



Lonson Arbor Care

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October 18, 2021

Brumbaugh Residence
4124 83rd Ave SE
Mercer Island, WA 98040

Re: **Tree Report** for the address above (Parcel #36265000030).

To Whom It May Concern,

This report documents the inspection and identification of an “exceptional” tree on the property mentioned above. A site map of tree locations is included, along with an ISA Hazard Assessment Form for the exceptional tree. A planting plan is provided with the removal of the exceptional tree. A tree protection plan is discussed for trees along the south property line.

Subject tree (tag #1):

- Eastern White Pine (*Pinus strobus*).

Diameters at Breast Height (DBH):

- 12.1”, 8.0”, 13.0”, 6.2”, 18.4”, and 26.2”.
- Total DBH of all trunks is 38.0 inches ($DBH = \sqrt{[(DBH1)^2 + (DBH2)^2 + (DBH3)^2 + \dots]}$).

Condition:

- Multi-trunked tree with included bark between trunks. The tree has a dead trunk down to the base indicating heartwood decay near the root collar. Side branches have severely rubbed into the trunk stem.

Mitigation:

- The Eastern White Pine warrants removal because of structural defects that will require extensive pruning and cabling to lower risk without the guarantee of recovery. The total DBH of the tree is 38.0” which requires the planting of six (6) new trees under MICC 19.10.070. Conifer (evergreen) trees must be at least 6-feet tall when planted. Deciduous trees need to have a trunk caliper (base measurement) of 1.5 inches.

Eastern White Pine Pictures:



The picture above, taken at time of inspection, shows the base of the Eastern White pine. The red arrow points at the included bark between the trunks. This part of the trunk is likely to fail within the 5-year assessment time frame. The yellow arrow points at the dead stem which indicates root crown problems near the base of the tree. Severe branch rubbing is highlighted in yellow. The imbedded, rubbing branch has compromised the stem's structural strength and is likely to fail within the assessment period.

ISA Basic Tree Risk Assessment Form

Client: **Burnhaugh Residence** Date: **September 29, 2021** Time: **9:00 am**

Address/Tree location: **4124 83rd Ave. SE, Mercer Island** Tree no.: **#1** Sheet: **1** of **1**

Tree species: **Pinus strobus** dbh: **5.2", 1.8", 1.2"** Height: **120'** Crown spread dia.: **30'**

Assessor(s): **Lionie Olson PN-54274** Tools used: **Basic Inspection Tools, Camera** Time frame: **5 years**

Target number	Target description	Target protection	Target zone			Occupancy 1 - rare 2 - occasional 3 - frequent 4 - constant	Practical to move target?	Restriction practical?
			Target within 1 x Ht.	Target within 1.5 x Ht.	Target within 2 x Ht.			
1	House 4124	None	X	X	4	no	no	
2	Roadway (83rd Ave. SE)	None	X	X	4	no	no	
3								
4								

Site factors: **None** Topography Flat Slope % Aspect _____

History of failures: **None** Site clearing Changed soil hydrology Root cuts Describe _____

Site changes: **None** Grade change Shallow Compacted Pavement over roots % Describe **Fair**

Soil conditions: **Limited volume** Saturated Ice Snow Heavy rain Describe _____

Prevailing wind direction: **NE** Common weather: **Strong winds** Describe _____

Tree Health and Species Profile

Vigor: **Low** Normal High Foliage: **None** (seasonal) Abiotic: **Included bark, severe rubbing**

Species failure profile: **Branches** Trunk Describe: **Loss of structural strength.**

Wind exposure: **Protected** Partial Full Wind funneling Load Factors _____

Crown density: **Sparse** Normal Dense Interior branches: **Few** Normal Dense Vines/Mistletoe/Moss

Recent or expected change in load factors: **Seasonal winds**

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown LCR: **80** % Max. dia.: **3"** Lightning damage

Dead twigs/branches Number: **20** % overall Max. dia.: _____

Broken/hanging Over-extended branches Weak attachments Similar branch failures Cavity/Nest hole: _____ % circ.

Pruning history: Crown cleaned Thinned Raised Reduced Topped Lion-tailed Dead/Missing bark Cankers/Galls/Burrs Sapwood damage/decay Flush cuts Other: _____

Response growth: _____ Condition(s) of concern: **No concerns**

— Trunk —

Dead/Missing bark Abnormal bark texture/color Stem girdling

Codominant stems Included bark Crotches Cankers/Mushrooms

Sapwood damage/decay Cankers/Galls/Burrs Sap ooze Cavity: _____ % circ.

