TREE FROG
CONSULTING ARBORIST

To:	Mark Nelson (Architect)
Job Site:	2800 60TH AVE SE 98040
Parcel:	2174502670
Subject:	Arborist Report
Date:	5/29/2025
From:	Andy Crossett, ISA Certified Arborist #PN-7375A, Qualified Tree Risk Assessor, WSNLA Certified Professional Horticulturist #2537, ASCA Member

Andrew Crossett
#PN-7375A

Assignment

On Wednesday, May 7, 2025, Mark Nelson from Nelson Architecture, Inc. contacted me with a request for a tree inventory arborist report for their client's (Dickenson) Mercer Island property. On Tuesday, May 13, I walked the site with Mr. Nelson to inspect the trees and document my findings.

A summary, along with demolition, pruning, and construction specifications; a tree table; site maps; and photographic documentation can be found in Sections 1 through 8 below.

Where applicable, I have categorized risk based on the methodologies presented in the International Society of Arboriculture's Tree Risk Assessment (Best Management Practices).

My responsibilities were to provide the following:

A tree plan that includes a tree inventory, site map, replanting information (if necessary), tree protection measures for on-site and off-site trees (where CRZ extends on-site) (if requested), and recommendations that will meet the minimum city of **Mercer Island** tree code requirements.

Site Description

This 7,502-square-foot lot is located at the southeast corner of 60th Avenue SE and SE 28th Street. Existing site conditions include a single-family residence and a detached carport, both situated along the north side of the property. The southern half of the lot is moderately to densely forested with a mix of native and non-native deciduous and evergreen trees. The site topography slopes downward from west to east. According to the Mercer Island GIS Portal, a drainage basin runs centrally through the site from west to east, and the entire property has been classified as infeasible for infiltration.

Subject Trees – Fourteen (14) regulated trees.

1. Summary of Collected Data

I visited the site and individually measured, tagged (using round aluminum numbered tags), and inspected each tree, performing a Level 2 Basic Tree Risk Assessment where visibility and access allowed. For inaccessible trees, a Level 1 inspection was conducted. A Level 3 inspection was not performed and will only be conducted upon specific request. All information in this report reflects my best efforts and professional judgment based on the conditions observed during the inspection; however, not all tree defects or features may be visible, particularly those occurring underground or high in the canopy, where visibility is limited.

This report is preliminary, as no design plans or construction details have been reviewed at this time. Tree locations are approximate and based on a combination of the provided survey, King County Parcel Viewer data, and conditions observed during the site visit.

This report assesses a total of fourteen (14) trees. Of these, twelve (12) are located on-site and two (2) are off-site. One (1) tree qualifies as exceptional based on its size and species, while the remaining thirteen (13) are categorized as large trees. All trees appear to be in good condition and are suitable for preservation.

According to **MICC 19.10.060 – Tree Removal Associated with a Development Proposal**, *"A minimum of 30 percent of trees with a diameter of ten inches or greater, or that otherwise meet the definition of a large tree, shall be retained over a rolling five-year period."* Based on this requirement, a minimum of four (4) trees must be retained and protected.

Additional requirements may apply. For full details, please refer to the Mercer Island City Code:
https://library.municode.com/wa/mercer_island/codes/city_code?nodeId=CICOOR_TIT19UNLADECO_CH19.10TR_19.10.060TRRESSDEPR

Trees that are retained will need protection measures to ensure they are not significantly affected by construction activities. Details on **Mercer Island** tree protection fencing specifications and ISA-recommended tree protection guidelines can be found below.

It is recommended that the site plan be provided to the project arborist prior to the submission of the building permit. This practice enables the arborist to offer feedback and prepare a customized tree protection plan, which may reduce the potential for corrections during the city's permit review process.

2. Demolition and Site Clearing Specifications

To ensure retained trees are adequately protected during site development, **the following tasks must be completed before any demolition or site clearing begins.**

1) Project managers shall review the contents of this report, which includes detailed tree protection measures recommended by the Pacific Northwest chapter of the International Society of Arboriculture. **It is important that this information is effectively communicated to workers and subcontractors.**

2) Trees slated for removal, particularly those with branches extending into the canopy of trees designated to remain, should be removed by a qualified arborist rather than demolition or construction contractors. The arborist must ensure removal is conducted in a manner that prevents damage to the remaining trees and understory.

3) Trees designated for removal must be felled in a manner that directs them away from tree protection zones and prevents the pulling or breaking of roots of trees that are to remain. If roots are intertwined, the consultant may recommend severing the major woody root mass before extracting the trees.

4) Trees to be removed from within the tree protection zone should be removed by a qualified arborist. They should be cut near ground level, and if necessary, any stumps should be ground out rather than pulled out with excavating equipment.

5) Brush clearing within the tree protection zone must be done using hand-operated equipment only.

6) To minimize soil compaction, six inches of medium fine mulch or arborist chips should be applied within the recommended tree protection zones of this report. It should be kept at a minimum of 6 inches from the protected tree's trunk.

7) After applying the mulch, install tree protection fencing according to the tree and vegetation protection guidelines specified by the local governing agency, as detailed below. If specific tree protection guidelines are not available, use the tree protection recommendations provided by the International Society of Arboriculture (ISA).

8) Structures and underground features within the tree protection zone that need removal should utilize the smallest equipment feasible and operate from outside the designated tree protection zone.

9) All trees requiring pruning must be pruned according to the provided pruning specifications.

10) Any damage to trees caused by demolition activities must be reported to the consulting arborist within 24 hours to allow prompt remedial action. Timeliness is critical to tree health.

11) If temporary haul or access roads need to cross over the root area of retained trees, a roadbed consisting of 6 inches of mulch or gravel must be established to protect the soil. This roadbed material should be regularly replenished to maintain a depth of 6 inches.

3. Pruning Specifications

Trees have thrived for millions of years without intervention from tree care professionals. They often do not require pruning, and unnecessary pruning can harm them. **Therefore, only perform the minimum pruning necessary to achieve project goals**. If pruning is necessary, the following guidelines shall be followed.

1) All pruning should be carried out by an International Society of Arboriculture (ISA) certified arborist and should follow the *Tree Pruning Guidelines* from the ISA and/or the ANSI A300 Pruning Standards (American National Standard for Tree Care Operations), adhering to the latest edition of ANSI Z133.1.

2) Temporary clearance for access shall involve tying back branches to keep them clear of the access zone.

3) Pruning should not occur during periods when adult boring insects are active, as fresh wounds attract pests. Pruning should only occur once the risk of infestation has passed.

4) Interior branches should not be stripped out.

5) Trees should not be topped unless it is necessary to prevent their removal. Topping can introduce numerous issues for trees. However, it's worth noting that trees are often naturally wind-topped multiple times throughout their lives and can survive and even thrive afterward. Topping should only be considered as a last resort to save the tree.

6) Avoid pruning cuts larger than 4 inches in diameter, except for dead wood.

7) Minimize pruning cuts that expose the tree's heartwood whenever possible.

8) **Do not** remove more than 20 percent of live foliage from the trees.

9) **Do not** lion-tail, which is the inappropriate pruning practice of removing excessive inner and/or lower lateral branches. This practice has been conclusively proven to be detrimental to the health and stability of trees.

10) **Do not** "wind sail" trees. This pruning practice falsely assumes that removing branches throughout a tree's canopy reduces wind resistance and enhances safety, despite there being no scientific evidence to support this claim.

11) **Do not** spur climb for pruning. Spur climbing should only be utilized for tree removal. It is not considered best practice to use spur climbing while pruning trees. There are several other climbing techniques and equipment options available that do not harm trees.

12) While in the tree, the arborist should perform an aerial inspection to identify defects requiring treatment. Any additional necessary work must be reported to the consultant before any action is taken.

