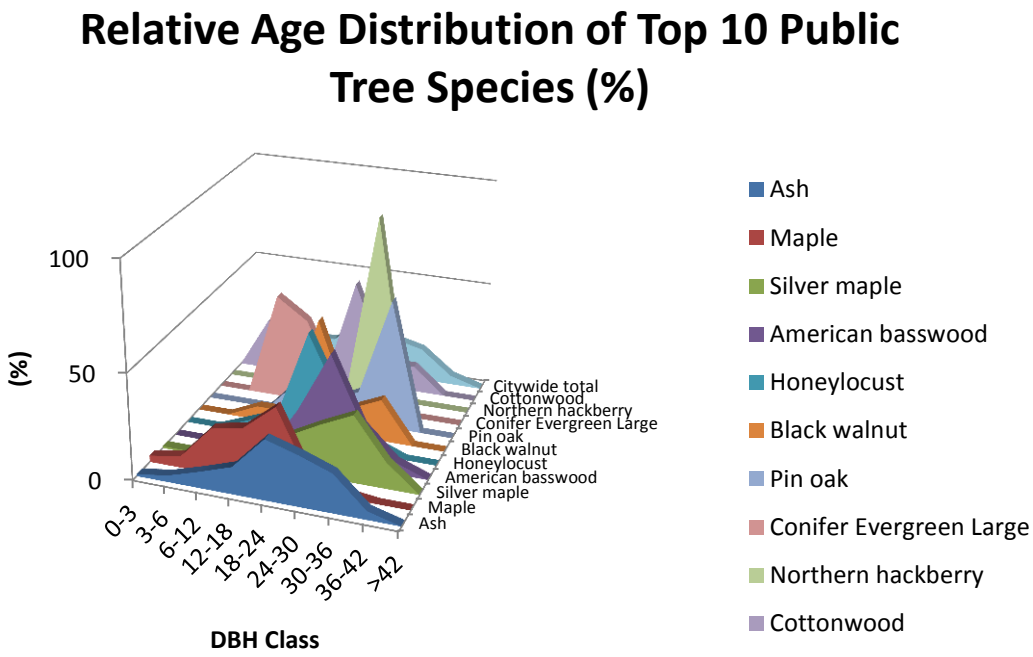
Appendix A, Figures

Figure 1: Species Distribution



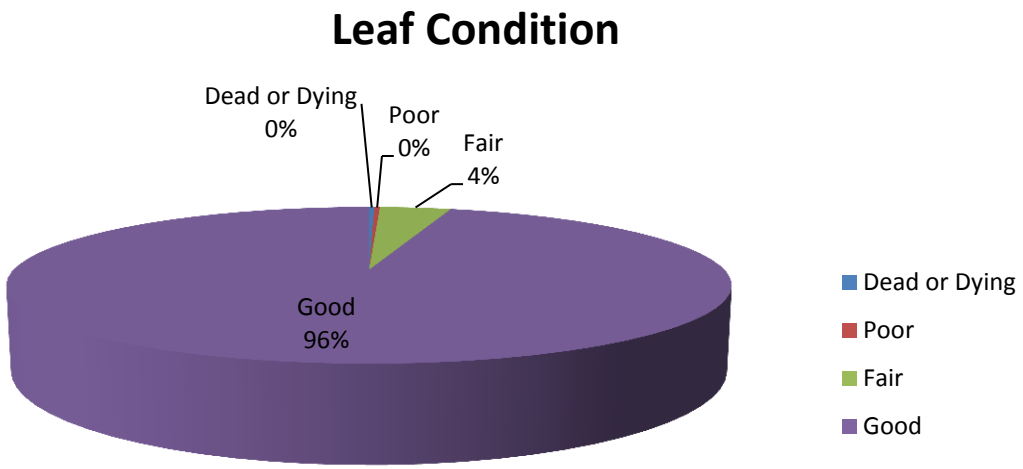
Remsen		
Species Distribution of Public Trees (%)		
1/13/2015		
Species	Percent	
Ash	32.15	
Maple	24.15	
Silver maple	16.74	
American basswood	5.19	
Honeylocust	2.52	
Black walnut	2.22	
Pin oak	1.93	
Conifer Evergreen Large	1.48	
Northern hackberry	1.33	
Cottonwood	1.19	
Other species	11.11	
Total	100.00	

