Board Members:

Leland Walmsley – Chair
Julie Broughton – Vice-Chair
Carol Terry
Kathy Henry
Lindsey Foucht

Location:

Council Chamber
5775 Carpinteria Avenue
Carpinteria, CA 93013
Time: 5:30 P.M.

CITY OF CARPINTERIA
TREE ADVISORY BOARD
Thursday, February 18, 2016

A. CALL TO ORDER

B. ROLL CALL

C. APPROVAL OF MINUTES AND AGENDA

D. PUBLIC COMMENT

This is a time for public comments on matters not otherwise on the agenda, but within the subject matter jurisdiction of the Tree Advisory Board.

E. OLD BUSINESS

F. NEW BUSINESS

1. Stone Pine Assessment & Management Plan Discussion
2. Heath Ranch Park Tree Matters

G. MATTERS PRESENTED BY STAFF

H. ADJOURNMENT

Next Regular Meeting of the Tree Advisory Board – Thursday, May 19, 2016

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact Melissa Angeles at MelissaA@ci.carpinteria.ca.us or (805) 755-4445 or through the California Relay Service at (866) 735-2929. Notification of two business days prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting.

CITY OF CARPINTERIA

5775 Carpinteria Avenue, Carpinteria, CA 93013

MEETING MINUTES OF THE TREE ADVISORY BOARD
THURSDAY, NOVEMBER 5, 2015

A. Call to Order

Chair Walmsley called the meeting to order at 5:30 P.M.

B. Roll Call

Boardmembers present:	Chair Leland Walmsley Vice Chair Julie Broughton Boardmember Kathy Henry Boardmember Carol Terry Boardmember Lindsey Foucht
Boardmembers absent:	None
Staff members present:	Paul Medel, Public Works Supervisor Melissa Angeles, Engineering Technician Charlie Ebeling, Public Works Director

C. Approval of Minutes and Agenda

Motion by Boardmember Henry, seconded by Boardmember Foucht to approve the agenda of November 5, 2015 and the minutes of May 21, 2015. *Motion approved 5-0.*

D. Public Comment

No public comment to report.

E. Old Business

Chair Walmsley asked Public Works to take a look at the Koelreuteria Bippinata (Chinese Flame) tree at 5065 Carpinteria Avenue due to potential damage and cracking.

F. New Business

1. 5641 Calle Pacific

Betty Songer, resident at 5641 Calle Pacific, stated that she would like this tree to be retained but have the City repair the sidewalk. She said that although the tree is creating sidewalk lifts near the walkway to her front door, she can access her home through her driveway.

Boardmember Henry and Vice Chair Broughton agreed that the tree does have some minor health issues but nothing extreme.

Boardmember Foucht stated that the tree is in fairly decent condition.
Chair Walmsley said that he feels that the tree should be retained if the homeowner is in favor of keeping it.

A motion was made by Boardmember Terry and seconded by Boardmember Henry to retain the Ligustrum Lucidum (Glossy Privet) tree at 5641 Calle Pacific and direct Public Works to perform necessary sidewalk repairs. Motion approved 5-0.

2. 5653 Calle Pacific

Elizabeth Copeland, resident at 5653 Calle Pacific, stated that the tree has caused damage to her property and she would like to see it removed. She feels that it creates a severe safety issue.

Vice Chair Broughton stated that because of the tree's history to cause sewer damage and its proximity to utility boxes, she would like to see the tree removed and replaced.

Boardmember Henry stated that the tree is in good health. Vice Chair Broughton disagreed and said that there is some girdling to tree trunk that makes its health questionable.

A motion was made by Vice-Chair Broughton and seconded by Boardmember Foucht to remove and replace the Ligustrum Lucidum (Glossy Privet) tree at 5653 Calle Pacific with an approved species from the STMP. Motion approved 5-0.

3. 420 Arbol Verde Street (2 trees at this location)

Patrick Johnson, resident at 420 Arbol Verde, said that he would like to see these trees removed and replaced due to the them dropping wood splinters that get stuck in people's feet. He said that the street sweeper has a hard time getting under the trees.

Boardmember Terry stated that both trees are healthy and she would like to see them retained.

Vice Chair Broughton said that the trees can be messy but can do with a good trimming.

Chair Walmsley said that considering the drought, there are a lot of trees that are in decline but these two trees are very healthy. Additionally, they are not damaging the public right-of-way.

Tree 1: A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to retain the Metrosideros (New Zealand Christmas) tree at 420 Arbol Verde Street. Motion approved 5-0.

Tree 2: A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to retain the Metrosideros Excelsa (New Zealand Christmas) tree at 420 Arbol Verde Street. Motion approved 5-0.

4. 810 Arbol Verde Street

The Board agreed that this tree has caused severe damage to the public infrastructure and should be removed when the budget allows for it. It is not high priority in terms of safety concerns but should be added to the removal list.

A motion was made by Vice-Chair Broughton and seconded by Boardmember Foucht to remove and replace the Liquidambar Styraciflua (American Sweet Gum) tree at 810 Arbol Verde Street with an approved species from the STMP. Motion approved 5-0.

5. 5452 Cameo Road

The Board agreed that this tree is in very bad health and is dying. They recommended that it be removed without a replacement due to a lack of vacant planting space.

A motion was made by Boardmember Terry and seconded by Boardmember Henry to remove the Melaleuca Viminalis (Weeping Bottlebrush) tree at 5452 Cameo Road with no replacement. Motion approved 5-0.

6. 5372 Ogan Road

Bruce Aragon, resident at 5372 Ogan Road, said that he would like to see this tree removed and replaced with something smaller such as a dwarf magnolia if possible. He said that the tree hangs over his property and drops berries that damage his vehicles. Additionally, Mr. Aragon stated that he paid out of pocket to replace the sidewalk five years ago when he replaced his driveway due to severe lifts. He noticed that the sidewalk has begun to crack again and is damaging the curb and gutter as well.

Boardmember Terry and Boardmember Henry agreed that the tree is lifting the curb, gutter and driveway apron and are concerned that it will continue to cause damage. They both recommended that the tree be removed and replaced.

Vice Chair Broughton and Boardmember Foucht recommended that the tree be removed and replaced. Vice Chair Broughton added that the root cut that was done to the tree will negatively affect the tree in the long run.

Chair Walmsley said that he felt that the homeowner has already gone to great lengths to retain the tree and it continues to cause damage, therefore it should be replaced.

A motion was made by Boardmember Henry and seconded by Vice-Chair Broughton to remove and replace the Cupaniopsis Anacardioides (Carrotwood) tree at 5372 Ogan Road with an approved species from the STMP. Motion approved 5-0.

7. 5371 Santa Rosa Lane

The Board agreed that this tree is in decent overall health but should continue to be monitored. They requested that the tree be trimmed and the branch overhanging the house be removed.

A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to retain the Metrosideros Excelsa (New Zealand Christmas) tree, add it to the trimming list and remove the large branch overhanging the house. Motion approved 5-0.

8. 5481 Granada Way

Craig Jacobson, resident at 5481 Granada Way, stated that the tree drops seeds everywhere that create a safety hazard and sap that damages his vehicles. He said the tree is beginning to damage the sidewalk and the limbs are starting to grow towards the house. He fears that with severe weather, the tree may fall over and land on the house.

Boardmember Henry and Vice Chair Broughton would like the tree to receive a heavy trim as quickly as possible to avoid having rain overstress the branches.

Boardmember Foucht said that this tree is one of the nicer character trees on the street and would like to see a heavy trim to reduce the canopy weight. Boardmember Terry agreed.

Chair Walmsley reminded the Board that the tree helps with heat reduction in the City and the habitat factor is enormous.

A motion was made by Vice Chair Broughton and seconded by Boardmember Terry to retain the Cupaniopsis Anacardioides (Carrotwood) tree and heavily trim as soon as possible. Motion approved 5-0.

9. 5489 Granada Way

The Board agreed that this tree is a major safety issue. They stated that its weight is unevenly distributed and has been severely damaged by Edison's trimming and should be removed immediately. Additionally, there is root damage that could cause it to fall over.

A motion was made by Boardmember Foucht and seconded Boardmember Henry to remove the Cupaniopsis Anacardioides (Carrotwood) tree at 5489 Granada Way immediately with no replacement. Motion approved 5-0.

10. 5497 Granada Way

The Board agreed that this tree is diseased and dying and should be removed immediately with no replacement.

A motion was made by Vice Chair Broughton and seconded Boardmember Foucht to remove the Cupaniopsis Anacardioides (Carrotwood) tree at 5497 Granada Way immediately with no replacement. Motion approved 5-0.

11. 1325 El Portal

Terry Moore, resident at 1325 El Portal, said that the roots from this tree are interfering with his plan to replace the grass in his front yard with drought tolerant landscaping. He added that the droppings will fall into the gravel that he plans on installing and will be impossible to rake. He would like to see the tree replaced with a smaller tree.

Boardmember Foucht said that the tree is in overall good health and does not see a reason to remove it.

Boardmember Terry stated that the tree would benefit from a crown reduction. She said that if properly pruned, the tree will not interfere with a drought tolerant landscaping.

Chair Walmsley agreed that the tree would benefit from light pruning and a crown reduction.

A motion was made by Boardmember Terry and seconded by Vice Chair Broughton to retain the Cupaniopsis Anacardioides (Carrotwood) tree at 1325 El Portal and add to the trim list. Motion approved 5-0.

12. 5280 Ogan Road

The Board agreed that this tree needs to be removed due to its poor structure. They said that it is not an emergency but should be removed. A replacement tree should be planted in a different location.

A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to remove the Liquidambar Styraciflua (American Sweet Gum) tree at 5280 Ogan Road with an approved species from the STMP in a different location. Motion approved 5-0.

13. 5413 El Carro Lane

Cynthia McAlexander, resident at 5413 El Carro Lane, stated that the City should be concerned about the water meter located to the left of the tree. She said that the sidewalk is severely lifted and is a safety hazard. She added that a plumber clears her sewer lines every two years to remove roots from the lines. She would like to see the tree replaced with a slower growing species and in a different location.

Boardmember Foucht said that it is a beautiful tree but is causing extensive damage to the City sidewalk and with the predicted El Niño, the roots will expand. He would like to see the tree replaced.

Vice Chair Broughton said that the potential for damage to the adjacent water meter is extreme.

Boardmember Terry said that the damage will only get worse and would like to see the tree removed and replaced. Boardmember Henry agreed.

Chair Walmsley stated that this tree is one of the worst offenders on the replacement request list.

A motion was made by Vice-Chair Broughton and seconded by Boardmember Henry to remove the Podocarpus (Fern Pine) tree at 5413 El Carro Lane and replace with an approved species from the STMP in a different location. Motion approved 5-0.

14. 1435 Begonia Place

Don Wood, resident at 1435 Begonia Place, would like to see this tree removed due to its overall health. He is concerned that it is diseased due to the sap it is pushing out through the trunk.

Vice Chair Broughton said that this tree has major health issues and would like to see it removed.

Boardmember Foucht said that this tree should be removed as soon as possible.

A motion was made by Boardmember Henry and seconded by Boardmember Terry to remove the Prunus Caroliniana (Carolina Laurel Cherry) tree at 1435 Begonia Place and replace with an approved species from the STMP. Motion approved 5-0.

15. 4516 La Tierra Lane

John Culbertson, resident at 4516 La Tierra Lane, stated that Public Works has had to come out various times to repair the sidewalk to pick up broken limbs. In the past it broke his fence and is also concerning because it is located in a public utility corridor. He would like to see a replacement tree such as a Gingko Biloba take its place.

Boardmember Foucht stated that the tree is healthy but the fact that it is located in a utility corridor makes him nervous.

Vice Chair Broughton said that the tree is causing minor damage but would benefit from a good trim to reduce the potential for sudden limb drop.

Boardmember Terry said that the tree should get a good trim and requested that the City monitor it for future damage.

A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to retain the Liquidambar Styraciflua (American Sweetgum) tree and add to the trim list as soon as possible. Motion approved 5-0.

16. 1496 Santa Ynez Avenue

Zave Saragosa, resident at 1496 Santa Ynez Avenue, stated that this tree has caused the sidewalk to be uplifted and he has cut out big roots from his lawn in the past. He said that there are utility and sewer lines in close proximity to this tree. He added that this tree is interfering with the growth of the Coast Live Oak tree that is planted next to it.

Boardmember Foucht said that the Magnolia tree is causing minimal damage and recommended that the tree be retained and monitored for future damage.

Vice Chair Broughton stated that the Magnolia tree is starting to encroach upon the Oak tree and its health is starting to decline due to a lack of sunlight. She would like the Magonlia to be removed to allow the Oak tree to grow to its full potential.

Boardmember Terry recommended that this tree be removed. Boardmember Henry agreed.

Chair Walmsley added that if the Magnolia is removed, the water that it consumes can be used up by the other Oaks on the property. He would like the tree removed but it is not high priority.

A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to remove the Magnolia Grandiflora (Southern Magnolia) tree at 1496 Santa Ynez Avenue and replace with an approved species from the STMP in a different location. Motion approved 5-0.

17. 4486 La Tierra Lane

Linda and Bruce Trimble, residents at 4486 La Tierra Lane, stated that they are concerned about vertical cracks they have seen on the trunk of the tree that are getting wider. Mrs. Trimble said that she is concerned that with a strong wind, the tree could come down on the house.

Boardmember Foucht said that the tree looked ok and he did not see anything concerning.

Vice Chair Broughton said that the vertical cracks seen are normal. She said that if the tree is trimmed, it will allow the wind to go through it and will reduce potential safety issues. She recommended that a better canopy thinning be performed.

Boardmember Terry said that the tree could use a trim and a canopy thinning.

Chair Walmsley said that the Board should take into consideration the cost to bring climbers to trim the tree rather than a boom lift because of the tree's height.

A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to retain the Eucalyptus Polyanthemos (Silver Dollar Gum Eucalyptus) tree at 4486 La Tierra Lane and add to the trim list with a 30% canopy reduction as soon as possible. Motion approved 5-0.

18. 4496 La Tierra Lane

Dan Cerda, resident at 4496 La Tierra Lane, said that he is concerned about safety. He is worried that the tree could fall over with severe weather. He added that quite a few smaller branches have already fallen onto his car.

The Board agreed that this tree should be heavily trimmed to reduce potential safety issues. They recommended that a 30% canopy reduction be performed.

A motion was made by Vice Chair Broughton and seconded by Boardmember Henry to retain the Eucalyptus Polyanthemos (Silver Dollar Gum Eucalyptus) tree at 4496 La Tierra Lane and add to the trim list with a 30% canopy reduction as soon as possible. Motion approved 5-0.

19. 4823 7th Street

Millie and Willie Nevarez, residents at 4823 7th Street, stated that this tree has caused extensive damage to their sewer and water lines and caused mold to grow inside their home. Additionally, the tree drops sap and has damaged the sidewalk, curb and gutter extensively. They are concerned that the tree is going to split and they can no longer afford to keep paying for expenses out of pocket.

Public Works Director, Charlie Ebeling asked that an email sent to the City Council and Staff be put on the record. Mr. Miguel Checa wrote that he would like to see this tree and all other Italian Stone Pines on 7th Street retained. He wrote that he would like the City to collaborate with the City of Santa Barbara to set up a program to prevent any more loses to protect the remaining Italian Stone Pines.

Boardmember Foucht stated that he observed that roots from the street side have been removed which makes him nervous. He is concerned that the weight from the tree is not evenly distributed. He recommends removal but is concerned about the cost.

Vice Chair Broughton said that she would like this tree to be placed on the top of the removal list but would first like to see the arborist report being prepared by contract arborist, Bill Spiewak. She requested that the City schedule a special meeting once the report is received and then move forward.

Boardmember Henry and Boardmember Terry said that they agree with the Board's comments but would like to see the arborist report before making a decision.

Chair Walmsley said that he feels that Edison should be put on notice due to their process for trimming trees because they are creating a massive liability for the City. He feels that some action needs to be taken because nothing has been accomplished in the 10 years that he has sat on the Board.

The Board made a motion to table this item until the arborist report is received at which time a special meeting will be scheduled to discuss the 7th Street Italian Stone Pines. Motion approved 5-0.

20. Parking Lot #1

Boardmember Foucht said that he feels that the tree needs more growing space.

Vice Chair Brougthon said that this tree is being overshadowed by the adjacent Magnolia tree and is creating lifts because it is searching for water. She feels that it will continue to create lifts and should be removed.

Public Works Director, Charlie Ebeling stated that this request was generated by Staff due to the tree creating lifts in the sidewalk. He said that the City will eventually have to repair the entire walkway but for now, he feels that the tree should be removed to prevent further damage to the public right-of-way.

A motion was made by Boardmember Terry and seconded by Vice Chair Broughton to remove the Cupaniopsis Anacardioides (Carrotwood) tree in Parking Lot #1 and replace with an approved species from the STMP in a different location. Motion approved 5-0.

G. Matters Presented By Staff

No matters presented by staff.

H. Adjournment

Meeting adjourned at 8:30 P.M.

The next regular Tree Advisory Board meeting will be on Thursday, February 18, 2016.

City of Carpinteria
DEPARTMENT OF PUBLIC WORKS

Agenda Item #: 1

TREE ADVISORY BOARD

MEETING DATE: February 18, 2016

ITEM FOR CONSIDERATION

Stone Pine Assessment & Management Plan Discussion

Action Item: X **Non-Action Item:** ____

Report prepared by: Melissa Angeles
Department of Public Works
Melissa Angeles
Signature

Reviewed by: Charles W. Ebeling, P.E.
Director of Public Works/City Engineer
Signature

I. RECOMMENDATION

Receive and file the Stone Pine Assessment & Management Plan and make a recommendation on the two Italian Stone Pines recommended for removal at 4823 7th Street and 4791 7th Street.

II. DISCUSSION

The City has twenty-eight Italian Stone Pines within the City limits. They are located on 7th Street, Carpinteria Avenue, Ash Avenue, Wullbrandt Way, 9th Street, El Carro Park, Monte Vista Park and Olive Avenue. Public Works retained Consulting Arborist, Bill Spiewak, to assess the condition and level of risk of each tree. Mr. Spiewak prepared the attached Stone Pine Assessment & Management Plan.

