

Arborist Report

To: Brad Chase

Site: 4525 Forest Ave SE, Mercer Island, WA

Re: Tree Inventory and Assessment

Date: February 26, 2024

Project Arborists: George White,
ISA Certified Arborist #PN-8908A
ISA Qualified Tree Risk Assessor

Reviewed By: Katherine Taylor,
ISA Certified Arborist #PN-8022A
ISA Qualified Tree Risk Assessor

Referenced Documents: Tree Protection Plan C2.50 (Fused Elements, 9.8.2023)
Grading Plan C3.00 (Fused Elements, 9.8.2023)
Tree Replacement Plan L1.01 (Spring Greenworks, 9.8.2023)

Attached: Table of Trees
Site Map
ECA Steep Slopes Map

Summary

We inventoried and assessed 44 large (regulated) trees on this lot that may be impacted by construction. Mercer Island City Code (MICC) defines a large tree as any tree over 10 inches Diameter at Standard Height (DSH). Each tree assessed is tagged with an aluminum tree tag. Numerical identifiers correspond to the number on each tag.

Of the trees we assessed, seven met the exceptional tree criteria outlined in the MICC. Six exceptional trees exceeded 24 inches DSH.

Three adjacent property trees required documentation for this project. We documented trees on neighboring properties if they appeared to be greater than 10-inches diameter with driplines overhanging the property line. In this case, we were able to assess these trees up-close because the adjacent property is also owned by Mr. Brad Chase. We assigned off-site trees alphabetical identifiers.

We documented four additional trees (trees 102-105) that are below regulated size at request of the property owner. These trees do not impact tree retention totals but will be discussed in this report because of their value to Mr. Chase.

The scope of our inventory only included the areas expected to be impacted by proposed improvements. The provided survey, which covers the entire parcel, includes a total of 87 trees. Based on our inventory experience, this survey proved to be accurate and accounted for all large trees located within the scope area. Therefore, 87 trees is an accurate estimate as to the total number of significant trees located on the entire site.

Of the estimated 87 large trees located on-site, 28 are proposed for removal, resulting in an estimated retention rate of 68 percent which satisfies the 30 percent retention requirement outlined in MMC 19.10. The majority of the trees on the lot are located outside of the proposed construction area and are unlikely to be affected by construction.

Seventy-four replacement trees, or fee-in-leu of, will be required per MICC 19.10.070. Replacement trees should be installed on-site or in adjacent public right-of-way.

Assignment and Scope of Work

This report outlines the site inspection by George White and Arin Lewis of Tree Solutions Inc, on July 12, 2022, and subsequent site visit by George White on June 14, 2023. This report includes findings and management recommendations following those site visits. Brad Chase, owner of the property, requested these services for project planning purposes.

Observations and Discussion

Site

The proposed development of 4525 Forest Ave SE is adjacent to another parcel owned by Mr. Chase. Adjustments to the property line between the two parcels (4467 and 4525 Forest Ave SE) were made to accommodate the construction of the proposed building which is reflected in the site plans provided by Olson Kundig and Fused Elements.

According to the Mercer Island GIS portal, several Environmentally Critical Areas (ECA) exist on site including a Water Course, Steep-Slope, Erosion Hazard, and Potential Slide Area. Refer to MICC chapter 19.07 for ECA specific regulations. ECA regulations should be taken into consideration during planning and construction.

We noted the presence of multiple invasive plant species on site including English ivy (*Hedera* sp.) (Photo 1), holly (*Ilex* spp.), Saint John's wort (*Hypericum* spp.), and black locust (*Robinia pseudoacacia*). Invasive plants should be managed prior to development.

Proposed Plans

The most recent plans (C3.00 Grading Plan, Fused Elements, 9.8.2023) propose the demolition of existing structures and the construction of a new house, landscaping, utilities, and driveway improvements.

Trees

Tree species on-site included a mix of native conifers, shade trees and ornamental specimens. The existing vegetation buffer along the property line is a dense mix of exotic species with some native western redcedar higher on the slope.

Tree 106 is an exceptional Leyland cypress located north of the existing home. The roots of this tree have significant conflict with the existing driveway (Photo 2). Leyland cypress trees grow rapidly and often outgrow their location.

Tree 107 is an exceptional black oak located immediately adjacent to the existing building (Photo 3). This tree was malpruned by the previous property owner. Several large scaffold limbs were removed, with some pruning cuts in excess of 13 inches in diameter. A few of the cuts were made flush to the trunk and did not leave the branch collar intact (Photo 4). Even though oaks are generally strong-wooded trees which compartmentalize decay well, the severity of these wounds and the expected root impacts during demolition make it unlikely to be viable over the long term.

Tree 119 is a flowering cherry located east of the existing house. This tree is in poor health and has a failed limb overhanging the house (Photo 6). In our opinion, this tree should not be prioritized for retention. The broken limb should be removed as soon as possible.

We have attached an annotated plan sheet to serve as the site map, as well as a table of trees which contains specific information about each tree we assessed.

Discussion—Construction Impacts

Trees Proposed for Removal

28 trees (trees 103-118, 120, 122-132) are currently proposed for removal due to conflicts with the footprints of proposed structures, necessary utilities, and driveway improvements. Tree 119 was removed in 2023 due to condition.

Tree 107 is an exceptional 36.6-inch eastern black oak that is currently proposed for removal. Retention is not possible due to the impacts of the proposed demolition of the existing foundation which is located within inches of the trunk (Photo 4).

Trees 106, 123, and 130 are exceptional trees greater than 24 inches DSH that are currently proposed for removal due to conflicts with the footprint of proposed structures and driveway improvements. Removal of these trees is permitted under MICC 19.10.060.3 because their retention would limit the constructable gross floor area to under 85 percent of the maximum allowed. An exhibit comparing the Recommended Limits of Disturbance (RLOD) of the exceptional trees proposed for removal compared to the buildable area is attached to this report.

All removed trees shall be felled directionally or pieced down by a climbing arborist to avoid damage to adjacent retained trees. The stumps of retained trees located within the RLOD of retained tree must be ground in place and not ripped out to avoid damage to adjacent root systems. Stumps of trees located within the Minimum Limits of Disturbance (MLOD) of a retained tree must be cut to grade and abandoned in place.