4. Construction Specifications

The following specifications must be incorporated into all construction plans to minimize the risk of tree loss during and after development.

1) Before commencing work, the contractor should arrange a meeting with the tree consultant at the site to discuss work procedures, access routes, storage areas, and tree protection measures.

2) Fences must be installed to protect trees designated for preservation. Each tree or group of trees will have a specific protection zone defined by these fences. **The fences must remain in place until all sitework is completed** and may not be relocated or removed without written permission from the consultant.

3) Construction trailers, traffic, and storage areas must always be located outside fenced areas.

4) All underground utilities, drain, or irrigation lines must be routed outside the tree protection zone. **If it's necessary for lines to cross through the protection area, they must be tunneled or bored under the trees.**

5) No materials, equipment, spoil, or waste or washout water may be deposited, stored, or parked within the tree protection zone (fenced area).

6) Additional tree pruning needed for clearance during construction **should be carried out by a qualified arborist, not by construction personnel**.

7) Pesticides used on site must be safe for trees and resistant to water transport.

8) If injury occurs to any tree during construction, it should be promptly evaluated by the consultant to determine appropriate treatments.

9) Any grading, construction, demolition, or other work expected to encounter tree roots should be monitored by the consulting arborist.

10) Trees identified by the tree consultant will be watered based on a schedule set by the consultant. Each tree that receives irrigation should saturate the soil in its protection zone to a depth of 30 inches.

11) Before grading, pad preparation, or excavation for foundations, footings, walls, or trenching, nearby affected trees shall be root pruned 1 foot outside the tree protection zone by cutting all roots cleanly to a depth of 24 inches. Roots shall be cut by manually digging a trench and cutting exposed roots with a saw, vibrating knife, rock saw, narrow trencher with sharp blades, or other approved root-pruning equipment.

12) Any roots damaged during grading or construction shall be exposed to sound tissue and cut cleanly with a sterilized saw.

13) If temporary haul or access roads need to cross over the root area of retained trees, a roadbed consisting of 6 inches of mulch or gravel must be established to protect the soil. This roadbed material should be regularly replenished to maintain a depth of 6 inches.

5. Tree Inventory Table – Mercer Island

Tree ID	Parcel/Location	Species	DBH (inches)	Health Condition	Structural Condition	Combined Viability	Average Dripline Diameter (feet)	Basic TPZ Radius (1" = 1')	*Limits of Disturbance Radius (feet)	Tree Type	Grove (Yes/No)	Overall Risk Rating	Proposed Action	Comments
535	**2174502670**	Common Plum *Prunus domestica*	15	Good	Good	Viable	25	15	7.5	**Large**	**No**	**Low**	Unknown	
536	**2174502670**	Winter Camellia *Camellia sasanqua*	15	Good	Good	Viable	15	15	7.5	**Large**	**No**	**Low**	Unknown	Multi-stemmed – 4,5,6,6,7,8
537	**2174502670**	Fullmoon Maple *Acer japonica*	10	Good	Good	Viable	15	10	5	**Large**	**No**	**Low**	Unknown	
538	**2174502670**	Shore Pine *Pinus contorta*	14	Good	Good	Viable	26	14	7	**Exceptional**	**No**	**Low**	Unknown	Exceptional at 6-inches DSH.
539	**2174502670**	English Yew *Taxus baccata*	10	Good	Good	Viable	13	10	5	**Large**	**No**	**Low**	Unknown	Multi-stemmed – 2,3,4,4,4,4,4.
540	**2174502670**	Leyland Cypress *Cupressus × leylandii*	15	Good	Good	Viable	26	15	7.5	**Large**	**No**	**Low**	Unknown	
541	**2174502670**	Leyland Cypress *Cupressus × leylandii*	12	Good	Good	Viable	26	12	6	**Large**	**No**	**Low**	Unknown	
542	**2174502670**	Leyland Cypress *Cupressus × leylandii*	12	Good	Good	Viable	26	12	6	**Large**	**No**	**Low**	Unknown	

***Limits of Disturbance Radius –** Also referred to as the inner critical root area. This measurement is based on the ISA's recommendation for a tree protection zone, which uses a ratio of 1-foot radius per 1 inch of trunk diameter. Disturbance within this inner critical root zone is discouraged unless an investigation determines that the roots will not be significantly impacted.

Tree ID	Parcel/Location	Species	DBH (inches)	Health Condition	Structural Condition	Combined Viability	Average Dripline Diameter (feet)	Basic TPZ Radius (1″ = 1′)	*Limits of Disturbance Radius (feet)	Tier Type	Grove (Yes/No)	Overall Risk Rating	Proposed Action	Comments
543	**2174502670**	Leyland Cypress *Cupressus × leylandii*	12	Good	Good	Viable	26	12	6	**Large**	**No**	**Low**	Unknown	
544	**2174502670**	Leyland Cypress *Cupressus × leylandii*	12	Good	Good	Viable	26	12	6	**Large**	**No**	**Low**	Unknown	
545	**2174502670**	Leyland Cypress *Cupressus × leylandii*	12	Good	Good	Viable	26	12	6	**Large**	**No**	**Low**	Unknown	
546	**2174502670**	Leyland Cypress *Cupressus × leylandii*	12	Good	Good	Viable	26	12	6	**Large**	**No**	**Low**	Unknown	
A	**2174502655 (off-site)**	Norway Maple *Acer platanoides*	12	Good	Good	Viable	30	12	6	**Large**	**No**	**Low**	Unknown	Off-site. DSH approximate.
B	**2174502655 (off-site)**	Western redcedar *Thuja plicata*	12	Good	Good	Viable	24	13	6.5	**Large**	**No**	**Low**	Unknown	Off-site. DSH approximate.

6. Preliminary Tree Inventory Site Map

Parcel 2174502670

Present use:	Single Family(Res Use/Zone)
Jurisdiction:	MERCER ISLAND
Taxpayer name:	LAWLER MIDORI
Address:	2800 60TH AVE SE 98040
Appraised value:	$1,596,000
Lot area:	7,500
Levy code:	1031

