



Memo

Date: January 10, 2025

To: **City of Mercer Island – Public Works**
C/o: Christopher Marks, Utilities Engineer
9611 SE 36th Street,
Mercer Island, WA 98040

From: **Urban Forestry Services | Bartlett Consulting**
Tyler P. Holladay, Consulting Arborist - GIS Specialist
ISA Certified Arborist® #PN-8100A
ISA Tree Risk Assessment Qualified

Reviewed by: Paul Hans Thompson, Managing Consultant

Re: **85th Ave SE Sewer Pump Station 20 Replacement Project
Tree Inventory, Assessment, and Tree Protection Planning**

The purpose of this Memo is to provide inventory and assessment details, recommendations, and tree protection planning guidance for the trees within and surrounding the proposed Pump Station 20 project area. The guidance provided in this Memo is to assist this project with meeting the City's permitting requirements and tree protection standards.

As requested by Christopher Marks, Utilities Engineer with the City of Mercer Island Public Works, I conducted a tree inventory, risk assessment, and construction impact evaluation for twenty-six (26) trees potentially impacted by the planned Sewer Pump Station 20 Replacement Project adjacent to 8790 85th Ave SE, Mercer Island, Washington. I conducted and completed my field evaluation and assessment on December 16, 2024.

Of the 26 trees I evaluated, only sixteen (16) were evaluated individually and tagged using aluminum numerical identification tags. Per our engagement, only trees that are likely to be impacted to some degree by construction were to be individually inventoried and assessed. The remaining ten (10) trees that were not individually evaluated were considered and documented in groups.

Except for four (4) trees – ID numbers 69, 71, 72, and 73 – requiring removal due to expected unsustainable impacts during construction, all trees surrounding the improvement area can be retained and protected contingent upon the tree protection guidance recommended herein.

Findings

Tree Assessment Matrices with photos and detailed information on each individually inventoried and assessed tree and tree grouping are attached. A *Tree Assessment and Protection Site Plan – TA-01* is also attached and shows the locations of each of the inventoried assessed trees and tree groups, as well as tree protection elements and required treatments.

All of the trees I inventoried and assessed throughout and surrounding the project site appear to be located within the street right-of-way according to the locations and boundaries shown on the plans provided.

Four (4) of the individually inventoried and assessed trees meet or exceed the definition of a Large Tree¹ according to Mercer Island's Code. This includes Trees 63, 71, 72, and 73.

The remaining twelve (12) individually inventoried and assessed trees meet the definition of *Small Trees*². This includes Trees 61, 62, 64, 65, 66, 67, 68, 69, 70, 74, 75, and 76.

No *Exceptional Trees*³ or *Groves*⁴ are included in this work.

Construction Impact Evaluation

Proposed improvements are planned at the existing pump station site located at the south end of Mercer Island, at the end of 85th Ave SE, adjacent to 8790 85th Ave SE. The station resides on the shoreline of Lake Washington and is surrounded by single-family residential properties to the west, north, and east. Based on email correspondence with Christopher Marks and the plans he provided, dated November 18, 2024, it is my understanding that the site will generally undergo the following changes:

- Significant excavation, forming, and installation of a new pump station with infrastructural pump and pipe systems north of the existing pump station infrastructure.
- Excavation for and construction of a concrete star system overlying a new sewer pipe east of the existing pump station.
- Minor roadway resurfacing north of the planned improvements tying in the improvements with the existing road.

Impact Classification

Trees classified as impacted in this assessment are those that will experience impacts, direct or indirect, to their Calculated Tree Protection Zones (CTPZ) and/or dripline based on the proposed plans provided by Public Works. Impacts are classified in the following ways and

¹ Large Tree: Any tree with a diameter of ten inches or more, and any tree that meets the definition of an exceptional tree.

² Small tree: Any tree with a diameter of less than ten inches. Small trees do not include any tree that meets the definition of an exceptional tree.

³ Exceptional Tree: A tree or group of trees that because of its unique historical, ecological, or aesthetic value constitutes an important community resource. An exceptional tree is a tree that is rare or exceptional by virtue of its size, species, condition, cultural/historic importance, age, and/or contribution as part of a tree grove. Trees with a diameter of more than 36 inches, or with a diameter that is equal to or greater than the diameter listed in the Exceptional Tree Table, are considered exceptional trees.

⁴ Grove: A grove means a group of eight or more trees each ten inches or more in diameter that form a continuous canopy. Trees that are part of a grove shall also be considered exceptional trees, unless they also meet the definition of a hazardous tree.

determined using infield observations as well as GIS analysis. See the attached *Tree Assessment and Protection Site Plan – TA-01* and *TPZ explanation* for details.

- Direct** A tree resides directly within the planned work limits, and/or greater than 50% of a tree's CTPZ and/or dripline is expected to incur root loss or damage.
- Major** A tree resides outside the planned work limits, but a large portion (20%<50%) of the tree's CTPZ and/or dripline is expected to incur root loss or damage.
- Minor** A tree resides outside of the planned work limits, and a small portion (5%<20%) of the tree's CTPZ and/or dripline is expected to incur root loss or damage.
- Negligible** A tree resides outside of the planned work limits to the degree that less than 5% root loss or damage is expected within the tree's CTPZ and/or canopy.
- None** A tree resides outside of the planned work limits to the degree that no impacts are expected within the tree's CTPZ and/or dripline.

Table 5. Impact Group Summary

Impact Group	Totals	Tree ID Number
Direct	4	69, 71, 72, 73
Major	0	
Minor	11	61, 62, 63, 65, 66, 67, 68, 70, 74, 75, 76
Negligible	1	64
None expected	10	Groups 1 and 2
Totals	26	

Impacted trees

Eleven (11) evaluated trees will likely experience **Negligible** to **No** impact from construction. Despite the low likelihood of impacts, I still recommend protection treatments to ensure these trees do not incur impacts.

Eleven (11) trees are vulnerable to **Minor** impacts. Most of these impacts relate to the potential for above-ground impact on branches and live foliage close to or overhanging the work areas and site access points. Tree parts in this category may face damage from vehicle and equipment ingress/egress, as well as damage from exhaust from idling vehicles and equipment. These trees will require protective measures to lessen these potential impacts and ensure they can remain injury-free and viable in the long term.

I expect four (4) trees to incur **Direct** impacts to their critical roots to an unsustainable degree. Planned improvements near and surrounding these trees will require significant damage and loss to fine tree roots during excavation and construction to a degree that will significantly impact the trees' ability to sustain themselves. In addition, I also expected structural roots to be damaged and lost, which may destabilize the trees and, in the case of Trees 71, 72, and 73, create a potential risk to surrounding residents and property. As such, all four (4) of these trees are recommended for removal.

Risk Assessment

I assessed all trees using ISA Level 1 Limited Visual Assessment Methods.

No trees warranted assessment using ISA Level 2 Basic Tree Risk Assessment methods. Per our work agreement, only trees with assessed parts presenting a *probable* or *imminent likelihood of failure* and a *moderate* or *high likelihood of impact* to any potential persons, property, or activities were to be advanced to a Level 2 Assessment.

Through my Level 1 assessments, I found that all of the trees presented a **Low** overall risk to surrounding persons, property, and use. The low-risk ratings for these trees are due to the fact that no parts of concern were found during my assessment.

The timeframe for this assessment is three (3) years. All trees that will be retained as part of the project should be monitored and reassessed within three (3) years.

Risk Assessment Limitations

Assignment

My ground-based ISA Level 2 Basic Risk Assessment of the trees within and surrounding the project work limits is based on a single site visit on December 16, 2024.

All photographs, samples, and readings (if applicable) were taken at the time the assessment was performed. The assessment is limited to visible and accessible portions of the root collar and canopy; vegetation covering the ground and tree parts, such as English ivy, etc., may be obstructing significant defects from view.

Tree Risk Assessments

The tree owner or manager needs 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 and Assessment* and *American National Standards Institute A300 Tree Risk Assessment Standard*, 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. Tree failure can cause adjacent trees to fail, resulting in a "domino effect" that impacts targets outside the foreseeable target zone of this tree. 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 that 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.

Recommendations

Tree Removal:

Four (4) inventoried and assessed trees surrounding and within the project areas are recommended for removal due to unsustainable construction impacts. These trees are identified with a red 'X' on the attached *Tree Assessment and Protection Site Plan – TA-01*.

These trees include 69, 71, 72, and 73.

- Take care while removing trees slated for removal to ensure that surrounding protected trees do not incur impact from removal activities.
- Retain the root systems from these trees where possible to limit impacts to surrounding trees from excavation/extraction. Alternatively, stumps can be cut flush to the ground, or a stump grinder can be used to grind the stumps below grade.

Tree retention and protection:

Twenty-two (22) inventoried and assessed trees surrounding the project areas may be retained during and after construction, contingent on carefully implementing the attached *UFS|BC General Tree Protection Guidelines (GTPG)*.

