Fenton, IA

Urban Forestry Management Plan

SUMMER 2022

JEO CONSULTING GROUP

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Executive Summary

EXECUTIVE SUMMARY

Overview

This plan was developed to assist the City of Fenton in managing its urban forest, including budgeting and future planning. Trees bring numerous benefits to a community, and sound management helps leaders take advantage of these benefits. Management is especially important now considering the serious threats posed by forest pests like 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 except mountain ash. There is a strong possibility that 42% of Fenton's city-owned trees will die once EAB becomes established in the community, unless local leaders begin preventative treatment. 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 2022, JEO conducted a tree inventory 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 406 trees inventoried.

- Fenton trees provide $88,975 of benefits annually, an average of $219 per tree
- There are over 35 species of trees
- The top three genera are: Ash 42%, Maple 37%, and Spruce 4%
- 13% of trees need some type of management
- 11 trees should be removed

Recommendations

We detail our core recommendations in the Recommendations Section. In the Emerald Ash Borer Plan, we include management recommendations. Below are some key recommendations.

- Out of the 11 trees needing removal, 6 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*
- 88 of the 169 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 do not include: ash, maple, cottonwood, poplar, box elder, Chinese elm, evergreen, willow or black walnut.
- Check ash trees yearly with a visual survey.
- With the current budget it could take 24 years to remove ash. We suggest that city officials request a budget increase to $10,000 annually and apply for grants to plant replacement trees.

Introduction

INTRODUCTION

This plan was developed to assist Fenton with managing, budgeting, and future planning of their urban forest. Across the state, forestry budgets continue to decrease as a higher percentage of the budgets are devoted to 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, treatment, and replacement planting. With proper planning and management of the current canopy in Fenton, these costs can be spread out over the years and public safety issues from dead and dying ash trees can be mitigated.

Trees are an important part of Fenton's infrastructure and one of the city's greatest assets. The benefits of trees are immense. Trees improve air quality, intercept stormwater runoff, conserve energy, lower traffic speeds, increase property values, reduce crime, improve mental health, and create a desirable place to live, to name just a few. Good urban forestry management will maintain these important benefits for the people of Fenton and future generations.

Urban forestry management sets goals and develops management strategies to achieve them. To develop management strategies, a comprehensive public tree inventory must be conducted. The inventory informs maintenance, removal schedules, tree planting, and budgeting. Aligning management actions with the tree inventory results will help meet Fenton's urban forestry goals.

Assist Fenton with Managing its Urban Forest

Inform on the Benefits of a Healthy Urban Forest

Establish Preventative Treatment for Emerald Ash Borer

Develop Efficient City Tree Management Techniques

Mitigate Public Safety Issues

Findings

INVENTORY

In 2022, JEO conducted a tree inventory that included 100% of the city-owned trees on both streets and parks. The team collected tree data 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 data collectors' programming 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, for all ash trees, the team notes signs and symptoms associated with EAB including canopy dieback, epicormic shoots, bark splitting, D-shaped borer exit holes, and wood pecker damage.

INVENTORY RESULTS

JEO entered the data collected for the 406 city trees into the USDA Forest service program Street Tree Resource Analysis Tool for Urban forestry Management as part of the i-Tree suite. Following are results from the i-Tree STREETS analysis.

ANNUAL BENEFITS

Annual Energy Benefits

Trees conserve energy by shading buildings and blocking winds. Fenton's trees reduce energy-related costs by approximately $23,106 annually (Appendix A, Table 1). These savings are both in electricity (109.6 MWh) and in natural gas (15,086.6 Therms).

Annual Stormwater Benefits

Fenton's trees intercept about 1,343,208 gallons of rainfall or snow melt per year (Appendix A, Table 2). This interception provides $36,401 in benefit 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 lessens emissions of volatile organic matter (ozone). In Fenton, it is estimated that trees remove 1,459 lbs of air pollution (ozone (O3), particulate matter less than 10 microns (PM10), carbon monoxide (CO), nitrogen dioxide (NO2), and sulfur dioxide (SO2)) per year with a net value of $4,142 (Appendix A, Table 3).

Annual Carbon Benefits

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Fenton, trees sequester about 270,402 lbs of carbon per year with an associated value of $3,204 (Appendix A, Table 5). In addition, the trees store 5,384,121 lbs of carbon, with a yearly benefit of $40,381 (Appendix A, Table 4).

Annual Aesthetics Benefits

The social benefits of trees are hard to capture. The i-Tree 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. Fenton receives $22,123 in annual social benefits from trees (Appendix A, Table 6).

Financial Summary of All Benefits

According to the USDA Forest Service i-Tree STREETS analysis, Fenton's trees provide $88,975 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 406 trees in Fenton provide approximately $219 annually (Appendix A, Table 7).

ENERGY	STORMWATER	AIR QUALITY	CARBON	AESTHETICS	SUMMARY
• Reduce energy cost by **$23,106**	• Intercept 1,343,208 **gallons** • Provides **$36,401** benefit	• Remove 1,459 **lbs** of pollution • Net value of **$4,142**	• Sequester 270,402 **lbs** • Value of **$3,204** • Store 5,384,121 **lbs** • Value of **$40,381**	• **$22,123** in social benefits	• **$88,975** annual benefits • Each tree provides **$219** annually

FOREST STRUCTURE

Species Distribution

Fenton has over 53 different tree species along city streets and parks (Appendix A, Figure 1).

The distribution of trees by genera is as follows:

Ash	169	42%	Elm	2	<1%
Maple	149	37%	Cherry	1	<1%
Spruce	16	4%	Conifer Evergreen	1	<1%
Basswood/Linden	14	3%	Poplar	1	<1%
Apple	13	3%	Birch	1	<1%
Walnut	11	3%	Other Deciduous	1	<1%
Boxelder	4	1%			
Cedar	4	1%			
Buckeye	3	1%			
Locust	3	1%			
Oak	3	1%			
Hackberry	2	<1%			
Lilac	2	<1%			
Mulberry	2	<1%			
Plum	2	<1%			
Sycamore	2	<1%			

Age Class

Most of Fenton's trees (28%) are between 30 and 36 inches in diameter at 4.5 ft (Appendix A, Figure 2).

To prepare for natural mortality and to maintain canopy cover, most trees should be in the smallest size category (a downward slope), indicating youth. Fenton's size curve is on the larger side, indicating an older than average stand.

Condition: Wood and Foliage

Both wood condition and leaf condition are good indicators of the urban forest's overall health. The foliage condition results for Fenton indicate that 90% of the trees are in good health, with only 1% of the foliage in poor health, dead, or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Similarly, 61% of Fenton's trees are in good health for wood condition (Appendix A, Figure 4 & Appendix B, Figure 3). Six percent of the tree population's wood condition is in poor health, dead, or dying. This 6% is an estimate of trees that need management follow up.

Management Needs

The following outlines the specific management needs of the street and park trees by number of trees and percent of canopy (Appendix B, Figure 3).

Action	Number of Trees	Percentage
Crown Cleaning	40	10%
Tree Removal	11	3%
Crown Raising	1	<1%
Crown Reduction	0	0%
Tree Staking	0	0%

Canopy Cover

The total canopy with both private and public trees is 31 acres or 14% cover. The canopy cover included in the Fenton inventory includes approximately 13 acres (Appendix A, Figure 4). The city's canopy goal is to increase canopy by 10% in 30 years. To achieve this goal it is estimated that 9 trees need to be planted annually on public and private lands.

Land Use and Location

The majority of Fenton'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	Percentage
Single Family Residential	70%
Park/Vacant/Other	26%
Small commercial	3%
Multifamily Residential	<1%
Industrial/Large Commercial	<1%

Recommendations

RECOMMENDATIONS

Risk Management

Hazardous trees can be a significant threat to both people and property. Trees that are dead, dying, or have large issues such as trunk cracks longer than 18 inches should be removed. Broken branches and branches that interfere with motorists' vision of pedestrians, vehicles, traffic signs and signals should be removed.

HAZARDOUS TREES

Fenton has 2 critical concern trees that need immediate removal. These trees can be seen on the Location of Trees with Recommended Maintenance Map (Appendix B, Figure 4). We recommend starting with the large-diameter, critical concern trees first. There are 2 trees over 18 inches in diameter at 4.5 ft that should be addressed immediately. Please refer to the Six-Year Maintenance Plan at the end of this section. After all of the critical concern trees are addressed, there should be follow up on the trees marked as needing maintenance. There are a total of 398 trees with maintenance needs.

POOR TREE SPECIES

After removing the critical concern trees, ash trees in poor health should be assessed for removal (Appendix B, Figure 3 & Appendix B, Figure 4). Of the 11 removals, 7 are ash trees. There are a total of 169 ash trees, and 13 of those have signs and symptoms that have been associated with EAB. In addition, there are 10 trees that are in poor health. *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 removes lower branches that are two inches in diameter or larger to provide clearance for pedestrians or vehicles. Crown reduction removes individual limbs from structures or utility wires. We recommend 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.

Planting

Most of the planting over the next five years will replace the trees that are removed. We recommend planting 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 the existing forest in Fenton.

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 (37%) (Appendix A, Figure 1). Maples should not be planted until this percentage 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: crabapple, Japanese Lilac, serviceberry, oak (red, white), hackberry, linden, elm (disease resistant), cork, London plane, ironwood hornbeam as outlined in section 151.02 of the city ordinance (Appendix C). All trees planted must meet the restrictions in city ordinance 151.02 (Appendix C).

Continual Monitoring

Due to the threat of EAB, it is important to continuously check the health of ash trees. We recommend 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 will be prioritized by first removing dead, dying, hazardous trees (Appendix B, Figure 4). Next will be all ash in poor condition that display EAB signs and symptoms (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 an effective tool for communities to spread removal costs out over several years while allowing trees to continue providing 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 normally disposed of if your county is not part of a quarantine.

Canopy Replacement

As budget permits, all removed trees will be replaced. All trees will meet the restrictions in city ordinance 151.02 (Appendix C). The new plantings will be a diverse mix and will not include crabapple, Japanese Lilac, serviceberry, oak (red, white), hackberry, linden, elm (disease resistant), cork, London plane, ironwood hornbeam.

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.