Property Report Districts Report

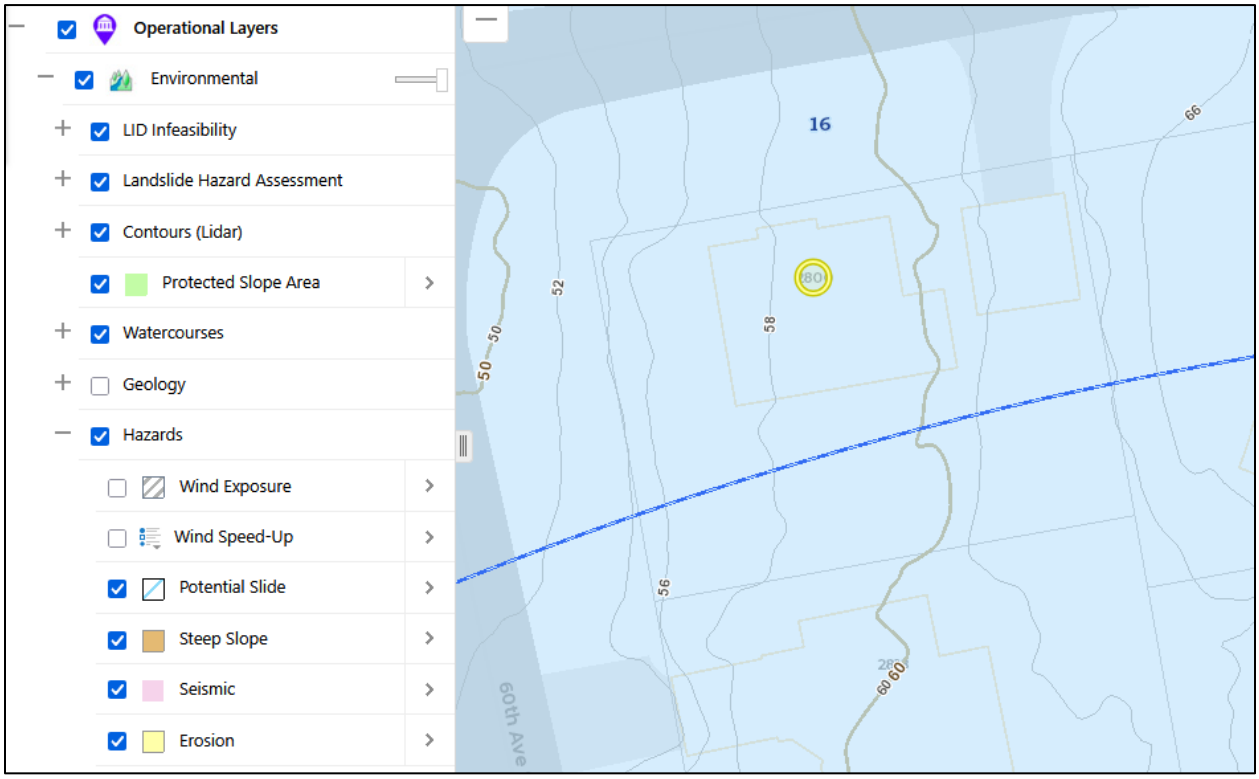
Source: King County Assessor

Lot lines are approximate. Not for legal use.

See our terms of use.

Tree Inventory				
Tree	DSH	Type	Grove	Notes
535. Common Plum	15	Large	No	
536. Camellia	15 (4,5,6,6,7,8)	Large	No	Multi-stemmed.
537. Fullmoon Maple	10	Large	No	
538. Shore Pine	14	Exceptional	No	
539. Yew	10 (2,3,4,4,4,4,4)	Large	No	Multi-stemmed.
540. Leyland Cypress	15	Large	No	
541. Leyland Cypress	12	Large	No	
542. Leyland Cypress	12	Large	No	
543. Leyland Cypress	12	Large	No	
544. Leyland Cypress	12	Large	No	
545. Leyland Cypress	12	Large	No	
546. Leyland Cypress	13	Large	No	
A. Norway Maple	~13	Large	No	Off-site. DSH approximate.
B. Western redcedar	~14	Large	No	Off-site. DSH approximate.

7. City of Mercer Island GIS Portal Property Information

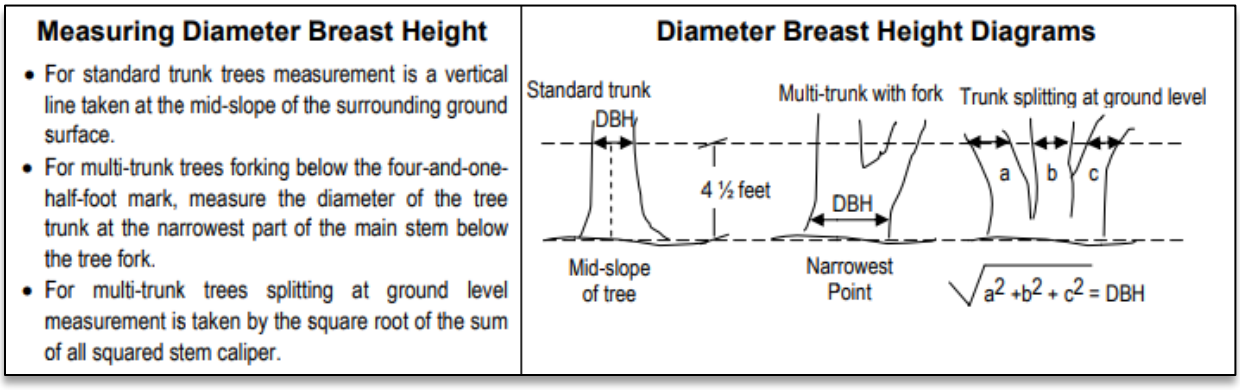


8. Photographic Documentation

Figure 1. 2800 60th Ave SE. (Google Street View, Aug 2024).

9. Definitions (City of Mercer Island):

Diameter at Standard Height (DSH) - Tree size is measured in Diameter at Standard Height (DSH) – standard forestry methodology for measuring tree size. Multi-stemmed trunk combined DSH determined by the square root of the sum of all squared trunk stems DSH.



Basic Tree Protection Area: Means the area surrounding a tree in which excavation and other construction-related activities should be avoided. This area is delineated using a radius that is equal to one foot for every inch DSH of the tree.

Inner Critical Root Zone: An area half the distance of the tree protection area that, when impacted, may compromise the structural integrity of the tree. Example: a 24-inch DBH tree has a 12-foot radius inner critical root zone measured from the face of the trunk.

Mercer Island Specific

Tree: Any living woody plant species other than a shrub, characterized by one main trunk or few dominant trunks and many branches, known to achieve a typical mature height of at least 15 feet.

***Tree*, small:** 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*.

***Tree*, large (regulated):** Any *tree* with a diameter of ten inches or more, and any *tree* that meets the definition of an exceptional *tree*.

***Tree*, 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*.

***Tree*, hazardous:** Any *tree* that receives an 11 or 12 rating under the International Society of Arboricultural rating method set forth in Hazard *Tree* Analysis for Urban Areas (copies of this manual are available from the city arborist) and may also mean any *tree* that receives a 9 or 10 rating, at the discretion of the city arborist.

***Tree*, exceptional:** 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*:

Exceptional *Tree* Table	
Species	**Threshold Diameter**
Native Species	
Oregon ASH — Fraxinus latifolia	2 ft
Quaking ASPEN — Populus tremuloides	1 ft
Paper BIRCH — Betula papyrifera	1 ft 8 in
CASCARA — Rhamnus purshiana	8 in
Western Red CEDAR — Thuja plicata	2 ft 6 in
Pacific CRABAPPLE — Malus fusca	1 ft
Pacific DOGWOOD — Cornus nuttallii	6 in
Douglas FIR — Pseudotsuga menziesii	2 ft 6 in
Grand FIR — Abies grandis	2 ft
Black HAWTHORN — Crataegus douglasii	6 in
Western HEMLOCK — Tsuga heterophylla	2 ft
MADRONA — Arbutus menziesii	6 in
Bigleaf MAPLE — Acer macrophyllum	2 ft 6 in
Dwarf or Rocky Mountain MAPLE — Acer glabrum var. Douglasii	6 in
Vine MAPLE — Acer circinatum	8 in
Oregon White or Garry OAK — Quercus garryana	6 in
Lodgepole PINE — Pinus contorta	6 in
Shore PINE — Pinus contorta 'contorta'	1 ft
Western White PINE — Pinus monticola	2 ft
Western SERVICEBERRY — Amelanchier alnifolia	6 in
Sitka SPRUCE — Picea sitchensis	6 in
WILLOW (All native species) — Salix sp. (Geyeriana ver meleina, eriocephala ssp. mackenzieana, Hookeriana, Piperi, Scouleriana, sitchensis)	8 in
Pacific YEW — Taxus brevifolia	6 in
Nonnative Species	
Orchard (Common) APPLE — Malus sp.	1 ft 8 in
European ASH — Fraxinus excelsior	1 ft 10 in
Green ASH — Fraxinus pennsylvanica	2 ft 6 in
Raywood ASH — Fraxinus oxycarpa	2 ft
European BEECH — Fagus sylvatica	2 ft 6 in

