

MACNAIR
&
ASSOCIATES
CONSULTING ARBORISTS AND HORTICULTURISTS



July 21, 2019

Ms. Anne Boucher
131 Butterfield Road
San Anselmo, CA 94960

RE: Coast Redwood Risk Assessment- Report Addendum

Dear Ms. Boucher:

This report addendum addresses a report by Urban Forestry Associates dated June 25, 2019. The UFA report provides tree management recommendations as an option to the removal of the coast redwood (*Sequoia sempervirens*) located on the property line with your neighbors at 127 Butterfield Road. The tree was ordered removed by the Town of San Anselmo based upon tree risk assessment reports prepared by me, Dan McKenna, and Ed Gurka.

The tree risk assessments were prepared in response to falling branches that damaged your residence and nearly resulted in injury to yourself and your daughter. In addition to the repeated occurrences of falling limbs onto your property, the reports also identified structural risks associated with the co-dominant trunk structure of the tree, included bark and a wood reaction ridge at the attachment, excessive pruning of the tree, and grading cuts that have occurred near the base of the tree in the critical root zone where buttress roots are located.

The consequences of continued branch failure is the risk of moderate to severe property damage and personal injury. The failure of a trunk or windthrow of the whole tree would be catastrophic if striking your house or a neighboring property.

The Urban Forestry Associates report states that the "main concern seems to be future branch failure onto your property." This statement is not accurate as all three reports identify the co-dominant trunk structure, trunk union, and history of grading as potentially significant concerns.

As mitigation for the branch failure risk, the UFA report recommends aggressively pruning the branches on your side of the tree and then regularly hedging back any new growth originating from dormant buds below the bark. A comparison is made to fire damaged trees and the adventitious branch growth response to loss of burned branches. The UFA recommendation for hedging the new growth is presumably because branches originating from adventitious buds are weakly attached and prone to breakage as weight increases.

A critical issue not addressed in the UFA report is that removal of branches increases the lever force on the lower trunks and root system. Branches dissipate wind energy through mass damping that decreases trunk loading and oscillation of the trunk. The previous pruning of

branches (and the proposed removal of remaining branches) increases the trunk loading and adds stress on the co-dominant trunk union and the root system.

The UFA report states that the installation of steel cables would be “very good at mitigating the likelihood of failure.” However, in evaluating the efficacy of the cables, it is important to consider the height of these trees (142 feet), the lack of mass damping of wind energy from branches, and the probable loss of roots from past grading. Most cabling installations are for trees that have reasonably full crowns and have not been subject to grading impacts.

Regarding the co-dominant trunk defect, McKenna noted that the mitigation for this defect was problematic and that cabling of the trunks would not completely mitigate this defect. The Tree Risk Assessment Manual (2nd Edition) cautions that “although structural support measures can reduce the likelihood of failure, especially of specific parts, they can also change how a tree responds to wind loading. When recommending the installation of support systems, consider not only the reinforcement of specific tree parts but also the overall effects on the tree. For instance, installing a number of cables or rods can decrease the ability of the tree crown to absorb the force of the wind and thus increase the load on the lower stem and roots.”

In summary, the UFA recommendation for reducing branch failures through removal of the branches is unconventional and would require regular maintenance to hedge the branch regrowth. The cabling recommendation does not consider the range of dynamic forces on the tree, the dissipation of wind energy, and the potential effect on the stability of the tree. The recommendation that further testing and exposure of roots be required is onerous, difficult to assess to a high level of confidence, and expensive.

In my original report, I stated that the tree’s risk rating is high for continued branch failure and at best, moderate for trunk or whole tree failure. When the consequences of failure are severe (meaning catastrophic damage, death, or injury), a moderate risk is often an unacceptable level of risk to the property owner or others potentially impacted by the tree failure. Further, the ability of trained arborists to detect hidden, or underground defects, is limited. It is difficult to evaluate root systems and internal conditions of trees and, even when performed by a trained arborist, can result in false negatives.

Dr. Tom Smiley is one of the co-authors of ISA's Best Management Practices for Tree Risk Assessment, Second Edition, 2017. He addressed the moderate risk level with the following statement “with the ISA TRA (Tree Risk Assessment) system, moderate risk needs to be taken seriously. Most people would not accept a moderate risk tree leaning over their house.” This statement by Dr. Smiley clarifies the seriousness of the moderate risk rating and the implicit right of a property owner to choose to remove a moderate risk tree.

An additional point is that Ed Gurka says in his report that any mitigation option other than removal should be agreeable to both parties as you must ultimately accept the risks associated with this tree.

In summary, nothing in the UFA report changes my recommendation that the tree be removed. The recommendations proposed in the UFA report may, unintentionally, actually increase the risk of structural failure.

Please contact me with any questions, or if additional information is required.

Sincerely,



James MacNair

International Society of Arboriculture Certified Arborist WE-0603A

International Society of Arboriculture Qualified Tree Risk Assessor