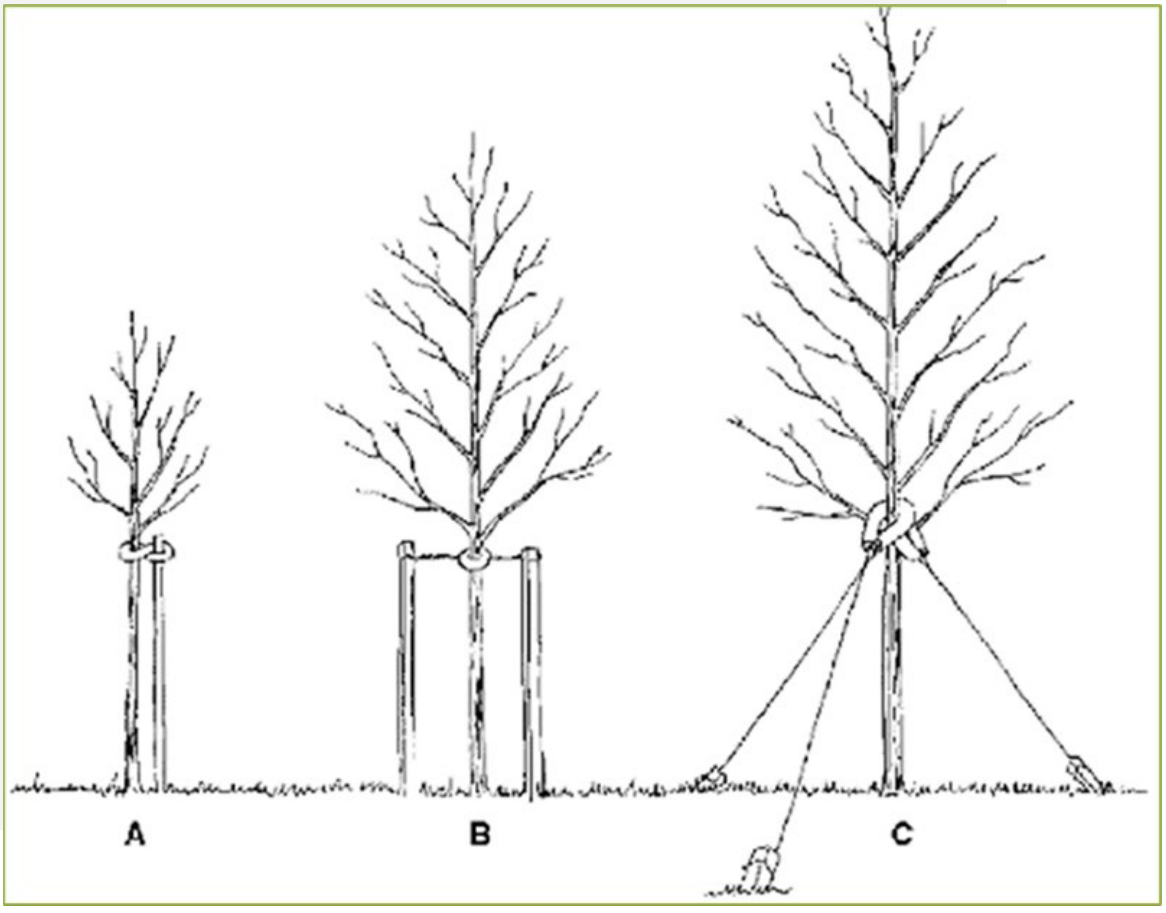
Monitoring

It is recommended that ash trees be checked with a visual survey every year for tree death and for EAB signs and symptoms including 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 if preventative treatments are not being used. City Code 151.06 states “A property owner may remove a tree that is on personal property as long as the property owner does the actual work. Otherwise, the property owner must hire a licensed tree surgeon to remove the tree.”

Schedule & Budget



PROPOSED WORK SCHEDULE & BUDGET

Budget Allowance of $5,000/Year – (Based off Reported Yearly Tree Budget)

YEAR 1	Est. Cost
Remove 5 trees recommended for immediate removal	$3,500
Remove 1 ash tree in poor condition	$700
Plant 5 trees in open locations	$750
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$4,950**

YEAR 2	Est. Cost
Remove 3 trees recommended for immediate removal	$2,100
Plant 5 trees in open locations	$750
Prune 1/3 of city owned trees	$2,030
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$4,880**

YEAR 3	Est. Cost
Remove 1 tree recommended for immediate removal	$700
Remove 5 ash trees in poor condition	$3,500
Plant 5 trees in open locations	$750
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$4,950**

YEAR 4	Est. Cost
Remove 3 ash trees	$2,100
Plant 5 trees in open locations	$750
Prune 1/3 of city owned trees	$2,030
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$4,880**

YEAR 5	Est. Cost
Remove 6 ash trees	$4,200
Plant 5 trees in open locations	$750
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$4,950**

YEAR 6	Est. Cost
Remove 3 ash trees	$2,100
Plant 5 trees in open locations	$750
Prune 1/3 of city owned trees	$2,030
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$4,880**

Estimated costs based on average costs of $700/tree for removal, $150/tree for planting and maintenance, and $15/tree for pruning.

***To remove all ash trees within 6 years alone, the budget would need to be $20,000 a year. If the budget were increased to $10,000 a year all ash could be removed in 12 years.*

PROPOSED WORK SCHEDULE WITH INCREASED BUDGET

Budget Allowance of $12,000/Year – (Budget Increase Suggested to Best Manage City Trees)

YEAR 1	Est. Cost
Remove 5 trees recommended for immediate removal	$3,500
Remove 10 ash trees in poor condition	$7,000
Plant 10 trees in open locations	$1,500
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$12,000**

YEAR 2	Est. Cost
Remove 12 ash trees in poor condition	$8,400
Plant 10 trees in open locations	$1,500
Prune 1/3 of city owned trees	$2,030
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$11,930**

YEAR 3	Est. Cost
Remove 15 ash trees	$10,500
Plant 10 trees in open locations	$1,500
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$12,000**

YEAR 4	Est. Cost
Remove 11 ash trees	$7,700
Plant 15 trees in open locations	$2,250
Prune 1/3 of city owned trees	$2,030
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$11,980**

YEAR 5	Est. Cost
Remove 12 ash trees	$8,400
Plant 24 trees in open locations	$3,600
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$12,000**

YEAR 6	Est. Cost
Remove 11 ash trees	$7,700
Plant 15 trees in open locations	$2,250
Prune 1/3 of city owned trees	$2,030
Visual Survey of EAB Signs/Symptoms	n/a
TOTAL	**$11,980**

Purposed Budget Increase

EAB could potentially kill all ash trees in Fenton within four years of its arrival. To remove all ash trees within six years, the budget would need to be increased to $19,800 a year. If the budget were increased to $10,000 per year all ash could be removed within 12 years. Additionally, we recommend that Fenton 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.

Another option considered by many communities is treating selected trees, either to maintain those trees in the landscape or to delay their removal – to spread out the costs and number of trees needing removal all at once. Trunk injection is administered every two years for the life of the tree. If treatment is discontinued, the tree dies. For instance, in this treatment scenario, the average ash diameter is 20 inches and at $15 per inch, about 4 trees could be treated per year (every other year treatment). Eight trees would be selected for treatment, and Fenton would still need to find $112,700 for removal. Alternatively, if there are 20 treatable trees, it would cost approximately $3,000 a year for treatment and leave $2,000 for removal. These are alternatives to straight removal of ash trees. However, whether or not the treatment option is selected, there will be an increased cost of dealing with ash trees if EAB is found in Fenton. We suggest considering an increased budget to plan for this.

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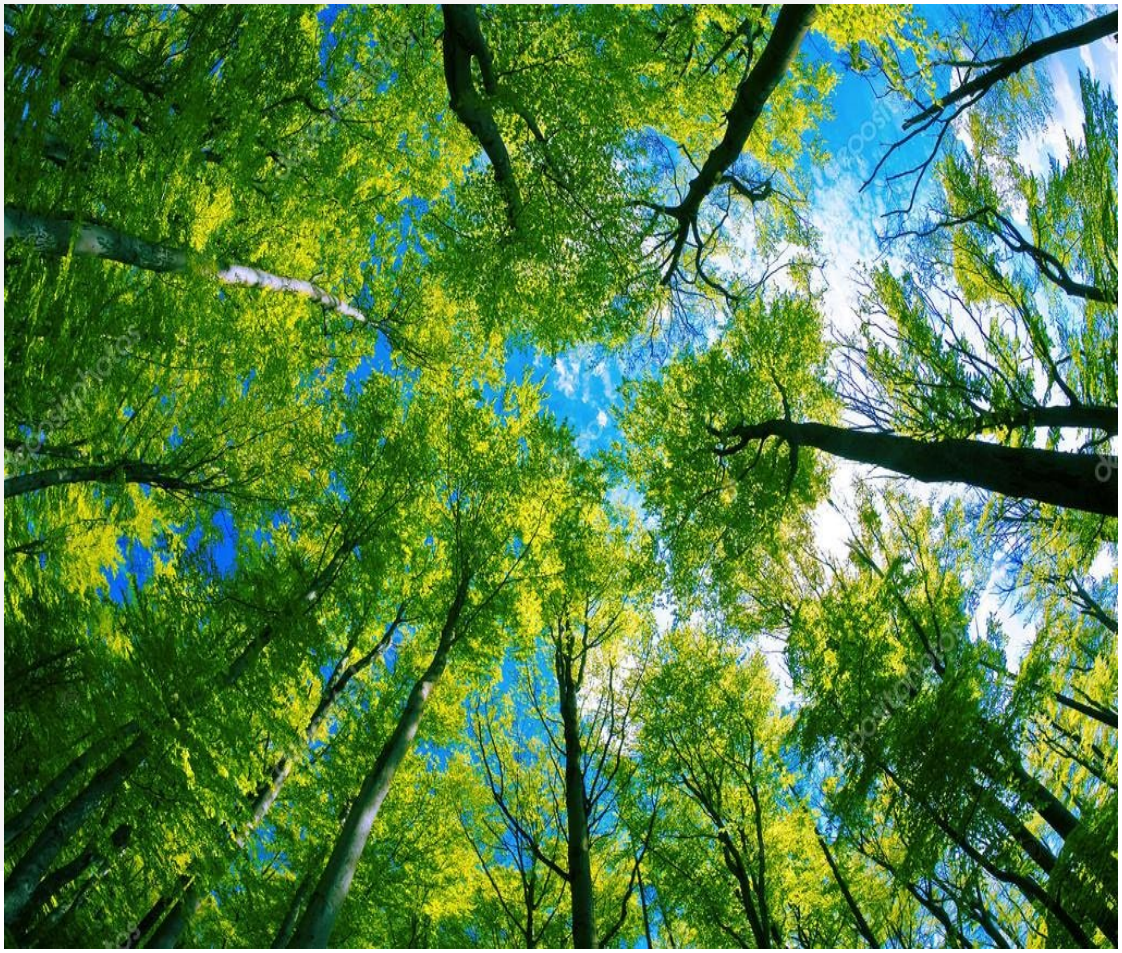
Appendices



