

*\*Due to the COVID-19 concerns and social distancing recommendations, a virtual meeting is being offered. Participants wishing to speak on a topic should message the meeting moderator. All participants are asked to mute their individual computers at times when they are not speaking to minimize background noise. Join: <https://us02web.zoom.us/j/>*

**NOTICE OF A REGULAR MEETING  
BONDURANT PARKS AND RECREATION BOARD  
MAY 20, 2021**

**NOTICE IS HEREBY GIVEN** that a Regular Meeting of the City Council will be held at 6:00 PM on May 20, 2021, in the Bondurant City Center, 200 Second Street, Northeast, Bondurant, Polk County, Iowa. Said meeting is open and the public is encouraged to attend.

**AGENDA**

1. Roll Call
2. Call to Order and Declaring a Quorum
3. Abstentions declared
4. Approval of Minutes
  - a. Parks & Rec 21-2: February 18, 2021 Meeting Minutes
5. Perfecting and Approval of the Agenda
6. Guests requesting to address the Parks Board
  - a. Urban Forestry Coordinator Emma Hanigan to share the 2020 Bondurant Urban Forest Management Plan
7. Old Business
  - a. Approve and File **Joshua Rose Gaga Pit Eagle Scout Project** Project Beneficiaries Form and discuss project progress
  - b. RDG City Park final DRAFT Concept
8. New Business
  - a. Establish an official entrance from Chichaqua Valley Trail to West Soccer Complex
  - b. Wisteria Heights Basketball Court or Multi Purpose Court
9. Reports and Comments:
  - a. Event Reports
  - b. Central Park Concept
  - c. Gay Lea Wilson Underpass Progress
10. Adjournment

# City of Bondurant

## BONDURANT PARKS AND RECREATION BOARD MINUTES

### Meeting 21-2

**NOTICE IS HEREBY GIVEN** that a Regular Meeting of the Bondurant Parks and Recreation Board was held at 6:00 p.m., on Thursday, February 18, 2021 at Bondurant City Hall, 200 2<sup>nd</sup> St NE, Bondurant, Polk County, Iowa. Said meeting was open and the public is encouraged to attend.

1) Roll Call

Board Present: Board Chair Dennis Lyman  
Board Vice Chair Marian Collison  
Board Member Emily Karwoski  
Board Member Seth Williams  
Board Member Nic Robinson  
Board Member Joe Miller

City Officials: City Council Member Bob Pepper  
City Administrator Marketa Oliver  
Planning & Development Director Maggie Murray  
Communications and Events Nicole Van Houten

2) Call to Order and Declaring a Quorum

Board Chair Lyman called the meeting to order at 6:03 p.m. A quorum was present.

3) Abstentions Declared

Board Member Tessa Simpson

4) Perfecting and Approval of Agenda

Board motion to recommend Council approval by Collison, second by Robinson. Ayes: 6 Nays: 0 Motion Passed.

5) Approval of Minutes 21-01

Board motion to recommend Council approve Minutes 21-01 by Miller, second by Robinson. Ayes: 6 Nays: 0 Motion Passed.

6) Guests Requesting to Address the Parks Board

1. **Colt McDermott, Mike Bell, and Molly Hanson, RDG Planning & Design** – introduced themselves, shared their scope of service, and reviewed the proposed work schedule for the City Park Master Planning. March 2<sup>nd</sup> will be the kick-off meeting with the Planning Committee, March 18<sup>th</sup> will be a Planning Committee Workshop, April 6<sup>th</sup> two concepts will be presented to the Planning Committee, April 8<sup>th</sup> a Public Workshop will be hosted to present the two concepts, May 6<sup>th</sup> the Planning Committee will review the Master Plan, and June 3<sup>rd</sup> a Public Workshop will be hosted to present the Master Plan.

7) Old Business

1. Further discussion about the RDG Scope of Service and timeline.

8) New Business

1. Brickhouse Fitness Gym owner to donate land for community splashpad discussion.
  - Concerned about the scale of size and location because the entire community will want access and ability to use.
  - Concerns about accessibility.
  - Current gym parking is often full.
  - Donation to give our community what they are asking for, how can we turn it down? (rhetorical question)
  - **Is it possible to use the land in another way?**

A motion was made to table this discussion until we obtain further information from the landowner by Board Member Miller, second by Board Member Collison.

9) Reports and Comments:

1. Communication and Events Specialist: Take & Make Kits, more information to come about Ice Rinks.
2. Board Members - None
3. City Administrator - Hwy 65 Underpass Progress; Central Park Concept/Bondurant Regional Commercial Master Plan; Library addition on schedule. A potential location for a splashpad could be the new development Harvest Meadows.
4. City Council Liaison - None
5. Planning & Development Director - if the existing BrickHouse Fitness parking lot were to be utilized to gain access to the proposed splashpad, it would be at least a 400' walk to the area. Des Moines has 4 splashpools and 11 splashpads and their access to the splash feature is closer than 400'. In 2017 during the BrickHouse Fitness site plan review, 101 proposed parking spaces were included. The 2017 site plan did show a future overflow parking area but was not addressed as part of the site plan approval. V&Ks review and HKGI's review noted concerns over potential parking shortages. Given the concerns, not sure it would be allowed for BrickHouse Fitness to dedicate any portion of their existing parking lot area for splashpad patrons. The city would have to run its own water service to this splashpad area from the closest public water main which is 500' to the Paine Street SE water main. This would be a C-2 District, the setbacks would require a minimum 30' front yard setback (south property line) and a minimum 25' rear yard setback (west property line) from the splashpad and any associated structures. **What about public restrooms? What are the ADA access standards if this splashpad were to be installed?** A potential location for a splashpad could be the new development Harvest Meadows. The dedicated park land will be 6.94 acres, for comparison, City Park is about 1.7 acres. Another potential location for a splashpad could be the new development Sankey Summit Phase 2. The dedicated park land will be 4.03 acres. Or the City Park could be a potential location that already has public restrooms; on-street parking and/or the public parking lot north of City Park; and nearby access to existing water mains could make it easy to run water to splashpad; splashpad could be seen as an economic draw to the downtown businesses due to proximity to downtown.

10) Adjournment

A motion was made by Board Chair Lyman, second by Board Member Robinson to adjourn the meeting. Ayes: 6 Nays: 0 Motion Passed.

Board Member Vice Chair Lyman adjourned the meeting at 7:22 p.m.

ATTEST:

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Nicole Van Houten  
Communications and Events

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Dennis Lyman  
Board Chair



**BUSINESS OF THE PARKS & RECREATION BOARD  
BONDURANT, IOWA  
AGENDA STATEMENT**

Item No. 6.a.  
For Meeting of 5/20/2021  
**Presentation**

**TITLE:** Urban Forestry Coordinator Emma Hanigan to share the 2020 Bondurant Urban Forest Management Plan

**CONTACT PERSON:**

Nicole Van Houten, Communication & Event Specialist

**BRIEF HISTORY & ANALYSIS:** Urban Forestry Coordinator Emma Hanigan to share the 2020 Bondurant Urban Forest Management Plan

**COMMISSION REVIEW/RECOMMENDATION:**

**FUNDING SOURCE:**

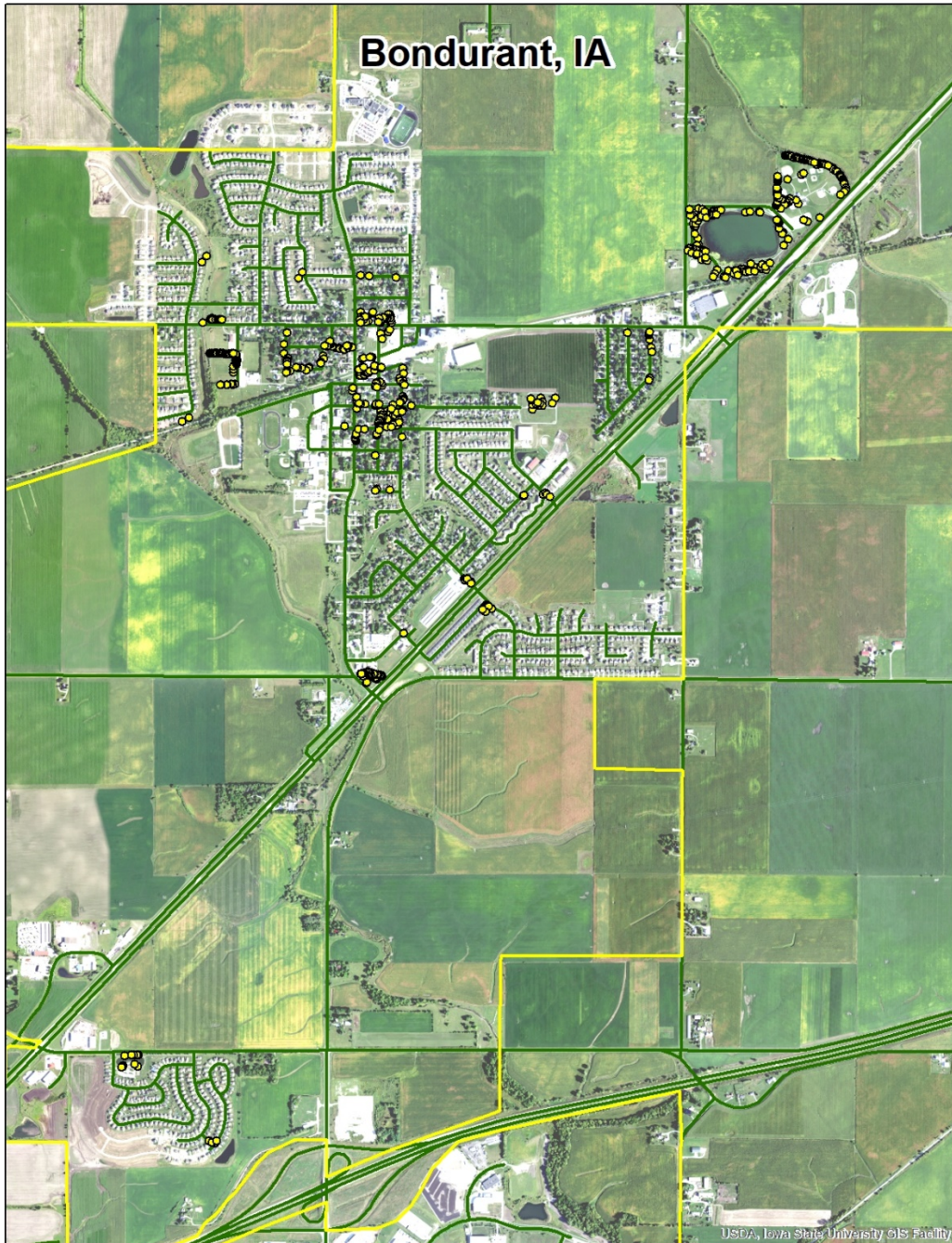
**STAFF RECOMMENDATION:**

**APPROVED FOR SUBMITTAL:**

**ATTACHMENTS:**

1. Bondurant Urban Forest Management Plan '20
2. Directions for Using ArcGIS Tree Inventory Viewer

# Bondurant, IA



2020 Urban Forest Management Plan  
Prepared by Vince Grube  
Iowa Department of Natural Resources



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# Executive Summary

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## Overview

This plan was developed to assist the City of Bondurant with managing its urban forest, including budgeting and future planning. Trees can provide a multitude of benefits to the community, and sound management allows a community to best 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 9% of Bondurant'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 2020, 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 541 trees inventoried.

- Bondurant's trees provide \$52,302 of benefits annually, an average of \$96.67 a tree
- There are over 52 species of trees from 29 different genera.
- The top three genera are: Maple 21%, Apple 11%, and Catalpa 9%
- 18% of trees are in need of some type of management
- 45 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 45 trees needing removal, 7 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\\*](#)
- 28 of the 49 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 with a visual survey yearly

# Introduction

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This plan was developed to assist Bondurant 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 or treatment and replacement planting. With proper planning and management of the current canopy in Bondurant, these costs can be extended over years and public safety issues from dead and dying ash trees mitigated.

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

## Inventory

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In 2020, a tree inventory was conducted that included 100% of the city owned trees on both streets and 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

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The data collected for the 541 city trees was entered into the USDA Forest service program Street Tree Resource Analysis Tool for Urban forestry Management as part of the i-Tree suite. The following are results from the i-Tree STREETS analysis.

## Annual Benefits

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### **Annual Energy Benefits**

Trees conserve energy by shading buildings and blocking winds. Bondurant's trees reduce energy related costs by approximately \$14,747 annually (Appendix A, Table 1). These savings are both in Electricity (70.5 MWh) and in Natural Gas (9,588 Therms).

### **Annual Stormwater Benefits**

Bondurant's trees intercept about 664,983 gallons of rainfall or snow melt a year (Appendix A, Table 2). This interception provides \$18,021 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 Bondurant, it is estimated that trees remove 853.1 lbs of air pollution (ozone (O<sub>3</sub>), particulate matter less than 10 microns (PM<sub>10</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), and sulfur dioxide (SO<sub>2</sub>)) per year with a net value of \$2,375 (Appendix A, Table 3).

### **Annual Carbon Benefits**

Carbon sequestration and storage reduce the amount of carbon in the atmosphere, mitigating climate change. In Bondurant, trees sequester about 148,340 lbs of carbon a year with an associated value of \$1,113 (Appendix A, Table 5). In addition, the trees store 2,028,994 lbs of carbon, with a yearly benefit of \$15,217 (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. Bondurant receives \$15,239 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, Bondurant's trees provide \$52,302 of benefits annually. Benefits of individual trees vary based on size, species, health and location, but on average each of the 541 trees in Bondurant provide approximately \$96.68 annually (Appendix A, Table 7).

# Forest Structure

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## Species Distribution

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

| Genus                     | Count | Percent |
|---------------------------|-------|---------|
| Maple                     | 111   | 21%     |
| Apple                     | 61    | 11%     |
| Catalpa                   | 51    | 9%      |
| Ash                       | 49    | 9%      |
| Oak                       | 38    | 7%      |
| Spruce                    | 35    | 6%      |
| Broadleaf Deciduous S/M/L | 27    | 5%      |
| Pine                      | 27    | 5%      |
| Elm                       | 19    | 4%      |
| Cedar                     | 18    | 3%      |
| Pear                      | 17    | 3%      |
| Sycamore                  | 13    | 2%      |
| Cottonwood                | 13    | 2%      |
| Hackberry                 | 9     | 2%      |
| Birch                     | 8     | 1%      |
| Conifer Evergreen S/M/L   | 7     | 1%      |
| Walnut                    | 6     | 1%      |
| Locust                    | 6     | 1%      |
| Basswood                  | 6     | 1%      |
| Willow                    | 4     | 1%      |
| Broadleaf Evergreen S/M/L | 3     | 1%      |
| Mulberry                  | 3     | 1%      |
| Alder                     | 2     | 0%      |
| Redbud                    | 2     | 0%      |
| Kentucky Coffeetree       | 2     | 0%      |
| Cherry/Plum               | 1     | 0%      |
| Lilac                     | 1     | 0%      |
| Aspen                     | 1     | 0%      |
| Sumac                     | 1     | 0%      |

## Age Class

Most of Bondurant's trees (43%) are between 6 and 18 inches in diameter at 4.5 ft (Appendix A, Figure 2). For age, it is preferred that the highest amounts of trees are in the smallest size category (a downward slope) to prepare for natural mortality and to maintain canopy cover. Bondurant's size curve is on the smaller side, indicating a younger than average stand.

## Condition: Wood and Foliage

Both wood condition and leaf condition are good indicators of the overall health of the urban forest. The foliage condition results for Bondurant indicate that 72% of the trees are in good health, with only 11% of the foliage in poor health, dead or dying (Appendix A, Figure 3 & Appendix B, Figure 3). Similarly, 46% of Bondurant's trees are in good health for wood condition (appendix A, Figure 4 &

Appendix B, Figure 3). Wood condition that is in poor health, dead or dying is about 14% of the population. This 14% 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).

|                    |    |     |
|--------------------|----|-----|
| Crown Cleaning     | 36 | 7%  |
| Crown Raising      | 6  | 1%  |
| Tree Staking       | 1  | 2%  |
| Tree Removal       | 45 | 8%  |
| Crown Reduction    | 2  | <1% |
| Treat Pest/Disease | 7  | 1%  |

### Canopy Cover

The total canopy with both private and public trees is 4%, 227.64 acres. The canopy cover included in the Bondurant inventory includes approximately 7.29 acres (Appendix A, Figure 4). The City's Canopy goal is to increase canopy by 3%, in 30 years. To achieve this goal, it is estimated that 392 trees need to be planted annually on public and private lands.

