



Title: Permit Number 2016-ARP-0040, Nor Wes Property  
Site Plan Review, Lake Forest Park, WA

Prepared For: Lee MacArthur  
Parcel #4022903193

Copy to: Andrea Flower, Principal Planner  
Jake Tracy, Assistant Planner  
City of Lake Forest Park Planning & Building Department  
17425 Ballinger Way NE  
Lake Forest Park, Washington 98155

Prepared By: Urban Forestry Services, Inc.  
Kurt Fickeisen  
Registered Consulting Arborist #472  
ISA Certified Arborist® #RM-451A  
ISA Tree Risk Assessment Qualified

Date: October 19, 2016

Attachments: Critical Root Zone Explanation  
General Tree Protection Guidelines  
Assumptions and Limiting Conditions

## Introduction

As requested by the City of Lake Forest Park Planning and Building Department, I reviewed construction plans at the Nor Wes property, parcel #4022903193, 190XX 195th St., Lake Forest Park, WA 98155. A proposed driveway would require removal of Tree # 28 (Figure-1). Modifications to the driveway footprint could preserve Tree #28.

## Findings

Tree #28 is a 29-inch diameter Douglas fir (*Pseudotsuga menziesii*) (Photo-1). The tree is east of Tree #25, an 11-inch diameter big leaf maple (*Acer macrophyllum*) (Photo-2). Current plans call for removal of Tree #28 to provide space for the house driveway (Figure-1).

A previous report submitted by Lake Forest Park Arborist Michael Woodbury states both trees are in good condition and calls for preservation of Tree #28 and Tree #25.

Based on a review of driveway requirements, preserving Tree #25 would require driveway placement to be located 5-feet from the trunk of Tree #28. The root flares of Tree #28

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indicate that large structural roots grow south and northwest of the trunk. Root flare patterns do not indicate roots grow west of the trunk. The tree has a 10-foot radial crown spread, which suggests roots may occupy this area of soil.

While both Tree #25 and #28 appear in good condition at this time, the Douglas fir has a longer life expectancy than the big leaf maple does. In addition, there are other big leaf maples on the property are directly west of Tree #25.