APPENDIX A: i-TREE DATA

Table 1: Annual Energy Benefits

Fenton

Annual Energy Benefits of Public Trees

2/7/2023

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	51.2	3,890	7,040.8	6,900	10,790	(N/A)	41.4	46.7	64.22
Silver maple	21.0	1,591	2,742.7	2,688	4,279	(N/A)	17.2	18.5	61.13
Norway maple	16.2	1,230	2,346.1	2,299	3,530	(N/A)	16.5	15.3	52.68
Apple	1.2	89	184.9	181	270	(N/A)	3.2	1.2	20.74
American basswood	3.7	280	542.2	531	811	(N/A)	3.2	3.5	62.41
Black walnut	4.0	304	542.4	532	836	(N/A)	2.7	3.6	75.97
Spruce	1.1	80	122.1	120	199	(N/A)	2.0	0.9	24.93
Sugar maple	1.3	101	179.9	176	277	(N/A)	1.5	1.2	46.18
Norway spruce	0.6	45	73.6	72	117	(N/A)	1.0	0.5	29.23
Boxelder	1.1	84	153.9	151	234	(N/A)	1.0	1.0	58.57
Ohio buckeye	0.4	34	63.2	62	96	(N/A)	0.7	0.4	31.91
Honeylocust	1.1	83	142.2	139	223	(N/A)	0.7	1.0	74.28
Eastern red cedar	0.2	16	32.3	32	48	(N/A)	0.7	0.2	15.84
Bur oak	1.1	83	152.7	150	233	(N/A)	0.7	1.0	77.62
Blue spruce	0.4	28	53.0	52	80	(N/A)	0.7	0.3	26.64
Black maple	0.8	63	109.9	108	170	(N/A)	0.7	0.7	56.77
Northern hackberry	1.0	73	130.5	128	201	(N/A)	0.5	0.9	100.36
Plum	0.1	11	25.7	25	36	(N/A)	0.5	0.2	18.19
American sycamore	0.7	50	93.7	92	142	(N/A)	0.5	0.6	70.91
Lilac	0.0	1	1.2	1	2	(N/A)	0.5	0.0	0.87
Mulberry	0.4	29	56.3	55	84	(N/A)	0.5	0.4	42.14
Black spruce	0.1	5	10.2	10	15	(N/A)	0.2	0.1	14.80
Conifer Evergreen Large	0.2	14	24.6	24	38	(N/A)	0.2	0.2	38.17
Red maple	0.1	8	16.5	16	25	(N/A)	0.2	0.1	24.58
Littleleaf linden	0.2	15	23.9	23	39	(N/A)	0.2	0.2	38.70
Northern white cedar	0.1	11	19.7	19	30	(N/A)	0.2	0.1	30.47
Amur maple	0.1	6	12.8	13	18	(N/A)	0.2	0.1	18.19
Maple	0.0	0	0.7	1	1	(N/A)	0.2	0.0	1.03
Black poplar	0.3	20	38.1	37	57	(N/A)	0.2	0.2	57.32
American elm	0.1	6	11.7	11	18	(N/A)	0.2	0.1	17.66
Paper birch	0.4	29	53.7	53	82	(N/A)	0.2	0.4	82.02
Kwanzan cherry	0.1	6	12.8	13	18	(N/A)	0.2	0.1	18.19
Elm	0.3	25	46.9	46	71	(N/A)	0.2	0.3	70.91
Mountain ash	0.1	6	12.8	13	18	(N/A)	0.2	0.1	18.19
Broadleaf Deciduous Small	0.1	6	12.8	13	18	(N/A)	0.2	0.1	18.19
Total	109.6	8,321	15,086.6	14,785	23,106	(N/A)	100.0	100.0	56.91

Table 2: Annual Stormwater Benefits

Fenton

Annual Stormwater Benefits of Public Trees

2/7/2023

Species	Total rainfall interception (Gal)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	636,863	17,259	(N/A)	41.4	47.4	102.73
Silver maple	297,480	8,062	(N/A)	17.2	22.1	115.17
Norway maple	161,746	4,383	(N/A)	16.5	12.0	65.42
Apple	4,638	126	(N/A)	3.2	0.3	9.67
American basswood	43,516	1,179	(N/A)	3.2	3.2	90.71
Black walnut	54,094	1,466	(N/A)	2.7	4.0	133.27
Spruce	13,740	372	(N/A)	2.0	1.0	46.54
Sugar maple	12,723	345	(N/A)	1.5	0.9	57.46
Norway spruce	10,651	289	(N/A)	1.0	0.8	72.16
Boxelder	14,227	386	(N/A)	1.0	1.1	96.39
Ohio buckeye	2,581	70	(N/A)	0.7	0.2	23.32
Honeylocust	14,054	381	(N/A)	0.7	1.0	126.96
Eastern red cedar	2,953	80	(N/A)	0.7	0.2	26.68
Bur oak	15,125	410	(N/A)	0.7	1.1	136.63
Blue spruce	5,992	162	(N/A)	0.7	0.4	54.13
Black maple	7,338	199	(N/A)	0.7	0.5	66.29
Northern hackberry	11,477	311	(N/A)	0.5	0.9	155.52
Plum	529	14	(N/A)	0.5	0.0	7.17
American sycamore	7,886	214	(N/A)	0.5	0.6	106.85
Lilac	15	0	(N/A)	0.5	0.0	0.20
Mulberry	1,841	50	(N/A)	0.5	0.1	24.94
Black spruce	755	20	(N/A)	0.2	0.1	20.47
Conifer Evergreen Large	4,605	125	(N/A)	0.2	0.3	124.79
Red maple	625	17	(N/A)	0.2	0.0	16.95
Littleleaf linden	1,260	34	(N/A)	0.2	0.1	34.14
Northern white cedar	2,969	80	(N/A)	0.2	0.2	80.46
Amur maple	264	7	(N/A)	0.2	0.0	7.17
Maple	12	0	(N/A)	0.2	0.0	0.32
Black poplar	2,591	70	(N/A)	0.2	0.2	70.21
American elm	432	12	(N/A)	0.2	0.0	11.72
Paper birch	5,491	149	(N/A)	0.2	0.4	148.79
Kwanzan cherry	264	7	(N/A)	0.2	0.0	7.17
Elm	3,943	107	(N/A)	0.2	0.3	106.85
Mountain ash	264	7	(N/A)	0.2	0.0	7.17
Broadleaf Deciduous Small	264	7	(N/A)	0.2	0.0	7.17
Citywide total	1,343,208	36,401	(N/A)	100.0	100.0	89.66

Table 3: Annual Air Quality Benefits

Fenton

Annual Air Quality Benefits of Public Trees

2/7/2023

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								
Green ash	85.7	13.7	39.8	3.8	453	244.9	35.6	34.0	232.3	1,525	0.0	0	689.9	1,978	(N/A)	41.4	11.77
Silver maple	50.0	8.5	24.7	2.2	270	98.7	14.5	13.8	94.8	618	-25.2	-95	281.9	793	(N/A)	17.2	11.33
Norway maple	34.4	5.9	16.8	1.5	186	78.7	11.4	10.8	73.6	487	-8.0	-30	225.1	643	(N/A)	16.5	9.60
Apple	1.2	0.2	0.6	0.1	7	5.8	0.8	0.8	5.3	36	0.0	0	14.8	42	(N/A)	3.2	3.23
American basswood	6.0	1.0	2.9	0.3	32	18.0	2.6	2.5	16.7	111	-5.1	-19	44.9	125	(N/A)	3.2	9.58
Black walnut	7.7	1.2	3.5	0.3	41	19.1	2.8	2.7	18.2	119	0.0	0	55.5	160	(N/A)	2.7	14.51
Spruce	1.5	0.3	1.3	0.2	10	4.8	0.7	0.7	4.8	30	-5.2	-19	9.1	21	(N/A)	2.0	2.65
Sugar maple	1.5	0.3	0.8	0.1	8	6.3	0.9	0.9	6.0	39	-1.2	-5	15.6	43	(N/A)	1.5	7.20
Norway spruce	1.3	0.2	1.0	0.2	8	2.7	0.4	0.4	2.7	17	-5.3	-20	3.6	6	(N/A)	1.0	1.38
Boxelder	2.1	0.3	0.9	0.1	11	5.3	0.8	0.7	5.0	33	-0.7	-3	14.5	41	(N/A)	1.0	10.25
Ohio buckeye	0.3	0.1	0.2	0.0	2	2.2	0.3	0.3	2.0	13	-0.1	0	5.3	15	(N/A)	0.7	4.95
Honeylocust	2.8	0.5	1.3	0.1	15	5.2	0.8	0.7	5.0	32	-2.3	-9	14.0	39	(N/A)	0.7	12.87
Eastern red cedar	0.5	0.1	0.4	0.1	3	1.0	0.1	0.1	0.9	6	-1.6	-6	1.7	3	(N/A)	0.7	1.14
Bur oak	2.1	0.3	1.0	0.1	11	5.3	0.8	0.7	5.0	33	0.0	0	15.3	44	(N/A)	0.7	14.66
Blue spruce	1.0	0.2	0.8	0.1	6	1.8	0.3	0.2	1.7	11	-2.3	-8	3.7	9	(N/A)	0.7	2.93
Black maple	1.8	0.3	0.8	0.1	10	3.9	0.6	0.5	3.7	24	-0.6	-2	11.2	32	(N/A)	0.7	10.61
Northern hackberry	2.5	0.4	1.2	0.1	14	4.6	0.7	0.6	4.3	29	0.0	0	14.5	42	(N/A)	0.5	21.04
Plum	0.1	0.0	0.1	0.0	1	0.8	0.1	0.1	0.7	5	0.0	0	1.8	5	(N/A)	0.5	2.55
American sycamore	1.0	0.2	0.5	0.0	5	3.2	0.5	0.4	3.0	20	0.0	0	8.7	25	(N/A)	0.5	12.48
Lilac	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.1	0	(N/A)	0.5	0.11
Mulberry	0.6	0.1	0.3	0.0	3	1.9	0.3	0.3	1.7	12	0.0	0	5.2	15	(N/A)	0.5	7.45
Black spruce	0.1	0.0	0.1	0.0	0	0.3	0.0	0.0	0.3	2	-0.2	-1	0.6	2	(N/A)	0.2	1.53
Conifer Evergreen Large	0.6	0.1	0.4	0.1	4	0.9	0.1	0.1	0.8	5	-2.9	-11	0.3	-2	(N/A)	0.2	-1.58
Red maple	0.1	0.0	0.0	0.0	0	0.5	0.1	0.1	0.5	3	0.0	0	1.3	4	(N/A)	0.2	3.64
Littleleaf linden	0.2	0.0	0.1	0.0	1	0.9	0.1	0.1	0.9	6	-0.1	0	2.3	6	(N/A)	0.2	6.42
Northern white cedar	0.3	0.1	0.3	0.0	2	0.7	0.1	0.1	0.7	4	-1.4	-5	0.9	1	(N/A)	0.2	1.45
Amur maple	0.0	0.0	0.0	0.0	0	0.4	0.1	0.1	0.3	2	0.0	0	0.9	3	(N/A)	0.2	2.55
Maple	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)	0.2	0.13
Black poplar	0.3	0.0	0.1	0.0	1	1.3	0.2	0.2	1.2	8	0.0	0	3.3	9	(N/A)	0.2	9.34
American elm	0.0	0.0	0.0	0.0	0	0.4	0.1	0.1	0.4	2	0.0	0	0.9	3	(N/A)	0.2	2.54
Paper birch	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)	0.2	15.71
Kwanzan cherry	0.0	0.0	0.0	0.0	0	0.4	0.1	0.1	0.3	2	0.0	0	0.9	3	(N/A)	0.2	2.55
Elm	0.5	0.1	0.2	0.0	3	1.6	0.2	0.2	1.5	10	0.0	0	4.4	12	(N/A)	0.2	12.48
Mountain ash	0.0	0.0	0.0	0.0	0	0.4	0.1	0.1	0.3	2	0.0	0	0.9	3	(N/A)	0.2	2.55

Fenton

Annual Air Quality Benefits of Public Trees

2/7/2023

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								
Broadleaf Deciduous Small	0.0	0.0	0.0	0.0	0	0.4	0.1	0.1	0.3	2	0.0	0	0.9	3	(N/A)	0.2	2.55
Citywide total	207.3	34.4	100.5	9.6	1,113	523.9	76.2	72.7	496.7	3,262	-62.2	-233	1,459.2	4,142	(N/A)	100.0	10.20