Figure 2: Relative Age Class



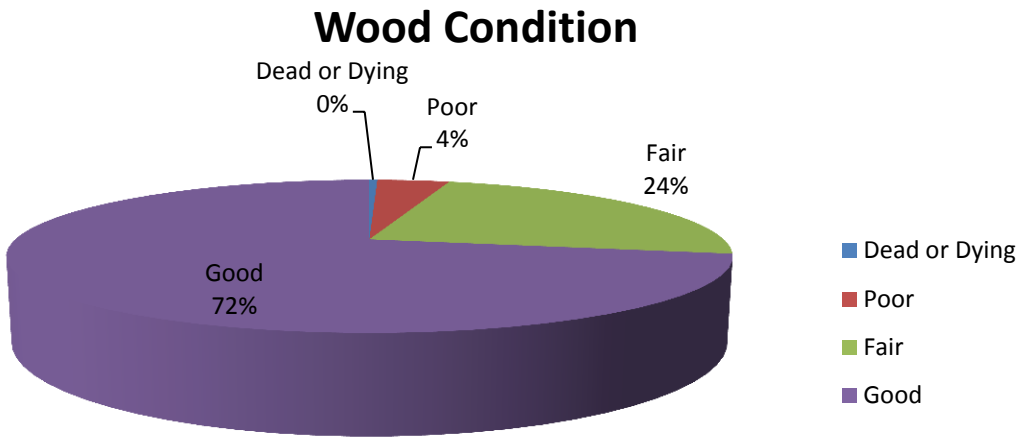
Remsen									
Relative Age Distribution of Top 10 Public Tree Species (%)									
1/13/2015									
	DBH class (in)								
Species	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42
Ash	0.92	3.23	7.83	12.90	28.57	23.96	18.43	4.15	0.00
Maple	3.07	5.52	21.47	24.54	36.81	6.75	1.84	0.00	0.00
Silver maple	0.88	0.88	3.54	8.85	16.81	24.78	31.86	12.39	0.00
American basswood	0.00	0.00	0.00	0.00	22.86	51.43	20.00	5.71	0.00
Honeylocust	0.00	0.00	5.88	11.76	52.94	23.53	5.88	0.00	0.00
Black walnut	0.00	0.00	6.67	6.67	53.33	13.33	20.00	0.00	0.00
Pin oak	0.00	0.00	0.00	15.38	7.69	15.38	61.54	0.00	0.00
Conifer Evergreen Large	0.00	0.00	50.00	40.00	10.00	0.00	0.00	0.00	0.00
Northern hackberry	0.00	0.00	11.11	0.00	0.00	88.89	0.00	0.00	0.00
Cottonwood	0.00	25.00	0.00	0.00	50.00	12.50	12.50	0.00	0.00
Citywide total	2.37	4.89	13.19	14.22	26.07	19.26	15.70	4.30	0.00

Figure 3: Foliage Condition



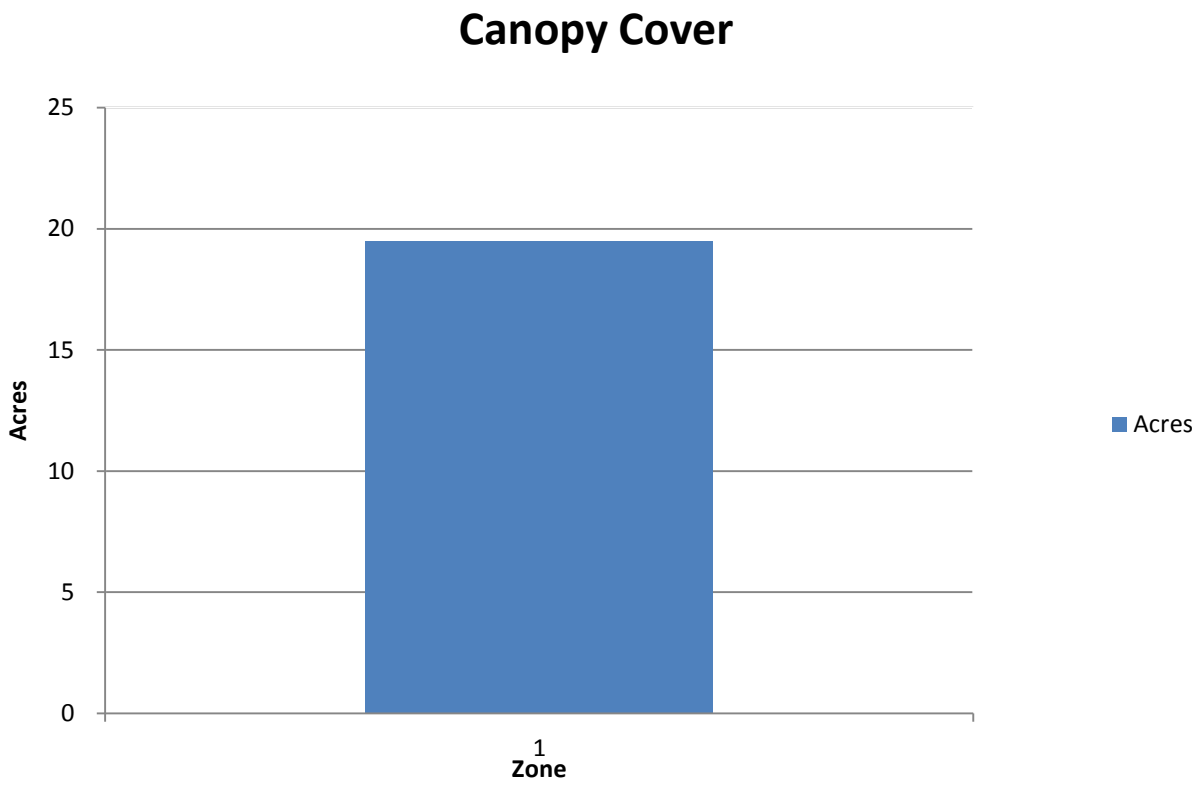
Remsen				
Condition (Foliage) of Public Trees by Species (%)				
1/13/2015				
Species Name	Dead or Dying	Poor	Fair	Good
Ash	0.00	0.46	5.99	93.55
Maple	0.61	0.61	1.23	97.55
Silver maple	0.00	0.00	0.00	100.00
American basswood	0.00	0.00	2.86	97.14
Honeylocust	5.88	0.00	0.00	94.12
Black walnut	0.00	0.00	0.00	100.00
Pin oak	0.00	0.00	38.46	61.54
Northern hackberry	0.00	0.00	9.09	90.91
Conifer Evergreen Large	0.00	0.00	10.00	90.00
Cottonwood	0.00	0.00	12.50	87.50
Quaking aspen	0.00	0.00	0.00	100.00
Littleleaf linden	0.00	0.00	0.00	100.00
Elm	0.00	0.00	0.00	100.00
Citywide total	0.30	0.30	3.84	95.57