Impact of Proposed Removals on Retained Trees

Removal of trees from a grove will inevitably cause variation in the wind dynamics of the remaining trees. In some cases, this can result in an increased likelihood of windthrow or part failure of the remaining trees until they have adapted to their new condition.

In the case of this project, it is my opinion that the proposed removals should have minimal impact on the wind firmness of the remaining trees due to the topography of the site and distribution of proposed removals.

Tree Protection

All large, retained trees must be protected to the standards outlined in MMIC 19.10.080. This includes the installation of tree protection fencing at the RLOD. Trees growing in a grove should be protected at the shared edge of their RLODs. No excavation, grading, machine/vehicle access is permitted within the tree protection fencing without arborist coordination. Under specific circumstances, the fencing may be reduced to the Minimum Limits of Disturbance (MLOD) if approved by the project arborist and the city of Mercer Island. The RLOD and MLOD measurements for each tree can be found in the attached Table of Trees.

All tree protection fencing must be installed prior to the demolition phase of the project. A pre-construction inspection of tree protection efforts conducted by the project arborist is recommended. Where possible, tree protection fencing should be expanded outside of the RLOD, so as to protect a larger area of uncompacted soil around retained trees.

Additional tree protection specifications can be found in Appendix F.

Impacted Trees

Trees 133-135, 143, 144, and 146 are trees proposed for retention that are expected to be impacted by proposed construction. These trees can be successfully retained if protected in the manner described in this report.

Trees 133-135

Tree 133 is a 21-inch black locust (*Robinia pseudoacacia*), tree 134 is a 17-inch katsura (*Cercidiphyllum japonicum*), and tree 135 is a 16-inch flowering plum (*Prunus cerasifera*). All three trees are growing on the inside of a curve in the existing driveway and may be impacted by the proposed construction of the new driveway. These trees can be retained if they are protected at the edge of the existing driveway with tree protection fencing, as the existing driveway and compact soils beneath it likely limit the extent of tree roots beneath the driveway. Excavation outside of the driveway footprint should be limited to grubbing 3-4 inches of organic surface material within the MLOD of these trees.

Trees 143 and 144

Tree 143 is an 18-inch grand fir (*Abies grandis*) and tree 144 is an exceptional 45-inch exceptional Douglas-fir (*Pseudotsuga menziesii*) located northeast of the proposed driveway improvements. Both trees are expected to be impacted by the grade cut proposed to facilitate the new driveway route. These trees shall be protected with tree protection fencing erected at the edge of the proposed grade cut. The proposed grade cut must be made using the following alternative excavation method:

- Use hydro-excavation or pneumatic excavation to cut a trench at the limits of excavation to the depth of the proposed grade cut.
- Use a sharp reciprocating saw or hand saw to cut all exposed roots cleanly.
- Once all exposed roots have been cut, the remainder of the excavation can be conducted traditionally.
- Cut and exposed roots must be immediately covered with soil, wet jute, or plastic sheeting to prevent desiccation until the area is backfilled.

The proposed grade cut, as well as any work conducted uphill of the proposed grade cut that is located within the tree protection fencing must be monitored by the project arborist.

Tree 146

Tree 146 is a 15-inch Douglas-fir located southwest of the existing driveway which is expected to be impacted by driveway improvements. The new driveway is proposed to be constructed 8 feet from the base of this tree. The new driveway will be built on a fill, and no excavation is expected within this tree's RLOD. Tree protection fencing shall be installed at the edge of the proposed driveway prior to construction.

Trees A and B

Trees A and B are two western redcedars located just north of the new property line that are expected to be impacted by the construction of the new driveway. These trees shall be protected with tree protection fencing at the edge of the proposed grade cut. The proposed grade cut must be made following the same methods described for trees 143 and 144. Any work conducted north of the proposed grade cut within the tree protection fencing must be monitored by the project arborist.

Replacement Trees

Seventy-four replacement trees pursuant to MICC 19.10.070 will be required to replace the trees currently proposed for removal.

Planting 74 replacement trees in the limited open space available on-site is not feasible due to the existing canopy coverage and existing site conditions outside of the project area. The project will therefore pursue a reduction in required tree replacements, in accordance with MICC 19.10.070.B.4, by restoring critical areas on-site with native, understory vegetation and removing invasive vegetation. Provided plans (Tree Replacement Plan, Spring Greenworks, 9.8.2023) propose a reduced total of 31 replacement trees, including 29 native trees.

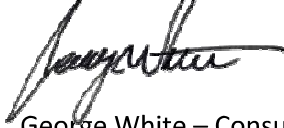
Some fees in-lieu-of replacement may still be required per MICC 19.10.070.C depending on the negotiated reduction of tree replacements.

Recommendations

- Obtain all necessary permits and approval from the city prior to commencement of site work.
- Tree protection consisting of chain link fencing shall be installed at the RLOD of all retained trees prior to demolition. Protect trees growing in a group at the edge of their shared RLOD. General tree protection specifications can be found in Appendix F. The tree protection fencing may be reduced for individual trees as specifically identified in this report.
- All off-site trees must be protected during construction.
- The project arborist should conduct an inspection of tree protection efforts once they have been installed.
- All excavation within the Recommended Limits of Disturbance (RLOD) of a retained tree must be conducted using the alternative excavation methods described in this report.
- The locations where alternative excavation/arborist monitoring is required shall be indicated on the Tree Protection Plan and all other pertinent plan sheets.

- Where possible, expand the tree protection fencing outside of the RLOD to protect a larger rooting area from unnecessary soil compaction.
- Negotiate a reduction in the number of tree replacements per MICC 19.10.070.B.4.
- Plant all proposed replacement trees pursuant to MICC 19.10.070.
- Manage invasive plant species prior to site development.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "George White", written in a cursive style.

George White – Consulting Arborist

Appendix A Glossary

DBH or DSH: diameter at breast or standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Council of Tree and Landscape Appraisers 2019)

tree grove: a group of eight or more trees each 10 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. (MICC 19.16.010)

exceptional tree: a tree measuring 36 inches DSH or greater or with a diameter that is equal to or greater than the diameter listed in the Exceptional Tree Table (MICC 19.16.010)

ISA: International Society of Arboriculture

large tree (regulated): A tree measuring 10 inches or greater DSH (MICC 19.16.010)

MLOD (Minimum Limits of Disturbance) Minimum Limits of Disturbance: represents a distance five (5) times that of the trunk or 6-feet, whichever is greater, and is the minimum distance from a trunk that a structural root can be cut to maintain tree stability.