Exceptional *Tree* Table	
Species	**Threshold Diameter**
European White BIRCH — Betula pendula	2 ft
Atlas CEDAR — Cedrus atlantica	2 ft 6 in
Deodor CEDAR — Cedrus deodara	2 ft 6 in
Incense CEDAR — Calocedrus decurrens	2 ft 6 in
Flowering CHERRY — Prunus sp. (serrula, serrulata, sargentii, subhirtella, yedoensis)	1 ft 11 in
Lawson CYPRESS — Chamaecyparis lawsoniana	2 ft 6 in
Kousa DOGWOOD — Cornus kousa	1 ft
Eastern DOGWOOD — Cornus florida	1 ft
American ELM — Ulmus americana	2 ft 6 in
English ELM — Ulmus procera	2 ft 6 in
GINGKO — Ginkgo biloba	2 ft
Common HAWTHORN Crataegus laevigata	1 ft 4 in
Washington HAWTHORN — Crataegus phaenopyrum	9 in
European HORNBEAM — Carpinus betulus	1 ft 4 in
KATSURA — Cercidiphyllum japonicum	2 ft 6 in
Littleleaf LINDEN — Tilia cordata	2 ft 6 in
Honey LOCUST — Gleditsia triancanthos	1 ft 8 in
Southern MAGNOLIA — Magnolia grandiflora	1 ft 4 in
Paperbark MAPLE — Acer griseum	1 ft
Japanese MAPLE — Acer palmatum	1 ft
Red MAPLE — Acer rubrum	2 ft 1 in
Sugar MAPLE — Acer saccharum	2 ft 6 in
Sycamore MAPLE — Acer pseudoplatanus	2 ft
MONKEY PUZZLE *TREE* — Araucaria araucana	1 ft 10 in
MOUNTAIN-ASH — Sorbus aucuparia	2 ft 5 in
Pin OAK — Quercus palustris	2 ft 6 in
Red OAK — Quercus rubra	2 ft 6 in
Callery PEAR — Pyrus calleryana	1 ft 1 in
Austrian Black PINE — Pinus nigra	2 ft
Ponderosa PINE — Pinus ponderosa	2 ft 6 in
Scot's PINE — Pinus sylvestris	2 ft
London PLANE — Platanus acerifolia	2 ft 6 in
Flowering PLUM — Prunus cerasifera	1 ft 9 in

Exceptional *Tree* Table	
Species	**Threshold Diameter**
Coastal REDWOOD — Sequoia sempervirens	2 ft 6 in
Giant SEQUOIA — Sequoiadendron giganteum	2 ft 6 in
Japanese SNOWBELL — Styrax japonica	1 ft
American SWEETGUM — Liquidambar styraciflua	2 ft 3 in
TULIP *TREE* — Liriodendron tulipifera	2 ft 6 in
WILLOW (All nonnative species)	2 ft

10. Details of Risk Assessment

Risk – The combination of the likelihood of an event and the severity of the potential consequences. In the context of trees, risk is the likelihood of a conflict or a tree failure occurring and affecting a target, and the severity of the associated consequences – personal injury, property damage, or disruption of activities.

How people perceive risk and their need for personal safety is inherently subjective; therefore, risk tolerance and action thresholds vary. What is within the tolerance of one person may be unacceptable to another. It is impossible to maintain trees completely free of risk—**some level of risk must be accepted to experience the benefits that trees provide**.

Methodology – When identifying potential hazard trees, I must consider a variety of factors that could contribute to failure. This can include the following: previous history of site failures, topography, site changes, prevailing wind direction and exposure, tree size and species, growth habit, overall vigor, the density and health of the foliage and crown, examination of root and root collar health, dead wood, hanging or broken branches, and evidence of disease-causing bacteria, fungi, or virus.

Tools Utilized: Binoculars, compass, hammer, diameter tape, measuring tape, clinometer, camera, soil probe.

Timeline – This assessment generally covers a **three-year** (unless stated otherwise) period from the date the report is delivered and is based on conditions present at the time of the assessment.

A. Risk Assessment Levels as Defined by the ISA.

Leve 1: Limited Visual Assessment

A visual assessment from a specified perspective such as a foot, vehicle, or aerial patrol of an individual tree or a population of trees near specified targets, to identify specified conditions or obvious defects.

Level 2: Basic Assessment

A level 2 basic assessment is the standard assessment performed for tree risk. The assessment includes a detailed visual inspection of a tree and its surrounding site, and a synthesis of the information collected. The basic

assessment involves walking completely around the tree – looking at the site, buttress roots, trunk, and branches. The tree is viewed from a distance, as well as close up, to consider crown shape and surroundings.

Level 3: Advanced Assessment

An assessment performed to provide detailed information about specific tree parts, defects, targets, or site conditions. Specialized equipment, data collection and analysis, and expertise are usually required.

B. Explanation of Tree Conditions (ISA)

Poor – A tree described with a poor condition would have a combination of the following features: low vigor, sparse crown density, and few interior branches. The crown could be unbalanced or contain many dead twigs/branches. It may also have been topped, tipped, or mal pruned. The trunk could have cracks, cavities, conks/mushrooms, and evidence of decay within the tree.

Fair – A fair description would describe a tree with normal vigor and crown density. The tree may possess one or possibly two of the above listed qualities but overall is in decent health. Improvements of site conditions could improve the trees health.

Good – Trees listed in good condition will have high vigor with a thick crown density. It would have few, if any defects, and would be a good example of that specific tree.

C. Explanation of Risk Ratings (ISA)

Low – The low-risk category applies when consequences are *negligible,* and likelihood is *unlikely*; or consequences are *minor,* and likelihood is *somewhat likely*.

Moderate – 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*.

High – 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*.

Extreme – The extreme-risk category 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*.

D. Determining Risk Ratings (ISA)

Qualitative Tree Risk Assessment – A process using ratings of consequences and likelihood to determine risk significance levels (e.g. *extreme, high, medium, or low*) and to evaluate the level of risk against eh qualitative criteria.

Quantitative Tree Risk Assessment – A process to estimate numerical probability values for consequences and to calculate numeric values for risk.

Risk Categorization – The process of risk identification, analysis, and evaluation.

Risk Categorization

Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Likelihood: Failure: Possible	Likelihood: Failure: Probable	Likelihood: Failure: Imminent	Likelihood: Impact: Very low	Likelihood: Impact: Low	Likelihood: Impact: Medium	Likelihood: Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Likelihood: Failure & Impact (from Matrix 1): Somewhat	Likelihood: Failure & Impact (from Matrix 1): Likely	Likelihood: Failure & Impact (from Matrix 1): Very likely	Consequences: Negligible	Consequences: Minor	Consequences: Significant	Consequences: Severe	Risk rating of part (from Matrix 2)
1																							
2																							
3																							
4																							

Risk Matrix (Risk Rating Matrix) – A tool for ranking and displaying risks by assigning ratings for consequences and likelihood.

Matrix 1. Likelihood matrix.

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

Matrix 2. Risk rating matrix.

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

11. Mercer Island Tree Protection Fencing Detail

TREE PROTECTION AREA (TPZ)

KEEP OUT!