These trees include 61, 62, 63, 64, 65, 66, 67, 68, 70, 74, 75, and 76, and groups 1 and 2.

- Install tree protection fencing in the locations shown on the attached *Tree Assessment and Protection Site Plan – TA-01*
- Take care while removing trees slated for removal to ensure that surrounding protected trees do not incur impact from removal activities.

Monitor and reassess all retained and protected trees:

To ensure that all retained and protected trees are adequately protected and managed during and after construction and to evaluate whether any physiological and structural conditions have changed over time, all retained trees are recommended for regular and continued monitoring throughout and after construction. A post-construction assessment is recommended to determine if any additional treatments are required to ensure the trees' safety and long-term viability.

- Regular monitoring and reassessment shall follow current ANSI A300 Tree Risk Assessment Standards, ANSI Z133.1 safety standards, and be performed by an ISA Certified and Tree Risk Assessment Qualified (TRAQ) Arborist®.

Please let me know if you have any questions regarding the contents of this memo.

Sincerely,



Tyler P. Holladay

Species: Japanese maple (Acer palmatum)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Restrict access beyond the roadway. Install tree protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.

DSH (in): 6.3	Height (ft): 15	Drip Ave. (ft): 12
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Tree ID:
61

Risk Assessment Components

Parts(s): None		Target(s):
Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	Medium	6.3

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: Branches from this tree overhang the roadway. Some branches already show signs of tissue injury from contact with passing vehicles.



Species: Evergreen magnolia (*Magnolia grandiflora*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Restrict access beyond the roadway. Install tree protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.

DSH (in): 9	Height (ft): 20	Drip Ave. (ft): 10
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Tree ID:
62

Risk Assessment Components

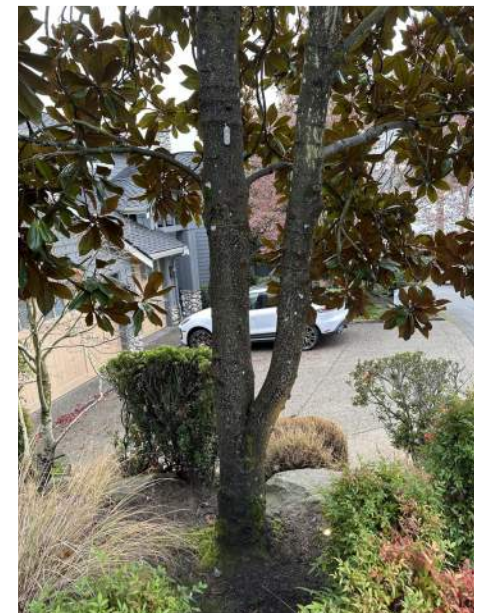
Parts(s): None		Target(s):
Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Young or	Low	9

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree has branches that overhang the roadway, which could potentially be damaged during construction by vehicles/equipment traveling to and from the site.



Species: Japanese maple (Acer palmatum)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Fair

Health	Structure	Form
Good	Fair	Good

Recommendations: Protect - Restrict access beyond the roadway. Install tree protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.

DSH (in): 10.9	Height (ft): 18	Drip Ave. (ft): 16
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Tree ID:
63

Risk Assessment Components

Parts(s): None		Target(s):
Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	Medium	10.8

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree has branches that overhang the roadway, which could potentially be damaged during construction by vehicles/equipment traveling to and from the site.



Species: Star magnolia (*Magnolia stellata*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Fair

Health	Structure	Form
Good	Good	Fair

Recommendations: Protect - Restrict access beyond the roadway. Install tree protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.



DSH (in): 4.1	Height (ft): 12	Drip Ave. (ft): 5
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Tree ID:
64

Risk Assessment Components

Parts(s): None			Target(s):
Failure Likelihood	Impact Likelihood	Consequences	

Impact Class: Negligible

Age class	Const. Tolerance	CTPZ (ft)
Young or	Low	4.1

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree is not shown/located on the provided survey/plan set. The tree has branches that overhang the roadway which could potentially be damaged during construction by vehicles/equipment traveling to and from the site.

Species: Evergreen magnolia (*Magnolia grandiflora*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Restrict access beyond the roadway/parking areas. Install tree protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.



DSH (in): 9.5	Height (ft): 28	Drip Ave. (ft): 10
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Tree ID:
65

Risk Assessment Components

Parts(s): None			Target(s):
Failure Likelihood	Impact Likelihood	Consequences	

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	Low	11.9

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree has branches that overhang the parking area which could potentially be damaged during construction by vehicles traveling to and from the site and from idling/exhaust.

Species: Evergreen magnolia (*Magnolia grandiflora*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Restrict access beyond the roadway/parking areas. The existing fence can be used as protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.

DSH (in): 8	Height (ft): 20	Drip Ave. (ft): 10
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Risk Assessment Components

Parts(s): None		Target(s):
Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Young or	Low	8

Tree ID:
66

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree is not shown/located on the provided survey/plan set. DBH is an estimate due to site access restrictions. This tree has branches that overhang the parking area, which could potentially be damaged during construction by vehicles traveling to and from the site and from idling/exhaust.



Species: Evergreen magnolia (*Magnolia grandiflora*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Ground protection will be needed if equipment access/travel is required within 8 feet of the fence line. The existing fence can be used as protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.

DSH (in): 7	Height (ft): 20	Drip Ave. (ft): 10
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Risk Assessment Components

Parts(s): None			Target(s):
Failure Likelihood	Impact Likelihood	Consequences	

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Young or	Low	7

Tree ID:
67

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree is not shown/located on the provided survey/plan set. DBH is an estimate due to site access restrictions. This tree has branches that overhang the parking area, which could potentially be damaged during construction by vehicles traveling to and from the site and from idling/exhaust.



Species: Green ash (Fraxinus pennsylvanica)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Poor

Health	Structure	Form
Fair	Poor	Poor

Recommendations: Protect - Install tree protection fencing and Ground protection in areas shown on the Tree Protection Site Plan.

DSH (in): 8.8	Height (ft): 12	Drip Ave. (ft): 6
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Tree ID:
68

Risk Assessment Components

Parts(s): None **Target(s):**

Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	High	5.9

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree is not shown/located on the provided survey/plan set. This tree is within the boundaries of the work area and could potentially be damaged during construction by equipment travel and idling. The tree has a low retention value due to repeated topping. The tree is at the edge of the shoreline.



Species: Arborvitae (*Thuja occidentalis*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Poor

Health	Structure	Form
Poor	Poor	Poor

Recommendations: Remove - poor overall condition and unsustainable impacts expected.



DSH (in): 7.6	Height (ft): 14	Drip Ave. (ft): 6
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Tree ID:
69

Risk Assessment Components

Parts(s): None			Target(s):
Failure Likelihood	Impact Likelihood	Consequences	

Impact Class: Direct

Age class	Const. Tolerance	CTPZ (ft)
Mature	High	5.1

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree exhibits significant decline throughout the canopy. There is turkey tail fungus on the north side of the trunk. Extensive signs of splitting bark and pitch oozing. This tree is directly next to the planned improvements and will likely face direct and unsustainable impacts

Species: Shore pine (Pinus contorta)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Install tree protection fencing as shown on the Tree Protection Site Plan. If needed, prune or tie back branches overhanging the work area to prevent injury during construction.

DSH (in): 6	Height (ft): 12	Drip Ave. (ft): 6
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Tree ID:
70

Risk Assessment Components

Parts(s): None			Target(s):
Failure Likelihood	Impact Likelihood	Consequences	

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	Medium	6

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree is directly next to the work area and branches overhang the existing concrete structure by roughly 4 feet. It appears that improvements will not significantly impact this tree; the removal of other trees nearby may pose some degree of impact.



Species: Norway spruce (*Picea abies*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Fair

Health	Structure	Form
Good	Good	Fair

Recommendations: Remove - unsustainable impacts expected

DSH (in): 22.6	Height (ft): 68	Drip Ave. (ft): 14
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Tree ID:
71

Risk Assessment Components

Parts(s): None	Target(s):
Failure Likelihood	Impact Likelihood
	Consequences

Impact Class: Direct

Age class	Const. Tolerance	CTPZ (ft)
Mature	Low	28.3

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree has been limbed up significantly in the past. It appears spurs were used to climb the tree, as is evident by spur injuries on the trunk. This tree is directly next to planned improvements and will likely experience significant to severe and unsustainable impacts. The tree may potentially be destabilized as well due to root severance.



Species: Green ash (Fraxinus pennsylvanica)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Poor

Health	Structure	Form
Fair	Poor	Poor

Recommendations: Remove - poor condition combined with unsustainable impacts.

DSH (in): 11.2	Height (ft): 30	Drip Ave. (ft): 10
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Tree ID:
72

Risk Assessment Components

Parts(s): None

Target(s):

Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Direct

Age class	Const. Tolerance	CTPZ (ft)
Mature	High	7.5

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree has been topped multiple times in the past as well as limbed up significantly. The root collar of this tree is buried significantly. The tree has dead, dying, and sluffing bark in the upper canopy. Impacts are within 4 feet to the east and will likely significantly impact this tree and potentially destabilize the tree.