### Land Use and Location

The majority of Bondurant's city and park trees are in planting strips in single family residential neighborhoods (Appendix A, Figure 6 & Appendix A, Figure 7). The following describes the land use and locations for the street and park trees.

#### Land Use

|                           |     |
|---------------------------|-----|
| Single family residential | 21% |
| Park/vacant/other         | 74% |
| Small commercial          | 3%  |
| Multifamily residential   | 2%  |

#### Location

|                |     |
|----------------|-----|
| Planting strip | 25% |
| Front yard     | 75% |

## Recommendations

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### 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 18 inches 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

Bondurant has 7 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). It is recommended to start with the large diameter critical concern trees first. There are 2 trees over 24 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 immediate maintenance. There are a total of 18 trees with these needs.

#### Poor tree species

After the removal of the critical concern trees, ash trees in poor health should be assessed for removal (Appendix B, Figure 3 & Appendix B, Figure 4). Of the 45 removals, 10 are ash trees. There are a total of 49 ash trees, and 28 of those have at least 2 signs and symptoms that have been associated with EAB. In addition, there are 12 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 is the removal of lower branches that are 2 inches in diameter or larger in the case of providing clearance for pedestrians or vehicles. Crown reduction is removing individual limbs from structures or utility wires. It is recommended that all trees be pruned on a routine schedule every five to seven years. Please refer to the six year maintenance plan for further information.

#### **Planting**

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

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 (21%) (Appendix A, Figure 1). Maples should not be planted until this percentage can be lowered. At this time the ordinance does not allow planting in the right-of-way. The city should consider investing in street tree infrastructure. Trees in the city rights-of-way are an important tool to reduce stormwater infrastructure, lengthening the life of street pavement, slowing traffic, and much more. A city implemented program allows a more strategic and equitable access to these benefits.

#### **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. Please refer to the example budget for the proposed maintenance schedule.

## Emerald Ash Borer Plan

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### Ash Tree Removal

Tree removal will be prioritized with dead, dying, hazardous trees to be removed first (Appendix B, Figure 4). Next will be all ash in poor condition and displaying signs and symptoms of EAB (Appendix B, Figure 2 & Appendix B, Figure 3). *\*City ownership of the tree recommended for removal should be verified prior to any removal\**

### Treatment of Ash Trees

Chemical treatment can be effective 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](http://www.aphis.usda.gov/plant_health/plant_pest_info/emerald_ash_b/regulatory.shtml). Wood waste can be disposed of as you normally would if your county is not part of a quarantine.

## **Canopy Replacement**

As budget permits, all removed trees will be replaced. We encourage the ordinance restrictions be reviewed to provide equitable tree planting.

## **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 if preventative treatments are not being used. City Code 151.05 states "If it is determined with reasonable certainty that any such condition exists on private property and that 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 fourteen (14) days of receipt of notice, the Council may cause the condition to be corrected and the cost assessed against the property."

# **Example Budget and Maintenance Schedule**

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## **Current Budget**

Total \$78,000 over 6 years (**\$13,000/year**) this budget would include removal of all ash and other species marked for removal over the next 6 years. There are 7 ash trees that might be candidates for treatment and example of those changes are under the budget.

## **FY 2021 Budget**

Removal: \$10,500 (15)

Planting: \$1,800 (18)

Young Tree Watering & Maintenance: \$700

- Need changes or additional funds if treating healthy ash (7 good condition trees)

## **FY 2022 Budget**

Removal: \$9,100 (13)

Planting: \$1,600 (16)

Routine trimming: \$1,800

Young Tree Watering & Maintenance: \$500

## **FY 2023 Budget**

Removal: \$10,500 (15)  
Planting: \$1,800 (18)  
Young Tree Watering & Maintenance: \$700  
- Need changes or additional funds if treating healthy ash (7 good condition trees)

#### **FY 2024 Budget**

Removal: \$9,100 (13)  
Planting: \$1,600 (16)  
Routine trimming: \$1,800  
Young Tree Watering & Maintenance: \$500

#### **FY 2025 Budget**

Removal: \$10,500 (15)  
Planting: \$1,800 (18)  
Young Tree Watering & Maintenance: \$700  
- Need changes or additional funds if treating healthy ash (7 good condition trees)

#### **FY 2026 Budget**

Removal: \$9,100 (13)  
Planting: \$1,600 (16)  
Routine trimming: \$1,800  
Young Tree Watering & Maintenance: \$500

Another option being considered by many communities is treating a number of 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 removed 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, there are only 7 treatable trees, it would cost approximately \$2,100 for treatment every 2 years. The cost of removal of those 7 trees would be a one-time cost of \$4,900.

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# Appendix A: i-Tree Data

**Table 1: Annual Energy Benefits**

**Bondurant**

## Annual Energy Benefits of Public Trees

8/27/2020

| Species                    | Total Electricity<br>(MWh) | Electricity<br>(\$) | Total Natural<br>Gas (Therms) | Natural<br>Gas (\$) | Total<br>(\$) | Standard<br>Error | % of Total<br>Trees | % of<br>Total \$ | Avg.<br>\$/tree |
|----------------------------|----------------------------|---------------------|-------------------------------|---------------------|---------------|-------------------|---------------------|------------------|-----------------|
| Apple                      | 6.0                        | 458                 | 903.0                         | 885                 | 1,343         | (N/A)             | 11.3                | 9.1              | 22.02           |
| Catalpa                    | 4.7                        | 355                 | 646.4                         | 633                 | 988           | (N/A)             | 9.4                 | 6.7              | 19.38           |
| Green ash                  | 8.0                        | 608                 | 1,059.9                       | 1,039               | 1,646         | (N/A)             | 7.4                 | 11.2             | 41.16           |
| Silver maple               | 9.6                        | 729                 | 1,265.4                       | 1,240               | 1,969         | (N/A)             | 6.3                 | 13.4             | 57.92           |
| Scotch pine                | 2.8                        | 216                 | 321.9                         | 315                 | 531           | (N/A)             | 4.1                 | 3.6              | 24.14           |
| Swamp white oak            | 0.8                        | 61                  | 129.4                         | 127                 | 188           | (N/A)             | 3.9                 | 1.3              | 8.93            |
| Spruce                     | 1.1                        | 86                  | 163.5                         | 160                 | 246           | (N/A)             | 3.9                 | 1.7              | 11.74           |
| Sugar maple                | 3.2                        | 240                 | 416.1                         | 408                 | 648           | (N/A)             | 3.7                 | 4.4              | 32.40           |
| Pear                       | 2.4                        | 180                 | 343.4                         | 337                 | 517           | (N/A)             | 3.1                 | 3.5              | 30.39           |
| Elm                        | 1.3                        | 96                  | 175.1                         | 172                 | 268           | (N/A)             | 2.8                 | 1.8              | 17.87           |
| Northern white cedar       | 1.1                        | 84                  | 148.7                         | 146                 | 230           | (N/A)             | 2.8                 | 1.6              | 15.31           |
| Red maple                  | 1.1                        | 87                  | 161.9                         | 159                 | 246           | (N/A)             | 2.8                 | 1.7              | 16.37           |
| American sycamore          | 3.0                        | 225                 | 359.9                         | 353                 | 578           | (N/A)             | 2.4                 | 3.9              | 44.43           |
| Norway maple               | 2.6                        | 199                 | 363.1                         | 356                 | 555           | (N/A)             | 2.4                 | 3.8              | 42.66           |
| Cottonwood                 | 3.7                        | 280                 | 490.3                         | 481                 | 761           | (N/A)             | 2.4                 | 5.2              | 58.52           |
| Blue spruce                | 0.4                        | 28                  | 55.6                          | 55                  | 82            | (N/A)             | 2.2                 | 0.6              | 6.85            |
| Amur maple                 | 0.4                        | 32                  | 69.1                          | 68                  | 99            | (N/A)             | 2.0                 | 0.7              | 9.03            |
| Broadleaf Deciduous Large  | 1.1                        | 81                  | 145.9                         | 143                 | 224           | (N/A)             | 1.8                 | 1.5              | 22.41           |
| White ash                  | 1.8                        | 136                 | 201.7                         | 198                 | 333           | (N/A)             | 1.7                 | 2.3              | 37.05           |
| Broadleaf Deciduous Medium | 0.4                        | 34                  | 71.5                          | 70                  | 104           | (N/A)             | 1.7                 | 0.7              | 11.52           |
| Northern hackberry         | 3.0                        | 231                 | 414.5                         | 406                 | 637           | (N/A)             | 1.7                 | 4.3              | 70.79           |
| Broadleaf Deciduous Small  | 0.0                        | 3                   | 8.2                           | 8                   | 11            | (N/A)             | 1.5                 | 0.1              | 1.43            |
| River birch                | 0.4                        | 28                  | 60.0                          | 59                  | 87            | (N/A)             | 1.5                 | 0.6              | 10.89           |
| Maple                      | 0.3                        | 19                  | 37.3                          | 37                  | 56            | (N/A)             | 1.5                 | 0.4              | 7.00            |
| Conifer Evergreen Large    | 0.5                        | 35                  | 71.6                          | 70                  | 106           | (N/A)             | 1.3                 | 0.7              | 15.09           |
| Littleleaf linden          | 0.8                        | 62                  | 121.8                         | 119                 | 181           | (N/A)             | 1.1                 | 1.2              | 30.15           |
| Honeylocust                | 1.1                        | 83                  | 147.7                         | 145                 | 227           | (N/A)             | 1.1                 | 1.5              | 37.89           |
| Black walnut               | 1.3                        | 102                 | 189.7                         | 186                 | 288           | (N/A)             | 1.1                 | 2.0              | 47.94           |
| Northern red oak           | 0.2                        | 15                  | 28.3                          | 28                  | 43            | (N/A)             | 1.1                 | 0.3              | 7.15            |
| Black maple                | 1.0                        | 79                  | 142.9                         | 140                 | 219           | (N/A)             | 0.9                 | 1.5              | 43.89           |
| Bur oak                    | 0.8                        | 58                  | 88.4                          | 87                  | 144           | (N/A)             | 0.9                 | 1.0              | 28.86           |
| Eastern white pine         | 0.5                        | 41                  | 62.5                          | 61                  | 102           | (N/A)             | 0.9                 | 0.7              | 20.43           |
| Willow                     | 1.0                        | 77                  | 151.3                         | 148                 | 225           | (N/A)             | 0.7                 | 1.5              | 56.21           |
| Boxelder                   | 0.7                        | 53                  | 86.6                          | 85                  | 138           | (N/A)             | 0.7                 | 0.9              | 34.58           |
| Mulberry                   | 0.5                        | 36                  | 76.1                          | 75                  | 110           | (N/A)             | 0.6                 | 0.7              | 36.82           |
| Siberian elm               | 0.4                        | 32                  | 57.2                          | 56                  | 88            | (N/A)             | 0.6                 | 0.6              | 29.44           |
| Northern pin oak           | 1.0                        | 73                  | 142.2                         | 139                 | 213           | (N/A)             | 0.6                 | 1.4              | 70.84           |
| Eastern red cedar          | 0.3                        | 25                  | 49.3                          | 48                  | 74            | (N/A)             | 0.6                 | 0.5              | 24.57           |
| Eastern redbud             | 0.1                        | 6                   | 13.5                          | 13                  | 19            | (N/A)             | 0.4                 | 0.1              | 9.53            |
| Kentucky coffeetree        | 0.1                        | 7                   | 14.2                          | 14                  | 21            | (N/A)             | 0.4                 | 0.1              | 10.65           |
| Broadleaf Evergreen Large  | 0.0                        | 1                   | 3.2                           | 3                   | 5             | (N/A)             | 0.4                 | 0.0              | 2.26            |
| Black spruce               | 0.2                        | 12                  | 20.0                          | 20                  | 31            | (N/A)             | 0.4                 | 0.2              | 15.73           |
| Alder                      | 0.0                        | 3                   | 7.6                           | 7                   | 11            | (N/A)             | 0.4                 | 0.1              | 5.40            |
| White oak                  | 0.1                        | 9                   | 17.4                          | 17                  | 26            | (N/A)             | 0.4                 | 0.2              | 13.23           |
| Black cherry               | 0.1                        | 6                   | 12.8                          | 13                  | 18            | (N/A)             | 0.2                 | 0.1              | 18.19           |
| Sumac                      | 0.0                        | 0                   | 0.6                           | 1                   | 1             | (N/A)             | 0.2                 | 0.0              | 0.87            |
| Chinese elm                | 0.1                        | 7                   | 13.7                          | 13                  | 21            | (N/A)             | 0.2                 | 0.1              | 20.64           |
| Quaking aspen              | 0.0                        | 0                   | 0.5                           | 0                   | 1             | (N/A)             | 0.2                 | 0.0              | 0.66            |
| Pin oak                    | 0.4                        | 29                  | 51.8                          | 51                  | 80            | (N/A)             | 0.2                 | 0.5              | 80.25           |
| Broadleaf Evergreen Small  | 0.0                        | 2                   | 4.0                           | 4                   | 6             | (N/A)             | 0.2                 | 0.0              | 5.61            |
| Japanese tree lilac        | 0.0                        | 0                   | 0.6                           | 1                   | 1             | (N/A)             | 0.2                 | 0.0              | 0.87            |
| Japanese maple             | 0.0                        | 0                   | 0.6                           | 1                   | 1             | (N/A)             | 0.2                 | 0.0              | 0.87            |
| Total                      | 70.5                       | 5,351               | 9,588.0                       | 9,396               | 14,747        | (N/A)             | 100.0               | 100.0            | 27.26           |

