Gilles Consulting
Brian K. Gilles
425-822-4994

FIELD REPORT: Evaluation of Two Douglas Fir Trees Next to 77th Avenue

Project Name: **Peyree Residence**

Project Address: **6059 77th Avenue SE, Mercer Island, WA 98040**

Date of Site Visit: **February 8, 2019**

Date of Report: **February 11, 2019**

RESON FOR SITE VISIT:

Tom Gallagher, of Gallagher Company, requested that I return to the Peyree residence to evaluate two large Fir trees in the northwest corner of the property. The two trees are growing in a planter bed that is bordered on the east by 77th Avenue SE, to the north and south by driveways, and to the west by an existing garage and planter bed area. On January 30, 2019, a crew from the Bartlett Tree Expert Company had used an air spade to dig a trench along the line of excavation required to install a large retaining wall. Multiple small roots were exposed and one large root was exposed. John Kenney, City Arborist for Mercer Island, requested that the trees be evaluated to determine if the excavation required for the retaining wall installation will or will not harm the two large Douglas Fir trees.

METHODLOLOGY

To evaluate the trees, as well as to prepare this report, I drew upon my 30+ years of experience in the field of arboriculture and my formal education in natural resources management, dendrology, forest ecology, plant identification, and plant physiology. I followed the protocol of the International Society of Arboriculture (ISA) for tree risk assessment. Published in 2011, the *Best Management Practices, Tree Risk Assessment, ANSNI A300 Part 9* was developed to aid in the interpretation of professional standards and guide work practices based upon current science and technology. Using this process, now called the *Tree Risk Assessment Qualification,* or TRAQ for short, I performed a Level Two assessment which included looking at the overall health of the tree as well as

fax: 425-822-6314
email: bkgilles@comcast.net
P.O. Box 2366 Kirkland, WA 98083

the site conditions. This is a scientifically based process to look at the entire site, surrounding land and soil, as well as a complete look at the threes themselves.

In examining each tree, I looked at such factors as: size, vigor, canopy and foliage condition, density of needles, injury, insect activity, root damage and root collar health, crown health, evidence of disease-causing bacteria, fungi or virus, dead wood and hanging limbs.

Failure

While no one can predict with absolute certainty which trees will or will not fail, we can, by using this scientific process, assess which trees are most likely to fail and take appropriate action to minimize injury and damage.

OBSERVATIONS

On Friday, February 8, 2019 I returned to the site. The two Firs were numbered with tags 48 and 49. The trench had been exposed by the crew from Bartlett Tree. They exposed a dense mat of roots from the two trees near the surface of the trench. The trench was blown down to a depth of approximately 24 inches. The roots were almost all located in the top 12-14-inches of depth. They were all between the diameters of 0.1 and 1.75 inches in diameter. All but one that is. There is one root that is estimated to be between 4.5 and 5.0 inches in diameter. It is right at the edge of the trench and turns almost vertical downward for the depth of the trench.

Photo # 1: A 2017 aerial photo with the property lines approximated. (Taken from the King County Assessor's website.) Trees 48 & 49 are these two.

Photos # 2 & 3: Looking at the bases of the Firs, # 48 & 49 from 77th Ave SE.

Photo # 4: Looking at several of the smaller roots exposed by the air spade trench.

Photo # 5: Looking as some of the smaller and one of the medium sized roots exposed by the air spade.

It appears that the face of the cut is approximately 14.25 feet from the base of the closest tree, # 48. The face of the cut is approximately 20 feet from the base of tree # 49. Please refer to Attachment 1 Shoring Plan for the specific design of the all.

CONCLUSIONS

If the driplines of the two trees, and the soil volume were complete circles, I estimate that the amount of root loss to be approximately 15% to 20%. Healthy trees such as these should be able to tolerate such a loss and survive long-term. However, there are multiple utilities near the base of the trees and there are significant hard surfaces on a good percentage of the critical root zone. Therefore, I conclude that the trees can tolerate the excavation and wall construction *if* the extra-ordinary *Tree Protection Measures* outlined below are strictly adhered to.

RECCOMENDATIONS – Tree Protection Measures

As noted above, I believe the two large Douglas Fir Trees, #'s 48 & 49, can tolerate the excavation and wall construction *if* the following measures are adhered to.