Species: Green ash (Fraxinus pennsylvanica)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Poor

Health	Structure	Form
Fair	Poor	Poor

Recommendations: Remove - poor condition combined with unsustainable impacts.

DSH (in): 12.4	Height (ft): 30	Drip Ave. (ft): 12
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Tree ID:
73

Risk Assessment Components

Parts(s): None		Target(s):
Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Direct

Age class	Const. Tolerance	CTPZ (ft)
Mature	High	8.3

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree has been topped multiple times in the past as well as limbed up significantly. The root collar of this tree is buried significantly. The tree has dead, dying, and sluffing bark in the upper canopy. Impacts are within 5 feet to the east and will likely significantly impact this tree and potentially destabilize the tree.



Species: Japanese maple (Acer palmatum)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Restrict access beyond the roadway/parking areas. Install tree protection fencing. Trunk protection may also be needed. Prune or tie back branches that overhang the parking area to prevent injury from vehicles/equipment during construction.

DSH (in): 5.3	Height (ft): 14	Drip Ave. (ft): 10
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Tree ID:
74

Risk Assessment Components

Parts(s): None			Target(s):
Failure Likelihood	Impact Likelihood	Consequences	

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	Medium	5.3

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: The trunk of this tree is within 1 foot of the driveway surface to the south. The lower trunk contains swollen areas likely from repeated vehicle-related damage. There are a couple of lower branches that could come into conflict with construction vehicles/equipment.



Species: Deodar cedar (Cedrus deodara)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Restrict access beyond the roadway/parking areas. Install tree protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.



DSH (in):	Height (ft):	Drip Ave. (ft):
5.9	6	5

Tree ID:
75

Risk Assessment Components

Parts(s): None

Target(s):

Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	Medium	5.9

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree is not shown/located on the provided survey/plan set. The tree is very close to the driveway to the south and east, within 6 feet. Branches of this tree could potentially be impacted by equipment or vehicles during construction.

Species: Evergreen magnolia (*Magnolia grandiflora*)

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

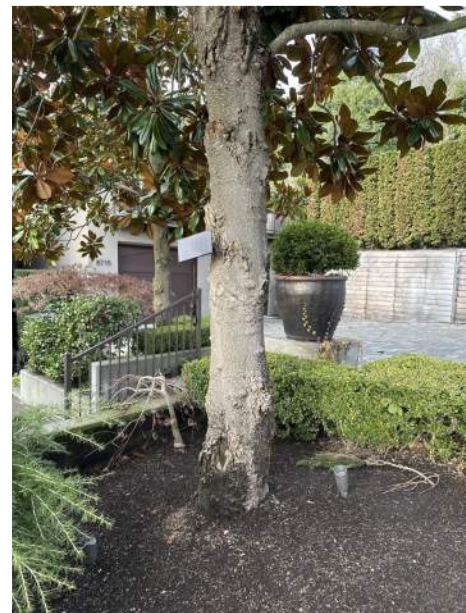
Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect - Restrict access beyond the roadway/parking areas. Install tree protection fencing. Prune or tie back branches that overhang the roadway to prevent injury from vehicles/equipment during construction.



DSH (in): 9.7	Height (ft): 24	Drip Ave. (ft): 10
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Tree ID:
76

Risk Assessment Components

Parts(s): None			Target(s):
Failure Likelihood	Impact Likelihood	Consequences	

Impact Class: Minor

Age class	Const. Tolerance	CTPZ (ft)
Mature	Low	12.1

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: This tree has branches that overhang the parking area which could potentially be damaged during construction by vehicles traveling to and from the site and from idling/exhaust.

Species: Mix - Broadleaf Dominant

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Fair

Health	Structure	Form
Good	Good	Fair

Recommendations: Protect this area during construction to prevent vehicles from driving on the edge of the landscape.

DSH Range (in):	Height Range (ft):	Drip Range (ft):
4 - 11	6 - 60	3 - 12

Risk Assessment Components

Parts(s): Dead birch tops **Target(s):** Utility lines

Failure Likelihood	Impact Likelihood	Consequences
Possible	Medium	Significant

Impact Class: None

Age class	Const. Tolerance	CTPZ (ft)

Group ID:

1

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: There are 8 small to large trees in this group - 1 - western red cedar, 2 - Birch species, 2 - Camelia species, 3 - Japanese maple species, and various shrubs and woody ornamentals. According to the plans provided, none of these trees appear to be potentially impacted by construction. None of these trees have branches that extend over the roadway. These trees have not been individually inventoried due to the low likelihood of impact during construction.



Species: Mix - Broadleaf Dominant

Risk Assessment Summary - ISA Level 1 Limited Visual Risk Assessment

Risk Rating: Low

Assessment Time Frame: 3 years

Residual Risk (see recommendations): na

Condition Rating: Good

Health	Structure	Form
Good	Good	Good

Recommendations: Protect this area during construction to prevent vehicles from driving on the edge of the landscape.

DSH Range (in): 4 - 6	Height Range (ft): 4 - 10	Drip Range (ft): 4 - 6
---------------------------------	-------------------------------------	----------------------------------

Group ID:
2

Risk Assessment Components

Parts(s): None **Target(s):**

Failure Likelihood	Impact Likelihood	Consequences

Impact Class: Negligible

Age class	Const. Tolerance	CTPZ (ft)

This document has been prepared specifically for the above-named project and is likely part of a larger set of data. This sheet should be used in conjunction with the written report and should not be used without the approval and participation of the F.A. Bartlett Tree Expert Company.

Notes: There are 2 small trees in this group - 1 - Trochodendron, 1 - Japanese maple. According to the plans provided, none of these trees appear to be potentially impacted by construction. None of these trees have branches that extend over the roadway. These trees have not been individually inventoried due to the low likelihood of impact during construction.



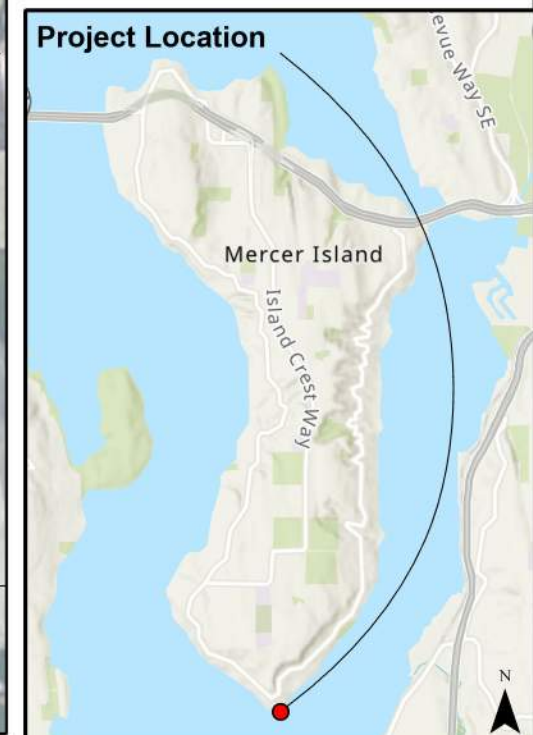
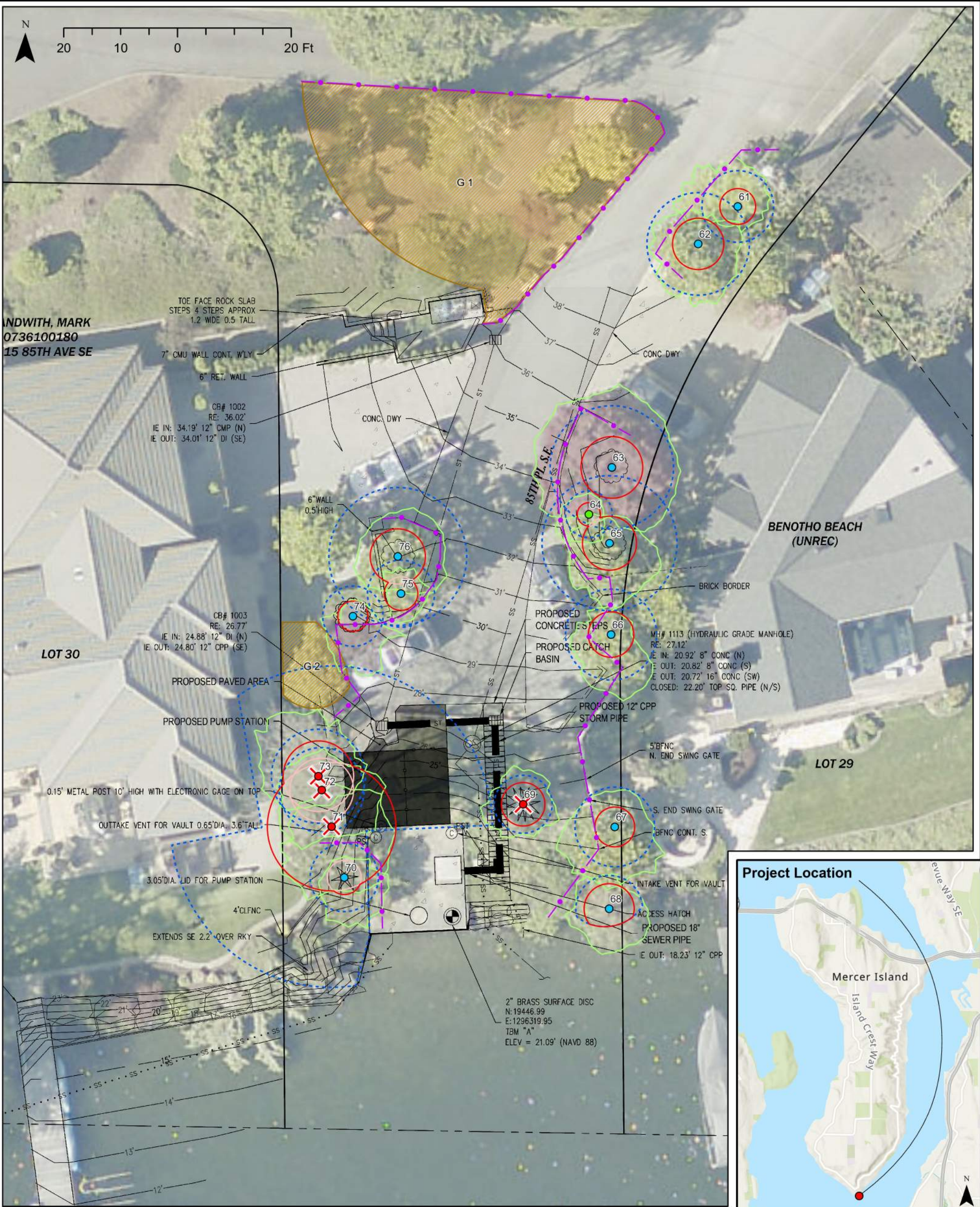
Tree Assessment and Protection Site Plan

