

Tree Assessment  
For Median Trees  
Van Ness & Weldon Avenues  
City of Fresno

Prepared For:

City of Fresno, Public Works  
2101 'G' St., Building E1  
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## SUMMARY

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Concerned about the ongoing condition of trees in median islands on Van Ness and Weldon Avenues, due to drought conditions, and changes in the irrigation due to State mandates, Mr. Aaron Aguirre of the Public Works Department of the City of Fresno hired me to evaluate the trees' condition and make any recommendations required.

Based on my visual assessment, most of the 46 Deodar Cedars (*Cedrus deodara*) and 23 Southern Live Oak (*Quercus virginiana*) trees, are in fair to good condition, especially the Southern Live Oaks on Weldon Avenue. Although a majority of the Deodar Cedars in the medians on Van Ness Avenue are in fair to good condition there are several that have suffered from maladies created by past cultural conditions and practices which are directly related to having been planted in a turf area. There are 2 Deodar Cedars that should be removed soon, because they are becoming hazardous, and 2 should be removed in the next year due to their condition.

The present watering regimen is helping the trees to survive in the short term. As per my recommendations on page 8 of this report I suggest changes to the short term watering regimen, and a long term solution of installing an irrigation system dedicated to these trees.

## INTRODUCTION

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### Background

At the request of Aaron Aguirre with the Public Works Department of the City of Fresno, a site visit was performed on September 4, 2015 to provide a tree assessment of the Deodar Cedars in the median islands from Shields south to Weldon, and the Southern Live Oaks in the median islands from Van Ness east to Maroa Avenue. These were turf medians with irrigation systems that have been turned off due to mandates from the State of California. I was told by Mr. Aguirre the trees are being watered by a water truck on a 3 times per week schedule. He said the City would like a general health and condition assessment of these trees.

### Assignment

Perform a basic ground inspection of the 46 Deodar Cedars, and 23 Southern Live Oak trees on designated medians on Van Ness and Weldon Avenues. Review all site conditions, and evaluate the trees' overall condition, taken as a group. Identify any clearly recognizable safety or health issues observed. Provide a report of findings, with recommendations intended to improve the trees' condition and longevity if possible.

## Limits of the Assignment

This report and observations are based only on my site visit on September 4, 2015. The evaluation of health and structural condition of the trees was made using a **basic assessment**<sup>1</sup> process from ground only and of their overall condition taken as a group. This report is confidential and shall be distributed and used only as indicated in the Assumptions and Limiting Conditions on page 17 of this report.

## INSPECTION METHODS

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The inspection method used was the basic assessment and ground inspection. The processes included locating and identifying the trees to be assessed, determining the site conditions, tree health, and condition, taking notes, and photographs.

## OBSERVATIONS

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### Deodar Cedars

The 46 Deodar Cedar trees are planted in the center of the median islands on Van Ness Avenue that run from Shields Avenue south to Weldon Avenue. Most of the trees are mature with a **Diameter at Breast Height (DBH)** in the 18 inch to 36 inch range. A few of the trees were smaller and appear to have been planted as replacements for older trees that have been removed.

Up until recently the medians were maintained as turf islands with the Cedar trees planted in the middle of the turf. There are irrigation spray heads along the edge of the medians, which watered both the turf and the trees. The irrigation system has been shut off at some time in the past unknown to me, and the turf has died.

I noticed that the water delivered by the water truck is applied mainly near the trunks of the trees.

The majority of the cedar trees have **live crown ratio** of 70% to 90%, which is good. The majority of the Cedar trees have appropriate gray-green foliage color for their species. Almost all of the trees have a lean to the southeast, which is common in the Fresno area due to the prevailing northwest winds.

Nearly all of the larger, older trees, have some damage on the trunks near the base of the tree and on the **buttress roots**, and many have in particular an area of damage on the west side. Areas of the bark are gone and inner wood is exposed. On several of these trees **wood decay** has set in.

<sup>1</sup> All bold and italicized words are defined in glossary

Following are the eleven trees which have poor or very poor condition and are exceptions to the majority of fair to good condition trees. I have labeled these trees A-K.