At this time, Public Works is requesting that the Board review and discuss the report and make a recommendation on two Italian Stone Pines located at 4823 7th Street and 4791 7th Street. A replacement request was submitted by a resident for the tree at 4823 7th Street. At its November 5, 2015 meeting, the Board made a motion to table the replacement request until they could review the arborist report. Both trees, located at 4823 & 4791 7th Street, were recommended for removal by Mr. Spiewak due to their poor structure. It is important to note that an additional tree at 4757 7th Street was also recommended for removal by Mr. Spiewak, but has since been removed by the City due to a large stress fracture that created a significant risk of tree failure.

Attachment A: Stone Pine Assessment & Management Plan
Attachment B: Addendum to Stone Pine Assessment & Management Plan

ATTACHMENT A

Bill Spiewak
CONSULTING ARBORIST
Registered Consulting Arborist #381 • American Society of Consulting Arborists

STONE PINE ASSESSMENT & MANAGEMENT PLAN

Project Site: 7th St., Carp Ave, Ash, Wullbrandt Way, El Carro & Monte Vista Parks - November 13, 2015

Prepared for:
Charlie Ebeling-Public Works Director / City of Carpinteria
5775 Carpinteria Ave., CA 93013
(805) 684-5405 ext. 402 / cebeling@ci.carpinteria.ca.us

Prepared by:
Bill Spiewak Consulting Arborist
3517 San Jose Lane, Santa Barbara, CA 93105
805) 331-4075 / bill@sbarborist.com

SUMMARY

There are 27 Italian Stone Pines in Carpinteria. I was retained to assess their condition and level of risk. I developed a spread sheet to collect information on each tree including size, health, structure, underlying targets, and damage to infrastructure. I utilized two methodologies to assess risk and also provided recommendations.

The pines are all biologically healthy but in structurally fair condition. Co-dominant stems with included bark is a common defect in trees that leads to weak branch attachments. Due to the multiple stems of these stone pines, they have a high potential to split when over-weighted with growth, especially during adverse weather conditions. Due to their location as street trees, the consequences of failure could be tragic.

As a result, most of the trees need pruning this winter and some will benefit from cabling to help retain some of the spreading limbs that that are more prone to failure. During the next pruning cycle, tree workers must be more aggressive in removing leaders to significantly reduce weight in the crowns. In addition, concrete sidewalks and asphalt roadways had been repaired multiple times followed by more cracking and lifting. This conflict with infrastructure needs to be addressed. Because root pruning can lead to tree failure, *bulbing out* curbs and sidewalks may be an option in certain locations.

The table of contents on the next page illustrates the organization of this report. For a quick review of my findings, see conclusions on page 17.

TABLE OF CONTENTS

BACKGROUND/ASSIGNMENT 3
- ***Use of Report*** 3
- ***Limits of Assessment and Report*** 3
- ***Scope of Project*** 3

SPECIES PROFILE: Benefits & Detriments 4

ASSESSMENT CRITERIA 5
- ***Size and Condition*** 5
- ***Infrastructure, Conflicts and Damage*** 5
- ***Risk Assessment: Quantitive and Qualitative Methodologies*** 6

MITIGATING RISK AND MAINTENANCE OPTIONS 9
- ***Tree Removal*** 9
- ***Tree Pruning*** 9
- ***Cabling*** 9
- ***Infrastructure and Root Pruning*** 10

TREE INVENTORY 11
- ***Description of Column Headings*** 11
- ***Tree List (see Excel spreadsheet as attachment in electronic version)*** 13

CONCLUSIONS & SPECIFICATIONS 17

REFERENCES 17

ARBORIST'S DISCLOSURE AND CERTIFICATION OF PERFORMANCE 18

PHOTOS 19

BACKGROUND/ASSIGNMENT

The City of Carpinteria has twenty seven stone pines within its city limits. The trees along 7th Street were planted by the Lion's Club, circa 1955, as street trees that now overhang sidewalks, roads, parking, and residences. I am not sure about the planting year for the rest of the trees.

A couple of the trees had failed and many have caused severe damage to the infrastructure. I was retained to inspect the trees and prepare a report with my findings and recommendations. I performed my field work in October and November 2015.

Use of Report

It is intended that this report provide a management tool for the public works department to remove, retain, and manage this city's stone pine resource.

Limits of Assessment and Report

- Initially there were 32 trees requested for inspection. However, five had been removed and the report includes only 27 trees.
- I did not inspect the trees from the homeowners side of the property unless they were present and invited me to look from their side.
- I did not have a history of maintenance on the trees, aside from general pruning cycles. A few residents had described some of the history when they saw me inspecting the trees.
- My recommendations for pruning are mostly general based on species and location. In some cases, specific recommendations were made. However, the tree pruning contractor must be able to make appropriate decisions when pruning that fulfills the objective of reducing risk while maintaining natural form and health to the greatest extent feasible.

Scope of Project

In order to fulfill my assignment, the following tasks were required:

- Develop criteria for assessment and a worksheet for field work,
- Inspect each tree and assess its health and structure,
- Identify underlying targets and potential risks from tree failures,
- identify previous and current damage to sidewalk, curb, gutters, driveways, and roadways,
- Identify conflicts with utilities,
- Prepare a report with my findings and recommendations.

SPECIES PROFILE: Benefits & Detriments

The Italian Stone Pine *(Pinus pinea)* is native to the Mediterranean region. It has been widely planted as a street tree and park tree in Southern California. Santa Barbara has many along Anapamu Street that were planted approximately one hundred years ago. Most of the stone pines in Carpinteria were planted in 1955 with the exception of one in El Carro Park, one in Monte Vista Park, one on 9th street, and possibly one on 7th Street.

The stone pine has a beautiful spreading canopy that is often shorter than it is wide. The shade created by these trees is magnificent and quite welcome on hot days. The trees along 7th street create a canopy that covers the entire road in several locations.

There are not many diseases associated with stone pines although they are susceptible to brown rots and other fungi that infect conifers and their roots, although I did not observe any obvious fungal infections. Stone pines are also susceptible to beetle infestations but none were observed. It was interesting to see so many biologically healthy stone pines in Carpinteria, which is likely due to their young age and root growth into deep sandy soil.

However, stone pines have two detrimental characteristics. First, their shallow lateral roots are highly invasive and cause damage to infrastructure and anything in their path. They are aggressive and fast growing and therefore an expensive species to manage when planted in limited spaces. Although roots are often pruned, as they have been here, can sometimes leads to toppling (falling of an entire tree).

The other problematic characteristic is their form. Stone pines naturally develop co-dominant stems with included bark. Co-dominant stems are two or more trunks, leaders, limbs or branches that grow adjacent to each other, at similar rates, and are similar in size. As these stems continue to grow each year, they also enlarge in diameter. Eventually, the space between them closes and the bark becomes included or embedded. This causes a weak attachment and a seam between stems.

This structural occurrence is a common defect in stone pines and other trees and is often the cause of splitting that occurs as co-dominant stems with included bark get large and heavy. The defect can often be mitigated with removal of one of the co-dominant stems, weight reduction pruning, and/or sometimes cabling. Despite this being a common problem, not every co-dominant stem with included bark will fail. However, this structural defect was identified in most every stone pine and the reason for the high risk assessment posed by some of the trees.

The photos beginning on page 19 of the report illustrate the defects described above.

ASSESSMENT CRITERIA

I looked at many aspects of the stone pines in order to provide a comprehensive assessment. The categories below are the characteristics that I evaluated. The tree inventory beginning on page 11 describes the column headings prior to the tree list.

Size and Condition

The location, trunk diameter, diameters of individual leaders, height and spread are the first bits of information.

I used a diameter tape to measure the trunk DBH (diameter at breast height measured at 54" above ground) for most trees except when they were partially growing on private property. DBH is an industry standard used to identify tree size. I used a linear tape when necessary to obtain a close estimate of leader diameter. Leaders are major stems that are smaller than the trunk but larger than a limb and represent a significant section of the tree.

I assessed the biological and structural condition of the trees with good, fair, or poor ratings, although every pine was in good biological condition except for one in fair condition growing in Monte Vista Park. I have conjecture that these trees are so healthy due to their young age and deep sandy soil that allows vertical and diagonal roots to grow deep, despite all the surface root problems.

Structurally, most of the trees are in fair condition. This is due to the common structural defect, co-dominant stems with included bark. Most of the trees had two to seven leaders attached at a common height or union. Although typical of this species, co-dominant stems with included bark is a significant weak spot in a tree that is highly prone to splitting.

Tree heights were estimated visually and spread size was estimated by pacing beneath the canopy along the sidewalk. Trees under high voltage wires were similar in maximum height due to utility pruning, with the exception of younger trees or slower growing trees that have not yet been in conflict. Trees without overhead high voltage wires were mostly taller with the exception of a few younger trees in the two parks, 9th street, and in the Wullbrandt Way parking lot.

Infrastructure, Conflicts and Damage

Among potential problems with Stone Pines and infrastructure are the conflicts with utilities, sidewalks, curbs, gutters, driveways, and roads. The stone pine is a big offender in this department and the cause of huge amounts of maintenance expenditures. The aggressive and rapid growth of roots and trunk in small planting areas repeatedly lift, crack, and push anything in the path. Most every location has experienced problems that have been repaired more than once, are in need of repair, or will be faced with repairs in the near future.

Although root pruning is one form of mitigating sidewalk and street damage, this can create a potentially hazardous situation due to removal of roots that keep the tree

upright, stable, and healthy. Although I did not observe any unhealthy trees from root pruning, there is currently a potential for whole tree failures.

Utility wires are another conflict with the large tree canopies. The low voltage secondary wires, cable TV, and telephone are not a problem as these thick and insulated wires usually extend through the tree. Some of the larger cables even provide some support. However, the high voltage wires are in conflict that is managed by Southern California Edison. Utility tree pruning is performed by the utility line clearing contractor but is often done with little regard for the type or placement of pruning cuts. This has left some of the trees off balance and disfigured. Despite pruning concerns, the Public Utility Commission requires SCE to maintain clearance from the high voltage wires.

Note that high voltage wires are above trees on the odd numbered side of 7th Street and Carpinteria Avenue. There are several trees along 7th street that have been severely pruned by the utility and warrant maintenance to reduce the risks posed by their poor structure. Three of these may be considered for removal. The wires on Carpinteria Ave are higher or the trees are smaller and/or younger.

Although I could not observe underground conflicts with water and gas, it is likely that these utilities will be disrupted by roots that are close to the trunks. There is one large tree with a drain/culvert along the side of its root system that is very close to the trunk and at least eight feet deep. This lack of root system on one side is concerning. There are many trees with water and gas meters close to the trunks.

Risk Assessment: Quantitive and Qualitative Methodologies

The primary purpose of my assessment was to identify trees that pose high risks and determine how to mitigate these risks. High risk trees have a high potential to damage or hurt underlying targets (people, structures, and vehicles, etc.) from limb breakage or toppling.

Over the past twenty-five years, two methods of risk assessment have been used by our industry. Back in the early 1990s, the International Society of Arboriculture adopted a quantitative methodology that rated certain aspects of trees with numbers to determine a hazard rating. The higher the hazard rating (12 was maximum) the greater the risk. The name of the manual is *The Photographic Guide to the Evaluation of Hazard Trees in Urban Areas – 2nd Edition*, Matheny & Clark, ISA, 1994. The hazard rating was also used to compare one tree to another on a given property that would help prioritize and budget maintenance.

For each tree, a hazard rating is determined by identifying the target, rating the probability of failure, the size of the part most likely to fail, and the frequency of use of the underlying area as show in the table below.

Tree	Target	Tree Part Most Likely To Fail	Failure Potential 1-4 (low to high)	Size of Part 1-4 (low to high)	Target Rating 1-4 (low to high)	Hazard Rating
example	People, Vehicle, Structure, Yard	Leader	3	3	3	9

These variables are rated by number from 1 – 4 (4 being largest or most extreme) and added together to determine a hazard rating. The higher the hazard rating the more significant the problem and the greater the need to perform maintenance. In this example, 9 is the hazard rating, which is a high rating although not the most extreme of 12. On this project there were several pines I rated with 8 and 9 but none higher.

More recently in 2011, the International Society of Arboriculture developed a new qualitative methodology to tree risk assessment. The manual is called *Best Management Practices for Tree Risk Assessment* and was written as a companion publication to the *American National Standard Institute's A300 Risk Management Standards*. Protocol for risk assessment requires the arborist to determine the likelihood of a tree failure, the likelihood of it hitting a target, and the severity of the consequences. This qualitative approach was better suited to define the real risk of an individual tree in a specific location rather than as a comparison of one tree to another.

The two tables below are used for a qualitative risk assessment.

- The first table is used to identify the *likelihood of failure and likelihood of impacting a target* as indicated across the top column headings.
- The arborist first assesses the likelihood of failure (left column) as *improbable, possible, probably, or imminent*.
- The arborist then assesses the likelihood of impacting a target (top right column) as *very low, low, medium, or high*.
- At the intersection of the selected row and column is the finding, *unlikely, somewhat likely, likely, or very likely*. This finding is carried over to the second table.

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

- In the second table, the finding from the previous table is carried over to the left column.
- The *consequences* under the right column heading are assessed as *negligible, minor, significant, or severe.*
- At the intersection of the row and column selected is the level of risk, which is defined as *low, moderate, high, or extreme.*

Likelihood of Failure & 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

For this project, I found that both methodologies were important. The qualitative (more modern method) assesses risk of the individual tree while the quantitative (older approach) helps prioritize work. In some instances I elevated the level of risk based on both methodologies. Mitigating tree risk is described in the next section.

MITIGATING RISK AND MAINTENANCE OPTIONS

Due to risk posed by tree trunks and limbs, and conflicts with infrastructure posed by roots, the maintenance recommendations described below provide options for management. These include tree removal, pruning, cabling, root pruning and infrastructure repair.

Tree Removal

Tree removal is the most extreme and maybe the best option for dealing with some of the most hazardous and infrastructure damaging trees. Although I found three trees that could be considered for removal, every tree could be temporarily retained and managed with crown pruning, cabling, and root pruning. The cost of on-going maintenance versus removal and replacement when compared with the benefits provided by the tree is likely to be the driving factor for tree removal.

Tree Pruning

This is the primary management tool. Most trees can be pruned to minimize potential of splitting and toppling. Although pruning standards recommend to not remove more than 20% of the crown in one season, some trees will require more pruning (up to 30%) to reduce risk and conflicts. Refer to the ANSI A300 (Part 1)-2008 Pruning.

In several situations, entire leaders may need to be removed. In other situations, tree crowns will need to be thinned by removing one or more of the co-dominant stems that may be 3"-12" in diameter to lighten the load and minimize potential for splitting.

Another concern with tree pruning is the time of the year and the sap that drips from cuts. Winter will be the best time to prune as insect activity is lowest, which reduces tree susceptibility. Also very important, the community should be alerted about parking beneath pruned trees. It could take a month for the resins to harden at pruning cuts even in the cooler weather. Dripping resins on vehicles can be an expensive problem.

Cabling

Specialized hardware has been designed specifically for trees. Eye bolts, cables, and associated hardware can be installed to assist in supporting limbs. Cabling complements pruning and is appropriate for stone pines. Direct or triangular systems should be used for the greatest support. These systems attach one cable directly from one leader to another or in a triangle with three individual cables and six separate eyebolts. Cables are galvanized steel and usually installed at a height that is not easily seen from the ground. Standards for cabling must be followed as improper installation, hardware, and placement of cables may not provide the benefits for which is was designed. Cabling may imply that a tree is safe while an improperly installed cable can create more risks. Cables need to be inspected every one to three years. Refer to the ANSI A300 (Part 3)-2013 Supplemental Support Systems.

Infrastructure and Root Pruning

There has been an abundance of damage and repair to sidewalks, curbs, gutters, and asphalt. With stone pines, this is generally an on-going problem due to the aggressive root growth and the excellent growing environment within the interface between hardscape and underlying soil.

Roots grow where there is oxygen and moisture, which is plentiful in the microscopic spaces. A root tip gets into a small space within the interface between a hard surface and the underlying road base or soil and then elongates each year followed by diameter growth. The growth begins to push and displace the hard surface upward or sideways. This is because the underlying road base or soil is prepared only to resist downward pressure of sidewalks and roads. There is nothing to stop the upward pressure created by root growth.

Due to the sidewalk, curb, gutter, and road damage caused by trees, root pruning is commonly practiced in municipalities. However, root pruning can cause unforeseen problems with tree stability including creating entry points for root rot and decay. Research suggests to avoid root pruning within three to five trunk diameters due to potential destabilization. However, this distance is impossible to follow in most situations where trees are in the parkways.

Pines that are root pruned, warrant the removal of a significant amount of foliage to reduce weight and potential toppling of the entire tree. Despite any potential impact to the health of a tree from root loss, risks are likely to be increased after root pruning. Trees between sidewalks and front yards are better candidates for root pruning rather than those surrounded by concrete in a narrow planter. Unfortunately, the later is more common.

When root pruning, cleanly cut roots with sharp tools rather than ripping them with an axe or backhoe. Refer to the ANSI A300 (Part 8)-2013 Root Management Standard.

Root barriers, chemical or physical, can be installed for approximately ten years of control. Plastic physical barriers *(Deep Root)* deflect root growth downward while cloth and chemical barriers *(Bio Barrier)* inhibit root growth at the root tip.

Trees that appear to decline in health after root pruning, as suggested by browning or die back of foliage, may need to be evaluated for root decay and subsequently removed. I did not observe any dieback that would be associated with root pruning.

TREE INVENTORY

Description of Column Headings

I have 32 columns of information that correspond with the 27 trees. The heading are described below but separated into the four categories and distributed over three pages due to limited space.

TREE DESCRIPTION									
#	Address	Parkway Size	DBH	# of Leaders & Sizes	Approx Height	Approx Spread	Health G/F/P	Structure G/F/P	Comment

#: the assigned tree number that corresponds between the spreadsheet and photo pages.
Address: the location, when there are two trees at one site, the eastern or northern tree is first.
Parkway size: a public works description.
DBH: the diameter at breast height or 54" above ground.
# of Leaders & Sizes: indicate the approximate diameter of each and the height of their attachment.
Approx height: estimated
Approx spread: estimated by pacing the sidewalk beneath the drip line.
Health G/F/P: biological health and is good, fair and poor although most tree health was good.
Structure G/F/P: mechanical condition as good, fair, and poor although most of the trees were structurally fair (ratehr than good) due to their co-dominant leaders and limbs throughout the crown (which is a common tree defect that leads to splitting).
Comment: a notable observation or summary of my inspection.