City of Mercer Island - Pump Station 20 Project

Adjacent 8790 85th Ave SE,
Mercer Island, Washington



Urban Forestry Services
BARTLETT CONSULTING
Divisions of The F.A. Bartlett Tree Expert Company
15119 McLean Road
Mount Vernon, WA, 98273
1(360)-399-1377
urbanforestryservices.com



Symbols: (Approximate locations)

- Inventoried and Assessed Trees**
- Anticipated Impacts
- Direct
 - Major
 - Minor
 - Negligible
 - None Expected

- ✘ Assessed tree recommended for removal due to anticipated unsustainable impacts
- Tree/shrub group recommended for protection
- Recommended Tree Protection Fencing

Tree Preservation Zones (TPZ)*

- Calculated Tree Protection Zone (CTPZ)
- Generalized Drip Line
- Critical Root Zone (CRZ)

*See the attached Tree Preservation Zone Explanation for details.

Tree Risk Assessment Vocabulary

Tree risk assessment has a unique set of terminology with specific meanings. A complete list of tree risk vocabulary and procedures may be found in the International Society of Arboriculture's (ISA) *Best Management Practice (BMP) for Tree Risk Assessment* or the American National Standards Institute (ANSI) *A300 Tree Risk Assessment Standard*. The following information is provided to assist the owner/client with understanding some of the common industry phrases or language, and some of the procedures and methodologies associated with the industry language used in the proposal and/or report.

Vocabulary Used Throughout Proposals and Reports

Inspection interval is the recommended amount of time between inspections or assessments.

Occupancy rates categorize the estimated time a target is physically within a target zone. Occupancy rate is classified as rare, occasional, frequent, or constant.

Overall risk rating is the highest individual risk identified for the tree.

Residual risk is the estimated level of risk that will remain after the recommended mitigation efforts to reduce the risk have been made. This estimate is provided to help the client understand that some level of risk may still exist and plan appropriately for future risk management.

Risk is the likelihood of an event and its consequences.

Risk rating for a tree or tree part is the combination of the likelihood of failure, the likelihood of impact, and the consequences.

Time frame is the period the assessor uses in which to estimate the likelihood of failure in all categories except the "imminent" category. The use of a time frame is meant solely to help the assessor better determine the portions of the risk analysis which are time dependent. The owner/client should never consider the time frame a "guarantee period" for the risk assessment or that the tree will not fail or is safe within the stated time frame.

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

Target occupancy rates are typically identified based on information obtained from the owner/client prior to conducting the assessment, as well as information gained during the limited time the assessor evaluates the tree and site. Targets, target zones, and occupancy rates may be adjusted based on observations during the assessment.

Target zones are the areas where a tree or tree part is likely to land if it were to fail. The target zone(s) is determined in the field at the time of the assessment.

Trees can generally be defined as a woody perennial plant with a single trunk, defined crown, and will reach a minimum height of 15 feet at maturity.

Tree parts include branches, fruit, and trunks.

Tree risk is the likelihood of a tree failure impacting a target and the severity of the consequences.

Vocabulary Used Throughout Proposals and Reports

Tree risk assessment is the systematic process used to identify, analyze, and evaluate tree risk. Tree risk assessments are conducted to assist the tree owner or client in better understanding the risk their trees pose so they can make management decisions to reduce or minimize those risks. Tree risk assessments focus on evaluating the structural integrity of the tree crown, branches, trunks, and roots and root collar.

Tree risk assessors are trained arborists or qualified professionals with experience in performing tree risk assessments.

Vocabulary Used to Communicate Occupancy Rates

Constant indicates a target is present in the target zone at nearly all times, 24 hours a day, seven days a week.

Frequent indicates a target is present in the target zone for a large portion of the day or week.

Occasional indicates a target is present in the target zone infrequently or irregularly.

Rare indicates a target zone that is not commonly used by people or other mobile/movable targets.

Vocabulary Used to Communicate the Likelihood of Failure

Imminent indicates that failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load.

Probable indicates that failure may be expected under normal weather conditions within the specified time frame.

Possible indicates that failure could occur, but is unlikely under normal weather conditions within the specified time frame.

Improbable indicates that failure is not likely during normal weather conditions, and it may not fail in extreme weather conditions within the specified time frame.

Vocabulary Used to Communicate the Likelihood of Impacting a Target

High indicates that a failed tree or tree part will most likely impact a target.

Medium indicates the failed tree or tree part could impact the target but is not expected to do so.

Low indicates that the failed tree or tree part is not likely to impact a target.

Very low indicates that the likelihood of a failed tree or tree part impacting the specified target is remote.

Vocabulary Used to Communicate the Likelihood of a Failure Impacting a Target

Very likely to impact a target is reached by an imminent likelihood of failure and high likelihood of impact.

Likely to impact a target can be reached by an imminent likelihood of failure and medium likelihood of impact; or probable likelihood of failure and high likelihood of impact.

Somewhat likely to impact a target can be reached by one of the following combinations; an imminent likelihood of failure and low likelihood of impact; probable likelihood of failure and medium likelihood of impact; or possible likelihood of failure and high likelihood of impact.

Vocabulary Used to Communicate the Likelihood of a Failure Impacting a Target

Unlikely to impact a target can be reached by one of the following combinations; a possible or probable likelihood of failure and low likelihood of impact; possible likelihood of failure and medium likelihood of impact; improbable likelihood of failure with any likelihood of impact rating; or any likelihood of failure rating with very low likelihood of impact.

Vocabulary Used to Communicate the Consequences of Failure and Impact

Severe consequences could involve serious personal injury or death, high-value property damage, or major disruption to important activities.

Significant consequences are those that could involve substantial personal injury, property damage of moderate to high value, or considerable disruption of activities.

Minor consequences are those that are believed will only cause minor personal injury, low-to-moderate-value property damage, or small disruption of activities.

Negligible consequences are those that are believed will not result in personal injury, will only involve low-value property damage, or disruptions that can be replaced or repaired.

Vocabulary Used to Communicate Overall Risk Ratings

Extreme risk applies in situations in which failure is imminent, there is a high likelihood of impacting the target, and the consequences of the failure are severe.

High risk situations are those for which consequences are significant and likelihood is very likely or likely; or consequences are severe and likelihood is likely.

Moderate risk situations are those for which consequences are minor and likelihood is very likely or likely; or likelihood is somewhat likely and consequences are significant or severe.

Low risk situations are those for which consequences are negligible and likelihood is unlikely; or consequences are minor and likelihood is somewhat likely.

Explanation of Tree Risk Levels

The three levels of tree risk assessment defined in the *ANSI A300 Tree Risk Assessment Standard* are:

I. Level 1: Limited Visual Assessment

This level of assessment provides a visual assessment from a defined perspective (e.g., from the sidewalk, street, or aerial view) of an individual tree or population of trees to assess risk to specified targets from obvious defects or specified conditions.