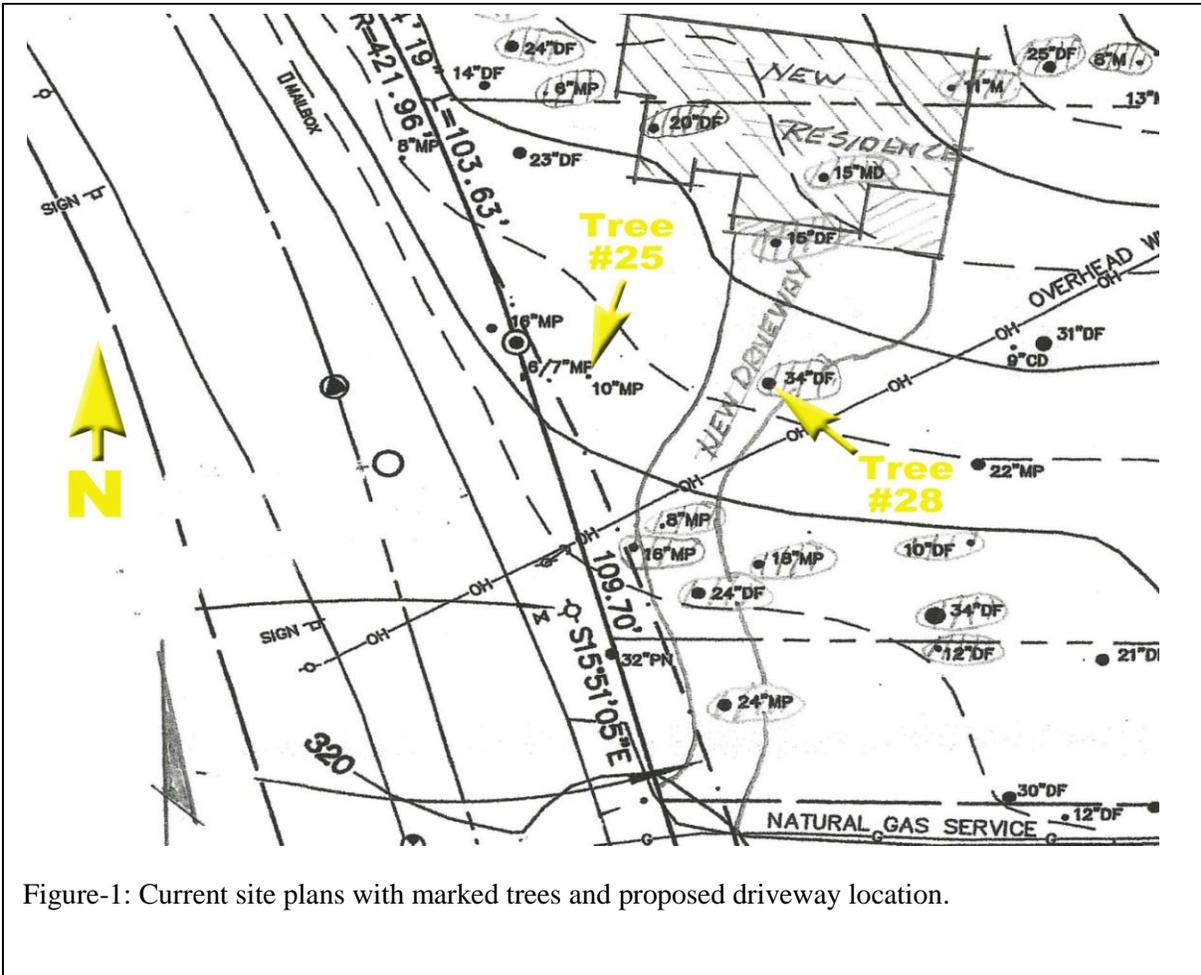


Figure-1: Current site plans with marked trees and proposed driveway location.

## Recommendations

Due to questions regarding root growth west of Douglas fir #28, **hand excavation** to a depth of 2-feet west of the tree should be done to locate and expose significant structural roots. Excavation should be no closer than 7-feet from the trunk because this area is within the Critical Root Zone (see attached Critical Root Zone Explanation).

An arborist should be present during this excavation to confirm the lack of significant structural roots. The arborist can facilitate excavation with an Air Knife or similar device which allows excavation to take place with minimal impact to retained roots.

If no roots greater than 2-inches in diameter are exposed, the eastern edge of the driveway can be placed in this location west of Tree #28. The northern edge of the driveway can be placed 10-feet from the trunk.

If preserving Tree #28 is possible, Tree #25 should be removed due to risks of significant structural root damage during driveway installation.

If preservation of Tree #28 is possible, protection fencing should be installed prior to driveway and site construction. See the General Tree Protection Guidelines attached to this report.

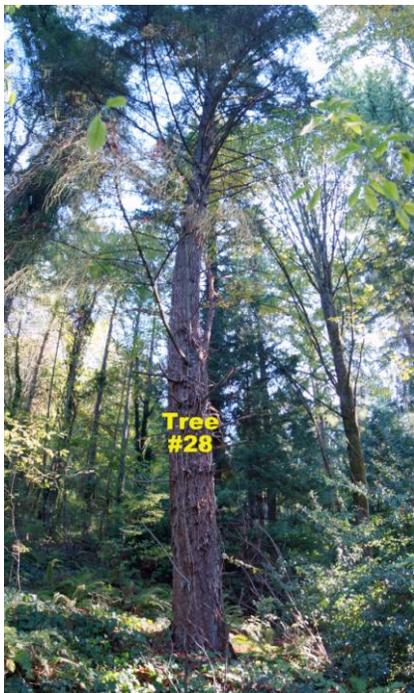


Photo-1: Tree #28, Douglas fir.