INFRASTRUCTURE ASSESSMENT					
Utilities: HV, Cables	Topped Yes/No	Sidewalk Cracked: Low/Moderate/ Severe	Curb Cracked: Low/ Moderate/ Severe	Gutter Cracked: Low/Moderate/ Severe	Asphalt damage: Low/ Moderate/ Severe

Utilities: HV, Cables: indicates which overhead utilities are present and their location, overhead or through the crown. HV is high voltage, pole to pole indicates heavy black low voltage or cable/TV wires. Note that HV is only above the odd numbered side of 7th St. and Carp Ave.
Topped: Yes/No: are severely cut back in height to accommodate overhead wires.
Sidewalk Cracked: Low/Moderate/Severe-low is insignificant at the time of inspection to moderate and severe which indicates a potential hazard to pedestrians.
Curb Cracked: Low/Moderate/Severe-Cracked curbs pose some risk to people crossing the street or vehicles when parking.
Gutter Cracked: Low/Moderate/Severe- Cracked gutters pose risk to people crossing the street or parking.
Asphalt damage: Low/Moderate/Severe-Cracked asphalt poses risk to cyclists and vehicles, and people crossing the street.

QUANTATIVE RISK ASSESSMENT					
Target: Ped & Vehicle/ Structure/ Yard	Tree Part Most Likely To Fail	Failure Potential 1-4	Size of Part 1-4	Target Rating 1-4	Hazard Rating

Target: Pedestrians, Vehicle, Structure, Yard: indicates the target within range of a falling tree or limbs. Most of the trees have all of these underlying targets except those in the parks.
Tree Part Most Likely To Fail: most of the tree parts identified as potential failures are trunks, leaders and limbs.
Failure Potential: 1-4-failure potentials are 1 = low, 2 = medium, 3 = high, 4 = severe
Size of Part - 1-4: identifies the size of the part most likely to fail as 1 = < 6" diameter, 2 = 6"-18"diameter, 3 = 18"-30" diameter, and 4 = >30" diameter.
Target Rating -1-4: identifies use of the underlying target area as 1=occasional use, 2=intermittent use, 3= frequent use, and 4=constant use. Most of these trees have target ratings of 2-4. A residence is considered to be constantly used while a sidewalk or yard may be intermittent or frequent.
Hazard Rating: the sum of the three ratings. A hazard rating of 8 or above is a high risk.

QUALITATIVE RISK ASSESSMENT				
Likelihood Of Failure	Impacting Target	Likelihood of Failure & Impacting a Target	Consequences	Risk

Likelihood Of Failure: similar to failure potential in the other methodology but described as unlikely, possible, probable, and imminent
Impacting Target: unlikely, somewhat likely, likely, and very likely.
Likelihood of Failure & Impacting a Target: is the intersection of the column and row in the first risk assessment table (pages 7 & 8).
Consequences: if a tree part hits the underlying target, the consequences are negligible, minor, significant, or severe. Most of the consequence range between significant and severe.
Risk: the risk level is based on the previous four ratings.

TREE MANAGEMENT				
Remove	Pruning Priority	Possible Leaders to be removed	% of Limb pruning	Cable

Remove: the three trees considered to be removed are identified with a "?".
Pruning priority: is recommended as high, medium, or low. Most of the trees warrant pruning. Although prioritizing allows phasing for budgeting, it is more likely less expensive to prune all trees on one street during the same cycle rather than skipping around. Risks can be significantly reduced through pruning this winter.
Possible Leaders to be Removed: a suggestion on removing a major portion of the tree to reduce risk.
% of Limb Pruning: low-approx 15%-20%, medium-approx 25%, major-approx 30% all based on structure, underlying targets, and previous root pruning.
Cable: cables should be installed in conjunction with pruning on some trees.

Tree List (see Excel spreadsheet as attachment in electronic version)

FOR THE TREE INVENTORY IN THE ELECTRONIC VERSION: SEE EXCEL SPREAD SHEET

TREE DESCRIPTION									
#	Address	Park way Size	DBH inches	Leader Diameter @ Height of Union	Approx Height feet	Approx Spread feet	Health G/F/P	Structure G/F/P	Comment
1	4621 7th St.	4	34	18/23 @5'	25-30	40	Good	Fair	Small tree under wires that has and will continue to damage concrete and asphalt. Lower cable wires contribute to support of limbs. Also note root damage in adjacent driveway of residence approx 15'-20' from tree to northwest. Could remove northern leader and lift other limbs. Consider a bulb out of curb.
2	4621 7th St.	6	50	20/24/28/24/24 @6'-8'	25-30	85	Good	Fair	Leader to west, toward residence and 12" limb over road, could be removed and others lifted to reduce weight. Consider bulb out as option for curb and more space for roots. Note damage and repairs to sidewalk.
3	4678 7th St.	99	84	20/24/30/28/28 @5'-6'	45-50	80	Good	Fair	Partially on residential property. Very dense and heavy crown. Prune to reduce the number of leaders and lift horizontals. Note some deformity in southern and central leaders at 15'-20'. Bulb out sidewalk/curb as option. Gas and water meters 8' to east of trunk.
4	4696 7th St.	99	51	20/24/28/24 @6'	45-50	75	Good	Fair	Partially on residence's property with encroachment onto sidewalk but minimal damage. Also major culvert below sidewalk, thus few roots on southern side of trunk. Must reduce weight including two 12" limbs on house side. Could remove eastern and western leaders.
5	4757 7th. St.	6	41/40/28	28/22/22/20/14/ 22/24 @6'-10'	25-30	75	Good	Poor	Heavy codominant trunks pose a high risk, particularly during severe storm events. Reduce a significant amount of weight and cable. Several leaders and large limbs should be removed including eastern and western leaders and large limbs over road. Note damage to curb and gutter. Consider bulb out.
6	4774 7th St.	99	32	smaller@20'	40-45	60	Good	Fair	Partially on residence's property or east edge of sidewalk. Crown thin to reduce end weight. A second trunk had been removed. Bulb out is option.
7	4774 7th St.	99	37	smaller@15'	40-45	45	Good	Fair	Mostly on east edge of sidewalk. Codominant leader is dense and warrants pruning and cabling. Could significantly reduce weight of southern leader to avoid need for cable. Bulb out is option.
8	4791 7th St.	6	58	30/30/40 @6'-8'	25-30	75	Good	Poor	Severely pruned for utility lines, leaving dense and heavy leaders on both sides of center cables. Tree also grows into canopy of two pines on other side of street. Curb was nicely repaired with a steel curb, which appears to be holding up although the adjacent concrete is cracked. Due to the poor form, this tree could be considered for removal. Otherwise, it warrants a high degree of pruning to reduce weight and spread of all lateral limbs.
9	4792 7th St.	99	49	12/16/18/18/18/ 18 @6'-10'	40-45	75	Good	Fair	Limbs are heavy on leader toward house. Tree is on corner and bulb out option in future not likely.
10	4816 7th St.	99	45	18/18/16/18/18 @6'-8'	40-45	65	Good	Fair	Appears well pruned in recent history. Not much problem now except for curb and sidewalk close to needing repairs.
11	4823 7th St.	6	62	36/36 @6'	25-30	75	Good	Poor	Owner has requested removal due to damage. Tree has no real canopy due to extreme utility pruning and is significantly dense and heavy on the laterals. The base has outgrown the planter. Removal and replacement is appropriate.
12	4848 7th St.	99	51	24/24/24/14/12 @6'	45-50	65	Good	Fair	Crown is dense although better structured than most. Limbs also intertwine to some degree to assist in support. Leader to east is most prone to split but unlikely. Bulb out is an option. Sidewalk about ready for repairs. Note water and sewer to north.
13	4851 7th St.	6	50	12/25/28/24 @6'-8'	25-30	60	Good	Fair	Utility cables provide some support to street side, but crown is dense and residence is potential target. Infrastructure was replaced and is holding up. Remove several large limbs over house and street if when thinning.
14	4863 7th St.	4	27	18/14 @4'	20-25	30	Good	Fair	Young tree beneath utility wires that warrants structural pruning New cracks in curb and gutter suggest aggressive root growth.
15	4877 7th St.	6	55	24/24/24/24/24 @6'-8'	45-50	75	Good	Fair	Large tree with high potential to split over road and sidewalk. Either remove northern leader or majorly thin over road. Cable could help retain northern leader. Southern half of crown needs major thinning.

		INFRASTRUCTURE ASSESSMENT						QUANTATIVE RISK ASSESSMENT						QUALITATIVE RISK ASSESSMENT					TREE MANAGEMENT				
#	Address	Utilities: HV, Cables	Topped Y/N	Sidewalk Cracked: L/M/S	Curb Cracked: L/M/S	Gutter Cracked: L/M/S	Asphalt damage: L/M/S	Target: Pedestrian, Vehicle, Structure, Yard	Tree Part Most Likely To Fail	Failure Potential 1-4	Size of Part 1-4	Target Rating 1-4	Hazard Rating	Likelihood Of Failure	Likelihood of Impacting Target	Likelihood of Failure & Impacting Target	Consequences	Risk	Remove	Pruning Priority	Possible Leaders to be removed	% of Limb pruning	Cable
1	4621 7th St.	Overhead & through	Y	Moderate /replaced, then ground down, now cracked	Low /replaced, now trunk enveloping curb	Moderate /replaced, now cracked	Severe /in parking space to 6' wide	All	Leader	1	2	2	5	Improbable	High	Unlikely	Significant	Low		Low	Northwestern leader	Low	
2	4621 7th St.	Overhead & through	Y	Moderate /replaced, now cracked	Low /replaced, now cracked	Moderate /replaced, now cracked	Severe /in parking space to 6' wide	All	Leaders	2	3	2	7	Possible	High	Somewhat likely	Significant	Moderate		Med	Western and lower section of northern leader.	Major	Yes
3	4678 7th St.	Pole to house	N	Low /replaced, then ground down,now cracked	Replaced, old portion pushed out	Low /partially replaced and cracked	Low /patched OK	All	Leaders	3	3	3	9	Possible	High	Somewhat likely	Severe	Moderate to High		Hi		Major	Yes
4	4696 7th St.	None	N	Low /ground down	Low /pushed out	Low /cracked	Severe /patched but small lifted 24" circle in parking space	All	Leaders	3	3	3	9	Possible	High	Somewhat likely	Severe	Moderate to High		Hi	Eastern and western leaders	Major	Yes
5	4757 7th. St.	Overhead & through	Y	Low /replaced and then asphalt patched	Moderate /cracked, pushed out,now trunk enveloping curb	Ok /asphalt patched	Low /patched in parking strip	All	Trunks	3	3	3	9	Probably	High	Likely	Severe	High	?	HI	Eastern and western	Major	Yes
6	4774 7th St.	None	N	Moderate /asphalt patched and now cracked, partially lifting driveway.	Ok	Ok	Ok	All	Limbs	2	2	2	6	Possible	High	Somewhat likely	Significant	Moderate		Med		Medium	
7	4774 7th St.	None	N	Moderate /replaced, then ground down, then asphalt patched, now lifted	Low /beginning movement and cracking	Low /some minor cracking	Ok	All	Leader /limbs	2	2	2	6	Possible	High	Somewhat likely	Significant	Moderate		Med		Medium	Yes
8	4791 7th St.	Overhead & through	Y	Moderate /replace, ground down, cracked	None /steel border curb	None /asphalt patch	Ok	All	Leaders	3	3	3	9	Probable	High	Likely	Significant	High	?	Hi		Major	Yes
9	4792 7th St.	Pole to pole secondary wires	N	None/replaced	None /replaced	None /replaced	Ok	All	Leaders	2	2	3	7	Possible	High	Somewhat likely	Significant	Moderate		Med		Medium	Yes
10	4816 7th St.	Pole to pole (lower cables only)- below crown on Holly st.	N	Moderate /replaced, then ground down, now cracked	Moderate /lifted	Moderate /lifted	Ok	All	Leaders	1	2	3	6	Improbable	High	Unlikely	Significant	Low		Low		Low	
11	4823 7th St.	Overhead & through	Y	Low /replaced, then ground down	Moderate /crack, pushed, and now trunk enveloping curb	Low /asphalt patched	None /asphalt patched	All	Leaders	3	3	3	9	Possible	High	Somewhat likely	Severe	Moderate to High	?	Hi		Major	
12	4848 7th St.	None	N	Moderate /concrete patch, cracked	Moderate /cracked	Low /slightly lifted	None /patched	All	Leader /limbs	1	2	3	6	Improbable	High	Unlikely	Significant	Low		Low		Low	Yes
13	4851 7th St.	Overhead & through	Y	None /replaced	Low /replaced with steel curb but new crack in connective concrete	None /replaced	None /patched	All	Leaders /limbs	2	2	3	7	Possible	High	Somewhat likely	Significant	Moderate		Med		Medium	
14	4863 7th St.	Overhead & through	N	None /replaced	Low / replaced, now new crack	Low /replaced, new crack	Low /patched but new lifting in parking space	Sidewalk/ yard	Limbs	1	1	2	4	Improbable	High	Unlikely	Minor	Low		Low	Western leader at 6'	Low	
15	4877 7th St.	Overhead & through and pole to house	Y	Moderate /replaced, then ground down, since cracked and now lifted	Moderate /cracked and pushed	None /asphalt patch	None /patched	All	Leader /limbs	3	3	3	9	Probable	High	Likely	Severe	High		Hi	Northern leader or major limbs	Major	Yes

TREE DESCRIPTION									
#	Address	Park way Size	DBH inches	Leader Diameter @ Height of Union	Approx Height feet	Approx Spread feet	Health G/F/P	Structure G/F/P	Comment
16	4910 7th St.	6	47	18/18/18/12/22/ 12/12 @8'-10'	45-50	65	Good	Fair	Dense and heavy. Warrants crown thinning. Consider removing northeastern and northwestern leaders. Replacement sidewalk is ADA undersized but allows passage without obstacles. Bulb out may be an option.
17	4926 7th St.	6	57	28/26/24/14 @6'-8'	45-50	75	Good	Fair	Dense and heavy. Warrants crown thinning by removing major limbs. Replacement sidewalk is ADA undersized and lifting is creating hazard to pedestrians. Bulb out may be an option.
18	4760x 9th St.	99	38	24/24/12 @6'-8'	25-30	45	Good	Fair	Low skirt needs raising, low over road and apartment. Could use thinning to reduce weight and improve structure. Some cracking of resident patio but great shade.
19	4292 Carp Ave.	99	84	18/18/24/28/28 @6'-8'	35-40	75	Good	Fair	A great tree with multiple leaders. Nothing to buffer failure and crown is dense and heavy. Sidewalk not currently a problem as tree is more on residential lot.
20	4297 Carp Ave.	99	60	26/28/24 @4'-6'	35-40	75	Good	Fair	Lower utility cables provide a buffer from the street, but crown can still break free in severe weather. Trunk obstructs passage on sidewalk. Bulb out an option. Asphalt repairs warranted.
21	4311 Carp Ave.	99	42	20/12/16/16 @5'-6'	35-40	50	Good	Fair	Thinner crown but overhangs house. Asphalt damage is severe but sidewalk is already bulbed outward.
22	4327 Carp Ave	99	54	28/24/14/14/12/ 20 @6'-8'	35-40	60	Good	Fair	Dense and heavy crown over residence and warrants pruning. Note water meters in close proximity. Homeowner upset about damage to driveway. Consider removing some of the leaders. Also significant damage to asphalt.
23	4415 Carp Ave.	6	27/27/28/18		35-40	75	Good	Fair	Intertwining limbs help hold tree together. Tree obstructing sidewalk. Repaired concrete beginning to fail. Bulb out is an option.
24	4425 Carp Ave.	7	63	24-28/30/18 @5'-6'	35-40	75	Good	Fair	Mitigate risk with pruning. Tree overhangs sidewalk creating an obstacle for pedestrians as witnessed by homeowner, but he also loves the tree, not the roots. Bulb out is an option
25	El Carro Park	99	6	3/6 @ 3'-4'	1-1510	6	Good	Fair	Structural prune young tree.
26	Monte Vista Prk	99	41	10x 8"-16" @4'-6'	20	50	Fair	Fair	Park tree in low use area but warrants pruning to improve structure and reduce long term potential to split.
27	Wullbrandt Wy Parking Lot	99	44	22/24/12/24 @ 6'-10'	25-30	65	Good	Fair	Tree in parking lot is dense and heavy. Pruning should reduce risk. Also needs lifting. The roots are damaging the curb and asphalt.