RLOD (Recommend Limits of Disturbance): As outlined in ISA Best Management Practices: Managing Trees During Construction, this is calculated as a radial distance 8 times the trunk diameter or greater depending on tree species and/or condition. For the purpose of this report, this represents the critical root zone (CRZ).

Appendix B References

Accredited Standards Committee A300 (ASC 300). ANSI A300 (Part 1) Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Londonderry: Tree Care Industry Association, 2017.

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture

2001 Mercer Island Municipal Code (MICC) 19.16.010. Definitions

Mercer Island Municipal Code (MICC) 19.10. Trees

Appendix C Photographs

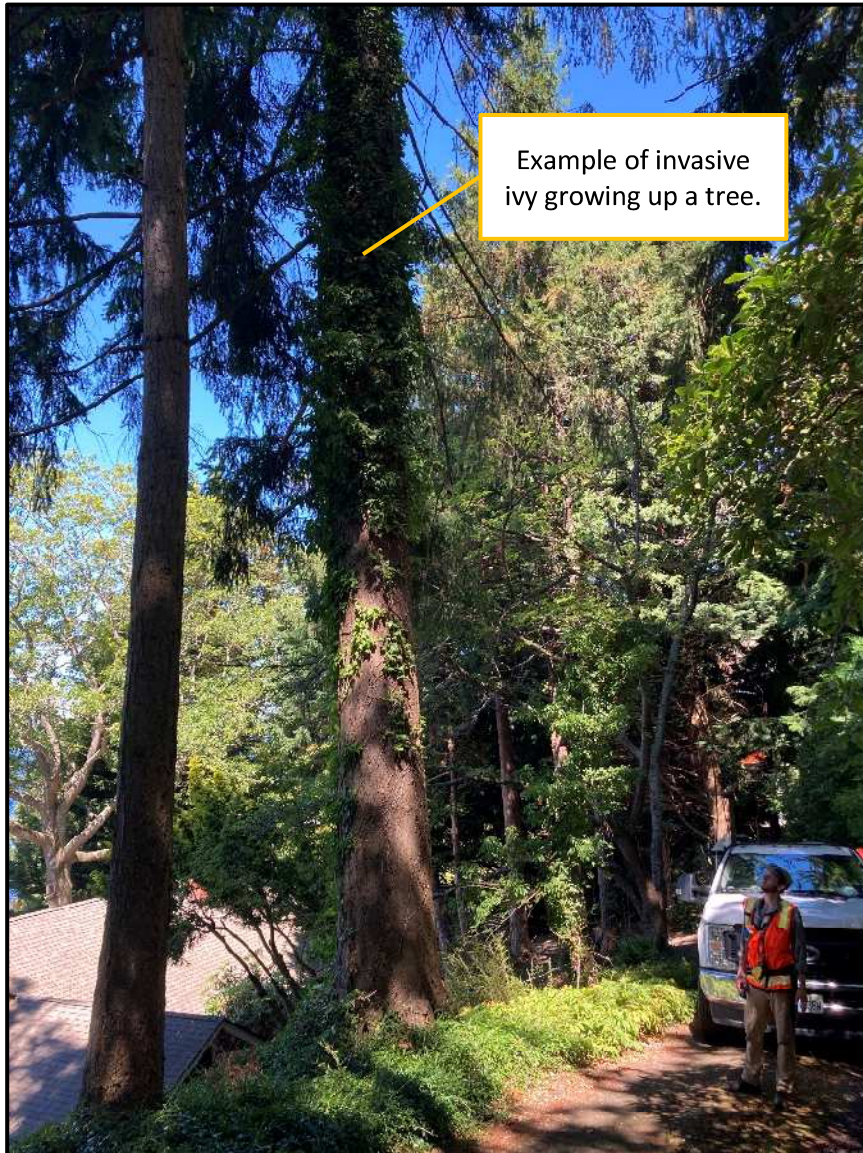


Photo 1. Tree 130 is an exceptional tree with significant vines growing up the main stem. Management of invasive species is easier prior to construction.



Photo 2. Tree 106 is causing significant damage to the existing driveway.



Photo 4. Oak tree near existing building and hardscape.