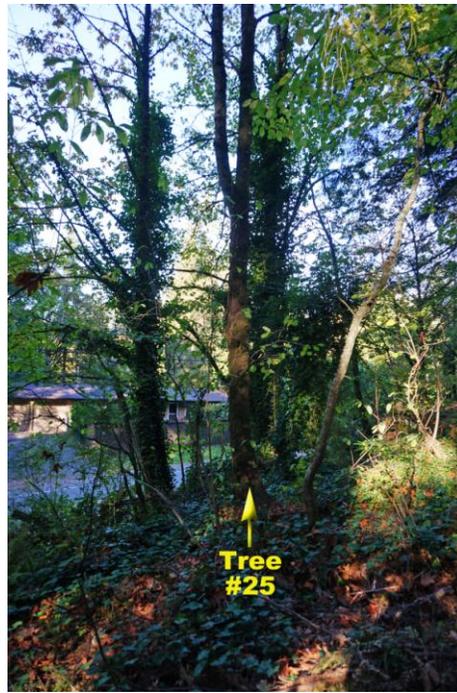


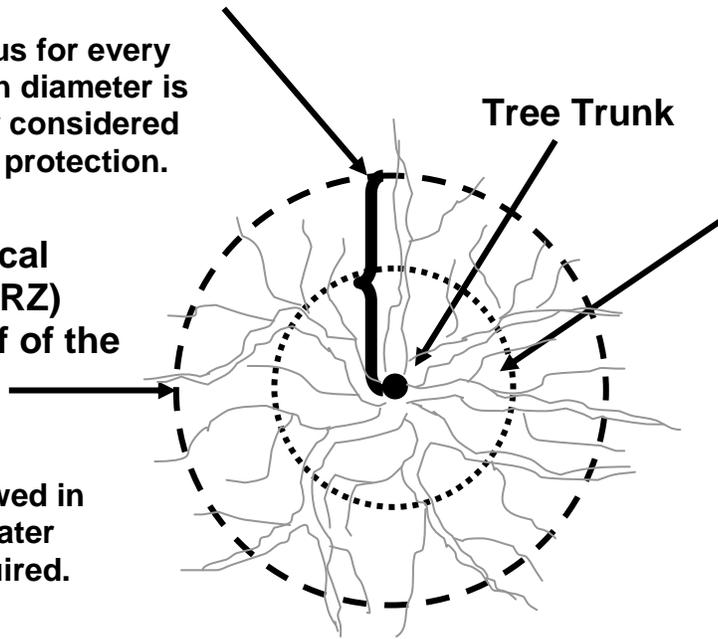
Photo-2: Tree #25, big leaf maple.

Please let us know if you have any questions about this report.

**Critical Root Zone (CRZ) =**  
12" Radius for every Tree inch diameter is generally considered optimum protection.

**Perimeter Critical Root Zone (PCRZ) =** the outer half of the CRZ

The greater the disturbance allowed in this area, the greater Post Care is required.



**Interior Critical Root Zone (ICRZ)**  
= the inner half of the CRZ  
Protecting only this area would cause significant impact to the tree, potentially life threatening, and would require maximum Post Care Treatment to retain the tree. See Post Care Treatment below.

The Critical Root Zone (CRZ) of a tree is established on the basis of the trunk diameter. The CRZ is a circular area which has a radius of 12 inches to every inch diameter of trunk measured at 4.5 feet above grade. Root systems will vary both in depth and spread depending on size of tree, soils, water table, species and other factors. However, this CRZ description is generally accepted in the tree industry. Protecting this entire area should result in no adverse impact to the tree.

The above CRZ drawing has been further differentiated into the 'Perimeter' (PCRZ) and 'Interior' (ICRZ) to help define potential impact and required Post Care. Generally, the full PCRZ is considered the optimum amount of root protection for a tree. As one encroaches into the "Perimeter CRZ, but not into the "Interior CRZ" the greater Post Care the tree would require to remain alive and stable. The 'Interior CRZ is half the radius of the full PCRZ. Disturbance into the ICRZ could destabilize or cause the tree to decline.

The absolute maximum disturbance allowed should leave the 'Interior' CRZ undisturbed if the tree is to have any chance of survival. This 'Interior' CRZ would approximately equal the size of a rootball needed to transplant this tree which in turn would require extensive Post Care and possibly guying. Post Care Treatment includes but may not be limited to; regular irrigation, misting, root treatment with special root hormones, mulching, guying and monitoring for several years.



**Urban Forestry Services, Inc.**  
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**Title: Explanation of Critical Root Zone (CRZ)**  
Source: Urban Forestry Services, Inc  
Jim Barborinas, ISA Certified Arborist PN-0135  
ASCA Registered Consulting Arborist #356,  
Certified Tree Risk Assessor #PNW-0327