Lightning damage Heartwood decay Conks/Mushrooms Root plate lifting Distance from trunk: _____

Cavity/Nest hole: _____ % circ. Depth: _____ Poor taper Soil weakness

Learn: _____ Corrected? _____

Response growth: _____ Condition(s) of concern: **Dead stem from root collar**

Part Size: _____ Fall Distance: _____

Load on defect: **18" dia** Minor Moderate Significant

Likelihood of failure: **Impossible** Possible Probable Imminent

Risk Categorization

Target (Target number or description)	Tree part	Condition(s) of concern	Likelihood					Risk rating (from Matrix 2)
			Failure	Impact	Failure & Impact (from Matrix 2)	Consequences	Risk rating (from Matrix 2)	
1	Trunk/Stem	Failure at base	Improbable	Low	Medium	High		
2	Trunk/Stem	Failure at rubbing	Possible	Low	Moderate	High		

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact	Consequences of Failure	Risk Rating
Very Low	Low	Minor	Low
Imminent	Somewhat likely	Moderate	Low
Probable	Unlikely	High	Low
Possible	Unlikely	High	Low
Improbable	Unlikely	High	Low

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure	Risk Rating
Very likely	Minor	Low
Likely	Moderate	Low
Somewhat likely	High	Low
Unlikely	High	Low
Unlikely	High	Low

Notes, explanations, descriptions

Tall stems add to the leverage load on the included bark and rubbing stress. A lot of over-lapping (girdling) phloem cells around the trunk base may be the reason for the stem dieback.

Mitigation options

1. **Remove** Residual risk: **None**

2. Residual risk: **None**

3. Residual risk: **None**

4. Residual risk: **None**

Overall tree risk rating: **Low** Moderate High Extreme

Overall residual risk: **None** Low Moderate High Extreme

Data: Final Preliminary Advanced assessment needed No Yes-Type/Reason _____

Inspection limitations: None Visibility Access Vines Crown collar buried Describe _____

Tree Protection Plan:

Protective fencing is recommended around the perimeters of the Tree Protection Zone (TPZ) for each retained tree during grading and construction. Chain-link fencing is recommended to preserve the trees from soil disturbance due to machines, foot traffic, and materials. Grading and construction should not be allowed within the TPZ of retained trees, unless described in this report.

The placement for tree protection fencing is shown on the property map (page 6). I allow the protection fencing to cut across part of the TPZ of trees along the south property line to provide room for building. This fencing plan results in less than 30% disturbance of the outer root zone area and protects the inner (critical) root zone area. The radius of the inner root zone is half the TPZ. The threshold for outer root zone disturbance is no more than 30% of the area, not including the inner root zone area. The area of allowable disturbance for each impacted tree is calculated below.

Douglas Firs with 18.0" DBH and TPZ radius:

$$\text{Inner root zone area} = \pi r^2 = \pi (\text{TPZ} / 2)^2 = \pi (9.0')^2 = 254.3 \text{ ft}^2.$$

$$\text{Outer root zone area} = \pi r^2 = \pi (\text{TPZ})^2 = \pi (18.0')^2 = 1,017.4 \text{ ft}^2.$$

$$1,017.4 \text{ ft}^2 - 254.3 \text{ ft}^2 = 763.1 \text{ ft}^2.$$

$$763.1 \text{ ft}^2 \times 30\% = 228.9 \text{ ft}^2.$$

Protective fencing for Douglas Firs with 18.0" DBH may expose no more than 229.0 ft² of the outer root zone and not intersect the inner root zone.

Pine with 12.0" DBH and TPZ radius:

$$\text{Inner root zone area} = \pi r^2 = \pi (\text{TPZ} / 2)^2 = \pi (6.0')^2 = 113.0 \text{ ft}^2.$$

$$\text{Outer root zone area} = \pi r^2 = \pi (\text{TPZ})^2 = \pi (12.0')^2 = 452.2 \text{ ft}^2.$$

$$452.2 \text{ ft}^2 - 113.0 \text{ ft}^2 = 339.2 \text{ ft}^2.$$

$$339.2 \text{ ft}^2 \times 30\% = 101.7 \text{ ft}^2.$$

Protective fencing for Pine with 12.0" DBH may expose no more than 102.0 ft² of the outer root zone and not intersect the inner root zone.

New Tree Recommendations:

Native trees are most preferred. Some of the larger native evergreen (conifer) trees include Douglas fir (*Psuedotsuga menziesii*), Red cedar (*Thuja plicata*), Western hemlock (*Tsuga heterophylla*), Grand fir (*Abies grandis*), and Engelmann spruce (*Picea Engelmannii*).

Ornamental native trees and near native trees more suited for landscape design may include Excelsior cedar (*Thuja plicata* 'Excelsior'), Mountain hemlock (*Tsuga mertensiana*), Shore pine (*Pinus contorta*), Alaskan weeping cedar (*Chamaecyparis nootkatensis*), and Pacific yew (*Taxus brevifolia*) for evergreen conifers. Deciduous trees include Serviceberry (*Amelanchier alnifolia*), Dogwood (*Cornus nutellii* or *Cornus* 'Eddie's White Wonder'), White oak (*Quercus garryana*), Crabapple (*Malus fusca*), and Vine maple (*Acer circinatum*).

Please reply if you have questions.