Level 1 assessments are typically performed to quickly assess large populations of trees or conduct a rapid assessment of an individual tree. The assessor views only one side of the tree while walking on a sidewalk, being unable to access a neighboring property, looking from a slow-moving car, or from above with a drone, helicopter, or airplane.

A Level 1 assessment requires the client to identify the location and/or selection criteria of trees to be assessed. The assessor may:

1. Determine the most efficient route and document the route taken.
2. Assess the tree(s) within the area from the defined perspective (e.g., walk-by or

- drive-by).
3. Record the location of trees that meet the defined criteria (e.g., significant defects or other conditions of concern).
 4. Evaluate the risk (risk rating is optional).
 5. Identify trees requiring a higher level of assessment (Level 2 or Level 3) and/or prompt action.
 6. Submit risk mitigation recommendations and/or a report.

Limitations: Level 1 assessments are the least thorough means of assessment. They are typically from one perspective, such as a walk-by, a drive-by, or aerial view. This level of assessment is most commonly used to prioritize higher-risk trees within larger groups of trees when there are budgetary, time, or other management constraints. Some defects or conditions will not be visible to the inspector, nor will all conditions visible at all times of the year; therefore, not all higher-risk trees will be accurately identified. In addition, the assessment may not provide enough information to assign a risk rating, make a risk mitigation recommendation, or determine residual risk.

II. Level 2: Basic Assessment

A Level 2 assessment is a detailed visual inspection of a tree and its surrounding site and a synthesis of the information collected. It requires a 360° ground-based inspection around a tree, including the site conditions, visible buttress roots, trunk, branches, and crown.

The Level 2 assessment may include using tools such as binoculars, mallet, or probe at the discretion of the assessor or at the request of the owner/client.

At this level, the assessor may:

1. Locate and identify the tree or trees to be assessed.
2. Determine the targets and target zone for the tree or tree part(s) of concern.
3. Review the site history and conditions, and species failure profile.
4. Assess potential load on the tree and its parts.
5. Assess general tree health.
6. Inspect the tree visually which may include the use of common tools such as binoculars, mallet, probes, and/or shovels, as specified in the Scope of Work.
7. Record observations of site conditions, defects, indicators of internal defects, and response growth.
8. If necessary, recommend a Level 3 advanced assessment.
9. Analyze data to determine the likelihood of failure, likelihood of impact, and consequences of failure to evaluate the degree of risk.
10. Develop mitigation options and estimate residual risk for each option.
11. Recommend a re-inspection interval.
12. Prepare and submit a report.

Limitations: Level 2 assessments only include conditions and defects that can be detected from a ground-based visual inspection on the day of the assessment. Below-ground, internal, or upper-crown conditions, decay, and defects may not be detected.

III. Level 3: Advanced Assessment

A Level 3 assessment is performed to provide detailed information about specific tree parts, defects, targets, or site conditions. These are usually conducted in conjunction with or after a Level 2 assessment with owner/client approval. Specialized equipment, data collection and analysis, and/or expertise are usually required for Level 3 assessments.

At this level, the assessor may:

1. Locate and identify the tree or trees to be assessed.
2. Determine the targets and target zone for the tree or tree part(s) of concern.
3. Review the site history and conditions, and species failure profile.
4. Assess potential load on the tree and its parts.
5. Assess general tree health.
6. Inspect the tree and/or site using advanced techniques as specified in the Scope of Work.
7. Record results from advanced techniques.
8. Analyze data to determine the likelihood of failure, likelihood of impact, and consequences of failure to evaluate the degree of risk.
9. Develop mitigation options and estimate residual risk for each option.
10. Recommend a re-inspection interval.
11. Recommend other advanced assessments, if necessary.
12. Prepare and submit a report.

*Items 1-5 may be included in the associated Level 2 assessment.

Procedures and Methodologies Often Used for Level 3 Assessments

Level 3 procedures and methodologies, which are referred to as technologies, may include:

Procedure	Methodology
Aerial inspection and evaluation of structural defects in upper stems and branches	<ul style="list-style-type: none"> • visual inspection from within the tree crown or from a lift • unmanned aerial vehicle (UAV) photographic inspection • decay testing of branches
Detailed target analysis	<ul style="list-style-type: none"> • property value of anything potentially impacted by tree failure • use and occupancy statistics • potential disruption of activities such as road blockage or an electrical outage
Detailed site evaluation	<ul style="list-style-type: none"> • history evaluation • soil profile inspection to determine root depth • soil mineral and structural testing
Decay and wood analysis	<ul style="list-style-type: none"> • increment boring • drilling with small-diameter bit • resistance-recording drilling • single path sonic (stress) wave • sonic tomography • electrical impedance tomography • radiation (radar, X-ray) • advanced analysis for pathogen identification
Health evaluation	<ul style="list-style-type: none"> • tree ring analysis (in temperate zone trees) • shoot length measurement • detailed health/vigor analysis • starch assessment

Procedure	Methodology
Root inspection and evaluation	<ul style="list-style-type: none"> • root and root collar excavation • root decay evaluation • ground-penetrating radar
Storm/wind load analysis	<ul style="list-style-type: none"> • detailed assessment of tree exposure and protection • computer-based estimations according to engineering models • wind reaction monitoring over a defined interval
Measuring and assessing the change in trunk lean	<ul style="list-style-type: none"> • visual documentation • digital level
Load testing	<ul style="list-style-type: none"> • hand pull • measured static pull • measured tree dynamics

Limitations: Level 3 assessments that include specialized technologies may have uncertainty and require qualified estimations. Exact measures may not be feasible.

Conclusion

Regardless of the level of assessment conducted, every assessment is limited to the trees identified in the scope of work, conditions detectable at the time of the assessment, the level of communication with the owner/client, and other conditions that affect the assessor's ability to collect information. Not all defects and conditions are detectable, and not all tree failures can be predictable. Trees are living organisms, and as such, every tree's structural conditions change over time.

Terms for Commercial Consulting Services

The F.A. Bartlett Tree Expert Company (“**Bartlett Tree Experts**”) provides tree-care and related consulting services to commercial and government clients. The agreed upon “Work” has been expressed in a separate Client Agreement between Bartlett Tree Experts and the Client, and is identified within the portion of the Client Agreement communicating the Scope of the Work, the Goals, the Specifications, the Schedule of the Work, and the Payment Terms. These terms combine with the approved Client Agreement and form the complete agreement between the parties.

Article 1 TREE RISK

1.1 Tree Risk

- (a) The Client acknowledges that having trees on one’s property involves risk, including the risk that a tree or tree limb might fall. As part of the Work, Bartlett Tree Experts may recognize the risk posed by failure of trees within the scope of the Work and recommend to the Client ways to reduce that risk, but the Client acknowledges that Bartlett Tree Experts cannot detect all defects and other conditions that present the risk of tree failure and cannot predict how all trees will respond to future events and circumstances. Trees can fail unpredictably, even if no defects or other conditions are apparent. Bartlett Tree Experts will not be responsible for damages caused by subsequent failure of a tree, or tree part, within or around the scope of the Work due to defects or other preexisting structural or health conditions.
- (b) Unless the Work includes having Bartlett Tree Experts perform a tree risk assessment for designated trees, the Client acknowledges that in performing the Work Bartlett Tree Experts is not required to conduct a tree risk assessment and report to the Client on risks to, and risks posed by, trees on or near the Client’s property.
- (c) The Client also acknowledges that because trees are living organisms that change over time, the best protection against the risk associated with having trees on the Client’s property is for the Client to arrange to have a qualified tree risk assessment arborist conduct a tree risk assessment in accordance with industry standards periodically and after each major weather event to identify any defects or other conditions that present the risk of tree or limb failure and the potential consequences of such failure. Then, once a tree risk assessment is performed, the Client should review any possible defects or conditions that present the risk of failure and request recommendations for, and implement, remedial actions to mitigate the risks.

Article 2 THE WORK

2.1 Ownership

The Client states that all trees and other vegetation within the Scope of Work are owned by the Client or that the Owner has authorized the Client to include them within the Scope of Work.

2.2 Specified Trees or Work

The specific trees, shrubs, plant materials or work described in the Scope of Work or in the Agreement will be the only trees, shrubs, plant materials, or work included in the scope of the consultative services or Work performed by Bartlett for the Client.

2.3 Insurance

- (a) Bartlett Tree Experts states that it is insured for liability resulting from injury to persons or damage to property while performing the Work and that its employees are covered under workers’ compensation laws.
- (b) The scope of ongoing operations of the Work shall be defined as beginning when the performance on the site begins and ending when the performance on the site concludes.

2.4 Compliance

Bartlett Tree Experts shall perform the Work competently and in compliance with the law and industry standards, including the American National Standards Institute’s A-300 Standards for tree care.