Figure 4: Wood Condition



Remsen				
Condition (Woody) of Public Trees by Species (%)				
1/13/2015				
Species Name	Dead or Dying	Poor	Fair	Good
Ash	0.46	5.05	24.31	70.18
Maple	0.61	4.29	23.93	71.17
Silver maple	0.00	1.77	23.89	74.34
American basswood	0.00	2.86	37.14	60.00
Honeylocust	5.88	0.00	5.88	88.24
Black walnut	0.00	0.00	26.67	73.33
Pin oak	0.00	0.00	15.38	84.62
Northern hackberry	0.00	36.36	36.36	27.27
Conifer Evergreen Large	0.00	0.00	10.00	90.00
Cottonwood	0.00	0.00	37.50	62.50
Quaking aspen	0.00	0.00	0.00	100.00
Littleleaf linden	0.00	14.29	28.57	57.14
Elm	0.00	0.00	71.43	28.57
Citywide total	0.44	3.98	23.60	71.98

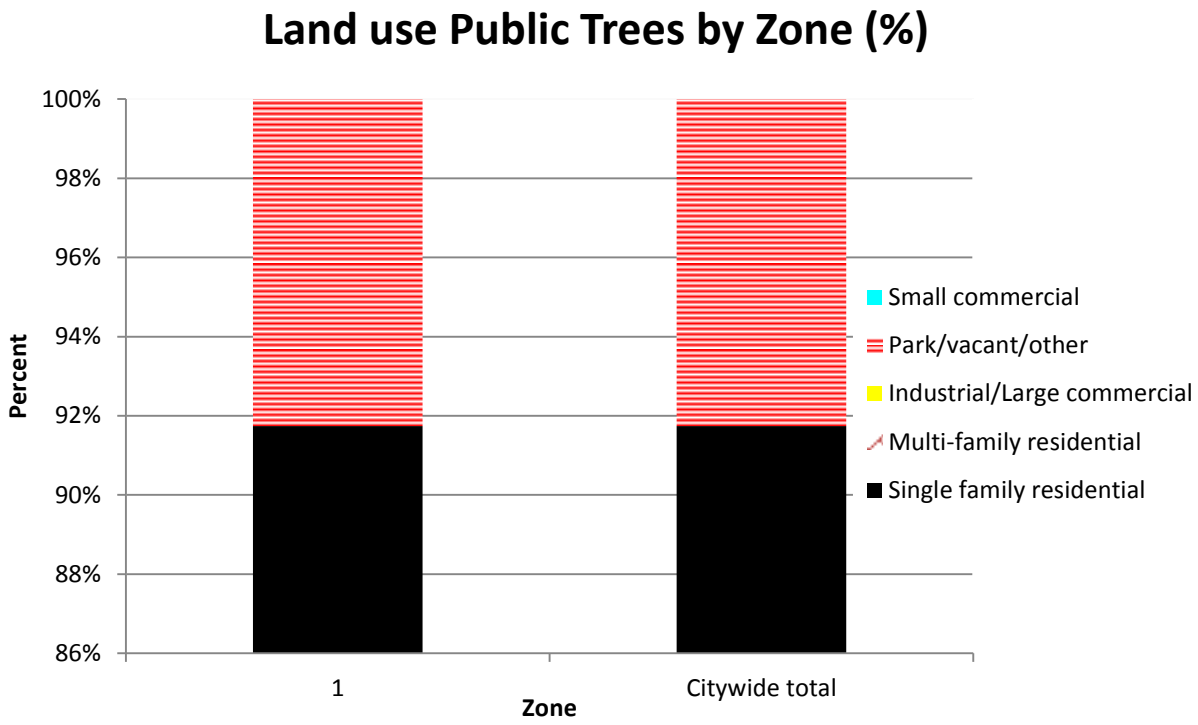
Figure 5: Canopy Cover in Acres



Remsen
Canopy Cover of Public Trees (Acres)
1/13/2015

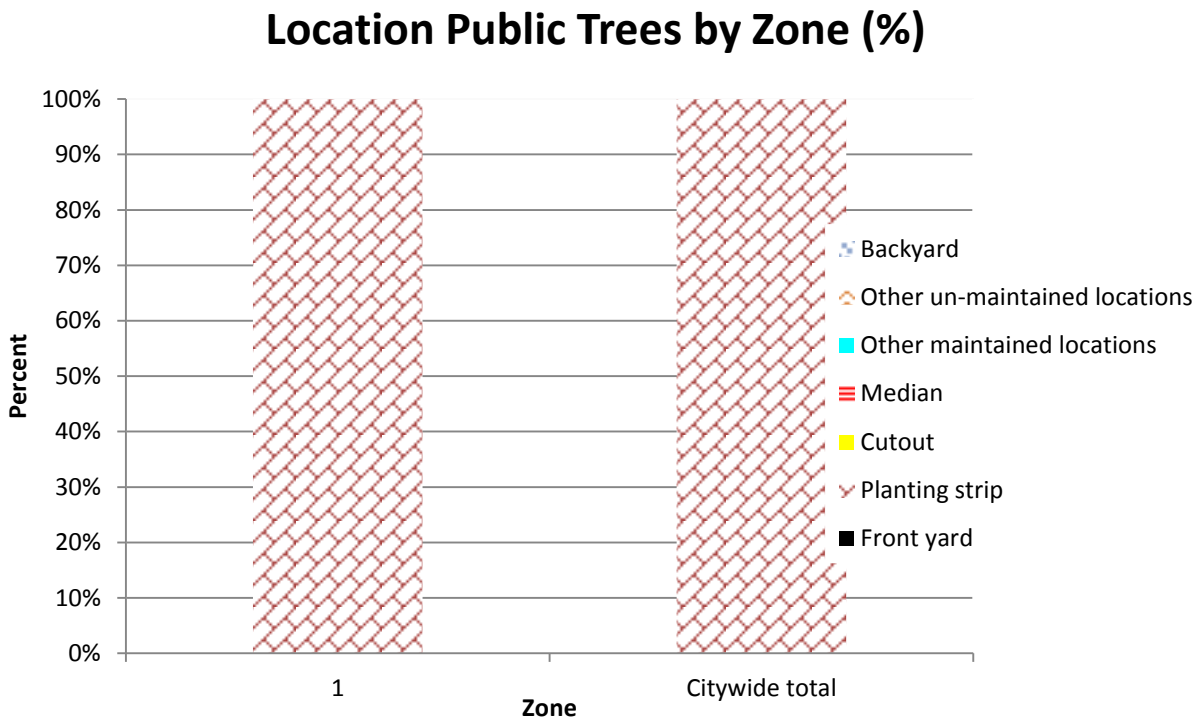
	Total Land Area	Total Canopy Cover	Canopy Cover as % of Total Land Area
Citywide total	810.50	19.48	2.40

Figure 6: Land Use of city/park trees



Remsen					
Land use Public Trees by Zone (%)					
1/13/2015					
Zone	Single family residential	Multi-family residential	Industrial/Large commercial	Park/vacant/other	Small commercial
1	91.74	0.00	0.00	8.26	0.00
Citywide total	91.74	0.00	0.00	8.26	0.00

Figure 7: Location of city/park trees



Remsen							
Location Public Trees by Zone (%)							
1/13/2015							
Zone	Front yard	Planting strip	Cutout	Median	Other maintained locations	Other un-maintained locations	Backyard
Citywide total	0.00	100.00	0.00	0.00	0.00	0.00	0.00

