

TECHNICAL MEMORANDUM



Date: August 19, 2021
To: Wes Giesbrecht, Cayson Fields LLC
From: Lexi Ochoa, ISA Certified Arborist®
Lucas Vannice, ISA Certified Arborist®
Project Name: Mercer Island Cayson Fields
Project Number: 190410

Subject: Mercer Island Cayson Fields Subdivision (1903-061) Air-Excavation Root Observation Memo: Tree #4591

This memo is intended to summarize the findings of the air-excavation analysis by Bartlett Tree Experts (Bartlett) on July 28, 2021. The purpose of this analysis was to air-excavate along the limits of disturbance adjacent to tree #4591, within Lot 5, and identify the location of the roots. The findings of this study do not confirm the proposed retention of this tree.

Air-Excavation Procedure

Bartlett was retained by Cayson Fields LLC (developer) to perform exploratory air excavation within the dripline of tree #4591 (Figure 1). The excavation area included approximately 24 linear feet of trench (about 12 inches wide and 24 inches deep), oriented north-south at the eastern limits of Lot 5 and adjacent to the Native Grown Protection Easement (NGPE). The NGPE boundary is about two feet eight inches west of the subject tree's trunk. Air excavation occurred along the limits of work for proposed development based upon site plans provided by the developer, titled Permit Revision 2 and dated August 15, 2019. The specific location of work for air-excavation was laid out in the field prior to the arrival of Bartlett by The Watershed Company (Watershed) ISA Certified Arborists®, Lucas Vannice and Lexi Ochoa, using the known location of surveyed existing site features to offset the proper location for the trench. The trench location was demarcated with white spray paint—Bartlett air-excavated within these boundaries. Watershed was on-call during this air-excavation work. On July 28, 2021, the trench was completely excavated, and Watershed evaluated the findings on-site. Watershed assessed the presence of structural roots (3 inches diameter or greater), transport roots (1 – 2 inches diameter), and fine feeder roots and small transport roots (<1 inch in diameter) revealed in the trench.

Air-Excavation Results

Tree #4591

Bartlett's exploratory trench for tree #4591 revealed two structural roots, eight transport roots, and many fine feeder and small transport roots. The southernmost structural root, Photopoint 1 (Figure 2), was previously torn 90 inches from the trunk (Figure 3). The tear occurred within the limits of disturbance (the approved limits of disturbance were two feet eight inches from the trunk of tree #4591), presumably when the existing shed was removed. At this tear, the root measured four inches in diameter. Following best management practices, a clean-cut was made to facilitate proper wound closure above the tear damage 59 inches from the trunk. An additional root was torn along the same plane as the previously described root but was suspected of having belonged to adjacent vegetation, Photopoint 2 (Figures 2 and 5). A clean-cut was made, nonetheless.

The second four-inch structural root was located on the northern portion of the trench, Photopoint 3 (Figures 2 and 6). It was visible six feet from the trunk and traveled parallel to the trench before dropping ten inches down into the soil, 10 feet from the trunk. At this point, the root measured one inch and indicated a north-northeast trajectory.

Numerous transport roots were visible within the trench, visible in three concentrated sections. The highest number of transport roots were found around Photopoint 1. The second-highest concentration of these roots was visible around Photopoint 3.

Fine, feeder roots and small transport roots were visible in significant quantities throughout the length of the trench, especially in the northernmost section, approximately 39 inches from the end of the trench.

Project Recommendations

At the time of the initial inventory, tree #4591 was given a health condition rating of "fair." When on-site to review the air excavation, its overall health condition has dipped below "fair" but wouldn't quite qualify as "poor;" its canopy shows signs of flagging, and the visible cones were smaller than average. Additionally, the overall color of the canopy was chlorotic, not the vibrant green of a healthy Douglas-fir. Its current DBH measured 16 inches with an averaged canopy radius of 18 feet. In April 2016, at the initial inventory, the tree measured 13.7 inches in trunk diameter with a canopy radius of 12 feet.

Based on the proposed location of the house, garage, and driveway, the location of tree #4591, its overall declining health, and the roots discovered during exaction, we do not recommend retaining tree #4591. The building pad and driveway located within the critical root zone will impact a significant percentage of the tree's critical root zone. While only two structural roots were discovered, the anticipated damage to the numerous transport roots from additional excavation, compaction, and added impervious surface is expected to lead to further decline in overall tree health.

The arborist report previously submitted by Watershed arborists for the project (*Tree Inventory and Retention Plan Report: Proposed Long Plat at 7233 80th Ave SE Mercer Island, WA*; dated May 2017) recommends a replacement ratio of 1:3 for a tree of this size. These replacement trees will be planted within the neighboring NGPE at a larger size than the required minimum (at a minimum, coniferous replacements shall be six feet, and deciduous replacements shall be at least one and one-half inches in caliper) to mitigate the ecological loss of removing tree #4951. Additionally, to increase the ecological function of this area, invasive species, namely Himalayan blackberry (*Rubus armeniacus*) and English ivy (*Hedera helix*), will be removed.

The information contained in this memo is based on the application of technical guidelines currently accepted as the best available science. All discussions, conclusions, and recommendations reflect the best professional judgment of the author(s) and are based upon information available at the time the study was conducted. No other warranty, expressed or implied, is made.