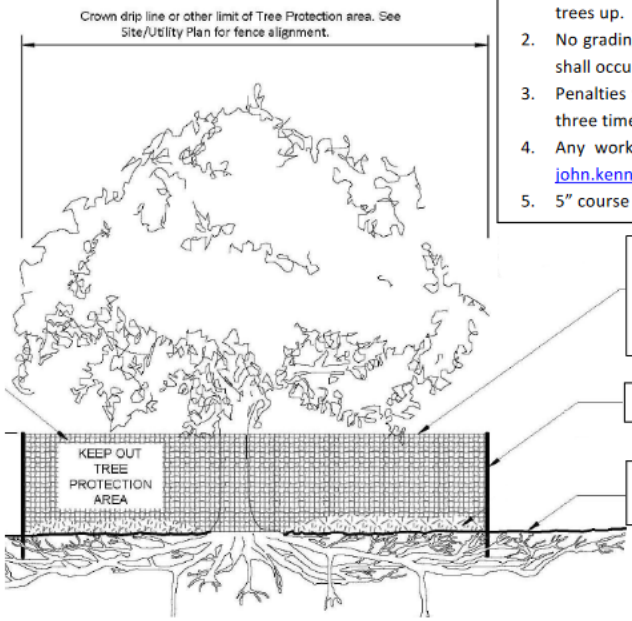
DO NOT REMOVE OR ADJUST THE APPROVED LOCATION OF THIS TREE PROTECTION AREA

Trees enclosed by this fence are protected and are subject to the conditions of the tree permit. Violation of tree conditions may lead to:

1. Correction Notices or Stop Work Orders until compliance is achieved
2. RE Inspection Fees/financial penalties
3. Arborist reports recommending mitigation

Notes

1. No pruning shall be performed unless under the direction of the Project Arborist. Including limbing trees up.
2. No grading, excavation, storage (materials, equipment, vehicles, etc.), or other unpermitted activity shall occur inside the protective fencing.
3. Penalties for damaging by root damage/compaction or removing a saved tree may be a fine up to three times the value of the tree plus restoration (MICC 19.10.160).
4. Any work in approved TPZ must be with the permission of the City Arborist (206) 275-7713, john.kenney@mercergov.org.
5. 5" course woodchips within the tree protection zone, but not against the tree trunk.



Tree protection fence: 6' **chain link** fence, solidly anchored into the ground, or if authorized High-density polyethylene fencing with 3.5" x 1.5" openings; color orange. Steel posts installed at 8' o.c.

2" x 6" steel posts or approved equal

Maintain existing grade with the tree protection fence unless otherwise indication on the plans

Any Work in the protected area must be with the permission of the City Arborist john.kenney@mercergov.org

12. PNW ISA Recommended Tree Protection Information

The Pacific Northwest Chapter of the ISA Recommends the following for protecting trees from damage during construction.**https://pnwisa.org/page/protecting-trees-from-damage**

PROTECTING TREES FROM DAMAGE

Tree hazards are more easily prevented than repaired. Your efforts at prevention will be much less expensive and more successful than attempting to cure a damaged tree that is on its way to becoming a hazard.

CHOOSE WHICH TREES TO PROTECT

For fruitful damage prevention, you need to correctly identify which trees are worth saving. Many well-intentioned protection efforts fail because large old trees nearing the end of their lifespans were protected and younger trees weren't. Take time to look critically at your trees and decide what you want them to look like in 10-20 years. Some of your trees may be better off being removed; others may potentially become useful wildlife habitats. An ISA Certified Arborist can help you decide.

Trees don't exist independently of their environment. Trees in a group, known as a stand, grove, or patch, should be evaluated together as well as individually.

EVALUATING FOREST REMNANT STANDS

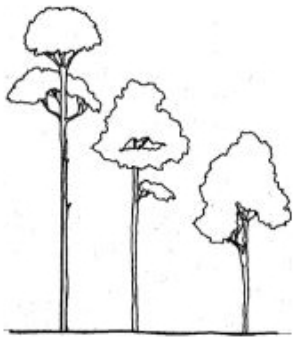
Stands, groves, or patches of native Pacific Northwest trees, such as Oregon white oak, Western red cedar, red alder, bigleaf maple, and Douglas fir, are often found in urban or urbanizing areas. These are remnants of the larger forests that previously covered the area. They may range from less than a quarter acre to several acres in size. Conservation of existing groves of native trees often provides greater economic and environmental benefit than preserving individual trees in the developing landscape. However, you should still evaluate the quality of the forest stand to determine if it is worth preserving.

EXCELLENT STAND PROTECTION ZONE

- Trees structurally support one another.
- Soil remains undisturbed.
- Wildlife uses are relatively unimpaired.
- Shady microclimate encourages natural woodland plants.
- Natural forest succession continues, and forest regeneration is ongoing.
- The stand is visually attractive.
- Ecological functions are relatively unimpaired.

Image: A stand to protect. Reproduced with permission by the City of Chattanooga.

POOR STAND PROTECTION ZONE



Scattered trees with a highly disturbed or missing understory may not be worth saving. A poor stand protection zone has the following characteristics:

- Trees blow over easily due to lack of support.
- Soil dries out and soil erosion occurs due to disturbed soils and lack of understory.
- Forest microclimate is disturbed.
- Sunlight and temperature are increased.
- Weeds and invasive species have taken over.
- Forest succession is interrupted, and little regeneration occurs.
- The stand is visually unattractive.
- Ecological functions are severely interrupted.

Image: A stand that may not be worth saving. Reproduced with permission by the City of Chattanooga.

PROTECTING FOREST STANDS

The best way to preserve a forest stand is to leave it alone. Fence the entire stand, grove, or patch to protect understory vegetation and soil as well as trees. Healthy soils require little if any fertilization, pesticides, or irrigation to support tree health.

When evaluating the members of a stand individually to see if they should be kept, consider whether or not the tree is on the edge of the group. These trees provide support and protection to the interior of the stand. If the tree in question is large and providing wind cover, do not remove it. Avoid removing vigorous, healthy trees and vegetation from the stand, and do not retain isolated single, tall, spindly trees; such trees are more likely to become structurally unstable, bend or blow over in storms, or become diseased and infested with insects.

PROTECTING INDIVIDUAL TREES

Tree protection involves activities designed to preserve and protect tree health by avoiding damage to a tree's roots, trunk, or crown. The best way to do this is protect not only the tree itself but also the ground covering its most important roots, known as the critical root zone.

CRITICAL ROOT ZONE PROTECTION

A critical step in retaining healthy trees is the protection of tree roots from disturbance. Each tree has a critical root zone (CRZ) that varies by species and site conditions. The International Society of Arboriculture defines CRZ as an area equal to a 1-foot radius from the base of the tree's trunk for each 1 inch of the tree's diameter at 4.5 feet above grade (referred to as diameter at breast height).

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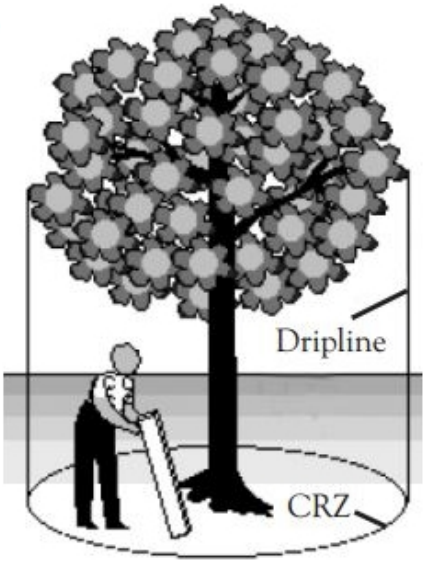
CRITICAL ROOT ZONE RADIUS DISTANCES CALCULATED BY TREE DIAMETER AT BREAST HEIGHT

Tree diameter	Critical root zone radius	Total protection zone diameter, including trunk
2 inches	2 feet	4+ feet
6 inches	6 feet	13.5 feet
20 inches	20 feet	42 feet
46 inches	46 feet	96 feet

Another common rule of thumb is to use a tree's drip line to estimate the CRZ (see figure). Evaluate both of these and choose whichever provides the larger CRZ.