Appendix B. ArcGIS Mapping

Figure 1: Location of Ash Trees

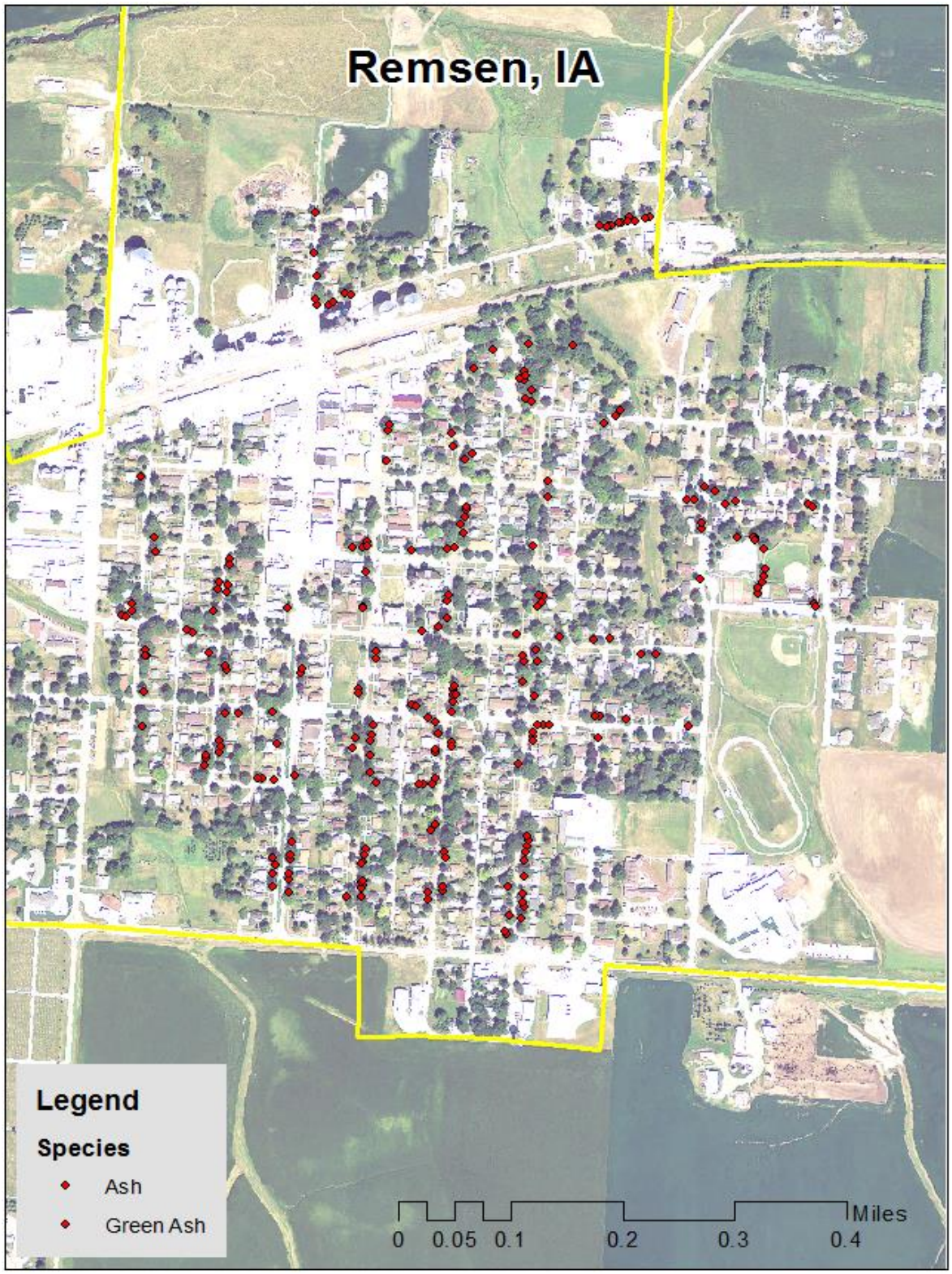