		INFRASTRUCTURE ASSESSMENT						QUANTATIVE RISK ASSESSMENT						QUALITATIVE RISK ASSESSMENT					TREE MANAGEMENT				
#	Address	Utilities: HV, Cables	Topped Y/N	Sidewalk Cracked: L/M/S	Curb Cracked: L/M/S	Gutter Cracked: L/M/S	Asphalt damage: L/M/S	Target: Pedestrian, Vehicle, Structure, Yard	Tree Part Most Likely To Fail	Failure Potential 1-4	Size of Part 1-4	Target Rating 1-4	Hazard Rating	Likelihood Of Failure	Likelihood of Impacting Target	Likelihood of Failure & Impacting Target	Consequences	Risk	Remove	Pruning Priority	Possible Leaders to be removed	% of Limb pruning	Cable
16	4910 7th St.	Secondary wires and guy through crown along Elm, also pole to house	N	Low /replaced with narrow slab around tree, ground down and nowcrackled where not replaced	None /replaced	None /replaced	None /patched	All	Leader	3	3	3	9	Possible	High	Somewhat likely	Severe	Moderate to High		Hi	Northeastern and northwestern leaders	Major	Yes
17	4926 7th St.	Pole to pole, also to house	N	Moderate /replaced with narrow slab around tree, then patched wth asphalt, and now lifted	Moderate /then cracked, now pushed, and lifted	Moderate / then cracked, now pushed, and lifted	None /patched	All	Leader /limbs	3	3	3	9	Possible	High	Somewhat likely	Severe	Moderate to High		Hi		Major	Yes
18	4760x 9th St.	Overhead & through	Y	No sidewalk	No curb	No gutter	Gravel parking	All	Leader	1	2	3	6	Improbable	High	Unlikely	Significant	Low		Low		Low	
19	4292 Carp Ave.	Pole to pole, also pole to house	N	None /replaced, then ground down	None /replaced, very slightly lifting	None /replaced, very slight lifting	Low /very slight lifting	All	Leaders	3	3	3	9	Possible	High	Somewhat likely	Severe	Moderate to High		Hi		Major	Yes
20	4297 Carp Ave.	Overhead & through	Not yet	None /replaced, then ground down, now enveloping trunk	None /replaced, slightly pushed	None /repaired	Severe /parking strip and bike lane significantly lifted	All	Leaders	1	3	2	6	Improbable to possible	High	Somewhat likely	Significant	Moderate		Med		Medium	
21	4311 Carp Ave.	Overhead & through	Not yet	None /replaced, now very slight lift	None /replaced, now very slight lift	None /replaced and very slight lift	Moderate / bike lane lifted	Al	Leaders	1	2	2	5	Improbable to possible	High	Somewhat likely	Significant	Moderate		Med		Low	
22	4327 Carp Ave	Overhead & through	Not yet	Low /replaced, then ground down, now slightly cracked and lifted	None /replaced	None /replaced	Moderate /bike lane lifted	All	Leaders	2	3	3	8	Possible	High	Somewhat likely	Severe	Moderate to High		Hi	Southern leader, major limb over road	Major	Yes
23	4415 Carp Ave.	Overhead & through, also pole to bldg.	Not yet	Moderate /replaced, then ground down, now lifted	Low /replaced, now cracked	None /replaced	None	All	Leaders	2	2	3	7	Possible	High	Somewhat likely	Significant	Moderate		Med		Major	Yesr
24	4425 Carp Ave.	Overhead & through	Not yet	Low /replaced with narrower sidewalk, ground down, some new lifting	Low /replaced, now with slight movement	None /replaced	None /patched, but adjacent driveway damaged	All	Leader	2	3	3	8	Possible	High	Somewhat likely	Significant	Moderate to High		HI		Major	Yes
25	El Carro Park	None	N	None	None	None	None		not	0	0	0	0	None	/	/	/	None		Low		Low	
26	Monte Vista Prk	None	N	None	None	None	None	People	Leaders	1	2	1	4	Improbable	Low	Unlikely	Minimal	Low		Low		Low	
27	Wullbrandt Wy Parking Lot	Pole to pole and leads to commercial bldg.	Y	No sidewalk	Low /cracked and pushed curb in parking spot	None	Low /lifting in parking spot	All	Leader	2	3	2	7	Possible	High	Somewhat likely	Significant	Moderate		Med		Medium	

CONCLUSIONS & SPECIFICATIONS

1. I have determined that 3 trees are high risk, 8 are moderate to high risk, 9 trees are moderate risk, and 7 trees are low risk. These trees are on 7th Street, Wullbrandt Way, and Carpinteria Street. The trees in the parks and on 9th St. are low risk.
2. Risks increase during extreme weather events. The moderate to high risk trees become high risk trees in storm events and the moderate risk trees also increase.
3. The risks can be reduced with pruning and some cabling, although there will always be some risk as long as there are trees.
4. Three trees should be considered for removal although the risks can be temporarily mitigated. It is likely that these three trees will eventually need to be removed. The group includes one tree that is under application for removal by the resident at 4823 7th St. This is a moderate to high risk tree that has outgrown its location. The others are where high voltage has lead to extreme pruning and unbalanced crowns.
5. Pruning most trees is recommended every one to two years depending on weather and growth. However, pruning needs to be more aggressive during this next cycle. Many leaders and large limbs will need to be removed to reduce weight and spread. This should require less pruning during subsequent pruning cycles.
6. In some instances, cabling is preferred over removing entire leaders. Public works needs to decide if the wide spread of the crown is more important than removing the problematic leader. Cabling should be performed soon after pruning (preferably simultaneously) by qualified Certified Tree Workers or Certified Arborists.
7. When pruning to mitigate risk, remove leaders back to the trunk and selectively remove limbs from 3"-12" in diameter, where co-dominant, and as necessary. Qualified tree workers should be able to make these decisions.
8. When removing one of two co-dominant stems, leave the stronger (usually the lower) so the remaining limb will not snap after losing support of the adjacent limb.
9. Prune in the winter when temperatures are cooler to reduce pest susceptibility and dripping tree resin. Notify residents of resins that drip on cars, outside furniture, etc.
10. Concrete and asphalt repairs are necessary adjacent to at least 10 trees. Root pruning must be complemented with tree pruning to reduce weight and potential of toppling. Cleanly cut roots with a sharp hand pruner, shears, or reciprocating saw.
11. Root barriers should be installed when repairing concrete and asphalt around trees to help control root growth for approximately ten years. Use the cloth and chemical *Bio Barrier,* or the plastic physical *Deep Root Barrier* for maximum benefit.

REFERENCES

- ANSI (*American National Standards Institute)* A300: Part 1-Pruning Standards 2008, Part 3-Supplemental Support Systems 2013, Part 8-Root Management Standard 2008, and Part 9-Tree Risk Assessment 2013.
- Harris, R. W., and Matheny, N. P., and Clark, J. R., 2004. *Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines,* Fourth Edition. Prentice Hall.
- Matheny, N. P., and Clark, J. R. 1993. *A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas-2nd Edition.* International Society of Arboriculture.
- Smiley, E., and Matheny, N., and Lilly, S. 2011. *Best Management Practices: Tree Risk Assessment.* International Society of Arboriculture

ARBORIST'S DISCLOSURE AND CERTIFICATION OF PERFORMANCE

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 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 a tree is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

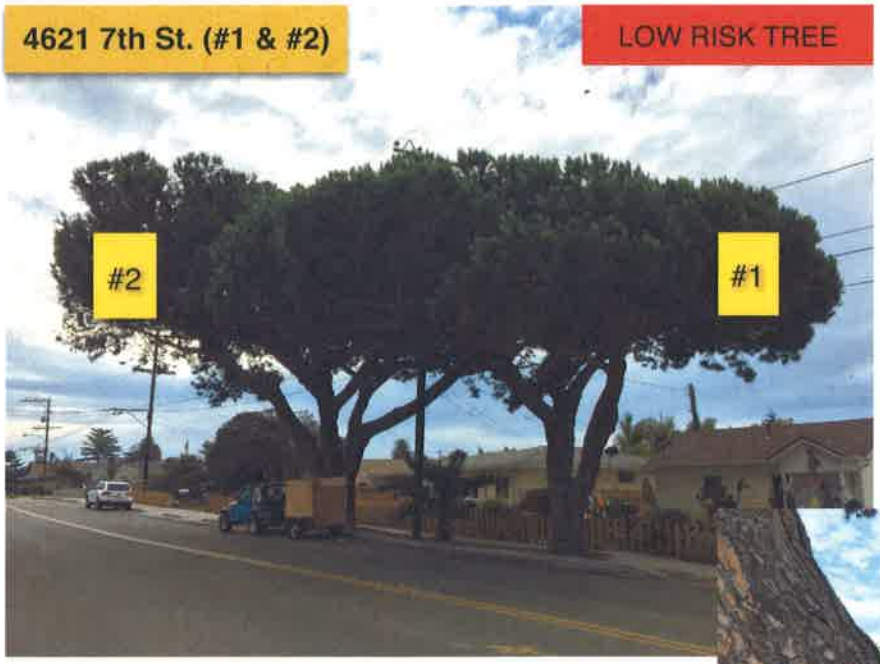
I Bill Spiewak, certify:
That I have personally inspected the trees on the property referred to in this report and have stated my findings accurately.
The analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and commonly accepted arboricultural practices.

Signed: Bill Spiewak

Bill Spiewak
Registered Consulting Arborist #381
American Society of Consulting Arborists

Board Certified Master Arborist #310B
International Society of Arboriculture

PHOTOS



Small tree under wires that has and will continue to damage concrete and asphalt. The lower cable wires contribute to support of limbs. Also note root damage in adjacent driveway of residence approx 15'-20' from tree to northwest. Could remove northern leader and lift other limbs. Red dashed line is a suggestion for bulb out.

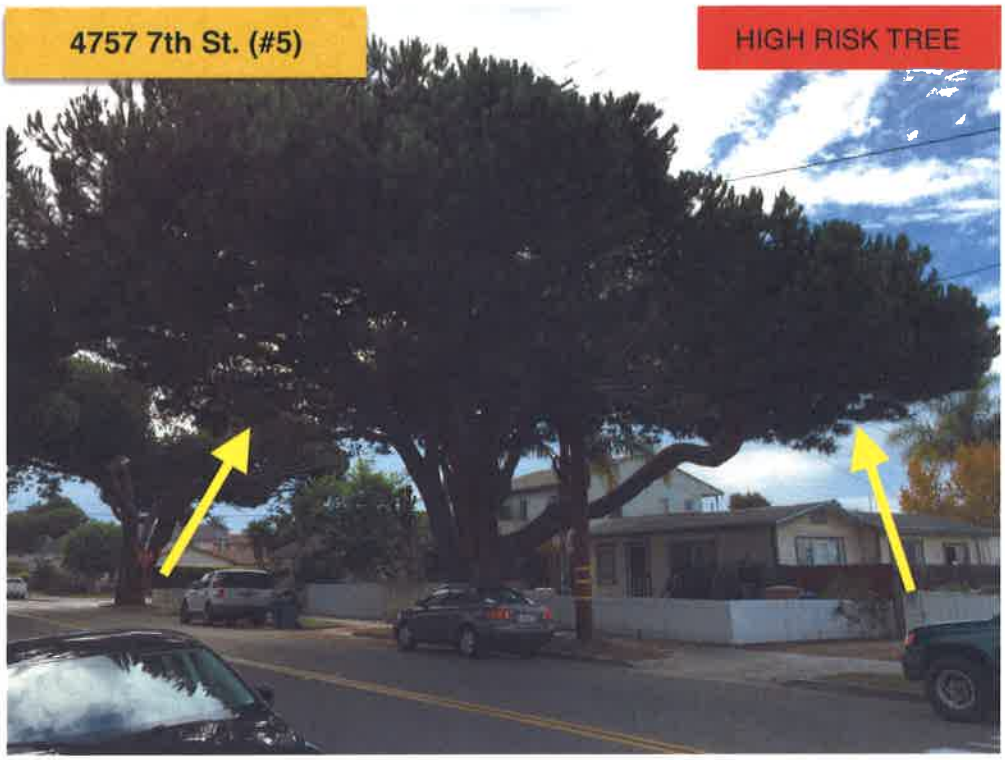
Damage to driveway not in photo

Leader to west, toward residence (yellow arrow), and 12" limb over road, could be removed and others lifted to reduce weight. Consider bulb out as option for curb and more space for roots. Note damage and repairs to sidewalk.

Partially on residential property. Very dense and heavy crown. Prune to reduce the number of leaders & lift horizontal limbs. (more photos on next page)

Note some deformity in southern and central leaders at 15'-20'. Bulb out sidewalk/curb as option. Gas and water meters 8' to east of trunk.

Partially on residence's property, with encroachment onto sidewalk but minimal damage. Also major culvert below sidewalk, thus few roots on southern side of trunk (dashed line). Must reduce weight including two 12" limbs on house side. Could remove eastern and western leaders.



Heavy co-dominant trunks pose a high risk, particularly during severe storm events. Reduce a significant amount of weight and install cables. Several leaders and large limbs should be removed including eastern and western leaders and large limbs over road (more photos on next page).

4757 7th St. (#5)

HIGH RISK TREE

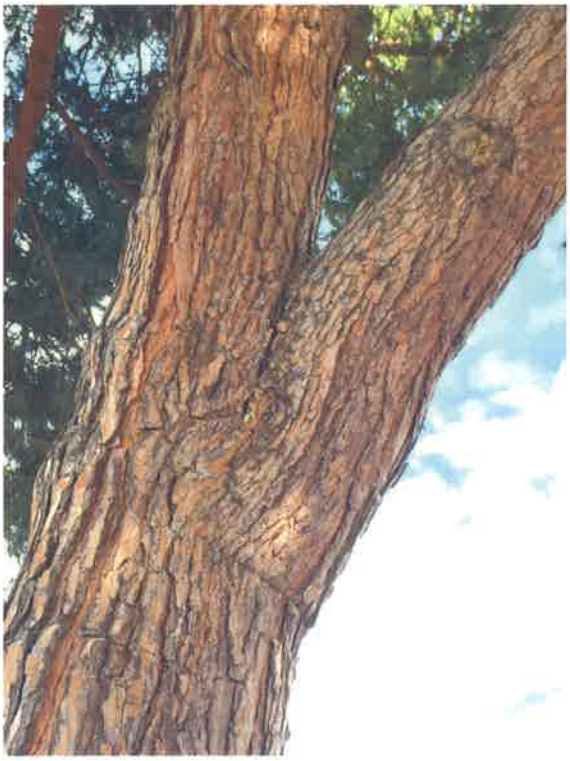
Note damage to curb and gutter. Consider bulb out.

Partially on residence's property or east edge of sidewalk. Crown thin to reduce end weight. A second trunk had been removed. Bulb out is option. Note damage to sidewalk.

4774 7th St. (#7)

MODERATE RISK TREE

Mostly on east edge of sidewalk. Co-dominant leader is dense and warrants pruning and cabling. Could significantly reduce weight of southern leader to avoid need for cable. Bulb out is option.



4791 7th St. (#8)

HIGH RISK TREE

Severely pruned for utility lines, leaving dense and heavy leaders on both sides of center cables. Tree also grows into canopy of two pines on other side of street (more photos next page).

4791 7th St. (#8)

Curb was nicely repaired with a steel curb, which appears to be holding up although the adjacent concrete is cracked.
Due to the poor form, this tree could be considered for removal. Otherwise, it warrants a high degree of pruning to reduce weight and spread of all lateral limbs.

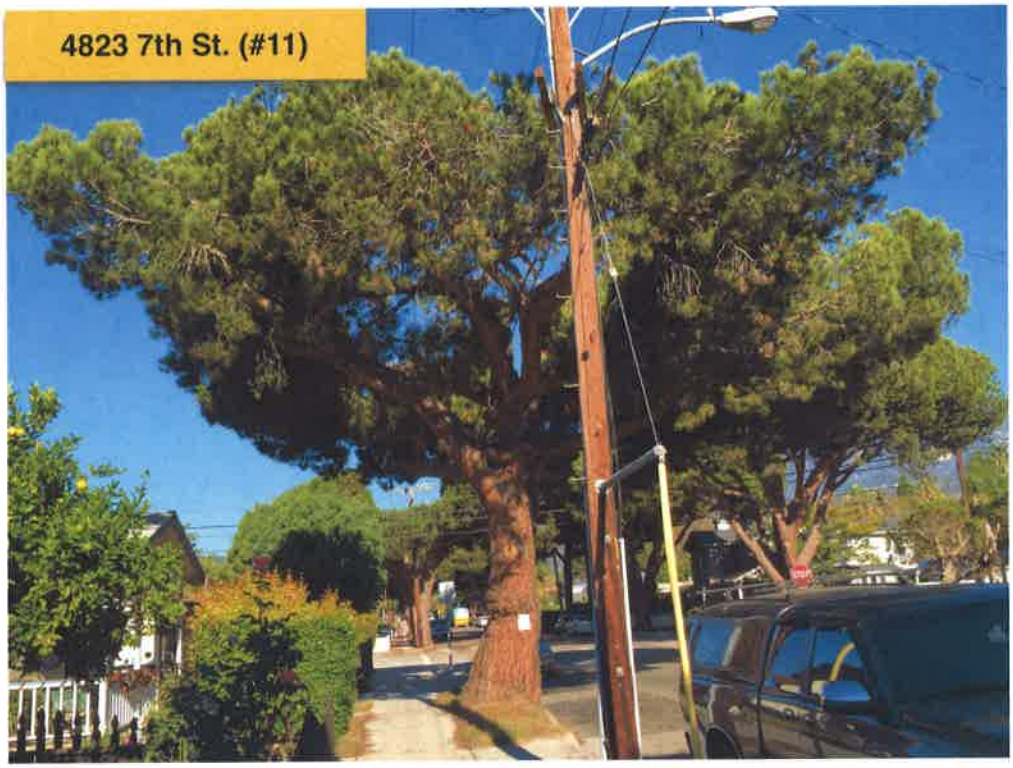
HIGH RISK TREE

MODERATE RISK TREE

4792 7th St. (#9)

Limbs are heavy on leader toward house. Tree is on corner and bulb out option in future not likely.

Appears well pruned in recent history. Not much problem now except for curb and sidewalk close to needing repairs.



Owner has requested removal due to damage. Tree has no real canopy due to extreme utility pruning and is significantly dense and heavy on the laterals. The base has outgrown the planter. Removal and replacement is appropriate (more photos next page).

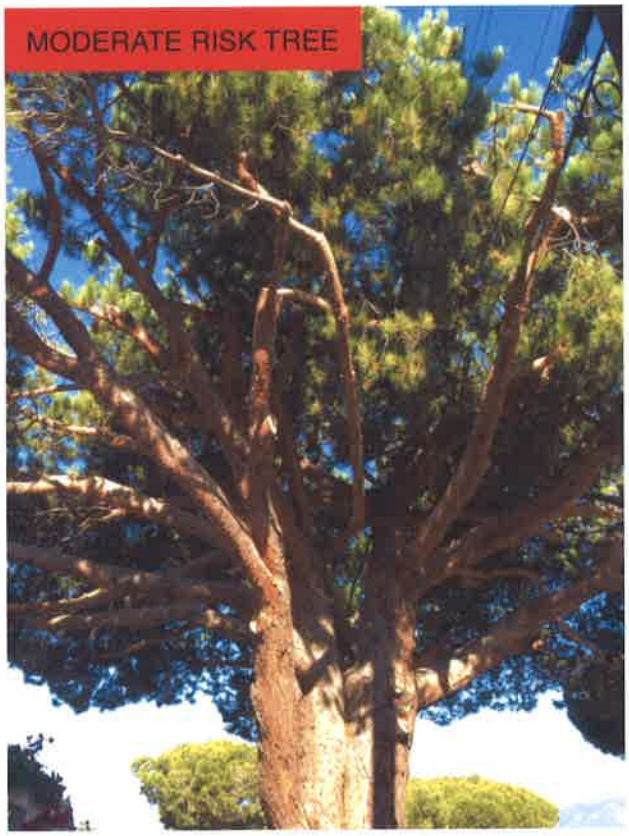
4823 7th St. (#11)

The two trunks are major co-dominant stems and prone to splitting. Also note the trunk overhanging the curb at the base.