Under certain circumstances, disturbing or cutting roots in a CRZ may be unavoidable. In such cases, the work should be done only under the on-site supervision of an ISA Certified Arborist.

Cutting or disturbing a large percentage of a tree's roots increases the likelihood of the tree's failure or death. Never cut tree roots that are more than four inches wide; roots that large are usually structural. Cutting them can destroy the stability of the tree, causing it to fall over!



If you must cut tree roots, do so cleanly with sharp tools. Never tear with a backhoe or other dull instrument. A clean cut encourages good wound closure and confines the spread of decay. If damage is severe, consider removing the tree because its stability may have been compromised.

Image: Using drip line to estimate critical root zone (CRZ). Reproduced with permission by the City of Chattanooga.

ACTIVITIES TO AVOID IN THE CRITICAL ROOT ZONE

The CRZ that should be protected from negative interactions. Avoid the following activities:

- Stockpiling construction materials or demolition debris
- Parking vehicles or equipment
- Piling soil and/or mulch
- Trenching for utilities installation or repair, or for irrigation system installation
- Changing soil grade by cutting or filling
- Damaging roots by grading, tearing, or grubbing
- Compacting soil with equipment, vehicles, material storage, and/or foot traffic
- Contaminating soil from washing out equipment (especially concrete) and vehicle maintenance
- Installing impervious parking lots, driveways, and walkways
- Attaching anything to trees using nails, screws, or spikes
- Wounding or breaking tree trunks or branches through contact with vehicles and heavy equipment
- Wounding trunks with string weed trimmers and lawn mowers
- Causing injury by fire or excessive heat

Some tree species are more tolerant of damage and disturbance in the CRZ than others. A tree's tolerance depends not only upon the species but also upon conditions present prior to and at the time of the damage. Tree health, age of the tree, soil aeration and moisture, the time of year the damage occurs, its severity, and the weather conditions prior to, during, and after the damage all contribute to the tree's response. An ISA Certified Arborist can analyze these variables and make specific recommendations to retain or recover a tree's health and safety during and after the construction process.

PROTECTING TREES FROM CONSTRUCTION

Tree protection during construction may be passive or active. Passive tree protection, most commonly used during the planning or post-development stages, simply means avoiding any disturbance or harmful activity near the tree. Active tree protection, by contrast, involves physical protective barriers and is generally required during any site disturbance that may impact your trees, such as grading, building or surface construction and maintenance, infrastructure and utility installation and maintenance, lawn renovation, and other landscape changes that may affect the structural integrity and stability of your trees.

While these practices are presented here as voluntary guidelines, some local jurisdictions have tree protection regulations that must be followed. Contact your local planning department for specific regulations for your area.

BEFORE CONSTRUCTION

The goal of tree protection is to help trees remain as healthy after you work around them as they were before you began. Plan and budget for tree conservation and protection as part of the development process, before construction begins. Optimally, tree protection should begin at least one growing season prior to the beginning of construction activities.

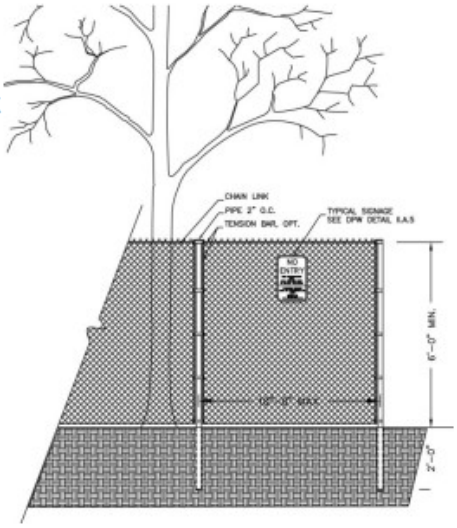
Start by making an inventory of the trees you will be working around. Include not just your trees but also your neighbor's trees, if working close to the edge of your property. Evaluate soil health and past site damage; you will need to incorporate that information into tree protection measures. If you are just working around one or two trees, you can do that by making a simple map listing the size, species, and health of each tree. If you have a lot of trees that need to be protected, it may make sense to hire an ISA Certified Arborist to develop the plan for you.

Take your tree information and overlay it with your construction plans to determine how much the planned activity will impact the tree. If the planned construction will have such an impact on the tree that it won't survive, either make the decision to remove the tree or change the construction project to avoid the tree. Consider the tree's location, species, quality, health, and benefits such as energy savings by shade or wind protection in order to make your decision. Remove trees that:

- Are within ten feet of the proposed building or structure
- Cannot be adequately protected
- Have less than a quarter of their total height composed of tree crown (tall and spindly)
- Have trunks that are more than a third wounded

Once you have identified which trees are in the path of your planned construction activities, put that information down on paper and communicate it to anyone you hire to work on the project. Reinforce your tree protection intentions by writing tree damage and noncompliance with tree protection clauses into any service contract. This should provide financial penalties to any contractor who damages your trees. If your property is large, engage maintenance staff in early decision-making and education about care of retained trees.

Install strong fencing around the CRZ and require the fence to remain in place for the life of the development project. This barrier can be a chain link or other type of fencing. Fencing protects both the root system and the trunk from being damaged.



Clearly identify the perimeter of the protection zone with highly visible signs.

Protect high-value trees with stem, branch, and root padding or wraps in addition to CRZ barriers.

To minimize soil compression across the property, establish one access route into the site and one exit route out of the site.

Complete preconstruction tree maintenance, including mulch, fertilization, supplemental irrigation as necessary, and pruning to remove dead, structurally weak, and low-hanging branches.

Image: Fencing for tree protection. Reproduced with permission by the City of Arlington, Virginia.

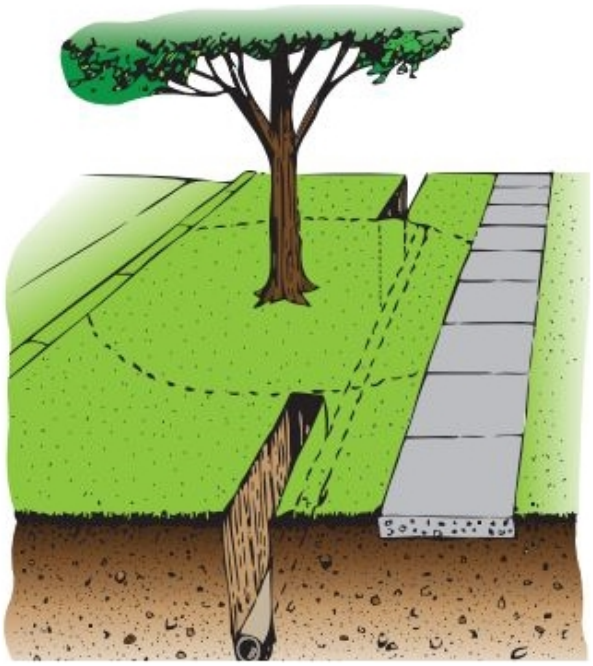
DURING CONSTRUCTION

Monitor compliance with tree protection requirements and the impacts of construction activities on tree health regularly during construction. If there are incursions into the root zone, ensure roots have been severed cleanly, enforce penalties, and reestablish the protection zone. Confer with your contractors to make sure that construction offices, vehicular parking, worker break sites, concrete washout areas or other pollutants, and material storage will remain outside of protected areas. Diligence in maintaining barriers and in enforcing your protection plan will pay great dividends at the end of the project when the tree is still healthy.

Following the guidelines laid out above will serve in most situations, but occasionally construction plans will require impingement on the CRZ.

