

Valley Lo Tree Inventory and Management Plan | 2019



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Valley Lo Tree Inventory and Management Plan

MAKING THE MOST OF YOUR INVENTORY MANAGEMENT PLAN

Those who operate a large business or institution understand how inventory impacts operations and budgeting. One must know what's there, how much or how many, and where it all is. But the task doesn't end there. To obtain the greatest benefit from inventory, owners or their designees must manage it. Are a company's tools, for example, old and defective, in need of repair, in short supply, or useless and taking up space that could be better occupied? A good management plan will address these issues and keep the inventory current, in good condition, and functioning for the benefit and safety of those involved.

Managing trees on a large property can seem like an overwhelming task, but the same principles of inventory management apply. This inventory and management plan should provide managers the data they need to develop realistic budgets for their tree maintenance needs, and it will help make the Valley Lo HOA a safer and more beautiful environment.

The following tips will assist you in making the most of this document:

Who's Who

Those who conducted the inventory and prepared this document are members of the Bartlett Inventory Solutions team. They are also employees of Bartlett Tree Experts. The Bartlett Inventory Solutions team is overseen by Technical Advisors out of the Bartlett Tree Research Laboratories in Charlotte, North Carolina. The advisors are primarily charged with client support, coordination, quality control, and documentation of inventories and the related data. Extensively trained Regional Inventory Arborists from local Bartlett Tree Experts offices are the primary data collectors and authors of the management plans. Readers may interpret the terms "Bartlett Tree Experts," "Bartlett," "the Inventory Team," "the team," "we," and "our" as the Bartlett company and those who conducted the inventory and prepared this management plan. In addition to the primary author(s) listed on the cover page, Team Member(s) involved in this project included:

Technical Advisor

Kevin Weber, Bartlett Inventory Solutions

Registered Consulting Arborist #636, ISA Board Certified Master Arborist #PD-2030B,
ISA Tree Risk Assessment Qualified

Data Collection

Max Zilz, Regional Inventory Arborist

ISA Certified Arborist #IL-1758A, ISA Tree Risk Assessment Qualified

Subject Trees

In this document, the term "subject trees" refers (depending on context) to some or all of the 150 trees (some of them groupings of trees) included in the inventory.

Definitions & Bolded Terms

Some definitions or specifications are detailed within a given section to explain how readers should interpret certain terms or classifications. We have also appended a Glossary for other terms that appear throughout the document. The first reference to each of these terms appears in **bold** for the reader's convenience.

How This Document is Organized

An outline appears below that introduces the order in which the sections of the management plan will appear. The management plan layout is as follows:

- **Table of Contents**
 - Road map for the management plan
- **Making the Most of Your Inventory Management Plan**
 - Explanations for how to efficiently and effectively understand and navigate this management plan document
- **Executive Summary**
 - Synopsis of the major findings and recommendations
- **Introduction**
 - Brief explanation of the inventory and what was included
- **Goals & Objectives**
 - Explanation of the specific goals and objectives for this inventory
- **Data Collection & Tree Inspection Methodology**
 - Lists, explanations, and definitions of all data collected during the inventory
- **Tree Risk Assessment and Mitigation**
 - Summary of *overall tree risk ratings* assigned during the inventory with corresponding table and map displays with figures if applicable
 - Summary of *Level 3 Advanced assessments* recommended during the inventory (summarized in the *overall tree risk ratings* table) with a map display and figures if applicable
- **Stand Dynamics Results**
 - Summary information for the entire tree population inventoried

- **Recommendations**
 - Summary of all recommendations made during the inventory including associated table and map displays, explanations and examples, and figures if applicable
- **Defects or Observations**
 - List of all trees observed to have defects in the field in a table view with associated descriptive figures and maps if applicable
- **Entire Inventory**
 - List of all trees collected in a table display
- **Additional Resources**
 - Listing of all appended items for this management plan

EXECUTIVE SUMMARY

In August 2019, the Bartlett Inventory Solutions (BIS) Team from Bartlett Tree Experts conducted an inventory of trees within the Valley Lo HOA. We identified 150 trees, including 3 groupings, which included 23 species. The attributes that we collected include tree latitude and longitude, size, age and condition class, and a visual assessment of tree structure, health, and **vigor**.

We conducted the attribute collection using a sub-meter accuracy Global Positioning Satellite Receiver (GPSr) device with an error-in-location potential of not greater than three meters. Our recommendations for the subject trees are based on the number of desired management cycles. All tree work activities will comply with current American National Standards Institute (ANSI) Z133.1 requirements for safety.

Tree Risk Assessments and Mitigation

As part of the inventory process, the Inventory Team conducts a *basic assessment (Level 2)* from the ground in accordance with industry standards. While every tree poses a risk, typically *Low*, no trees were found to have defects or concerns at the time of inventory that prompted the use of the International Society of Arboriculture's (ISA) risk matrices in the field. However, we recommend close monitoring of trees for changes in condition, especially after weather events not considered normal for the area.

Level 3 Advanced Assessment

At the time of inventory, no trees were recommended for *Level 3 Advanced assessments* to evaluate the impact of wood decay. However, as trees continue to grow and site changes occur, we recommend continual consultation with your local Bartlett Arborist Representative to determine if *Level 3 Advanced assessments* are warranted in the future.

Soil Sampling

Taking soil samples throughout planting beds and actively managed areas. Soil analysis provides information on the presence of soil nutrients, pH, organic matter, and cation exchange capacity.

Bulk Density Sampling

Taking bulk density samples throughout planting beds and actively managed areas to determine the amount of soil compaction.

Mulching

Wherever possible, apply 2-4 inches of mulch within the root zone to help moderate soil temperatures, reduce soil moisture loss, reduce soil compaction, provide nutrients, improve soil structure, and keep mowers and string trimmers away from tree trunks. The best mulch materials are wood chips, bark nuggets, composted leaves, or pine needles. To avoid potential disease problems, mulch should not be placed directly against the trunk.

Root Collar Excavations

Perform **root collar** excavations to 76 trees (51%) to lower risk of damaging conditions such as **girdling roots**, basal cankers, masking of root decay and lower-stem decay, and predisposing trees to various insect and disease pests.

Plant Health Care (PHC)

Implement Bartlett's PHC program to monitor pests and diseases on the subject trees. Treatments are therapeutic and preventive, and treatment timing is based on pest life cycle.

Pruning

Prune 62 trees (41%) for safety, health, structure, and appearance. Pruning will comply with current ANSI A300 standard practices for pruning.

Structural Support

At the time of inventory, no trees were recommended for structural support. However, as trees continue to grow and site changes occur, we recommend continual consultation with your local Bartlett Arborist Representative to determine if structural support systems are warranted in the future.

Lightning Protection

At the time of inventory, no trees were recommended for lightning protection systems. However, as trees continue to grow and site changes occur, we recommend continual consultation with your local Bartlett Arborist Representative to determine if lightning protection systems are warranted in the future.

Removals

Remove 8 trees (5%) due to condition or because of their location in relation to other trees to try and prevent competition or damage to infrastructure.

INTRODUCTION

In July 2019, Braeside Condominium Management Ltd. in Glenview, IL retained Bartlett Tree Experts to perform an inventory of trees within the Valley Los HOA. Team member Max Zilz visited the site on August 19, 2019 to conduct the inventory.

The inventory included:

- identifying trees and assigning a Tree ID number (Tree ID numbers ranging from 1 to 137);
- identifying the trees' condition, health, and vigor;
- recommending risk evaluations and removals of appropriate trees;
- recommending tree care, soil care, structural support, and pest management treatments to promote tree safety, health, appearance, and longevity; and
- mapping the trees using GPSr hardware and Geographic Information System (GIS) software, and Bartlett Tree Experts' ArborScope™ web-based management system

The methods and procedures we used to make the above determinations and recommendations are detailed in the following sections.

GOALS & OBJECTIVES

An effective management plan communicates clear goals and the specific objectives designed to carry out those goals. We intend "goal" to mean the overall aim or result we expect to achieve for the client in producing the inventory and management plan. The objectives are the specific actions taken or recommended to support goal completion. The table below describes each goal and its corresponding objective(s).

GOALS & OBJECTIVES

GOAL	OBJECTIVES TO ACCOMPLISH GOAL
Establish the tree inventory (per numbers agreed) on the Valley Lo site.	<ul style="list-style-type: none"> • Using Trimble® Geo GPSr hardware and ArborScope™ Inventory Management Tools, collect data such as tree name, location, size, age class, and condition class. • Assign a Tree ID number to each tree or group of trees inventoried.
Provide mechanism for managing inventory, recommendations, and related budget planning.	<ul style="list-style-type: none"> • Provide map or maps of the inventoried trees and tree groupings to assist the client in managing property areas. • Submit a comprehensive management plan that documents and organizes findings and provides other resources to assist the client in efficient use of the information.
Maximize client understanding and implementation of management plan.	<ul style="list-style-type: none"> • Include in management plan specific explanations and visuals related to plan recommendations. • Provide appended resources that address health, procedures, and standards related to tree care. • Make periodic contact with client to follow up and answer any questions about the management plan's contents.
Maximize immediate and long-term tree health and aesthetics.	Implement recommended plant-health-care program that uses <ul style="list-style-type: none"> • integrated pest management • soil care • maintenance pruning
Manage immediate and long-term risk associated with trees in high-use areas.	Implement recommended risk-management measures that include <ul style="list-style-type: none"> • risk-reduction pruning • required removals • tree structure evaluations

DATA COLLECTION & TREE INSPECTION METHODOLOGY

In conducting the inventory, we used specialized equipment and software and followed specific procedures to determine tree characteristics, risk evaluations, and recommendations. The following explanation will assist the reader in interpreting the findings of this management plan.

Data Collection Equipment & Attribute Data

The Inventory Team used Trimble® Geo GPSr hardware units, TerraSync® and GPS Pathfinder® Office GIS software, and Bartlett Tree Experts' ArborScope™ web-based

management system to inventory the trees. The attribute data we collected on site are listed below.

- botanical name and regional common name according to local ISA Chapter Tree Species List
- tree location based on GPS coordinate system
- tree ID number
- diameter at breast height (**DBH**)
- canopy radius
- age class
- height class
- condition class
- root zone infringement, based on **dripline** and estimated **grayscale** (e.g., sidewalks) impact on root zone
- infrastructure interaction (between trees and grayscale that may cause an undesirable condition)
- documented *Level 2 Basic assessment* for tree risk where defects or concerns were observed that prompted the need to use the ISA risk matrices in the field resulting in an *overall tree risk rating*
- Tree & Shrub Work phase (based on number of desired management cycles)
- pruning category
- need for and inspection of existing structural support systems
- need for and inspection of existing lightning protection systems
- need for *Level 3 Advanced assessment* for tree risk
- tree removals
- soil care recommendations
- plant health care recommendations
- noted defects/observations
- observed pests/diseases

Specifications/Definitions

Age Class

New Planting	Tree not yet established
Young	Established tree but not in the landscape for many years
Semi-mature	Established tree but has not yet reached full growth potential
Mature	Tree within its full growth potential
Over-mature	Tree that is declining or beginning to decline due to its age

Height Class

Small	Less than 15 feet
Medium	15 to 40 feet
Large	Greater than 40 feet

Condition Class

Dead

Poor Most of the canopy displays dieback and undesirable leaf color, inappropriate leaf size or inadequate new growth. Tree or parts of tree are in the process of failure.

Fair Parts of canopy display undesirable leaf color, inappropriate leaf size, and inadequate new growth. Parts of the tree are likely to fail.

Good Tree health and condition are acceptable.

Tree & Shrub Work Phase

Tree & Shrub Work phase takes into consideration tree species, condition, location, age, and proximity to infrastructure. We intend for this rating system to assist decision makers in prioritizing risk mitigation, tree pruning, cabling and bracing, and tree lightning protection recommendations. *Trees with an ASAP and an overall tree risk rating of extreme or high (see definitions in the next section) should be addressed immediately.* Prioritization does not take into account any budgetary or financial considerations.

Phase 1, 2, 3, 4, and 5 are all based on observations by the inventory arborist according to the manager's goals. The following additional information clarifies each priority:

- ASAP** Trees with recommendations that should be addressed As Soon As Possible.
- Phase 1** Typically addressed in the first management cycle. Trees located in high-use sites, have a high aesthetic value, have an elevated *overall tree risk rating*, and/or parts that are currently in conflict with infrastructure.
- Phase 2** Typically addressed in the second management cycle. Trees with moderate aesthetic value, don't have an elevated *overall tree risk rating*, and/or parts that are anticipated to be in conflict with infrastructure.
- Phase 3** Typically addressed in the third management cycle. Tree parts that are anticipated to be in conflict with infrastructure and/or recommendations based on anticipated growth.
- Phase 4** Typically addressed in the fourth management cycle. Recommendations are for future consideration and anticipated growth.
- Phase 5** Typically addressed in the fifth management cycle. Recommendations are for future consideration and anticipated growth.

Pruning Category

All trees identified in this management plan that have tree care recommendations are listed within a specific pruning category. Trees within each pruning category can be prioritized by the specific goals of the manager. It is recommended that specific goals be discussed prior to any pruning.

Risk Mitigation	This goal requires pruning of any tree where risk mitigation should take precedence over other pruning goals. Typically aims to reduce the <i>overall tree risk rating</i> by branch removal and/or branch reduction.
Maintenance	This goal typically requires routine pruning of large/mature trees. Includes branch removal and/or branch reduction to help reduce <i>likelihood of failure</i> and/or conflict with infrastructure. Trees with this goal are typically climbed or require the use of aerial lifts and/or other specialized equipment.
Developmental	This goal typically requires routine pruning of small/young trees. Includes structural pruning to develop a strong central stem, establish proper branch spacing, and/or develop branch structure.
Ornamental	This goal typically requires pruning of small trees. Includes reduction and/or shearing to its desired shape, size, and/or structure.
Specialized	Trees with this goal require a unique treatment that may include, but not limited to, targeted pruning cuts, removal of nuisance fruit/parasitic plants, and/or rejuvenation/internodal pruning.