Figure 2: Location of EAB symptoms

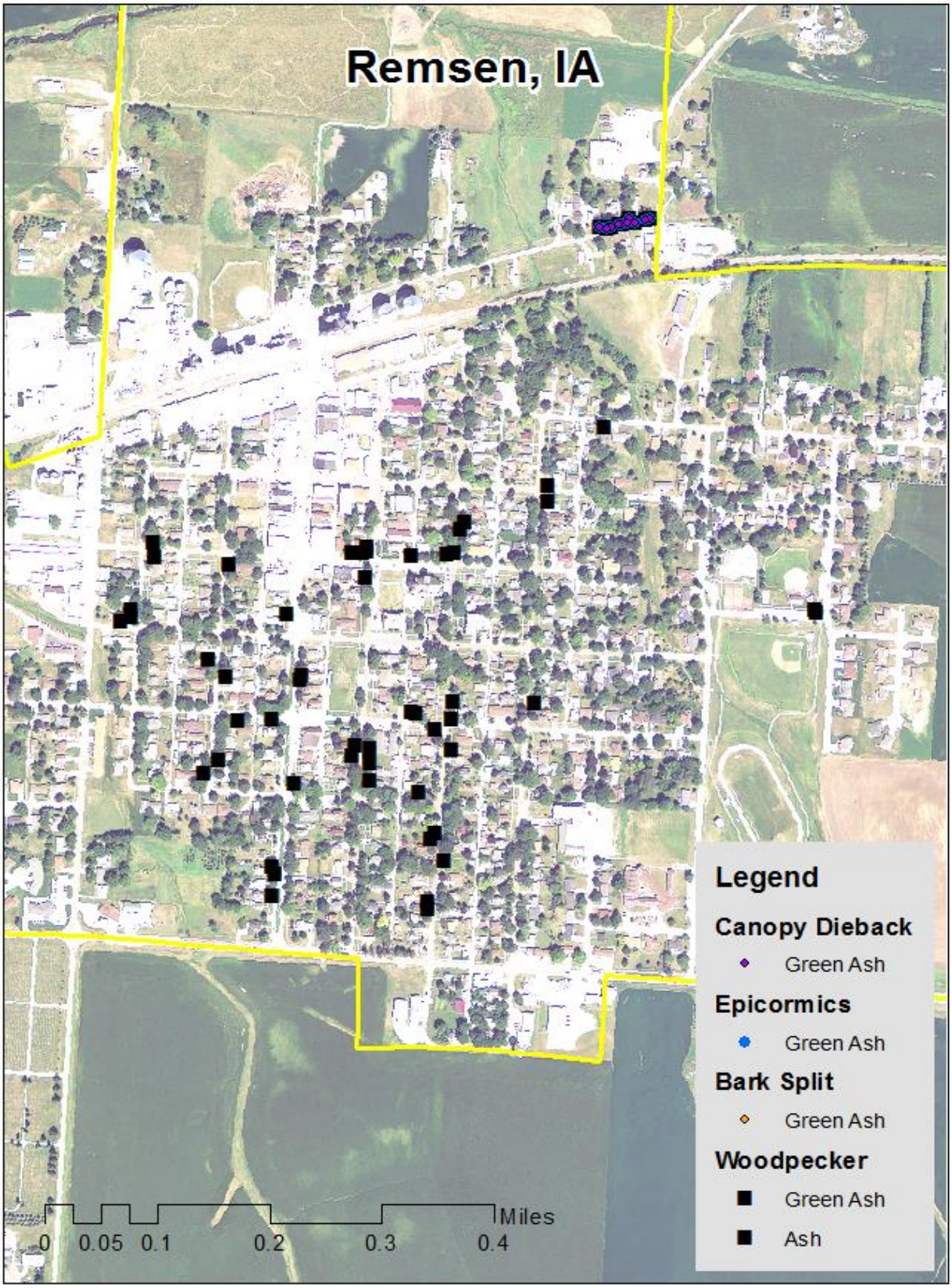


Figure 3: Location of