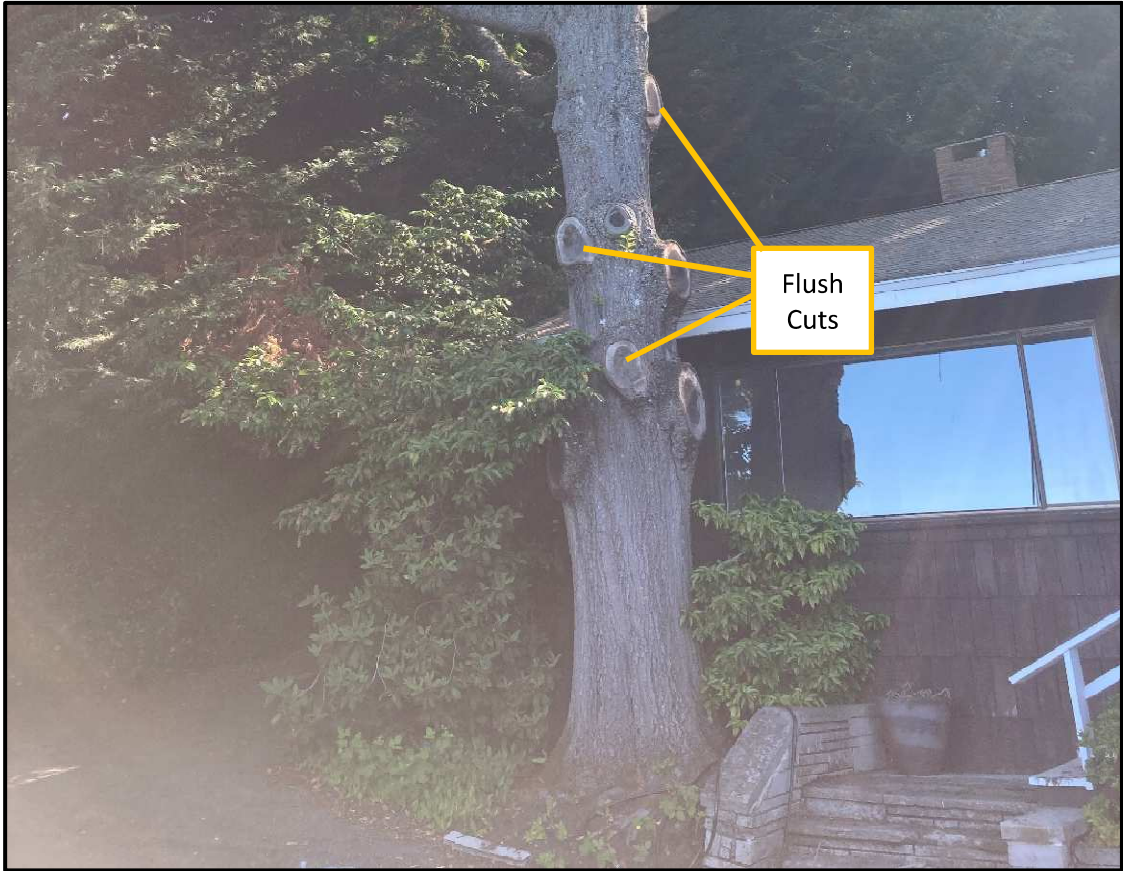


Photo 5. Improper pruning on tree 107.



Photo 6. Major damage to tree 119. The tree overall is in poor condition and is not recommended for retention.

Appendix D Assumptions & Limiting Conditions

- 1 Consultant assumes that the site and its use do not violate, and is in compliance with, all applicable codes, ordinances, statutes, or regulations.
- 2 The consultant may provide a report or recommendation based on published municipal regulations. The consultant assumes that the municipal regulations published on the date of the report are current municipal regulations and assumes no obligation related to unpublished city regulation information.
- 3 Any report by the consultant and any values expressed therein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.
- 4 All photographs included in this report were taken by Tree Solutions, Inc. during the documented site visit, unless otherwise noted. Sketches, drawings, and photographs (included in, and attached to, this report) are intended as visual aids and are not necessarily to scale. They should not be construed as engineering drawings, architectural reports, or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by the consultant as to the sufficiency or accuracy of the information.
- 5 Unless otherwise agreed, (1) information contained in any report by consultant covers only the items 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, climbing, or coring.
- 6 These findings are based on the observations and opinions of the authoring arborist, and do not provide guarantees regarding the future performance, health, vigor, structural stability, or safety of the plants described and assessed.
- 7 Measurements are subject to typical margins of error, considering the oval or asymmetrical cross-section of most trunks and canopies.
- 8 Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.
- 9 Our assessments are made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

Appendix E Methods

Measuring

We measured the diameter of each tree at 54 inches above grade, diameter at standard height (DSH). If a tree had multiple stems, we measured each stem individually at standard height and determined a single-stem equivalent diameter by using the method outlined in the Guide for Plant Appraisal, 10th Edition Second Printing published by the Council of Tree and Landscape Appraisers. A tree is regulated based on this single-stem equivalent diameter value. Because this value is calculated in the office following field work, some unregulated trees may be included in our data set. These trees are included in the tree table for informational purposes only and not factored into tree totals discussed in this report.

Tagging

We tagged each on-site tree with a circular aluminum tag at eye level. We assigned each tree a numerical identifier on our map and in our tree table, corresponding to this tree tag. We used alphabetical identifiers for trees off-site.

Evaluating

We evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts. An understanding of the uniform stress allows the arborist to make informed judgments about the condition of a tree.

Rating

When rating tree health, I took into consideration crown indicators such as foliar density, size, color, stem and shoot extensions. When rating tree structure, I evaluated the tree for form and structural defects, including past damage and decay. Tree Solutions has adapted our ratings based on the Purdue University Extension formula values for health condition (*Purdue University Extension bulletin FNR-473-W - Tree Appraisal*). These values are a general representation used to assist arborists in assigning ratings.

Health

Excellent - Perfect specimen with excellent form and vigor, well-balanced crown. Normal to exceeding shoot length on new growth. Leaf size and color normal. Trunk is sound and solid. Root zone undisturbed. No apparent pest problems. Long safe useful life expectancy for the species.

Good - Imperfect canopy density in few parts of the tree, up to 10% of the canopy. Normal to less than $\frac{3}{4}$ typical growth rate of shoots and minor deficiency in typical leaf development. Few pest issues or damage, and if they exist, they are controllable, or tree is reacting appropriately. Normal branch and stem development with healthy growth. Safe useful life expectancy typical for the species.

Fair - Crown decline and dieback up to 30% of the canopy. Leaf color is somewhat chlorotic/necrotic with smaller leaves and "off" coloration. Shoot extensions indicate some stunting and stressed growing conditions. Stress cone crop clearly visible. Obvious signs of pest problems contributing to lesser condition, control might be possible. Some decay areas found in main stem and branches. Below average safe useful life expectancy

Poor - Lacking full crown, more than 50% decline and dieback, especially affecting larger branches. Stunting of shoots is obvious with little evidence of growth on smaller stems. Leaf size and color

reveals overall stress in the plant. Insect or disease infestation may be severe and uncontrollable. Extensive decay or hollows in branches and trunk. Short safe useful life expectancy.

Structure

Excellent - Root plate undisturbed and clear of any obstructions. Trunk flare has normal development. No visible trunk defects or cavities. Branch spacing/structure and attachments are free of any defects.

Good - Root plate appears normal, with only minor damage. Possible signs of root dysfunction around trunk flare. Minor trunk defects from previous injury, with good closure and less than 25% of bark section missing. Good branch habit; minor dieback with some signs of previous pruning. Codominant stem formation may be present, requiring minor corrections.

Fair - Root plate reveals previous damage or disturbance. Dysfunctional roots may be visible around the main stem. Evidence of trunk damage or cavities, with decay or defects present and less than 30% of bark sections missing on trunk. Co-dominant stems are present. Branching habit and attachments indicate poor pruning or damage, which requires moderate corrections.