* The listed descriptions of goals, tools, and/or techniques are not limited to these definitions. Specific individual goals and species profiles should guide the pruning recommendations.

Tree Risk Assessments, Limitations & Glossary

In accordance with industry standards, tree risk ratings are derived from a combination of three factors: the *likelihood of failure*, the *likelihood of the failed tree part impacting a target*, and the *consequences* of the target being struck. The guidelines used to classify each of these factors are presented in the *ISA's BMP for Tree Risk Assessment* and guidelines developed by the Bartlett Tree Research Laboratories. *These factors are then used to categorize tree risk as Extreme, High, Moderate or Low.* The factors used to define your risk ratings are identified in this report. An explanation of terms used in this report appears in the glossary located in the appendix. The information provided in this report is based on the conditions identified at the time of inspection. Tree conditions do change over time so reassessment is recommended annually and after major storm events.

Limitations of Tree Risk Assessments

It is important for the tree owner or manager to know and understand that all trees pose some degree of risk from failure or other conditions. The information and recommendations within this report have been derived from the level of tree risk assessment identified in this report, using the information and practices outlined in the *International Society of Arboriculture's Best Management Practices for Tree Risk Assessment*, as well as the information available at the time of the inspection. However, the *overall tree risk rating*, the mitigation recommendations, or any other conclusions do not preclude the possibility of failure from undetected conditions, weather events, or other acts of man or nature. Trees can unpredictably fail even if no defects or other conditions are present. It is the responsibility of the tree owner or manager to schedule repeat or *Advanced assessments*, determine actions, and implement follow up recommendations, monitoring and/or mitigation.

Bartlett Tree Experts can make no warranty or guarantee whatsoever regarding the safety of any tree, trees, or parts of trees, regardless of the level of tree risk assessment provided, the risk rating, or the residual risk rating after mitigation. The information in this report should not be considered as making safety, legal, architectural, engineering, landscape architectural, land surveying advice or other professional advice. This information is solely for the use of the tree owner and manager to assist in the decision making process regarding the management of their tree or trees. Tree risk assessments are simply tools which should be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

Glossary

Tree risk assessment has a unique set of terms with specific meanings. Definitions of all specific terms may be found in the *International Society of Arboriculture's Best Management Practice for Tree Risk Assessment*. Definitions of some of these terms used in this report are as follows:

The *likelihood of failure* may be categorized as imminent meaning that failure has started or could occur at any time; probable meaning that failure may be expected under normal weather conditions within the next 3 years; possible meaning that failure could occur, but is unlikely under normal weather conditions during that time frame; and improbable meaning that failure is not likely under normal weather conditions, and may not occur in severe weather conditions during that time frame.

The likelihood of the failed tree part impacting a target may be categorized as high meaning that a failed tree or tree part will most likely impact a target; medium meaning the failed tree or tree part could impact the target, but is not expected to do so; low meaning that the failed tree or tree part is not likely to impact a target; and very low meaning that the chance of a failed tree or tree part impacting the target is remote.

The likelihood of failure and impact is defined by the Likelihood Matrix below.

LIKELIHOOD OF FAILURE AND IMPACT

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

The *consequences* of a known target being struck may be categorized as severe meaning that impact could involve serious personal injury or death, damage to high value property, or disruption to important activities; significant meaning that the impact may involve personal injury, property damage of moderate to high value, or considerable disruption; minor meaning that impact could cause low to moderate property damage, small disruptions to traffic or a communication utility, or minor injury; and negligible meaning that impact may involve low value property damage, disruption that can be replaced or repaired, and do not involve personal injury.

Targets are people, property, or activities that could be injured, damaged or disrupted by a tree failure.

Levels of assessment 1) *Limited visual assessments* are conducted to identify obvious defects. 2) *Basic assessments* are visual inspections done by walking around the tree looking at the site, buttress roots, trunk and branches. It may include the use of simple tools to gain information about the tree or defects. 3) *Advanced assessments* are performed to provide detailed information about specific tree parts, defects, targets of site conditions. Drilling to detect decay is an advanced assessment technique.

Tree Risk Ratings are terms used to communicate the level of risk rating. They are defined in defined in the Risk Matrix below as a combination of Likelihood and Consequences:

ISA RISK MATRIX

Likelihood of Failure & Impact	Consequences of the Tree Failure			
	Negligible	Minor	Significant	Severe
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Overall tree risk rating is the highest individual risk identified for the tree. The *residual risk* is the level of risk the tree should pose after the recommended mitigation.

Bartlett Tree Experts can inventory trees that have ropes courses, zip lines, swings, tree houses, or any other life support system attached for several different attributes; however, Bartlett Tree Experts is unable to provide tree risk assessment information on such trees, nor is Bartlett Tree Experts able to determine whether the correct hardware has been used, the systems are attached to the trees correctly, or whether the trees can withstand the additional forces that are placed on the tree or trees from such systems or structures. Bartlett Tree Experts does not recommend that any hardware or structures, other than those recommended by and installed by qualified arborists to aid the tree in structural support or protections from lightning, be installed in or attached to any tree(s). Bartlett Tree Experts recommends removing, or discontinuing the use of, any such system or recreational structure until the Client hires or consults with an engineer/specialist that deals specifically with ropes courses, zip lines, swings, tree houses, or any other life support systems and how they attach to and impact trees to determine if the trees can handle the forces being placed on them.

In the event that Bartlett Tree Experts observes an immediate safety issue with a tree with any such device attached, such as the presence of a dead, dying, or broken limb that could fall and injure a person or damage property, Bartlett Tree Experts may make a recommendation to remove or prune such a limb or otherwise mitigate the obvious safety issue. However, the Client should not infer that following such a recommendation and mitigating the immediate safety issue makes the tree in question safe for the use of the attached device or feature.

TREE RISK ASSESSMENTS AND MITIGATION



TREE RISK ASSESSMENTS AND MITIGATION

As part of the inventory process, the Inventory Team conducts a *Level 2 Basic assessment* from the ground. While every tree poses a risk, typically low, any trees that were found to have conditions that posed a hazardous situation, prompting the arborists to go through the steps outlined in the Tree Risk Assessments, Limitations, and Glossary section of this plan. *Overall Tree Risk Ratings* are then assigned to these trees.

During the *Level 2 Basic assessment* the Regional Inventory Arborist can determine whether some aspect of tree structure or health indicates that a more comprehensive tree structure evaluation, called a *Level 3 Advanced assessment*, is needed to more thoroughly evaluate tree condition and *likelihood of failure*.

In such cases, we may recommend *Level 3 Advanced assessments* of the roots, stem, or crown. These assessments may include climbing inspections, examination of the root system using a compressed-air tool (that avoids damage to roots and underground utilities), resistance-recording drilling, or sonic tomography that produces a visual representation of internal conditions based on how sound moved through the tree. The goal is to use the appropriate method to evaluate impact of wood decay in stems and buttress roots that show potential for failure and to determine presence and condition of the root system. Once those *Level 3 Advanced assessments* are completed, more specific recommendations can be made, such as remediation, maintenance, or removal.

At the time of inventory, no trees were recommended for risk mitigation. However, as trees continue to grow and site changes occur, we recommend continual consultation with your local Bartlett Arborist Representative to determine if risk mitigation is warranted in the future.

STAND DYNAMICS RESULTS



STAND DYNAMICS RESULTS

In reviewing the results and recommendations, the reader will find useful the specifications and definitions detailed in the preceding methodology above. We used the following categories to organize the stand dynamics results, which are displayed in tables:

- **Subject Trees Summarized According to:**
 - Tree Species Identified
 - Tree Groupings
 - Condition Class
 - Age Class
 - Tree Size per DBH
 - Estimated Tree Asset Value
 - Tree Location Value

Where appropriate, we have included explanations, photos, drawings, or other information to illuminate the table contents.

Stand Dynamics

Tree Species Identified

Our inventory revealed 23 species of trees, as detailed in the following table:

TREE SPECIES IDENTIFIED

Genus	Species	Common Name	Count	% Distribution Total
<i>Acer</i>	<i>campestre</i>	Maple-Hedge	3	2%
	<i>platanooides</i>	Maple-Norway	5	3%
	<i>rubrum</i>	Maple-Red	4	3%
	<i>saccharum</i>	Maple-Sugar	1	1%
	<i>x freemanii</i>	Maple-Freeman's	1	1%
Acer Total			14	9%
<i>Amelanchier</i>	sp.	Serviceberry	1	1%
<i>Betula</i>	<i>nigra</i>	Birch-River	2	1%
<i>Celtis</i>	<i>occidentalis</i>	Hackberry	4	3%
<i>Crataegus</i>	sp.	Hawthorn	5	3%
<i>Ginkgo</i>	<i>biloba</i>	Ginkgo	2	1%
<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	Honeylocust-Thornless Common	12	8%
<i>Picea</i>	<i>abies</i>	Spruce-Norway	1	1%
	<i>pungens</i>	Spruce-Colorado Blue	28	19%
Picea Total			29	19%
<i>Pinus</i>	<i>nigra</i>	Pine-Austrian	39	26%
	<i>sylvestris</i>	Pine-Scotch	3	2%
Pinus Total			42	28%
<i>Populus</i>	<i>nigra</i>	Poplar-Black	1	1%
	<i>tremuloides</i>	Aspen	2	1%
Populus Total			3	2%
<i>Pyrus</i>	<i>calleryana</i>	Pear-Callery	2	1%
<i>Quercus</i>	<i>palustris</i>	Oak-Pin	3	2%
	<i>rubra</i>	Oak-Northern Red	3	2%
Quercus Total			6	4%
<i>Syringa</i>	<i>reticulata</i>	Lilac-Japanese Tree	11	7%
<i>Thuja</i>	<i>occidentalis</i>	Arborvitae-Eastern	7	5%
<i>Tilia</i>	<i>cordata</i>	Linden-Littleleaf	10	7%
Grand Total			150	100%

2019 TREE INVENTORY



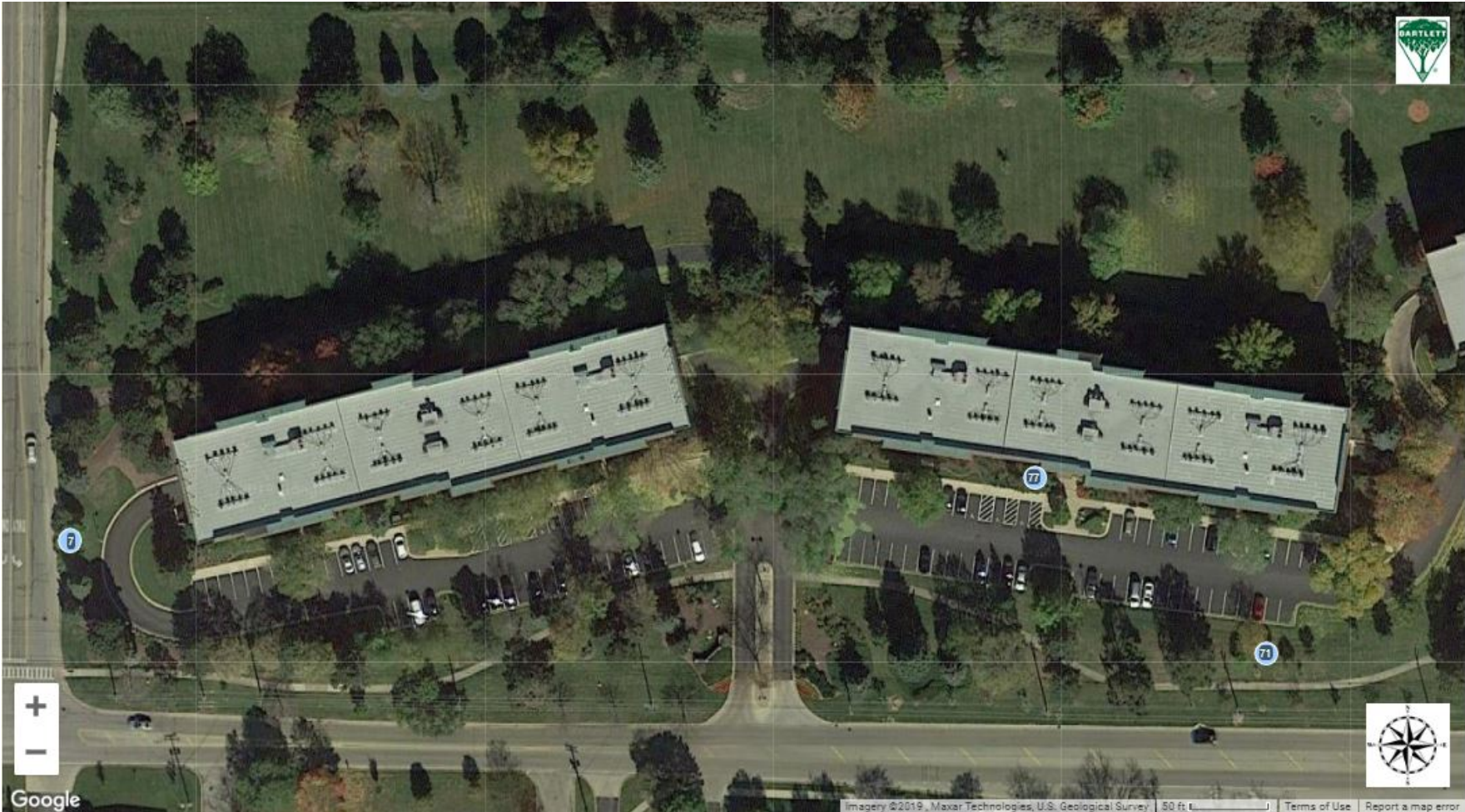
Tree Groupings

The following table displays inventoried trees that were recorded as groupings. Throughout the management plan, those trees recorded as groupings will be displayed with the number of plantings in parentheses after the common name.