Table 4: Annual Carbon Stored

Fenton

Stored CO2 Benefits of Public Trees

2/7/2023

Species	Total Stored CO2 (lbs)	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	2,814,036	21,105	(N/A)	41.4	52.3	125.63
Silver maple	1,063,128	7,973	(N/A)	17.2	19.7	113.91
Norway maple	570,680	4,280	(N/A)	16.5	10.6	63.88
Apple	20,108	151	(N/A)	3.2	0.4	11.60
American basswood	220,095	1,651	(N/A)	3.2	4.1	126.98
Black walnut	254,147	1,906	(N/A)	2.7	4.7	173.28
Spruce	11,534	87	(N/A)	2.0	0.2	10.81
Sugar maple	44,522	334	(N/A)	1.5	0.8	55.65
Norway spruce	13,174	99	(N/A)	1.0	0.2	24.70
Boxelder	74,172	556	(N/A)	1.0	1.4	139.07
Ohio buckeye	5,825	44	(N/A)	0.7	0.1	14.56
Honeylocust	36,735	276	(N/A)	0.7	0.7	91.84
Eastern red cedar	1,656	12	(N/A)	0.7	0.0	4.14
Bur oak	70,804	531	(N/A)	0.7	1.3	177.01
Blue spruce	7,839	59	(N/A)	0.7	0.1	19.60
Black maple	19,515	146	(N/A)	0.7	0.4	48.79
Northern hackberry	42,439	318	(N/A)	0.5	0.8	159.15
Plum	1,816	14	(N/A)	0.5	0.0	6.81
American sycamore	31,546	237	(N/A)	0.5	0.6	118.30
Lilac	28	0	(N/A)	0.5	0.0	0.10
Mulberry	9,780	73	(N/A)	0.5	0.2	36.67
Black spruce	284	2	(N/A)	0.2	0.0	2.13
Conifer Evergreen La	7,490	56	(N/A)	0.2	0.1	56.18
Red maple	1,101	8	(N/A)	0.2	0.0	8.26
Littleleaf linden	3,595	27	(N/A)	0.2	0.1	26.96
Northern white cedar	3,343	25	(N/A)	0.2	0.1	25.07
Amur maple	908	7	(N/A)	0.2	0.0	6.81
Maple	17	0	(N/A)	0.2	0.0	0.13
Black poplar	8,458	63	(N/A)	0.2	0.2	63.43
American elm	908	7	(N/A)	0.2	0.0	6.81
Paper birch	25,943	195	(N/A)	0.2	0.5	194.57
Kwanzan cherry	908	7	(N/A)	0.2	0.0	6.81
Elm	15,773	118	(N/A)	0.2	0.3	118.30
Mountain ash	908	7	(N/A)	0.2	0.0	6.81
Broadleaf Deciduous	908	7	(N/A)	0.2	0.0	6.81
Citywide total	5,384,121	40,381	(N/A)	100.0	100.0	99.46

The value of stored carbon dioxide is calculated as the total amount of carbon dioxide sequestered annually over the life of each tree, summed for the population. This value should not be added to the Replacement Value or double-counting of the carbon dioxide storage benefit will occur.

Table 5: Annual Carbon Sequestered

Fenton

Annual CO $_2$ Benefits of Public Trees

2/7/2023

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	122,142	916	-13,507	-552	-105	85,963	645	194,045	1,455 (N/A)	41.4	45.4	8.66
Silver maple	83,548	627	-5,105	-228	-40	35,169	264	113,384	850 (N/A)	17.2	26.5	12.15
Norway maple	17,809	134	-2,741	-179	-22	27,194	204	42,083	316 (N/A)	16.5	9.9	4.71
Apple	1,464	11	-97	-17	-1	1,956	15	3,306	25 (N/A)	3.2	0.8	1.91
American basswood	12,638	95	-1,056	-44	-8	6,189	46	17,726	133 (N/A)	3.2	4.1	10.23
Black walnut	9,480	71	-1,220	-43	-9	6,720	50	14,937	112 (N/A)	2.7	3.5	10.18
Spruce	996	7	-55	-16	-1	1,762	13	2,686	20 (N/A)	2.0	0.6	2.52
Sugar maple	2,657	20	-214	-14	-2	2,226	17	4,655	35 (N/A)	1.5	1.1	5.82
Norway spruce	675	5	-63	-10	-1	990	7	1,591	12 (N/A)	1.0	0.4	2.98
Boxelder	4,985	37	-356	-16	-3	1,845	14	6,458	48 (N/A)	1.0	1.5	12.11
Ohio buckeye	834	6	-28	-4	0	747	6	1,548	12 (N/A)	0.7	0.4	3.87
Honeylocust	1,486	11	-176	-8	-1	1,844	14	3,146	24 (N/A)	0.7	0.7	7.86
Eastern red cedar	123	1	-8	-4	0	351	3	461	3 (N/A)	0.7	0.1	1.15
Bur oak	2,626	20	-340	-12	-3	1,839	14	4,113	31 (N/A)	0.7	1.0	10.28
Blue spruce	186	1	-38	-7	0	619	5	759	6 (N/A)	0.7	0.2	1.90
Black maple	483	4	-94	-7	-1	1,385	10	1,767	13 (N/A)	0.7	0.4	4.42
Northern hackberry	1,361	10	-204	-10	-2	1,609	12	2,756	21 (N/A)	0.5	0.6	10.34
Plum	228	2	-9	-2	0	248	2	465	3 (N/A)	0.5	0.1	1.74
American sycamore	1,714	13	-151	-7	-1	1,105	8	2,660	20 (N/A)	0.5	0.6	9.97
Lilac	17	0	0	0	0	11	0	28	0 (N/A)	0.5	0.0	0.10
Mulberry	746	6	-47	-5	0	643	5	1,338	10 (N/A)	0.5	0.3	5.02
Black spruce	39	0	-1	-1	0	106	1	142	1 (N/A)	0.2	0.0	1.07
Conifer Evergreen Large	256	2	-36	-4	0	311	2	528	4 (N/A)	0.2	0.1	3.96
Red maple	165	1	-5	-1	0	186	1	344	3 (N/A)	0.2	0.1	2.58
Littleleaf linden	514	4	-17	-2	0	337	3	832	6 (N/A)	0.2	0.2	6.24
Northern white cedar	187	1	-16	-3	0	246	2	415	3 (N/A)	0.2	0.1	3.11
Amur maple	114	1	-4	-1	0	124	1	232	2 (N/A)	0.2	0.1	1.74
Maple	3	0	0	0	0	7	0	9	0 (N/A)	0.2	0.0	0.07
Black poplar	660	5	-41	-3	0	441	3	1,058	8 (N/A)	0.2	0.2	7.93
American elm	111	1	-4	-1	0	137	1	242	2 (N/A)	0.2	0.1	1.82
Paper birch	960	7	-125	-4	-1	650	5	1,481	11 (N/A)	0.2	0.3	11.11

Annual CO Benefits of Public Trees

2/7/2023

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
Kwanzan cherry	114	1	-4	-1	0	124	1	232	2 (N/A)	0.2	0.1	1.74
Elm	857	6	-76	-4	-1	552	4	1,330	10 (N/A)	0.2	0.3	9.97
Mountain ash	114	1	-4	-1	0	124	1	232	2 (N/A)	0.2	0.1	1.74
Broadleaf Deciduous Smal	114	1	-4	-1	0	124	1	232	2 (N/A)	0.2	0.1	1.74
Citywide total	270,402	2,028	-25,847	-1,215	-203	183,884	1,379	427,224	3,204 (N/A)	100.0	100.0	7.89

Table 6: Annual Social and Aesthetic Benefits

Fenton

Annual Aesthetic/Other Benefits of Public Trees

2/7/2023

Species	Total ($)	Standard Error	% of Total Trees	% of Total $	Avg. $/tree
Green ash	9,487	(N/A)	41.4	42.9	56.47
Silver maple	6,669	(N/A)	17.2	30.1	95.27
Norway maple	1,707	(N/A)	16.5	7.7	25.48
Apple	82	(N/A)	3.2	0.4	6.33
American basswood	909	(N/A)	3.2	4.1	69.89
Black walnut	683	(N/A)	2.7	3.1	62.08
Spruce	273	(N/A)	2.0	1.2	34.16
Sugar maple	296	(N/A)	1.5	1.3	49.40
Norway spruce	138	(N/A)	1.0	0.6	34.49
Boxelder	288	(N/A)	1.0	1.3	71.97
Ohio buckeye	92	(N/A)	0.7	0.4	30.53
Honeylocust	389	(N/A)	0.7	1.8	129.63
Eastern red cedar	56	(N/A)	0.7	0.3	18.79
Bur oak	190	(N/A)	0.7	0.9	63.17
Blue spruce	41	(N/A)	0.7	0.2	13.69
Black maple	66	(N/A)	0.7	0.3	21.96
Northern hackberry	154	(N/A)	0.5	0.7	76.96
Plum	13	(N/A)	0.5	0.1	6.40
American sycamore	131	(N/A)	0.5	0.6	65.59
Lilac	0	(N/A)	0.5	0.0	0.03
Mulberry	44	(N/A)	0.5	0.2	22.14
Black spruce	21	(N/A)	0.2	0.1	21.08
Conifer Evergreen Large	26	(N/A)	0.2	0.1	26.25
Red maple	30	(N/A)	0.2	0.1	29.84
Littleleaf linden	55	(N/A)	0.2	0.2	55.09
Northern white cedar	47	(N/A)	0.2	0.2	47.08
Amur maple	6	(N/A)	0.2	0.0	6.40
Maple	0	(N/A)	0.2	0.0	0.04
Black poplar	58	(N/A)	0.2	0.3	57.69
American elm	20	(N/A)	0.2	0.1	19.89
Paper birch	67	(N/A)	0.2	0.3	66.60
Kwanzan cherry	6	(N/A)	0.2	0.0	6.40
Elm	66	(N/A)	0.2	0.3	65.59
Mountain ash	6	(N/A)	0.2	0.0	6.40
Broadleaf Deciduous Small	6	(N/A)	0.2	0.0	6.40
Citywide total	22,123	(N/A)	100.0	100.0	54.49