**Table 2: Annual Stormwater Benefits**

**Bondurant**

**Annual Stormwater Benefits of Public Trees**

8/27/2020

| Species                    | Total rainfall interception (Gal) | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|----------------------------|-----------------------------------|------------|----------------|------------------|---------------|--------------|
| Apple                      | 24,807                            | 672        | (N/A)          | 11.3             | 3.7           | 11.02        |
| Catalpa                    | 29,762                            | 807        | (N/A)          | 9.4              | 4.5           | 15.81        |
| Green ash                  | 72,600                            | 1,967      | (N/A)          | 7.4              | 10.9          | 49.19        |
| Silver maple               | 146,463                           | 3,969      | (N/A)          | 6.3              | 22.0          | 116.74       |
| Scotch pine                | 33,850                            | 917        | (N/A)          | 4.1              | 5.1           | 41.70        |
| Swamp white oak            | 3,906                             | 106        | (N/A)          | 3.9              | 0.6           | 5.04         |
| Spruce                     | 19,926                            | 540        | (N/A)          | 3.9              | 3.0           | 25.71        |
| Sugar maple                | 25,850                            | 701        | (N/A)          | 3.7              | 3.9           | 35.03        |
| Pear                       | 9,024                             | 245        | (N/A)          | 3.1              | 1.4           | 14.39        |
| Elm                        | 18,588                            | 504        | (N/A)          | 2.8              | 2.8           | 33.58        |
| Northern white cedar       | 26,431                            | 716        | (N/A)          | 2.8              | 4.0           | 47.75        |
| Red maple                  | 6,203                             | 168        | (N/A)          | 2.8              | 0.9           | 11.21        |
| American sycamore          | 20,445                            | 554        | (N/A)          | 2.4              | 3.1           | 42.62        |
| Norway maple               | 18,236                            | 494        | (N/A)          | 2.4              | 2.7           | 38.02        |
| Cottonwood                 | 38,702                            | 1,049      | (N/A)          | 2.4              | 5.8           | 80.68        |
| Blue spruce                | 3,773                             | 102        | (N/A)          | 2.2              | 0.6           | 8.52         |
| Amur maple                 | 1,873                             | 51         | (N/A)          | 2.0              | 0.3           | 4.61         |
| Broadleaf Deciduous Large  | 8,567                             | 232        | (N/A)          | 1.8              | 1.3           | 23.22        |
| White ash                  | 15,636                            | 424        | (N/A)          | 1.7              | 2.4           | 47.08        |
| Broadleaf Deciduous Medium | 2,283                             | 62         | (N/A)          | 1.7              | 0.3           | 6.87         |
| Northern hackberry         | 31,036                            | 841        | (N/A)          | 1.7              | 4.7           | 93.45        |
| Broadleaf Deciduous Small  | 121                               | 3          | (N/A)          | 1.5              | 0.0           | 0.41         |
| River birch                | 1,847                             | 50         | (N/A)          | 1.5              | 0.3           | 6.26         |
| Maple                      | 973                               | 26         | (N/A)          | 1.5              | 0.1           | 3.29         |
| Conifer Evergreen Large    | 5,112                             | 139        | (N/A)          | 1.3              | 0.8           | 19.79        |
| Littleleaf linden          | 7,747                             | 210        | (N/A)          | 1.1              | 1.2           | 34.99        |
| Honeylocust                | 5,623                             | 152        | (N/A)          | 1.1              | 0.8           | 25.40        |
| Black walnut               | 16,157                            | 438        | (N/A)          | 1.1              | 2.4           | 72.97        |
| Northern red oak           | 857                               | 23         | (N/A)          | 1.1              | 0.1           | 3.87         |
| Black maple                | 8,588                             | 233        | (N/A)          | 0.9              | 1.3           | 46.55        |
| Bur oak                    | 4,740                             | 128        | (N/A)          | 0.9              | 0.7           | 25.69        |
| Eastern white pine         | 6,367                             | 173        | (N/A)          | 0.9              | 1.0           | 34.51        |
| Willow                     | 10,594                            | 287        | (N/A)          | 0.7              | 1.6           | 71.77        |
| Boxelder                   | 5,088                             | 138        | (N/A)          | 0.7              | 0.8           | 34.47        |
| Mulberry                   | 2,613                             | 71         | (N/A)          | 0.6              | 0.4           | 23.60        |
| Siberian elm               | 4,778                             | 129        | (N/A)          | 0.6              | 0.7           | 43.16        |
| Northern pin oak           | 11,293                            | 306        | (N/A)          | 0.6              | 1.7           | 102.01       |
| Eastern red cedar          | 4,904                             | 133        | (N/A)          | 0.6              | 0.7           | 44.30        |
| Eastern redbud             | 272                               | 7          | (N/A)          | 0.4              | 0.0           | 3.68         |
| Kentucky coffeetree        | 626                               | 17         | (N/A)          | 0.4              | 0.1           | 8.48         |
| Broadleaf Evergreen Large  | 76                                | 2          | (N/A)          | 0.4              | 0.0           | 1.02         |
| Black spruce               | 1,801                             | 49         | (N/A)          | 0.4              | 0.3           | 24.40        |
| Alder                      | 137                               | 4          | (N/A)          | 0.4              | 0.0           | 1.86         |
| White oak                  | 779                               | 21         | (N/A)          | 0.4              | 0.1           | 10.56        |
| Black cherry               | 264                               | 7          | (N/A)          | 0.2              | 0.0           | 7.17         |
| Sumac                      | 7                                 | 0          | (N/A)          | 0.2              | 0.0           | 0.20         |
| Chinese elm                | 608                               | 16         | (N/A)          | 0.2              | 0.1           | 16.47        |
| Quaking aspen              | 18                                | 0          | (N/A)          | 0.2              | 0.0           | 0.48         |
| Pin oak                    | 4,943                             | 134        | (N/A)          | 0.2              | 0.7           | 133.95       |
| Broadleaf Evergreen Small  | 78                                | 2          | (N/A)          | 0.2              | 0.0           | 2.10         |
| Japanese tree lilac        | 7                                 | 0          | (N/A)          | 0.2              | 0.0           | 0.20         |
| Japanese maple             | 7                                 | 0          | (N/A)          | 0.2              | 0.0           | 0.20         |
| Citywide total             | 664,983                           | 18,021     | (N/A)          | 100.0            | 100.0         | 33.31        |

### Table 3: Annual Air Quality Benefits

#### Bondurant

#### Annual Air Quality Benefits of Public Trees

8/27/2020

| Species                    | Deposition (lb) |                 |                  |                 | Total<br>Depos.<br>(\$) | Avoided (lb)    |                  |      |                 | Total<br>Avoided<br>(\$) | BVOC<br>Emissions<br>(lb) | BVOC<br>Emissions<br>(\$) | Total<br>(lb) | Total<br>Standard<br>(\$)<br>Error | % of Total<br>Trees | Avg.<br>\$/tree |
|----------------------------|-----------------|-----------------|------------------|-----------------|-------------------------|-----------------|------------------|------|-----------------|--------------------------|---------------------------|---------------------------|---------------|------------------------------------|---------------------|-----------------|
|                            | O <sub>3</sub>  | NO <sub>2</sub> | PM <sub>10</sub> | SO <sub>2</sub> |                         | NO <sub>2</sub> | PM <sub>10</sub> | VOC  | SO <sub>2</sub> |                          |                           |                           |               |                                    |                     |                 |
| Apple                      | 7.4             | 1.2             | 3.5              | 0.3             | 39                      | 29.5            | 4.2              | 4.0  | 27.4            | 182                      | 0.0                       | 0                         | 77.5          | 221 (N/A)                          | 11.3                | 3.63            |
| Catalpa                    | 1.4             | 0.2             | 1.1              | 0.1             | 8                       | 22.3            | 3.3              | 3.1  | 21.2            | 139                      | 0.0                       | 0                         | 52.6          | 148 (N/A)                          | 9.4                 | 2.89            |
| Green ash                  | 7.6             | 1.2             | 3.9              | 0.3             | 41                      | 37.9            | 5.5              | 5.3  | 36.3            | 237                      | 0.0                       | 0                         | 98.0          | 278 (N/A)                          | 7.4                 | 6.95            |
| Silver maple               | 25.4            | 4.3             | 12.4             | 1.1             | 137                     | 45.3            | 6.6              | 6.3  | 43.4            | 283                      | -12.8                     | -48                       | 132.1         | 372 (N/A)                          | 6.3                 | 10.94           |
| Scotch pine                | 3.7             | 0.7             | 3.2              | 0.5             | 25                      | 12.9            | 1.9              | 1.8  | 12.9            | 82                       | -12.0                     | -45                       | 25.7          | 62 (N/A)                           | 4.1                 | 2.82            |
| Swamp white oak            | 0.3             | 0.0             | 0.2              | 0.0             | 2                       | 4.0             | 0.6              | 0.5  | 3.6             | 25                       | -0.1                      | 0                         | 9.2           | 26 (N/A)                           | 3.9                 | 1.23            |
| Spruce                     | 2.1             | 0.4             | 1.8              | 0.3             | 14                      | 5.5             | 0.8              | 0.8  | 5.1             | 34                       | -9.9                      | -37                       | 6.9           | 11 (N/A)                           | 3.9                 | 0.52            |
| Sugar maple                | 2.9             | 0.5             | 1.6              | 0.1             | 16                      | 14.9            | 2.2              | 2.1  | 14.3            | 93                       | -2.4                      | -9                        | 36.2          | 101 (N/A)                          | 3.7                 | 5.03            |
| Pear                       | 2.6             | 0.4             | 1.3              | 0.1             | 14                      | 11.5            | 1.7              | 1.6  | 10.8            | 71                       | 0.0                       | 0                         | 29.9          | 85 (N/A)                           | 3.1                 | 5.01            |
| Elm                        | 2.7             | 0.4             | 1.2              | 0.1             | 14                      | 6.1             | 0.9              | 0.8  | 5.8             | 38                       | 0.0                       | 0                         | 18.1          | 52 (N/A)                           | 2.8                 | 3.48            |
| Northern white cedar       | 3.2             | 0.6             | 2.5              | 0.4             | 21                      | 5.2             | 0.8              | 0.7  | 5.0             | 33                       | -15.9                     | -59                       | 2.6           | -6 (N/A)                           | 2.8                 | -0.40           |
| Red maple                  | 0.8             | 0.1             | 0.5              | 0.0             | 5                       | 5.5             | 0.8              | 0.8  | 5.2             | 34                       | -0.3                      | -1                        | 13.4          | 38 (N/A)                           | 2.8                 | 2.50            |
| American sycamore          | 1.6             | 0.3             | 1.0              | 0.1             | 9                       | 13.7            | 2.0              | 1.9  | 13.4            | 87                       | 0.0                       | 0                         | 34.1          | 96 (N/A)                           | 2.4                 | 7.38            |
| Norway maple               | 3.0             | 0.5             | 1.6              | 0.1             | 17                      | 12.6            | 1.8              | 1.7  | 11.9            | 78                       | -0.8                      | -3                        | 32.5          | 92 (N/A)                           | 2.4                 | 7.07            |
| Cottonwood                 | 4.7             | 0.7             | 2.3              | 0.2             | 25                      | 17.5            | 2.6              | 2.4  | 16.7            | 109                      | 0.0                       | 0                         | 47.1          | 134 (N/A)                          | 2.4                 | 10.33           |
| Blue spruce                | 0.3             | 0.1             | 0.3              | 0.0             | 2                       | 1.8             | 0.3              | 0.2  | 1.7             | 11                       | -1.2                      | -4                        | 3.6           | 9 (N/A)                            | 2.2                 | 0.76            |
| Amur maple                 | 0.5             | 0.1             | 0.2              | 0.0             | 3                       | 2.1             | 0.3              | 0.3  | 1.9             | 13                       | 0.0                       | 0                         | 5.4           | 15 (N/A)                           | 2.0                 | 1.41            |
| Broadleaf Deciduous Large  | 0.7             | 0.1             | 0.4              | 0.0             | 4                       | 5.1             | 0.7              | 0.7  | 4.8             | 32                       | 0.0                       | 0                         | 12.6          | 36 (N/A)                           | 1.8                 | 3.57            |
| White ash                  | 2.4             | 0.4             | 1.2              | 0.1             | 13                      | 8.1             | 1.2              | 1.2  | 8.1             | 52                       | 0.0                       | 0                         | 22.7          | 65 (N/A)                           | 1.7                 | 7.17            |
| Broadleaf Deciduous Medium | 0.2             | 0.0             | 0.1              | 0.0             | 1                       | 2.2             | 0.3              | 0.3  | 2.0             | 14                       | -0.1                      | 0                         | 5.1           | 14 (N/A)                           | 1.7                 | 1.61            |
| Northern hackberry         | 5.2             | 0.9             | 2.6              | 0.2             | 28                      | 14.5            | 2.1              | 2.0  | 13.8            | 91                       | 0.0                       | 0                         | 41.3          | 119 (N/A)                          | 1.7                 | 13.17           |
| Broadleaf Deciduous Small  | 0.0             | 0.0             | 0.0              | 0.0             | 0                       | 0.2             | 0.0              | 0.0  | 0.2             | 1                        | 0.0                       | 0                         | 0.5           | 1 (N/A)                            | 1.5                 | 0.18            |
| River birch                | 0.1             | 0.0             | 0.1              | 0.0             | 1                       | 1.9             | 0.3              | 0.3  | 1.7             | 11                       | -0.1                      | 0                         | 4.3           | 12 (N/A)                           | 1.5                 | 1.51            |
| Maple                      | 0.1             | 0.0             | 0.1              | 0.0             | 0                       | 1.2             | 0.2              | 0.2  | 1.2             | 8                        | 0.0                       | 0                         | 2.8           | 8 (N/A)                            | 1.5                 | 1.00            |
| Conifer Evergreen Large    | 0.5             | 0.1             | 0.5              | 0.1             | 3                       | 2.3             | 0.3              | 0.3  | 2.1             | 14                       | -1.5                      | -6                        | 4.6           | 12 (N/A)                           | 1.3                 | 1.67            |
| Littleleaf linden          | 1.2             | 0.2             | 0.6              | 0.1             | 7                       | 4.0             | 0.6              | 0.5  | 3.7             | 25                       | -0.6                      | -2                        | 10.3          | 29 (N/A)                           | 1.1                 | 4.81            |
| Honeylocust                | 0.8             | 0.1             | 0.4              | 0.0             | 4                       | 5.2             | 0.8              | 0.7  | 4.9             | 32                       | -0.5                      | -2                        | 12.5          | 35 (N/A)                           | 1.1                 | 5.82            |
| Black walnut               | 2.1             | 0.3             | 1.0              | 0.1             | 11                      | 6.5             | 0.9              | 0.9  | 6.1             | 40                       | 0.0                       | 0                         | 17.8          | 51 (N/A)                           | 1.1                 | 8.49            |
| Northern red oak           | 0.1             | 0.0             | 0.1              | 0.0             | 0                       | 1.0             | 0.1              | 0.1  | 0.9             | 6                        | -0.1                      | 0                         | 2.2           | 6 (N/A)                            | 1.1                 | 0.99            |
| Black maple                | 2.0             | 0.3             | 0.9              | 0.1             | 11                      | 5.0             | 0.7              | 0.7  | 4.7             | 31                       | -0.7                      | -3                        | 13.8          | 39 (N/A)                           | 0.9                 | 7.82            |
| Bur oak                    | 0.3             | 0.1             | 0.2              | 0.0             | 2                       | 3.5             | 0.5              | 0.5  | 3.4             | 22                       | 0.0                       | 0                         | 8.6           | 24 (N/A)                           | 0.9                 | 4.80            |
| Eastern white pine         | 0.7             | 0.1             | 0.6              | 0.1             | 5                       | 2.5             | 0.4              | 0.4  | 2.4             | 16                       | -2.2                      | -8                        | 4.9           | 12 (N/A)                           | 0.9                 | 2.37            |
| Willow                     | 2.3             | 0.4             | 1.1              | 0.1             | 12                      | 4.9             | 0.7              | 0.7  | 4.6             | 30                       | -0.5                      | -2                        | 14.3          | 41 (N/A)                           | 0.7                 | 10.20           |
| Boxelder                   | 0.5             | 0.1             | 0.3              | 0.0             | 3                       | 3.3             | 0.5              | 0.5  | 3.2             | 21                       | -0.2                      | -1                        | 8.0           | 22 (N/A)                           | 0.7                 | 5.60            |
| Mulberry                   | 0.9             | 0.2             | 0.4              | 0.0             | 5                       | 2.4             | 0.3              | 0.3  | 2.1             | 14                       | 0.0                       | 0                         | 6.7           | 19 (N/A)                           | 0.6                 | 6.41            |
| Siberian elm               | 0.8             | 0.1             | 0.4              | 0.0             | 4                       | 2.0             | 0.3              | 0.3  | 1.9             | 13                       | 0.0                       | 0                         | 5.9           | 17 (N/A)                           | 0.6                 | 5.67            |
| Northern pin oak           | 2.6             | 0.4             | 1.2              | 0.1             | 14                      | 4.7             | 0.7              | 0.6  | 4.4             | 29                       | -0.6                      | -2                        | 14.2          | 41 (N/A)                           | 0.6                 | 13.58           |
| Eastern red cedar          | 1.0             | 0.2             | 0.8              | 0.1             | 7                       | 1.6             | 0.2              | 0.2  | 1.5             | 10                       | -2.7                      | -10                       | 3.1           | 7 (N/A)                            | 0.6                 | 2.19            |
| Eastern redbud             | 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)                            | 0.4                 | 1.33            |
| Kentucky coffeetree        | 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)                            | 0.4                 | 1.54            |
| Broadleaf Evergreen Large  | 0.0             | 0.0             | 0.0              | 0.0             | 0                       | 0.1             | 0.0              | 0.0  | 0.1             | 1                        | 0.0                       | 0                         | 0.2           | 1 (N/A)                            | 0.4                 | 0.26            |
| Black spruce               | 0.2             | 0.0             | 0.2              | 0.0             | 1                       | 0.7             | 0.1              | 0.1  | 0.7             | 5                        | -0.6                      | -2                        | 1.5           | 4 (N/A)                            | 0.4                 | 1.82            |
| Alder                      | 0.0             | 0.0             | 0.0              | 0.0             | 0                       | 0.2             | 0.0              | 0.0  | 0.2             | 1                        | 0.0                       | 0                         | 0.5           | 1 (N/A)                            | 0.4                 | 0.71            |
| White oak                  | 0.0             | 0.0             | 0.0              | 0.0             | 0                       | 0.6             | 0.1              | 0.1  | 0.6             | 4                        | 0.0                       | 0                         | 1.4           | 4 (N/A)                            | 0.4                 | 1.93            |
| Black 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            |
| Sumac                      | 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                 | 0.11            |
| Chinese elm                | 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)                            | 0.2                 | 2.99            |
| Quaking aspen              | 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                 | 0.08            |
| Pin oak                    | 0.9             | 0.2             | 0.5              | 0.0             | 5                       | 1.8             | 0.3              | 0.3  | 1.8             | 12                       | -1.7                      | -6                        | 4.0           | 10 (N/A)                           | 0.2                 | 10.20           |
| Broadleaf Evergreen Small  | 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)                            | 0.2                 | 0.75            |
| Japanese tree lilac        | 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                 | 0.11            |
| Japanese 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                 | 0.11            |
| Citywide total             | 95.9            | 16.4            | 52.3             | 5.2             | 534                     | 335.8           | 48.9             | 46.7 | 319.4           | 2,094                    | -67.5                     | -253                      | 853.1         | 2,375 (N/A)                        | 100.0               | 4.39            |