4848 7th St. (#12)

LOW RISK TREE

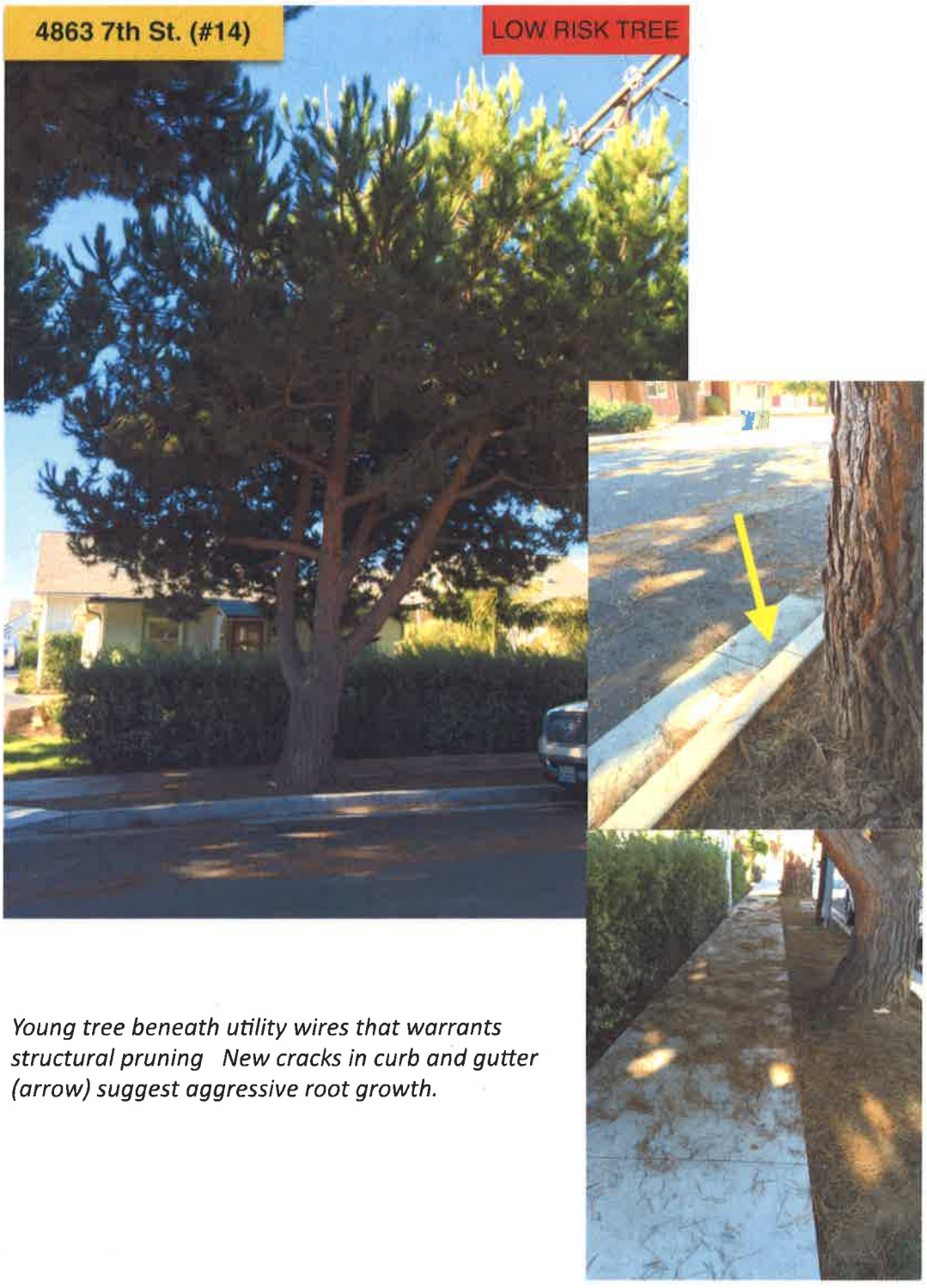
Crown is dense although better structured than most. Limbs also intertwine to some degree to assist in support. Leader to east is most prone to split but unlikely. Bulb out is an option to create more space for growth. Sidewalk about ready for repairs. Note water and sewer to north.



Utility cables provide some support to street side, but crown is dense and residence is potential target. Infrastructure was replaced and is holding up. Remove several large limbs over house and street when thinning (more photos next page).

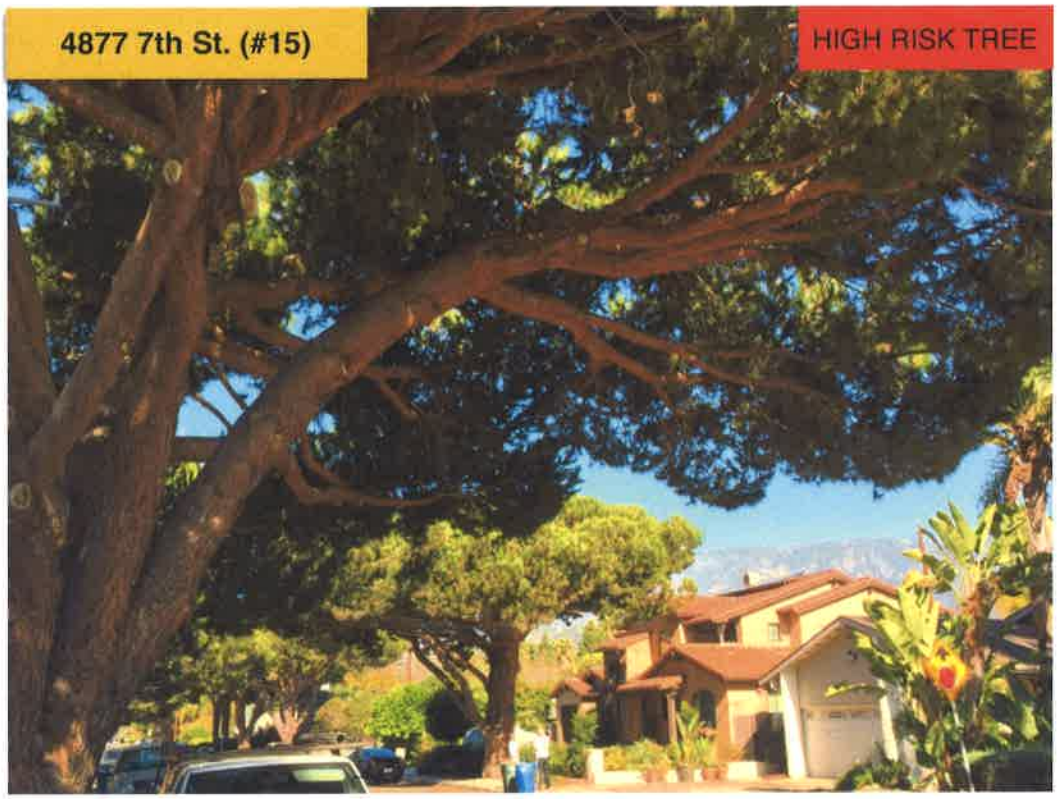
4851 7th St. (#13)

Note the replaced sidewalk and the steel curb.

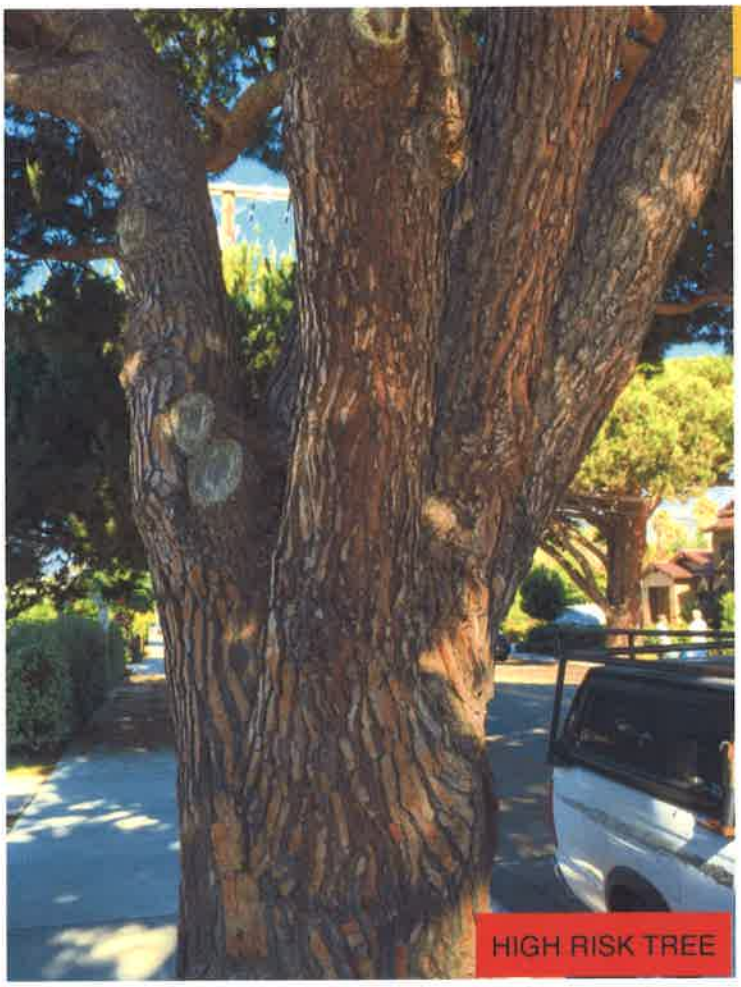


Young tree beneath utility wires that warrants structural pruning New cracks in curb and gutter (arrow) suggest aggressive root growth.

Large tree with high potential to split over road and sidewalk. Either remove northern leader or majorly thin over road. Cable could help retain northern leader. Southern half of crown needs major thinning (more photos on next two pages).



Extremely dense crown



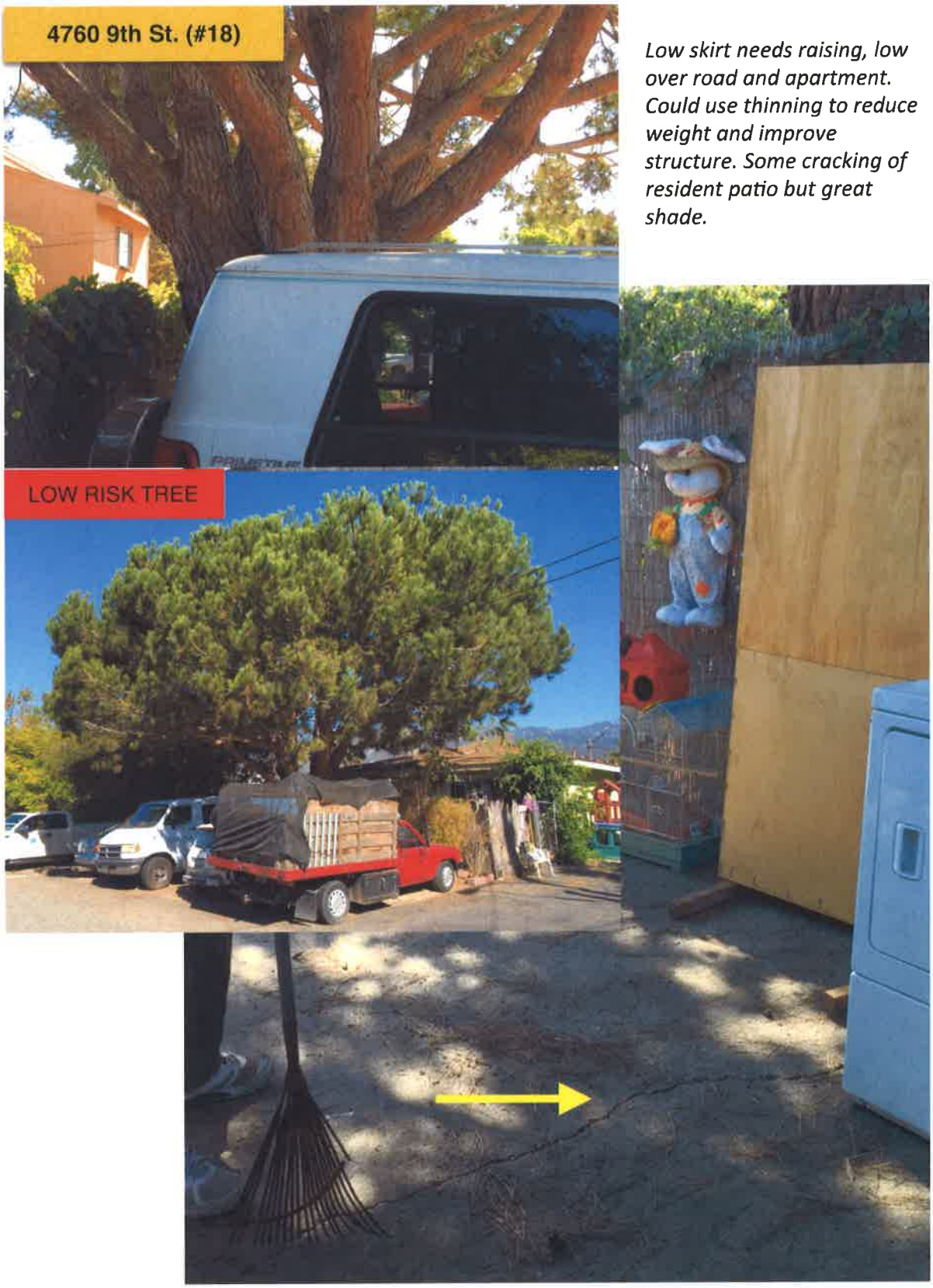
Note large trunk in small space and damage to curb sidewalk.

Dense and heavy. Warrants crown thinning. Consider removing northeastern and northwestern leaders. Replacement sidewalk is ADA undersized but allows passage without obstacles. Bulb out may be an option.

4926 7th St. (#17)

MODERATE TO HIGH RISK TREE

Dense and heavy. Warrants crown thinning by removing major limbs. Replacement sidewalk is ADA undersized and lifting is creating hazard to pedestrians. Bulb out may be an option.



Low skirt needs raising, low over road and apartment. Could use thinning to reduce weight and improve structure. Some cracking of resident patio but great shade.

4292 Carp Ave. (#19)

MODERATE TO HIGH RISK TREE

A great tree with multiple leaders. Nothing to buffer failure and crown is dense and heavy. Pruning is needed to reduce risk. Sidewalk not currently a problem as tree is more on residential lot (more photos next page).

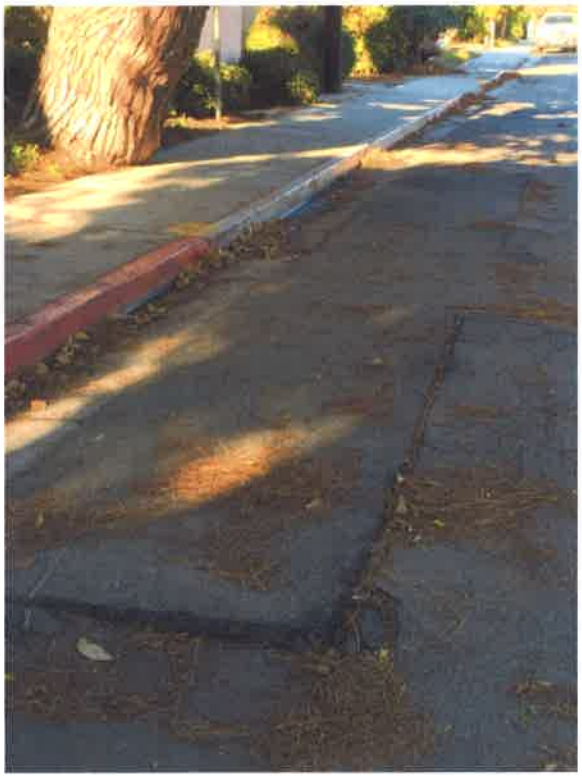
4292 Carp Ave. (#19)

MODERATE RISK TREE

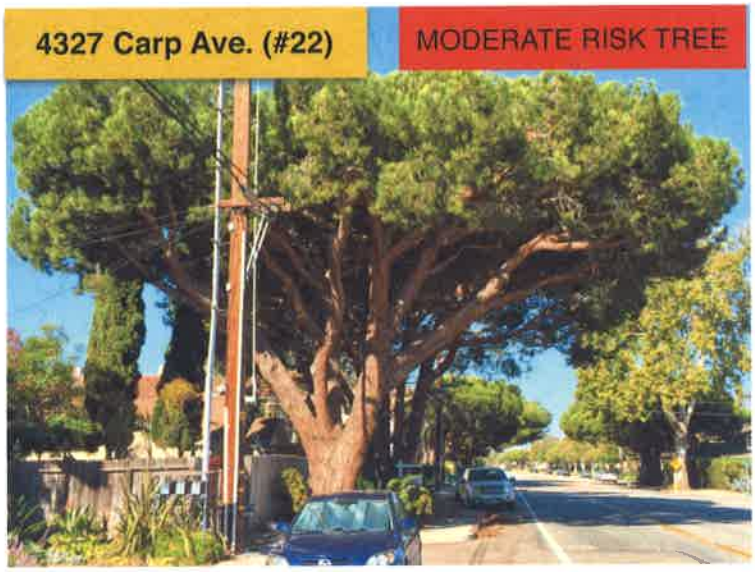
Another view of the massive tree over the small house.