TREE GROUPINGS

Tree ID	Common Name	Total Plants
7	Lilac-Japanese Tree	5
71	Lilac-Japanese Tree	4
77	Arborvitae-Eastern	7

INVENTORIED TREES RECORDED AS GROUPINGS

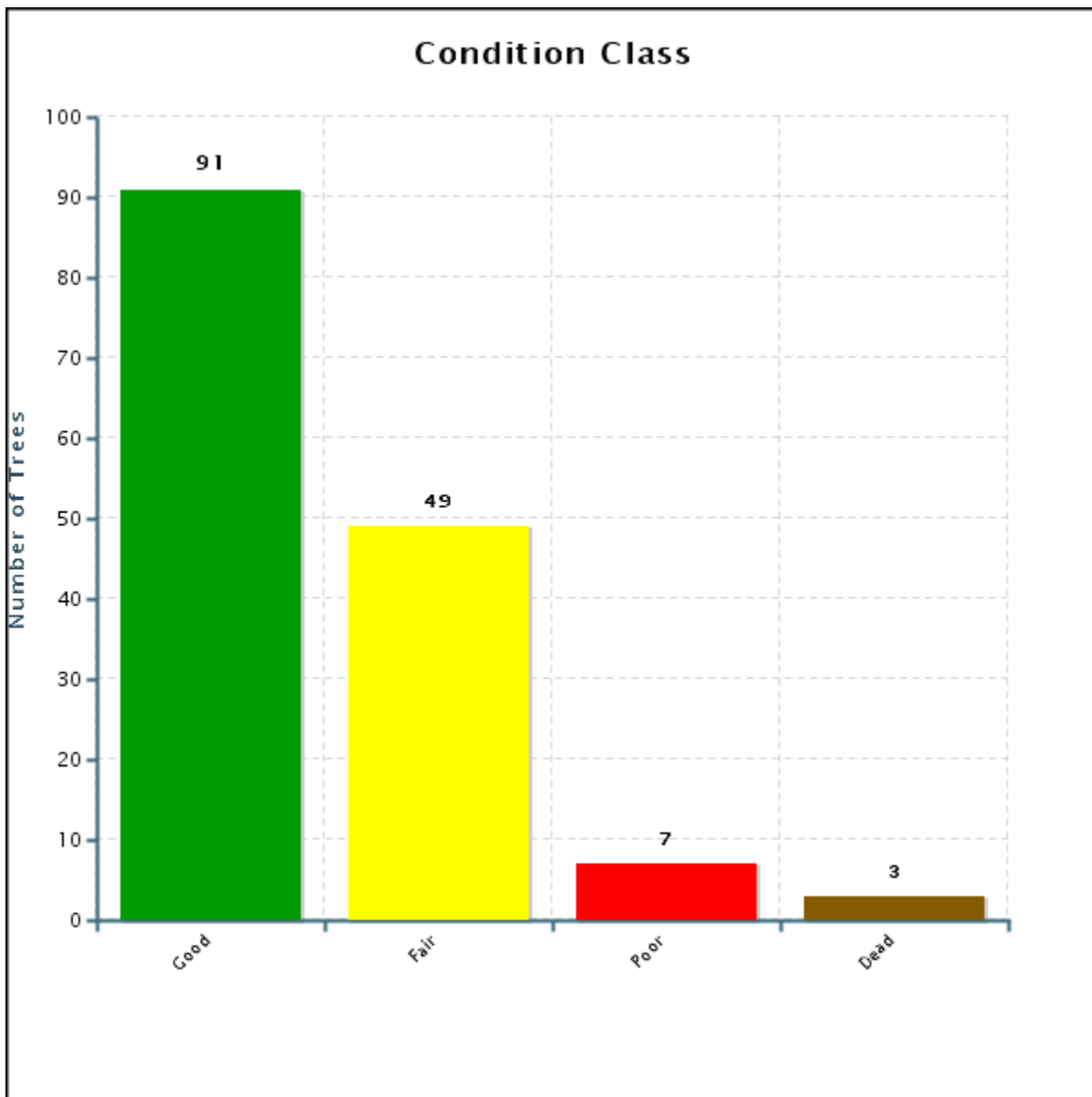


Condition Class

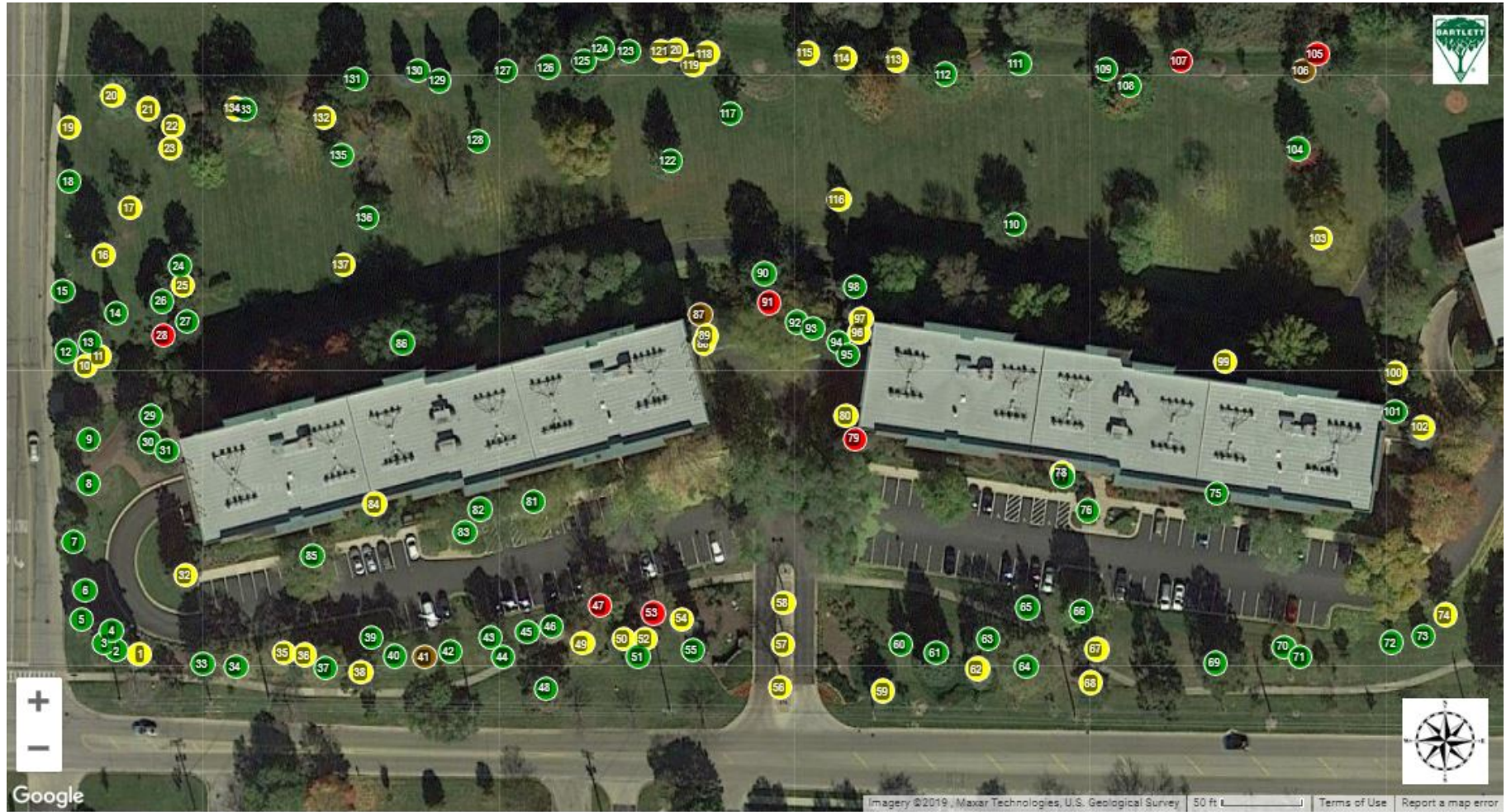
The breakdown of tree condition follows:

CONDITION CLASS BREAKDOWN

Condition Class	Quantity	% of Total
Good	91	61%
Fair	49	33%
Poor	7	5%
Dead	3	2%



INVENTORIED TREES BY CONDITION CLASS



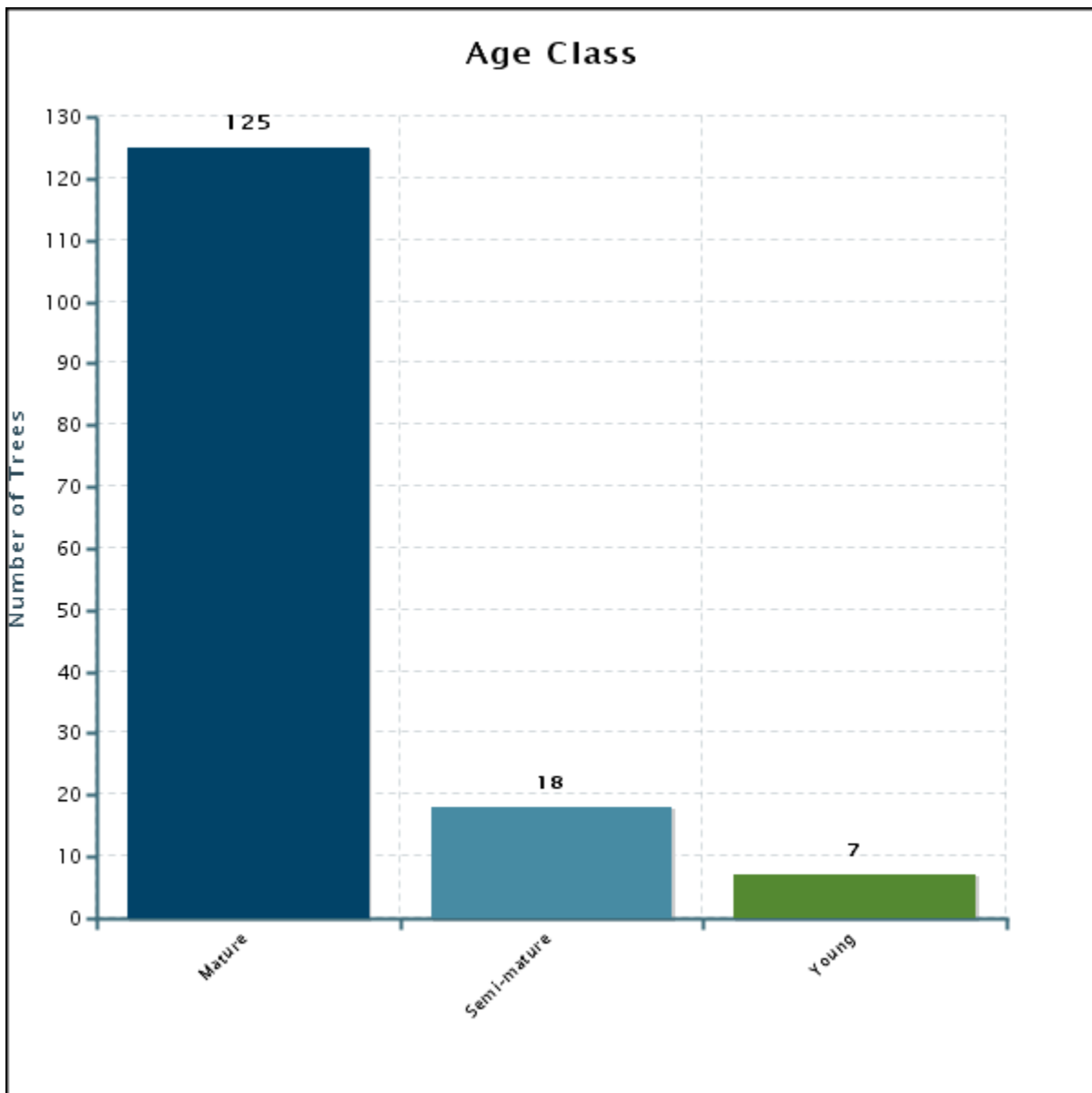
Condition: ● Good ● Fair ● Poor ● Dead

Age Class

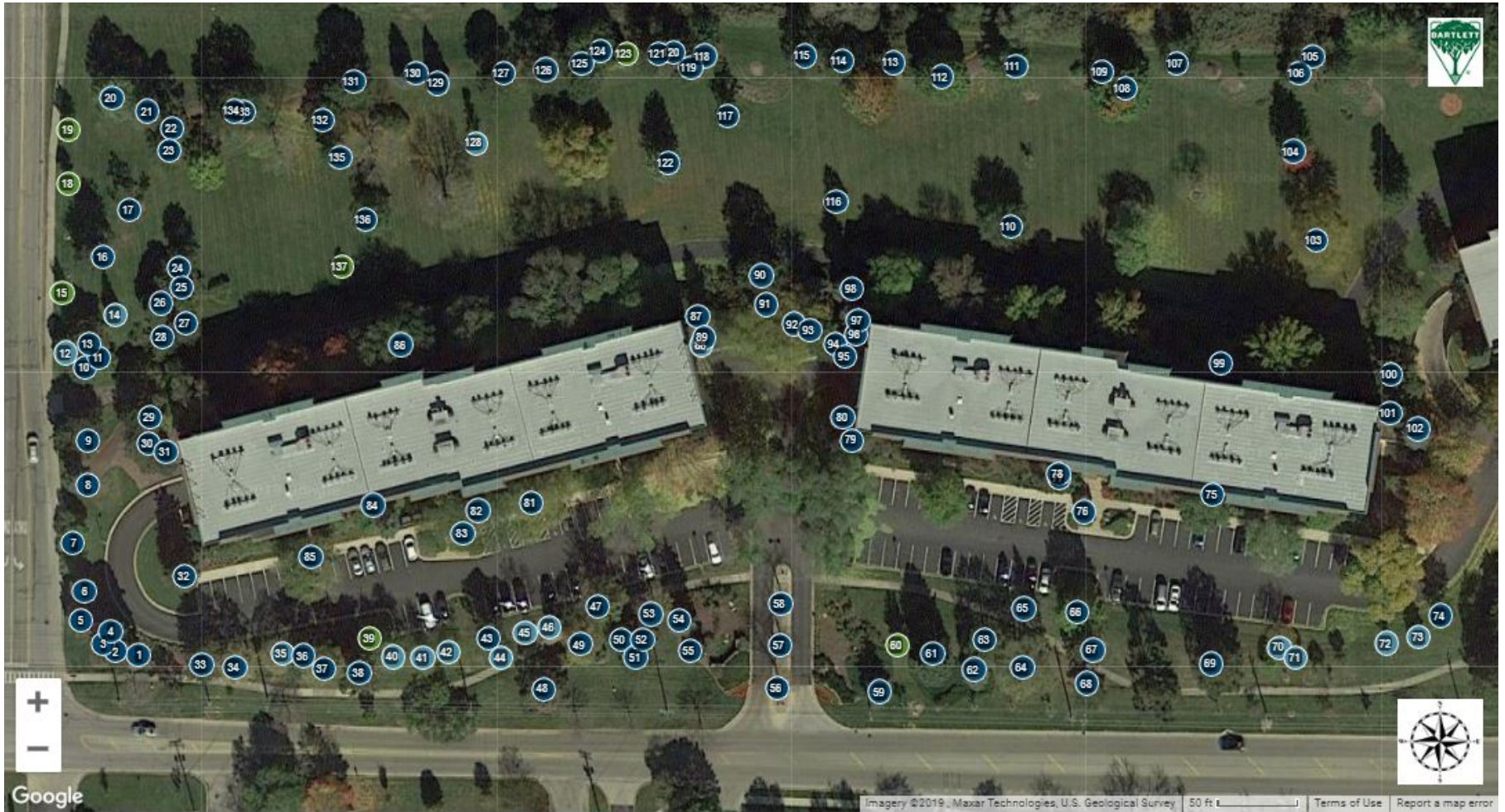
The breakdown of tree age class follows:

AGE CLASS BREAKDOWN

Age Class	Quantity	% of Total
Mature	125	83%
Semi-mature	18	12%
Young	7	5%

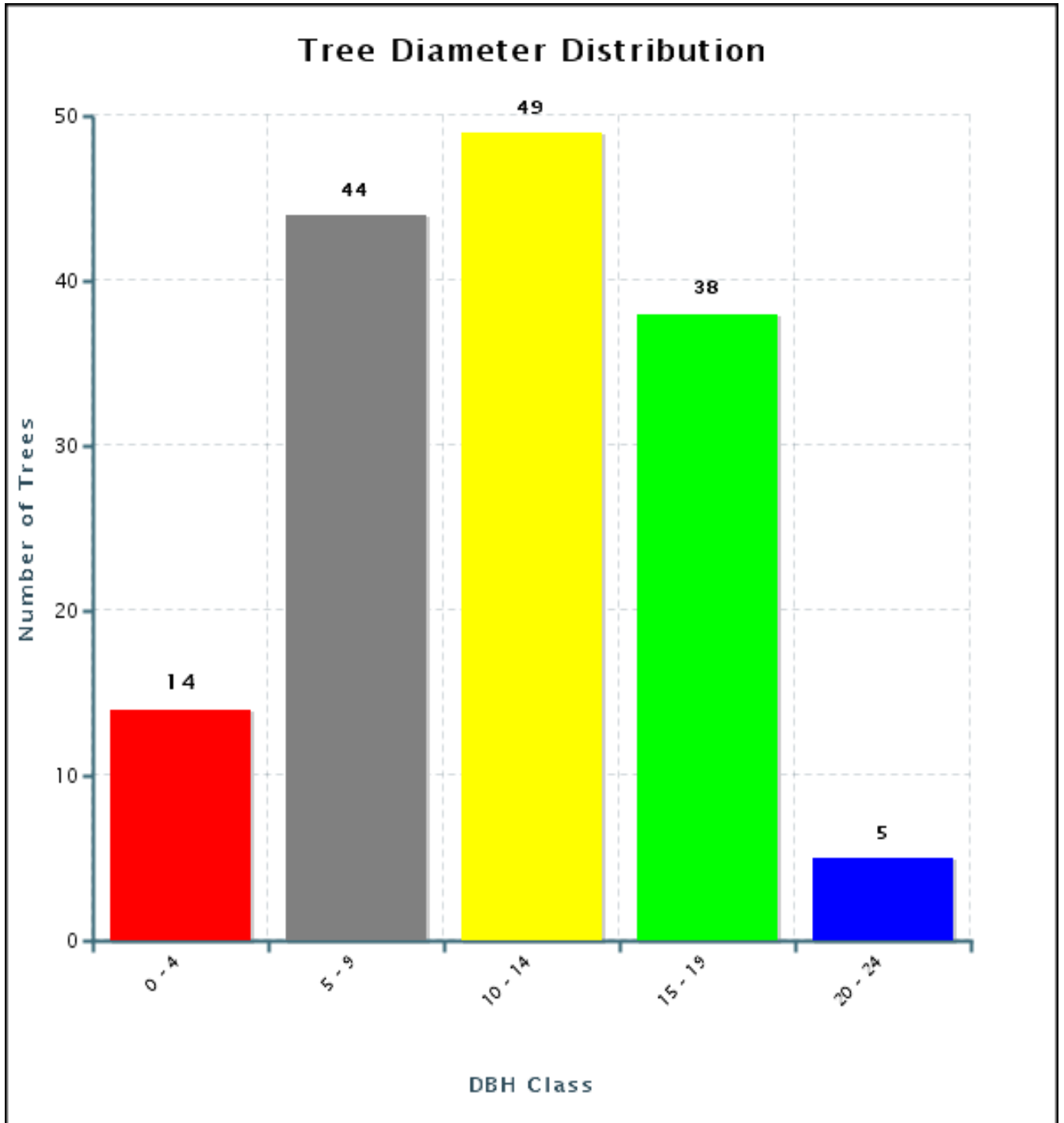


INVENTORIED TREES BY AGE CLASS



Tree Size (DBH)

The following chart illustrates numbers of trees according to size per DBH:



Estimated Tree Asset Value

As part of the Bartlett inventory process, we have included an Estimated Tree Asset Value for each tree and a cumulative total for all trees inventoried. We use an average per square inch nursery price, size (DBH), species factor, condition factor, and location factor to estimate the tree asset value. This is not intended to replace a tree appraisal.

The following data fields are used in this formula:

Data Field	Description
Average Per Square Inch Nursery Price	Based on the average nursery prices for two common tree species and one exotic tree species within a region, then taking the average of those three as the average per square inch price for the region
Size	Based on tree DBH (4.5 feet above grade)
Species Factor	Relative species desirability based on 100% for the tree in that geographical location. In most cases, species desirability ratings, published by the International Society of Arboriculture, are used for adjustment.
Condition Factor	Rating of the tree's structure and health based on 100%
Location Factor	Average rating for the site and the tree's contribution and placement, based on 100%

$$\text{Estimated Tree Asset Value} = (\text{Average Per Square Inch Nursery Price} * \text{Size}) * \text{Species Factor} * \text{Condition Factor} * \text{Location Factor}$$

The estimated cumulative total value for all trees inventoried is **\$399,408.51**. The following table lists the ten trees with the highest Tree Asset Values:

TOP TEN TREES - HIGHEST ESTIMATED TREE ASSET VALUE

Tree ID	Common Name	Genus	Species	DBH	Tree Asset Value
92	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	20,18,12,12	\$22,343.86
75	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	10,10,10,10,10,5	\$11,591.43
90	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	21	\$9,736.80
112	Maple-Sugar	<i>Acer</i>	<i>saccharum</i>	19	\$9,109.13
133	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	10,10,10,10	\$8,831.56
61	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	20	\$8,831.56
69	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	20	\$8,831.56
82	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	23	\$8,342.67
108	Maple-Norway	<i>Acer</i>	<i>platanoides</i>	9,9,9,9,4	\$7,967.33
64	Hackberry	<i>Celtis</i>	<i>occidentalis</i>	17	\$7,292.35

TOP TEN TREES - HIGHEST TREE ASSET VALUE



Tree Location Value

Each tree at Valley Lo was assigned a location value of good, fair, or poor. Thirty one trees (21%) were assigned a location value of fair or poor due to present or anticipated conflicts with infrastructure or utilities. Trees with conflicts that can easily be mitigated with a one-time raise or reduction prune were not classified as existing in a fair or poor location.

Two trees (1%) were assigned a location value of fair and were recommended for removal due to condition, defects, and/or risk. It is recommended that the remaining 29 trees (19%) with fair, or poor location values and not recommended for removal continue to be monitored for intolerable levels of conflict with the surrounding infrastructure. If the level of conflict continues to increase and cannot be easily mitigated, a removal and replacement program should be considered for these trees. If removal and replacement is deemed appropriate, please consult with your local Bartlett Arborist Representative for information on desirable replacement plantings.

INVENTORIED TREES WITH A FAIR OR POOR LOCATION VALUE (31 Trees)

Tree ID	Common Name	Location Type	Location Value	DBH	Root Zone Infringement
47	Oak-Pin	Median	Poor	18	<25%
56	Honeylocust-Thornless Common	Median	Poor	16	>75%
57	Honeylocust-Thornless Common	Median	Poor	11	>75%
58	Honeylocust-Thornless Common	Median	Poor	11	>75%
85	Honeylocust-Thornless Common	Foundation	Poor	19	>75%
33	Pine-Austrian	Median	Fair	18	<25%
77	Arborvitae-Eastern (7)	Foundation	Fair	7	25-50%
79	Spruce-Colorado Blue	Foundation	Fair	15	<25%
80	Spruce-Colorado Blue	Foundation	Fair	11	<25%
81	Honeylocust-Thornless Common	Foundation	Fair	18	25-50%
82	Honeylocust-Thornless Common	Foundation	Fair	23	25-50%
84	Spruce-Colorado Blue	Foundation	Fair	17	<25%
86	Honeylocust-Thornless Common	Foundation	Fair	18	<25%
87	Spruce-Colorado Blue	Foundation	Fair	11	<25%
88	Hawthorn	Foundation	Fair	6	<25%
89	Hawthorn	Foundation	Fair	7	<25%
93	Linden-Littleleaf	Foundation	Fair	16	<25%
95	Hawthorn	Foundation	Fair	6	<25%
99	Serviceberry	Foundation	Fair	4	<25%
100	Maple-Norway	Foundation	Fair	16	<25%
101	Spruce-Colorado Blue	Foundation	Fair	16	<25%
102	Spruce-Colorado Blue	Foundation	Fair	15	<25%

INVENTORIED TREES WITH A FAIR OR POOR LOCATION VALUE



RECOMMENDATIONS



RECOMMENDATIONS

In reviewing the results and recommendations, the reader will find useful the specifications and definitions detailed in the preceding methodology. We used the following categories to organize the results and recommendations, which are displayed in tables:

Recommendations

- Soil Care
- Root Collar Excavation
- Plant Health Care
- Tree Pruning
- Structural Support Systems
- Lightning Protection Systems
- Tree Removal

Soil Care

Healthy soil is critical to the health and longevity of trees. Soil provides trees with the essential nutrients required for their growth. Many secondary problems such as reduced vigor, inadequate growth, branch dieback, and pest or disease concerns are related to the primary stress of poor soil conditions. Undisturbed, native forest soils generally contain adequate levels of organic matter, soil microbes, and nutrients. Urban, suburban, and landscape soils (as opposed to forest soils) usually lack these qualities, and are often compacted. In many cases, trees in a landscaped environment suffer from inadequate soil fertility, soil compaction, root zone competition with turf grasses, and inadequate total soil volume. Soil Care treatments should be applied as soon as possible, therefore they do not have a Tree & Shrub Work phase.

Bartlett Tree Experts recommends several procedures and treatments that address soil quality. Taking soil samples is perhaps the most important. Proper tree care cannot be initiated unless it is known what type of soil environment the trees are growing in. Soil testing results can help to create a path forward for improved tree health. We address some of these below.

Soil Sampling

Collecting soil samples and having them tested helps determine nutrients that may be lacking, unfavorable soil pH values, and adequacy of soil organic matter. Laboratory tests and analyses can determine the need for soil amendments.

Bulk Density

Compacted soils are regrettably common in the urban setting. A bulk density test, which requires an undisturbed core sample, measures the level of soil compaction. Arborists can use the results to diagnose problems or to determine what size holes to dig for planting. If soil density exceeds a measured threshold for a given soil type and tree species, we recommend Bartlett's Root Invigoration™ program.