- Excavation Process:
  - A qualified International Society of Arboriculture, (ISA), *Certified Arborist*, or an American Society of Consulting Arborists, (ASCA), *Registered Consulting Arborist* must be on site and in charge of the excavation process.
  - The process must include using an air spade to expose roots at the edge of the excavation.
  - Roots must then be cleared using hand tools, shovels and trowels, then; the exposed roots must be cleanly cut using sharp implements such as hand shears, loppers, hand saws, and powered reciprocating saws.
  - As the roots are pruned a hoe can pull the soil away on the down-slope side of the trench.
  - This process is to continue until the arborist is convinced that no more roots are to be encountered.
- Irrigation:
  - A temporary drip irrigation system will need to be installed with a complex 24/7 timer that can be turned on once per month from April through October of 2019 and 2020.
  - The temporary system will need to be inspected by the Project Arborist to verify functionality.
  - Apply the water slowly to ensure that the water is penetrating to a depth of 22 to 24 inches. (A post-hole digger is a great way to test for this.)
  - Once the water reaches this depth turn off the water.
  - Repeat once every four weeks.
  - If temperatures rise above 80º F, water once every three weeks.
- Mulch:
  - The area under the trees will need to be covered with 6 – 8 inches of wood chips, hog fuel, or similar product to reduce evaporation.
- Soil/Root Treatments:
  - The trees will be stressed by the excavation and wall construction. In addition to the irrigation and mulch, the root zone will need to be treated with a combination of tree based fertilizer, compost tea, and beneficial microbes.
  - This must be done by a trained professional.
    - I recommend Nick Penovich owner of Soil Science Products.
    - 360-876-3734
    - nick@lawnjockey.net
    - www.lawnjockey.net

- Tree Based Fertilizer:
  - Trees have different chemical needs than does grass. Lawn fertilizers can actually harm trees.
  - Tree based fertilizers are specifically formulated to meet these needs.
- Compost Tea:
  - Compost teas are very good at providing Humic acids and beneficial microbes. Humic acids increase a tree's ability to handle stress.
- Beneficial Microbes:
  - Beneficial microbes come in two naturally occurring forms, bacteria and fungi.
  - Beneficial bacteria increase the microbial activity of the soil. They convert organic matter and fertilizer into forms more readily absorbed by the tree roots.
  - Beneficial fungi form a symbiotic relationship with the tree roots. The tree feeds the fungi. The fungi give off by-products of respiration that are in fact root growth stimulants. They increase absorption of water and nutrients, provide drought resistance, and a level of pathogenic protection.
- A program that injects the soil multiple times per year will be needed in 2019, 2020, and 2021.

- <u>Removal of the Garage and Driveways</u>:
  - When and if the driveways and garage are removed extra care will need to be taken with the demolition.
  - *Absolutely no material can be stored on the soil of the critical root zone*.
  - All work to remove the garage must be done from the existing driveway and road surface.
  - Trucks must be parked to receive the debris so that the truck wheels or the hoe does not drive on the critical root zone.
  - When the driveways are removed they must be combed away from the trunks of the trees and broken up outside the dripline of the trees.

WAIVER OF LIABILITY

There are many conditions affecting the stability of a slope. The recommendations in this report are to help the Palladian Pointe Homeowners Association manage the property only. It is not a guarantee against severe erosion or landslide. Tree, shrub, and groundcover roots cannot prevent deep-seated landslides from occurring. If a severe landslide occurs, all trees and vegetation will be swept away as part of the landslide.

There are also many conditions affecting a tree's health and stability which may be present and cannot be ascertained, such as, root rot, previous or unexposed construction damage, internal cracks, stem rot and more which may be hidden. Changes in circumstances and conditions can also cause a rapid deterioration of slope stability. While I have used every reasonable means to examine the slope and all relevant factors, this tree management plan represents my opinion of the situation at this point in time. These findings do not guarantee future safety nor are they predictions of future events. It is the property owner/project manager's responsible to engage the services of a qualified geotechnical engineer to ascertain the conditions of the slope and actions that will enhance or destabilize the slope.

As conditions change, it is the responsibility of the property owners to schedule additional site visits by the necessary professionals to ensure that the long-term success of the project is ensured. It is the responsibility of the property owner to obtain all required permits from city, county, state, or federal agencies. It is the responsibility of the property owner to comply with all applicable laws, regulations, and permit conditions. It is the responsibility of each property owner to comply with all Codes, Covenants, and Restrictions (CC&R's) that apply to tree pruning and tree removal.

This tree evaluation is to be used to inform and guide the client in the management of their trees. This in no way implies that the evaluator is responsible for performing recommended actions or using other methods or tools to further determine the extent of internal tree problems without written authorization from the client. Furthermore, the evaluator in no way holds that the opinions and recommendations are the only actions required to insure that the tree will not fail. A second opinion is recommended. The client shall hold the evaluator harmless for any and all injuries or damages incurred if the evaluator's recommendations are not followed or for acts of nature beyond the evaluator's reasonable expectations, such as severe winds, excessive rains, heavy snow loads, etc.