2.5 Access Over Roads, Driveways, and Walkways

The Client shall arrange for Bartlett Tree Experts’ representatives, vehicles, and equipment to have access during working hours to areas where the Work is to be performed. The Client shall keep roads, driveways, and walkways in those areas clear during working hours for the passage and parking of vehicles and equipment. Unless the Client Agreement states otherwise, Bartlett Tree Experts is not required to keep gates closed for animals or children.

2.6 Personnel

Bartlett Tree Experts will determine and provide the correct Bartlett personnel for completing the Work based scope of the project, the expertise needed, and the geographic location of the work, in order to meet the goals of the Client.

2.7 Accuracy of Information Provided By the Client or By Third Parties Acting on Behalf of the Client

- (a) The Client acknowledges that Bartlett Tree Experts cannot be held responsible for the accuracy of or content of information provided by the Client or third parties acting on behalf of the Client, including but not limited to; the legal description of the property, issues of title and/or ownership of the property, software programs, property and property line locations and/or boundaries, or other pieces of information provided which are integral to the final outcome of the consulting Work.
- (b) The Client agrees to correct any errors in any such inaccurate information that it or any third party acting on its behalf, provides Bartlett Tree Experts, once the inaccuracy is known, if such information will be necessary for Bartlett Tree Experts to base its final analysis, management plans, written reports, information or recommendations on for the finalization of the Work.

2.8 Information Provided By Reliable Sources

In certain circumstances, Bartlett Tree Experts may need to engage outside reliable sources to provide specialized information, cost estimates, or opinions. Bartlett Tree Experts will make every effort to engage reputable and reliable sources, and will communicate the use of these sources to the Client if such sources are used to help determine an integral part of the Work.

2.9 Tree Locations, Maps, Sketches, and Diagrams

The Client acknowledges that Bartlett Tree Experts may use several means and methods to provide tree locations on maps, sketches, or drawings, and that the use of tree locations on maps, sketches, diagrams, and/or in pictures are intended to aid the Client in understanding the deliverables provided, and may not be to scale and should not be considered precise locations, engineering surveys, or architectural drawings.

2.10 Global Positioning Systems

The Client acknowledges that all global positioning system (GPS) devices used to locate trees, shrubs, and plant material, have some accuracy limitations, and regardless of the methodologies or software programs used to enhance the accuracy of the locations, there will always be some level of meter or sub meter locational discrepancies within any deliverable product.

2.11 Advice, Opinions, Conclusions, and Recommendations

- (a) The Client Acknowledges that all advice, opinions, conclusions, and recommendations provided represent the professional objective opinion(s) of Bartlett Tree Experts; which are in no way predetermined, or biased toward any particular outcome.
- (b) The Client acknowledges that all advice, opinions, conclusions, and recommendations provided verbally or in written format such as email, management plans, or reports will be based on the present status of the tree(s), property(s), environmental conditions, and industry standards. Any advice, opinions, conclusions, and recommendations provided do not take into account any future changes in environmental conditions or changes to current industry standards which are unknown and unforeseen at the time the Work is performed.

2.12 Tree Risk Assessments and Inventories

- (a) If the Client Agreement is specifically for Bartlett Tree Experts to provide a *Level 1 Limited Visual*, *Level 2 Basic*, or *Level 3 Advanced assessment* of tree risk for any tree or group of trees for the Client in accordance with industry standards, the Client understands that any *risk ratings* and recommendations for mitigating such risks will be based on the observed defects, conditions, and factors at the time of the tree risk assessment or inventory.
- (b) The Client acknowledges that any recommendations made to mitigate risk factors will be made in accordance with industry best practices and standards, but that the decision to implement the recommended mitigation or remove the risk factors rests solely with the Client.
- (c) The Client understands that all *risk ratings* used are intended to assist the Client with understanding the potential for tree or tree part failure, and are not meant to be used to declare any tree or tree part to be safe or free from any defect. As such, the Client should not infer that any tree not identified as having an *imminent* or *probable likelihood of failure*, or not identified with a *moderate*, *high*, or *extreme risk rating*, or not having a condition rating of *poor* or *dead* is "safe" or will not fail in any manner.
- (d) The Client understands that it is the Client's responsibility to ensure that the assessed tree or trees are reassessed periodically, or after any major weather event, in order to ensure that risk rating information is kept current, and to enter any changes to risk ratings or mitigation measures to the inventory or tracking system used by the Client.

2.13 Tree or Plant Value Appraisals

- (a) The Client acknowledges that tree appraisal is not an exact science. If the Client Agreement is for Bartlett Tree Experts to provide the Client with an appraisal estimate of cost or value, or estimated tree asset value, for specified trees or plant materials, the Client understands that those estimates will be based on a combination of visible conditions at the time of appraisal, information or pictures provided by the Client, local knowledge, information and/or cost estimates provided by local nurseries or plant wholesalers, information and/or costs provided by tree care or landscape installation and maintenance companies, industry best practices, and/or asset value software.
- (b) The Client understands that while any such appraisal will be based on one or several accepted industry methods of appraising plant material values, the appraised values provided may or may not be accepted as the final value by third parties, or decision makers in disputes over plant values, such as courts, arbitrators, insurers, or mediation efforts.

2.14 Local and Tree-Related Permits

Unless the Client Agreement states differently, the Client is responsible for obtaining and paying for all required local or tree related permits required. If the Work stated in the Client Agreement involves Bartlett Tree Experts submitting for, or assisting the Client in submitting for, any kind of local or tree-related permit, the Client understands that Bartlett Tree Experts cannot guarantee the successful outcome. If Bartlett Tree Experts submits a local or tree permit application on behalf of the Client, the Client must provide all necessary information for Bartlett to make such a submittal, and the Client will be responsible for paying for, or reimbursing Bartlett Tree Experts for, all fees and expenses related to the application process, regardless of the outcome.

2.15 Expert Witness and Testimony

The Client acknowledges that unless the Scope of Work in Client Agreement is specifically to perform Expert Witness services and testimony for the Client, then nothing in the Client Agreement will obligate Bartlett Tree Experts to perform Expert Witness services or provide expert testimony for or on behalf of the Client.

2.16 Environmental Benefits Analyses

- (a) The Client understands that Bartlett Tree Experts may use one or more software, or other programs, developed by other companies or government agencies, which are designed to help provide estimates on the environmental benefits of trees, shrubs, or other plant materials if the Work involves providing an environmental benefit analysis for the Client.
- (b) The Client acknowledges that while Bartlett Tree Experts will be responsible for the correct collection and input of data into any such software or other program used to help estimate environmental benefits of trees, shrubs, and other plant materials, the determinations of the data made by any such program may vary based on the method, software, type, year, or version used at any given time. The Client understands that any such method, software, type, year, or version used is meant to provide a sound, scientific method to help the Client understand the environmental benefits of the collected data.

2.17 Tree and Property Hazards and Safety Issues

The Client understands that in no way does Bartlett Tree Experts imply, nor should the Client infer that Bartlett Tree Experts assumes the responsibility for assessing, identifying, reporting, and/or correcting tree or property hazards or safety issues on or near the Client's property, or conducting tree risk assessments, for which the Client Agreement does not specify, during the course of any of its ongoing consultative or other activities related to this Agreement.

2.18 Remote Sensing and Tree Canopy Analyses

- (a) If the Work requires Bartlett Tree Experts to evaluate aerial imagery to classify land cover classes, classify random points, or create or manipulate shapefile boundaries, the Client understands that certain factors can prohibit the accuracy of the final Work product, such as; the availability of imagery, files, and shapefiles for the property or site from reliable sources, the accuracy and quality of imagery, files, or shapefiles obtained from reliable sources or provided by the Client, the date of when the imagery, files, or shapefiles were taken or created, and the ability for a person to visually discern the difference between the pixels of aerial imagery.
- (b) If such factors inhibit the accuracy of the Work, Bartlett Tree Experts may choose to conduct visual analyses, or use other means, to verify or classify points or imagery into the required specifications. If such alternate methods are used, Bartlett Tree Experts will communicate the use of such methods to the Client in the final work product. If it is not possible or feasible to use alternative methods, then the Client acknowledges that the final work product may have some gaps in accuracy.

2.19 Use of Drones and Drone-Related Equipment

- (a) If the Work specifies the use of Drones or Drone-related equipment to help collect information, the Client acknowledges that in some cases the use of Drones and Drone-related equipment can provide detailed information,

imagery, views, and pictures of a tree(s) or property(s); however, in some cases, not all aspects of a tree(s) or property(s) can be seen or accessed by a Drone. The Client understands that this technology can be limited and should not be used by the Client as the sole decision-making criteria, but rather one of many factors used by the Client in the decision-making process.

- (b) The Client agrees that other methods of obtaining the required information must be included in the Client Agreement, and may be required to be utilized, in addition to or separate from the use of Drones or Drone related equipment in the event that the limitations are too severe to perform the required Work.