TRENCHING

Trenching is a standard way to install utilities. **It is best to entirely avoid trenching through the CRZ** (see figure); such practice could severely destabilize a tree, as well as adversely affect its health through loss of roots. Workers performing such operations should understand that 85% of the mass of a tree's root system is located within the CRZ and that most of a tree's roots are within the top 18 inches of soil. Alter routes of underground infrastructure or use alternate methods such as pipe boring. Tunneling at least 18 inches beneath the root zone will prevent loss of critical root mass if underground utilities must unavoidably be placed within the CRZ.



A decision must be made as to where best to locate utility trenches. Planners and designers must be made aware that trenches may not cross a CRZ and design alternate alignments accordingly; such realignments are not the responsibility of the construction crew.

Best practices for trenching include the following:

- Protect the trunks of high-value trees from scraping and gouging to a height of at least eight feet.
- Keep equipment and excavated backfill on the side furthest from the tree, not against the trunk.
- Place excavated backfill on a plastic or canvas tarp outside the CRZ.
- Prune away jagged roots back to the trench wall closest to the tree. Use a handheld pruner or pruning saw to make sharp, clean cuts.
- Replace the backfill on the same day if at all possible. Cover exposed roots with wet burlap to prevent them from drying out; in hot dry conditions, small roots may be injured in as little as 30 minutes.
- Do not allow chemicals, trash, or other foreign debris to become mixed with the backfill.
- If earthwork specifications allow it, firm the backfill to the same compaction as the surrounding soil and no more.
- Water the backfill to prevent excessive root drying.

Image: Proposed trench through a critical root zone. Reproduced with permission by the City of Chattanooga.

GRADE OR GROUND LEVEL CHANGES

Grade changes should be avoided in order to prevent serious damage or death to a tree. Fill that is added over existing soils can smother and kill roots, or invite disease if piled around the trunk. Even temporary fills such as stockpiling mulch or soil in the CRZ of a tree for as little as several days during the construction process can have severe, long-term negative effects, though symptoms may not appear for several years.

The extent of injury from adding soil around a tree varies with the kind, age, and condition of the tree; the depth and type of fill; drainage; and several other factors. Maple, oak and evergreens are most susceptible, while elm, ash, willow, sycamore, and locust are least affected.

Little can be done to save trees that have been suffering from soil added over an extended period of time. It is prudent to consider possible damage that may occur to a tree and take alternative action before the fill is made; prevention is less expensive and more effective than attempting to correct the situation after damage has been done.

Best practices for fill operations include the following:

- Never place any fill or organic materials directly against the tree.
- Never compact the soil within the CRZ.
- If using no more than two to four inches of fill around existing trees, significant damage may be avoided if the fill has a coarser texture than the existing soil.

Less damage to a tree's roots is likely with a lowered grade than when it is raised, unless exposing or removing a great deal of the root mass. A general rule-of-thumb used by landscape architects is to remove no more than six inches of soil from the existing grade in the CRZ; however, this is dependent on the soils in which the tree is growing. A tree's roots may all exist in the top foot of a shallow soil; removing the top six inches would have tremendous negative impact in that case.

Best practices for removing soil include the following:

- Consider removal and replacement if the tree is young, in poor condition, an undesirable species, or very susceptible to insects and disease.
- Plan grade changes well in advance of construction using the appropriate method to prevent injury to desirable trees.
- Use retaining walls or terraces to avoid excessive soil loss in the area of greatest root growth.
- Spread mulch over the exposed root area when possible to help prevent soil erosion, reduce moisture loss, and keep soil temperatures lower.
- Provide supplementary water when rainfall is less than one inch per week.
- Prune roots to prepare the tree for root loss due to grade lowering. Root pruning is best left to an ISA Certified Arborist, who can take into account the variables necessary to reduce the stress of the pruning to the tree.

13. References

Referenced Literature:

Dirr, Michael A. Manual of Woody Landscape Plants Their Identification, Ornamental Characteristics, Culture, Propagation, and Use. Stripes Publishing L.L.C., 2009

Smiley, E. Thomas, Nelda Matheny, and Sharon Lilly. Tree Risk Assessment (Best Management Practices, Second Edition). Champaign: International Society of Arboriculture, 2017.

Dunster, Julian A., E. Thomas Smiley, Nelda Matheny, and Sharon Lilly. Tree Risk Assessment Manual. Champaign, Illinois: International Society of Arboriculture, 2013.

Shigo, Alex L. A New Tree Biology: Facts, Photos, and Philosophies on Trees and Their Problems and Proper Care. Shigo and Trees, Associates, 1986.

Shigo, Alex L. A New Tree Biology Dictionary: Terms, Topics, and Treatments for Trees and Their Problems and Property Care. Shigo and Trees, Associates, 1986.

Shigo, Alex L. 100 Tree Myths. Shigo and Trees, Associates, 1993.

Nelda Matheny and James R. Clark. Trees and Development: A Technical Guide to Preservation of Tress During Land Development. International Society of Arboriculture, 1998.

Edward F. Gilman. An Illustrated Guide to Pruning, Third Edition. Cengage Learning; 3rd edition (August 8, 2011)

Jacobson, Arthur Lee, Trees of Seattle, 2nd edition, 2006

Dr. Julian A. Dunster & Dr. R. Edmonds. Common Fungi Affecting Pacific Northwest Trees, Implications for Tree risk Assessment, 8 Dunster & Associates Ltd. 2014. www.dunster.ca

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Referenced Municipal Code:

Tree Protection Regulations in Mercer Island
https://www.mercerisland.gov/cpd/page/tree-permits

Chapter 19.10 – Trees
https://library.municode.com/wa/mercer_island/codes/city_code?nodeId=CICOOR_TIT19UNLADECO_CH19.10TR

19.10.050 - Tree removal—Not associated with a development proposal.
https://library.municode.com/wa/mercer_island/codes/city_code?nodeId=CICOOR_TIT19UNLADECO_CH19.10TR_19.10.050TRREOTASDEPR

19.10.060 - Tree removal—Associated with a development proposal.
https://library.municode.com/wa/mercer_island/codes/city_code?nodeId=CICOOR_TIT19UNLADECO_CH19.10TR_19.10.060TRRESSDEPR

14. Certificate of Performance

I, Andy Crossett, attest that:

- I have personally inspected the trees, and the property referred to in this report and have stated my findings accurately.
- I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.
- The analysis, opinion, and conclusions stated herein are my own and are based on current industry standards, scientific procedures, and facts.
- My analysis, opinion, and conclusions were developed, and this report has been prepared according to commonly accepted arboriculture practices.
- No one provided significant professional assistance to me, except as indicated within the report.
- My compensation is not contingent upon the reporting of predetermined conclusions that favor the cause of the client or any other party, nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further attest that I am a member of good standing of the International Society of Arboriculture (ISA), an ISA Certified Arborist (#PN-7375A), and Tree Risk Assessment Qualified. Additionally, I am a Certified Professional Horticulturist through the Washington State Nursery and Landscape Association, as well as a member of the American Society of Consulting Arborists.

If you have any questions about this report, please contact me at 206-310-8254 or andycrossett@hotmail.com.

Andy Crossett

15. Credentials & Experience

History

My career in the horticulture industry began in 2002 at a local landscaping company in Bellevue, WA. During the next few years, I continued to landscape with the goal of pursuing a formal education in the field. I graduated from the Lake Washington Institute of Technology in 2011 with a degree in Environmental Horticulture and completed the ISA and CPH exams to become a Certified Arborist and Certified Horticulturist, respectively. I then worked for the City of Bellevue's Street Tree and Irrigation department, and later went on to work as the head gardener at a large estate in Medina WA. I started Tree Frog LLC in 2013 and have been consulting full time since 2017.

Currently, I am the Tree Consultant for the City of Medina, and I continue to do tree reports for a number of regular clients in the area.