Soil Rx®

Bartlett's Soil Rx® program, which is a prescription soil amendment program, aims to correct nutrient deficiencies and optimize soil conditions for designated trees.

Root Invigoration™

The aim of Bartlett's patented Root Invigoration™ Program is to improve soil conditions by addressing soil compaction and promoting efficient root growth, especially for high-value trees in disturbed areas. The process includes taking soil samples to determine what nutrients are deficient, performing a root collar excavation, "air-tilling" a portion of the root zone to find fine roots, incorporating organic matter, applying soil amendments (based on soil sample), and applying mulch. The area of the root system treated can vary by tree. For the Root Invigoration™ Program to be successful, proper watering techniques must be employed after the process is complete.

Mulch Application

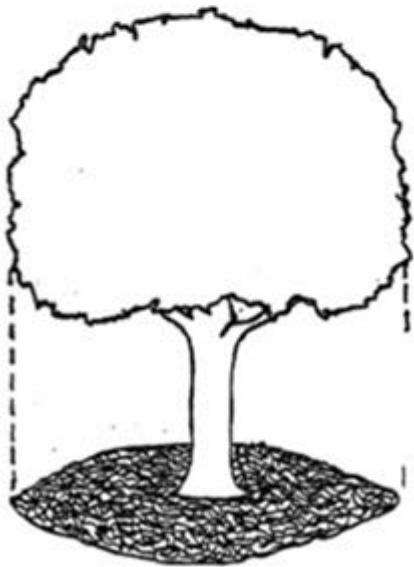
Proper mulching (top left and bottom left) provides many benefits to trees and shrubs. It moderates soil temperatures, reduces soil moisture loss, reduces soil compaction, provides nutrients, and improves soil structure. This practice results in more root growth and healthier plants. The image on the top right illustrates root growth density under grass versus mulch. Mulch is frequently applied incorrectly (bottom right), so we recommend that readers inspect the technical report on mulch application guidelines that appears in the Appendix.



Example of how mulch should be installed, 2-4 inches thick and not against the trunk.



Example of root density under grass versus mulch.



Example of how mulch should be applied from the trunk to the dripline.



Example of improper mulch application, known as "volcano mulch".

At the time of inventory, no trees were directly recommended for soil care. However, we recommend soil sampling across maintained areas with prominent landscape plantings to identify opportunities to optimize soil conditions moving forward.

Root Collar Excavation

Excavating the root collar is necessary for trees whose buttress roots are covered by excess soil or mulch. Buried root collars can contribute to tree health problems, including girdling roots, basal cankers, and masking root and lower stem decay. Trees in the root collar excavation table do not have a Tree & Shrub Work phase and should be completed as soon as possible. The top image shows a buried root collar and the bottom image shows an exposed root collar.



Example of a buried root collar.



Example of an exposed root collar.

Girdling Roots

Girdling roots (top left and right) restrict water and nutrient movement throughout the tree. If left untreated they can cause the tree to decline, fail (bottom), and eventually die in severe cases. Girdling roots should be removed as soon as possible, unless removal of roots will significantly impact the condition or stability of the tree. In some cases, the presence of significant or severe girdling roots may cause the tree to be recommended for removal.



Examples of girdling roots.



Example of tree failure from girdling roots.

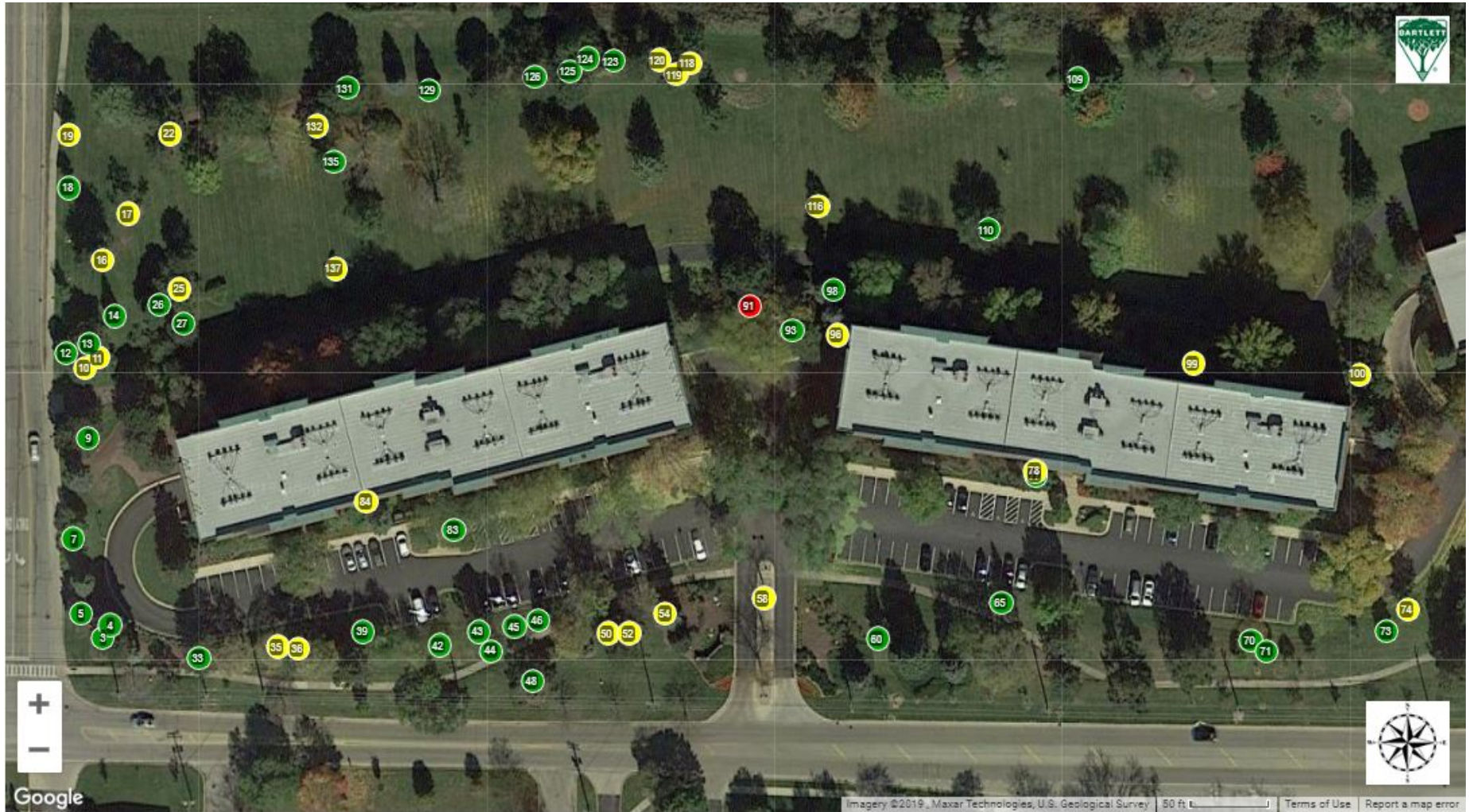
The following trees are recommended for a root collar excavation:

INVENTORIED TREES RECOMMENDED FOR A ROOT COLLAR EXCAVATION (76 Trees)

Tree ID	Common Name	DBH	Root Collar Observation
3	Pine-Austrian	9	• Buried root collar
4	Pine-Austrian	14	• Buried root collar • Girdling roots present
5	Spruce-Colorado Blue	9	• Buried root collar
7	Lilac-Japanese Tree (5)	4,3,3	• Buried root collar
9	Pine-Austrian	18	• Buried root collar
10	Pine-Austrian	11	• Buried root collar
11	Pine-Austrian	8	• Buried root collar
12	Maple-Hedge	7	• Buried root collar
13	Pine-Austrian	14	• Buried root collar
14	Spruce-Colorado Blue	6	• Buried root collar
16	Pine-Austrian	18	• Buried root collar
17	Pine-Austrian	12	• Buried root collar
18	Linden-Littleleaf	6	• Buried root collar
19	Maple-Hedge	7	• Buried root collar
22	Pine-Austrian	12	• Buried root collar
25	Pine-Austrian	14	• Buried root collar
26	Pine-Austrian	13	• Buried root collar
27	Pine-Austrian	13	• Buried root collar
33	Pine-Austrian	18	• Buried root collar
35	Hackberry	9	• Buried root collar
36	Pine-Austrian	13	• Buried root collar
39	Maple-Hedge	6	• Buried root collar
42	Honeylocust-Thornless Common	6	• Buried root collar
43	Pine-Austrian	11	• Buried root collar
44	Aspen	13	• Buried root collar
45	Aspen	8,9	• Buried root collar
46	Spruce-Colorado Blue	6	• Buried root collar
48	Pine-Austrian	14,12	• Buried root collar
50	Pine-Austrian	13	• Buried root collar
52	Pine-Austrian	10	• Buried root collar
54	Spruce-Colorado Blue	14	• Buried root collar
58	Honeylocust-Thornless Common	11	• Buried root collar
60	Maple-Norway	4	• Buried root collar
65	Spruce-Norway	6	• Buried root collar
70	Honeylocust-Thornless Common	7	• Buried root collar
71	Lilac-Japanese Tree (4)	3,3,2,2	• Buried root collar
73	Spruce-Colorado Blue	6	• Buried root collar
74	Maple-Red	6,5,5,4	• Buried root collar

Tree ID	Common Name	DBH	Root Collar Observation
77	Arborvitae-Eastern (7)	7	• Buried root collar
78	Hawthorn	5	• Buried root collar
83	Lilac-Japanese Tree	5	• Buried root collar
84	Spruce-Colorado Blue	17	• Buried root collar
91	Spruce-Colorado Blue	13	• Buried root collar
93	Linden-Littleleaf	16	• Buried root collar
96	Spruce-Colorado Blue	9	• Buried root collar
98	Spruce-Colorado Blue	14	• Buried root collar
99	Serviceberry	4,4,4,4	• Buried root collar
100	Maple-Norway	16	• Buried root collar • Girdling roots suspected
109	Pine-Scotch	10,11	• Buried root collar
110	Maple-Red	12	• Buried root collar • Girdling roots present (moderate)
116	Linden-Littleleaf	10	• Buried root collar
118	Pine-Austrian	12	• Buried root collar
119	Pine-Austrian	15	• Buried root collar
120	Pine-Scotch	11	• Buried root collar
123	Spruce-Colorado Blue	6	• Buried root collar
124	Linden-Littleleaf	16	• Buried root collar
125	Pine-Austrian	19	• Buried root collar
126	Pine-Austrian	15	• Buried root collar
129	Spruce-Colorado Blue	7	• Buried root collar • Girdling roots present
131	Linden-Littleleaf	18	• Buried root collar
132	Pine-Austrian	13	• Buried root collar
135	Pine-Austrian	12	• Buried root collar
137	Spruce-Colorado Blue	4	• Buried root collar

INVENTORIED TREES RECOMMENDED FOR A ROOT COLLAR EXCAVATION



Plant Health Care

The Inventory Team also recommends Plant Health Care (PHC) programs for trees in the formal landscape. In addition, an Integrated Pest Management (IPM) program monitors for potentially damaging insects, diseases and cultural problems that are often seasonal and may not have been evident during our inventory visit. Plant Health Care treatments should be applied as soon as possible, therefore they do not have a Tree & Shrub Work phase. These pests and diseases include, but are not limited to, the following:

- Anthracnose - on a variety of species
- Aphids - on a variety of species
- Bacterial Leaf Scorch - on trees within red oak group
- Bagworms - on a variety of tree species
- Boring Insects - on a variety of tree species
- Caterpillar Defoliators - on a variety of tree species, especially oak
- Gall Insects - on a variety of species
- Lacebugs - on a variety of species
- Scab and Rust Fungi - on crabapple and apple species.
- Suspected Phytophthora Root Rot and Canker - on a variety of tree species, especially beech species
- Scale Insects - on a variety of tree species, especially oak
- Spider Mites - on a variety of tree species

We identified pests or diseases and/or provided plant health care recommendations on the following inventoried trees at the time of the inventory:

INVENTORIED TREES IDENTIFIED FOR PLANT HEALTH CARE (43 Trees)

Tree ID	Common Name	DBH	Pest(s) or Disease(s)
2	Pine-Austrian	12	• Needlecast
3	Pine-Austrian	9	• Needlecast
4	Pine-Austrian	14	• Needlecast
9	Pine-Austrian	18	• Needlecast
10	Pine-Austrian	11	• Needlecast • Borers
11	Pine-Austrian	8	• Needlecast • Borers
13	Pine-Austrian	14	• Needlecast • Borers
16	Pine-Austrian	18	• Needlecast
17	Pine-Austrian	12	• Needlecast
22	Pine-Austrian	12	• Needlecast

Tree ID	Common Name	DBH	Pest(s) or Disease(s)
23	Pine-Austrian	15	• Needlecast • Borers
24	Pine-Austrian	13	• Needlecast
25	Pine-Austrian	14	• Needlecast
26	Pine-Austrian	13	• Needlecast
27	Pine-Austrian	13	• Needlecast
28	Pine-Austrian	9	• Needlecast
29	Pine-Austrian	17	• Needlecast
30	Pine-Austrian	15	• Needlecast
33	Pine-Austrian	18	• Needlecast • Borers
36	Pine-Austrian	13	• Needlecast • Borers
38	Pine-Austrian	16	• Needlecast
43	Pine-Austrian	11	• Needlecast
48	Pine-Austrian	14,12	• Needlecast
50	Pine-Austrian	13	• Needlecast • Borers
51	Pine-Austrian	14	• Needlecast
52	Pine-Austrian	10	• Needlecast
54	Spruce-Colorado Blue	14	• Cankers
58	Honeylocust-Thornless Common	11	• Borers
67	Pine-Austrian	15	• Needlecast • Borers
68	Pine-Austrian	15	• Needlecast • Borers
84	Spruce-Colorado Blue	17	• Needlecast
90	Honeylocust-Thornless Common	21	• Japanese beetle
109	Pine-Scotch	10,11	• Needlecast
113	Pine-Austrian	11	• Needlecast
118	Pine-Austrian	12	• Needlecast
119	Pine-Austrian	15	• Needlecast
120	Pine-Scotch	11	• Needlecast
121	Poplar-Black	15,9,8,8,7	• Needlecast
125	Pine-Austrian	19	• Needlecast
126	Pine-Austrian	15	• Needlecast
132	Pine-Austrian	13	• Needlecast
134	Pine-Austrian	13	• Needlecast
135	Pine-Austrian	12	• Needlecast • Borers

INVENTORIED TREES IDENTIFIED FOR PLANT HEALTH CARE



Tree Pruning

A commonly offered service among tree companies, pruning trees is one of the most poorly executed practices by tree workers who lack training in the basics of tree biology. "Lion's tailing," topping, and flush cuts are a few examples, and these can lead to hazardous conditions over time.