4297 Carp Ave. (#20) MODERATE RISK TREE

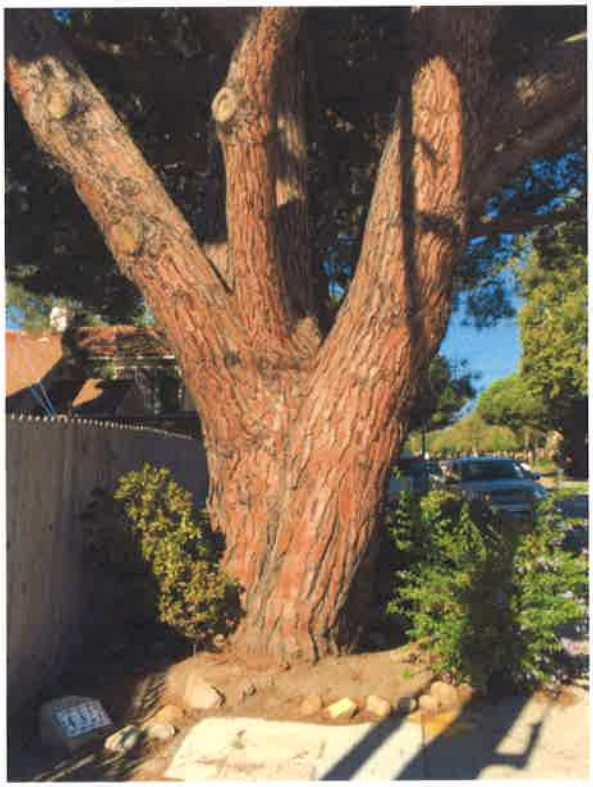
Lower utility cables provide a buffer from the street, but crown can still break free in severe weather. Trunk obstructs passage on sidewalk. Bulb out an option. Asphalt repairs warranted.

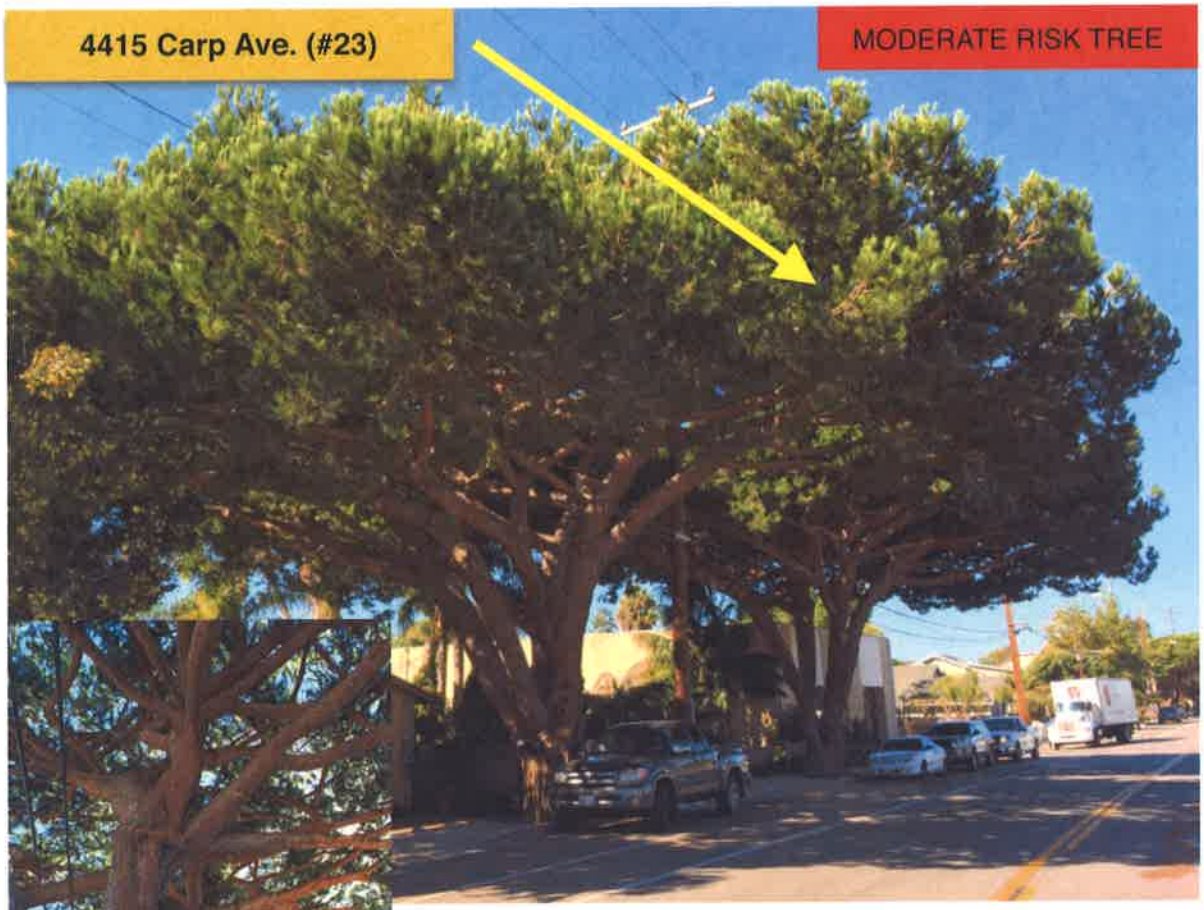


Thinner crown but overhangs house. Asphalt damage is severe but sidewalk is already bulbed outward.

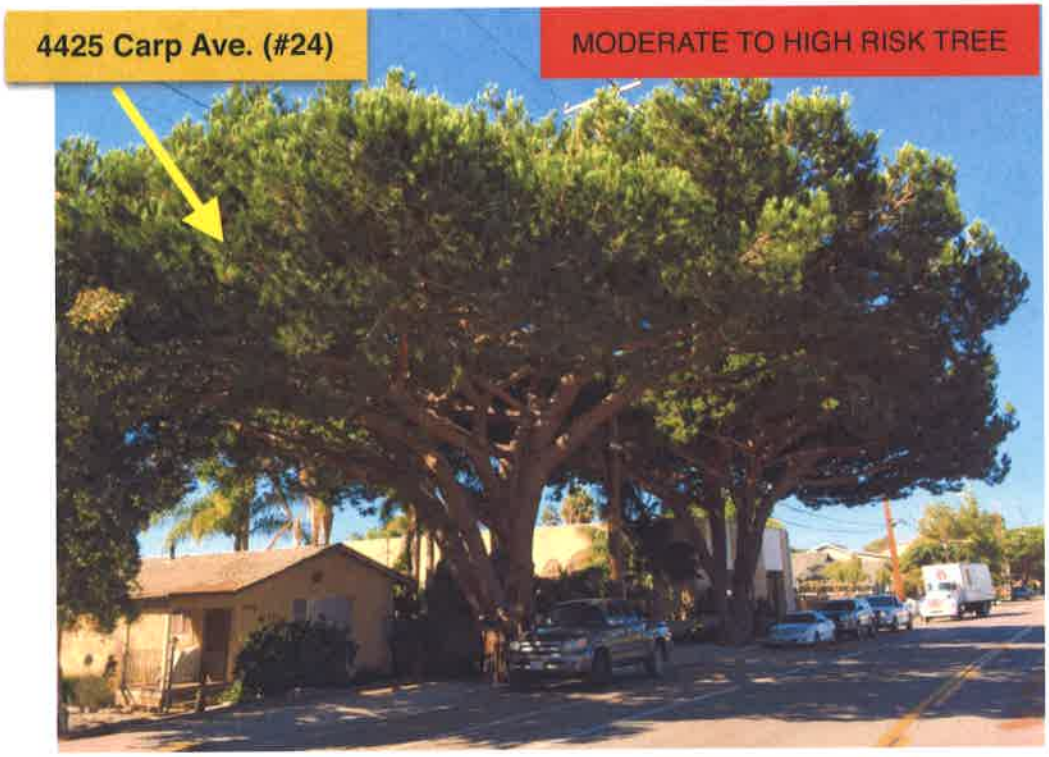


Dense and heavy crown over residence and warrants pruning. Note water meters in close proximity. Homeowner upset about damage to driveway. Consider removing some of the leaders. Also significant damage to asphalt.

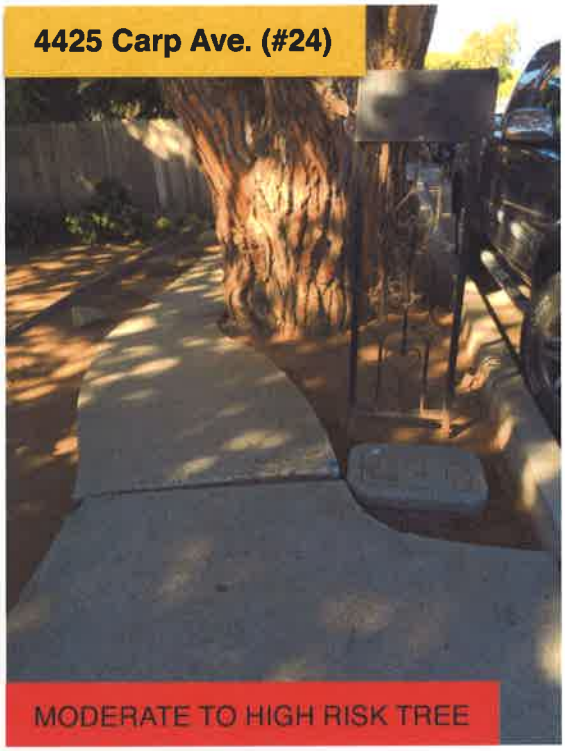




A view of #23 and #24. Arrow points to #23. Intertwining limbs help hold tree together. Tree is obstructing sidewalk. Repaired concrete beginning to fail. Bulb out is an option.



Arrow points to #24. Mitigate risk with pruning. Tree overhangs sidewalk creating an obstacle for pedestrians as witnessed by homeowner, but he also loves the tree, not the roots. Bulb out is an option (more photos next page).

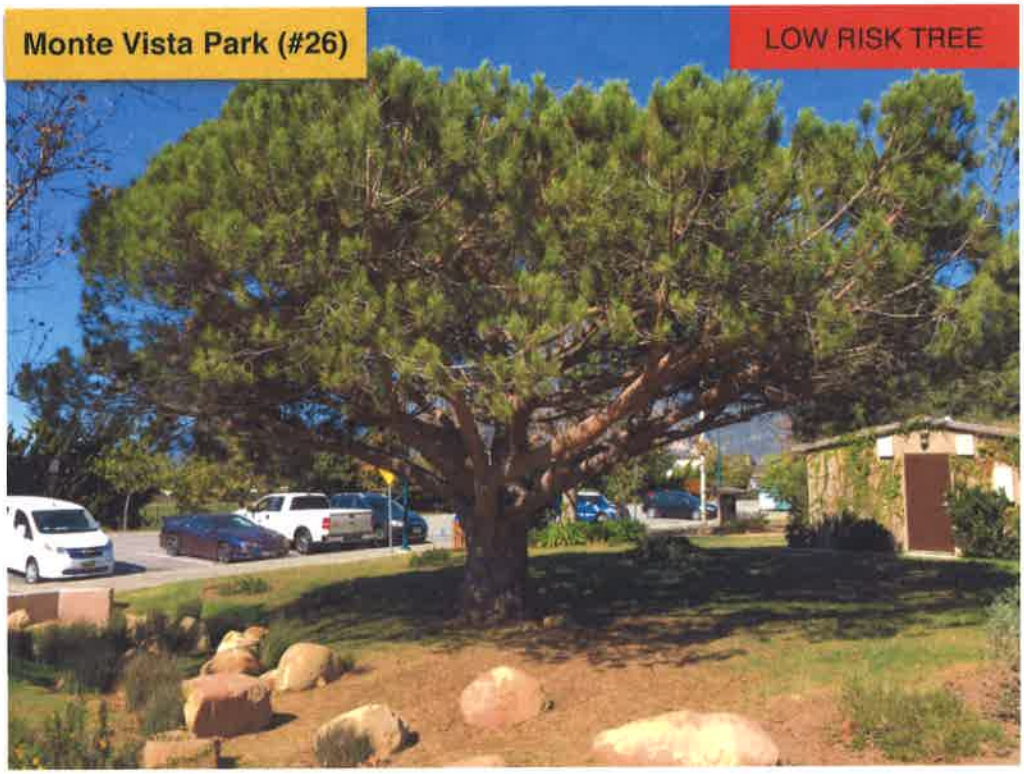


There is a drop of about 12" on the south side of the narrow sidewalk, where the trunk becomes an obstacle, creating a dangerous situation (arrows upper right).
Lower right arrow points to damaged driveway.

El Carro (#25)

NO RISK TREE

Structural prune young tree. Remove this limb now before it develops into a large co-dominant limb.



Park tree in low use area but warrants pruning to improve structure and reduce long term potential to split.

Tree in parking lot is dense and heavy. Pruning should reduce risk. Also needs lifting for clearance (more photos next page).

Wullbrandt Way - Parking (#27) MODERATE RISK TREE

Note the density of the crown and the damage to the curb and asphalt.

ATTACHMENT B

Bill Spiewak
CONSULTING ARBORIST
Registered Consulting Arborist #381 • American Society of Consulting Arborists

ADDENDUM TO: STONE PINE ASSESSMENT & MANAGEMENT PLAN

November 30, 2015

Prepared for:
Charlie Ebeling-Public Works Director / City of Carpinteria
5775 Carpinteria Ave., CA 93013

BACKGROUND

On November 14, 2015, I submitted the *Stone Pine Assessment and Management Plan* to the City of Carpinteria. Since that time, I learned that one additional pine was not included on the list of trees provided by the city. I was asked to inspect that one additional stone pine at 750 Olive Avenue and prepare a supplement to my report.

ASSSESSMENT

The table below is similar to the one in the initial report except that I omitted the infrastructure information since there are no sidewalks or utilities in conflict. The tree is located outside the front yard of a residence surrounded by a gravel parking area. The portions of the tree overhanging the yard are very dense. There are multiple swings hanging from the limbs.

DBH	Leaders & Sizes @ Height of Union	Approx Height	Approx Spread	Health G/F/P	Structure G/F/P	Comment
55	24/24/22/14@3-5'	35-40	60	G	F	Intertwining limbs provide some support. Leader over yard is most likely to split due to weight and density. Crown is very heavy throughout

QUANTATIVE RISK ASSESSMENT						QUALITATIVE RISK ASSESSMENT				
Target	Part Most Likely To Fail	Failure Potential 1-4	Size of Part 1-4	Target Rating 1-4	Hazard Rating	Likelihood Of Failure	Likelihood of Impacting Target	Likelihood of Failure & Impacting Target	Consequences	Risk
Yard, people	Leader	2	3	3	8	Possible	High	Likely	Significant	Moderate-high

Based on my assessment and the criteria defined in my initial report, I have determined that this pine poses a moderate to high risk and warrants pruning to reduce weight, particularly over the front yard, which is extensively utilized by the residents.

Prepared by:

Bill Spiewak

Bill Spiewak
Registered Consulting Arborist #381
American Society of Consulting Arborists
Board Certified Master Arborist #310B
International Society of Arboriculture

3517 San Jose Lane • Santa Barbara, CA 93105 • (805) 331-4075 • btc4trees@cox.net

City of Carpinteria
DEPARTMENT OF PUBLIC WORKS

Agenda Item #: 2

TREE ADVISORY BOARD

MEETING DATE: February 18, 2016

ITEM FOR CONSIDERATION

Heath Ranch Park Tree Matters

Action Item: X **Non-Action Item:** ____

Report prepared by: Melissa Angeles
Department of Public Works
Melissa Angeles
Signature

Reviewed by: Charles W. Ebeling, P.E.
Director of Public Works/City Engineer
Brian C. Barrett for CE
Signature

I. RECOMMENDATION

Recommend the phased removal and replacement of four Eucalyptus trees and continued maintenance of one other at Heath Ranch Park.

II. DISCUSSION

The Parks and Recreation Department is seeking the Board's recommendation to remove and replace four Eucalyptus trees and continue to maintain one other in Heath Ranch Park. The large Eucalyptus trees in the park are routinely evaluated for health and safety as part of the City's Park Maintenance Program. The Parks and Recreation Department consulted with two arborists who conducted risk assessments of five trees and determined that four trees pose a significant risk of failure; one poses a low risk. Attached to this staff report, you will find arborist reports from Consulting Arborists, Kenneth Knight and Duke McPherson.

The Department is proposing to phase out the removals by removing and replacing two trees in 2016 and two others in 2017. One tree was found to be in fair health and will undergo continued maintenance.

Because the Tree Advisory Board and the City Council have the authority to remove trees within City property, this request is being brought before you tonight. Parks and Recreation Director, Matt Roberts will be present to answer questions of the Board.

Attachment A: Arborist Report – Kenneth Knight Consulting (Dated 1/27/2015)
Attachment B: Arborist Report – Duke McPherson (Dated 8/20/2015)
Attachment C: Arborist Report – Kenneth Knight Consulting (Dated 12/24/2015)

ATTACHMENT A

Kenneth A. Knight Consulting LLC
Registered Consulting Arborist #507
69 Calaveras Avenue Goleta, CA 93117
H (805) 968-8523 W (805)252-1952

January 25, 2015
Matthew Roberts, Director, Parks and Recreation
City of Carpinteria
5775 Carpinteria Avenue
Carpinteria, CA 93013
MattR@ci.carpinteria.ca.us

Assignment
Conduct a Level 2 risk assessment of five heritage Blue Gum Eucalyptus (Eucalyptus globulus) trees in Heath Ranch Park. A Level 2 assessment as defined by the American National Standard Institute (ANSI) A300 (part 9) Tree Risk Assessment standard is a detailed ground based 360 degree walk by each tree and visual inspection of a tree and its surrounding site using binoculars, mallet, probe, magnifying glass, diameter tape and trowel. A Level 2 assessment provides analysis of data, evaluation of risk and mitigation options.