Thank you,

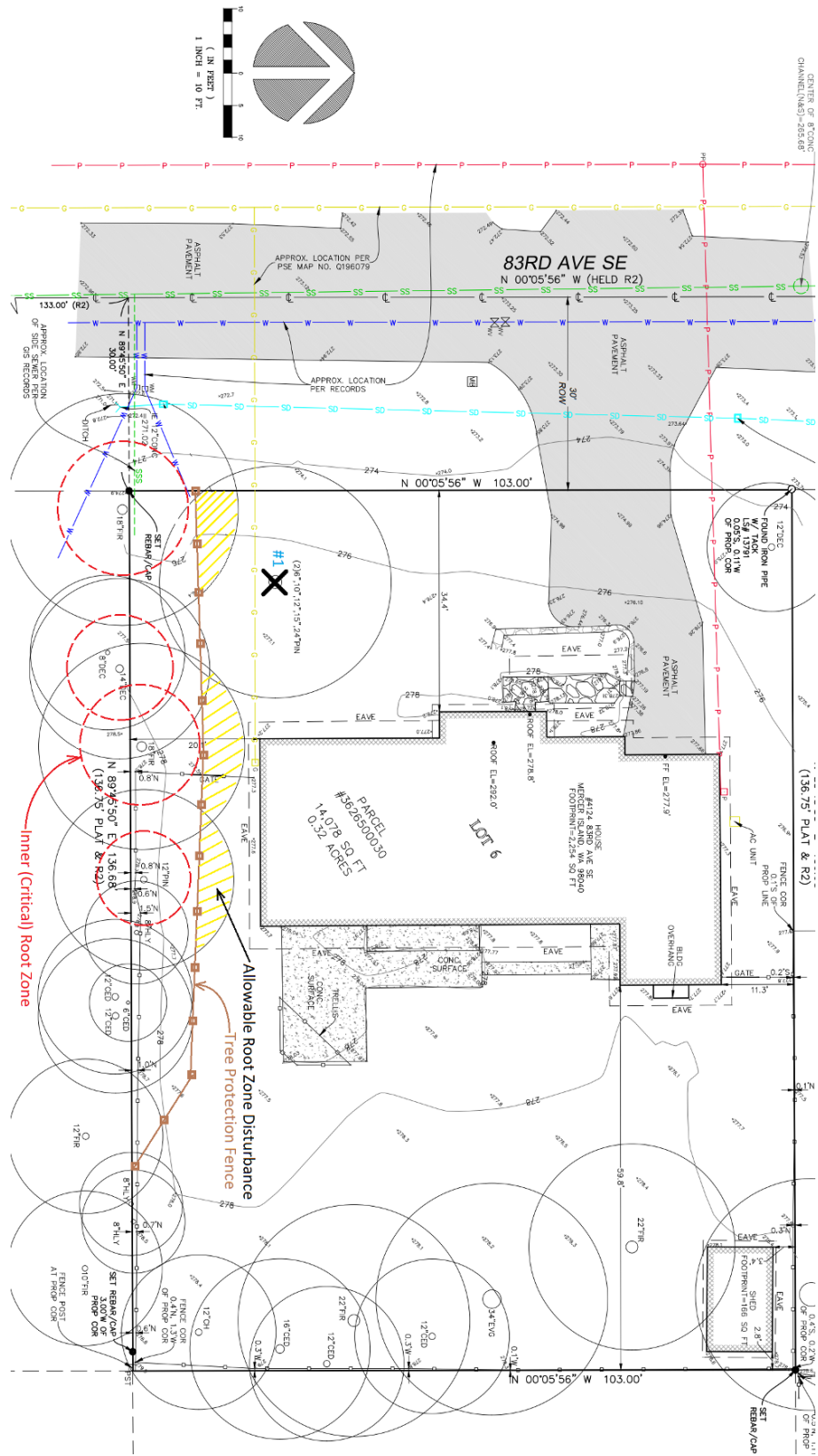


Lonnie Olson, Owner

ISA Certified Arborist (PN-5427A) exp. 12/31/2023

Qualified Tree Risk Assessor (#697) exp. 7/23/2024

Property Map: 4124 83rd Ave. SE, Mercer Island.



Assumptions & Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. The property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
2. All data has been verified insofar as possible; however, I can neither guarantee nor be responsible for the accuracy of information provided by others.
3. I shall not be required to give testimony or attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee.
4. Loss or alteration of any part of this report invalidates the entire report.
5. 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.
6. Neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant particularly as to value conclusions, identity of the consultant, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant as stated in my qualification.
7. This report and values expressed herein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
8. Sketches, diagrams, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
9. Unless expressed otherwise: (1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

Certification of Performance & Appraisal

I, Lonnie Olson, certify that all the statements of fact in this report are true, complete, and correct to the best of my knowledge and belief, and that they are made in good faith.

- ❑ I have personally inspected the trees and the property referred to in this report and have stated my findings accurately. The extent of the evaluation or appraisal is stated in the attached report and the terms of assignment.
- ❑ The analysis, opinions, and conclusions stated herein are my own and are based on current scientific procedures and facts.
- ❑ No one provided significant professional assistance to me, except as indicated within the report.
- ❑ My compensation is not contingent upon the reporting of a predetermined conclusion that favors 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 certify that I am a member in good standing with the International Society of Arboriculture. I have been involved in the field of arboriculture in a full-time capacity for a period of more than 24 years.

Lonnie Olson

Signed: _____