Tree Assessment and Management Plan

Prepared for

James Hawkins, CMCA, AMS
Community Manager

For Service at

Stoneleigh HOA
McLean, VA

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WHY DID SAVATREE INVENTORY THE STONELEIGH HOA TREES?

Earlier this year, the SavATree Consulting Group was asked to provide a proposal to perform a tree inventory and assessment of all trees located at Stoneleigh HOA in McLean, VA. Stoneleigh wanted an independent assessment of the trees in order to determine their species, current condition, associated risk, and best management recommendations. Our proposal was approved and it was determined that our assignment was to perform:

- On site ANSI A300 Level 2, 360-degree visual inspection of individual trees measuring 12-inches and greater that are growing within the specified area;
- Establishment of International Society of Arboriculture (ISA) Qualitative Risk Ratings for each tree as Low, Moderate, High, or Extreme;
- Establishment of priority responses as 1) critical; 2) medium; 3) routine 4) none observed at this time;
- For all trees inventoried, recordation of: location; species; diameter; condition; specific defects observed (structural, insect, disease and health defects); risk rating; recommendations for treatment; and priority of these recommendations;
- A web-based map of resulting inventory and tree management data; and,
- A written report of findings.

NOTE: For trees in unimproved areas and along wood edges, safety inspections were limited visual assessments from maintained lawns to identify conditions which may impact persons or property. When significant defects were observed, these trees were added to the inventory and given a Level 2 assessment.

Field data collection occurred on multiple days in November of 2016.

HOW DID SAVATREE CONDUCT THE ASSESSMENT?

We used mobile GIS and GPS technology (ArcGIS Online) to inventory all of the community trees in the development. We collected data on tree diameter at standard height (4.5', referred to as DSH), tree location, species, condition, defects, priority (as noted above), and recommendations for treatment.

We downloaded the data to Excel and analyzed it using Pivot Charts and Tables.

We uploaded the data to ArcGIS Online and exported the results to a web app for your use.

WHAT DID SAVATREE FIND?

Two hundred and forty trees were inventoried and assessed at Stoneleigh HOA. An Excel file with the complete Stoneleigh HOA Tree Inventory dataset has been provided as a separate document. The web app of the entire inventory is posted to:

http://satcg.maps.arcgis.com/apps/Solutions/s2.html?appid=a7b1b009111342ef802a1386b504724a&ex=-8592453,4711181,-8591803,4711532,102100

Icons are color-coded based upon priority level of recommended action, where orange is Immediate, yellow is Routine, and green are None. The map can be searched by tree tag number by clicking on the magnifying glass in the upper-right corner.

TREE DIAMETER DISTRIBUTION

Tree diameter distribution provides an indicator of population sustainability. A "reverse-J" curve represents a desirable diameter distribution in tree populations as the majority of individuals should be in the smaller diameter classes. This provides for a sustainable canopy; as older and larger individuals die or fail, there is a sufficient stock of younger individuals in the population to take their place.
Currently, the population peaks at 4 inches with fairly large numbers of trees from 2 through 12 inches. This indicates (and is confirmed by my observation) that the tree population is generally young and growing. Further, it indicates that Stoneleigh has been committed to planting new trees in recent years. It worth noting, however, that many of these smaller trees are ornamental (holly, crepe myrtle, etc.) trees that are not going to be large shade trees. There were new and recent shade tree plantings as well, but their numbers were not as significant. Overall, the tree age and size distribution is strong and not a cause of short-term concern.