Poor Condition Trees

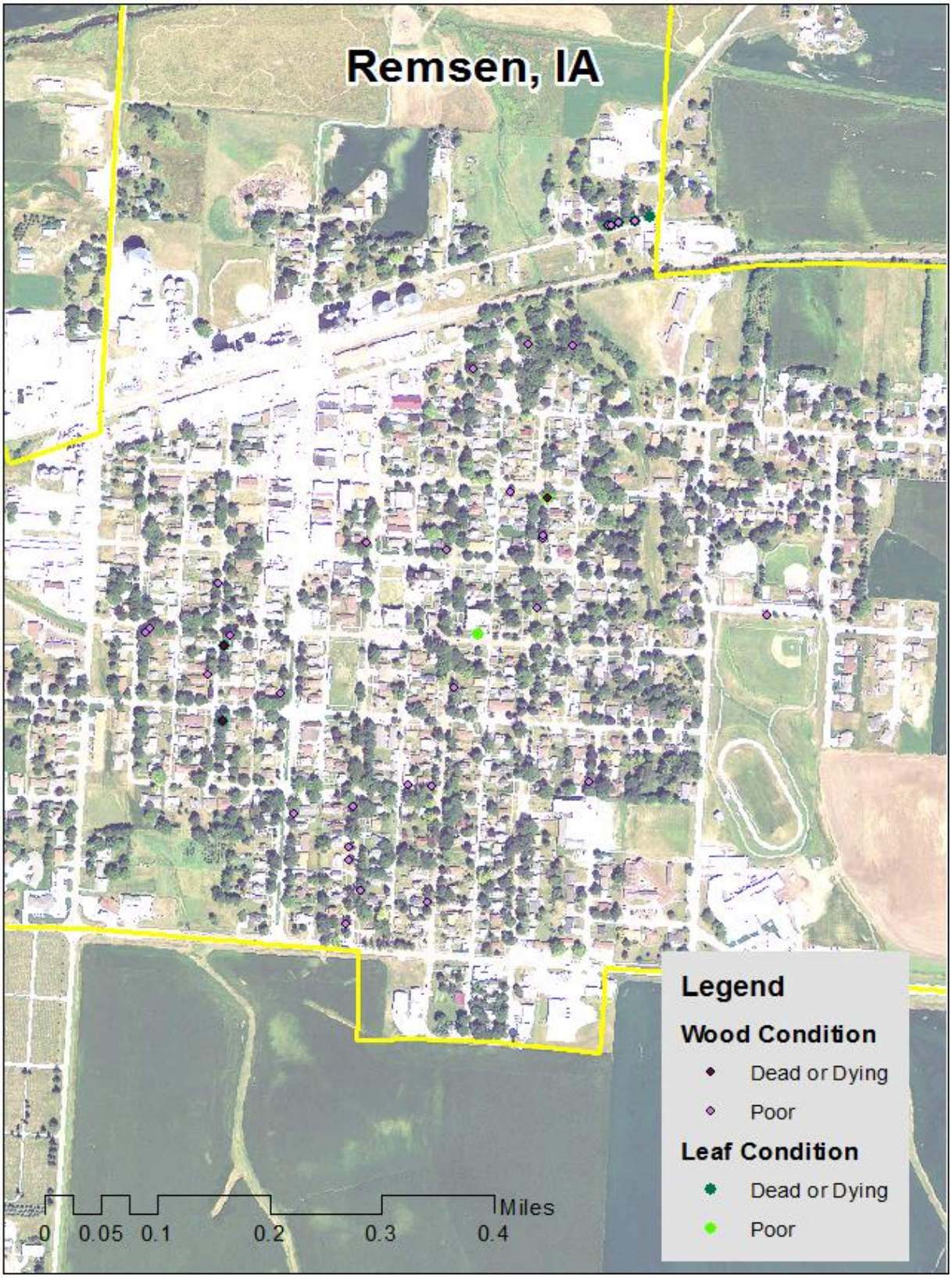


Figure 4: Location of Trees with