**Table 4: Annual Carbon Stored**

**Bondurant**

**Stored CO2 Benefits of Public Trees**

8/27/2020

| Species               | Total Stored<br>CO2 (lbs) | Total<br>(\$) | Standard<br>Error | % of Total<br>Trees | % of<br>Total \$ | Avg.<br>\$/tree |
|-----------------------|---------------------------|---------------|-------------------|---------------------|------------------|-----------------|
| Apple                 | 116,181                   | 871           | (N/A)             | 11.3                | 5.7              | 14.28           |
| Catalpa               | 54,473                    | 409           | (N/A)             | 9.4                 | 2.7              | 8.01            |
| Green ash             | 248,321                   | 1,862         | (N/A)             | 7.4                 | 12.2             | 46.56           |
| Silver maple          | 557,675                   | 4,183         | (N/A)             | 6.3                 | 27.5             | 123.02          |
| Scotch pine           | 25,745                    | 193           | (N/A)             | 4.1                 | 1.3              | 8.78            |
| Swamp white oak       | 6,504                     | 49            | (N/A)             | 3.9                 | 0.3              | 2.32            |
| Spruce                | 23,411                    | 176           | (N/A)             | 3.9                 | 1.2              | 8.36            |
| Sugar maple           | 81,386                    | 610           | (N/A)             | 3.7                 | 4.0              | 30.52           |
| Pear                  | 40,432                    | 303           | (N/A)             | 3.1                 | 2.0              | 17.84           |
| Elm                   | 91,464                    | 686           | (N/A)             | 2.8                 | 4.5              | 45.73           |
| Northern white cedar  | 40,816                    | 306           | (N/A)             | 2.8                 | 2.0              | 20.41           |
| Red maple             | 11,573                    | 87            | (N/A)             | 2.8                 | 0.6              | 5.79            |
| American sycamore     | 54,668                    | 410           | (N/A)             | 2.4                 | 2.7              | 31.54           |
| Norway maple          | 49,983                    | 375           | (N/A)             | 2.4                 | 2.5              | 28.84           |
| Cottonwood            | 154,937                   | 1,162         | (N/A)             | 2.4                 | 7.6              | 89.39           |
| Blue spruce           | 1,628                     | 12            | (N/A)             | 2.2                 | 0.1              | 1.02            |
| Amur maple            | 8,759                     | 66            | (N/A)             | 2.0                 | 0.4              | 5.97            |
| Broadleaf Deciduous   | 23,410                    | 176           | (N/A)             | 1.8                 | 1.2              | 17.56           |
| White ash             | 42,221                    | 317           | (N/A)             | 1.7                 | 2.1              | 35.18           |
| Broadleaf Deciduous   | 4,008                     | 30            | (N/A)             | 1.7                 | 0.2              | 3.34            |
| Northern hackberry    | 81,195                    | 609           | (N/A)             | 1.7                 | 4.0              | 67.66           |
| Broadleaf Deciduous   | 274                       | 2             | (N/A)             | 1.5                 | 0.0              | 0.26            |
| River birch           | 3,109                     | 23            | (N/A)             | 1.5                 | 0.2              | 2.91            |
| Maple                 | 1,546                     | 12            | (N/A)             | 1.5                 | 0.1              | 1.45            |
| Conifer Evergreen La  | 2,710                     | 20            | (N/A)             | 1.3                 | 0.1              | 2.90            |
| Littleleaf linden     | 26,052                    | 195           | (N/A)             | 1.1                 | 1.3              | 32.56           |
| Honeylocust           | 9,706                     | 73            | (N/A)             | 1.1                 | 0.5              | 12.13           |
| Black walnut          | 66,144                    | 496           | (N/A)             | 1.1                 | 3.3              | 82.68           |
| Northern red oak      | 945                       | 7             | (N/A)             | 1.1                 | 0.0              | 1.18            |
| Black maple           | 21,716                    | 163           | (N/A)             | 0.9                 | 1.1              | 32.57           |
| Bur oak               | 11,386                    | 85            | (N/A)             | 0.9                 | 0.6              | 17.08           |
| Eastern white pine    | 4,719                     | 35            | (N/A)             | 0.9                 | 0.2              | 7.08            |
| Willow                | 37,606                    | 282           | (N/A)             | 0.7                 | 1.9              | 70.51           |
| Boxelder              | 11,973                    | 90            | (N/A)             | 0.7                 | 0.6              | 22.45           |
| Mulberry              | 14,393                    | 108           | (N/A)             | 0.6                 | 0.7              | 35.98           |
| Siberian elm          | 19,920                    | 149           | (N/A)             | 0.6                 | 1.0              | 49.80           |
| Northern pin oak      | 42,840                    | 321           | (N/A)             | 0.6                 | 2.1              | 107.10          |
| Eastern red cedar     | 3,306                     | 25            | (N/A)             | 0.6                 | 0.2              | 8.27            |
| Eastern redbud        | 922                       | 7             | (N/A)             | 0.4                 | 0.0              | 3.46            |
| Kentucky coffeetree   | 1,047                     | 8             | (N/A)             | 0.4                 | 0.1              | 3.93            |
| Broadleaf Evergreen l | 25                        | 0             | (N/A)             | 0.4                 | 0.0              | 0.09            |
| Black spruce          | 1,161                     | 9             | (N/A)             | 0.4                 | 0.1              | 4.35            |
| Alder                 | 356                       | 3             | (N/A)             | 0.4                 | 0.0              | 1.33            |
| White oak             | 1,220                     | 9             | (N/A)             | 0.4                 | 0.1              | 4.57            |
| Black cherry          | 908                       | 7             | (N/A)             | 0.2                 | 0.0              | 6.81            |
| Sumac                 | 14                        | 0             | (N/A)             | 0.2                 | 0.0              | 0.10            |
| Chinese elm           | 1,035                     | 8             | (N/A)             | 0.2                 | 0.1              | 7.76            |
| Quaking aspen         | 12                        | 0             | (N/A)             | 0.2                 | 0.0              | 0.09            |
| Pin oak               | 24,952                    | 187           | (N/A)             | 0.2                 | 1.2              | 187.14          |
| Broadleaf Evergreen   | 178                       | 1             | (N/A)             | 0.2                 | 0.0              | 1.33            |
| Japanese tree lilac   | 14                        | 0             | (N/A)             | 0.2                 | 0.0              | 0.10            |
| Japanese maple        | 14                        | 0             | (N/A)             | 0.2                 | 0.0              | 0.10            |
| Citywide total        | 2,028,994                 | 15,217        | (N/A)             | 100.0               | 100.0            | 28.13           |

**Table 5: Annual Carbon Sequestered**

**Bondurant**

**Annual CO<sub>2</sub> Benefits of Public Trees**

8/27/2020

| 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 |
|---------------------------|------------------|------------------|----------------------------|--------------------------|---------------------|--------------|--------------|----------------|---------------------------|------------------|---------------|--------------|
| Apple                     | 7,909            | 59               | -558                       | -84                      | -5                  | 10,126       | 76           | 17,393         | 130 (N/A)                 | 11.3             | 6.8           | 2.14         |
| Catalpa                   | 10,105           | 76               | -262                       | -56                      | -2                  | 7,843        | 59           | 17,631         | 132 (N/A)                 | 9.4              | 6.9           | 2.59         |
| Green ash                 | 18,009           | 135              | -1,192                     | -80                      | -10                 | 13,427       | 101          | 30,164         | 226 (N/A)                 | 7.4              | 11.8          | 5.66         |
| Silver maple              | 40,708           | 305              | -2,677                     | -108                     | -21                 | 16,114       | 121          | 54,037         | 405 (N/A)                 | 6.3              | 21.1          | 11.92        |
| Scotch pine               | 2,542            | 19               | -124                       | -43                      | -1                  | 4,763        | 36           | 7,138          | 54 (N/A)                  | 4.1              | 2.8           | 2.43         |
| Swamp white oak           | 1,800            | 13               | -38                        | -12                      | 0                   | 1,342        | 10           | 3,092          | 23 (N/A)                  | 3.9              | 1.2           | 1.10         |
| Spruce                    | 764              | 6                | -112                       | -26                      | -1                  | 1,904        | 14           | 2,530          | 19 (N/A)                  | 3.9              | 1.0           | 0.90         |
| Sugar maple               | 5,743            | 43               | -393                       | -33                      | -3                  | 5,309        | 40           | 10,626         | 80 (N/A)                  | 3.7              | 4.2           | 3.98         |
| Pear                      | 3,684            | 28               | -194                       | -28                      | -2                  | 3,980        | 30           | 7,442          | 56 (N/A)                  | 3.1              | 2.9           | 3.28         |
| Elm                       | 2,934            | 22               | -439                       | -16                      | -3                  | 2,131        | 16           | 4,610          | 35 (N/A)                  | 2.8              | 1.8           | 2.30         |
| Northern white cedar      | 1,243            | 9                | -196                       | -24                      | -2                  | 1,856        | 14           | 2,880          | 22 (N/A)                  | 2.8              | 1.1           | 1.44         |
| Red maple                 | 1,713            | 13               | -56                        | -13                      | -1                  | 1,920        | 14           | 3,564          | 27 (N/A)                  | 2.8              | 1.4           | 1.78         |
| American sycamore         | 5,982            | 45               | -262                       | -26                      | -2                  | 4,970        | 37           | 10,663         | 80 (N/A)                  | 2.4              | 4.2           | 6.15         |
| Norway maple              | 4,621            | 35               | -240                       | -25                      | -2                  | 4,394        | 33           | 8,750          | 66 (N/A)                  | 2.4              | 3.4           | 5.05         |
| Cottonwood                | 8,206            | 62               | -744                       | -37                      | -6                  | 6,192        | 46           | 13,618         | 102 (N/A)                 | 2.4              | 5.3           | 7.86         |
| Blue spruce               | 198              | 1                | -8                         | -7                       | 0                   | 613          | 5            | 796            | 6 (N/A)                   | 2.2              | 0.3           | 0.50         |
| Amur maple                | 368              | 3                | -42                        | -9                       | 0                   | 699          | 5            | 1,016          | 8 (N/A)                   | 2.0              | 0.4           | 0.69         |
| Broadleaf Deciduous Large | 2,482            | 19               | -112                       | -12                      | -1                  | 1,792        | 13           | 4,149          | 31 (N/A)                  | 1.8              | 1.6           | 3.11         |
| White ash                 | 4,275            | 32               | -204                       | -15                      | -2                  | 3,002        | 23           | 7,058          | 53 (N/A)                  | 1.7              | 2.8           | 5.88         |
| Broadleaf Deciduous Medi  | 975              | 7                | -21                        | -6                       | 0                   | 743          | 6            | 1,690          | 13 (N/A)                  | 1.7              | 0.7           | 1.41         |
| Northern hackberry        | 3,774            | 28               | -390                       | -29                      | -3                  | 5,104        | 38           | 8,459          | 63 (N/A)                  | 1.7              | 3.3           | 7.05         |
| Broadleaf Deciduous Small | 99               | 1                | -2                         | -2                       | 0                   | 76           | 1            | 172            | 1 (N/A)                   | 1.5              | 0.1           | 0.16         |
| River birch               | 841              | 6                | -18                        | -5                       | 0                   | 624          | 5            | 1,442          | 11 (N/A)                  | 1.5              | 0.6           | 1.35         |
| Maple                     | 274              | 2                | -7                         | -4                       | 0                   | 429          | 3            | 692            | 5 (N/A)                   | 1.5              | 0.3           | 0.65         |
| Conifer Evergreen Large   | 431              | 3                | -13                        | -9                       | 0                   | 783          | 6            | 1,192          | 9 (N/A)                   | 1.3              | 0.5           | 1.28         |
| Littleleaf linden         | 2,710            | 20               | -126                       | -11                      | -1                  | 1,360        | 10           | 3,934          | 30 (N/A)                  | 1.1              | 1.5           | 4.92         |
| Honeylocust               | 1,754            | 13               | -47                        | -9                       | 0                   | 1,825        | 14           | 3,524          | 26 (N/A)                  | 1.1              | 1.4           | 4.41         |
| Black walnut              | 3,410            | 26               | -318                       | -15                      | -2                  | 2,249        | 17           | 5,326          | 40 (N/A)                  | 1.1              | 2.1           | 6.66         |
| Northern red oak          | 281              | 2                | -5                         | -3                       | 0                   | 335          | 3            | 608            | 5 (N/A)                   | 1.1              | 0.2           | 0.76         |
| Black maple               | 814              | 6                | -104                       | -10                      | -1                  | 1,756        | 13           | 2,456          | 18 (N/A)                  | 0.9              | 1.0           | 3.68         |
| Bur oak                   | 1,484            | 11               | -55                        | -7                       | 0                   | 1,276        | 10           | 2,699          | 20 (N/A)                  | 0.9              | 1.1           | 4.05         |
| Eastern white pine        | 480              | 4                | -23                        | -8                       | 0                   | 904          | 7            | 1,353          | 10 (N/A)                  | 0.9              | 0.5           | 2.03         |
| Willow                    | 1,434            | 11               | -181                       | -11                      | -1                  | 1,693        | 13           | 2,936          | 22 (N/A)                  | 0.7              | 1.1           | 5.50         |
| Boxelder                  | 1,436            | 11               | -57                        | -7                       | 0                   | 1,182        | 9            | 2,553          | 19 (N/A)                  | 0.7              | 1.0           | 4.79         |
| Mulberry                  | 592              | 4                | -69                        | -7                       | -1                  | 794          | 6            | 1,310          | 10 (N/A)                  | 0.6              | 0.5           | 3.27         |
| Siberian elm              | 869              | 7                | -96                        | -5                       | -1                  | 713          | 5            | 1,480          | 11 (N/A)                  | 0.6              | 0.6           | 3.70         |
| Northern pin oak          | 0                | 0                | -206                       | -13                      | -2                  | 1,616        | 12           | 1,397          | 10 (N/A)                  | 0.6              | 0.5           | 3.49         |
| Eastern red cedar         | 0                | 0                | -16                        | -6                       | 0                   | 561          | 4            | 539            | 4 (N/A)                   | 0.6              | 0.2           | 1.35         |
| Eastern redbud            | 123              | 1                | -4                         | -1                       | 0                   | 130          | 1            | 246            | 2 (N/A)                   | 0.4              | 0.1           | 0.92         |
| Kentucky coffeetree       | 211              | 2                | -5                         | -1                       | 0                   | 163          | 1            | 368            | 3 (N/A)                   | 0.4              | 0.1           | 1.38         |
| Broadleaf Evergreen Large | 25               | 0                | 0                          | 0                        | 0                   | 30           | 0            | 54             | 0 (N/A)                   | 0.4              | 0.0           | 0.20         |
| Black spruce              | 103              | 1                | -6                         | -3                       | 0                   | 261          | 2            | 356            | 3 (N/A)                   | 0.4              | 0.1           | 1.33         |
| Alder                     | 76               | 1                | -2                         | -1                       | 0                   | 74           | 1            | 147            | 1 (N/A)                   | 0.4              | 0.1           | 0.55         |
| White oak                 | 283              | 2                | -6                         | -2                       | 0                   | 207          | 2            | 483            | 4 (N/A)                   | 0.4              | 0.2           | 1.81         |
| Black cherry              | 114              | 1                | -4                         | -1                       | 0                   | 124          | 1            | 232            | 2 (N/A)                   | 0.2              | 0.1           | 1.74         |
| Sumac                     | 9                | 0                | 0                          | 0                        | 0                   | 6            | 0            | 14             | 0 (N/A)                   | 0.2              | 0.0           | 0.10         |
| Chinese elm               | 209              | 2                | -5                         | -1                       | 0                   | 159          | 1            | 361            | 3 (N/A)                   | 0.2              | 0.1           | 2.71         |
| Quaking aspen             | 3                | 0                | 0                          | 0                        | 0                   | 4            | 0            | 7              | 0 (N/A)                   | 0.2              | 0.0           | 0.05         |
| Pin oak                   | 2,196            | 16               | -120                       | -4                       | -1                  | 652          | 5            | 2,723          | 20 (N/A)                  | 0.2              | 1.1           | 20.43        |
| Broadleaf Evergreen Small | 27               | 0                | -1                         | -1                       | 0                   | 38           | 0            | 64             | 0 (N/A)                   | 0.2              | 0.0           | 0.48         |
| Japanese tree lilac       | 9                | 0                | 0                          | 0                        | 0                   | 6            | 0            | 14             | 0 (N/A)                   | 0.2              | 0.0           | 0.10         |
| Japanese maple            | 9                | 0                | 0                          | 0                        | 0                   | 6            | 0            | 14             | 0 (N/A)                   | 0.2              | 0.0           | 0.10         |
| Citywide total            | 148,340          | 1,113            | -9,760                     | -836                     | -79                 | 118,259      | 887          | 256,003        | 1,920 (N/A)               | 100.0            | 100.0         | 3.55         |