Poor - Root plate disturbance and defects indicate major damage, with girdling roots around the trunk flare. Trunk reveals more than 50% of bark section missing. Branch structure has poor attachments, with several structurally important branches dead or broken. Canopy reveals signs of damage or previous topping or lion-tailing, with major corrective action required.

Appendix F Tree Protection Specifications

The following is a list of protection measures that must be employed before, during and after construction to ensure the long-term viability of retained trees.

1. **Project Arborist:** The project arborists shall at minimum have an International Society of Arboriculture (ISA) Certification and ISA Tree Risk Assessment Qualification.
2. **Recommended Limits of Disturbance (RLOD):** The city of Mercer Island requires a recommended limits of disturbance (RLOD) of 8-12x the diameter of the tree. In some cases, the RLOD may extend outside tree protection fencing. Work within the RLOD must be approved and monitored by the project arborist.
3. **Tree Protection Fencing:** Tree protection shall consist of 6-foot chain-link fencing installed at the RLOD as approved by the project arborist. Fence posts shall be anchored into the ground or bolted to existing hardscape surfaces.
 - a. Where trees are being retained as a group the fencing shall encompass the entire area including all landscape beds or lawn areas associated with the grove.
 - b. Per arborist approval, RLOD fencing may be placed at the edge of existing hardscape within the RLOD to allow for staging and traffic.
 - c. Where work is planned within the RLOD, install fencing at edge of RLOD and move to limits of disturbance at the time that the work within the RLOD is planned to occur. This ensures that work within the RLOD is completed to specification.
 - d. Where trees are protected at the edge of the project boundary, construction limits fencing shall be incorporated as the boundary of tree protection fencing.
4. **Access Beyond Tree Protection Fencing:** In areas where work such as installation of utilities is required within the RLOD, a locking gate will be installed in the fencing to facilitate access. The project manager or project arborist shall be present when tree protection areas are accessed.
5. **Tree Protection Signage:** Tree protection signage shall be affixed to fencing every 20 feet. Signage shall be fluorescent, at least 2' x 2' in size, with 3" tall text. Signage will note: "Tree Protection Area – Do Not Enter: Entry into the tree protection area is prohibited unless authorized by the project manager." Signage shall include the contact information for the project manager and instructions for gaining access to the area.
6. **Filter / Silt Fencing:** Filter / silt fencing within the RLOD of retained trees shall be installed in a manner that does not sever roots. Install so that filter / silt fencing sits on the ground and is weighed in place by sandbags or gravel. Do not trench to insert filter / silt fencing into the ground.
7. **Monitoring:** The project arborist shall monitor all ground disturbance at the edge of or within the RLOD, including where the RLOD extends beyond the tree protection fencing.
8. **Soil Protection:** No parking, foot traffic, materials storage, or dumping (including excavated soils) are allowed within the RLOD. Heavy machinery shall remain outside of the RLOD. Access to the tree protection area will be granted under the supervision of the project arborist. If project arborist allows, heavy machinery can enter the area if soils are protected from the load. Acceptable methods of soil protection include applying 3/4-inch plywood over 4 to 6 inches of wood chip mulch or use of AlturnaMats® (or equivalent product approved by the project arborist). Retain existing paved surfaces within or at the edge of the RLOD for as long as possible.
9. **Soil Remediation:** Soil compacted within the RLOD of retained trees shall be remediated using pneumatic air excavation according to a specification produced by the project arborist.
10. **Canopy Protection:** Where fencing is installed at the limits of disturbance within the RLOD, canopy management (pruning or tying back) shall be conducted to ensure that vehicular traffic does not

damage canopy parts. Exhaust from machinery shall be located five feet outside the dripline of retained trees. No exhaust shall come in contact with foliage for prolonged periods of time.