Summary of findings
The risk failure ratings for each of the five trees are as follows;
Tree 2 – Moderate Risk
Tree 3 – Low Risk
Tree 4 - Moderate Risk
Tree 5 – Moderate Risk
Tree 6 – High Risk
Residual risk ratings remain the same after mitigation

Limitations of this report
1. Not all potential structure and stability concerns associated with trees can be predicted or eliminated.
2. Sudden branch drop is the sudden, unanticipated failure of a tree branch with little or no discernible defect, often associated with long, horizontal branches and warm temperatures. There are no current means of predicting sudden branch drop.
3. Crown reduction is one method of reducing risk by reduce the weight of long, usually horizontal scaffold extensions with little taper and most of its foliage at the end. Crown reduction can reduce the likelihood but not guarantee the avoidance of limb drop. Crown reduction does increase the likelihood of infection and disease entering cut areas of older trees, permanently disrupts their character, increases their long term maintenance needs, and could cause the tree to enter into a death spiral. General crown reduction to reduce risk liability is not recommended in this report, although specific scaffold and branch reductions are recommended for consideration
4. A Level Two analysis provides some indication of the interior structure of the tree, and to the amount of wood supporting the tree. A Level Three analysis can provide more specific information on the location and amount of structurally supportive wood within a tree. Level three information could be used for more exact recommendations on the extent of mitigation necessary to maintain a tree in a lower risk category, and possibly avoiding the reduction or removal of more of the tree than necessary.

Process
On January 10, 2015, I conducted a Level Two detailed assessment of 5 Eucalyptus trees at Heath Ranch Park in Carpinteria. The format and definitions included in this report are from the 2013 International Society of Arboriculture Tree Risk Assessment Manual and Tree Risk Assessment Best Management Practices.

Observations:

1. Trees one and seven previously failed, possibly due in part to root failure
2. Blue gum trees reconfigure as they age and deteriorate a process sometimes called natural retrenchment. The trunk diameter may continue to grow while branches die and fail—reducing overall height of the tree and increasing stability.
3. This area is in the midst of severe multiple year drought conditions. The trees are in a park area receiving some lawn irrigation at the periphery of the canopies. The trees do not appear to be in a drought stressed condition, but in their native condition, they thrive with regular water. One positive impact of the drought is that root rot from the common Armillaria fungus, which prefers moist conditions, is not as prevalent as it would likely to be given the soil conditions.
4. The area has unrestricted pedestrian access but there are no compaction issues around the trees.
5. The insects causing damages to the leaves are not a cause for significant concern at this time.
6. I did not detect any root problems that revealed themselves through conks and growths on trunks, which usually mean that decay within the tree is extensive.
7. No frass was present indicating the presence of borers such as the eucalyptus long horned beetle.
8. A 2-3 inch mulch underneath the canopies of the trees is beneficial, but care should be taken not to have the mulch deeper than 4". Mulch deeper than 4" prevents necessary water and air from getting to the roots of the tree.
9. While these trees are large heritage trees, the California champion Blue gum measures 141' high, circumference 586" (187" DSH), crown 126'}

Recommendations:

1. **Risk Ratings** –Specific risk ratings and recommended actions are attached for each of the five trees

2. **Mitigations to reduce risk**
    a. **Branch/Scaffold Reductions** – Specific branch/scaffold reductions are one method of attempting to reduce risk levels. General crown reductions are not recommended for risk reduction as there is no guarantee that reduced canopies will not fail. The purpose of the reduction is to gradually reduce weight on the end of a branch/scaffold to avoid its total failure. This process is best done over a several year period with no more than 15% of the total live growth of the tree (leaves and woody material) should be removed in one year.
    Tree care specifications should be written to avoid 'cleaning' a tree of all live and dead interior branches, resulting in 'lion tailing'. As in the case of a lion's tail where there is just a tuft of hair at the end, a lion tailed branch removes all foliage, leaving canopy only at the tip. This type of pruning resulting in structurally unstable trees.
    An essential element of a tree risk management program to avoid tree failures is to maintain trees in healthy and vigorous growing conditions. This maintenance program could include occasional deep watering of periphery of canopy during drought periods
    And installation of 2-3" of mulch under tree canopies (not touching trunks).
    b. **Level 3 Tree Risk Analysis** - Consider conducting Level 3 tree risk analysis on trees 2, 5 and 6 as identified in this Level 2 report. A Level Three analysis generally involves the use of tomography to more clearly identify the extent of decay and remaining structurally sound wood in a tree trunk, along with other more advanced investigative methodologies. This level of analysis provides more information and evidence to support taking aggressive actions, such as crown reductions, as a means of retaining the trees.
    Also of concern in trees 2, 5 and 6 are potential disease/insect issues that could weaken the roots and base of the trees. Further review of the sap and fungal issues is needed to determine if Armillaria is present (identified by white mycelium under the bark) or the presence of dark galleries under the bark made by eucalyptus long horned borers. Root collar inspections approximately one foot below current surface may reveal indications of phytophthora. If phytophthora is present, bark that is oozy and dark should

be removed and the soil around the root system should be allowed to dry out completely. There is no cure for phytophthora, but its effects can be lessened in a drier environment.

3. **Warning signs**
   The process of reducing the risk of heritage trees by removing portions of the tree could also endanger the life of the tree. If mitigations to reduce risk are not able to reduce the residual risk of a tree, the City may consider erecting signage to provide basic warning information to park visitors about potentially hazardous trees. A sample warning sign developed by the Tasmanian Parks & Wildlife Service (where Blue Gum trees are native) includes the following language;
   General Warnings
   - *Trees and limbs may fall at any time and in any weather conditions*
   - *High winds may increase the likelihood of trees and limbs falling*
   - *The only way to avoid the risk is not to enter forested areas.*

   Severe Hazard Area
   Using this area exposes you to Severe Hazard Risks. This means you are not protected from natural hazards such as large trees and limbs that may fail at any time and in any weather conditions – but may be especially dangerous during high winds. This natural hazard cannot be effectively reduced by management actions, and there are no steps that you can take to avoid this risk once you have entered this area. You must be prepared to accept this risk and meet this hazard on your own terms. This is your responsibility.
4. **Conduct a Level Two Update Annually on high risk rated trees** – Previous tree inspections occurred on December 2007 and January 2011. The current 1/27/15 assessment reviews likelihood of occurrences within one year from the date of this assessment. The value of these trees combined with their large size, mature status, the number of people visiting the park, changing environmental conditions, and the history of past tree failures indicates a benefit from an annual risk assessment.

Sincerely,

Ken Knight

Ken Knight, Registered Consulting Arborist #507
ISA Risk Assessment Qualified

Tree Risk Assessment – ISA BMP Definitions

Risk- the likelihood for conflict or tree failure occurring and affecting a target, and the severity of the associated consequences—personal injury, property damage, or disruption of activities. Categorized as Low, Moderate, High, Extreme.
Hazard—situation or condition that is likely to cause harm (injury, damage or disruption).
Hazardous tree—a tree identified as a likely source of harm.
Residual risk—risk remaining after mitigation.

Likelihood of Failure –The potential for tree or branch failure within a specified time frame. Based on species, extent of defect, anticipated loads and response growth. Categories based on the time frame established in the report are:

Improbable—failure not likely in normal or severe weather conditions within time frame.
Possible—failure unlikely during normal weather conditions (expected in severe weather).
Probable—failure expected under normal weather conditions within specified time frame.
Imminent—failure has started or is most likely to occur in the near future, regardless of weather.

Likelihood of Impact- The potential of the failed tree or branch impacting a target. Based on target location, occupancy rate, anticipated fall direction, and target protection factors. Categories are:

Very low— chance of impact is remote.
Low—not likely that the failed tree or branch will impact the target.
Medium—may or may not impact the target, with nearly equal likelihood.
High —will most likely impact the target.

Consequences—effects or outcome of an event, including personal injury, property damage, or disruption of activities. Based on target value, tree part size, fall distance, and target protection. Categories are:

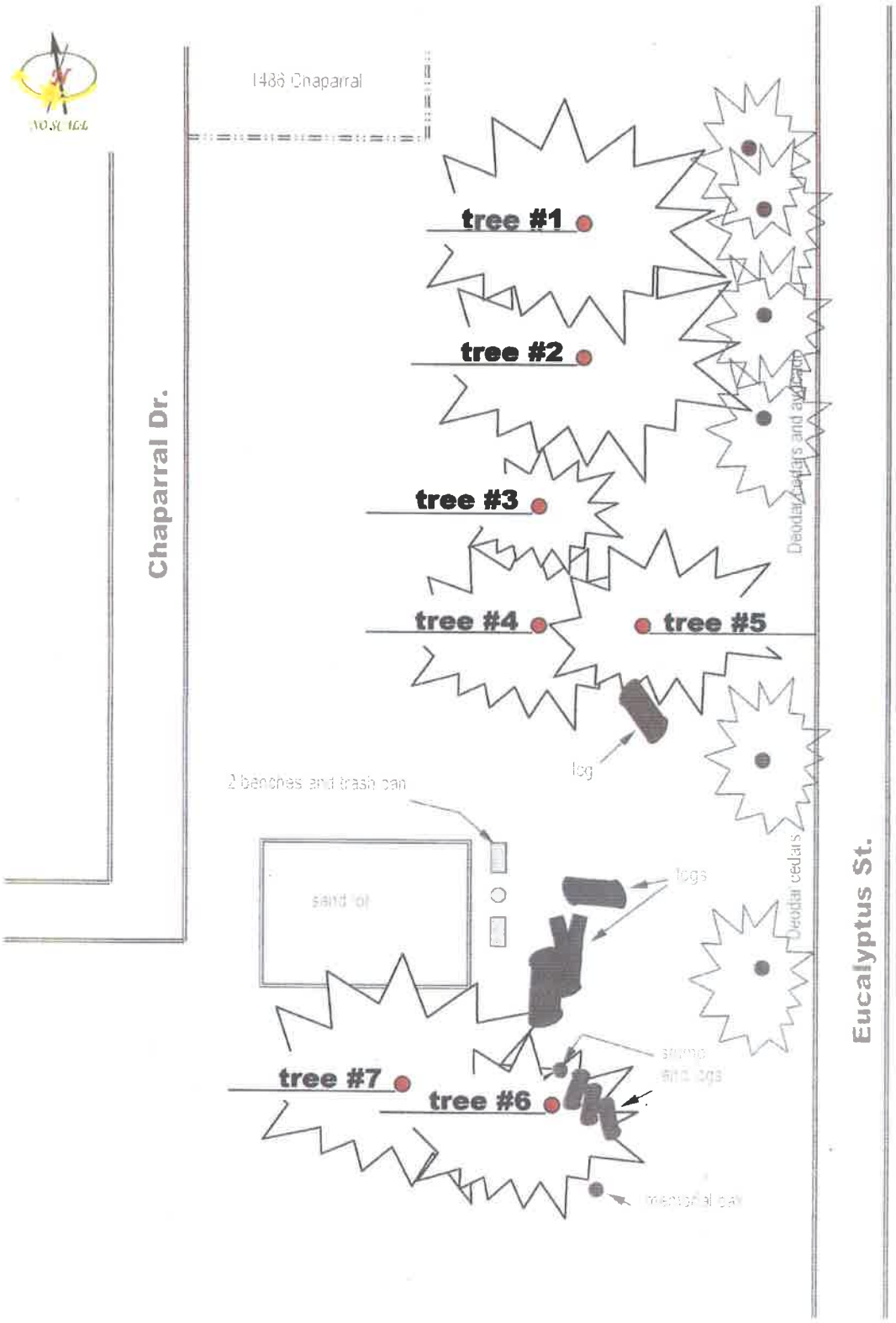
Negligible - low-value property damage (replace or repair), and do not involve personal injury.
Minor -moderate property damage, small disruptions of traffic or utility, or very minor injury.
Significant -high value property damage, considerable disruption, or personal injury.
Severe -serious personal injury or death, high-value damage, or disruption of important activities.

Matrix 1. Likelihood matrix.

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

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	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


1488 Chaparral
Chaparral Dr.
tree #1
tree #2
tree #3
tree #4
tree #5
tree #6
tree #7
log
2 benches and trash can
sand pit
logs
Deodar cedars
Eucalyptus St.

Tree 2

Species:	Tasmanian Blue Gum (Eucalyptus globulus)
DSH:	69" Diameter at Standard Height
Height:	110 feet
Canopy:	95" (53' x 95')
Observations:	Tree 2 appears to be in good condition. The burl on the bottom of the tree is primarily hollow and does exhibit evidence of sap ooze. This appears to be slime ooze, a harmless bacteria infection and not symptoms of damage from eucalyptus long horned beetle insect activity.
Tree Defects:	The parts of the tree most at risk of failure is weak scaffold branch approximately 2/3 of the way up the tree, and two overextended branches with weak attachments. Also possible root issues with sap oozing from burl.
Targets:	People walking in the Park under tree 2 and within 165' of the tree. People walking on Eucalyptus St. sidewalks People in cars parked along Eucalyptus St.
Likelihood of failure:	Possible
Likelihood of Impact to target:	High
Likelihood Matrix:	Somewhat likely
Consequences of failure:	Severe
Tree 2 Risk Rating:	Moderate
Mitigation Options:	Reduce two overextended branches in the upper canopy, no parking on west side of Eucalyptus St. within target area, warning signage
Residual risk:	Moderate

Tree 2

Potential scaffold reductions on north east side

Weak attachment

Sap oozing from burl

Tree 3

Species:	Tasmanian Blue Gum (Eucalyptus globulus)
DSH:	36" Diameter at Standard Height
Height:	70'
Canopy:	49' (54' x 43')
Observations:	Tree 3 appears to be in good condition. Tree 3 is protected on three sides by trees 2, 4 and 5.
Tree Defects:	The parts of the tree most at risk of failure are the three, codominant scaffold branches approximately 15-20 feet up the tree.
Targets:	People walking in the Park under tree 2 and within 105' of the tree.
Likelihood of failure:	Unlikely
Likelihood of Impact:	High
Likelihood of impacting target matrix:	Unlikely
Consequences of failure:	Severe
Tree 2 Risk Rating:	Low
Mitigation Options:	None recommended
Residual risk:	Low

Tree 4	
Species:	Tasmanian Blue Gum (Eucalyptus globulus)
DSH:	64" Diameter at Standard Height
Height:	120 feet
Canopy:	85" (89' x 80')
Observations:	Tree 4 appears to be in good condition.
Tree Defects:	There are two parts of the tree most at risk of failure. The first is a approximately ¾ up the trunk where three 25"+ scaffolds have V-joints extending from the main trunk. Although the scaffolds are large in relation to the main trunk, the joints do not have included bark. The second risk area is approximately half way up the trunk with three 25-30" scaffolds are within one foot of each other. The scaffold joints do not exhibit included bark, and the scaffolds are tapered, but overextended.
Targets:	People walking in the Park under tree 4 and within 180' of the tree. People walking on Eucalyptus St. sidewalks People in cars parked along Eucalyptus St.
Likelihood of failure:	Possible
Likelihood of Impact to target:	High
Likelihood Matrix:	Somewhat likely
Consequences of failure:	Severe
Tree 4 Risk Rating:	Moderate
Mitigation Options:	Reduce length of overextended branches in middle and upper canopy
Residual risk:	Moderate

Tree 4

Potential scaffold reduction

Tree 4

Potential scaffold reductions

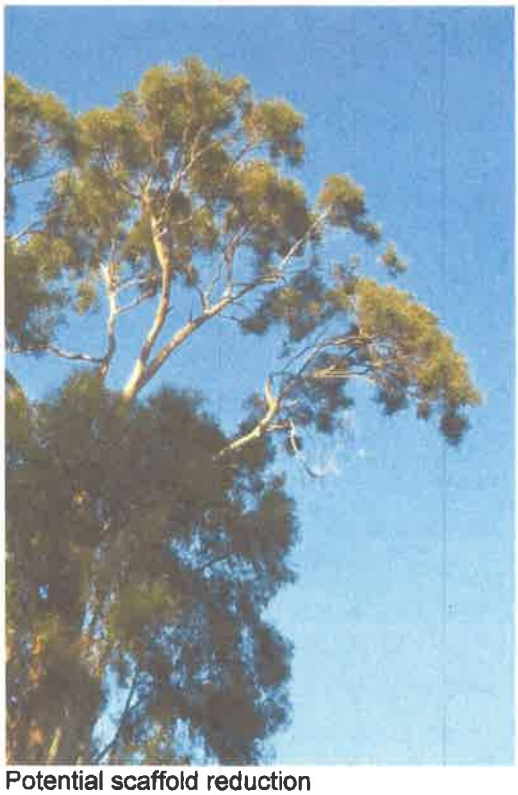
Tree 5

Species:	Tasmanian Blue Gum (Eucalyptus globulus)
DSH:	125" Diameter at Standard Height
Height:	125 feet
Canopy:	93" (92' x 93')
Observations:	Tree 5 appears to be in good condition. Areas of white fungus are located on the north east side of the burl, which sounds mostly hollow
Tree Defects:	The parts of the tree most at risk of failure are 1) the 30"+ scaffold branch half way up the tree on the northwest side that is overextended and lion-tailed. 2) The scaffold one quarter of the way up on the west side with a poor junction with the trunk. 3) The two over-extended branches three-quarter of the way up the tree on the east side
Targets:	People walking in the Park under tree 5 and within 188' of the tree. People walking on Eucalyptus St. sidewalks People in cars parked along Eucalyptus St. People in houses along Eucalyptus St.
Likelihood of failure:	Possible
Likelihood of Impact to Target:	High
Likelihood Matrix:	Somewhat likely
Consequences of failure:	Severe
Tree 5 Risk Rating:	Moderate
Mitigation Options:	Reduction of scaffolds, no parking on west side of Eucalyptus St. within target area, warning signage,
Residual risk:	Moderate