Recommended Maintenance

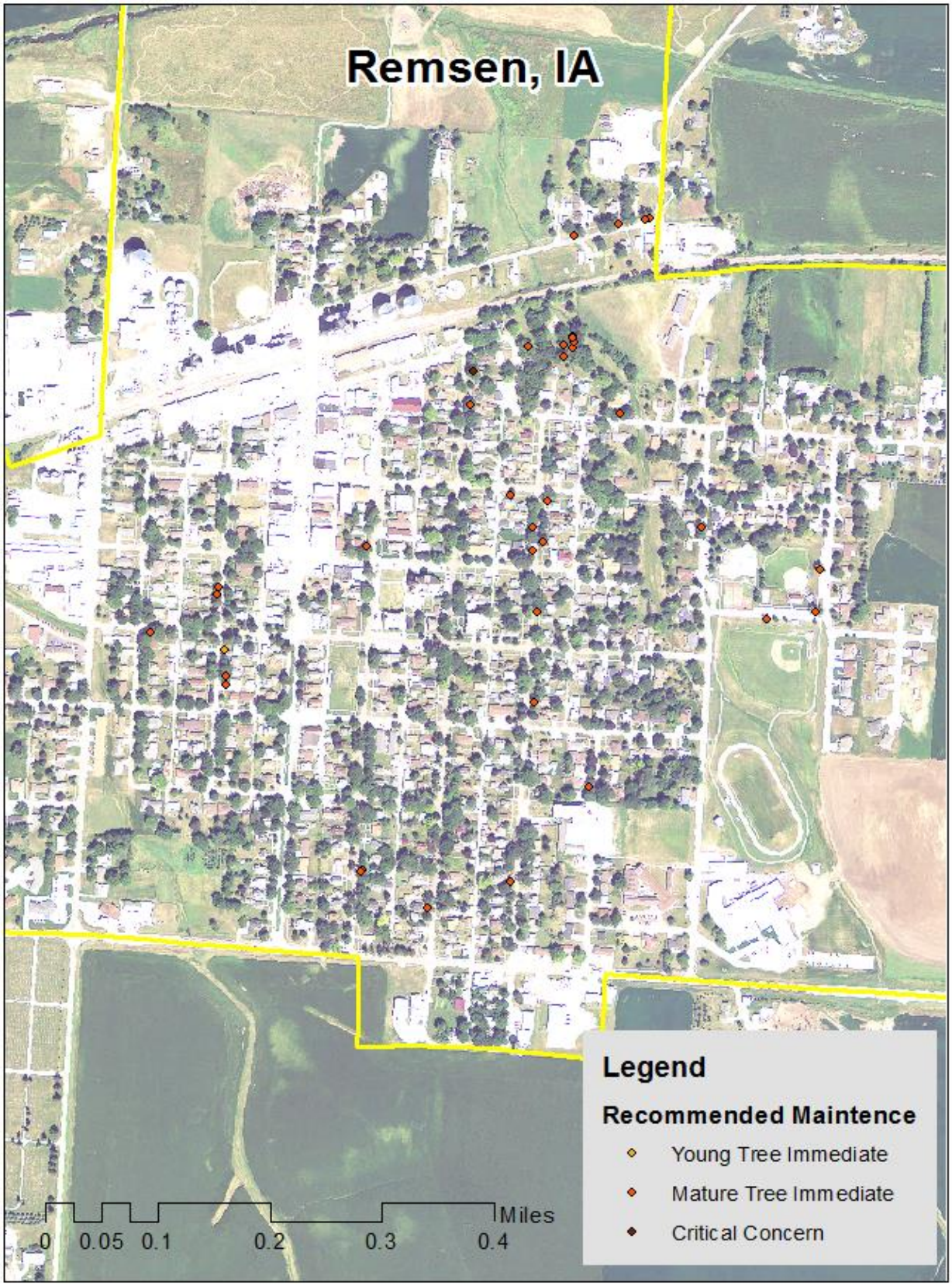
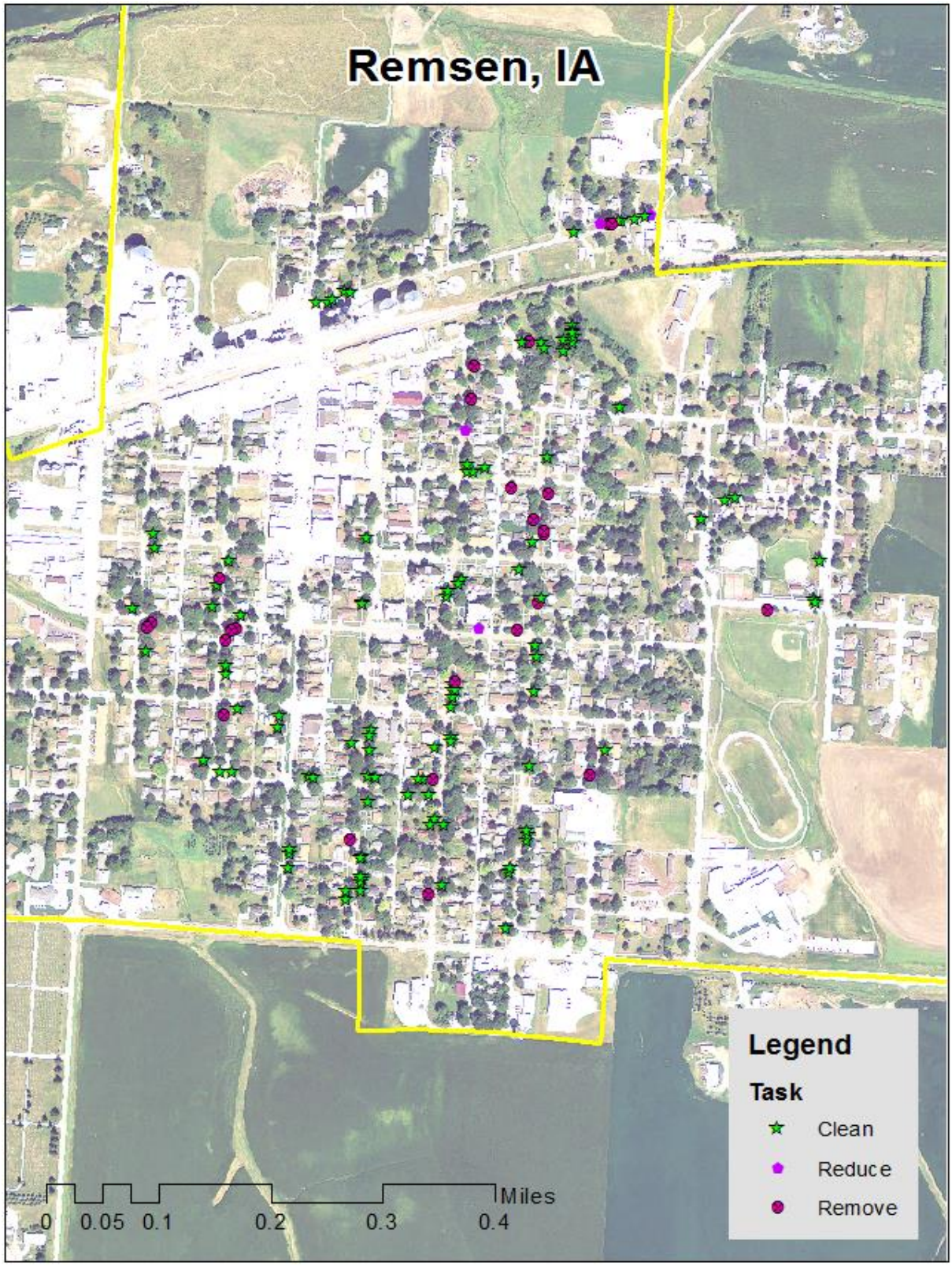


