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State Forester



COMMONWEALTH of VIRGINIA

Department of Forestry

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October 8, 2020

Leslie Herman, Director
Town of Vienna Parks and Recreation
120 Cherry Street
Vienna VA 22180

Dear Leslie:

Per your request I performed a Level 1 limited visual risk assessment of two trees located at 117 and 121 Courthouse Road SW. Both trees are large white oaks (*Quercus alba*). I only evaluated them from property side and did not go into or across Courthouse Road. When we met I forgot to discuss a time frame for evaluation. I am using one year and five years as time frames.

The tree at 117. This tree presents with asymmetric dieback of the upper canopy that includes an entire scaffold branch. Dieback of lower branches due to shading is normal, but dieback of unshaded upper canopy branches is an indication of vascular failure lower in the tree. The loss of a scaffold branch indicates the failure is severe and likely to spread. Dieback in the upper canopy is frequently associated with root failure, but the asymmetry may mean the failure is higher up in the tree. Normally a Level 1 assessment would focus on one potential failure, but I have looked at the risk from both the whole tree and the dead branches.

The first component of risk is the likelihood that a part or all of the tree will fail in a given time period under normal weather conditions. The likelihood of failure of the whole tree in the next year is **IMPROBABLE**. However the indications of existing root failure and the certain root damage caused by demolition and redevelopment of the lot move the five year likelihood of failure to **PROBABLE**.

The likelihood of failure of the dead branches in the next year in the next year is **IMMINENT**. These branches are dead and already failing.

The second component of risk is the likelihood of impacting a target when a failure occurs. In this case the target is an occupied vehicle on Courthouse Road. Courthouse Road is a busy road and cars do sometimes sit in the target zone of the tree and branches, but when viewed in the context of a 24 hour day the occupancy rate of the target zone is medium at best. The likelihood of impact for the tree is **LOW** and for the dead branches is **MEDIUM**. The difference is that if the tree fails it might not fall into Courthouse Road. This likelihood does not change with time.

The final component of risk is the consequence of hitting a target. If either the whole tree or the dead branches hit an occupied vehicle on Courthouse Road the consequence will be severe injury to or death of the passengers. The consequences of failure in all cases is **SEVERE**.

The risk rating for whole tree failure in one year or five years is **LOW**. This is driven almost entirely by the likelihood of impact analysis. An occupied vehicle on Courthouse Road was selected as the target because it is the most valuable possible target. Introducing an occupied house to the target zone may change this analysis and raise the 5 year risk rating.

The risk rating for the dead branches is **HIGH**.

Possible mitigation actions:

- Do nothing; residual risk is HIGH from the dead branches
- Remove dead branches; residual 1 year risk is LOW and 5 year risk is LOW to MODERATE depending on changes in the target zone.
- Remove the whole tree; residual risk is LOW due to the stump or stump hole.

I have presented this risk analysis in detail in part so that you understand that risk is more nuanced than just a signal word like “LOW” or “HIGH.” And you should compare my analysis against the Town’s risk profile to determine what should be done with the tree. The Town may also have better information on the traffic patterns on Courthouse Road and assign higher likelihood of impact than I have.

The tree at 121. This tree presents as a biologically healthy tree with a full, well developed canopy and no indication of disease or pest problems. There are some dead branches in the lower canopy due to shading. However the tree does have a small opening in the trunk at the soil line. Probing the hole with a stick revealed a large cavity at the base of the tree. About 80% of the cross section of base of the tree is missing up to at least a foot in height. I was unable to determine the extent of damage to the root plate and how far up into the bending moment of the tree the decay extended. The root plate is the mass of large roots at the base of the tree that hold it upright and in the ground. The bending moment is the point of maximum stress on the tree as it sways in the wind. This means that the structural integrity of the tree has been compromised. Using the same analysis described above, the likelihood of failure in 1 year is PROBABLE and the in 5 years is IMMINENT. This results in a 1 year risk rating of LOW and 5 year risk rating of MODERATE. The same caveat as above regarding likelihood of impact applies.

Possible mitigation actions:

- Do nothing; residual risk is unchanged
- Remove the tree; residual risk is LOW due to the stump or stump hole.

Note pruning to reduce weight is not a viable option, nor is treating with fungicides. The apparent biological health of the tree indicates that decay has been restricted to the non-living heart wood and kept out of the living sapwood. Pruning the tree enough to significantly reduce the stress on the bending moment and root plate will likely kill the tree outright or at least weaken the tree to the point that the living sapwood will begin to decay. Treating with fungicides will be ineffective because they will not circulate in the non-living heartwood. Filling cavities in trees with anything has long since been demonstrated to do more harm than good.

The Town will have to compare its acceptance of risk and liability against the objective risk profile I have outlined for these two trees in order to determine how to deal with these trees.

Sincerely,



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