- A. The second tree south of Shields Avenue has substantial damage to its buttress roots, and is in poor condition. (See Appendix A – Photos 1 & 2)
- B. The third tree south of Shields Avenue has moderate damage to its buttress roots, and has yellowing and slowing growth in the upper portion of the tree. (See Appendix A – Photos 3 & 4)
- C. The second tree south of Simpson Avenue has substantial damage to its buttress roots, and is in poor condition. (See Appendix A – Photos 5)
- D. The first tree south of Cornell Avenue has severe damage, and appears to have lost 60%-70% of its roots. (See Appendix A – Photo 6)
- E. The second tree south of Cornell Avenue has moderate damage to its buttress roots, lost branches, and has yellowing and slowing upper growth. It shows signs of positive regrowth. (See Appendix A – Photo 7)
- F. The third tree south of Cornell Avenue has substantial damage to its buttress roots, and is in poor condition. (See Appendix A – Photo 8)
- G. The second tree south of Michigan Avenue is twisted and severely leaning with approximately 50% dead bark and roots. (See Appendix A – Photo 9)
- H. The second tree south of Brown Avenue is very crooked and misshapen. (See Appendix A – No Photo)
- I. The second tree south of Vassar Avenue has substantial damage to its buttress roots, and is in poor condition. (See Appendix A – Photo 10)
- J. The fourth tree south of Vassar Avenue has substantial damage to its buttress roots, and is in poor condition. (See Appendix A – Photo 11)
- K. The third tree south of Cambridge Avenue has very damaged **root flare** and too much of its central **leader** is dead. (See Appendix A – No Photo)

### Southern Live Oaks

All of the Southern Live Oaks in the median islands on Weldon Avenue, between Van Ness and Maroa Avenues are in good condition. They have **live crown ratio** of 80% to 100%, which is very good. The majority of the oak trees have appropriate gray-green foliage color for their species.

Only one tree has any significant health issues. The second tree west of Maroa Avenue has a large area of the main trunk missing on the southwest side, exposing the inner wood just below the base of the **scaffold branches**. (See Appendix A – Photo 12)

## DISCUSSION

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### Deodar Cedars

Deodar Cedar is a species of cedar native to the western Himalayas. They are tough trees, designed for the extremes of low temperatures in the winter, high temperatures in the summer and extremes of moisture availability in the soil. They typically do very well in Fresno, and are not overly affected by our hot dry conditions, in fact, they are more likely to have problems with wet conditions in hot weather.

Median islands are generally a very hostile environment to most trees. The trees are subjected to increased heat, wind, pollutants, intensive cultural practices, and traffic collisions.

When these trees are grown in turf areas, they become more susceptible to fungal *pathogens* like *phytophthora*, and also root and wood decay. The pathogens like phytophthora attack the living and active tissue of the trees, limiting the ability of the tree to uptake and deliver raw materials and carbohydrates. The root decay and wood decay fungi break down the inner, inactive wood of the tree weakening its structure. This is because the base of the trees remains wet in warm weather for extended periods of time based on the amount of irrigation it takes to keep the turf around them alive.

In turf areas the trees are also more prone to mechanical damage due to lawn mowers keeping the turf mowed down where the root flare of the tree has risen above the surrounding turf grade level. This opens the roots to wounds, which then stay moist in the summer due to turf irrigation requirements and the exposed rots down into the roots.

Sometimes, because of our very strong afternoon sun, as well as reflected heat from asphalt and concrete, trees can become *sunscalded*, especially when the trees are young and their branches do not shade their trunks all the way to the ground. Their bark becomes damaged and sloughs off, exposing the inner wood, which is then susceptible to wood decay fungi. This is found on the west or southwest of the tree.

Deodar Cedars are also susceptible to occasional *sudden branch drop*. When branches fail and fall out of these trees, it often exposes areas of other branches or the trunk that have been previously shade to intense sun light. These newly exposed areas will often become sunscalded and get *borer* damage. This frequently causes branch or tip dieback in the tree.

Finally, **sapsucker** damage is frequently observed on Deodar Cedars when a sapsucker bird gets habituated to a particular tree, it can fill the bark of the upper trunk or branches with so many holes as to make the bark unable to function properly. The many holes also allow for pathogens to enter into the **vascular system** and exposed wood of the tree. This situation can also result in dieback of branches and the tip of the leader of the tree.

### **Southern Live Oaks**

Southern Live Oaks are a species native to the southeastern U.S. They can easily manage more summer water than our native California Oaks. Once they are well established they can also manage our dry weather. Because of the overall good health of these trees, there is not much to discuss.

## **CONCLUSIONS**

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### **Deodar Cedars**

Of the Deodar Cedars, 4 are in very poor condition and should be removed, 7 are in poor to average condition and should be treated, and 35 are in average to good condition.