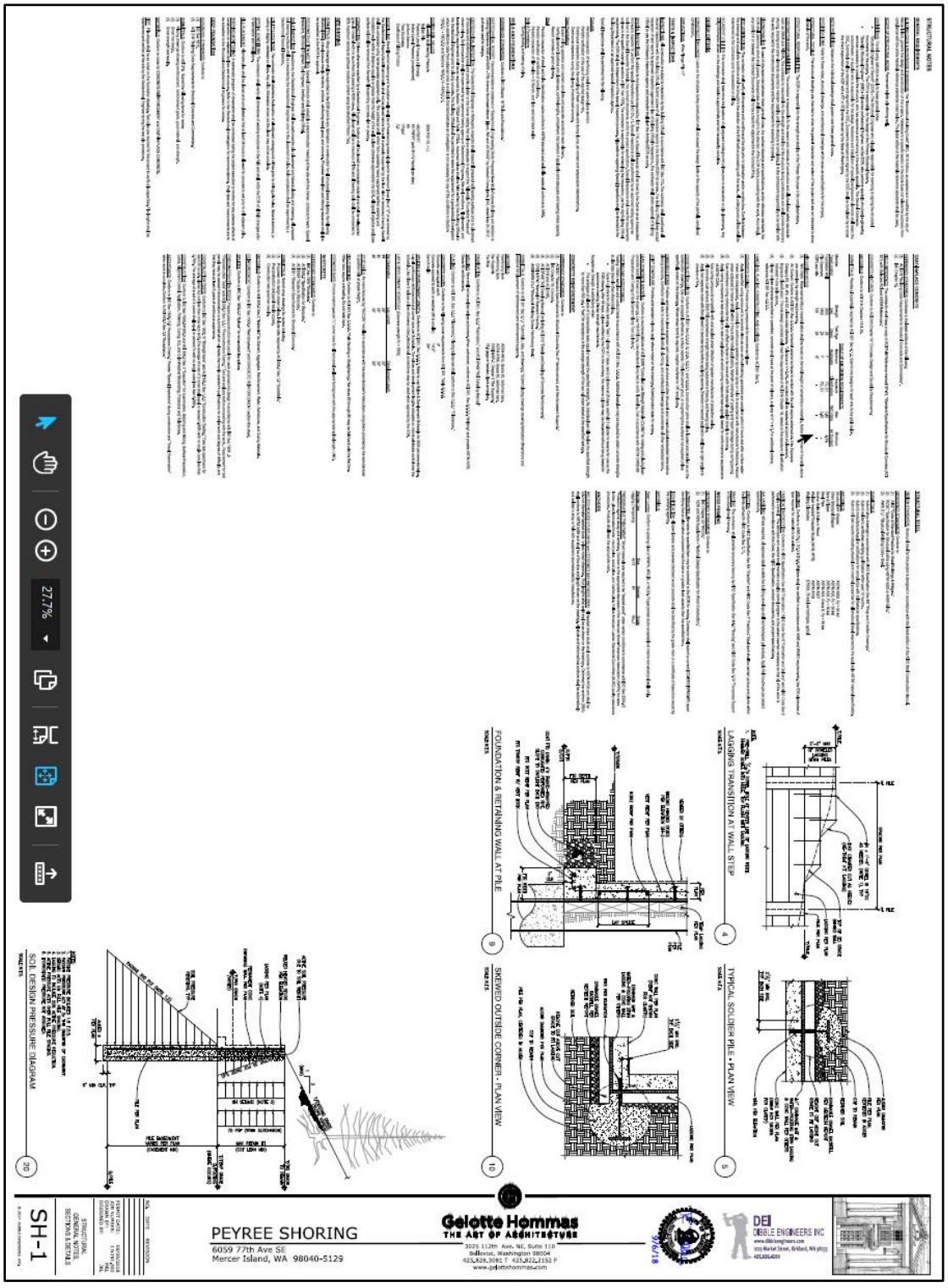
This report and all attachments, enclosures, and references, are confidential and are for the use of the client concerned. They may not be reproduced, used in any way, or disseminated in any form without the prior consent of the client concerned and Gilles Consulting.