Because this practice is so misunderstood, and because specific standards exist to perform pruning correctly, the Inventory Team decided to include some explanation in the main body of this management plan.

Tree owners and tree-care practitioners should always keep in mind that any pruning cut is a wound. Informed tree-care professionals have learned to manage that wounding to preserve the health, safety, and integrity of the tree.

Improper Pruning Practices

A few of the most common pruning abuses are:

- Lion's Tailing - pruning that removes interior branches along the stem and scaffold branches. This encourages poor branch taper, poor wind load distribution, and risk of branch failure. It also deprives the tree of foliage it needs to produce **photosynthates**. See next page, top left.
- Topping - pruning cuts that reduce a tree's size by using heading cuts that shorten branches to a predetermined size. Topping substantially reduces the functional benefits a tree is capable of providing and predisposes trees to structural defects that can contribute to failures in the future. It also reduces the value of the trees substantially and deprives the tree of adequate foliage. See next page, top right.
- Flush Cuts - pruning cut through the **branch collar**, flush against the trunk or parent stem, causing unnecessary injury. See next page, bottom.
- Using Climbing Spikes Inappropriately - Using climbing spikes on a healthy tree, for example, wounds healthy stem tissues and can lead to infection by fungal pathogens.



Example of Lion's tailing.



Examples of topping.



Examples of flush cuts.

Pruning with a Goal

Below are illustrations of common pruning goals:



Illustration of improving airflow to reduce disease.



Illustration of branch weight reduction.

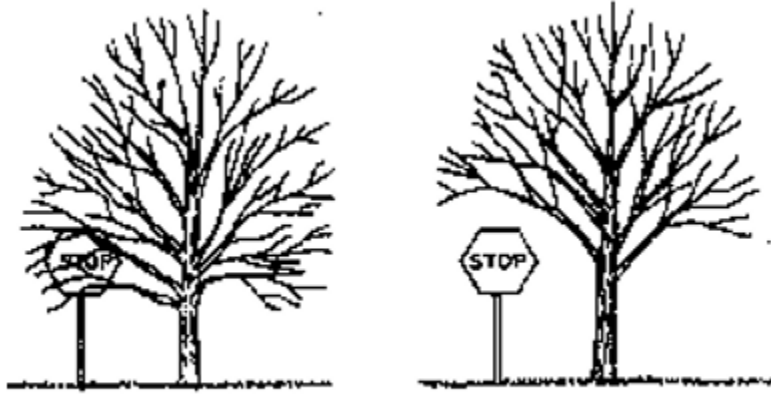


Illustration of raising branch elevation to improve clearance.

Without Development of Central Leader				
	At Planting	2-4 Years	5-7 Years	8-10 Years
With Development of Central Leader				

Illustration of promoting a strong central leader.

Pruning Category

All trees identified in this management plan that have pruning recommendations are listed with a specific pruning category. The listed order of these pruning categories are typical to most managers. Trees within each category are prioritized by the specific goals of most managers. It is recommended that specific goals be discussed with your local Bartlett Arborist Representative. Pruning categories are separated into individual tables below where each table lists specific arboricultural pruning goals and recommendations for each tree.

Risk Mitigation Pruning

Any tree identified with a Risk Mitigation Pruning category to reduce the *Overall Tree Risk Rating*, was previously summarized in the Tree Risk Assessments and Mitigation section earlier in the document.

Maintenance Pruning

This goal typically requires routine pruning of large/mature trees. Includes branch removal and/or branch reduction to help reduce *likelihood of failure* and/or conflict with infrastructure. Trees with these goals are typically climbed or require the use of aerial lifts and/or other specialized equipment.

The trees in this table are recommended for maintenance pruning:

INVENTORIED TREES RECOMMENDED FOR MAINTENANCE PRUNING (52 Trees)

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
1	Spruce-Colorado Blue	14	2	<ul style="list-style-type: none"> Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> Dead branches >2 Dieback (moderate)
22	Pine-Austrian	12	2	<ul style="list-style-type: none"> Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> Buried root collar Dead branches >2
29	Pine-Austrian	17	2	<ul style="list-style-type: none"> Improve light and air penetration through crown 	<ul style="list-style-type: none"> Poor branch structure

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
32	Spruce-Colorado Blue	16	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2 • Dieback (moderate)
36	Pine-Austrian	13	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Buried root collar • Dead branches >2
38	Pine-Austrian	16	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2
47	Oak-Pin	18	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Co-dominant stems • Dead branches >2 • Dieback (moderate)
48	Pine-Austrian	14,12	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure • Improve light and air penetration through crown 	<ul style="list-style-type: none"> • Buried root collar • Co-dominant stems • Dead branches >2
49	Oak-Northern Red	12	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2
50	Pine-Austrian	13	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure • Improve light and air penetration through crown 	<ul style="list-style-type: none"> • Buried root collar • Co-dominant stems • Dead branches >2
54	Spruce-Colorado Blue	14	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Buried root collar • Dead branches >2
56	Honeylocust-Thornless Common	16	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Poor branch structure

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
58	Honeylocust-Thornless Common	11	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Buried root collar • Dead branches >2
59	Spruce-Colorado Blue	14	2	<ul style="list-style-type: none"> • Remove disease infection 	<ul style="list-style-type: none"> • Dieback (moderate)
61	Spruce-Colorado Blue	20	2	<ul style="list-style-type: none"> • Develop branch structure • Improve light and air penetration through crown 	<ul style="list-style-type: none"> • Dead branches >2
63	Oak-Northern Red	16	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2
66	Oak-Northern Red	14	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches <=2
69	Linden-Littleleaf	20	2	<ul style="list-style-type: none"> • Develop branch structure • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Co-dominant stems • Girdling roots present • Poor branch structure
71	Lilac-Japanese Tree (4)	3,3,2,2	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Co-dominant stems • Poor branch structure
75	Linden-Littleleaf	10,10,10,10,10,5	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Poor branch structure
85	Honeylocust-Thornless Common	19	2	<ul style="list-style-type: none"> • Develop branch structure • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Poor branch structure

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
86	Honeylocust-Thornless Common	18	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2
88	Hawthorn	6,4	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2
89	Hawthorn	7,3	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Poor branch structure
91	Spruce-Colorado Blue	13	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2
92	Honeylocust-Thornless Common	20,18,12,12	2	<ul style="list-style-type: none"> • Develop branch structure • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Co-dominant stems • Poor branch structure
93	Linden-Littleleaf	16	2	<ul style="list-style-type: none"> • Develop branch structure • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Buried root collar • Co-dominant stems • Poor branch structure
97	Spruce-Colorado Blue	17	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Dead branches >2
99	Serviceberry	4,4,4,4	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Poor branch structure
100	Maple-Norway	16	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Buried root collar • Girdling roots suspected

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
103	Honeylocust-Thornless Common	19	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure • Develop branch structure 	<ul style="list-style-type: none"> • Dead branches >2 • Poor branch structure
104	Maple-Red	11	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Girdling roots present (severe) • Poor branch structure
108	Maple-Norway	9,9,9,9,4	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Girdling roots present • Poor branch structure
110	Maple-Red	12	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Girdling roots present (moderate)
111	Maple-Red	12	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Girdling roots present (moderate) • Poor branch structure
112	Maple-Sugar	19	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Girdling roots present • Poor branch structure
114	Pine-Austrian	15	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Poor branch structure
115	Pine-Austrian	15	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Poor branch structure
117	Pear-Callery	9	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Poor branch structure

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
121	Poplar-Black	15,9,8,8,7	2	<ul style="list-style-type: none"> • Develop branch structure • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Co-dominant stems • Included bark • Poor branch structure
122	Maple-Freeman's	11	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Girdling roots present (moderate) • Poor branch structure
125	Pine-Austrian	19	2	<ul style="list-style-type: none"> • Develop branch structure • Reduce risk of branch stem and/or root failure 	<ul style="list-style-type: none"> • Buried root collar • Co-dominant stems • Included bark • Poor branch structure
127	Pine-Austrian	17	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Poor branch structure
128	Pear-Callery	6	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Co-dominant stems • Poor branch structure
131	Linden-Littleleaf	18	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Poor branch structure
133	Linden-Littleleaf	10,10,10,10	2	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Co-dominant stems • Dead branches >2 • Poor branch structure
136	Oak-Pin	12	2	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Girdling material • Poor branch structure
70	Honeylocust-Thornless Common	7	3	<ul style="list-style-type: none"> • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Co-dominant stems

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
78	Hawthorn	5	3	<ul style="list-style-type: none"> • Reduce risk of branch stem and/or root failure • Develop branch structure 	<ul style="list-style-type: none"> • Buried root collar • Dead branches >2

INVENTORIED TREES RECOMMENDED FOR MAINTENANCE PRUNING



Developmental Pruning

This goal typically requires routine pruning of small/young trees. Includes structural pruning to develop a strong central stem, establish proper branch spacing, and/or develop branch structure.

The trees in this table are recommended for developmental pruning:

INVENTORIED TREES RECOMMENDED FOR DEVELOPMENTAL PRUNING (10 Trees)

Tree ID	Common Name	DBH	Tree & Shrub Work Phase	Pruning Goal	Defect(s) or Observation(s)
7	Lilac-Japanese Tree (5)	4,3,3	2	<ul style="list-style-type: none"> Develop branch structure 	<ul style="list-style-type: none"> Buried root collar Co-dominant stems Poor branch structure
9	Pine-Austrian	18	2	<ul style="list-style-type: none"> Develop branch structure Improve light and air penetration through crown 	<ul style="list-style-type: none"> Buried root collar Poor branch structure
16	Pine-Austrian	18	2	<ul style="list-style-type: none"> Develop branch structure Improve light and air penetration through crown 	<ul style="list-style-type: none"> Buried root collar Co-dominant stems Poor branch structure
42	Honeylocust-Thornless Common	6	2	<ul style="list-style-type: none"> Develop branch structure 	<ul style="list-style-type: none"> Buried root collar Poor branch structure
46	Spruce-Colorado Blue	6	2	<ul style="list-style-type: none"> Develop branch structure 	<ul style="list-style-type: none"> Buried root collar Co-dominant stems Poor branch structure
18	Linden-Littleleaf	6	3	<ul style="list-style-type: none"> Develop branch structure 	<ul style="list-style-type: none"> Buried root collar Poor branch structure Wound-stem

INVENTORIED TREES RECOMMENDED FOR DEVELOPMENTAL PRUNING



Ornamental Pruning

This goal typically requires pruning of small trees. Includes reduction and/or shearing to its desired shape, size, and/or structure.

At the time of inventory, no trees were recommended for ornamental pruning. However, we recommend close monitoring of trees for changes in condition, especially after weather events not considered normal for the area.

Specialized Pruning

Trees with this goal require a unique treatment that may include, but not limited to, targeted pruning cuts, removal of nuisance fruit/parasitic plants, and/or rejuvenation/internodal pruning.

At the time of inventory, no trees were recommended for specialized pruning. However, we recommend close monitoring of trees for changes in condition, especially after weather events not considered normal for the area.

Structural Support Systems

Structural support systems can reduce risk of tree or tree part(s) failure by limiting movement of stems or branches in certain situations. Examples include co-dominant stems or overextended branches with heavy foliage loads.

Cabling

Cabling is the process of connecting two or more upright stems to one another to add stability and reduce the *likelihood of failure*. In some instances, a lateral branch may be secured to the central leader using a cabling system to support the weight of the branch.

Bracing

Bracing is the process of securing the union of two co-dominant stems using high strength steel rods to alleviate stresses at the union and reduce the *likelihood of failure*. Bracing may also be used to reinforce trees that have a partial failure and are likely to benefit from bracing.

Guying

Guying is the process of anchoring a tree's stem to the ground or another immovable object to reduce the likelihood of root failure. Guying can be temporary or permanent and is most often used for establishing a tree in the landscape.

Propping

Propping is the process of using rigid structures that are built on or into the ground to help support the trunk or branch(s) that are oriented near the ground in a horizontal position to reduce the *likelihood of failure* from the weight or defect of the tree part being supported.

At the time of inventory, no trees were recommended for structural support. However, as trees continue to grow and site changes occur, we recommend continual consultation with your local Bartlett Arborist Representative to determine if structural support systems are warranted in the future.