The vast majority of problems, poor health and condition of these trees is due to factors that have existed for an extended period of years. The lack of irrigation by turf spray heads is a positive change. Watering with a water truck is helping maintain the trees through the drought in the short run, but is not the optimal long-term plan.

There is a very strong correlation between damage to buttress roots and the lower trunk of the trees, whether it be from watering directly against the trunk, mechanical damage from mowers or cars, sunscald, or any combination of those.

The wounds on the west side of these trees appears to be due to sunscald, or some combination of sunscald and fungal activity.

There is **dieback** in the branches and leader of some trees. This appears to be due to mature trees in a harsh environment, overall stress on the trees caused by the damage to the buttress roots as described above, and due to sunscald, borers and sapsuckers.

## Southern Live Oaks

Of the 23 Southern Live Oaks 22 have become well established, and are in good condition. The second tree west of Maroa, has significant damage to its trunk at the base of the scaffold branches, which could threaten its health and structural integrity in the future.

## RECOMMENDATIONS AND ACTIONS

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### Deodar Cedars

#### General Recommendations

Move the present water truck irrigation delivery off of the area around the base of the tree. Try to keep the water delivery in the area between a 3 foot radius from the trees to the drip line of the trees.

I recommend you install a separate irrigation system using a low precipitation delivery like drip or bubblers for long term watering of these trees. If you ever return to watering turf in these median, move and/or adjust the turf heads so they do not spray the trunks of the trees. Care should be taken not to damage roots in the installation process.

When removing the trees recommended for removal, also trim any dead branches over 2" diameter out of the remaining trees. Remove no green foliage if possible, as it is what will help the trees resist stress and regrow.

Discuss with your maintenance personnel the damage on the buttress roots from mowers and other equipment. Include them in a discussion of methods to avoid contact between the machines and the roots. I suggest keeping a 3 foot radius around the trunk of the trees free from turf or weeds by some other means than mowers or string trimmers.

Make an application of copper fungicide per label instructions to exposed wood areas of the trunks of all the trees to help slow wood decay.

#### Specific Recommendations

- A. The second tree south of Shields Avenue – treat the soil with a soil drench application within the tree's drip line with a potassium-phosphite product, such as Actagro Resist, according to label directions.
- B. The third tree south of Shields Avenue – treat the soil with a soil drench application within the tree's drip line with a potassium-phosphite product, such as Actagro Resist, according to label directions.
- C. The second tree south of Simpson - treat the soil with a soil drench application within the tree's drip line with a potassium-phosphite product, such as Actagro Resist, according to label directions.
- D. The first tree south of Cornell Avenue - Remove the tree within 60 days for safety, and replace.

- E. The second tree south of Cornell Avenue - treat the soil with a soil drench application within the tree's drip line with a potassium-phosphite product, such as Actagro Resist, according to label directions.
- F. The third tree south of Cornell Avenue - treat the soil with a soil drench application within the tree's drip line with a potassium-phosphite product, such as Actagro Resist, according to label directions.
- G. The second tree south of Michigan Avenue - Remove the tree within 60 days for safety and replace.
- H. The second tree south of Brown Avenue – Remove within 365 days and replace, because this tree will not recover its appropriate form.
- I. The second tree south of Vassar Avenue - treat the soil with a soil drench application within the tree's drip line with a potassium-phosphite product, such as Actagro Resist, according to label directions.
- J. The fourth tree south of Vassar Avenue - treat the soil with a soil drench application within the tree's drip line with a potassium-phosphite product, such as Actagro Resist, according to label directions.
- K. The third tree south of Cambridge Avenue – Remove within 365 days and replace, because this tree has too much of its leader dead and has extremely poor root flare development.

## **Southern Live Oaks**

### General Recommendations

In the short term, continue to supply water with the water truck to these trees in the area between a 3 foot radius from the trees to the drip line of the trees. In the long term, installation of a separate irrigation system dedicated to the trees only, using a low precipitation delivery like drip or bubblers.

### Specific Recommendations

For the second tree west of Maroa, treat the exposed wood of this trunk with an application of copper fungicide per label instructions to help slow wood decay.