**Table 6: Annual Social and Aesthetic Benefits**

**Bondurant**

**Annual Aesthetic/Other Benefits of Public Trees**

8/27/2020

| Species                    | Total (\$) | Standard Error | % of Total Trees | % of Total \$ | Avg. \$/tree |
|----------------------------|------------|----------------|------------------|---------------|--------------|
| Apple                      | 451        | (N/A)          | 11.3             | 3.0           | 7.39         |
| Catalpa                    | 1,368      | (N/A)          | 9.4              | 9.0           | 26.83        |
| Green ash                  | 1,693      | (N/A)          | 7.4              | 11.1          | 42.32        |
| Silver maple               | 3,193      | (N/A)          | 6.3              | 21.0          | 93.92        |
| Scotch pine                | 711        | (N/A)          | 4.1              | 4.7           | 32.32        |
| Swamp white oak            | 243        | (N/A)          | 3.9              | 1.6           | 11.56        |
| Spruce                     | 235        | (N/A)          | 3.9              | 1.5           | 11.18        |
| Sugar maple                | 651        | (N/A)          | 3.7              | 4.3           | 32.57        |
| Pear                       | 213        | (N/A)          | 3.1              | 1.4           | 12.53        |
| Elm                        | 264        | (N/A)          | 2.8              | 1.7           | 17.61        |
| Northern white cedar       | 204        | (N/A)          | 2.8              | 1.3           | 13.60        |
| Red maple                  | 289        | (N/A)          | 2.8              | 1.9           | 19.25        |
| American sycamore          | 602        | (N/A)          | 2.4              | 4.0           | 46.35        |
| Norway maple               | 469        | (N/A)          | 2.4              | 3.1           | 36.08        |
| Cottonwood                 | 700        | (N/A)          | 2.4              | 4.6           | 53.84        |
| Blue spruce                | 133        | (N/A)          | 2.2              | 0.9           | 11.09        |
| Amur maple                 | 19         | (N/A)          | 2.0              | 0.1           | 1.71         |
| Broadleaf Deciduous Large  | 283        | (N/A)          | 1.8              | 1.9           | 28.25        |
| White ash                  | 511        | (N/A)          | 1.7              | 3.4           | 56.81        |
| Broadleaf Deciduous Medium | 126        | (N/A)          | 1.7              | 0.8           | 13.95        |
| Northern hackberry         | 495        | (N/A)          | 1.7              | 3.3           | 55.04        |
| Broadleaf Deciduous Small  | 2          | (N/A)          | 1.5              | 0.0           | 0.29         |
| River birch                | 109        | (N/A)          | 1.5              | 0.7           | 13.68        |
| Maple                      | 51         | (N/A)          | 1.5              | 0.3           | 6.38         |
| Conifer Evergreen Large    | 125        | (N/A)          | 1.3              | 0.8           | 17.84        |
| Littleleaf linden          | 297        | (N/A)          | 1.1              | 1.9           | 49.45        |
| Honeylocust                | 331        | (N/A)          | 1.1              | 2.2           | 55.23        |
| Black walnut               | 275        | (N/A)          | 1.1              | 1.8           | 45.91        |
| Northern red oak           | 38         | (N/A)          | 1.1              | 0.2           | 6.26         |
| Black maple                | 126        | (N/A)          | 0.9              | 0.8           | 25.11        |
| Bur oak                    | 167        | (N/A)          | 0.9              | 1.1           | 33.41        |
| Eastern white pine         | 136        | (N/A)          | 0.9              | 0.9           | 27.22        |
| Willow                     | 132        | (N/A)          | 0.7              | 0.9           | 33.05        |
| Boxelder                   | 145        | (N/A)          | 0.7              | 1.0           | 36.29        |
| Mulberry                   | 35         | (N/A)          | 0.6              | 0.2           | 11.73        |
| Siberian elm               | 76         | (N/A)          | 0.6              | 0.5           | 25.44        |
| Northern pin oak           | 0          | (N/A)          | 0.6              | 0.0           | 0.00         |
| Eastern red cedar          | 0          | (N/A)          | 0.6              | 0.0           | 0.00         |
| Eastern redbud             | 6          | (N/A)          | 0.4              | 0.0           | 3.22         |
| Kentucky coffeetree        | 34         | (N/A)          | 0.4              | 0.2           | 16.91        |
| Broadleaf Evergreen Large  | 17         | (N/A)          | 0.4              | 0.1           | 8.32         |
| Black spruce               | 38         | (N/A)          | 0.4              | 0.2           | 18.77        |
| Alder                      | 4          | (N/A)          | 0.4              | 0.0           | 2.06         |
| White oak                  | 43         | (N/A)          | 0.4              | 0.3           | 21.64        |
| Black cherry               | 6          | (N/A)          | 0.2              | 0.0           | 6.40         |
| Sumac                      | 0          | (N/A)          | 0.2              | 0.0           | 0.03         |
| Chinese elm                | 29         | (N/A)          | 0.2              | 0.2           | 28.56        |
| Quaking aspen              | 5          | (N/A)          | 0.2              | 0.0           | 5.26         |
| Pin oak                    | 157        | (N/A)          | 0.2              | 1.0           | 157.02       |
| Broadleaf Evergreen Small  | 1          | (N/A)          | 0.2              | 0.0           | 0.99         |
| Japanese tree lilac        | 0          | (N/A)          | 0.2              | 0.0           | 0.03         |
| Japanese maple             | 0          | (N/A)          | 0.2              | 0.0           | 0.03         |
| Citywide total             | 15,239     | (N/A)          | 100.0            | 100.0         | 28.17        |

**Table 7: Summary of Benefits in Dollars**

**Bondurant**

**Total Annual Benefits of Public Trees by Species (\$)**

8/27/2020

| Species                 | Energy | CO <sub>2</sub> | Air Quality | Stormwater | Aesthetic/Other | Total (\$) | Standard Error | % of Total \$ |
|-------------------------|--------|-----------------|-------------|------------|-----------------|------------|----------------|---------------|
| Apple                   | 1,343  | 130             | 221         | 672        | 451             | 2,818      | (N/A)          | 5.4           |
| Catalpa                 | 988    | 132             | 148         | 807        | 1,368           | 3,443      | (N/A)          | 6.6           |
| Green ash               | 1,646  | 226             | 278         | 1,967      | 1,693           | 5,811      | (N/A)          | 11.1          |
| Silver maple            | 1,969  | 405             | 372         | 3,969      | 3,193           | 9,909      | (N/A)          | 18.9          |
| Scotch pine             | 531    | 54              | 62          | 917        | 711             | 2,275      | (N/A)          | 4.3           |
| Swamp white oak         | 188    | 23              | 26          | 106        | 243             | 585        | (N/A)          | 1.1           |
| Spruce                  | 246    | 19              | 11          | 540        | 235             | 1,051      | (N/A)          | 2.0           |
| Sugar maple             | 648    | 80              | 101         | 701        | 651             | 2,180      | (N/A)          | 4.2           |
| Pear                    | 517    | 56              | 85          | 245        | 213             | 1,115      | (N/A)          | 2.1           |
| Elm                     | 268    | 35              | 52          | 504        | 264             | 1,123      | (N/A)          | 2.1           |
| Northern white cedar    | 230    | 22              | -6          | 716        | 204             | 1,166      | (N/A)          | 2.2           |
| Red maple               | 246    | 27              | 38          | 168        | 289             | 767        | (N/A)          | 1.5           |
| American sycamore       | 578    | 80              | 96          | 554        | 602             | 1,910      | (N/A)          | 3.7           |
| Norway maple            | 555    | 66              | 92          | 494        | 469             | 1,675      | (N/A)          | 3.2           |
| Cottonwood              | 761    | 102             | 134         | 1,049      | 700             | 2,746      | (N/A)          | 5.3           |
| Blue spruce             | 82     | 6               | 9           | 102        | 133             | 333        | (N/A)          | 0.6           |
| Amur maple              | 99     | 8               | 15          | 51         | 19              | 192        | (N/A)          | 0.4           |
| Broadleaf Deciduous La  | 224    | 31              | 36          | 232        | 283             | 806        | (N/A)          | 1.5           |
| White ash               | 333    | 53              | 65          | 424        | 511             | 1,386      | (N/A)          | 2.6           |
| Broadleaf Deciduous Mi  | 104    | 13              | 14          | 62         | 126             | 318        | (N/A)          | 0.6           |
| Northern hackberry      | 637    | 63              | 119         | 841        | 495             | 2,156      | (N/A)          | 4.1           |
| Broadleaf Deciduous Sn  | 11     | 1               | 1           | 3          | 2               | 20         | (N/A)          | 0.0           |
| River birch             | 87     | 11              | 12          | 50         | 109             | 269        | (N/A)          | 0.5           |
| Maple                   | 56     | 5               | 8           | 26         | 51              | 147        | (N/A)          | 0.3           |
| Conifer Evergreen Large | 106    | 9               | 12          | 139        | 125             | 390        | (N/A)          | 0.7           |
| Littleleaf linden       | 181    | 30              | 29          | 210        | 297             | 746        | (N/A)          | 1.4           |
| Honeylocust             | 227    | 26              | 35          | 152        | 331             | 772        | (N/A)          | 1.5           |
| Black walnut            | 288    | 40              | 51          | 438        | 275             | 1,092      | (N/A)          | 2.1           |
| Northern red oak        | 43     | 5               | 6           | 23         | 38              | 114        | (N/A)          | 0.2           |
| Black maple             | 219    | 18              | 39          | 233        | 126             | 635        | (N/A)          | 1.2           |
| Bur oak                 | 144    | 20              | 24          | 128        | 167             | 484        | (N/A)          | 0.9           |
| Eastern white pine      | 102    | 10              | 12          | 173        | 136             | 433        | (N/A)          | 0.8           |
| Willow                  | 225    | 22              | 41          | 287        | 132             | 707        | (N/A)          | 1.4           |
| Boxelder                | 138    | 19              | 22          | 138        | 145             | 463        | (N/A)          | 0.9           |
| Mulberry                | 110    | 10              | 19          | 71         | 35              | 246        | (N/A)          | 0.5           |
| Siberian elm            | 88     | 11              | 17          | 129        | 76              | 322        | (N/A)          | 0.6           |
| Northern pin oak        | 213    | 10              | 41          | 306        | 0               | 570        | (N/A)          | 1.1           |
| Eastern red cedar       | 74     | 4               | 7           | 133        | 0               | 217        | (N/A)          | 0.4           |
| Eastern redbud          | 19     | 2               | 3           | 7          | 6               | 37         | (N/A)          | 0.1           |
| Kentucky coffeetree     | 21     | 3               | 3           | 17         | 34              | 78         | (N/A)          | 0.1           |
| Broadleaf Evergreen Lai | 5      | 0               | 1           | 2          | 17              | 24         | (N/A)          | 0.0           |
| Black spruce            | 31     | 3               | 4           | 49         | 38              | 124        | (N/A)          | 0.2           |
| Alder                   | 11     | 1               | 1           | 4          | 4               | 21         | (N/A)          | 0.0           |
| White oak               | 26     | 4               | 4           | 21         | 43              | 98         | (N/A)          | 0.2           |
| Black cherry            | 18     | 2               | 3           | 7          | 6               | 36         | (N/A)          | 0.1           |
| Sumac                   | 1      | 0               | 0           | 0          | 0               | 1          | (N/A)          | 0.0           |
| Chinese elm             | 21     | 3               | 3           | 16         | 29              | 71         | (N/A)          | 0.1           |
| Quaking aspen           | 1      | 0               | 0           | 0          | 5               | 7          | (N/A)          | 0.0           |
| Pin oak                 | 80     | 20              | 10          | 134        | 157             | 402        | (N/A)          | 0.8           |
| Broadleaf Evergreen Sm  | 6      | 0               | 1           | 2          | 1               | 10         | (N/A)          | 0.0           |
| Japanese tree lilac     | 1      | 0               | 0           | 0          | 0               | 1          | (N/A)          | 0.0           |
| Japanese maple          | 1      | 0               | 0           | 0          | 0               | 1          | (N/A)          | 0.0           |
| Citywide Total          | 14,747 | 1,920           | 2,375       | 18,021     | 15,239          | 52,302     | (N/A)          | 100.0         |