In my spare time, I enjoy spending time with my family and the animals on my small hobby farm.

Education

Lake Washington Institute of Technology – associate degree, Environmental Horticulture

My education from Lake Washington Institute of Technology's horticulture program focused on the following areas of study: botany, plant propagation, greenhouse management, soils, pruning, pest and disease management, landscape design, turf grass management, and plant identification.

Credentials

A. **Certified Professional Horticulturist** through the Washington State Nursery & Landscape Association #2537

In 1978, WSNLA created a two-pronged professional certification program that was known as the Washington Certified Nurseryman or Washington Certified Landscaper. In 2005, WSNLA revamped and upgraded the certification program and renamed the designation as Certified Horticultural Professional. With nearly 400 Certified Professional Horticulturists, the CPH program is the largest community of state certifications serving professional horticulturists in Washington State.

To earn a WSNLA Certified Professional Horticulturist credential, you must pass a written exam that tests your skills and knowledge as a horticultural professional based on study materials and practical applications.
You must provide the equivalent of one year of work experience (2000 hours) with a licensed nursery, landscape contractor or WSNLA-approved business or institution.

B. Certified Arborist and Qualified Tree Risk Assessor, through the International Society of Arboriculture #PN-7375A.

To earn an ISA Certified Arborist® credential, you must be trained and knowledgeable in all aspects of arboriculture. ISA Certified Arborist® have met all requirements to be eligible for the exam, which includes three or more years of full-time, eligible, practical work experience in arboriculture and/or a degree in the field of arboriculture, horticulture, landscape architecture, or forestry from a regionally accredited educational institute. This certification covers a large number of topics giving the candidates flexibility in the arboricultural profession. A code of ethics for ISA Certified Arborists® strengthens the credibility and reliability of the work force. This certification is accredited by the American National Standards Institute, meeting, and exceeding ISO 17024.

C. Member, American Society of Consulting Arborist

ASCA represents Consulting Arborists—the authoritative experts on trees, and whose objective, comprehensive viewpoint ensures the safety, health, and preservation of trees. Our members' extensive level of knowledge and experience makes them highly sought after by consumers, professionals, and other arborists.

To be an ASCA member, you must have at least five years of experience in arboriculture plus one of the following educational requirements: 1. Possess a four-year degree in arboriculture or a closely related field, such as urban forestry, horticulture, plant pathology, entomology, forestry, or plant biology. 2. Be a Board-Certified Master Arborist. 3. Have a minimum of 240 approved CEUs.

Continued Education

Trees and the Law | Report Writing for Arborists | Defensible Tree Appraisal | Developing Field Assessment Skills for Common PNW Tree Diseases | Climbing Safety Case Studies | WSNLA PROseries seminar Pest & Disease | Tree Disorder Diagnosis Online Workshop & Live Discussion | Why Trees Fail Online Workshop & Live Discussion | Arbor Chat: A Deep Dive Into the ISA Certified Arborist® Code of Ethics | Diagnosis & Disorder: General Diagnosis | Tree Biology: Anatomy | Arbor Chat - Coronet cuts: The simulation of natural fractures | Tree root physiology and urban soils – can't we just all get along? | Arboricultural Zombies - Myths That Will Not Die | Forged in Fire: Arborist Options Before & After the Fire | Forest Health Watch – working together to monitor, study and understand tree health issues in Pacific Northwest | Tree insect pest diagnosis and management | Homeowner knowledge and perceptions of tree care and preservation on residential properties | Managing the Trees Where People Live for Resiliency | Regenerative Pruning: Research on Overextended Trees, Practice on Hollow Trees | Machine Generated Report Writing | Tools We Use | Putting the MD Back in Tree Doctor | Building a Resilient Arboriculture and Urban Forestry Program in Rural Municipalities | Ethical Tree Care in the Urban Interface | What's pesky in the PNW… And what could be on its way? | Coping with heat: Community urban forest perspectives and experiences in Vancouver, Canada | Advancing Urban Forestry in the Pacific Northwest | Root Pruning | The Influence of Abiotic Factors on Street Tree Condition and Mortality in a Commercial-Retail Streetscape | Arborists and Wildlife: Retaining Trees for Wildlife Habitat | Tree Inventories | Biology and Identification of Fungi | Wood Decay Fungi Identification and Management | Container Type Affects Root Development | Tree Lightning Protection Systems | Advanced Tree Identification | Wood Chips and Compost Improve Soil Quality and Increase Growth of Acer rubrum and Betula nigra in Compacted Urban Soil | A Review of Spatial Variation of Allergenic Tree Pollen | The Cost of Not Maintaining the Urban Forest | Impacts of Wire Basket Retention and Removal | Effects of Root Severance by Excavation on Two Urban Tree Species | An Introduction to Arboricultural Biomechanics: How Arboricultural Practices Influence the Likelihood of Failure | Virtual Event Flashback: Quantifying Climbing Efficiency | Tree Stability Management: Monitoring & Treating Growth Forms and Faults. | Rules of Effective Community

Engagement in Urban Forestry | Extension Agents' Perceptions, Practices, and Needs of Urban Forestry | Green Enough? Comparing Urban Forest Access to Resident Preferences. | Are trees always good? Ecosystem disservices and urban forests | Planning and managing green cities for human health and well-being | Socio-political Drivers of Urban Tree Diversity and Composition: Development, Symbolism, and Stratification | Urban Tree Inventories - The A-Z of counting trees | Bat Sheet Crazy - How Sheet Mulches Damage Soil and Tree Health | The Skilled Professional: Arborists and Urban Foresters' Engagement in the Non-Profit Sector | Plant Diagnostics – Beginning Inspection of the Hidden 50% | TCIA Certified A300 Writing Pruning Specifications 3/6/24 - 3/6/29 | The Urban Forest Myth

Volunteering

Dog Mountain Farm, CSA
Dog Mountain Farm served the Snoqualmie Valley community and the greater Seattle area by providing Certified Naturally Grown vegetables, fruit, eggs, herbs, and flowers. The farm also offered educational tours for schools and community groups.

Duvall Arbor Day Festival
I participated in the 2025 Duvall Arbor Day Festival by working at the Arbor Day information booth. Throughout the event, I engaged with community members to promote urban forestry awareness, answered questions about tree care and preservation, and provided educational materials on the benefits of trees in the urban environment. It was a valuable opportunity to connect with residents, share professional knowledge, and support the city's ongoing commitment to environmental stewardship.

16. Assumptions & Limiting Conditions

a) A field examination of the site was conducted on **5/13/2025**. My observations and conclusions are as of that date.

b) Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/arborist can neither guarantee nor be responsible for accuracy of information provided by others.

c) Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the conditions of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied that problems or deficiencies of the subject tree may not arise in the future.

d) All trees possess the risk of failure. Trees can fail at any time, with or without obvious defects, and with or without applied stress. A complete evaluation of the potential for this (a) tree to fail requires excavation and examination of the base of the subject tree. Permission of the current property owner must be obtained before this work can be undertaken and the hazard evaluation completed.

e) Other trees with similar defects are standing in the neighborhood and have been so for some time. Trees are living biological organisms, and I cannot predict nor guarantee their stability or failure.

f) Sketches, drawings, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural report of surveys unless expressed otherwise. The reproduction of any information generated by architects, engineers, or other consultants on any sketches, drawings, or photographs is for the express purpose of coordination and ease of reference only. Inclusion of said information on any drawings or other documents does not constitute a representation by Tree Frog LLC as to the sufficiency or accuracy of said information.

g) The consultant/appraiser shall not be required to give testimony or attend court because of this report unless subsequent contractual arrangements are made.

h) Loss or alteration of any part of this report invalidates the entire report.

i) Unless required by law otherwise, possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.