## SUPPORTING MATERIALS - Appendix A

Photo 1



Photo 2



Photo 3



Photo 4

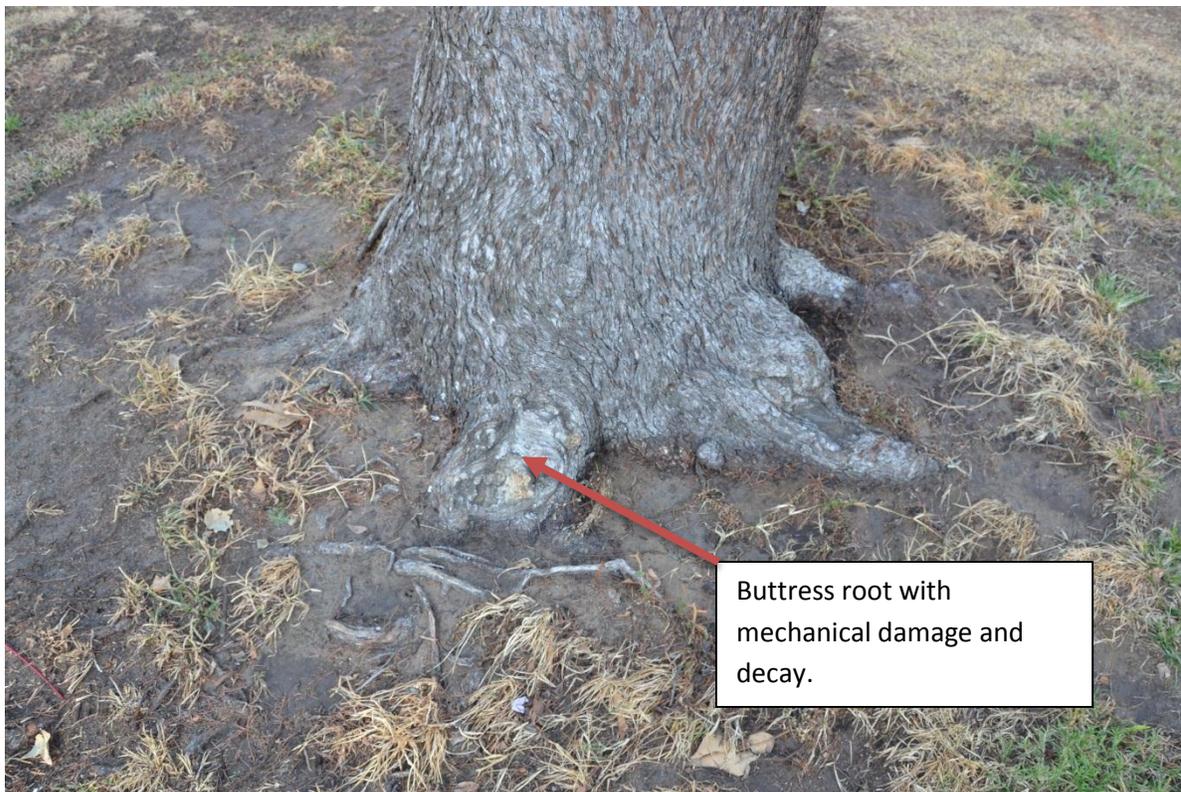


Photo 5

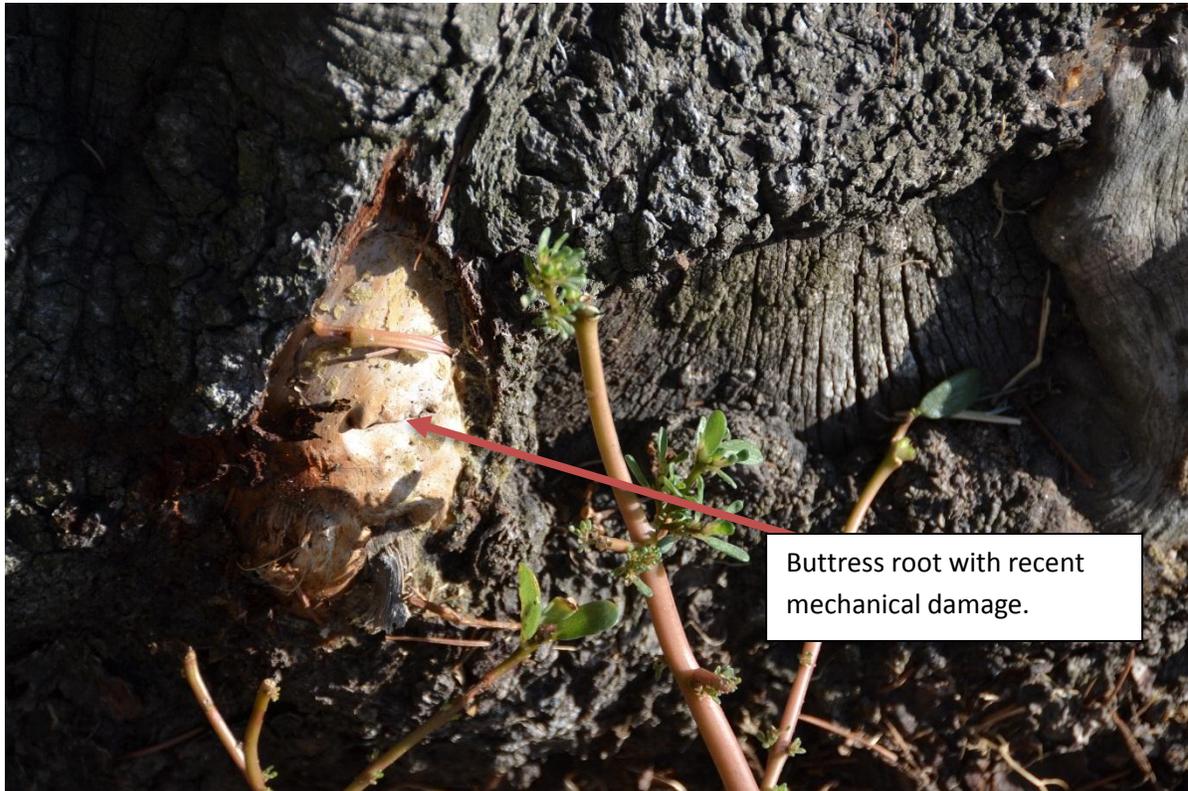