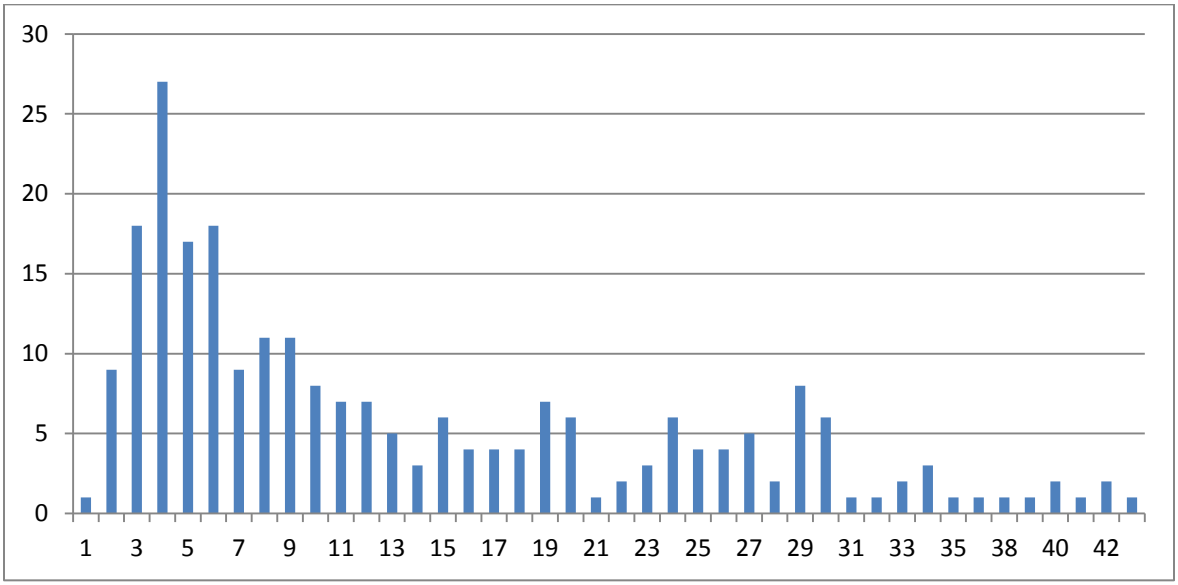

Figure 1 –2016 tree diameter distribution for trees at Stoneleigh HOA.

TREE SPECIES DISTRIBUTION

Dr. Frank Santamour has previously described a method for managing diversity in urban plantings; this is referred to as "the 10-20-30 formula". The formula states that for maximum protection against pest outbreaks, the urban forest should contain no more than 10% of any single tree species, no more than 20% of any tree genus, and no more than 30% of any tree family.

Species diversity at the site is oaky (Figure 2 on the following page). A total of 34 species were included in the inventory. Four species exceed the 10% recommendation. American holly were most popular, with 37 individual trees (15.4% of the population) included. This is followed by Leyland cypress (13.8%), white pine (10.8%), and red maple (10.4%). No genus exceeds the 20% threshold and no family exceeds 30%.

Row Labels	Count of ID	% of ID
American holly	37	15.4
Leyland cypress	33	13.8
White pine	26	10.8
Red maple	25	10.4
Crepe myrtle	13	5.4
Willow oak	13	5.4
Flowering cherry	11	4.6
Pin oak	10	4.2
Eastern red cedar	10	4.2
Black locust	7	2.9
Norway maple	6	2.5
Flowering dogwood	6	2.5
Silver maple	5	2.1
Canadian hemlock	5	2.1
Atlantic cedar	5	2.1
Magnolia	3	1.3
Cryptomeria	3	1.3
Honeylocust	2	0.8
Blue atlas cedar	2	0.8
Horse chestnut	2	0.8
Sweetbay magnolia	2	0.8
Japanese maple	2	0.8
Lacebark elm	1	0.4
Black walnut	1	0.4
Sycamore	1	0.4
Callery pear	1	0.4
Kousa dogwood	1	0.4
Mulberry	1	0.4
Sweetgum	1	0.4
European beech	1	0.4
Blue spruce	1	0.4
Hawthorn	1	0.4
Boxelder	1	0.4
Hinoki cypress	1	0.4
Grand Total	**240**	**100.0**

Figure 2 – Species distribution within Stoneleigh HOA

TREE CONDITION DISTRIBUTION

We assigned health condition ratings for each of the 240 trees in the inventory. Five ratings were possible: Excellent, Good, Fair, Poor, and Dead. Figure 3 below shows the current breakdown of condition ratings at the property. One hundred and fifty-six trees (65%) were in Good condition; 62 (25%) were Fair; 13 (5%) were Excellent; and 9 (4%) were Poor. No dead trees were observed.