Figure 5: Maintenance Tasks *City ownership of the trees recommended for removal should be verified prior to any removal*.



Appendix C: Remsen Tree Ordinances

CHAPTER 151
TREES AND GRASS

151.01 Definition
151.02 Planting Restrictions
151.03 Duty to Trim Trees
151.04 Trimming Trees to be Supervised
151.05 Disease Control
151.06 Inspection and Removal
151.07 Cutting or Mowing of Grass

151.01 DEFINITION. For use in this chapter, “boulevard” 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.

151.02 PLANTING RESTRICTIONS. No tree shall be planted in any boulevard or street except in accordance with the following:
1. Alignment. All tress planted in any street shall be planted in the boulevard midway between the outer line of the sidewalk and the curb. In the event a curb line is not established, trees shall be planted on a line ten (10) feet from the property line.
2. Spacing. Trees shall not be planted on any boulevard which is less than nine (9) feet in width, or contains less than eighty-one (81) square feet of exposed soil surface per tree. Trees shall not be planted closer than twenty (20) feet from street intersections (property lines extended) and ten (10) feet from driveways. If it is at all possible trees should be planted inside the property lines and not between the sidewalk and the curb.
3. Prohibited Trees. No person shall plant in any street any fruit-bearing tree or any tree of the kinds commonly known as cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut.

151.03 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 eighteen (18) feet above the surface of a street, twenty (20) feet above the surface of a primary highway, and eight (8) feet above the sidewalks. If the abutting property owner fails to trim the trees, the City may serve notice on the abutting property owner requiring that such action be taken within five (5) days. If such action is not taken 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[2c, d, & e])

151.04 TRIMMING TREES TO BE SUPERVISED. Except as allowed in Section 151.03, it is unlawful for any person to trim or cut any tree in a street or public place unless the work is done under the supervision of the City.

151.05 DISEASE CONTROL. Any dead, diseased or damaged tree or shrub which may harbor serious insect or disease pests or disease injurious to other trees is hereby declared to be a nuisance.

151.06 INSPECTION AND REMOVAL. The Council shall inspect or cause to be inspected any trees or shrubs in the City reported or suspected to be infected with or damaged by any disease or insect or disease pests, and such trees and shrubs shall be subject to removal as follows:
1. City Property. If it is determined that any such condition exists on any public property, including the strip between the curb and the lot line of private property, the Council may cause such condition to be corrected by treatment or removal. The Council may also order the removal of any trees on the streets of the City which interfere with the making of improvements or with travel thereon.
2. Private Property. If it is determined with reasonable certainty that any such condition exists on private property and that the danger to other trees or to adjoining property or passing motorists or pedestrians is imminent, the Council shall notify by certified mail the owner, occupant or person in charge of such property to correct such condition by treatment or removal within fourteen (14) days of said notification. If such owner, occupant or person in charge of said property fails to comply within 14 days of receipt of notice, the Council may cause the condition to be corrected and the cost assessed against the property.
(Code of Iowa, Sec. 364.12[3b & h])

151.07 CUTTING OR MOWING OF GRASS.
1. Duty to Cut and Mow Lawns and Lots. The owner of any property shall cut and mow all lawns and lots so that such growth shall be less than four (4) inches at all times.
2. Cutting and Mowing by City. If a property owner refuses or fails to cut and mow lawns and lots within forty-eight (48) hours after being delivered a notice from the City to perform such action, the Council may require said work to be done and the cost and expenses thereof shall be assessed to the property owner after due notice is given. The amount of such assessment shall be certified to the County Auditor as provided by law and the same shall be collected with and in the same manner as general property taxes.

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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 515-725-8282.