Photo 6



Photo 7



Photo 8



Photo 9

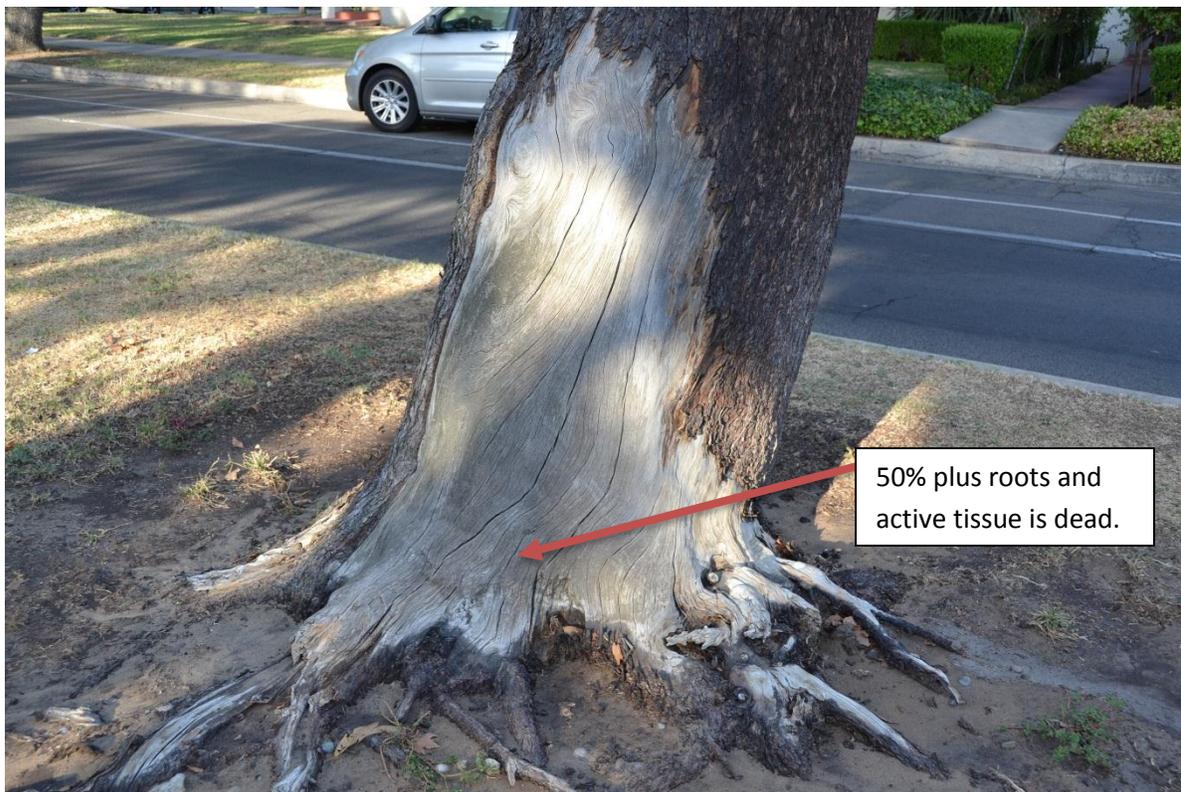


Photo 10

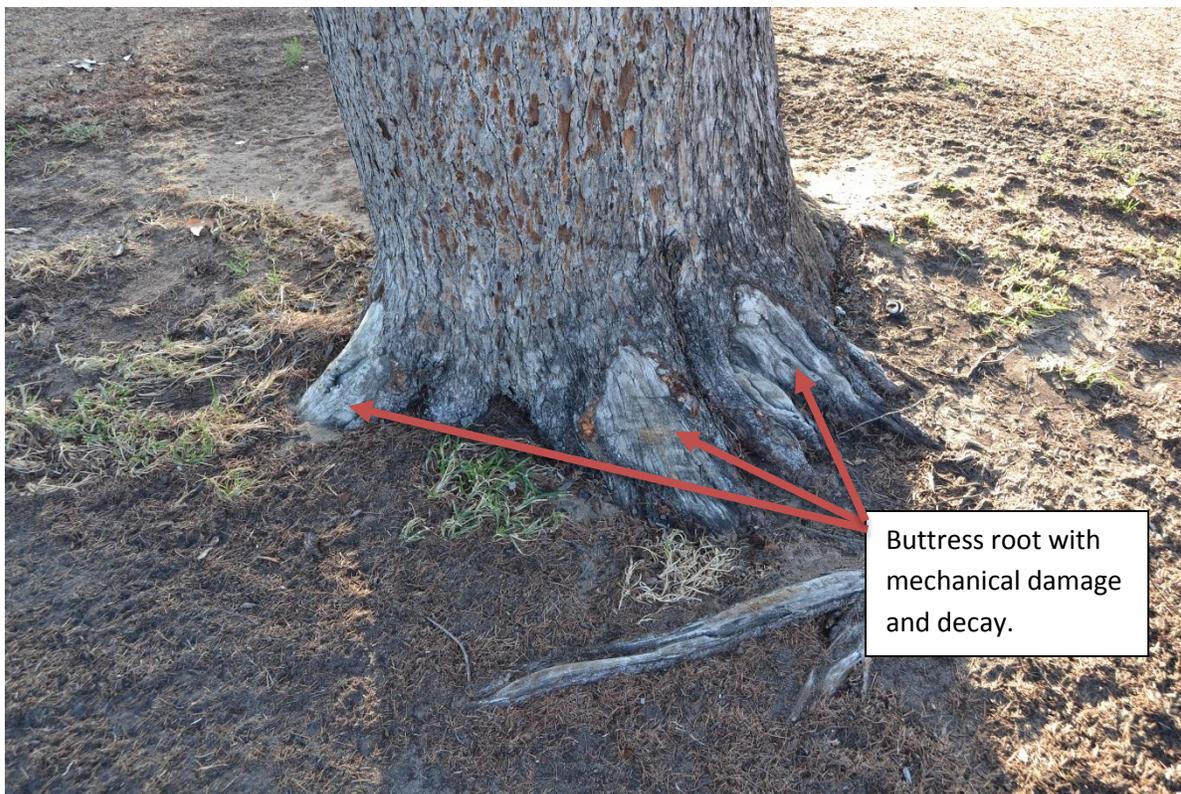


Photo 11