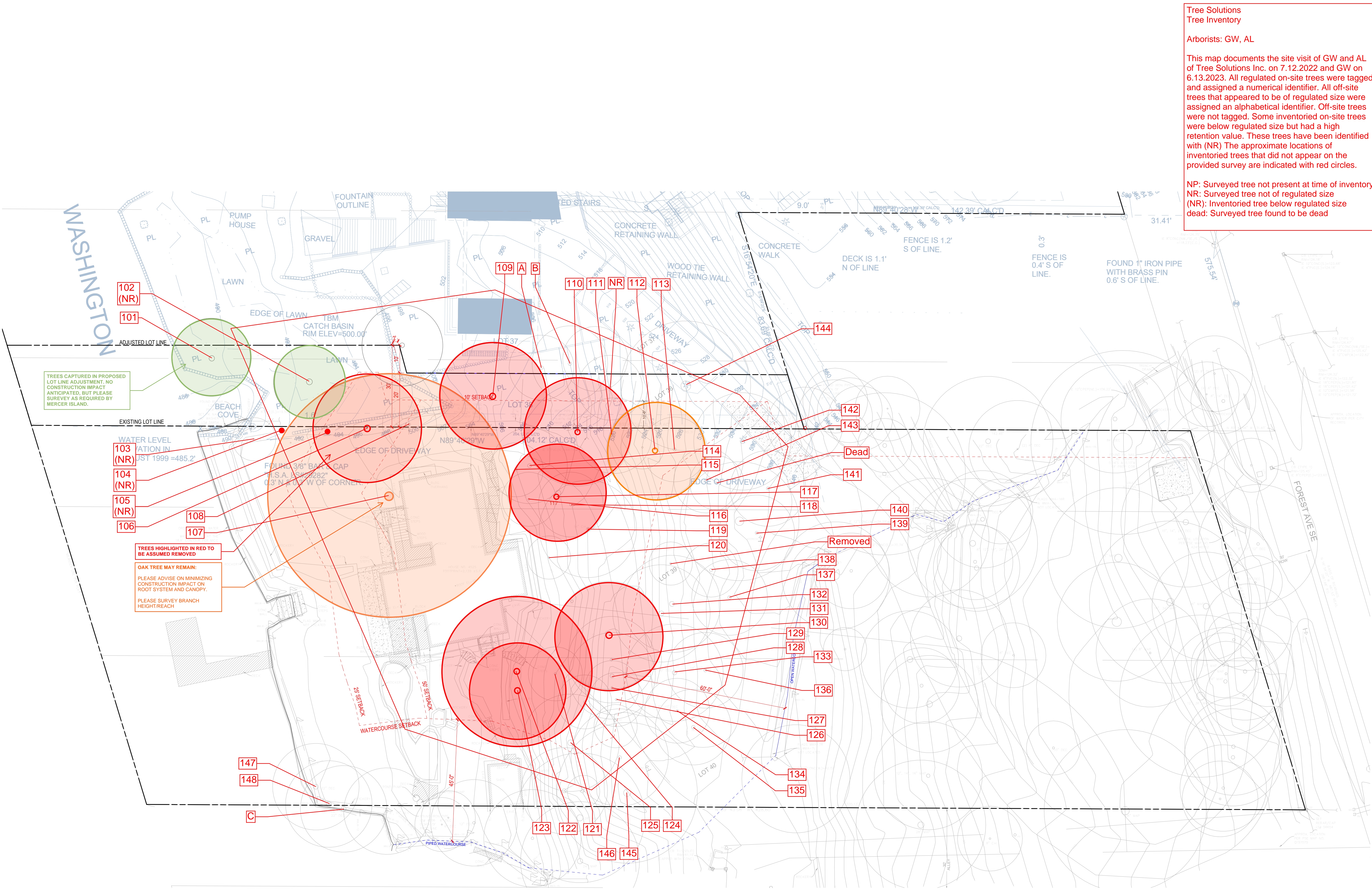
11. **Duff/Mulch:** Apply 6 inches of arborist wood chip mulch or hog fuel over bare soil within the RLOD to prevent compaction and evaporation. RLOD shall be free of invasive weeds to facilitate mulch application. Keep mulch 1 foot away from the base of trees and 6 inches from retained understory vegetation. Retain and protect as much of the existing duff and understory vegetation as possible.
12. **Excavation:** Excavation done at the edge of or within the RLOD shall use alternative methods such as pneumatic air excavation or hand digging. If heavy machinery is used, use flat front buckets with the project arborist spotting for roots. When roots are encountered, stop excavation and cleanly sever roots. The project arborist shall monitor all excavation done within the RLOD.
13. **Fill:** Limit fill to 1 foot of uncompacted well-draining soil, within the RLOD of retained trees. In areas where additional fill is required, consult with the project arborist. Fill must be kept at least 1 foot from the trunks of trees.
14. **Root Pruning:** Limit root pruning to the extent possible. All roots shall be pruned with a sharp saw making clean cuts. Do not fracture or break roots with excavation equipment.
15. **Root Moisture:** Root cuts and exposed roots shall be immediately covered with soil, mulch, or clear polyethylene sheeting and kept moist. Water to maintain moist condition until the area is back filled. Do not allow exposed roots to dry out before replacing permanent back fill.
16. **Hardscape Removal:** Retain hardscape surfaces for as long as practical. Remove hardscape in a manner that does not require machinery to traverse newly exposed soil within the RLOD. Where equipment must traverse the newly exposed soil, apply soil protection as described in section 8. Replace fencing at edge of RLOD if soil exposed by hardscape removal will remain for any period of time.
17. **Tree Removal:** All trees to be removed that are located within the RLOD of retained trees shall not be ripped, pulled, or pushed over. The tree should be cut to the base and the stump either left or ground out. A flat front bucket can also be used to sever roots around all sides of the stump, or the roots can be exposed using hydro or air excavation and then cut before removing the stump.
18. **Irrigation:** Retained trees with soil disturbance within the RLOD will require supplemental water from June through September. Acceptable methods of irrigation include drip, sprinkler, or watering truck. Trees shall be watered three times per month during this time.
19. **Pruning:** Pruning required for construction and safety clearance shall be done with a pruning specification provided by the project arborist in accordance with American National Standards Institute ANSI-A300 2017 Standard Practices for Pruning. Pruning shall be conducted or monitored by an arborist with an ISA Certification.
20. **Plan Updates:** All plan updates or field modification that result in impacts within the RLOD or change the retained status of trees shall be reviewed by the senior project manager and project arborist prior to conducting the work.
21. **Materials:** Contractor shall have the following materials onsite and available for use during work in the RLOD:
 - **Sharp and clean bypass hand pruners**
 - **Sharp and clean bypass loppers**
 - **Sharp hand-held root saw**
 - **Reciprocating saw with new blades**
 - **Shovels**
 - **Trowels**
 - **Clear polyethylene sheeting**
 - **Burlap**
 - **Water**

**Tree Solutions
Tree Inventory**

Arborists: GW, AL

This map documents the site visit of GW and AL of Tree Solutions Inc. on 7.12.2022 and GW on 6.13.2023. All regulated on-site trees were tagged and assigned a numerical identifier. All off-site trees that appeared to be of regulated size were assigned an alphabetical identifier. Off-site trees were not tagged. Some inventoried on-site trees were below regulated size but had a high retention value. These trees have been identified with (NR) The approximate locations of inventoried trees that did not appear on the provided survey are indicated with red circles.

NP: Surveyed tree not present at time of inventory
NR: Surveyed tree not of regulated size
(NR): Inventoried tree below regulated size
Dead: Surveyed tree found to be dead



TREES CAPTURED IN PROPOSED LOT LINE ADJUSTMENT, NO CONSTRUCTION IMPACT ANTICIPATED, BUT PLEASE SURVEY AS REQUIRED BY MERCER ISLAND.

- 103 (NR)
- 104 (NR)
- 105 (NR)
- 106
- 107
- 108

TREES HIGHLIGHTED IN RED TO BE ASSUMED REMOVED

OAK TREE MAY REMAIN:
PLEASE ADVISE ON MINIMIZING CONSTRUCTION IMPACT ON ROOT SYSTEM AND CANOPY.
PLEASE SURVEY BRANCH HEIGHT/REACH

stamp/seal:

project architect: TK
project manager: ER
drawn by: ER
checked by: QC
job no.: 22017

revisions:

no.: date: description:

NOT FOR CONSTRUCTION

SCHEMATIC DESIGN

title:

SITE PLAN

sheet:

A1.00

DSH (Diameter at Standard Height) is measured 4.5 feet above grade, or as specified in the Guide for Plant Appraisal, 10th Edition, published by the Council of Tree and Landscape Appraisers.