Lightning Protection Systems

Lightning strikes kill many people each year and can cause significant damage to objects on the property. Lightning protection systems are designed to provide a preferred path for lightning to the ground in a manner that minimizes tree damage; adjacent tree damage; and also to buildings, property, animals, and people near the tree. Tree species that are naturally more susceptible to lightning strikes, valuable to the landscape, and trees that are within 10 feet of, taller than, or have limbs that are extending over a structure are recommended for lightning protection systems due to the possibility of damage, "sideflashes", and step voltage.

At the time of inventory, no trees were recommended for lightning protection systems. However, as trees continue to grow and site changes occur, we recommend continual consultation with your local Bartlett Arborist Representative to determine if lightning protection systems are warranted in the future.

Tree Removal

In some cases, the inspector may determine need for removal while assessing the tree. Trees may be recommended for removal during the inventory for several reasons:

- The tree is dead;
- The tree is in poor condition and thought to be beyond rehabilitation;
- The tree is over-mature and will continue to decline in condition;
- The tree has significant structural weaknesses that cannot be addressed;
- The tree is already or will interfere with infrastructure (overhead lines for example);
- The location value for the tree is poor or unacceptable (for example, large maturing tree growing directly under overhead lines); and/or,
- The tree species has been declared an invasive for the given area or region.

The trees listed in the table below are recommended for removal:

INVENTORIED TREES RECOMMENDED FOR REMOVAL (8 Trees)

Tree ID	Common Name	DBH	Condition	Tree & Shrub Work Phase	Defect(s) or Observation(s)
41	Birch-River	6	Dead	1	...
62	Spruce-Colorado Blue	14	Fair	1	<ul style="list-style-type: none"> • Buried root collar • Dieback (severe)
79	Spruce-Colorado Blue	15	Poor	1	<ul style="list-style-type: none"> • Dead branches >2
87	Spruce-Colorado Blue	11	Dead	1	...
105	Maple-Norway	10	Poor	1	<ul style="list-style-type: none"> • Co-dominant stems • Dead branches >2
106	Pine-Scotch	9	Dead	1	...
107	Maple-Norway	8	Poor	1	<ul style="list-style-type: none"> • Decay-Stem • Dieback (severe)
53	Oak-Pin	15	Poor	2	<ul style="list-style-type: none"> • Buried root collar • Dieback (severe)

INVENTORIED TREES RECOMMENDED FOR REMOVAL



DEFECTS OR OBSERVATIONS



DEFECTS OR OBSERVATIONS

The following table lists inventoried trees for which we noted defects, observations, or other structural issues and were not assigned an *overall tree risk rating*, recommended for a *Level 3 Advanced assessment*, or have pruning and/or removal recommendations that were previously reported.



Tree #116 exhibiting buried root collar.



Tree #80 exhibiting girdling material.

**INVENTORIED TREES WITH DEFECTS, OBSERVATIONS, OR OTHER STRUCTURAL ISSUES
(17 Trees)**

Tree ID	Common Name	DBH	Defect(s) or Observation(s)
2	Pine-Austrian	12	<ul style="list-style-type: none"> • Dead branches <=2 • Co-dominant stems
6	Spruce-Colorado Blue	15	<ul style="list-style-type: none"> • Dead branches <=2
20	Linden-Littleleaf	8,7,6,5	<ul style="list-style-type: none"> • Co-dominant stems • Poor branch structure
21	Linden-Littleleaf	5,5,4,4,3,3	<ul style="list-style-type: none"> • Co-dominant stems • Buried root collar
23	Pine-Austrian	15	<ul style="list-style-type: none"> • Buried root collar • Girdling roots present
28	Pine-Austrian	9	<ul style="list-style-type: none"> • Lean • Dead branches >2
40	Birch-River	4,4,3,3	<ul style="list-style-type: none"> • Co-dominant stems
51	Pine-Austrian	14	<ul style="list-style-type: none"> • Dead branches <=2
55	Spruce-Colorado Blue	10	<ul style="list-style-type: none"> • Buried root collar
67	Pine-Austrian	15	<ul style="list-style-type: none"> • Dead branches <=2
68	Pine-Austrian	15	<ul style="list-style-type: none"> • Dead branches <=2
80	Spruce-Colorado Blue	11	<ul style="list-style-type: none"> • Girdling material • Co-dominant stems • Dead branches >2
81	Honeylocust-Thornless Common	18	<ul style="list-style-type: none"> • Poor branch structure
82	Honeylocust-Thornless Common	23	<ul style="list-style-type: none"> • Poor branch structure
90	Honeylocust-Thornless Common	21	<ul style="list-style-type: none"> • Fungi/conks • Co-dominant stems • Poor branch structure
95	Hawthorn	6	<ul style="list-style-type: none"> • Uneven crown
102	Spruce-Colorado Blue	15	<ul style="list-style-type: none"> • Dead branches <=2

INVENTORIED TREES WITH DEFECTS, OBSERVATIONS, OR OTHER STRUCTURAL ISSUES



ENTIRE INVENTORY



ENTIRE INVENTORY (150 Trees)

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
1	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	14	Medium	Mature	1	Fair	2	\$3,091.05
2	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	12	Medium	Mature	1	Good	...	\$2,270.97
3	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	9	Medium	Mature	1	Good	...	\$1,277.42
4	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	14	Medium	Mature	1	Good	...	\$3,091.05
5	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	9	Medium	Mature	1	Good	...	\$1,788.39
6	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	15	Medium	Mature	1	Good	...	\$4,967.75
7	Lilac-Japanese Tree (5)	<i>Syringa</i>	<i>reticulata</i>	4,3,3	Small	Mature	3	Good	2	\$3,753.41
8	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	16	Medium	Mature	1	Good	...	\$5,514.34
9	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	18	Medium	Mature	1	Good	2	\$5,109.69
10	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	11	Medium	Mature	1	Fair	...	\$1,363.03
11	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	8	Small	Mature	1	Fair	...	\$720.94
12	Maple-Hedge	<i>Acer</i>	<i>campestre</i>	7	Medium	Semi-mature	1	Good	...	\$1,081.87
13	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	14	Medium	Mature	1	Good	...	\$3,091.05
14	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	6	Medium	Semi-mature	1	Good	...	\$794.84
15	Ginkgo	<i>Ginkgo</i>	<i>biloba</i>	5	Small	Young	1	Good	...	\$551.97
16	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	18	Medium	Mature	1	Fair	2	\$3,649.78
17	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	12	Small	Mature	1	Fair	...	\$1,622.12
18	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	6	Medium	Young	1	Good	3	\$794.84
19	Maple-Hedge	<i>Acer</i>	<i>campestre</i>	7	Medium	Young	1	Fair	...	\$551.97

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
20	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	8,7,6,5	Medium	Mature	4	Fair	...	\$2,744.09
21	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	5,5,4,4,3,3	Medium	Mature	6	Fair	...	\$1,577.06
22	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	12	Medium	Mature	1	Fair	2	\$1,622.12
23	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Fair	...	\$2,534.57
24	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	13	Medium	Mature	1	Good	...	\$2,665.24
25	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	14	Medium	Mature	1	Fair	...	\$2,207.89
26	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	13	Medium	Mature	1	Good	...	\$2,665.24
27	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	13	Medium	Mature	1	Good	...	\$2,600.23
28	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	9	Medium	Mature	1	Poor	...	\$547.47
29	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	17	Medium	Mature	1	Good	2	\$4,557.72
30	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Good	...	\$3,548.40
31	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	13	Medium	Mature	1	Good	...	\$3,731.34
32	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	16	Medium	Mature	1	Fair	2	\$4,037.29
33	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	18	Medium	Mature	1	Good	...	\$3,649.78
34	Hackberry	<i>Celtis</i>	<i>occidentalis</i>	11	Medium	Mature	1	Good	...	\$3,053.20
35	Hackberry	<i>Celtis</i>	<i>occidentalis</i>	9	Medium	Semi-mature	1	Fair	...	\$1,459.91
36	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	13	Medium	Mature	1	Fair	2	\$1,903.74
37	Hackberry	<i>Celtis</i>	<i>occidentalis</i>	13	Medium	Mature	1	Good	...	\$4,264.38
38	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	16	Medium	Mature	1	Fair	2	\$2,883.78
39	Maple-Hedge	<i>Acer</i>	<i>campestre</i>	6	Medium	Young	1	Good	...	\$794.84
40	Birch-River	<i>Betula</i>	<i>nigra</i>	4,4,3,3	Medium	Semi-mature	4	Good	...	\$1,103.95
41	Birch-River	<i>Betula</i>	<i>nigra</i>	6,4,3	Medium	Semi-mature	3	Dead	1	...

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
42	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	6	Medium	Semi-mature	1	Good	2	\$794.84
43	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	11	Medium	Mature	1	Good	...	\$1,908.25
44	Aspen	<i>Populus</i>	<i>tremuloides</i>	13	Medium	Semi-mature	1	Good	...	\$2,665.24
45	Aspen	<i>Populus</i>	<i>tremuloides</i>	8,9	Medium	Semi-mature	2	Good	...	\$2,286.74
46	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	6	Medium	Semi-mature	1	Good	2	\$794.84
47	Oak-Pin	<i>Quercus</i>	<i>palustris</i>	18	Medium	Mature	1	Poor	2	\$1,313.92
48	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	14,12	Medium	Mature	2	Good	2	\$5,231.24
49	Oak-Northern Red	<i>Quercus</i>	<i>rubra</i>	12	Medium	Mature	1	Fair	2	\$2,270.97
50	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	13	Medium	Mature	1	Fair	2	\$1,903.74
51	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	14	Medium	Mature	1	Good	...	\$3,091.05
52	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	10	Medium	Mature	1	Fair	...	\$1,126.47
53	Oak-Pin	<i>Quercus</i>	<i>palustris</i>	15	Medium	Mature	1	Poor	2	\$2,129.04
54	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	14	Medium	Mature	1	Fair	2	\$3,091.05
55	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	10	Medium	Mature	1	Good	...	\$2,207.89
56	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	16	Medium	Mature	1	Fair	2	\$1,730.27
57	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	11	Medium	Mature	1	Fair	...	\$817.82

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
58	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	11	Medium	Mature	1	Fair	2	\$817.82
59	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	14	Medium	Mature	1	Fair	2	\$3,091.05
60	Maple-Norway	<i>Acer</i>	<i>platanoides</i>	4	Medium	Young	1	Good	...	\$302.80
61	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	20	Large	Mature	1	Good	2	\$8,831.56
62	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	14	Medium	Mature	1	Fair	1	\$3,091.05
63	Oak-Northern Red	<i>Quercus</i>	<i>rubra</i>	16	Medium	Mature	1	Good	2	\$5,652.20
64	Hackberry	<i>Celtis</i>	<i>occidentalis</i>	17	Medium	Mature	1	Good	...	\$7,292.35
65	Spruce-Norway	<i>Picea</i>	<i>abies</i>	6	Medium	Mature	1	Good	...	\$794.84
66	Oak-Northern Red	<i>Quercus</i>	<i>rubra</i>	14	Medium	Mature	1	Good	2	\$4,327.47
67	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Fair	...	\$2,472.75
68	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Fair	...	\$2,534.57
69	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	20	Medium	Mature	1	Good	2	\$8,831.56
70	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	7	Medium	Semi-mature	1	Good	3	\$1,081.87
71	Lilac-Japanese Tree (4)	<i>Syringa</i>	<i>reticulata</i>	3,3,2,2	Small	Semi-mature	4	Good	2	\$574.05
72	Ginkgo	<i>Ginkgo</i>	<i>biloba</i>	4	Medium	Semi-mature	1	Good	...	\$353.26
73	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	6	Medium	Semi-mature	1	Good	...	\$794.84
74	Maple-Red	<i>Acer</i>	<i>rubrum</i>	6,5,5,4	Medium	Mature	4	Fair	...	\$1,378.81

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
75	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	10,10,10,10,10,5	Medium	Mature	6	Good	2	\$11,591.43
76	Lilac-Japanese Tree	<i>Syringa</i>	<i>reticulata</i>	7	Small	Mature	1	Good	...	\$772.76
77	Arborvitae-Eastern (7)	<i>Thuja</i>	<i>occidentalis</i>	7	Medium	Mature	1	Good	...	\$6,182.09
78	Hawthorn	<i>Crataegus</i>	sp.	5	Small	Mature	1	Fair	3	\$394.27
79	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	15	Medium	Mature	1	Poor	1	\$1,520.74
80	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	11	Medium	Mature	1	Fair	...	\$1,363.03
81	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	18	Medium	Mature	1	Good	...	\$5,109.69
82	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	23	Medium	Mature	1	Good	...	\$8,342.67
83	Lilac-Japanese Tree	<i>Syringa</i>	<i>reticulata</i>	5	Small	Mature	1	Good	...	\$551.97
84	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	17	Medium	Mature	1	Fair	...	\$3,255.51
85	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	19	Medium	Mature	1	Good	2	\$3,415.92
86	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	18	Medium	Mature	1	Good	2	\$5,109.69
87	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	11	Medium	Mature	1	Dead	1	...