Figures:

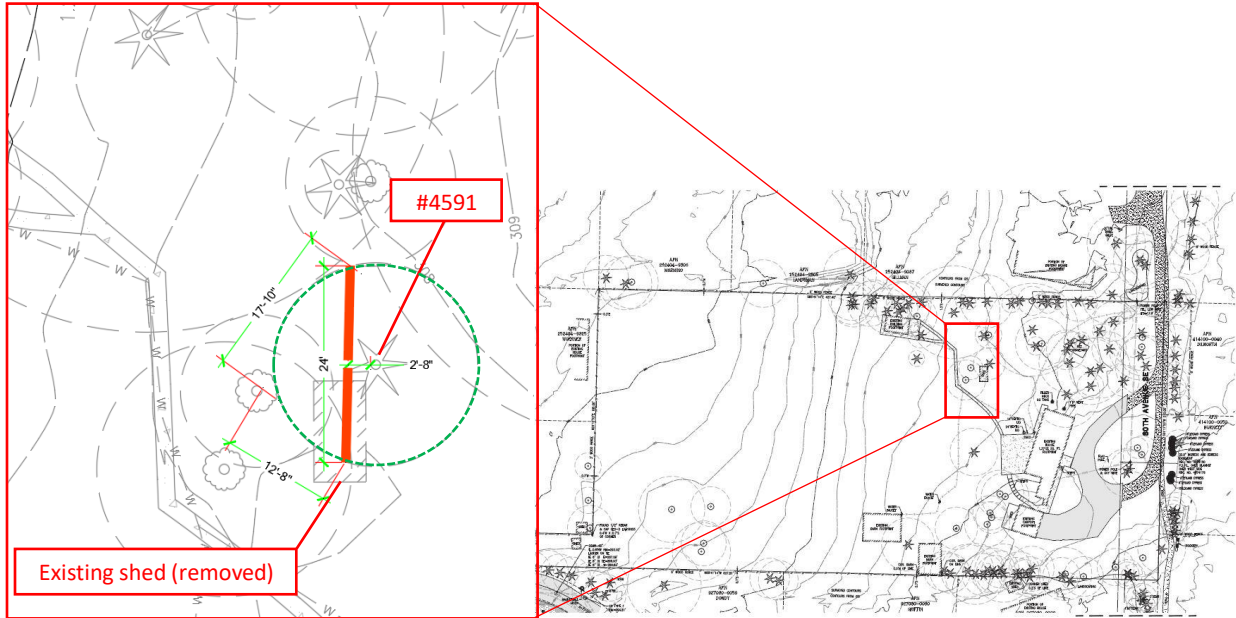


Figure 1. Air-excavated trench (vertical red line) with tree #4591 dripline noted with the green dashed circle.



Figure 2. Excavated trench (photo looking north) showing Photopoints (PP) 1, 2, and 3.



Figure 3. Photopoint #1, looking northeast, of the torn 4-inch structural root.



Figure 4. Photopoint #1, showing additional transport roots and feeder roots below the impacted structural root.



Figure 5. Photopoint #2, looking west, showing a 1.5-inch transport root.



Figure 6. Photopoint #3, looking southeast, showing the second, 4-inch structural root (red arrow) and additional transport roots and feeder roots (within yellow dash).

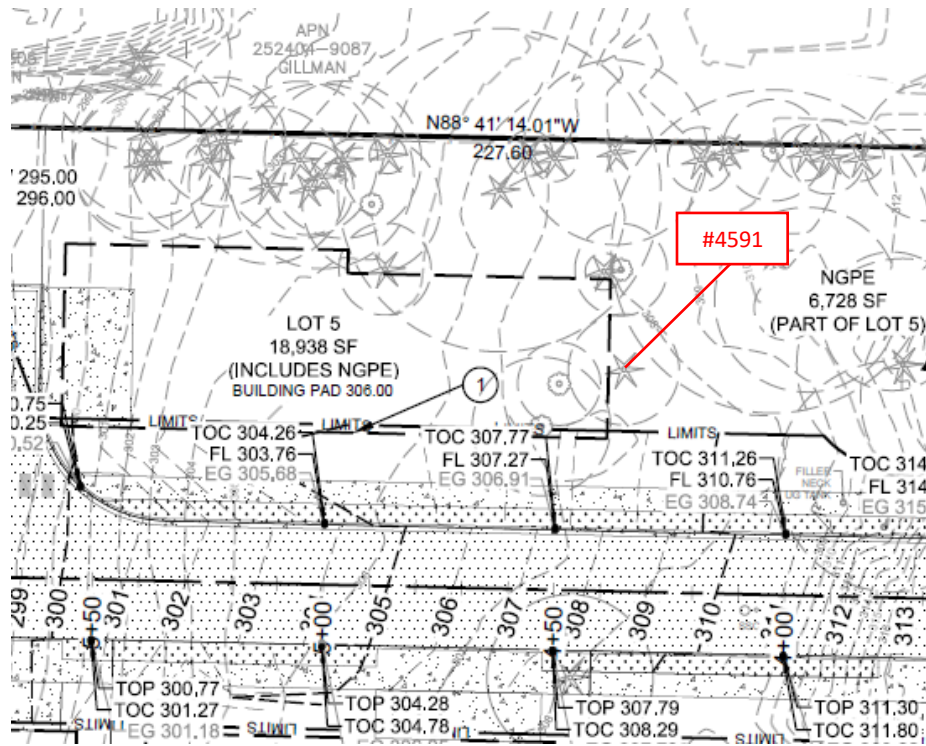


Figure 7. Preliminary approved plans showing Lot 5 in relation to tree #4591.