



Mike Boyle
3603 West Mercer Way
Mercer Island, WA

September 2, 2017

Scope of Work – You have asked me to assist you in satisfying the tree related submittal requirements associated with the City of Mercer Island’s development permit process for the above addressed property. You provided me with an ‘Intake Comments (Tree)’ checklist that detailed the submittal requirements. The checklist details the need for an inventory of all ‘Regulated’ trees, which is defined as any deciduous tree greater than 6” DBH (Diameter at Breast Height, or 4.5’ above grade). This includes trees on the subject site as well as trees within 15’ of the subject property, or in the ‘Park’, or in the Right of Way (ROW). A Tree Site Plan detailing existing tree locations and driplines is required. The Tree Site plan should include a detail of trees to be removed as well as Tree Protection Fencing (TPF) installation details.

Methodology - The methods used for this assessment are as outlined in *Tree Risk Assessment* by Julian Dunster and as adopted by the International Society of Arboriculture (ISA). While the specific task of this report is to better understand the potential impacts to the trees as a result of construction related excavation and construction, the guiding principles of risk assessment apply here as well. The end goal of most assessments is to provide the owner or manager of the tree(s) with factual information, enabling them to make decisions about the management of the tree(s). Tree risk assessment involves identifying potential failure of trees, or parts of trees, and the potential target(s). Risk assessment is the subjective analysis of the potential of failure and impact, together with an assessment of the likely consequences of the impact. Assessing potential construction related impacts includes consideration of potential impacts to the root zone of the existing trees.

All of the trees detailed on the inventory have had a numbered metal tag attached to the individual tree. The tree tag number is detailed on the Tree Site Plan. The Tree Inventory is attached.

Level II Basic Assessment includes inspection of the lower trunk of the tree, the root collar, and the canopy of the tree, as best as can be done from the ground. Basic Assessment does not include climbing the tree or soil probing or any other invasive assessment.

Findings and Observations – The site is typical of many steep-slope Mercer Island sites, with frontage to Lake Washington; steep slopes infested with ivy and other bramble. The tree canopy is primarily Big Leaf Maple and Alder that is dominated by ivy. The site has one large Western Red Cedar tree. All of the above referenced trees are located on the steep slope above the existing residence. There are two (2) ornamental deciduous trees located near the SW corner of the existing structure and near the lake front.

There are four (4) trees growing on-site, on the slope; Tree #562, 563, 564, 567. Tree # 562 is a large Big leaf maple growing just up the slope a few feet above the base of the slope. It is leaning heavily downhill, out and over the existing structure. The tree has multiply co-dominant stems and has the appearance of structural defects in the root collar. This tree is located on a steep slope which made it difficult to thoroughly inspect the collar. The risk of partial to complete failure is High and the consequences could be severe.

Tree #563 is also a Big Leaf Maple with three stems measuring 4" to 10" in diameter. The tree locations were not surveyed so it is difficult to know the exact property line in this steep slope area. The tree might be growing on the property line. The tree leans downhill and is dominated with ivy.

Tree #564 is a 36" DBH Western Red Cedar dominated by ivy and overshadowed by the Big Leaf Maple canopy around it. There is a void under the tree that I probed. Such voids are common in Western Red Cedar and may be indicative of decay in that portion of the tree. Further assessment tools are available that could attempt to quantify the extent of the suspected decay. The tree has a live crown ratio (LCR) of 25% or less. LCR is a calculation of the percentage of the overall tree height that still has live branches growing from it. The lower the LCR in a Western Red Cedar, the higher the likelihood of wind related damage; either partial failure of the top or failure of co-dominant stems. I was not able to determine if this particular cedar tree had previously been topped, by intent or by weather.

Tree #567 is a multi-stem Big Leaf Maple with eight (8) stems each measuring 8" to 10". This tree is heavily infested with ivy and has a LCR estimated to be 25%.

Tree # 568 appears to be growing just off-site to the south. It is a Big Leaf Maple with only a 15% LCR and dominated by ivy.

All of the above trees are dominated by ivy which has climbed out on the dead or defoliated limbs of the host tree. This appears to create a larger canopy than what would exist if the ivy and dead limbs were removed. The canopy circles detailed on the site-plan were estimated due to inability to see above the ivy canopy to accurately measure the real canopy.

Tree #569 is a Big Leaf Maple located in the ROW near the NW corner of the 'encroachment structure'. This tree was tagged as being typical of several trees located in this partially level, partially sloped ROW area. If the structure is removed, caution should be given to the roots of tree #569, though it has broken tops and could be a candidate for removal. If that area will be used to park vehicles or for people to congregate, a risk assessment of that entire stand of trees might be in order. I understand these trees to be in the ROW and outside of your parcel. The area around the 'Encroachment structure' and steep slope will need TPF (Tree Protection Fencing).

Tree #570 through #578 appear to be growing on what has been called the 'Park Property'. Tag #574 and #577 were not used so the 'Park' trees total seven (7). This area is especially steep and

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access to the individual trees was especially difficult. The trees were tagged and sufficient ivy was removed to at least make a cursory observation of the lower trunk on at least one side of each tree. As detailed in the attached Tree Inventory, the trees are primarily Big leaf Maple with heavy ivy infestation, low LCR's, and lots of dead-wood present in the sparse canopy. There are the remnants of an abandoned tram system in this area.

Tree #565 and #566 appear to be in the ROW just to the east of the subject property, at the top of the slope. Both trees are Alder and both are in poor condition with an estimated 5% LCR. There is lots of dead-wood present.

Conclusions – Tree #562 and 563 should be removed regardless of development or not, both will score a High risk of partial or complete failure in the coming years.

Tree #563 and #564 would need to be removed for the proposed construction. Tree #563 has sufficient structural defects, such that we understand it will not grow stronger and better with time. Tree #564 is rated as being in Poor to Fair condition.

Tree #568, located just off-site, could be retained with limited construction impacts but the structure of the tree is so poor, it would pose a risk to the proposed new garage structure, once completed. If this tree is to be retained, TPF should be installed as close to the limits of disturbance as possible in order to provide for as minimal intrusion into the existing root zone of the tree as possible. When excavation is under way in the vicinity of this tree, any roots encountered should be professionally cut with proper tools and an assessment should be conducted as to the significance of individual roots encountered and severed. Roots that are torn by an excavator often break along the axis of the root and become large entry points for bacteria and decay. A tree professional should be on-site during excavation work.

The 'Park' trees could have the ivy climbers cut so as to stop the climbing infestation. Other structural defects would remain but the likely consequences of a partial or complete failure might be minor as there is no access to this area, therefore limited targets of people or structures. If there are portions of these trees that could strike the proposed structures, further risk assessment would be needed once the structures were completed and/or occupied.

Tree Protection Fencing (TPF) should be installed at the top and bottom of the slope immediately around the 'Encroachment structure' as to provide protection from mobile equipment and from the temptation to place excess soils or other materials thereon, as detailed on the Tree Site plan. TPF for tree #560 and 561 should be installed as detailed on the Tree Site Plan. TPF would not be needed for the "Park' trees provided that no disturbance of soils occurred north of the subject property line, again, as detailed in the Tree Site Plan. Numerical reference to the City of Mercer Island Tree Protection Code is be noted on the Tree Site Plan.

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This report represents what I saw as of my most recent visit to the site. Trees fail, sometimes with little outward indicators. Many of these trees have structural defects that will contribute to additional partial or complete failures in the future. This 'current condition' report is limited to the day of the report.

This report was prepared by Thomas Quigley, ISA certified arborist PN0655A. Tree Risk Assessment Qualified by the International Society of Arboriculture.

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