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
88	Hawthorn	<i>Crataegus</i>	sp.	6,4	Small	Semi-mature	2	Fair	2	\$585.77
89	Hawthorn	<i>Crataegus</i>	sp.	7,3	Small	Mature	2	Fair	2	\$653.36
90	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	21	Medium	Mature	1	Good	...	\$9,736.80
91	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	13	Medium	Mature	1	Poor	2	\$685.35
92	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	20,18,12,12	Medium	Mature	4	Good	2	\$22,343.86
93	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	16	Medium	Mature	1	Good	2	\$4,037.29
94	Hawthorn	<i>Crataegus</i>	sp.	6	Medium	Mature	1	Good	...	\$794.84
95	Hawthorn	<i>Crataegus</i>	sp.	6	Small	Mature	1	Good	...	\$567.74
96	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	9	Medium	Mature	1	Fair	...	\$1,277.42
97	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	17	Medium	Mature	1	Fair	2	\$4,557.72
98	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	14	Medium	Mature	1	Good	...	\$4,327.47
99	Serviceberry	<i>Amelanchier</i>	sp.	4,4,4,4	Medium	Mature	4	Fair	2	\$720.94
100	Maple-Norway	<i>Acer</i>	<i>platanooides</i>	16	Medium	Mature	1	Fair	2	\$2,471.81
101	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	16	Medium	Mature	1	Good	...	\$4,037.29
102	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	15	Medium	Mature	1	Fair	...	\$2,534.57
103	Honeylocust-Thornless Common	<i>Gleditsia</i>	<i>triacanthos</i> var. <i>inermis</i>	19	Medium	Mature	1	Fair	2	\$5,693.20

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
104	Maple-Red	<i>Acer</i>	<i>rubrum</i>	11	Medium	Mature	1	Good	2	\$2,289.90
105	Maple-Norway	<i>Acer</i>	<i>platanoides</i>	10,9,9,8	Medium	Mature	4	Poor	1	\$2,644.06
106	Pine-Scotch	<i>Pinus</i>	<i>sylvestris</i>	9	Medium	Mature	1	Dead	1	...
107	Maple-Norway	<i>Acer</i>	<i>platanoides</i>	8,8,8,6,6,6	Medium	Mature	6	Poor	1	\$2,433.19
108	Maple-Norway	<i>Acer</i>	<i>platanoides</i>	9,9,9,9,9,4	Medium	Mature	6	Good	2	\$7,967.33
109	Pine-Scotch	<i>Pinus</i>	<i>sylvestris</i>	10,11	Medium	Mature	2	Good	...	\$2,788.25
110	Maple-Red	<i>Acer</i>	<i>rubrum</i>	12	Medium	Mature	1	Good	2	\$2,725.17
111	Maple-Red	<i>Acer</i>	<i>rubrum</i>	12	Medium	Mature	1	Good	2	\$2,725.17
112	Maple-Sugar	<i>Acer</i>	<i>saccharum</i>	19	Medium	Mature	1	Good	2	\$9,109.13
113	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	11	Medium	Mature	1	Fair	...	\$1,329.79
114	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Fair	2	\$2,534.57
115	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Fair	2	\$2,534.57
116	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	10	Medium	Mature	1	Fair	...	\$1,577.06
117	Pear-Callery	<i>Pyrus</i>	<i>calleryana</i>	9	Medium	Mature	1	Good	2	\$1,788.39
118	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	12	Medium	Mature	1	Fair	...	\$1,622.12
119	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Fair	...	\$2,534.57
120	Pine-Scotch	<i>Pinus</i>	<i>sylvestris</i>	11	Medium	Mature	1	Fair	...	\$1,090.43
121	Poplar-Black	<i>Populus</i>	<i>nigra</i>	15,9,8,8,7	Medium	Mature	5	Fair	2	\$2,176.35
122	Maple-Freeman's	<i>Acer</i>	<i>x freemanii</i>	11	Medium	Mature	1	Good	2	\$2,671.55
123	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	6	Medium	Young	1	Good	...	\$794.84
124	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	16	Medium	Mature	1	Good	...	\$5,652.20
125	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	19	Medium	Mature	1	Good	2	\$5,693.20
126	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	15	Medium	Mature	1	Good	...	\$3,548.40
127	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	17	Medium	Mature	1	Good	2	\$4,557.72
128	Pear-Callery	<i>Pyrus</i>	<i>calleryana</i>	6	Medium	Semi-mature	1	Good	2	\$794.84

Tree ID	Common Name	Genus	Species	DBH	Height Class	Age Class	Stems	Condition Class	Tree & Shrub Work Phase	Tree Asset Value
129	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	7	Medium	Mature	1	Good	...	\$1,081.87
130	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	9	Medium	Mature	1	Good	...	\$1,788.39
131	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	18	Medium	Mature	1	Good	2	\$7,153.57
132	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	13	Medium	Mature	1	Fair	...	\$1,903.74
133	Linden-Littleleaf	<i>Tilia</i>	<i>cordata</i>	10,10,10,10	Medium	Mature	4	Good	2	\$8,831.56
134	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	13	Medium	Mature	1	Fair	...	\$1,903.74
135	Pine-Austrian	<i>Pinus</i>	<i>nigra</i>	12	Medium	Mature	1	Good	...	\$2,270.97
136	Oak-Pin	<i>Quercus</i>	<i>palustris</i>	12	Medium	Mature	1	Good	2	\$3,179.36
137	Spruce-Colorado Blue	<i>Picea</i>	<i>pungens</i>	4	Small	Young	1	Fair	...	\$252.33

APPENDIX



ADDITIONAL RESOURCES

Bartlett publishes a variety of tree-resource documents, including technical reports, plant health care recommendations, and service brochures. The following technical reports may be pertinent to your inventory. To access these documents and view the complete Bartlett Resource Library online, please follow this URL:

<https://www.bartlett.com/resourcelist.cfm>

Girdling Roots

Maintenance Pruning Program

Monitor IPM Program

Mulch Application Guidelines

Tree Risk Assessments

Tree Structure Evaluation

GLOSSARY OF TERMS

air pollution removal: removal of pollutants from the air by plants through natural processes

arborist: 1. An individual engaged in the profession of arboriculture who, through experience, education and related training, possesses the competence to provide for, or supervise the management of, trees and other woody ornamentals. [ANSI A300 (Part 1, 2, 4, 5, 6)] 2. An individual engaged in the profession of arboriculture. [ANSI Z133.1-2000 Safety Requirements for Arboricultural Operations]

bracing: The installation of lag-thread screw or threaded-steel rods in limbs, leaders, or trunks to provide supplemental support. [ANSI A300 (Part 3)-2000 Support Systems]

branch: An outgrowing shoot, stem or twig that grows from the main stem or trunk. [ANSI Z60.1-2004 Nursery Stock]

buttress roots: Lateral surface roots that aid in stabilizing the tree.

cable: 1) Zinc coated strand per ASTM A-475 for dead-end grip applications. 2) Wire rope or strand for general applications. 3) Synthetic-fiber rope or synthetic-fiber webbing for general applications. [ANSI A300 (Part 3)-2000 Support Systems]

cabbling: The installation of a steel wire rope, steel strand, or synthetic-fiber system within a tree between limbs or leaders to limit movement and provide supplemental support. [ANSI A300 (Part 3)-2000 Support Systems]

canopy: collective branches and foliage of a tree or group of trees' crowns

carbon sequestration: removal of carbon from the air by plants through natural processes

carbon storage: storage of carbon removed from the air in plant tissues

cation exchange capacity (CEC): The ability of soil to absorb nutrients.

cavity: An open wound characterized by the presence of decay and resulting in a hollow.

cleaning: Selective pruning to remove one or more of the following parts: dead, diseased, and/ or broken branches (5.6.1). [ANSI A300 (Part 1)-2001 Pruning]

co-dominant branches: Equal in size and importance, usually associated with either the trunks, stems, or scaffold limbs.

conk: fruiting body or non-fruiting body of a fungus. Often associated with decay.

critical root zone (CRZ): area of soil around a tree trunk where roots are located that provide stability and uptake of water and minerals required for tree survival.

crown: 1. The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree. [ANSI A300 (Part 1)-2001 Pruning] [ANSI A300 (Part 6)-2005 Transplanting] 2. The portion of a tree comprising the branches. [ANSI Z60.1-2004 Nursery Stock]

D.B.H. [diameter at breast height]: Measurement of trunk diameter taken at 4.5 feet (1.4 m) off the ground. [ANSI A300 (Part 6)-2005 Transplanting]

decay: The degradation of woody tissue caused by microorganisms. [ANSI A300 (Part 1)-2001 Pruning]

Geographic Information System (GIS): is any system for capturing, storing, analyzing and managing data and associated attributes which are spatially referenced to earth.

girdling root: A root that may impede proper development of other roots, trunk flare, and/or trunk. [ANSI A300 (Part 6)-2005 Transplanting]

Global Positioning System (GPS): A constellation of at least 24 Medium Earth Orbit satellites that transmit precise microwave signals, the system enables a GPS receiver to determine its location, speed, direction, and time.

Global Positioning System receiver (GPSr): A receiver that receives its input from GPS satellites to determine location, speed, direction, and time.

heading: cutting a shoot back to a bud or cutting branches back to buds, stubs, or lateral branches not large enough to assume apical dominance. Cutting an older branch or stem back to meet a structural objective

integrated pest management (IPM): A pest control strategy that uses an array of complementary methods: mechanical devices, physical devices, genetic, biological, legal, cultural management, and chemical management. These methods are done in three stages of prevention, Observation, and finally Intervention. It is an ecological approach that has its main goal is to significantly reduce or eliminate the use of pesticides.

lateral branch: A shoot or stem growing from a parent branch or stem. [ANSI A300 (Part 1)-2001 Pruning]

leader: A dominant or co-dominant, upright stem. [ANSI A300 (Part 1)-2001 Pruning]

lean: Departure from vertical of the stem, beginning at or near the base of the trunk.

limb: A large, prominent branch. [ANSI A300 (Part 1)-2001 Pruning]

lion's tailing: The removal of an excessive number of inner, lateral branches from parent branches. Lion's tailing is not an acceptable pruning practice (5.5.7). [ANSI A300 (Part 1)-2001 Pruning]

macronutrient: Nutrient required in relatively large amounts by plants, such as nitrogen (N), phosphorus (P), potassium (K), and sulfur (S). [ANSI A300 (Part 2)-2004 Fertilization]

micronutrient: Nutrient required in relatively small amounts by plants, such as iron (Fe), manganese (Mn), zinc (Zn), copper (Cu), and boron (B). [ANSI A300 (Part 2)-2004 Fertilization]

noise attenuation: reducing sound levels via materials, structures, plants, etc.

nutrient: Element or compound required for growth, reproduction or development of a plant. [ANSI A300 (Part 2)-2004 Fertilization]

organic matter: material derived from the growth (and death) of living organisms. The organic components of soil.

parent branch or stem: A tree trunk, limb, or prominent branch from which shoots or stems grow. [ANSI A300 (Part 1)-2001 Pruning]

pH: unit of measurement that describes the alkalinity or acidity of a solution. Measured on a scale of 0 to 14. Greater than 7 is alkaline, less than 7 is acid, and 7 is neutral (pure water).

pruning: The selective removal of plant parts to meet specific goals and objectives. [ANSI A300 (Part 1)-2001 Pruning]

qualified arborist: An individual who, by possession of a recognized degree, certification, or professional standing, or through related training and on-the-job experience, is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated ability in the performance of the special techniques involved. [ANSI Z133.1-2000 Safety Requirements for Arboricultural Operations]

raising: Selective pruning to provide vertical clearance (5.6.3). [ANSI A300 (Part 1)-2001 Pruning]

reduction: Selective pruning to decrease height and/or spread (5.6.4). [ANSI A300 (Part 1)-2001 Pruning]

risk assessment: process of evaluating what unexpected things could happen, how likely it is, and what the likely outcomes are. In tree management, the systematic process to determine the level of risk posed by a tree, tree part, or group of trees.

root collar: 1. The transition zone between the trunk and the root system. [ANSI A300

(Part 6)-2005 Transplanting] 2. See COLLAR. [ANSI Z60.1-2004 Nursery Stock]

root flare or trunk flare: The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk. [ANSI Z60.1-2004 Nursery Stock] [ANSI A300 (Part 6)-2005 Transplanting]

root zone: The volume of soil containing the roots of a plant. [ANSI A300 (Part 5)-2005 Management]

secondary nutrient: Nutrient required in moderate amounts by plants, such as calcium (Ca) and magnesium (Mg). [ANSI A300 (Part 2)-2004 Fertilization]

seam: Vertical line that appears where two edges of wound wood or callus ridge meet.

soil amendment: Any material added to soil to alter its composition and structure, such as sand, fertilizer, or organic matter. [ANSI A300 (Part 6)-2005 Transplanting]

soil pH: A measure of the acidity or alkalinity of the soil.

stormwater runoff: water (generally from rain or snow melt) that flows over the ground after storm events.

structural support system: hardware installed in tree, may be; cables, braces, or guys, to provide supplemental support.

sweep: Departure from vertical of the stem, beginning above the base of the trunk.

thinning: Selective pruning to reduce density of live branches (5.6.2). [ANSI A300 (Part 1)-2001 Pruning]

tree risk assessment: Closer inspection of visibly damaged, dead, defected, diseased, leaning or dying tree to determine management needs.

topping: The reduction of a tree's size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not acceptable pruning practice. (5.5.7). [ANSI A300 (Part 1)-2001 Pruning]

tree inventory: A comprehensive list of individual trees providing descriptive information on all or a portion of the project area. [ANSI A300 (Part 5)-2005 Management during site planning, site development, and construction]

tree protection zone: A space above and belowground within which trees are to be retained and protected. [ANSI A300 (Part 5)-2005 Management during site planning, site development, and construction]

trunk: That portion of a stem or stems of a tree before branching occurs. [ANSI Z60.1-

2004 Nursery Stock]

vigor: Overall health. Capacity to grow and resist stress. [ISA Municipal Specialist Certification Study Guide 2008]

wound: An opening that is created when the bark of a living branch or stem is penetrated, cut, or removed. [ANSI A300 (Part 1)-2001 Pruning]