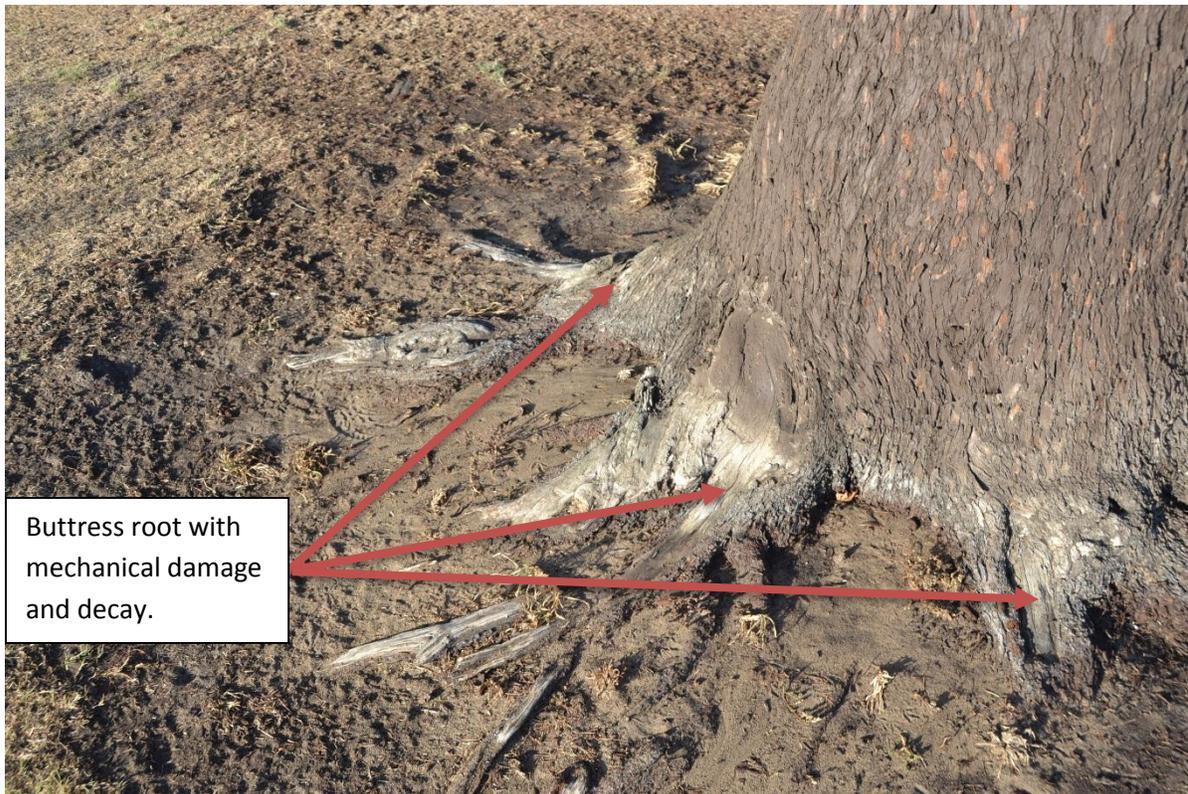
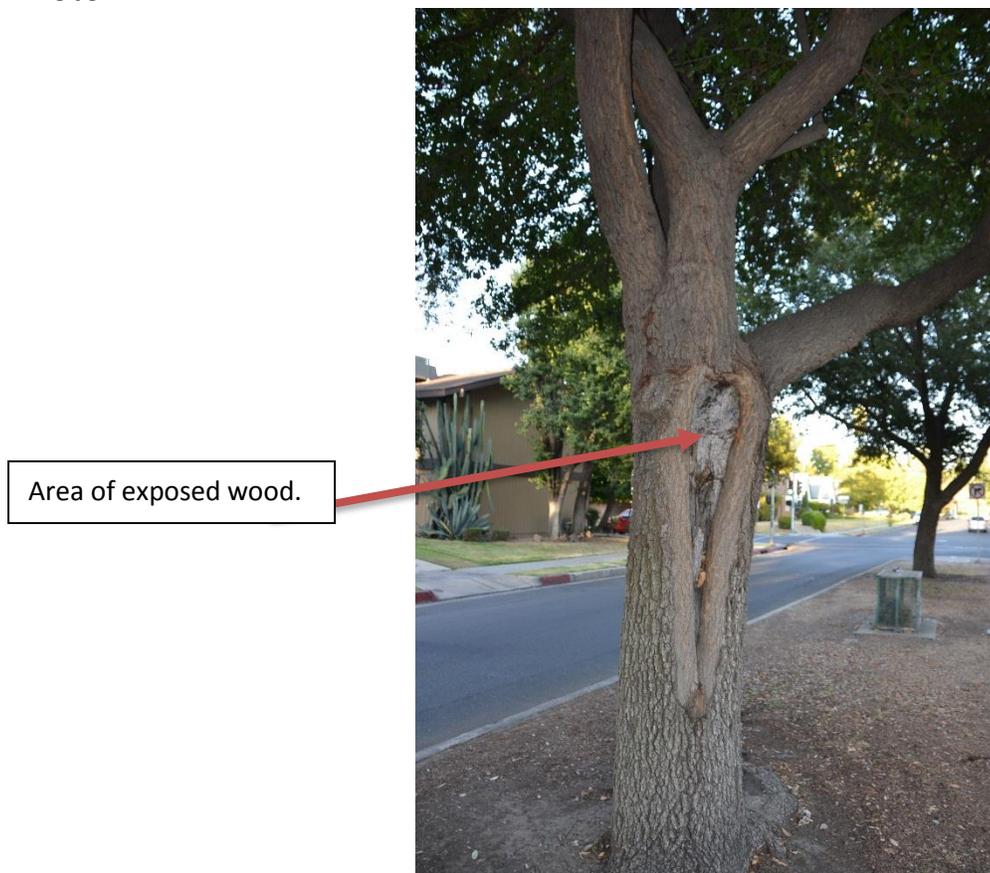


Photo 12



## Glossary

**Basic assessment** – A detailed visual inspection of a tree and surrounding site that may include the use of simple tools. It requires a risk assessor walk completely around the tree trunk looking at the site, above ground roots, trunk and branches.