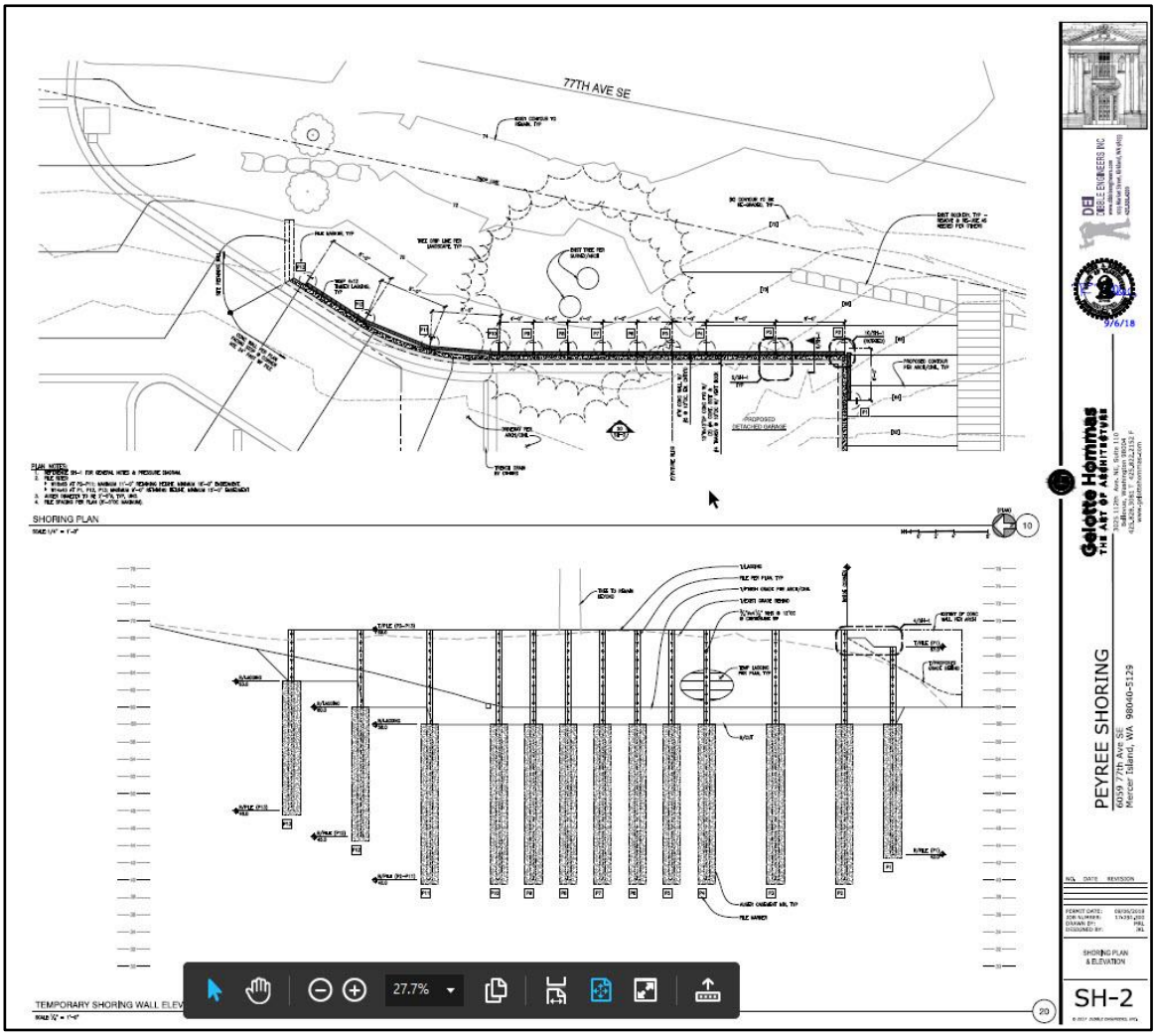
Thank you for calling Gilles Consulting for your arboricultural needs.

Sincerely,

Brian K. Gilles, Consulting Arborist
ASCA Registered Consulting Arborist # RCA-418
ASCA Tree & Plant Appraisal Qualified.
ASCA Tree & Plant Appraisal Certified Instructor
ISA TRAQ Qualified
ISA TRAQ Certified Instructor

ATTACHMENT 1, SHORING DESIGN




77TH AVE SE
PROPOSED DETACHED GARAGE
SHORING PLAN
TEMPORARY SHORING WALL ELEV
27.7%
Galotte Hommas
THE ART OF ARCHITECTURE
PEYREE SHORING
6059 77th Ave SE
Mercer Island, WA 98040-5129
SHORING PLAN & ELEVATION
SH-2