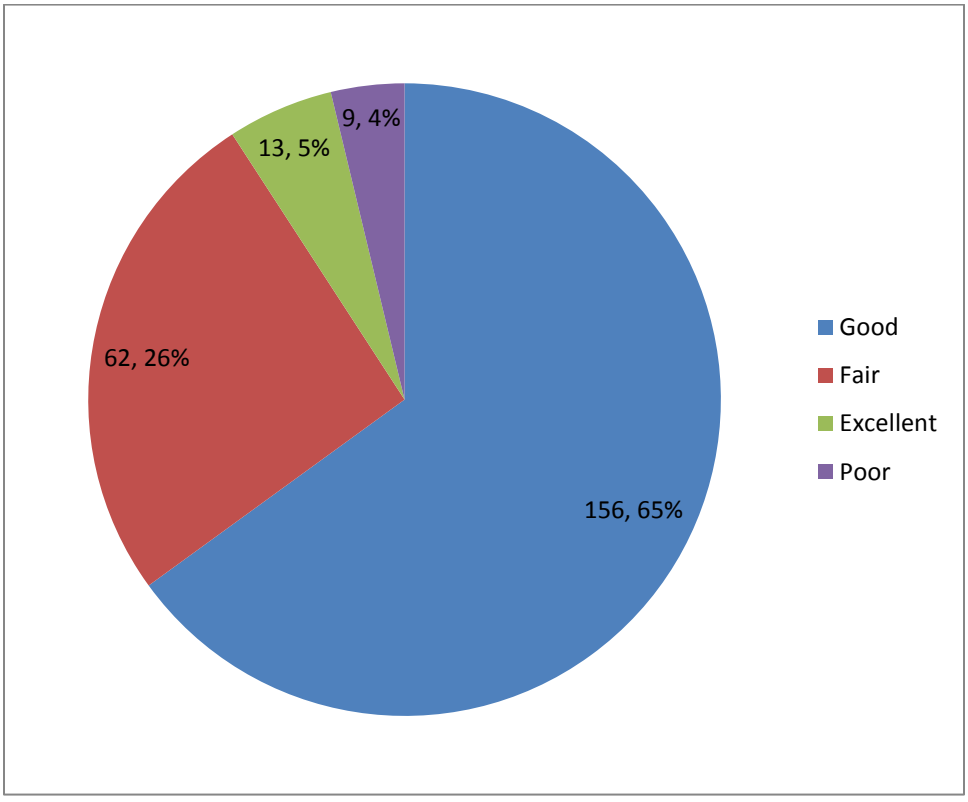

Figure 3 – Condition ratings for the 240 trees at Stoneleigh

TREE RISK RATINGS

All trees within striking distance of a potential target pose some level of risk – there is no way for a certified arborist to state that any tree has zero chance of failure. In any tree risk situation, there are three management options: remove the risk by removing all targets; remove the risk by removing the tree; mitigate the risk by treating the tree and/or the site.

If the tree is treated, reducing its risk can be accomplished by improving tree health and/or decreasing likelihood of limb failure by reducing the size of the tree and/or removing dead, diseased, or weakened branches. Tree health can be improved by restricting activities in the root zone that could lead to compaction and maximizing root health by turf removal, installation of composted mulch as a ground cover, prescription fertilization, and root health treatment.

If the tree is removed, risk of tree failure would be removed. However, the benefits the tree provides would also be lost.

The Qualitative Tree Risk Assessment protocol is the best management practice outlined by the ISA for assessing the level of risk associated with standing trees within a given time frame. In order to perform this type of risk assessment, the assessor first determines the Likelihood of Failure and Likelihood of Impacting to a target. A potential target may be a person, structure, vehicles, etc. This likelihood of Failure is rated as: Imminent, Probable, Possible, or Improbable. The likelihood of impacting a target is rated as: Very Low, Low, Medium, or High. The matrix below is then used to determine the Likelihood of Failure and Impact.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Next, the assessor determines the most likely Consequences of tree failure. This is ranked as: Negligible, Minor, Significant, or Severe. The matrix below is then used to determine the overall risk rating for the subject tree. The possible ratings are: Low, Moderate, High, and Extreme.

Likelihood of Failure and Impact	Consequences			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Of the 240 trees assessed, 212 were found to represent Low risk to person and property and 28 were assessed to have Moderate risk. No trees were found to have High or Extreme risk at the time of assessment.

MITIGATION & PRIORITIES

There are presently eight trees on the golf course that are recommended for removal; 54 require pruning (crown cleaning, reduction, etc.) and/or the installation of supplemental support cables; 18 require regular monitoring (this indicates that health or structural issues were observed that do not require action at this time);and one tree requires further testing to determine the extent of internal decay. One hundred and fifty-nine trees do have any mitigation recommendations at this time (NOTE: Some trees may have more than one recommendations – for example crown clean and installation of a supplemental support system).

None of the recommendations were given a priority rating of Critical (needs to be done ASAP). Thirty-five were rated Immediate (within 6 months to 1 year) and 46 are routine (within two years, but sooner as budget allows).

The tables on the following pages show the breakdown of recommendations sorted by priority level.