2.20 Decay and Wood Analysis Devices

- (a) The Client acknowledges that all decay and wood analysis devices have limitations, and the use of any such device should be used to supplement information regarding the decay or structural deficiencies within a tree(s), and not as the sole source of information.
- (b) If the Work requires the use of a decay or wood analysis device, unless the Client Agreement specifies the type of device, Bartlett Tree Experts will decide the most appropriate type of decay and/or wood analysis device to use based on the conditions present and the information needed to supplement and complete the Work.
- (c) The Client acknowledges and understands that the presence of decay or other structural weaknesses, such as air pockets, voids, cracks, burned wood, or other structural deficiencies, will more than likely lead the inspecting arborist to the same result with respect to the determination made on the overall structural integrity of the tree in question based on results from the decay and/or wood analysis device used, so the presence of any of these items in sufficient quantities will preclude the need to verify the presence of another, and in many cases it may not even be necessary for the type of device used to distinguish between the specific types of structural issues for the arborist to make a determination given all other objective evidence.

2.21 Diagnostic Services

Bartlett Tree Experts may offer diagnostic services as a means of attempting to isolate certain plant pest or soil problems for the Client, and determining the most logical possibility as to the cause of the condition of the trees, shrubs, or plants in question. The Client understands that in some cases government quarantines may prohibit samples from being sent to a diagnostic clinic, and in some cases, determinations on samples may be inconclusive.

2.22 Tree Preservation, Tree Protection, and Construction and Site Monitoring

- (a) If the Work includes Bartlett Tree Experts conducting or providing tree preservation or tree protection evaluations, tree impact evaluations, recommendations, specifications, and/or documents required by the governing agency, the Client understands that Bartlett Tree Experts will review the project, materials or plans that are provided by the Client, combined with industry best practices and current tree conditions, to arrive at the recommendations and specifications. The Client also understands that trees are living organisms and that even following all industry best practices and specifications cannot guarantee that a tree will survive construction impacts, which may include but are not limited to soil compaction, root damage, inadequate soil moisture, and decrease in tree stability.
- (b) If the Work includes Bartlett Tree Experts conducting or providing tree monitoring during project construction, the Client understands that Bartlett Tree Experts will review the project, materials, or plans that are provided by the Client and/or described by the Client representative at the site, and provide recommendations to the Client to assist with tree preservation or protection, but that the Client will be responsible for ensuring the implementation of such recommendations by the Client or any third parties.

2.23 Irrigation and Recycled Water Analyses

If the Work requires Bartlett Tree Experts to provide irrigation or recycled water analyses as a means of aiding the Client with their tree care needs, the analyses will be provided using the best known site conditions, the best available water quality information, or the best available water quality test results provided to Bartlett Tree Experts; however, the Client acknowledges that Bartlett Tree Experts cannot provide information on water source, delivery systems, water chemistry, water quality testing methodology, or distribution systems.

2.24 Bird, Water Fowl, and Wildlife Habitat Analyses

If the Work requires Bartlett Tree Experts to provide bird, water fowl, and wildlife habitat analyses or identifications as a means of aiding the Client with their tree care needs and wildlife considerations, the analyses will be based on known site conditions and available industry bird, waterfowl, and wildlife management information.

2.25 Endangered or Protected Species and Habitats

- (a) If the Work is for Bartlett Tree Experts to identify trees or plant materials that may be endangered or protected species, or to identify trees or plant materials that may be primary or secondary habitat for endangered or protected species, or to provide any analysis for a project that may affect any endangered species or protected species or its habitat, then Bartlett Tree Experts will base all reports and information on the existence of any known endangered or

protected species and known habitats using government approved endangered or protected species or habitat information.

- (b) The Client acknowledges that Bartlett Tree Experts cannot be responsible for identifying unknown endangered species or habitats.

2.26 Wetland and Riparian Habitat Mapping

The Client understands that if the Work involves wetland or riparian habitat mapping, such maps will require the Client to provide the tree or plant species considered to be the primary or secondary habitat for the specific species of animal in question, and such maps will be limited to the species information provided as it overlays within the known designated wetland areas.

2.27 Representation Services

If the Work involves a member of Bartlett Tree Experts acting as a representative for, or decision-maker for, the Client, including but not limited to activities such as reviewing, approving or declining tree-related permits, plants, designs, or selections submitted by third parties, then the Client agrees to be the final decision-maker in the event of a third party appeal of an adverse decision or recommendation made by Bartlett Tree Experts with respect to granting or denying a tree related permit, plant, design, or selection submitted by a third party. The Client also agrees to defend Bartlett Tree Experts against any claims made by third parties regarding such decisions or recommendations, and represent the decisions and recommendations of Bartlett Tree Experts, as if such decisions or recommendations were made by the Client.

2.28 Integrated Pest Management

- (a) If the Work includes consultation for integrated pest management services, the Client understands that the final product may involve recommendations for plant health care treatments that will be tailored to meet the Client's needs for specific trees, shrubs, turf areas, or plants. In creating these recommendations, Bartlett Tree Experts will consider the Client's objectives, priorities, budgetary concerns, plant materials, site conditions, pest and disease infestation levels and the expectations of those levels, and timing issues.
- (b) The Client acknowledges that such recommendations may involve one or more inspections of specific plants to help determine insect and disease concerns, the sampling of specific plant materials or soil areas, an understanding of the cultural needs of certain plants, consideration of biological control concepts and limitations (natural and/or introduced predators), recommended improvements to physical site conditions, or the use of pesticide treatments. The integrated pest management service does not combine all possible controls and concepts for every tree, shrub, turf area, or plant, but rather it considers the most reasonable option or options for control of and mitigation of insect and disease damages to the specific trees, shrubs, turf areas or plants as designated by the Client to meet the Client's goals.
- (c) The Client understands and acknowledges that during the course of an integrated pest management program, as inspections are taking place, and treatments or other services are being performed to certain trees or shrubs, not every tree or shrub inspected will require a specific treatment or other service, and in fact, some trees or shrubs may not require any specific treatment or other service throughout the course of a season to maintain health and vigor if the inspections show insignificant pest thresholds, and sound environmental and cultural conditions.
- (d) The Client also understands that tree, shrub, plant and turf inspections conducted during the integrated pest management program are for the purpose of determining plant health issues and, insect and disease thresholds; and are not conducted for the purposes of determining tree, shrub, plant, or turf safety.

2.29 Plant Species Selection

If the Work involves Bartlett Tree Experts providing advice and guidance on plant species selection to aid the Client with their landscape site needs, Bartlett Tree Experts will provide the advice and guidance based on the known site conditions, the available plant species locally at the time, and the plant species characteristics. The Client will be responsible for the planting and maintenance, and ensuring the survival of such plant selections in the landscape.

2.30 Trees and Subsidence Analyses

- (a) If the Work involves Bartlett Tree Experts providing an analysis of the relationship between certain trees or tree parts and the subsidence or movement of a building or structure, the Client understands that certain inferences and assumptions will be made given the location, visibility, soil and drainage conditions, size, species, and condition of the tree or trees, and other factors, in order to perform the Work in the least intrusive manner possible.
- (b) Bartlett Tree Experts recommends that the Client reviews any tree related report recommendations, prior to having the work completed, with their structural engineer or other qualified building contractor to help the client determine any potential adverse impact to the buildings or structures.

2.31 Investigation of Covenants, Easements, Constraints, or Restrictions

The Client is responsible for investigating and identifying to Bartlett Tree Experts any covenants, easements, constraints, or other restrictions to the title or deed on the property that may adversely impact Bartlett Tree Experts' ability to perform the Work.

2.32 Cancellation

If the Client cancels or reduces the Work after the Work has started, the Client shall pay Bartlett Tree Experts for all the items of the Work that have been completed and all reasonable costs Bartlett Tree Experts has incurred in preparing to perform the remainder of the Work.

2.33 Payment

The Client shall pay for the Work when the Client receives Bartlett Tree Experts' invoice for the Work, unless specific payment terms have been agreed upon by the parties. If any amount remains unpaid 30 days after the date of the invoice or any period stated in the Client Agreement, whichever is longer, as a service charge the unpaid amount will accrue interest at the rate of 1.5% per month (or 18% per year) or the maximum rate permitted by law, whichever is lower. The Client shall reimburse Bartlett Tree Experts for any expenses (including attorneys' fees and court costs) it incurs in collecting amounts that the Client owes under the Client Agreement.

Article 3 TREE CONDITIONS

3.1 Cables, Braces and Tree-Support Systems

- (a) The Client acknowledges that cables, braces or tree-support systems are intended to reduce the risk associated with tree part breakage by providing supplemental support to certain areas within trees and in some cases by limiting the movement of leaders, limbs, or entire trees, and are intended to mitigate the potential damage associated with tree part breakage; but that such supplemental support systems cannot eliminate the risk of breakage or failure to trees or tree parts entirely, and future breakage and damage is still possible.
- (b) The Client acknowledges that for cables, braces or tree-support systems to function optimally, the Client must arrange for them to be inspected and maintained by a qualified arborist periodically and after each major weather event.