Table 7: Summary of Benefits in Dollars

Fenton

Total Annual Benefits, Net Benefits, and Costs for Public Trees

2/7/2023

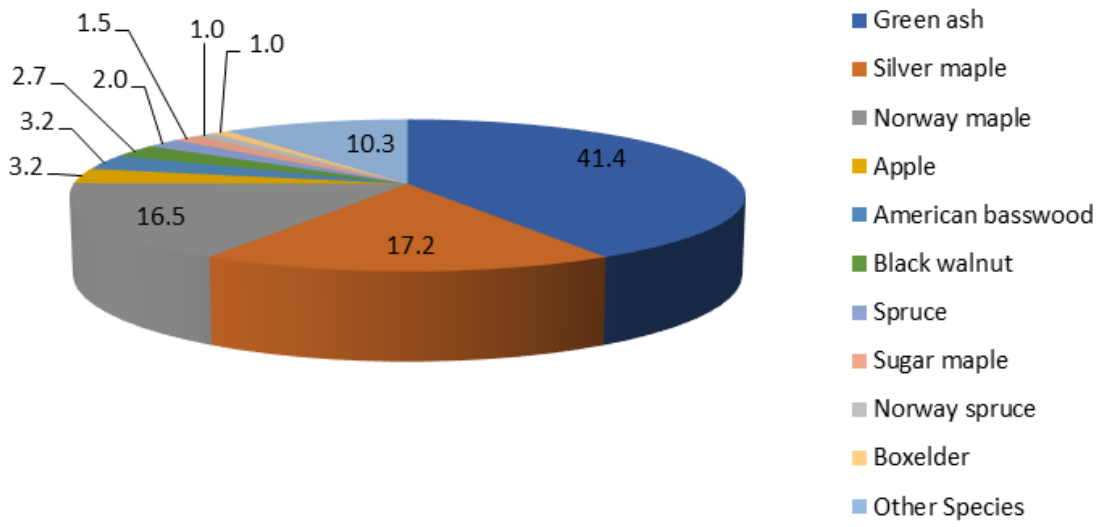
Benefits	Total ($)	Standard Error	$/tree	Standard Error	$/capita	Standard Error
Energy	23,106	(N/A)	56.91	(N/A)	87.19	(N/A)
CO2	3,204	(N/A)	7.89	(N/A)	12.09	(N/A)
Air Quality	4,142	(N/A)	10.20	(N/A)	15.63	(N/A)
Stormwater	36,401	(N/A)	89.66	(N/A)	137.36	(N/A)
Aesthetic/Other	22,123	(N/A)	54.49	(N/A)	83.48	(N/A)
Total Benefits	88,975	(N/A)	219.15	(N/A)	335.75	(N/A)
Costs						
Planting	0		0.00		0.00	
Contract Pruning	0		0.00		0.00	
Pest Management	0		0.00		0.00	
Irrigation	0		0.00		0.00	
Removal	0		0.00		0.00	
Administration	0		0.00		0.00	
Inspection/Service	0		0.00		0.00	
Infrastructure Repairs	0		0.00		0.00	
Litter Clean-up	0		0.00		0.00	
Liability/Claims	0		0.00		0.00	
Other Costs	0		0.00		0.00	
Total Costs	0		0.00		0.00	
Net Benefits	88,975	(N/A)	219.15	(N/A)	335.75	(N/A)
Benefit-cost ratio	0.00	(N/A)				

Figure 1: Species Distribution

Fenton

Species Distribution of Public Trees

2/7/2023



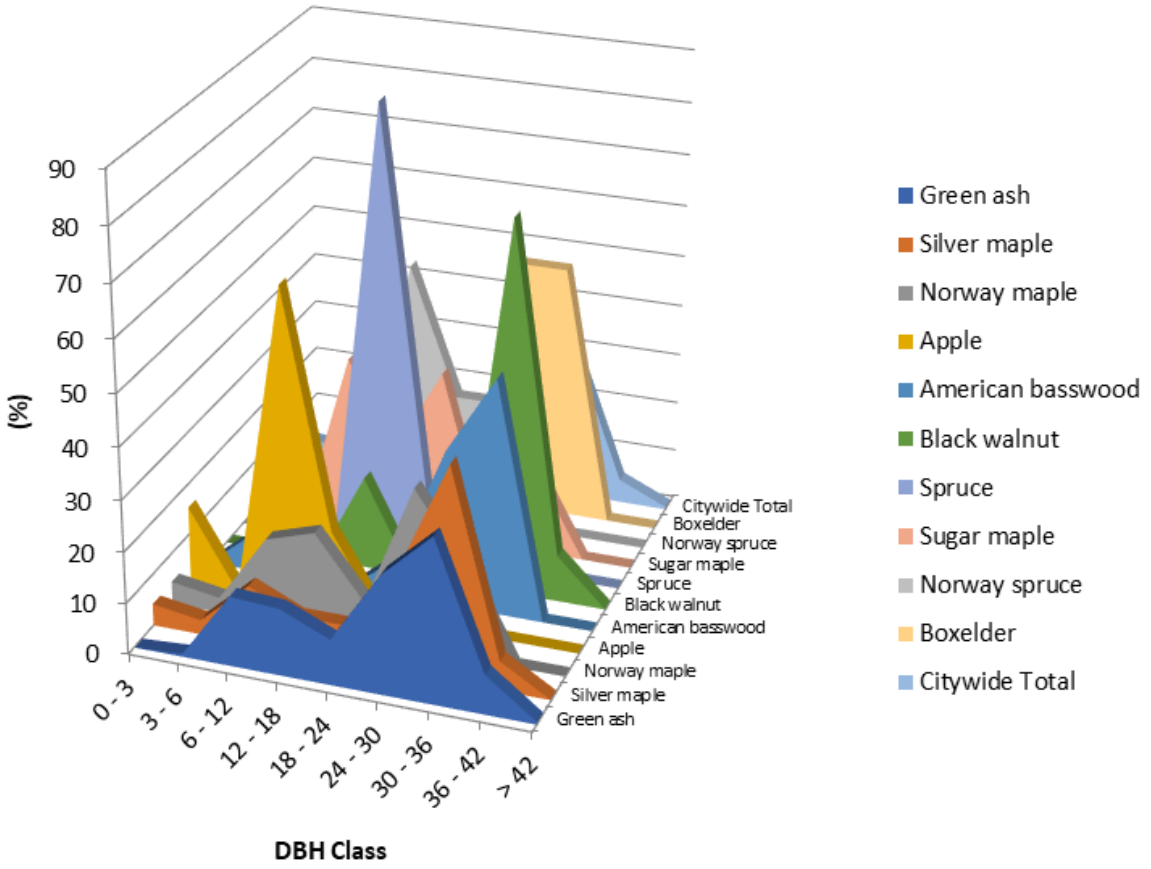
Species	Percent
Green ash	41.4
Silver maple	17.2
Norway maple	16.5
Apple	3.2
American basswood	3.2
Black walnut	2.7
Spruce	2.0
Sugar maple	1.5
Norway spruce	1.0
Boxelder	1.0
Other Species	10.3
Total	100.0

Figure 2: Relative Age Class

Fenton

Relative Age Distribution of Top 10 Public Tree Species for All Zones (%)

2/7/2023



	DBH class (in)								
Species	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	> 42
Green ash	0.00	0.60	13.69	13.10	8.93	23.21	32.14	7.74	0.60
Silver maple	4.29	2.86	11.43	7.14	7.14	20.00	41.43	5.71	0.00
Norway maple	4.48	2.99	16.42	19.40	7.46	31.34	17.91	0.00	0.00
Apple	15.38	0.00	61.54	15.38	0.00	7.69	0.00	0.00	0.00
American basswood	0.00	7.69	7.69	0.00	7.69	30.77	46.15	0.00	0.00
Black walnut	0.00	0.00	0.00	18.18	0.00	0.00	72.73	9.09	0.00
Spruce	0.00	0.00	0.00	87.50	12.50	0.00	0.00	0.00	0.00
Sugar maple	0.00	0.00	33.33	16.67	33.33	0.00	16.67	0.00	0.00
Norway spruce	0.00	0.00	0.00	50.00	25.00	25.00	0.00	0.00	0.00
Boxelder	0.00	0.00	0.00	0.00	0.00	50.00	50.00	0.00	0.00
Citywide Total	2.71	1.48	16.50	14.53	8.37	21.92	29.31	4.68	0.49