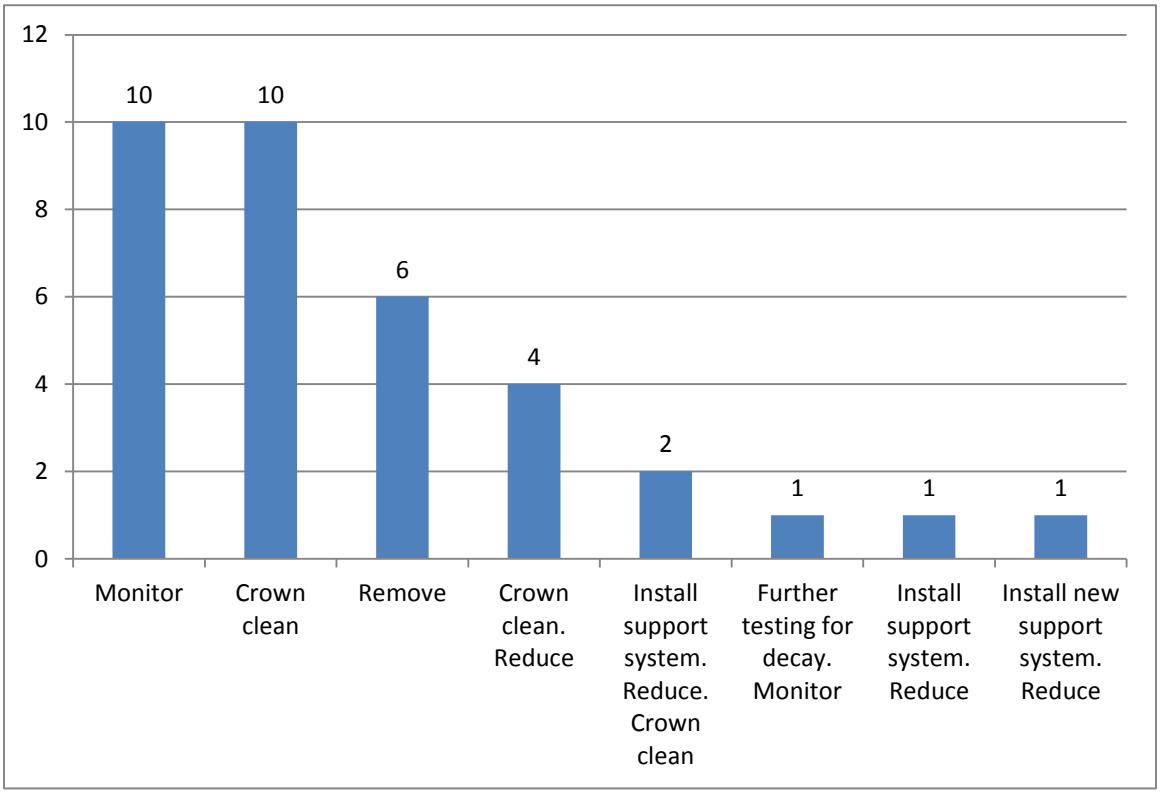

Figure 4 – Number of trees with Immediate priority recommendations sorted by mitigation recommendation .