Date: 2011

Not to Scale



## General Tree Protection Guidelines

1. These Guidelines pertain to any disturbance, use or activity within the Critical Root Zone of any retained tree on this project. See attached **Critical Root Zone Explanation**. The owner's arborist and general contractor shall meet onsite before any site work begins to discuss and agree on the methods used to protect the retained trees during construction.
2. No soil disturbance shall take place before tree protection fences are installed. All evaluated trees to be retained within these areas are clearly illustrated on the Site Plan. The owner's arborist and contractor shall confirm on site which trees are to be removed and those to be retained. Directional felling of trees to be removed will be completed with great care not to damage retained trees.
3. The **Tree Protection Site Plan** shows the recommended location of the Tree Protection Fence (TPF). Immediately after clearing and grading stakes are set in the field, the owner's arborist, during review and discussion with the contractor will make a final determination on the tree protection requirements depending on construction limits and impact on major roots. The arborist may adjust clearing limits in the field so that, in his/her opinion, tree roots are protected while necessary work can proceed.
4. The Tree Protection Fence (TPF) shall be installed along the clearing limits, with special consideration of the Critical Root Zone (CRZ) of trees to be preserved. The CRZ of a tree is generally described as an area equal to 1-foot radius for every 1-inch diameter of tree. For example, a 10-inch diameter tree has a CRZ of 10-foot radius. Work within that area may be limited to hand work. The Tree Protection Fence (TPF) shall be constructed with a steel posts driven into the ground with 6-ft. chain link fence attached. The arborist upon consultation with the contractor shall determine the placement of the fence and the extent and method of clearing near preserved trees. Additional follow-up determinations may be required later on in the project. See attached **Critical Root Zone Explanation**.
5. Where the CRZ includes an area covered by hardscape, the TPF can be placed along the edge of the hardscape if and until it is removed. After removal, the available CRZ should be backfilled with soil up to 6 inches deep and protected with the TPF.
6. No parking, storage, dumping, or burning of materials is allowed beyond the clearing limits or within the TPF.
7. Tree protection signs shall be attached to the fence only and shall be shown as required on the Site Plan. They should read "Protect Critical Root Zone (CRZ) of trees to be retained. No

soil disturbance, parking, storage, dumping, or burning of materials is allowed beyond the Tree Protection Fence. Work within this area shall be reviewed with and approved by the owner's arborist. Call 360-770-9921 for Questions."

- 8.** Where vehicular access is required within the CRZ of any preserved tree that is not protected with hardscape, the soil shall be protected with 18" of woodchips and/or plywood or metal sheets to protect from soil compaction and damage to roots of retained trees.
- 9.** The Tree Protection Fence will not be moved without authorization by the owner's arborist or City. The Fence shall be left up for the duration of the project.
- 10.** Great care will be exercised when landscaping within the CRZ of any tree. Roots of preserved trees and other vegetation shall not be damaged by planting or irrigation lines. The owner's arborist shall review the Landscape Plan and approve those activities within the CRZ of retained trees
- 11.** The owner's arborist will determine to what extent backfilling is allowed within the CRZ of a preserved tree. Only sandy, gravelly pit run is recommended for backfilling. Grade cuts are usually more detrimental than grade filling within the CRZ.
- 12.** Trees recommended for maintenance and approved by the owner, shall be pruned for deadwood, low hanging limbs, and proper balance, as recommended for safety, clearance or aesthetics. An International Society of Arboriculture Certified Arborist is recommended to perform the pruning. ANSI A300 American Standards for Pruning shall be used. Limbs of retained trees within 10 feet or more, of any power line depending on power line voltage, may only be pruned by a Utility Certified Arborist. This pruning must be coordinated with the local power company or a private company with this certification.
- 13.** Required work may result in the cutting of roots of retained trees. Severed roots of retained trees shall be cut off cleanly with a sharp saw or pruning shears. No pruning paint on trunk or root wounds is recommended. Severed roots shall be covered immediately after final pruning with moist soil or covered with mulch until covered with soil. Excavation equipment operators shall take extreme care not to hook roots and pull them back towards retained trees. This work shall be under the direct supervision of the owner's arborist.
- 14.** If clearing is performed during the summer, supplemental watering and/or mulching over the root systems of preserved trees may be required by the owner's arborist. He or she should be notified in this event. Supplemental watering and mulching over the root systems of root impacted or stressed trees are strongly recommended to compensate for root loss and initiate new root growth. Long periods of slow drip irrigation will be most effective. Water once per week and check soils for at least 12 inches infiltration. This work shall be under the direct supervision of the owner's arborist.
- 15.** Additional tree protection recommendations may be required as needed.

- 16.** The owner's arborist may be required to monitor work when disturbance occurs near retained trees and shall make periodic site visits to report to the owner and city if tree protection guidelines are being followed.
- 17.** The owner's arborist shall make a final site visit to report on retained tree condition following completed work and shall report to the city to release the bond for the retained trees.