Figure 3: Foliage Condition

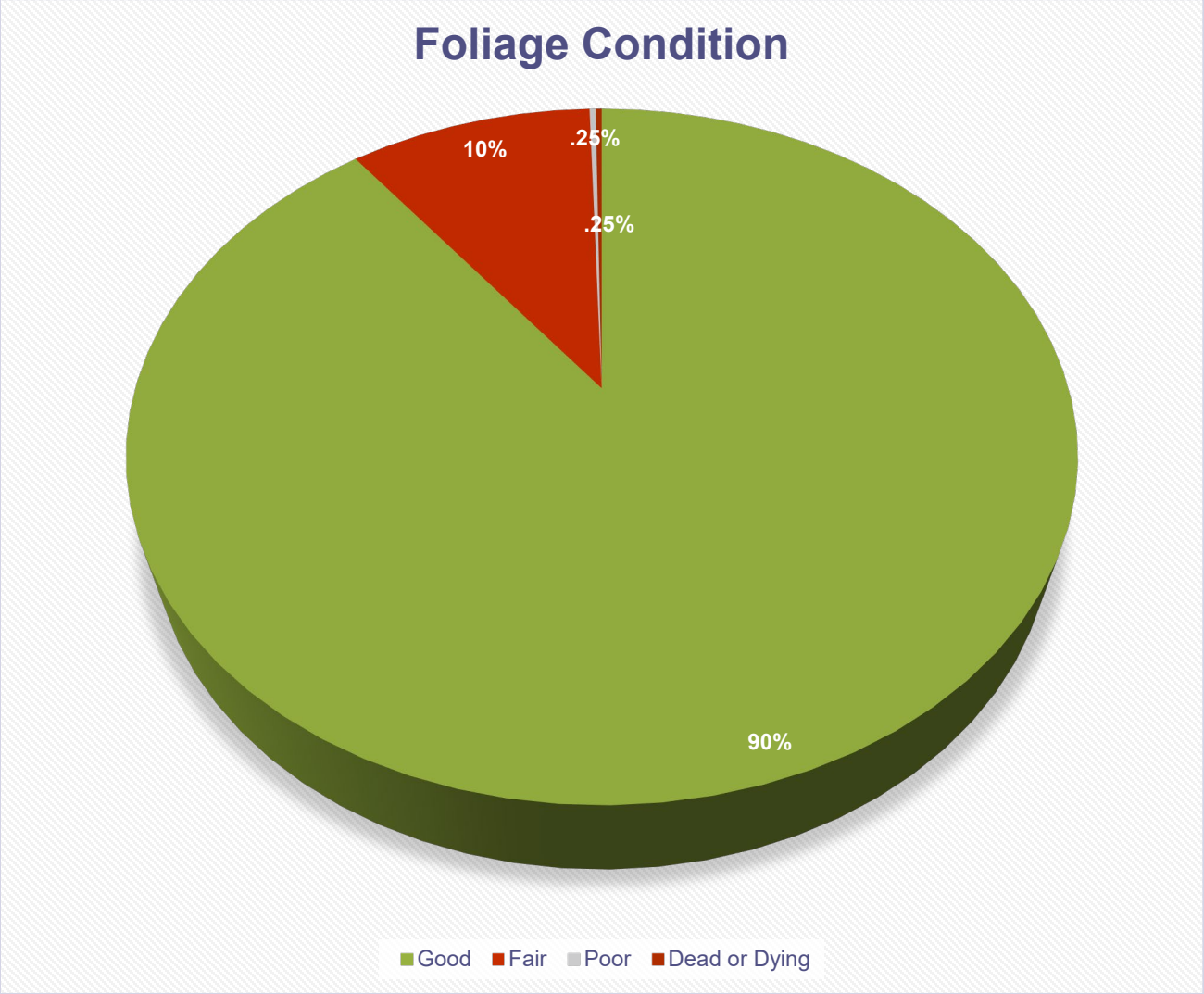


Figure 4: Wood Condition

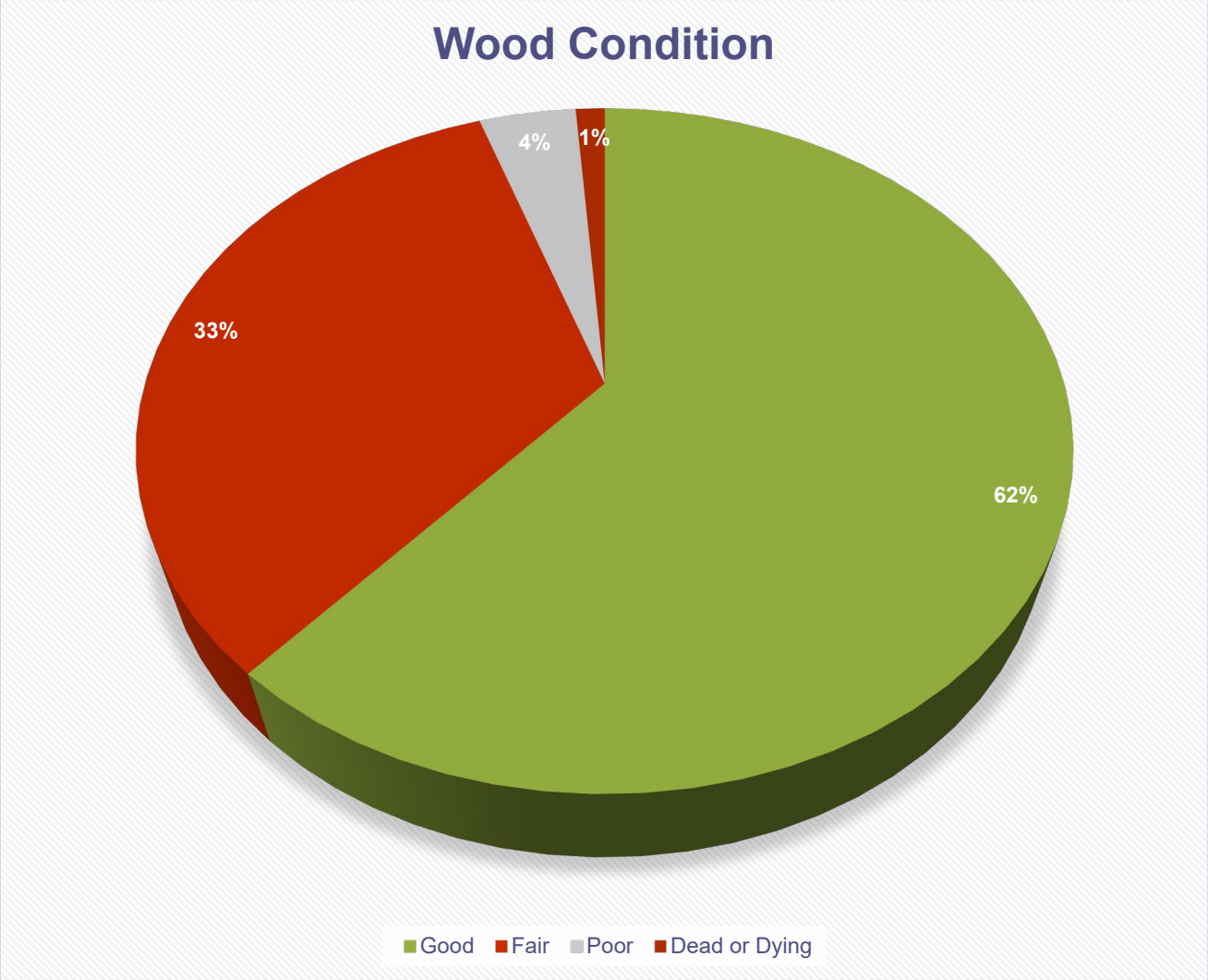
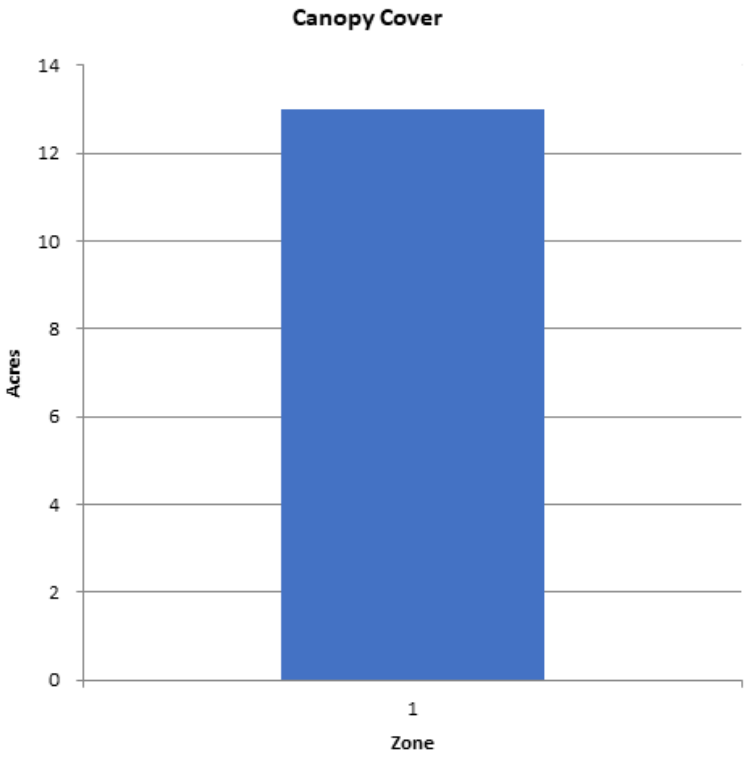


Figure 5: Canopy Cover in Acres

Fenton

Canopy Cover of Public Trees (Acres)

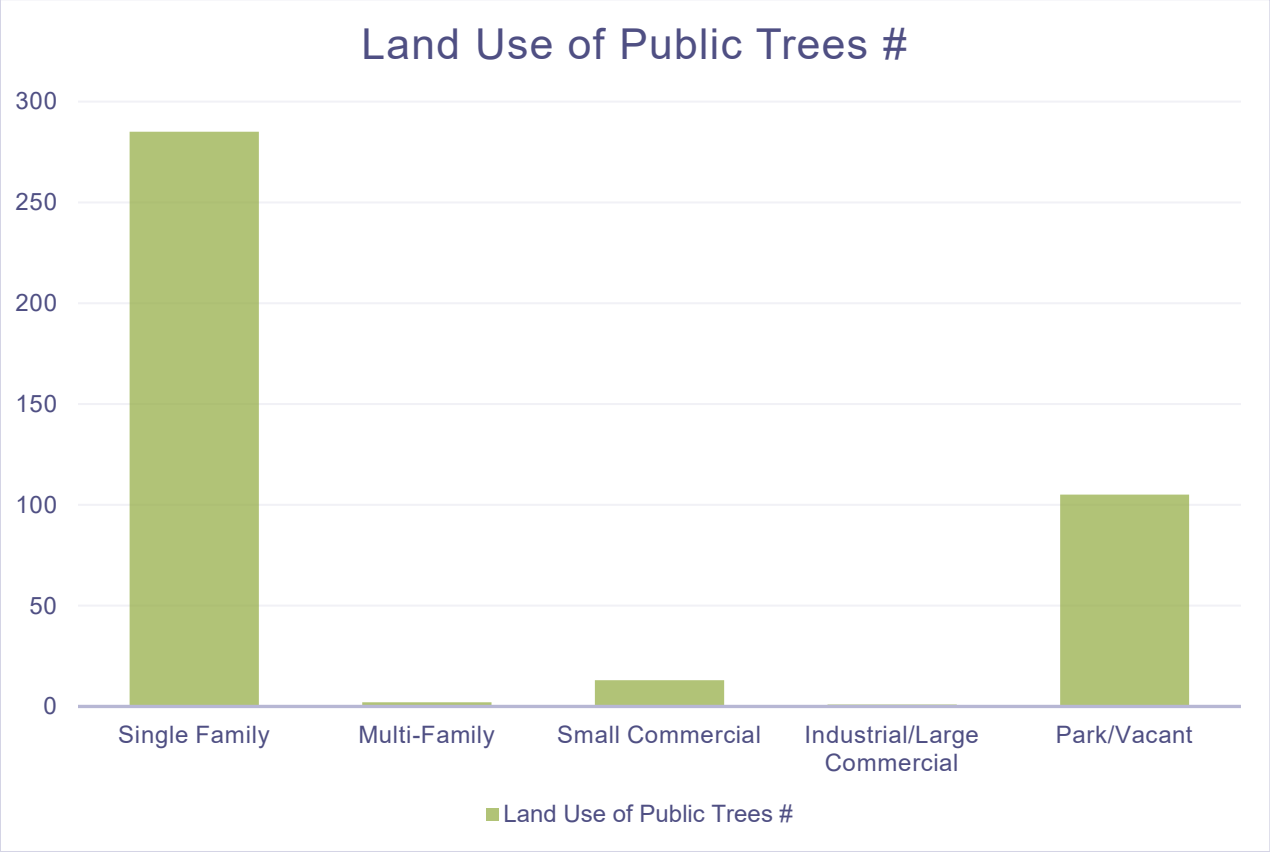
2/7/2023



Zone	Acres	% of Total Canopy Cover
1	13	100.0
Citywide total	13	100.0

	Total Land Area	Total Street and Sidewalk Area	Total Canopy Cover	Canopy Cover as % of Total Land Area	Canopy Cover as % of Total Streets and Sidewalks
Citywide Total	0	0	13	0.00	0.00