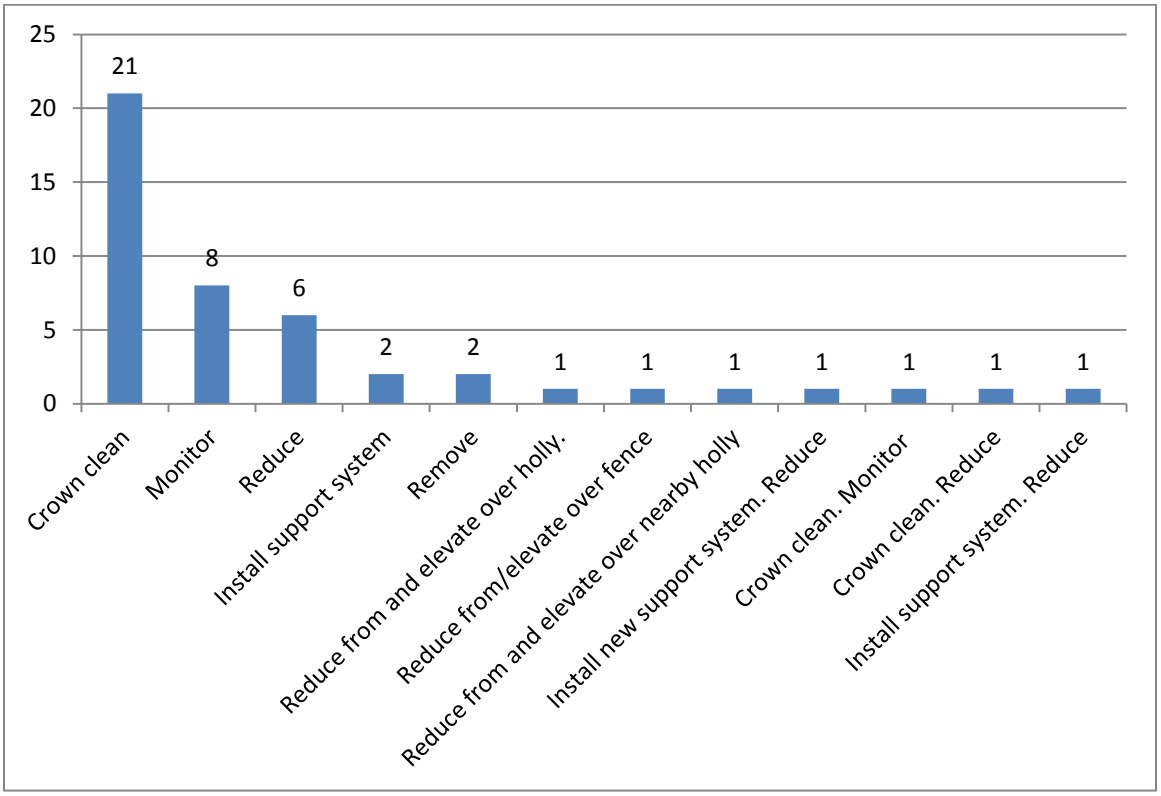

Figure 5 – Number of trees with Routine priority recommendations sorted by mitigation.

WHAT DOES SAVATREE RECOMMEND BASED ON WHAT WE OBSERVED?

We recommend:

- Using the tool to allocate resources to address the highest priority objective first and moving through the priorities for that objective to the limit of your contracting window (6 months, one year, two years).
- Further testing for internal decay is recommended for Tree #206. Depending on the results, the management recommendations for this tree may be changed to Remove.
- Eight trees have been recommended for removal.
    - Six (Trees #21, 144, 150, 220, 221, and 227) of these trees are Immediate priority removals.
    - Two are Routine priority removals: Trees #39 and 102.
- Ninety-nine trees are recommended for pruning and/or the installation of supplemental support cables.
    - Immediate priority action is recommended for 18 trees. These are #14, 18, 25, 29, 32, 44, 47, 50, 53, 82, 108, 109, 134, 149, 191, 193, 199, and 219.
    - Routine priority action is recommended for 36 trees. These are #1, 5, 7, 12, 26, 27, 28, 30, 41, 42, 43, 51, 52, 54, 58, 66, 69, 79, 85, 86, 96, 98, 105, 117, 128, 142, 143, 148, 154, 192, 198, 200, 205, 222, 229, and 237.
- Regular monitoring is recommended for 18 trees.
    - Ten are Immediate (annual reassessment) priority: #31, 33, 34, 75, 88, 121, 145, 203, 223, and 228.
    - Eight are Routine (every-other-year) priority: #35, 37, 63, 64, 83, 202, 209, and 216.
- Application of biostimulant or fertilizer is recommended for the following 16 trees: #9, 47, 49, 75, 82, 88, 105, 106, 108, 109, 165, 174, 203, 206, 212, and 216.
- An application of organic mulch over the root zone for trees: 2, 3, 15, and 16.
- A root collar excavation is recommended for Trees #1 and 16.

APPENDIX A - ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided to the consultant is assumed to be correct. Any titles and ownership to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management

2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.

3. The consultant shall not be required to give testimony or attend court or any other meeting, public of private, by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the original or subsequent proposal.

4. Loss or alteration of any part of this report invalidates the entire report.

5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant.

6. Neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant particularly as to value conclusions, identity of the consultant, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant as stated in his qualification.

7. This report and values expressed herein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated results, the occurrence of a subsequent event, nor upon any finding to be reported.

8. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.

9. Unless expressed otherwise: (1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

APPENDIX B – CERTIFICATE OF PERFORMANCE

I, Matthew K. Weibel, certify:

- That I have personally inspected the tree(s) and/or property referred to in the report, and have stated my findings accurately. The extent of the evaluation is stated in the attached report and the stated terms and conditions;
- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and facts;
- That my analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboriculture practices;
- That no one provided significant professional assistance to me, except as indicated within the report;
- That my compensation is not contingent upon the reporting or predetermined conclusion that favors the cause of the client or any other party nor upon the results of the assignment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a member in good standing of the American Society of Consulting Arborists and International Society of Arboriculture. I have been involved in the practice of arboriculture and the care and study of trees for over fourteen years.

Signed: Matthew K. Weibel

Date: December 5, 2016