August, 15th 2024

From: Will Fargo
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ATTN: City of Salem

RE: 4824 San Antonio Ct. NE Salem, OR 97305

To Whom it May Concern,

I have been contracted by property owners Dennis and Debbie Engelhard to evaluate three (3) Giant Sequoia (*Sequoia sempervirens*) trees bordering their property's west property line. In addition to providing a basic Tree Risk Assessment using standardized tree risk assessment criteria established by the International Society of Arboriculture (ISA) I have also provided recommendations to mitigate any risk associated with these trees. The trees are identified as *Tree 1* (59" DBH), *Tree 2* (60" DBH) and *Tree 3* (39" DBH). Photos of the evaluated trees are attached to this report.

In evaluating these trees, it was determined that this was originally a grove of five (5) closely spaced Giant Sequoia trees that grew up together and are approximately 50-60 years old at present day. The two northernmost trees of the grove have already been removed as they were badly damaged by a lightning storm approximately ten (10) years ago. Additionally, the top, or apical meristem or *Tree 1* experience a complete failure in the ice storm of 2021 with the top of the tree landing on the property owner's roof. The remaining three trees have significant lightning damage. The lightning damage to *Tree 1* and *Tree 2* has exceeded the tree's ability to compartmentalize the damage and has led to noticeable decline. An almost certain impending death of *Tree 2* can be seen by the presence of a dead top, or apical meristem.

While the lightning damage to these trees is significant and appears to be leading to the trees decline, a far more significant risk is total tree failure. It should be noted that *Tree 1* is leaning (10%) towards Dennis and Debbie Engelhard's property, *Tree 2* is leaning (10%) towards the neighbor's home to the South and *Tree 3* leans (15%) west towards another neighboring house. Because the trees grew up together in a tight grove, their canopies are unbalanced, with the majority of the canopy weight compounding the lean of the trees. Moreover, in discussing the history and future plans for the property, the root zones on all four sides of the grove have been compromised: On the North side of the grove's critical root zone, two Giant Sequoia trees have already been removed. As the roots from these two trees decay, the intertwining roots from the remaining three

trees will lose stability. Additionally, when the homeowners proceed with stump grinding and replanting of the two trees removed, the existing trees will be unavoidably damaged and further destabilized. On the West side of the critical root zone, a fence and raised garden bed have been built on the neighbor's property altering the natural grade of the soil. On the east side of the critical root zone, the property owners have brought in fill dirt in an attempt to better grow a lawn in the backyard. They reported extensive soil compaction and existing root damage during this process. The entire root plate from these trees is significantly uplifted approximately two (2) feet from the natural grade. The property owners have noticed additional root plate uplifting in recent years and recently had to replace a leaking automatic sprinkler line that broke (likely due to root plate uplift) on the south side of the grove's critical root zone. It is unknown how long this line had been broken and fully saturating the tree's critical root zone.

Because Giant Sequoia trees are a very long lived species I chose a ten year time frame over a typical five year time span used for these reports. Given the significant lean of all three trees towards high risk targets, and the lean compounded by an imbalance canopy and deteriorating root zone, I found total tree failure within ten years to be probable with a high likelihood of impacting targets. Given the severe consequences of total tree failure, all three trees are determined to be high risk trees and are recommended to be removed.

When Giant Sequoia trees grow up together in a grove they become very interdependent. Absent the lightning strike ten years ago, these trees would have had a good chance of supporting one another into old age. However, because the lightning has already caused the death of two of these trees and a third (*Tree 2)* is badly in decline, it is inevitable that the other trees will fail as well. Giant Sequoia trees naturally have shallow intertwined roots which they use to support one another. Given the general decline of these trees and the significantly compromised critical root zone, it is essential that you remove these trees to avoid total tree failure, which becomes more and more likely as root zone degradation progresses.

Should there be any questions or concerns regarding this inspection, please don't hesitate to reach out.

Sincerely,

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