Figure 6: Land Use of City/Park Trees



APPENDIX B: ArcGIS MAPPING

Figure 1: Location of Ash Trees

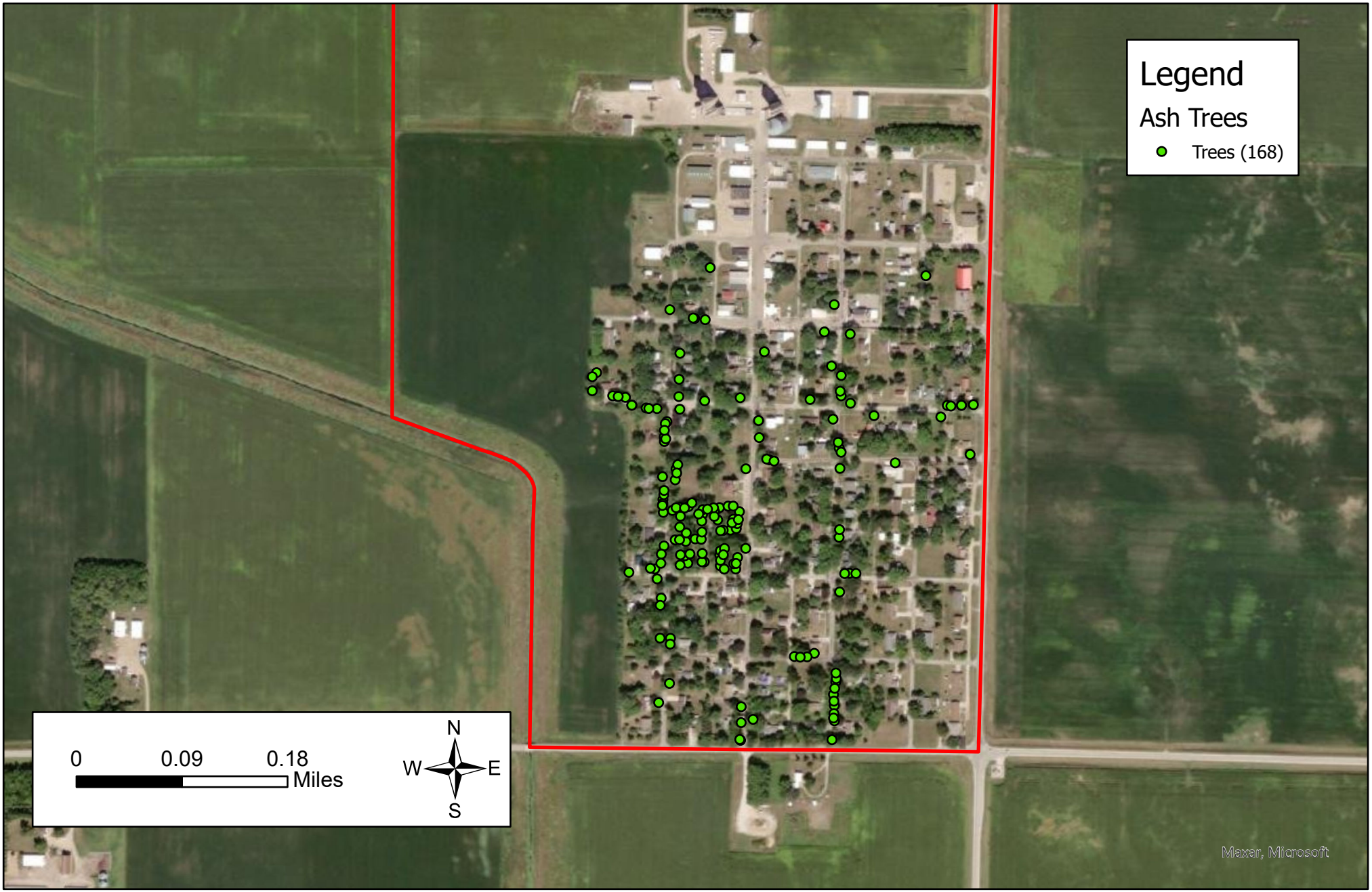
Figure 2: Location of EAB Symptoms

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



Created By: D. Genereux
Date: 1/26/2023
Software: ArcGIS Pro 3.0.3
File: 2022 IDNR Tree Inventory.aprx

2022 IDNR Tree Inventory

Figure 1 - Ash Tree Location
Fenton, Iowa

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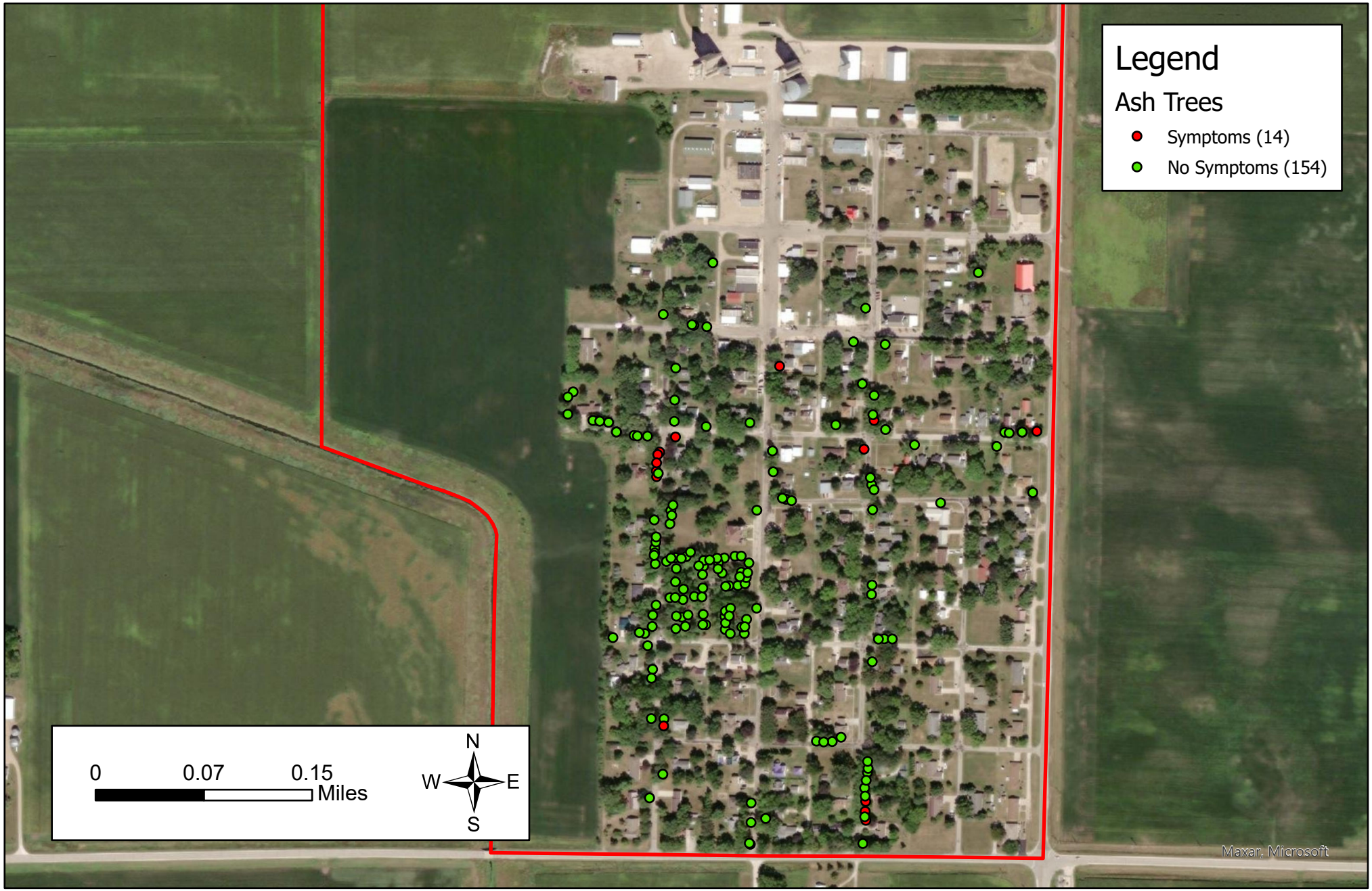
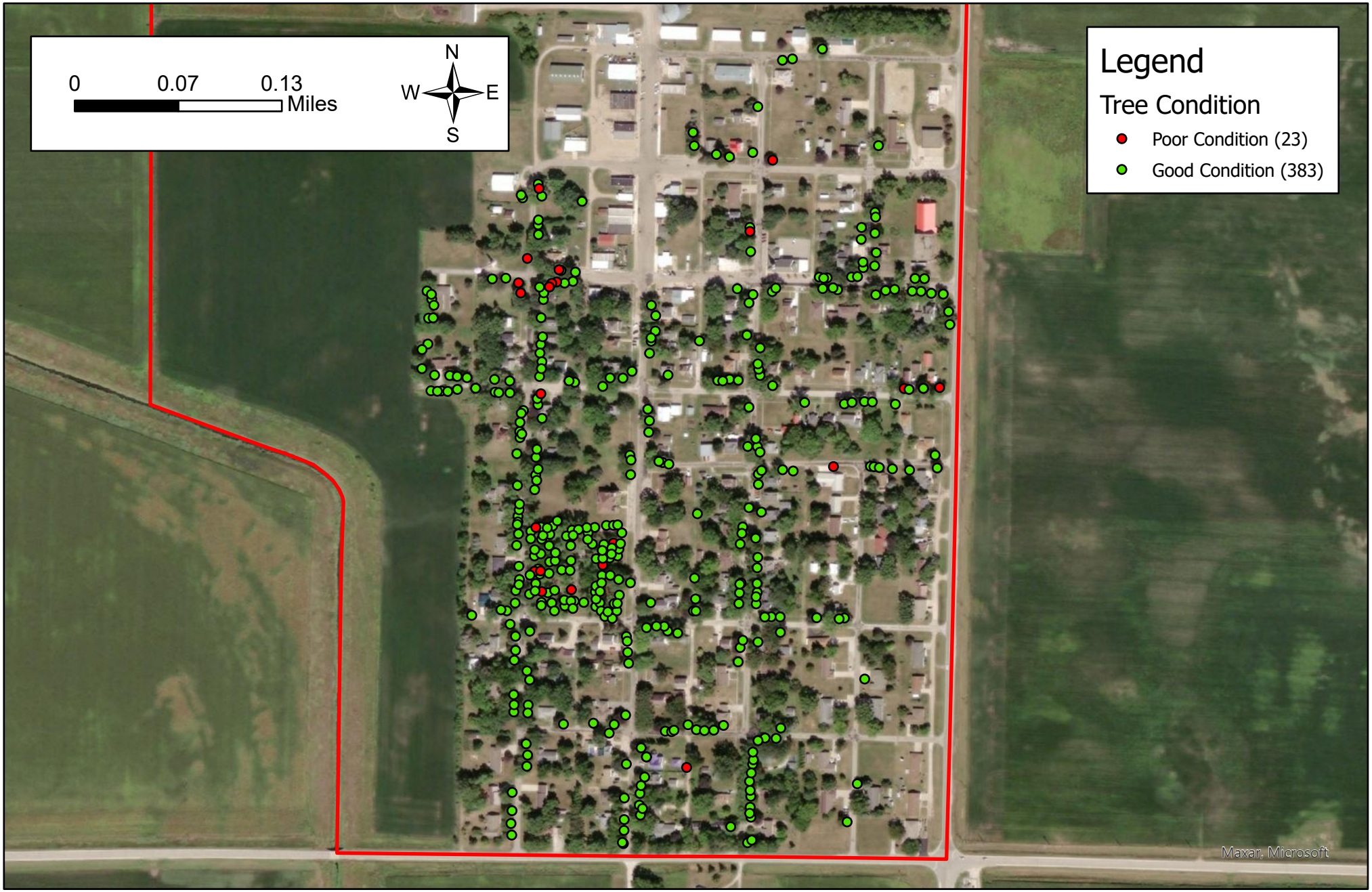


Created By: D. Genereux
Date: 1/26/2023
Software: ArcGIS Pro 3.0.3
File: 2022 IDNR Tree Inventory.aprx

2022 IDNR Tree Inventory

Figure 2 - EAB Symptoms
Fenton, Iowa

JEO CONSULTING GROUP INC



Created By: D. Genereux
Date: 1/26/2023
Software: ArcGIS Pro 3.0.3
File: 2022 IDNR Tree Inventory.aprx