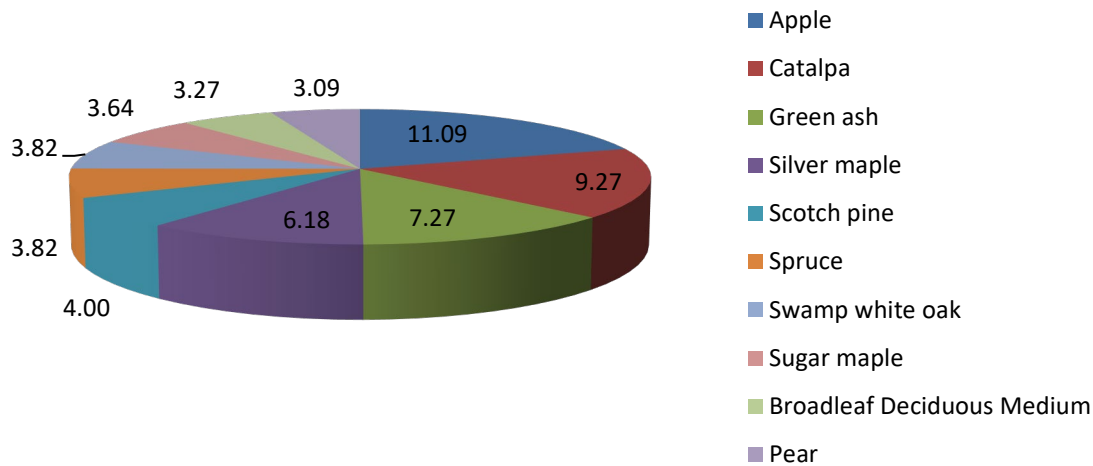


Figure 1: Species Distribution

## Relative Age Distribution of Top 10 Public Tree Species (%)

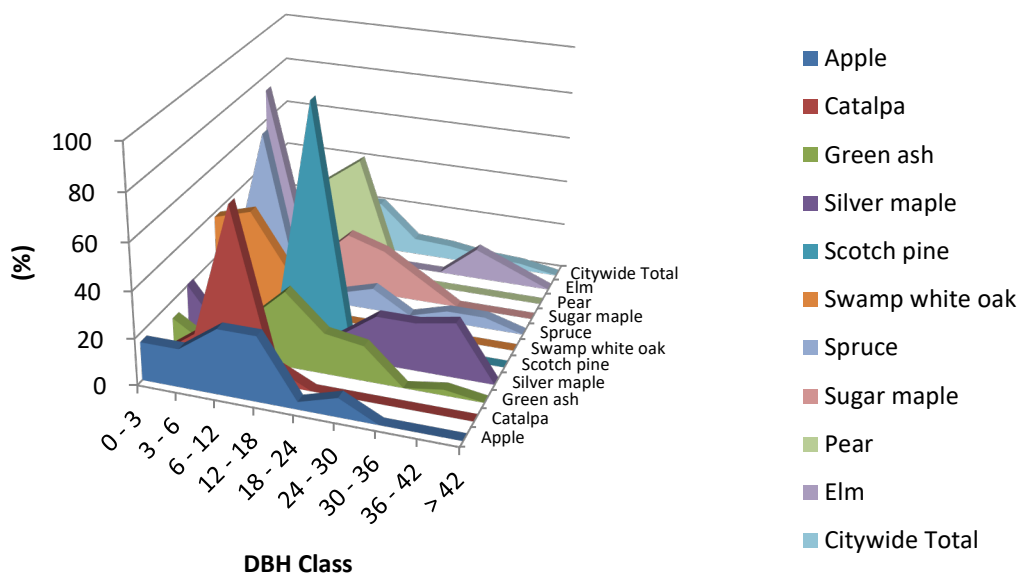
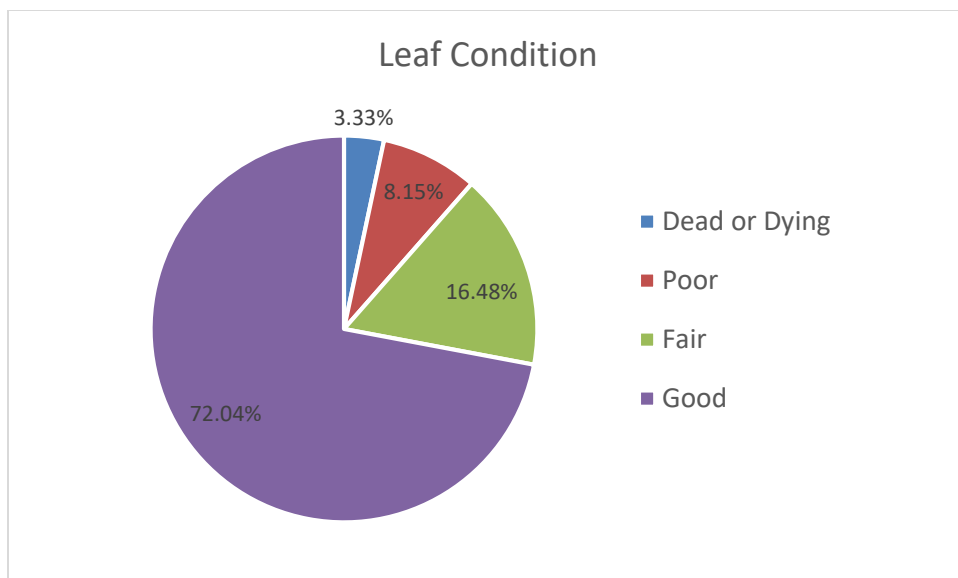
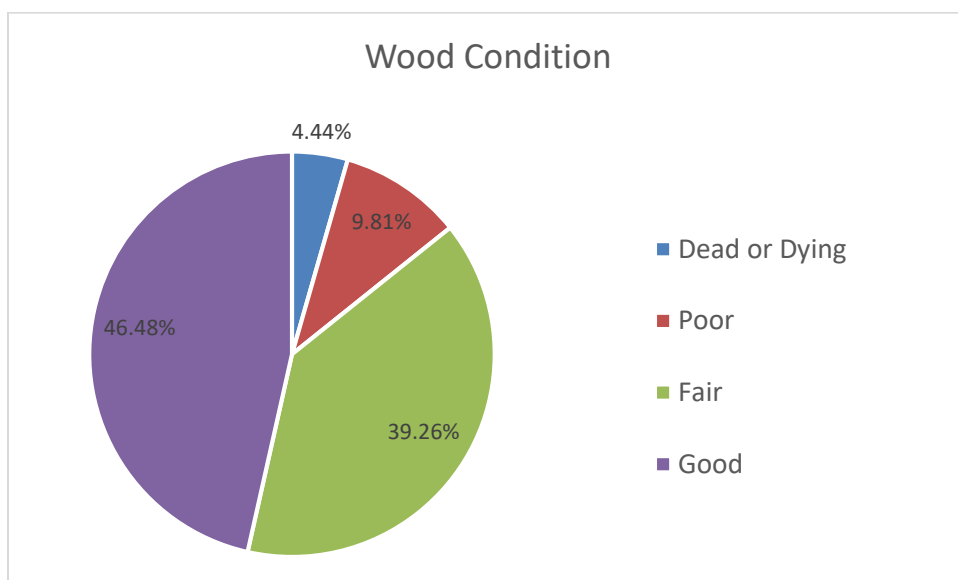


Figure 2: Relative Age Class

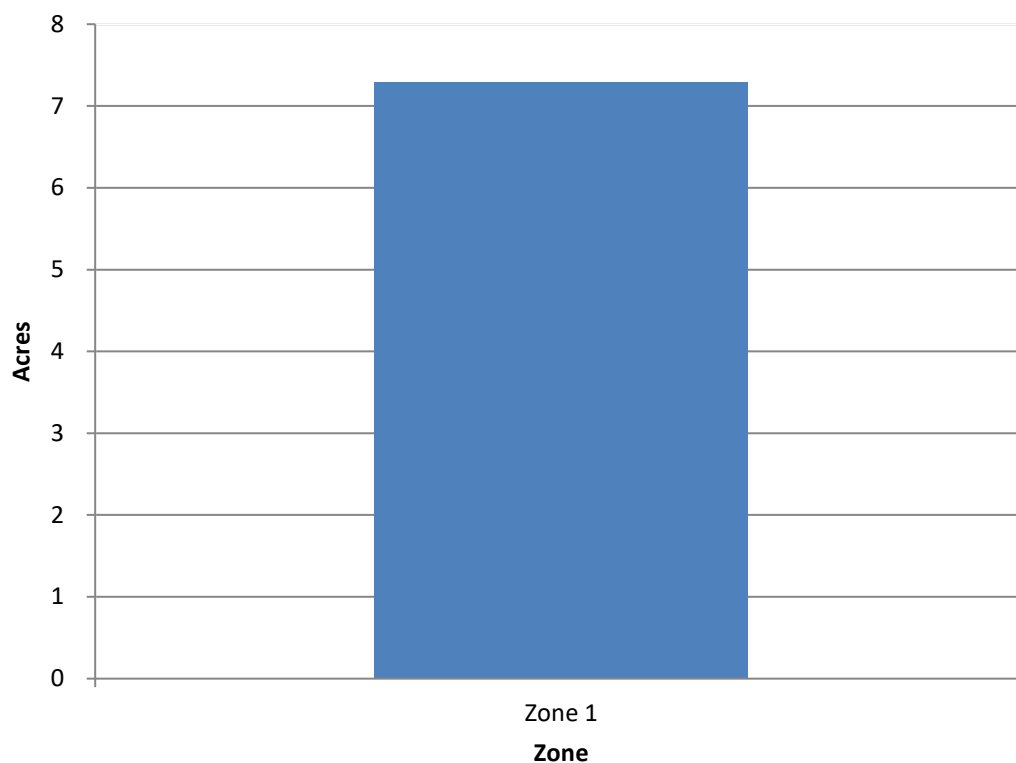


**Figure 3: Foliage Condition**

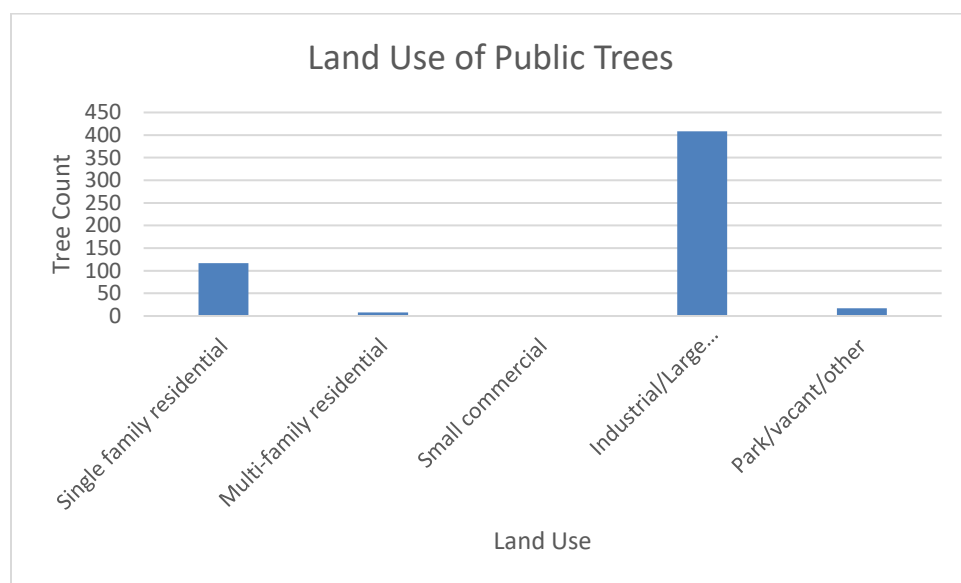


**Figure 4: Wood Condition**

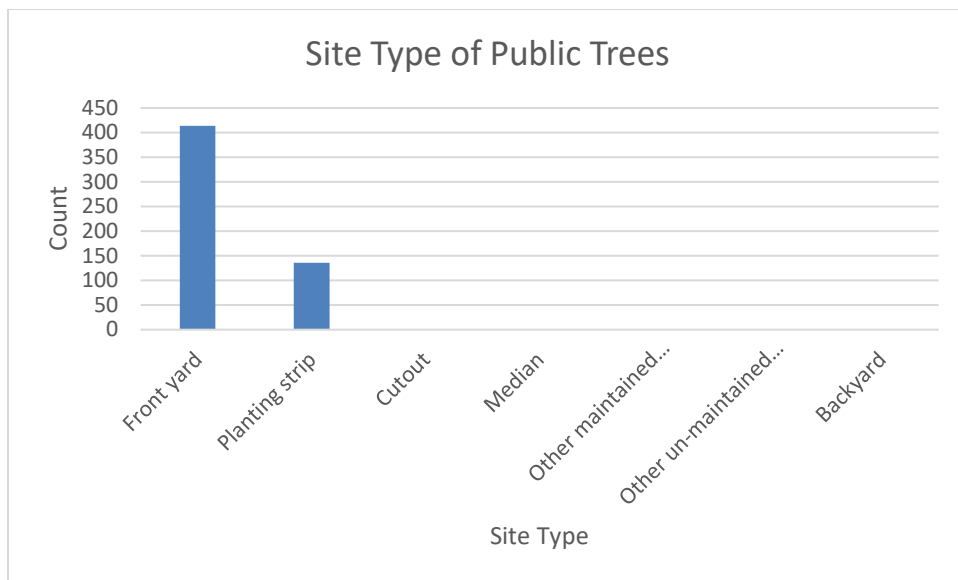
## Canopy Cover of Public Trees (Acres)