DSH for multi-stem trees are noted as a single stem equivalent, which is calculated using the method defined in the Guide for Plant Appraisal, 10th Edition.

Letters are used to identify trees on neighboring property with overhanging canopies.

Minimum Limit of Disturbance (MLOD) is defined as 5 times trunk diameter or 6 feet, whichever is greater.

Recommended Limit of Disturbance (RLOD) is 8 times trunk diameter or greater depending on tree species and/or condition.

Dripline is measured from the center of the tree to the outermost extent of the canopy.

| Tree ID | Scientific Name | Common Name | DSH (inches) | DSH Multistem | Health Condition | Structural Condition | Exceptional Threshold | Exceptional | 24-Inch DSH or Greater | MLOD (feet) | RLOD (feet) | Proposed Action | Replacement Trees | Notes |
|---------|-------------------------------------|--------------------------|--------------|-----------------------------------|------------------|----------------------|-----------------------|-------------|------------------------|-------------|-------------|-----------------|-------------------|--|
| 101 | <i>Pinus contorta</i> 'contorta' | Shore Pine | 17.1 | | Good | Good | 12.0 | Exceptional | - | 7 | 11 | Retain | 0 | Codominant at 15 feet, in property line adjustment |
| 102 | <i>Photinia x fraseri</i> | Fraser photinia | 7.9 | 4,1,2,6,2, 3,2,3,4,2, 5,2,5 | Good | Good | - | | - | 6 | 5 | Retain | 0 | Shaded by adjacent Leyland Cypress, pt to north |
| 103 | <i>Pinus thunbergii</i> | Japanese black pine | 9.0 | | Good | Good | - | | - | 6 | 6 | Remove | 1 | Pruned in Japanese style, high retention value |
| 104 | <i>Acer griseum</i> | Paperbark Maple | 5.8 | 4,6,3,6 | Good | Fair | 12.0 | | - | 6 | 4 | Remove | 1 | Pt lean to west suppressed by leyland, care when removing leyland |
| 105 | <i>Pinus paviflora</i> | Japanese white pine | 6.1 | | Good | Fair | - | | - | 6 | 4 | Remove | 1 | Suppressed by Leyland Cypress |
| 106 | <i>Cuprocyparis leylandii</i> | Leyland cypress | 38.3 | | Good | Good | - | Exceptional | Yes | 16 | 26 | Remove | 6 | Significant driveway conflicts |
| 107 | <i>Quercus veluntia</i> | Eastern black oak | 36.6 | | Fair | Fair | 30.0 | Exceptional | Yes | 15 | 24 | Remove | 6 | Black oak, several limbs removed, some with flush cuts, some upwards of 13 inches, some tip dieback, lowest east limb 19 feet. |
| 108 | <i>Prunus lusitanica</i> | Portuguese cherry laurel | 12.4 | | Good | Fair | - | | - | 6 | 8 | Remove | 2 | Suppressed by adjacent Leyland Cypress, sapsucker damage, adjacent driveway |
| 109 | <i>Cuprocyparis leylandii</i> | Leyland cypress | 29.0 | | Good | Good | - | | Yes | 12 | 19 | Remove | 3 | |
| 110 | <i>Cuprocyparis leylandii</i> | Leyland cypress | 26.8 | | Good | Good | - | | Yes | 11 | 18 | Remove | 3 | Phototropic lean to west |
| 111 | <i>Thuja plicata</i> | Western Redcedar | 11.0 | | Good | Good | 30.0 | | - | 6 | 7 | Remove | 2 | Grove condition |
| 112 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 24.2 | | Good | Good | 30.0 | | Yes | 10 | 16 | Remove | 3 | Grove condition |
| 113 | <i>Tsuga heterophylla</i> | Western Hemlock | 15.3 | | Good | Good | 24.0 | | - | 6 | 10 | Remove | 2 | |
| 114 | <i>Pinus nigra</i> | Austrian Black Pine | 15.5 | | Good | Good | 24.0 | | - | 6 | 10 | Remove | 2 | Somewhat suppressed |
| 115 | <i>Tsuga heterophylla</i> | Western Hemlock | 10.0 | | Good | Fair | 24.0 | | - | 6 | 7 | Remove | 2 | Asymmetric canopy to west, phototropic lean to west |
| 116 | <i>Picea glehnii</i> | Glehn's spruce | 13.6 | | Good | Good | - | | - | 6 | 9 | Remove | 2 | |
| 117 | <i>Thuja plicata</i> | Western Redcedar | 25.3 | | Good | Good | 30.0 | | Yes | 11 | 17 | Remove | 3 | Mechanical damage at base |
| 118 | <i>Larix occidentalis</i> | Western larch | 14.2 | | Fair | Good | - | | - | 6 | 9 | Remove | 2 | |