2022 IDNR Tree Inventory

Figure 3 - Poor Condition Trees
Fenton, Iowa

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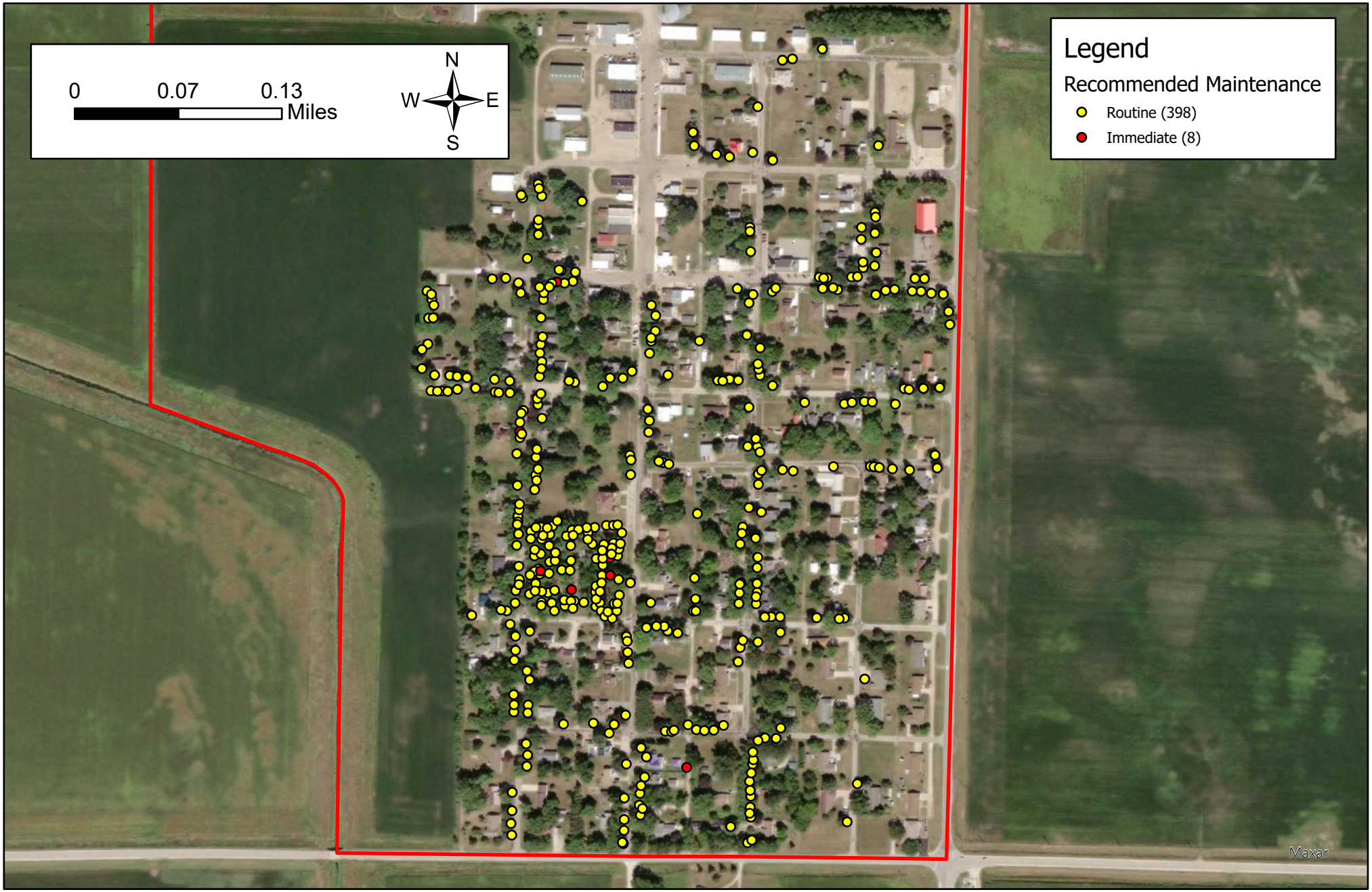

Created By: D. Genereux
Date: 1/26/2023
Software: ArcGIS Pro 3.0.3
File: 2022 IDNR Tree Inventory.aprx

2022 IDNR Tree Inventory

Figure 4 - Recommended Maintenance
Fenton, Iowa

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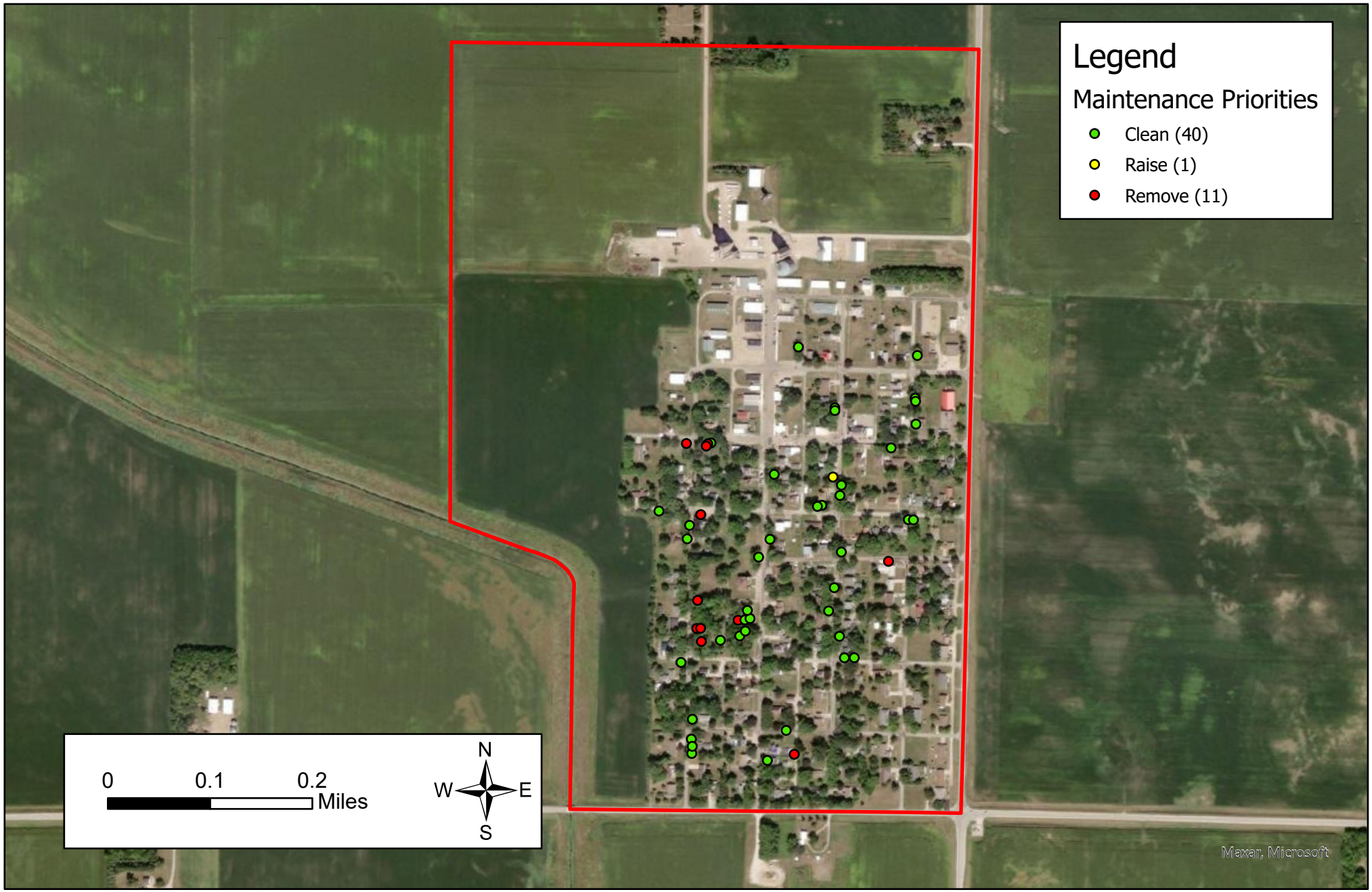

Created By: D. Genereux
Date: 1/26/2023
Software: ArcGIS Pro 3.0.3
File: 2022 IDNR Tree Inventory.aprx

2022 IDNR Tree Inventory

Figure 5 - Maintenance Priorities
Fenton, Iowa

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APPENDIX C: FENTON TREE ORDINANCES

151.01 DEFINITIONS.
For use in this chapter, the following terms are defined:

1. "Boulevard" means the area given between the proposed or existing sidewalk and curb on a public street.
2. "Director of Public Works" means the Director of Public Works of the City or a duly appointed representative.

151.02 PERMITS FOR PLANTING TREES IN BOULEVARDS.
A permit must be secured at the office of the Director of Public Works before planting any tree in any boulevard within the corporate limits of the City. Trees are to be purchased and planted by the property owner of the land abutting the boulevard, or by a person retained by the property owner. Varieties of trees approved are those trees of the hard wood variety, having good appearance, adaptability to the climate, being long lived and generally free from injurious insects and diseases. Following are listed the approved varieties: Crabapple Linden Japanese Lilac Elm (Disease Resistant) Serviceberry Cork Oak (Red, White) London Plane Hackberry Ironwood Hornbeam (Ord. 473 – Jun. 18 Supp.)

151.03 TREE TRIMMING.
All property owners shall trim boulevard trees to a ground clearance of eight (8) feet. The City or City's agent will perform trimming of boulevard trees as deemed necessary. Public utilities may do such trimming as necessary to protect their utilities.

151.04 REGULATIONS FOR PLANTING TREES IN BOULEVARDS.

1. Trees must be of an approved variety and of nursery stock with a straight trunk.
2. No trees shall be placed so as to cause a traffic hazard, in the opinion of the Director of Public Works.
3. Trees shall be planted at least twenty-five (25) feet apart.
4. Trees shall not be planted closer than 25 feet from future or existing curb returns at intersections.
5. Trees shall be planted at least five (5) feet from driveways, visible or identifiable underground utility or light poles.
6. Except where a special permit is obtained from the Director of Public Works, no tree shall be planted on any boulevard where the distance between the nearest edge of the sidewalk and curb is less than four (4) feet.
7. All trees shall be planted equidistant from the nearest edge of the proposed or existing sidewalk and curb, except when the Director of Public Works directs otherwise.
8. The Director of Public Works may assist in staking out the location of the tree planting.
9. Trees shall be planted at least ten (10) feet from fire hydrants.

151.05 REMOVAL OF BOULEVARD TREES.

1. The City will remove trees that are determined by the Director of Public Works to be diseased, dangerous or a public nuisance.
2. Ordinary removal by the City will leave the stump in the ground, cut off at about boulevard level, then ground to below the surface of the boulevard.
3. Removal of any boulevard tree is to be approved by the Director of Public Works before starting removal.
4. Upon approval to remove a nuisance tree from the boulevard, the property owner may hire a licensed tree surgeon to remove this tree if the property owner takes full responsibility for the hauling, chipping, stump removal, replacement of the tree, and replacement of the lawn. Any income from the sale of the tree would then go to the property owner instead of the City. (Ord. 452 – Jul. 14 Supp.)

151.06 REMOVAL OF TREES ON PRIVATE PROPERTY.

1. A property owner may remove a tree that is on personal property as long as the property owner does the actual work. Otherwise, the property owner must hire a licensed tree surgeon to remove the tree. (Ord. 452 – Jul. 14 Supp.)

151.07 ABUSE OR MUTILATION OF TREES.
No person shall willfully damage, injure, mar, deface or destroy any tree on any boulevard in the City. (Ord. 452 – Jul. 14 Supp.)

151.08 DISEASE CONTROL.
Any dead, diseased, or damaged tree or shrub that may harbor serious insect or disease pests or disease injurious to other trees is hereby declared to be a nuisance. (Ord. 452 – Jul. 14 Supp.)

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 515-725-8200.