Tree 5 potential scaffold reduction

Tree 5 potential scaffold reduction

Fungus on burl

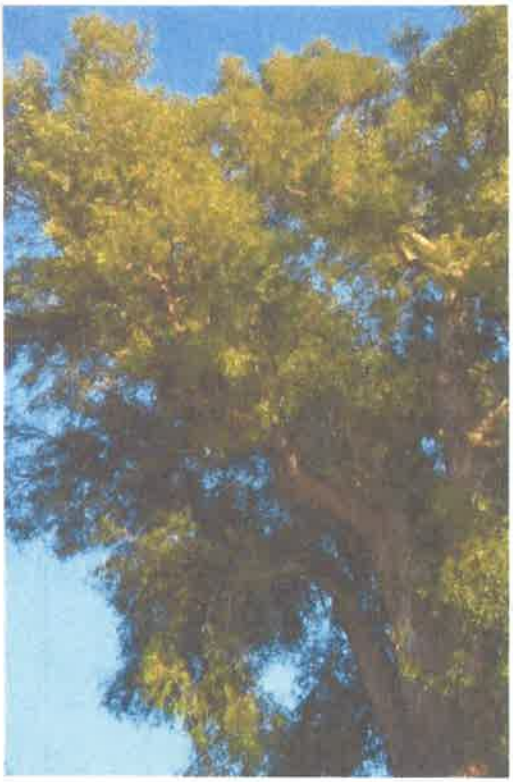


Potential scaffold reduction

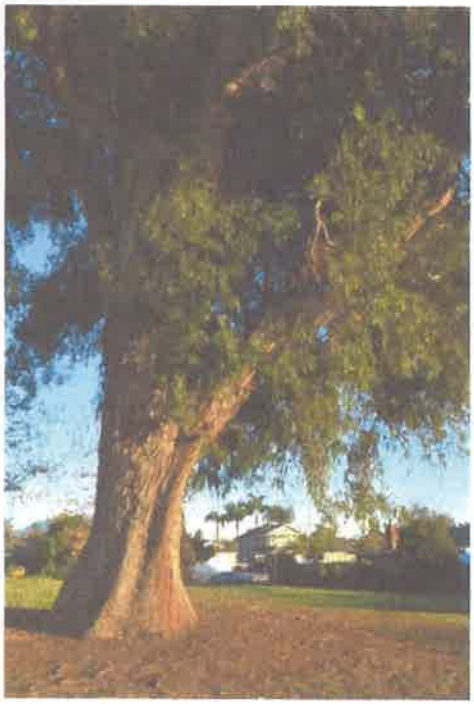
Tree 6

Species:	Tasmanian Blue Gum (Eucalyptus globulus)
DSH:	93" Diameter at Standard Height
Height:	95 feet
Canopy:	75"
Observations:	Tree 6 appears to be in fair condition. The bottom of the tree is partially hollow, with a flat edge on the southeast side indicating root issues, and sap ooze. The sap appears to be slime ooze, a harmless bacteria infection and not symptoms of damage from eucalyptus long horned beetle insect activity.
Tree Defects:	The parts of the tree most at risk of failure are 1) the overextended branches on the north side of tree, 2) the three scaffolds next to each other about one quarter up the tree on the west side. 3) The scaffold on the southeast side. 4) The base of the tree and possible insect/root issues
Targets:	People walking in the Park under tree 2 and within 143' of the tree. People in playground People in houses within target zone on south side Chaparral Dr.
Likelihood of failure:	Possible
Likelihood of Impact to target:	High
Likelihood Matrix:	Somewhat likely
Consequences of failure:	Severe
Tree 6 Risk Rating:	High
Mitigation Options:	Reduce two overextended branches on north side of tree, or consider moving playground 143' from trunk, level three analyses of sap wounds and root collar
Residual risk:	Moderate

Tree 6 sap ooze, flat base



Tree 6 – Scaffold reduction on playground side



Tree 6 scaffold reduction

Tree 6 3 close scaffolds

ATTACHMENT B

Arborist Report
Heath Ranch Park

Submitted to:
Matthew Roberts
Parks and Recreation Director
City of Carpinteria
5775 Carpinteria Avenue
Carpinteria CA 93013

Prepared by:
Duke McPherson, Arborist
201 East Mountain Drive
Santa Barbara, California 93108

August 20, 2015

Table of Contents

Introduction----------1

Observations and Discussion----------1-2

Further Discussion----------2

Conclusions and Recommendations----------3

Appendix A

Figure 1. Decay in Tree #2----------4

Appendix B

Figure 2. Decay in Tree #5----------5

Appendix C

Figure 3. Decay in Tree #7----------6

Duke McPherson, Arborist

201 East Mountain Drive
Santa Barbara, CA 93108
Phone 805 705-9529
E-mail: treemanduke@cox.net

August 20, 2015

Matthew Roberts
Parks and Recreation Director
City of Carpinteria
5775 Carpinteria Avenue
Carpinteria CA 93013

Arborist Report

Introduction

I was asked by Matthew Roberts, Director of the City of Carpinteria Parks and Recreation Department, to present my opinion as to the health and safety of the five mature Tasmanian Blue Gum trees, *Eucalyptus globulus* found on the property known as Heath Ranch Park located in Carpinteria, California.

Observations and Discussion

The five trees on the property are highly prized for their historical significance and beauty. On the other hand consideration must be given to the following conditions within and around each tree:

1. They are older trees which over the years have built up both obvious and hidden 'defects' which can contribute to hazardous conditions (Refer to an arborist report by Kenneth Knight of January 25, 2015 titled Heath Ranch Park Heritage Trees Level 2 Assessment and Dan Condon's letter to Matthew Roberts dated January 31, 2011)..
    a. In this grove there are signs of hollowing and internal decay occurring (see photographs in Appendix's A-C pages 4-6).
    b. There are numerous poorly attached branches in most of the trees (See the report by Kenneth Knight and Dan Condon's letter).

2. There are over weighted and over extended branches throughout the grove (See Kenneth Knight's report).

3. The logs from previously fallen trees in the Park had exhibited an internal decay called Brown Cubical Rot, *Phaeolus schweinitzii.* In my Arborist Report of October 17, 2005 I noted that it appeared that the large trunk lignotubers (galls) on the fallen trees had provided entry points for this variety of internal rot which eventually compromised the support tissue in the trees.

4. The trees have grown to great heights (70'-125'). Their high canopies carry branches which, when they break off, have the potential to injure and possibly kill park users.

5. The phenomenon called 'sudden limb drop' can strike at any time in this tree species and does not depend on wind to dislodge branches

5. The property provides 'targets' in the form of park users on a daily basis.

Further Discussion

I address below in more detail the potential and possible anticipated problems regarding the subject trees which were noted in the above section:

1. Defects

a. In the photos presented on pages 4-6 visually observed decay is occurring in three of the five trees under study. In trees 2 and 5, the decay at this point appears not to have invaded wood deeply. More research needs to be done with tree number 7 to determine the extent of decay and hollowing out. The same process may now be in progress in the existing trees which caused toppling in those which were described in #3 above.

b. Numerous poorly attached branches were noted in Mr. Knight's report. Dan Condon recommended that a trained professional in an aerial bucket truck be employed to look more closely at limb attachments and other possible defects throughout the grove to better determine a course of action. In my view, retaining most of the lower branches but pruning out their excessive weight may provide catch places for possible upper level breaks.

2, 4. Over weighted and over extended branches, high canopies, sudden limb drop.

To a certain extent, these existing and potential future problems can be ameliorated through pruning by trained professionals as was described in detail in Mr. Knight's report. In his report he presented recommendations regarding each specific tree's safety concerns. However, even with the best efforts to prevent it, the phenomenon of 'sudden limb drop' will always haunt this grove.

5. Targets

Concerns over safety would not be a consideration if it were not for the large number of people who frequent this park for recreation. It could be added that the trees present a threat to properties adjacent to the park as well. Whatever measures are employed to help insure safety, whether it be safety pruning, signage, or exclusion fencing, the City of Carpinteria must face the specter of the threat to human safety and life which these trees will continue to pose.

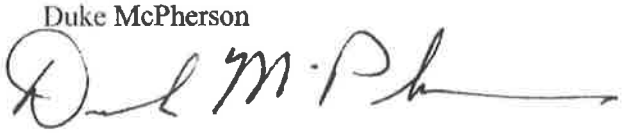
Conclusions and Recommendations

Throughout the years of my involvement with the maintenance of the Heath Ranch Park Eucalyptus grove, I recommended the removal of one tree (tree #1) and the safety pruning of the remaining trees. Tree number 5 has been an exception due to its rangy, poorly branched structure. In my arborist report of October 2005, I recommended that it be cordoned off to prevent possible harm to park users from falling branches (the tree has had a history of breakage).

I have come to conclude at the present time that even with the best efforts, these mature trees present a significant liability for the City and pose a threat to human safety. The central issue is that their dangerous condition, on many counts, continues to progress. It is only a matter of time before an accident will happen which will prompt their removal. My recommendation is that all the trees except for #7 should be removed at this time. Tree #7 needs basic pruning, especially over the playset. The cavity at its base on the north side needs to be thoroughly dug out to determine the extent of active decay.

Report prepared by

Duke McPherson



Certified Arborist with the
International Society of Arboriculture
Certification # WE-0690A

Appendix A

Figure 1. Photo shows a basal burl on the west side of tree #2 which has decayed away. Note the depth to which decay has advanced into its center. Decay of this kind can provide a point of entry for the very destructive Brown Cubicle Rot.

Appendix B

Figure 2. Photo shows burl decay in two places at the base of tree #5.

Appendix C

Figure 3. Photo shows a deep cavity on the north side of tree #7 in which Brown Cubicle Rot is abundantly present.

ATTACHMENT C

Kenneth A. Knight Consulting LLC
Registered Consulting Arborist #507
69 Calaveras Avenue Goleta, CA 93117
H (805) 968-8523 W (805)252-1952
kennethknight@cox.net www.goletaarborists.com

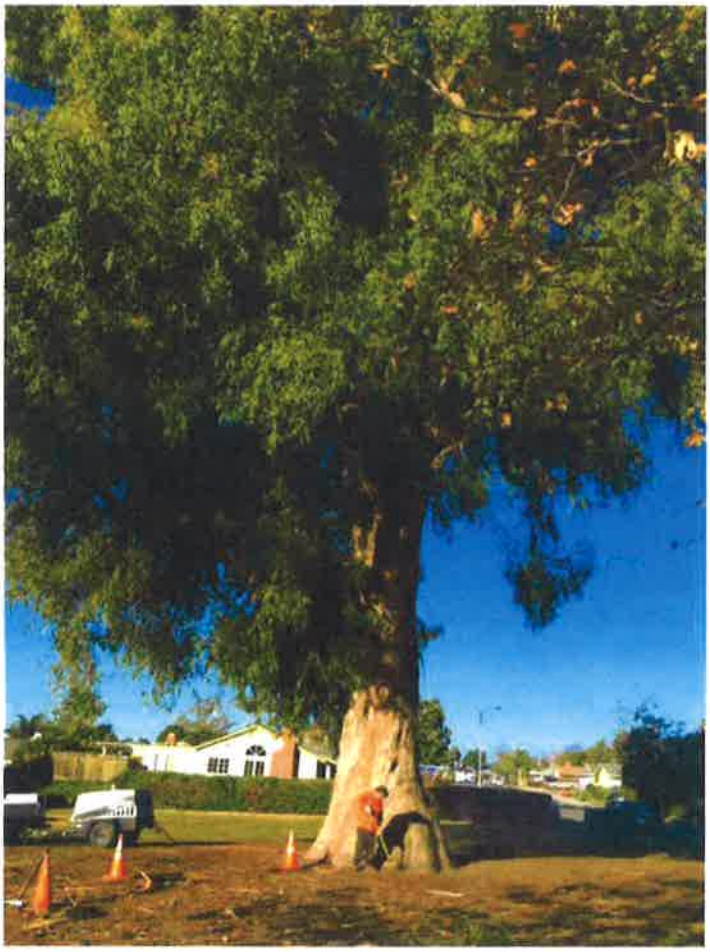
December 24, 2015

Matthew Roberts
Parks and Recreation Director
City of Carpinteria
5775 Carpinteria Avenue
Carpinteria CA 93013

Arborist Report: Health Ranch Park Eucalyptus Tree #7

Assignment

I was requested to follow up the September 4, 2015 pruning of Heath Park Ranch Eucalyptus Tree Number 7 with an air spade evaluation of the root collar. The purpose of the inspection was to identify potential structural root collar deficiencies that could result in whole tree failure, and to also improve tree health by loosening the soil under the canopy.



Observations

On December 15, 2015, after extensive watering around the tree by City staff, West Coast Arborist staff attempted to use an air spade to dislodge soil around the base of tree 7. However, the soil next to the tree was heavily compacted clay where the water could not penetrate. We stopped work and returned on December 23, 2015 after City staff again heavily watered around the tree, including the use of a soaker hose at the base of the tree.

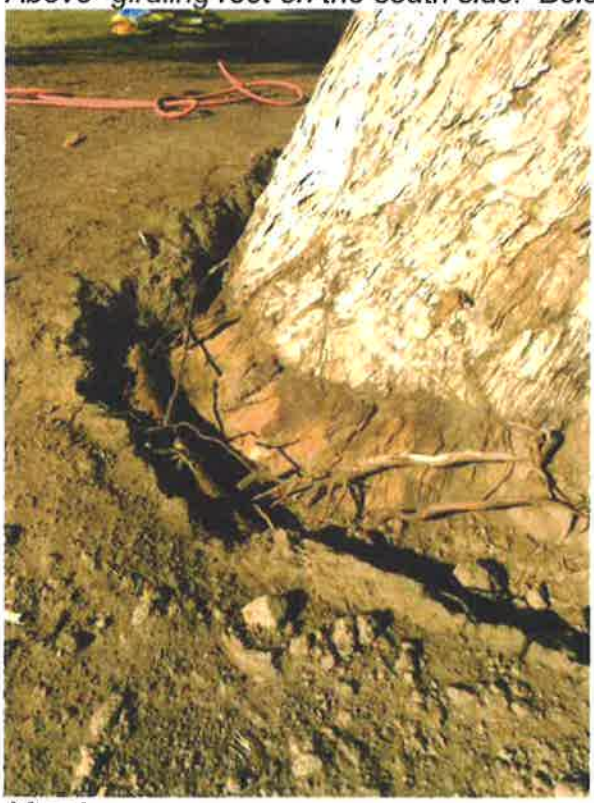
The irrigation penetrated approximately 3 inches of the upper soil, which did not allow as deep penetration with the air spade as we had anticipated, but it did allow the removal of approximately 8 to 12 inches of soil around the root color. I was particularly interested in the gall at ground level on the south side of the tree, I did not see any cankers, fungal bodies, or wood discoloration at that location or elsewhere around the outside of the tree. I sounded the root collar with a rubber mallet all around the tree and I did not detect any significant hollow sounds.

Duke McPherson's August 20, 2015 Arborist Report called for a closer inspection of the cavity on the north side of the tree. The cavity extends approximately 2 feet into the tree and about two feet high. While there is Brown Cubical Rot in the deadwood of the cavity, the remaining wood when probed by hand and with a five-foot probe is relatively solid. The tree is seven feet wide at this point, so there is approximately 5 feet of good wood on the southern side that will continue to support the tree.

Above-Cavity on north side, Right-decayed pieces, below looking up from inside cavity

The air spade did uncover a 7' to 9" diameter girdling root on the south side of the tree. The flat shape of the southern side of the trunk indicated that this was likely.

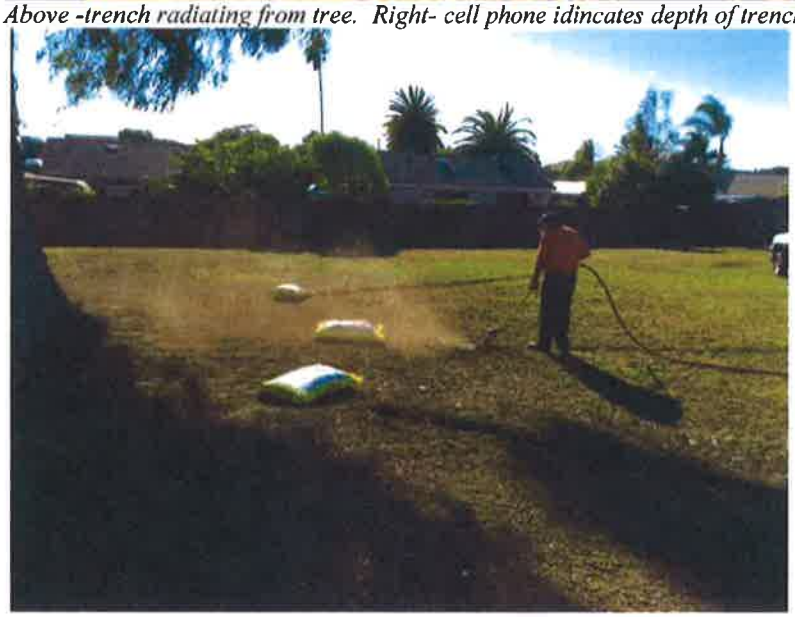
Above -girdling root on the south side. Below – girdling root extending east along trunk



After finishing the root collar examination, City staff refilled the hole with existing loose soil.

West Coast Arborist staff used the air spade to create eight trenches around the tree, each one about six inches deep and one foot wide. Each trench started about ten feet from the tree and extended about 25 feet to the edge of the canopy. Each trench was then backfilled with one two cubic foot bag of compost mixed in with the original soil. The purpose of the trenches is to loosen the compacted soil, add some organic material to the soil, and improve the ability of the tree roots to receive air and water.

Above -trench radiating from tree. Right- cell phone idincates depth of trench, note soil is dry about 3 inches below surface



Conclusions

1. There is some decay in the northern base of tree seven, but this decay is not present around the exterior root collar. There appears to be sufficient good, structurally sound wood to support the main trunk of tree seven under normal conditions.
2. Under the current drought conditions, the irrigation system for the grass is not penetrating deep enough to provide irrigation to tree seven.
3. Although the radial trenching will assist the ability of tree seven roots to secure water and minerals, the majority of the ground around tree seven remains heavily compacted clay.

Recommendations

1. To slow the progress of decay, the area around the cavity and the tree seven dripline should remain dry and not irrigated. Should the drought continue, the tree's periodic irrigation needs should be reevaluated in summer of 2016.
2. Tree seven is likely to continue to live for decades, thus the girdling root on the south side of the tree should be cleanly cut and removed along the approximately 10 foot length adjacent to the trunk.
3. The City should consider annually loosening the soil under the canopy of tree seven in different locations than done in 2015. Since the City has a number of high value trees where this soil loosening would be beneficial, the City may want to consider purchasing their own heavy duty Air Spade or Supersonic Air Knife.
4. All of the ground underneath the dripline of tree seven, especially the radial trench areas where the soil was recently loosened, should be covered with 3 to 4 inches of organic bark mulch. The grass does not have to be removed, but if the water is turned off, and the mulch is in place under the tree seven shady canopy, the grass will minimally active.
5. Tree seven is experiencing regrowth from the September 4, 2015 pruning of 15% of the canopy. The City should consider an annual strategic structural pruning to remove 15% of end weight.

Sincerely,

Ken Knight

Ken Knight, Registered Consulting Arborist #507