**Borer** – An insect, often larvae of beetles, moths or sawflies, which bore into a tree and develop by eating part of the tree as they grow.

**Buttress roots** – Roots at the base that help support the tree.

**ISA Certified Arborist** – An arborist who has passed an independent exam administered by the International Society of Arboriculture, and maintains the credential through continuing education.

**Diameter at Breast Height (DBH)** – An acronym for tree diameter at breast height, measured at 1.4 meters (4.5 feet) above the ground.

**Dieback** – A condition in which the branches in the tree or other plant crown die from the tips toward the main stem.

**Drip line** – An imaginary line defined by the branch spread of a single plant or group of plants.

**Leader** – The primary terminal shoot or trunk of a tree.

**Live Crown Ratio** – The ratio of the height of the crown containing live foliage to the overall height of the tree.

**Pathogens** – A causal agent of disease. Usually refers to microorganisms.

**Phytophthora** – Is a genus of plant-damaging Oomycetes (water molds), whose member species are capable of causing enormous economic losses on crops worldwide.

**Root flare** – The area at the base of the trunk where it flares out just above the ground and transitions to roots.

**Sapsucker** – A bird that creates holes in the bark of a tree in search of sap or insects, also called woodpecker, or flicker.

**Scaffold branches** – Permanent or structural branches that form the scaffold architecture or structure of a tree.

**Sudden branch drop** – When apparently sound limbs occasionally break out of mature trees during calm summer weather.

**Sunscald** – Injury to bark tissues on the trunk and branches caused high temperatures and direct sun light, especially when those tissue become suddenly unshaded, after being shade for some time.

**Vascular system** – The phloem and xylem, the parts of the tree which conduct water and minerals, or organic compounds.

**Wood Decay** – The type of saprophytic fungal infections that live in inactive wood of a tree, slowly destroying it by breaking down its components, especially cellulose and lignin.

## Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. Title and ownership of all property considered 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. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes or other governmental regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible. The consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
4. Various diagrams, sketches and photographs in this report are intended as visual aids and are not to scale, unless specifically stated as such on the drawing. These communication tools in no way substitute for nor should be construed as surveys, architectural or engineering drawings.
5. Loss or alteration of any part of this report invalidates the entire report.
6. 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 written or verbal consent of the consultant.
7. This report is confidential and shall be distributed only to the individual or entity to which it is addressed. Any or all of the contents of this report may be conveyed to another party only with the express prior written or verbal consent of the consultant. Such limitations apply to the original report, a copy, facsimile, scanned image or digital version thereof.
8. This report represents the opinion of the consultant. In no way is the consultant's fee contingent upon a stipulated result, the occurrence of subsequent event, nor upon any finding to be reported.
9. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule, an agreement or a contract.
10. Information contained in this report reflects observations made only to those items described and only reflects the condition of those items at the time of the site visit. Furthermore, the inspection is limited to visual examination of items and elements at the site, unless expressly stated otherwise. There is no expressed or implied warranty or guarantee that problems or deficiencies of the plants or property inspected may not arise in the future.

## Disclosure Statement

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

## Certification of Performance

I, John Pape, Certify:

- That I have inspected the trees and/or property evaluated in this report. I have stated findings accurately, insofar as the limitations of the Assignment and within the extent and context identified by this report;
- That I have no current or prospective interest in the vegetation or any real estate 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 original and are based on current scientific procedures and facts and according to commonly accepted arboriculture practices;
- That no significant professional assistance was provided, except as indicated by the inclusion of another professional report within this report;
- That compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party.

I am a Certified Arborist's with the International Society of Arboriculture (ISA).

I have attained professional training in all areas of knowledge asserted through this report by completion of certification and by routinely attending pertinent professional conferences and by reading current research from professional journals, books and other media.

I have rendered professional services in a full time capacity in the field of horticulture and arboriculture for more than 40 years.



Signed:

Date: September 5, 2014