**Figure 5: Canopy Cover in Acres**

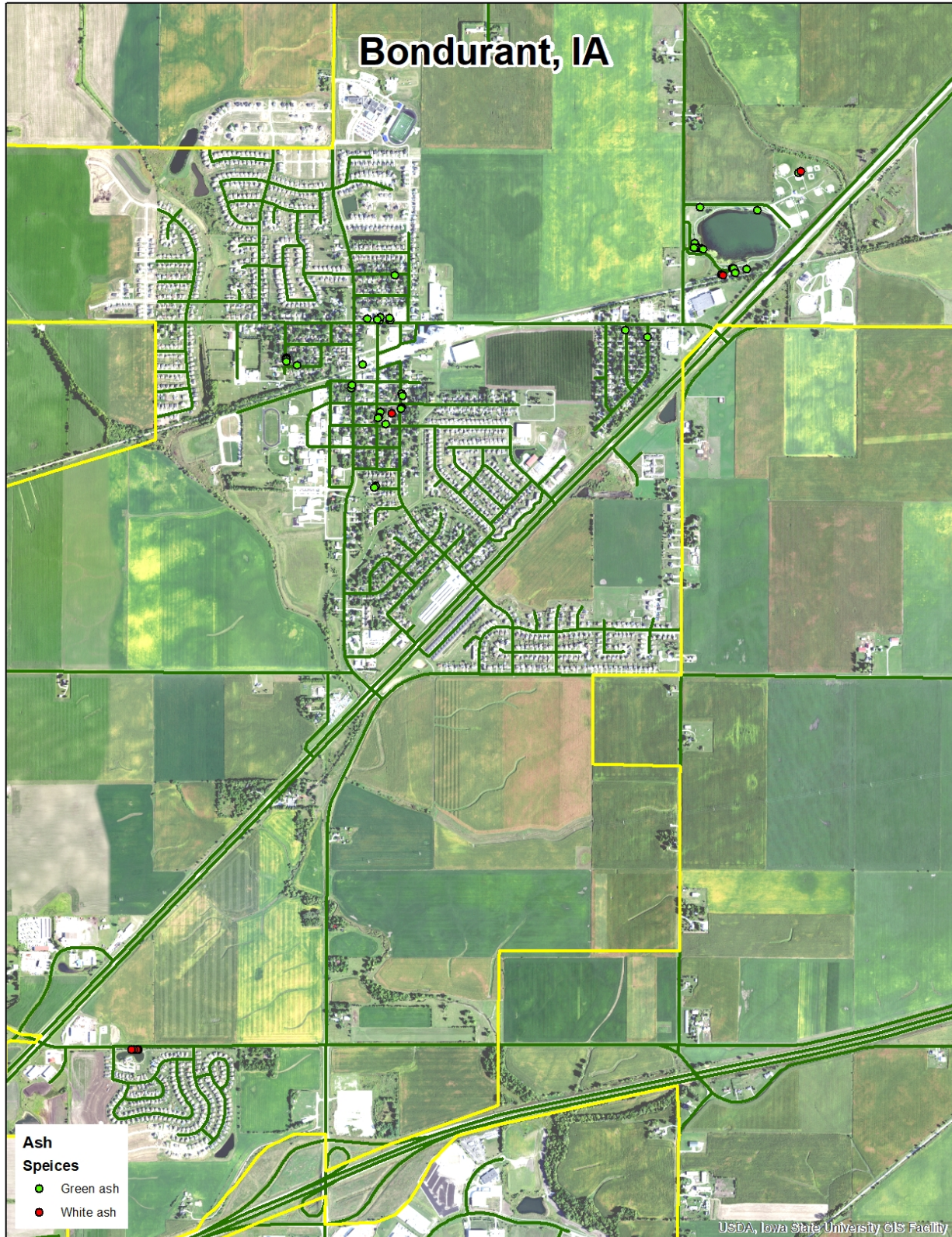


**Figure 6: Land Use of city/park trees**

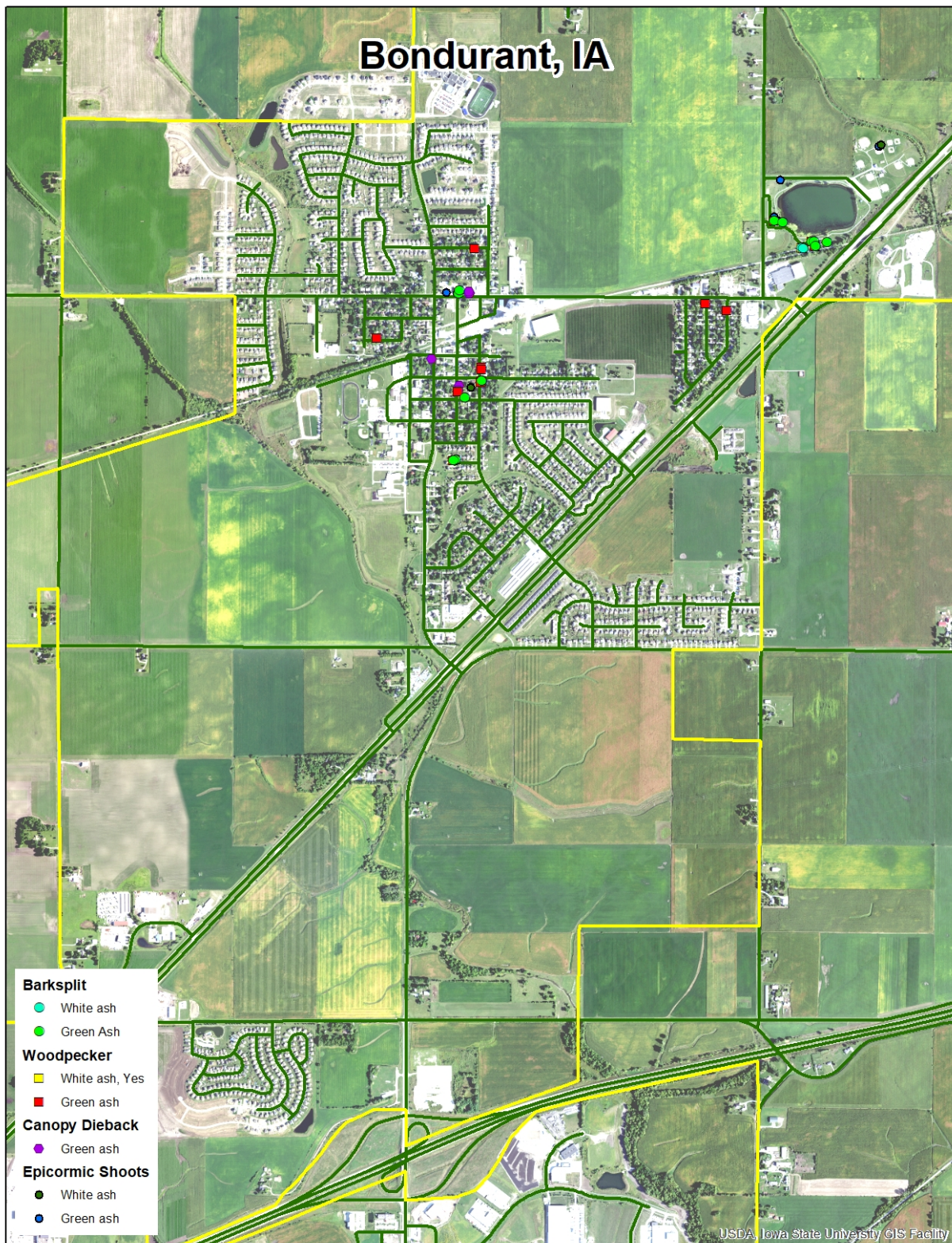


**Figure 7: Location of city/park trees**

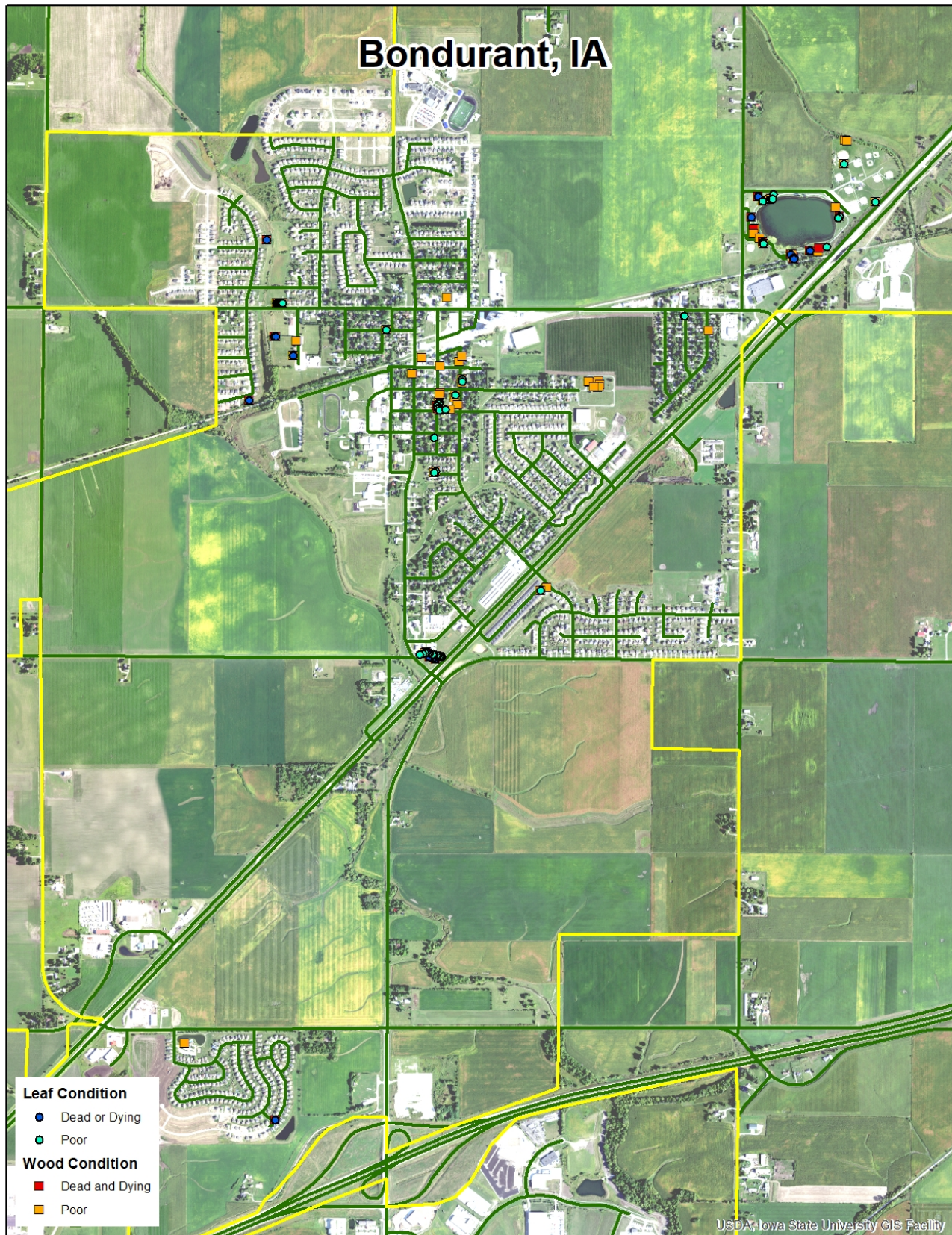
## Appendix B: ArcGIS Mapping



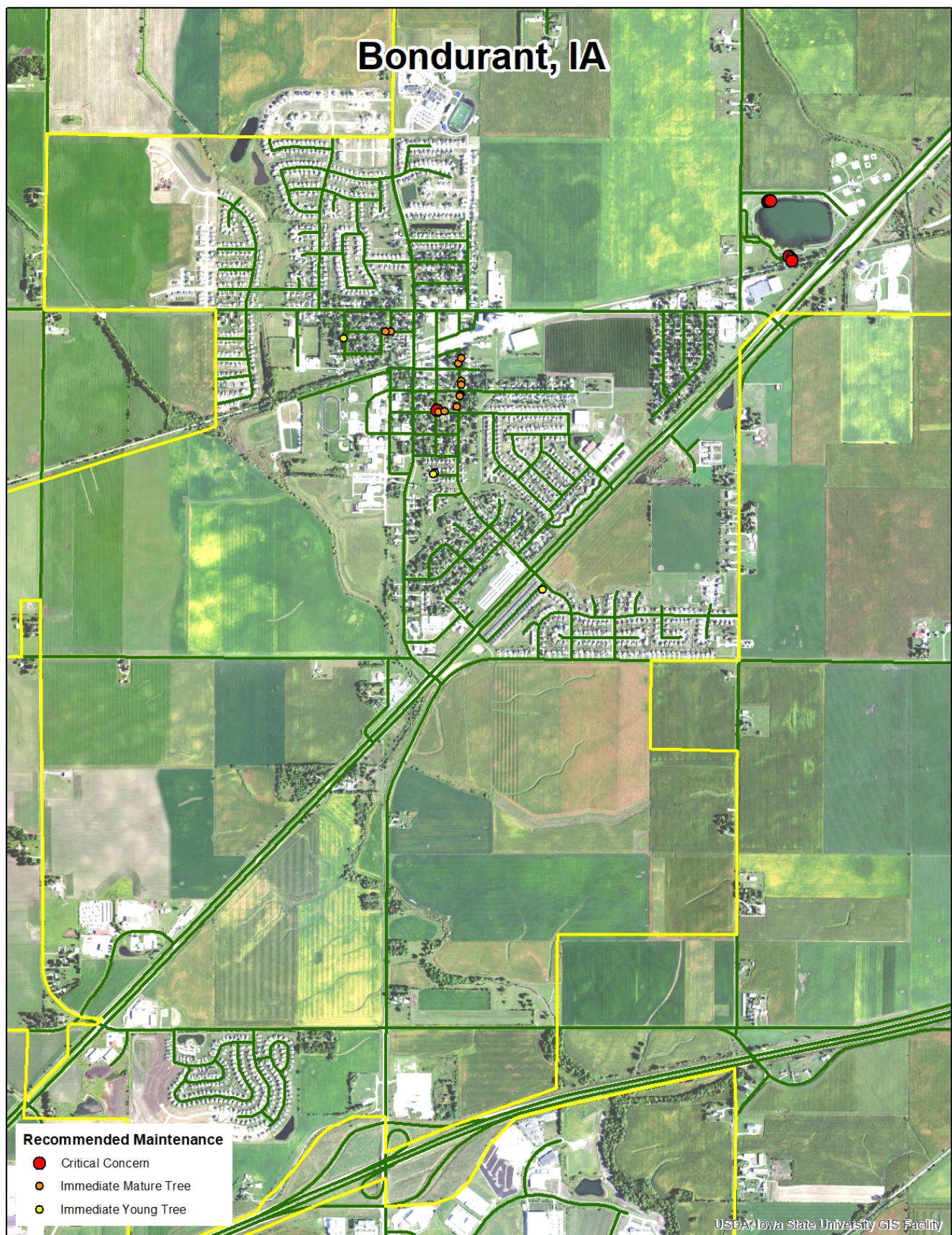
**Figure 1: Location of Ash Trees**



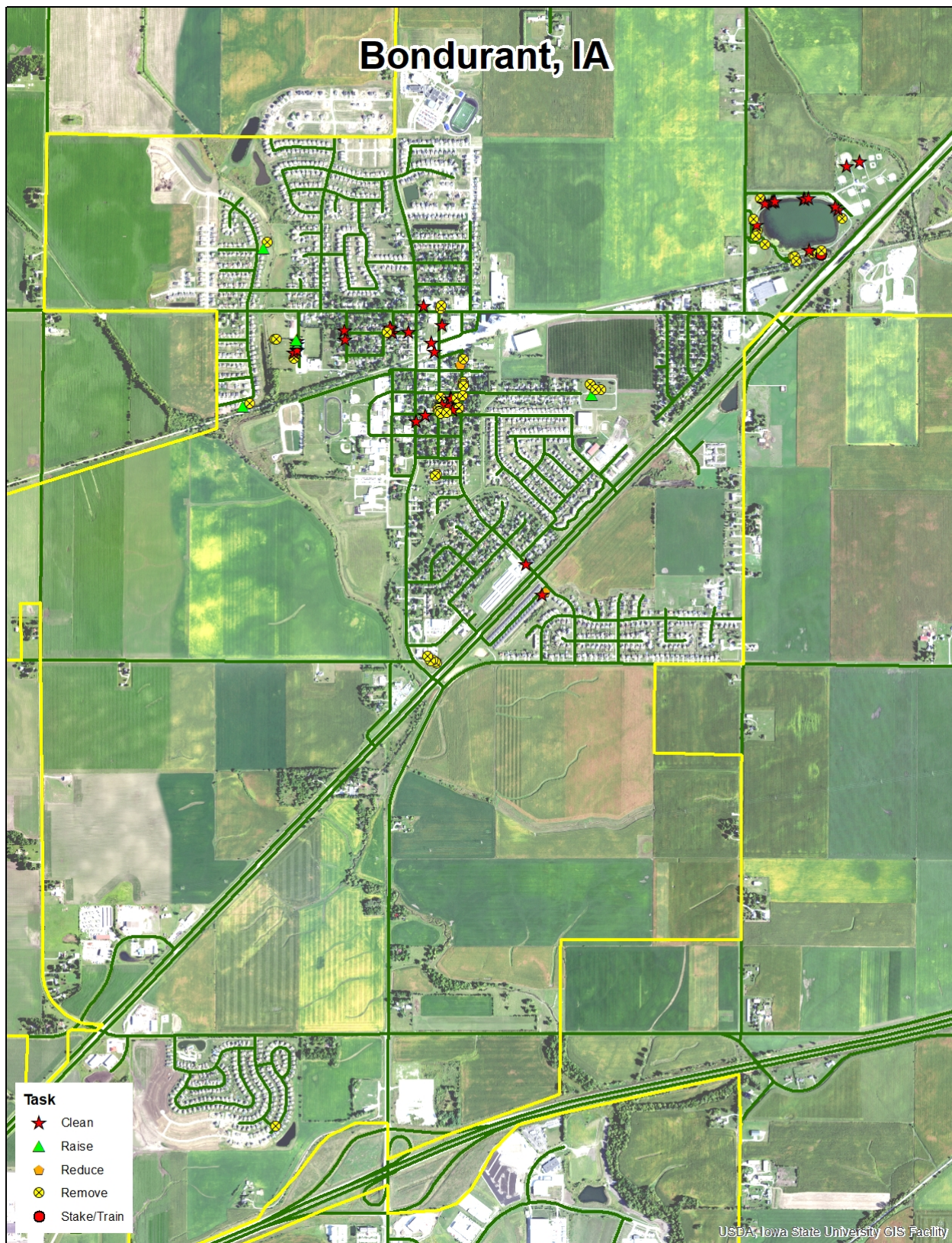
**Figure 2: Location of EAB symptoms**



**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\*

## Appendix C: Bondurant Tree Ordinances

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### CITY TREE BOARD

28.01 Purpose 28.04 Board Organization

28.02 City Tree Board 28.05 Compensation

28.03 Board Members 28.06 Powers and Duties

28.01 PURPOSE. It is the purpose of this chapter to provide for the establishment of a City Tree Board for the City, for the appointment of its Board members and to specify its powers and duties.

28.02 CITY TREE BOARD. There is hereby established the Bondurant City Tree Board.

28.03 BOARD MEMBERS. The City Tree Board shall consist of five (5) members, three (3) of whom shall be citizens and residents of the City and can include two (2) of whom that reside within the Bondurant-Farrar School district boundaries, to be appointed by Council.

28.04 BOARD ORGANIZATION. The term shall be four (4) years with one of the members appointed to the first Board shall be for only one year and the term of two members of the first Board shall be for two years. In the event that a vacancy shall occur during the term of any member, the successor shall be appointed by the Council for the unexpired portion of the term.

28.05 COMPENSATION. Members of the City Tree Board shall serve without compensation.

28.06 POWERS AND DUTIES. The City Tree Board shall have the following powers and duties.

1. The Board shall act as an advisory committee to the Park and Recreation Board. The Board shall have the responsibility to study, investigate, counsel, develop and update a written plan for the care, preservation, pruning, planting, replanting, removal or disposition of trees and shrubs in parks and in other public areas. Such a plan will be presented to the Council and upon its acceptance and approval shall constitute the official comprehensive City Tree Plan for the City. The City Tree Board, when requested by the Park and Recreation Board, shall consider, investigate, make findings, report and recommend upon any special matter of question coming within the scope of its work.

2. The Board shall choose its own officers, make its own rules and regulations and keep a journal of its proceedings. A majority of the members shall be a quorum for the transaction of business.

(Ordinance No. 03-207)

(Ordinance No. 14-211)

(Ordinance No. 15-209)

28.07 MEETING ATTENDANCE. Board members are expected to attend all regular and special meetings of the Board. If a member has a valid reason for nonattendance, the member shall notify the Board chairperson or City Clerk before the meeting. A Board member will be asked to resign if at any time the member has three unexcused absences within a six-month period from a regular, special, or subcommittee meeting, or if total absences (whether excused or not) exceed forty percent (40%) of the total meetings in a calendar year. A review of attendance will be made at the end of each year.

### TREES

151.01 Definition 151.04 Trimming Trees to be Supervised

151.02 Planting Prohibited 151.05 Disease Control

151.03 Duty to Trim Trees 151.06 Inspection and Removal

151.01 DEFINITION. For use in this chapter, “parking” means that part of the street, avenue or highway in the City not covered by sidewalk and lying between the lot line and the curb line; or, on unpaved streets, that part of the street, avenue or highway lying between the lot line and that portion of the street usually traveled by vehicular traffic.

151.02 PLANTING PROHIBITED. No person shall plant a tree in any street, street parking or public right-of-way.

(Ordinance No. 11-205)

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 fifteen (15) feet above the surface of the street 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 fourteen (14) 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 City Administrator shall inspect or cause to be inspected any trees or shrubs in the City reported or suspected to be dead, diseased or damaged, and such trees and shrubs shall be subject to the following:

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 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 fourteen (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])

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 9<sup>th</sup> 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.

## Directions for Using ArcGIS Tree Inventory Viewer

Open the following link:

[www.iowadnr.gov/urbanforestry](http://www.iowadnr.gov/urbanforestry)

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Click and hold your mouse to adjust the map so that your community is in the middle of your computer screen. Click the plus (+) button at the top left corner of the screen as many times as necessary to zoom into your community. Yellow dots representing inventoried trees will appear and become smaller as you continue to zoom in.

### To look at information for individual trees or groups of trees:

1. Zoom in and adjust the map until you find the tree or area of your community that you are looking for.
2. Move your cursor arrow above the tree you would like to view and click on the yellow dot; a small window containing information for that tree will appear. *(NOTE: If you click on the dot and a small box with a "Roads" heading appears, close this box and zoom out slightly by clicking on the minus (-) button at the top left of the screen. Continue to zoom out until clicking on the dot brings up the tree data).*

To close this window and go back to the map, click on the "x" at the top right corner of the window.