3.2 Lightning Protection Systems

- (a) The Client acknowledges that lightning protection systems are intended to direct a portion of the electricity from a lightning strike down through the system into the ground, and mitigate the potential damage to the tree from a lightning strike, but that such systems cannot prevent damage to structures, nor can such systems prevent damage to trees caused by lightning entirely.
- (b) The Client acknowledges that for lightning protection systems to function optimally, the Client must arrange for them to be inspected and maintained by a qualified arborist periodically and after each major weather event.

3.3 Recreational Features

- (a) The Client acknowledges that Bartlett Tree Experts recommends stopping the use of, and removing, any tree house, ropes course, swing, or other recreational feature attached to a tree. Regardless of the health or condition of the tree, such features might be unsuited for the intended use or might place unpredictable forces on the feature or the tree, resulting in failure of the feature or the tree and injury to persons or damage to property. Bartlett Tree Experts is not responsible for the consequences of use of any such feature.
- (b) The Client acknowledges that if a recommendation is made to mitigate an observed and immediate safety issue on a tree with any such device or feature attached, such as the removal of a dead, dying, or broken limb that could fall and injure a person or damage property, the Client should not infer that following the recommendation and mitigating the immediate safety issue makes the tree in question safe for the use of the attached device or feature.

3.4 Root Pruning

In the right circumstances, root pruning is a valuable and necessary service, but it might pose a risk to the health and structural integrity of trees. To limit that risk, Bartlett Tree Experts performs root pruning to industry standards, but the Client acknowledges that the health and structural integrity of trees within the Scope of Work might nevertheless be adversely affected by any root pruning performed as part of the Work. Bartlett Tree Experts shall assist the Client in understanding the risks involved before opting for root pruning, but the Client will be responsible for deciding to proceed with root pruning.

3.5 Stumps, Stump Grinding, Tree Grates

The Client acknowledges that if any recommendations call for the removal of certain trees, that the remaining stumps may present tripping hazards, and that it is the Client's responsibility to remove any such tripping hazard, whether such hazard is created by the stump, the grindings if the stump is ground down, or any tree grates that exist.

3.6 Client Trees in Hazardous Condition

If the Client Agreement specifies that one or more trees within the Scope of Work are in hazardous condition, have an *extreme, high or moderate risk rating*, or should be removed for safety reasons, the Client acknowledges that removing those trees would prevent future damage from trees or tree limbs falling. If the Client requests that one or more of those trees be pruned instead of removed, the Client acknowledges that although pruning might reduce the immediate risk of limbs falling, it does not preclude the possibility of future limb, stem, or root failure. Bartlett Tree Experts is not responsible for any such future failure.

3.7 Trees in Poor Health or a Severe State of Decline

The Client acknowledges that if a tree is in poor health or in a severe state of decline, Bartlett Tree Experts cannot predict how that tree will respond to any recommended plant health care or soil care and fertilization treatment and might not be able to prevent that tree from getting worse or dying.

3.8 Trees Planted and Maintained by Other Contractors

The Client acknowledges that if trees within the Scope of Work were recently planted or are being maintained by one or more other contractors or if one or more other contractors will be watering and providing services with respect to trees within the Scope of Work, how those trees respond to treatment in the course of the Work might be unpredictable, and Bartlett Tree Experts cannot be responsible for the health of such trees or plants.

3.9 Trees with Cones and Large Seed Pods

The Client acknowledges that large tree cones or seedpods on some trees can become dislodged and fall without notice, creating a hazard to persons or property. If the Client has the type of tree on their property that produces large, heavy cones or seedpods, and the Client does not wish to remove the tree, Bartlett Tree Experts recommends that the Client marks off and restricts the area under and near the tree from pedestrian and vehicle traffic whenever possible, places a warning sign near the tree, remains aware of the hazardous conditions the falling cones can create, and inspects the tree annually and removes any observable cones if possible in order to mitigate the potential for damage from falling cones.

3.10 Fire Damage

- (a) Regardless of the species, trees exposed to fire can suffer structural damage that goes beyond whatever external damage might be visible. Fire can cause cracking and brittleness in tree structure and integrity; it can make pre-existing defects worse; it can make roots less stable; and it can weaken the overall health of the tree, making it susceptible to disease and pest infestations. The effects of fire damage are unpredictable and difficult to determine. Bartlett Tree Experts is not responsible for any injury to persons or damage to property resulting from services performed on fire-damaged trees as part of the Work.
- (b) The Client acknowledges that if trees and shrubs on the Client's property have been exposed to fire, the Client should have qualified arborist periodically inspect trees and shrubs on the property for fire damage.

Article 4 DISPUTE RESOLUTION

4.1 Arbitration

- (a) As the exclusive means of initiating adversarial proceedings to resolve any dispute arising out of or related to the Client Agreement or Bartlett Tree Experts' performance of the Work, a party may demand that the dispute be resolved by arbitration administered by the American Arbitration Association in accordance with its commercial arbitration rules, and each party hereby consents to any such dispute being so resolved. Any arbitration commenced in accordance with this section must be conducted by one arbitrator. Judgment on any award rendered in any such arbitration may be entered in any court having jurisdiction. The parties also agree that the issue of whether any such dispute is arbitrable will be decided by an arbitrator, not a court.
- (b) The arbitrator must not award punitive damages in excess of compensatory damages. Each party hereby waives any right to recover any such damages in any arbitration.

4.2 Third Party Liability

The Client acknowledges that the use of any management plans created, reports written, recommendations, maps, sketches, and conclusions made are for the Client's use and are not intended to benefit or cause damage to any third party. Bartlett Tree Experts accepts no responsibility for any damages or losses suffered by any third party or by the

Client as a result of decisions made or actions based upon the use of reliance of the management plans created, reports written, recommendations, maps, sketches, and conclusions made by any third party.

4.3 Limitation of Liability

The maximum liability of Bartlett Tree Experts for any losses incurred by the Client arising out of the Client Agreement or Bartlett Tree Experts' performance of the Work will be the amount paid by the Client for the Work, except in the case of negligence or intentional misconduct by Bartlett Tree Experts.

Article 5 MISCELLANEOUS

5.1 Client Responsibilities

- (a) The Client is responsible for the maintenance of the Client's trees, shrubs, and turf and for all decisions as to whether or not to prune, remove, or conduct other types of tree work on each respective tree, or when to prune, remove, or conduct other tree work on any respective tree, and all decisions related to the safety of each respective tree, shrub, and turf area.
- (b) Nothing in this Agreement creates an ongoing duty of care for Bartlett Tree Experts to provide safety maintenance or safety inspections in and around the Client's property. It is the responsibility of the Client to ensure the safety of its trees and landscape, and to take appropriate actions to prevent any future tree or tree part breakage or failures, or otherwise remove any hazardous conditions which may be present or may develop in the future.

5.2 Severability

If any portion of this Client Agreement is found to be unenforceable, then only that portion will be stricken from the Client Agreement, and the remainder of the Client Agreement will remain enforceable.

5.3 Unrelated Court Proceedings

The Client acknowledges that Bartlett Tree Experts has prepared the Client Agreement solely to help the Client understand the Scope of Work and the related costs. If a court subpoenas Bartlett Tree Experts' records regarding, or requires that a Bartlett representative testify about, the Client Agreement or the Work in connection with any Proceeding to which Bartlett Tree Experts is not a party or in connection with which Bartlett Tree Experts has not agreed to provide expert testimony, the Client shall pay Bartlett Tree Experts Two Hundred Dollars (\$200.00) per hour for time spent by Bartlett representatives in collecting and submitting documents for those Proceedings and attending depositions or testifying as part of those Proceedings.

5.4 Use of Information

The Client acknowledges that the information provided within the Client Agreement and any deliverables provided is solely for the use of the Client for the intended purpose of helping the Client understand and manage their tree care needs. All deliverables must be used as a whole, and not separated or used separately for other purposes.

5.5 Notices

For a notice or other communication under the Client Agreement to be valid, it must be in writing and delivered (1) by hand, (2) by a national transportation company (with all fees prepaid), or (3) by email. If a notice or other communication addressed to a party is received after 5:00 p.m. on a business day at the location specified for that party, or on a day that is not a business day, then the notice will be deemed received at 9:00 a.m. on the next business day.

5.6 Amendment; Waiver

No amendment of the Client Agreement will be effective unless it is in writing and signed by the parties. No waiver under the Client Agreement will be effective unless it is in writing and signed by the party granting the waiver. A waiver granted on one occasion will not operate as a waiver on other occasions.

5.7 Conflicting Terms

If these terms conflict with the rest of the Client Agreement, the rest of the Client Agreement will prevail. If these terms conflict with any other Client documentation, terms, or purchase order agreement, then the Client Agreement and these terms will prevail.

5.8 Entire Agreement

The Client Agreement with these terms constitutes the entire understanding between the parties regarding Bartlett Tree Experts' performance of the Work and supersedes all other agreements, whether written or oral, between the parties.