Table of Trees
4467 Forest Ave SE, Mercer Island, WA 98040

Arborist: George White
Date of Inventory: 6.13.2023
Table Revised: 2.26.2024

| Tree ID | Scientific Name | Common Name | DSH (inches) | DSH Multistem | Health Condition | Structural Condition | Exceptional Threshold | Exceptional | 24-Inch DSH or Greater | MLOD (feet) | RLOD (feet) | Proposed Action | Replacement Trees | Notes |
|---------|---|------------------|--------------|---------------------|------------------|----------------------|-----------------------|-------------|------------------------|-------------|-------------|-----------------|-------------------|--|
| 119 | <i>Prunus spp. (serrula, serrulata)</i> | Flowering Cherry | 17.0 | 7.3,11.6,10.1 | Poor | Poor | 23.0 | | - | 7 | 11 | Remove | 2 | Very little live foliage, large stem broken, east stem mostly dead |
| 120 | <i>Taxus baccata</i> | English yew | 10.8 | 4.3,3.9,6.9,4.7,3.7 | Good | Fair | - | | - | 6 | 7 | Remove | 2 | Malpruned for building clearance. Rare 'golden' cultivar |
| 121 | <i>Picea glehnii</i> | Glehn's spruce | 10.1 | | Poor | Fair | - | | - | 6 | 7 | Retain | 0 | Nearly dead |
| 122 | <i>Pinus ponderosa</i> | Ponderosa Pine | 26.8 | | Good | Good | 30.0 | | Yes | 11 | 18 | Remove | 3 | Previously topped at 40 feet with multiple reiterations |
| 123 | <i>Thuja plicata</i> | Western Redcedar | 32.5 | | Fair | Fair | 30.0 | Exceptional | Yes | 14 | 22 | Remove | 6 | Low lcr, thin foliage |
| 124 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 10.6 | | Good | Fair | 30.0 | | - | 6 | 7 | Remove | 2 | Suppressed, low lcr, asymmetric canopy |
| 125 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 29.5 | | Good | Good | 30.0 | | Yes | 12 | 20 | Retain | 0 | On slope, compact soils, |
| 126 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 10.6 | | Good | Good | 30.0 | | - | 6 | 7 | Remove | 2 | |
| 127 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 11.0 | | Good | Good | 30.0 | | - | 6 | 7 | Remove | 2 | Subdominant |
| 128 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 17.3 | | Good | Good | 30.0 | | - | 7 | 12 | Remove | 2 | |
| 129 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 13.6 | | Good | Good | 30.0 | | - | 6 | 9 | Remove | 2 | |
| 130 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 31.3 | | Good | Good | 30.0 | Exceptional | Yes | 13 | 21 | Remove | 6 | Ivy on trunk, hypericum at base, on top of slope |
| 131 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 22.7 | | Good | Good | 30.0 | | - | 9 | 15 | Remove | 2 | |
| 132 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 23.4 | | Good | Good | 30.0 | | - | 10 | 16 | Remove | 2 | |
| 133 | <i>Robinia pseudoacacia</i> | Black locust | 21.1 | | Good | Fair | - | | - | 9 | 14 | Retain | 0 | Prominent buttess roots, not tagged, decay at base |
| 134 | <i>Cercidiphyllum japonicum</i> | Katsura | 16.5 | 10.9,10.5,6.5 | Good | Good | 30.0 | | - | 7 | 11 | Retain | 0 | 3 stems origination at base with narrow unions |
| 135 | <i>Prunus cerasifera</i> | Flowering Plum | 15.9 | | Good | Fair | 21.0 | | - | 7 | 11 | Retain | 0 | Heavy epicormic sprouting, phototropic lean to southeast |
| 136 | <i>Fagus sylvatica</i> | European Beech | 17.5 | | Fair | Good | 30.0 | | - | 7 | 12 | Retain | 0 | Somewhat thin foliage, partially shaded out |
| 137 | <i>Pinus sylvestris</i> | Scot's Pine | 18.6 | | Fair | Good | 24.0 | | - | 8 | 12 | Retain | 0 | Somewhat thin foliage, partially shaded |
| 138 | <i>Pinus sylvestris</i> | Scot's Pine | 16.7 | | Good | Good | 24.0 | | - | 7 | 11 | Retain | 0 | Thin foliage, exposed surface roots |
| 139 | <i>Pinus sylvestris</i> | Scot's Pine | 16.9 | | Good | Good | 24.0 | | - | 7 | 11 | Retain | 0 | |
| 140 | <i>Cedrus deodara</i> | Deodar Cedar | 39.7 | 26.4,27.6,11 | Good | Good | 30.0 | Exceptional | Yes | 17 | 26 | Retain | 0 | Phototropic crown to east |
| 141 | <i>Metasequoia glyptostroboides</i> | Dawn redwood | 13.4 | | Good | Good | - | | - | 6 | 9 | Retain | 0 | Tridominant at 3 feet with narrow unions |
| 142 | <i>Thuja plicata</i> | Western Redcedar | 23.7 | | Good | Good | 30.0 | | - | 10 | 16 | Retain | 0 | Slightly suppressed |
| 143 | <i>Abies grandis</i> | Grand Fir | 18.8 | | Good | Good | 24.0 | | - | 8 | 13 | Retain | 0 | New driveway adjacent |



Table of Trees
4467 Forest Ave SE, Mercer Island, WA 98040

Arborist: George White
Date of Inventory: 6.13.2023
Table Revised: 2.26.2024

| Tree ID | Scientific Name | Common Name | DSH (inches) | DSH Multistem | Health Condition | Structural Condition | Exceptional Threshold | Exceptional | 24-Inch DSH or Greater | MLOD (feet) | RLOD (feet) | Proposed Action | Replacement Trees | Notes |
|----------------|------------------------------|----------------------|--------------|---------------|------------------|----------------------|-----------------------|-------------|------------------------|-------------|-------------|-----------------|-------------------|---|
| 144 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 44.9 | | Good | Good | 30.0 | Exceptional | Yes | 19 | 30 | Retain | 0 | Ivy on trunk, recent soil disturbance near base |
| 145 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 26.8 | | Good | Good | 30.0 | | Yes | 11 | 18 | Retain | 0 | Sept base with corrected lean, swell at base, very old tree |
| 146 | <i>Pseudotsuga menziesii</i> | Douglas-fir | 15.2 | | Good | Good | 30.0 | | - | 6 | 10 | Retain | 0 | Ivy on trunk, holly, ivy, blackberry at base |
| 147 | <i>Betula pendula</i> | European White Birch | 20.0 | | Good | Good | 24.0 | | - | 8 | 13 | Retain | 0 | DSH estimated due to access restrictions, distinct lean to northwest, on lakeside |
| 148 | <i>Betula pendula</i> | European White Birch | 20.6 | | Good | Good | 24.0 | | - | 9 | 14 | Retain | 0 | May be shared tree, growing on lakeside |
| Off-site Trees | | | | | | | | | | | | | | |
| A | <i>Thuja plicata</i> | Western Redcedar | 15.0 | | Good | Good | 30.0 | | - | 6 | 10 | Retain | - | Grove condition |
| B | <i>Thuja plicata</i> | Western Redcedar | 15.8 | | Good | Good | 30.0 | | - | 7 | 11 | Retain | - | Grove condition |
| C | <i>Betula pendula</i> | European White Birch | 20.0 | | Good | Good | 24.0 | | - | 8 | 13 | Retain | - | |