### To view trees with a common feature (species, size, or leaf condition, for example):

1. Click on the up arrow in the small gray tab at the bottom of the screen; a rectangular box will appear in roughly the bottom third of the screen.
2. Click on the "Tree Inventory" tab at the top left corner of this box (next to the "Roads" tab).
3. Click on the "Options" tab that appears just below and to the left of this; scroll down and click on "Filter." A box will appear in the middle of the screen.
4. Click on "Add a filter expression." Three fields will appear-
  - a. In the first field, click on the arrow and select the feature you'd like to observe from the list of options;
  - b. Use the second field to define how you'd like your data to relate to the first field - for instance, you could choose "Species" in the first field and "is" or "is not" in the second field depending on whether you want to view only one particular species or to view everything BUT that species;

- c. Once you've selected options for the first two fields, a unique set of options should appear in the third field. Select which characteristic you'd like and then click on "OK" in the bottom right corner of the window.

The box in the middle of the screen will disappear and the map will refresh so that only the trees with that particular set of features appear.

*To go back to the main map, first click on "Options" and "Filter" to bring the box with the features that you've selected back to the middle of the screen. Click on the "x" to the right of the third field; once the fields disappear, click on the down arrow on the small gray tab, which is now located at the top of the rectangular box. This will collapse the box and bring the map back to full screen with all trees displayed.*

**To view trees with more than one shared feature** (i.e. Green Ash trees with a DBH over 42"):

1. Click on the small gray tab, click on "Tree Inventory," click on "Options" and scroll down and click "Filter" just like above.
2. Click on "Add filter expression" twice; this will bring up two sets of data fields.
3. A small drop box will appear just below the word "expression". Select "All" from this box. Enter the information you'd like to observe for the first characteristic (Species – is – Green ash) in the first line of data fields and the information for the second characteristic (DBH – is – >42) in the second line.
4. Click "OK." The map should refresh so that only Green ash with a DBH over 42" will appear.

**To view locations of trees with different sets of characteristics** (i.e. Green ash trees and white ash trees):

1. Complete steps 1 and 2 from the "shared feature" action, but then select "**Any**" from the small drop down menu instead of "All."
2. Select "Species – is – Green Ash " in the first field and "Species – is – White ash" in the second field.
3. Click "OK;" the map should refresh so that all of the green ash AND white ash in your community will appear.



**BUSINESS OF THE PARKS & RECREATION BOARD  
BONDURANT, IOWA  
AGENDA STATEMENT**

Item No. 7.a.  
For Meeting of 5/20/2021  
**Receive and File**

**TITLE:** Approve and File **Joshua Rose Gaga Pit Eagle Scout Project** Project  
Beneficiaries Form and discuss project progress

**CONTACT PERSON:**

John Horton, Public Works Director

**BRIEF HISTORY & ANALYSIS:** Joshua Rose is moving forward with the construction of a Gaga Pit for his Eagle Scout Project. City staff has assigned Wisteria Heights Park as the prime location for his project. City staff met Joshua Rose on site to review his plan. His next step is to work with Bondurant Public Works to seek approval to begin construction after he shares construction details.

**COMMISSION REVIEW/RECOMMENDATION:**

**FUNDING SOURCE:**

**STAFF RECOMMENDATION:** Staff recommendation is to approve and file.

**APPROVED FOR SUBMITTAL:**

**ATTACHMENTS:**

1. Eagle Scout Project Beneficiary Joshua Rose - Gaga Pit



# Navigating the Eagle Scout Service Project

## *Information for Project Beneficiaries*

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### **Thank You and Congratulations**

Congratulations on your selection as an Eagle Scout service project beneficiary, and thank you for the opportunity you are making available to an Eagle Scout candidate. Support from community organizations is important to Scouting—just as important as Scouting’s contributions are to the community. Scouts provide important services, and benefiting organizations such as yours provides a vehicle for personal growth.

### **The Eagle Scout Rank and the Service Project**

Service to others is an important part of the Scout Oath: “... to help other people at all times.” Each year tens of thousands of Scouts strive to achieve the coveted Eagle Scout rank by applying character, citizenship, and Scouting values in their daily lives. One of the rank requirements is to *plan, develop, and give leadership to others in a service project helpful to any religious institution, school, or community*. Through this requirement, Scouts practice what they have learned and gain valuable project management and leadership experience.

### **Typical Projects**

There are thousands of possible Eagle Scout projects. Some involve building things, and others do not. There have been all kinds: making birdhouses for an arboretum, conducting bicycle safety rodeos, constructing park picnic tables or benches, upgrading hiking trails, planting trees, conducting well-planned blood drives, and on and on. Other than the general limitations noted below, there are no specific requirements for project scope or for how many hours are worked, and there is no requirement that a project have lasting value. What is most important is the *impact or benefit* the project will provide to your organization. In choosing a project, remember it must be something a group with perhaps limited skills can accomplish under the leadership of your Eagle Scout candidate. In order to fulfill the requirement, the *Scout* must be the one to lead the project. Therefore, it is important that you work with the Scout and not with the Scout’s parents or leaders.

### **Project Restrictions and Limitations**

- Fundraising is permitted only for facilitating a project. Efforts that primarily collect money, even for worthy charities, are not permitted.
- Routine labor, like a service Scouts may provide as part of their daily lives such as mowing or weeding a church lawn, is not normally appropriate. However, if project scale and impact are sufficient to require planning and leadership, then it may be considered.
- Projects are not to be of a commercial nature or for a business, though some aspects of a business operation provided as a service, such as a community park, may qualify.
- The Scout is not responsible for any maintenance of a project once it is completed.

### **Approving the Project Proposal and Project Scheduling**

Once a potential project is identified, you must approve your Scout’s proposal. Regular communications with the Scout can make this quick and easy, but be sure you have both discussed and considered all aspects of the project to ensure your Scout has a clear understanding of your expectations and limitations. Keep in mind the Scout’s proposal is merely an overview—not a comprehensive plan.

Some projects may take only a few weeks or months to plan and carry out, while others may take longer. Scouts working toward the Eagle rank are typically busy, so scheduling flexibility may be important. The proposal must also have several approvals, besides yours, before project planning occurs and work begins. Therefore, if a proposed project must be completed by a certain rapidly approaching date, it may be a good idea to consider something different. Remember, too, that all work must be completed before the Scout’s 18th birthday.

### Approving Project Plans

After the proposal is approved by the BSA local council, your Scout must develop a plan for implementing the project. Before work begins, you should ask to see the plan. It may come in any format you desire or are willing to accept. It could even be a detailed verbal description. That said, the BSA includes a "Project Plan" form in your *Scout's Eagle Scout Service Project Workbook*, and we recommend that you ask your Scout to use it. If in your plan review you have any concerns the project may run into trouble or not produce the results you want, do not hesitate to require improvements *before* work begins.

### Permits, Permissions, and Authorizations

- If the project requires building permits, etc., your Scout needs to know about them for planning purposes. However, your organization must be responsible for all permitting. This is not a duty for the Scout.
- Your organization must sign any contracts.
- If digging is involved, it is your responsibility to locate, mark, and protect underground utilities as necessary.
- If you need approval from a committee, your organization's management, or a parent organization, etc., be sure to allow additional time and let the Scout know if their help is needed.

### Funding the Project

Eagle service projects often require fundraising. Donations of any money, materials, or services must be preapproved by the BSA unless provided by your organization; by the Scout or the Scout's parents or relatives; or by the Scout's unit or its chartered organization. The Scout must make it clear to donors or fundraising event participants that the money is being raised on the project beneficiary's behalf, and that the beneficiary will retain any leftover funds. If receipts are needed, your organization must provide them. If your organization is not allowed to retain leftover funds, you should designate a charity to receive them or turn them over to your Scout's unit.

### Supervision

To meet the requirement to "give leadership to others," your Scout must be given every opportunity to succeed independently without direct supervision. The Scout's unit must provide adults to assist or keep an eye on things, and your organization should also have someone available. The Scout, however, *must* provide the leadership necessary for project completion without adult interference.

### Safety

Through the proposal and planning process, the Scout will identify potential hazards and risks and outline strategies to prevent and handle injuries or emergencies. Scouts as minors, however, *cannot be held responsible for safety*. Adults must accept this responsibility. Property owners, for example, are responsible for issues and hazards related to their property or employees and any other individuals or circumstances they would normally be responsible for controlling. If during project execution you have any concerns about health and safety, please share them with the Scout and the unit leaders so action may be taken. If necessary, you may stop work on the project until concerns are resolved.

### Project Completion and Approval

After the project has been completed, your Scout will ask for your approval on their project report. The report will be used in the final review of the Scout's qualifications for the Eagle Scout rank. If the Scout has met your reasonable expectations, you should approve the project; if not, you should ask for corrections. This is not the time, however, to request changes or additions beyond what was originally agreed.

The Eagle Scout service project is an accomplishment a Scout will always remember. Your reward will be a helpful project and, more important, the knowledge you have contributed to a young Scout's growth.



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Caution: Using an Adobe or other PDF reader to insert a "signature" can cause this entire document's contents to be locked preventing future edits; make sure you save a copy if any signatures will be inserted digitally.

|                                                                                                                                                                                                                                                                                                                       |  |                                                                          |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------|--|
| <b>Candidate's Promise*</b>                                                                                                                                                                                                                                                                                           |  | <i>Sign below before you seek the other approvals for your proposal.</i> |  |
| On my honor as a Scout, I have read this entire workbook, including the "Message to Scouts and Parents or Guardians" on page 4. I promise to be the leader of this project, and to do my best to carry it out for the maximum benefit to the religious institution, school, or community I have chose as beneficiary. |  |                                                                          |  |
| Signed                                                                                                                                                                                                                                                                                                                |  | Date                                                                     |  |

\* Remember: Do not begin any work on your project, or raise any money, or obtain any materials, until your project has been approved.

|                                                                                                                                                                                                                                                                                                                                                                                      |      |                                                                                                                                                                                                                                                                                                                                                                                  |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Unit Leader Approval*</b>                                                                                                                                                                                                                                                                                                                                                         |      | <b>Unit Committee Approval*</b>                                                                                                                                                                                                                                                                                                                                                  |      |
| I have reviewed this proposal and discussed it with the candidate. I believe it provides impact worthy of an Eagle Scout service project, and will involve planning, development and leadership. I am comfortable the Scout understands what to do, and how to lead the effort. I will see that the project is monitored, and that adults or others present will not overshadow him. |      | This Eagle Scout candidate is a Life Scout, and registered in our unit. I have reviewed this proposal, I am comfortable the project is feasible, and I will do everything I can see that our unit measures up to the level of support we have agreed to provide (if any). I certify that I have been authorized by our unit committee to provide its approval for this proposal. |      |
| Signed                                                                                                                                                                                                                                                                                                                                                                               | Date | Signed                                                                                                                                                                                                                                                                                                                                                                           | Date |
| Name (Printed)                                                                                                                                                                                                                                                                                                                                                                       |      | Name (Printed)                                                                                                                                                                                                                                                                                                                                                                   |      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |                                                                                                                                                                                                                                                                                                                                                                                                                            |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>Beneficiary Approval*</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |      | <b>Council or District Approval</b>                                                                                                                                                                                                                                                                                                                                                                                        |      |
| This service project will provide significant benefit, and we will do all we can to see it through. We realize funding on our part is not required, but we have informed the Scout of the financial support (if any) to which we have agreed. We understand any fund raising the Scout conducts will be in our name and that funds left over will come to us if we are allowed to accept them. We will provide receipts to donors as required. |      | I have read topics 9.0.2.0 through 9.0.2.15, regarding the Eagle Scout service project, in the <i>Guide to Advancement</i> , No. 33088. I agree on my honor to apply the procedures as written, and in compliance with the policy on "Unauthorized Changes to Advancement." Accordingly, I approve this proposal. I will encourage the candidate to prepare a project plan and share it with the designated project coach. |      |
| Our Eagle Candidate has provided us a copy of "Navigating the Eagle Scout Service Project, Information for Project Beneficiaries."<br>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>                                                                                                                                                                                                                                      |      |                                                                                                                                                                                                                                                                                                                                                                                                                            |      |
| Signed                                                                                                                                                                                                                                                                                                                                                                                                                                         | Date | Signed                                                                                                                                                                                                                                                                                                                                                                                                                     | Date |
| Name (Printed)                                                                                                                                                                                                                                                                                                                                                                                                                                 |      | Name (Printed)                                                                                                                                                                                                                                                                                                                                                                                                             |      |

\* While it makes sense to obtain approvals in the order they appear, there shall be no required sequence for the order of obtaining those approvals marked with an asterisk (\*). Council or district approval, however, must come after the others.



**BUSINESS OF THE PARKS & RECREATION BOARD  
BONDURANT, IOWA  
AGENDA STATEMENT**

**TITLE:** Establish an official entrance from Chichaqua Valley Trail to West Soccer Complex

**CONTACT PERSON:**

Nicole Van Houten, Communication & Event Specialist

**BRIEF HISTORY & ANALYSIS:** View the Polk County GIS Mapping to view the aerial view

<https://gisp1.polkcountyiowa.gov/portal/home/webmap/viewer.html?useExisting=1&layers=5adee209b>

**COMMISSION REVIEW/RECOMMENDATION:**

**FUNDING SOURCE:**

**STAFF RECOMMENDATION:** Open for discussion.

**APPROVED FOR SUBMITTAL:**

**ATTACHMENTS:** None



**BUSINESS OF THE PARKS & RECREATION BOARD  
BONDURANT, IOWA  
AGENDA STATEMENT**

**TITLE:** Wisteria Heights Basketball Court or Multi Purpose Court

**CONTACT PERSON:**

Nicole Van Houten, Communication & Event Specialist

**BRIEF HISTORY & ANALYSIS:** View the Polk County GIS Mapping to view the aerial view

<https://gisp1.polkcountyiowa.gov/portal/home/webmap/viewer.html?useExisting=1&layers=5adee209b>

**COMMISSION REVIEW/RECOMMENDATION:**

**FUNDING SOURCE:**

**STAFF RECOMMENDATION:** Open for discussion.

**APPROVED FOR SUBMITTAL:**

**ATTACHMENTS:** None



**BUSINESS OF THE PARKS & RECREATION BOARD  
BONDURANT, IOWA  
AGENDA STATEMENT**

Item No. 9.a.  
For Meeting of 5/20/2021  
**Reports and Comments**

**TITLE:** Event Reports

**CONTACT PERSON:**

**BRIEF HISTORY & ANALYSIS:** File and approve Event Reports for Week Seven Take & Make Kits, Week Eight Take & Make Kits, Keep Bondu Beautiful, Live Healthy Iowa 5K, and Spring Bags Tournament.

**COMMISSION REVIEW/RECOMMENDATION:**

**FUNDING SOURCE:**

**STAFF RECOMMENDATION:** Staff recommendation is to file and approve.

**APPROVED FOR SUBMITTAL:**

**ATTACHMENTS:** None



**BUSINESS OF THE PARKS & RECREATION BOARD  
BONDURANT, IOWA  
AGENDA STATEMENT**

Item No. 9.b.  
For Meeting of 5/20/2021  
**Reports and Comments**

**TITLE:** Central Park Concept

**CONTACT PERSON:**

Marketa Oliver, City Administrator  
Maggie Murray, Planning & Community Development Director

**BRIEF HISTORY & ANALYSIS:** Page 9 of the [Bondurant Regional Commercial Master Plan](#) showcases an aerial map of the Central Park Concept. This Master Plan outlines the zoning and overlay land use. Page 38 is another view of the area. Here is a news article that was published on the cities website and was sent to the press <https://www.cityofbondurant.com/home/news/adoption-and-implementation-bondurant-regional-master-plan>

**COMMISSION REVIEW/RECOMMENDATION:**

**FUNDING SOURCE:**

**STAFF RECOMMENDATION:** Open for discussion.

**APPROVED FOR SUBMITTAL:**

**ATTACHMENTS:** None



**BUSINESS OF THE PARKS & RECREATION BOARD  
BONDURANT, IOWA  
AGENDA STATEMENT**

Item No. 9.c.  
For Meeting of 5/20/2021  
**Reports and Comments**

**TITLE:** Gay Lea Wilson Underpass Progress

**CONTACT PERSON:**

Marketa Oliver, City Administrator

**BRIEF HISTORY & ANALYSIS:** Progress updates can be found here

<https://www.cityofbondurant.com/home/pages/gay-lea-wilson-underpass>

**COMMISSION REVIEW/RECOMMENDATION:**

**FUNDING SOURCE:**

**STAFF RECOMMENDATION:** Open for discussion.

**APPROVED FOR SUBMITTAL:**

**ATTACHMENTS:** None