# ASSUMPTIONS AND LIMITING CONDITIONS

**Urban Forestry Services, Inc.**  
**15119 McLean Rd.**  
**Mount Vernon, Washington 98273**

## 1. **Limitations of this Assessment**

This Assessment is based on the circumstances and observations as they existed at the time of the site inspection of the Client's Property and the trees inspected by Urban Forestry Services, Inc. and upon information provided by the Client to Urban Forestry Services, Inc. The opinions in this Assessment are given based on observations made and using generally accepted professional judgment, however, because trees and plants are living organisms and subject to change, damage, and disease, the results, observations, recommendations, and analysis took place and no guarantee, warranty, representation, or opinion is offered or made by Urban Forestry Services, Inc. as to the length of the validity of the results, observations, recommendations, and analysis contained within this Assessment. As a result, the Client shall not rely upon this Assessment, save and except for representing the circumstances and observations, analysis, and recommendations that were made as at the date of such inspections. It is recommended that the trees discussed in this Assessment should be re-assessed periodically.

Urban Forestry Services, Inc. shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in our fee schedule and contract of engagement.

Sketches, diagrams, graphs, 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.

## 2. **Reaction of Assessment**

The Assessment carried out was restricted to the Property. No assessment of any other trees or plants has been undertaken by Urban Forestry Services, Inc. Urban Forestry Services, Inc. is not legally liable for any other trees or plants on the Property except those expressly discussed herein. The conclusions of this Assessment do not apply to any areas, trees, plants, or any other property not covered or referenced in this Assessment.

## 3. **Professional Responsibility**

In carrying out this Assessment, Urban Forestry Services, Inc. and any Assessor appointed for and on behalf of Urban Forestry Services, Inc. to perform and carry out the Assessment has exercised a reasonable standard of care, skill, and diligence as would be customarily and normally provided in carrying out this Assessment. The Assessment has been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, discolored foliage, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. Except where specifically noted in the Assessment, none of the trees examined on the property were dissected, cored, probed, or climbed and detailed root crown examinations involving excavation were not undertaken.

While reasonable efforts have been made to ensure that the trees recommended for retention are healthy, no guarantees are offered, or implied, that these trees, or all parts of them will remain standing. It is professionally impossible to predict with absolute certainty the behavior of any single tree or group of trees, or all their component parts, in all given circumstances. Inevitably, a standing tree will always pose some risk. Most trees have the potential to fall, lean, or otherwise pose a danger to property and persons in the event of adverse weather conditions, and this risk can only be eliminated if the tree is removed.

Without limiting the foregoing, no liability is assumed by Urban Forestry Services, Inc. or its directors, officers, employers, contractors, agents, or Assessors for:

- any legal description provided with respect to the Property;
- issues of title and or ownership respect to the Property;
- the accuracy of the Property line locations or boundaries with respect to the Property; and
- the accuracy of any other information provided to Urban Forestry Services, Inc. by the Client or third parties;
- any consequential loss, injury, or damages suffered by the Client or any third parties, including but not limited to replacement costs, loss of use, earnings, and business interruption; and
- the unauthorized distribution of the Assessment.

The total monetary amount of all claims or causes of action the Client may have as against Urban Forestry Services, Inc. including but not limited to claims for negligence, negligent misrepresentation, and breach of contract, shall be strictly limited to solely to the total amount of fees paid by the Client to Urban Forestry Services, Inc. pursuant to the Contract for Services as dated for which this Assessment was carried out. Further, under no circumstance may any claims be initiated or commenced by the Client against Urban Forestry Services, Inc. or any of its directors, officers, employees, contractors, agents, or Assessors, in contract or in tort, more than 12 months after the date of this Assessment.

#### **4. Third Party Liability**

This Assessment was prepared by Urban Forestry Services, Inc. exclusively for the Client. The contents reflect Urban Forestry Services, Inc. best assessment of the trees and plants on the Property in light of the information available to it at the time of preparation of this Assessment. Any use which a third party makes of this Assessment, or any reliance on or decisions made based upon this Assessment, are made a the sole risk of any such third parties. Urban Forestry Services, Inc. accepts no responsibility for any damages or loss suffered by any third party or by the Client as a result of decisions made or actions based upon the use of reliance of this Assessment by any such party.

#### **5. General**

Any plans and/or illustrations in this Assessment are included only to help the Client visualize the issues in this Assessment and shall not be relied upon for any other purpose.

This report and any values expressed herein represent the opinion of Urban Forestry Services, Inc. Our fee is in no way contingent upon any specified value, a result or occurrence of a subsequent event, nor upon any finding reported.

The Assessment report shall be considered as a whole, no sections are severable, and the Assessment shall be considered incomplete if any pages are missing. The right is reserved to adjust tree valuations, if additional relevant information is made available. This Assessment is for the exclusive use of the Client.