

***ARBORIST REPORT-***  
**Tree Survey & Construction Impact Assessment**

**109 Stanford Ave. - 917,919, & 923 Water Street**

**Santa Cruz, CA**

**APN: 009-234-59, 009-234-60, 009-234-25**

**9/14/2022**

**Prepared for:**

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ISA Tree Risk Assessment Qualification**

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## SUMMARY

This report provides the following information:

1. A summary of the health and structural condition of 4 trees.
  2. A preliminary evaluation of anticipated construction impacts to the trees.
  3. Recommendations for retention or removal of assessed trees based on their condition and anticipated construction impacts.
  4. Tree protection specifications to mitigate anticipated impacts to retained trees.
- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
  - An apartment complex consisting of 105 Single Room Occupancy Units and commercial spaces fronting Water Street is proposed.
  - Four *heritage trees* on or near the property were surveyed
  - The trees are in good or fair condition.
  - Two Heritage Trees are in direct conflict with the project and their removal will be necessary.
  - Two *Heritage Trees* are on neighboring properties, will be moderately impacted, can be incorporated into the project, and will require mitigation methods to reduce construction impacts including tree protection fencing.

## Background

Plans will be submitted to the City of Santa Cruz Planning Department, for construction of an apartment complex at Water Street and Stanford Avenue, Santa Cruz. Mr. Andy Goldberg has requested my services, to assess the condition of four trees on or near the applicant's property, and the construction impacts that may affect them. Further, to provide a report with my findings and recommendations to meet City of Santa Cruz planning requirements.

## Assignment

Provide an arborist report that includes an assessment of the trees within the project area. The assessment is to include the species, size (trunk diameter, height and canopy spread), condition (health and structure), suitability for preservation ratings. Review preliminary development plans assess potential impacts to trees, provide recommendations for retention or removal, and specify tree protection mitigation treatments for impacted trees that will be retained. Provide valuations of impacted trees to calculate a tree security deposit.

To complete this assignment, the following services were performed:

- **Tree Resource Evaluation:** Inventory, evaluate and assign suitability for preservation ratings for subject trees.
- **Plan Review: Reviewed provided plans including:** Stanford Studios, SB330 Pre-Application Plan Set, dated 5/4/2022.

- **Construction Impact Assessment:** Combine tree resource data with anticipated construction impacts, to provide recommendations for removal or retention of trees.
- **Tree Protection Plan:** Develop tree protection specifications to mitigate anticipated impacts to retained trees.
- **Mapping:** Tree locations were plotted onto Sheet APO.51, Proposed Site Plan, dated 5/4/2022, and a Tree Location Map, was created.

## Limits of the Assignment

The information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection on September 7, 2022.

The inspection is limited to visual examination of accessible items without climbing, dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in questions may not arise in the future.

## Purpose and use of the report

The report is intended to identify all the trees within the plan area that could be affected by a project. The report is to be used by the developer, their agents, and the City of Santa Cruz as a reference for existing tree conditions and to help satisfy the City of Santa Cruz planning requirements.

## Resources

All information within this report is based on site plans as of the date of this report. Resources are as follows:

- Stanford Studios, SB330 Pre-Application Plan Set, dated 5/4/2022.
- Site Visit, Tree Inventory & Condition Evaluation at Water Street and Stanford Avenue, Santa Cruz, on 9/7/2022.
- City of Santa Cruz Municipal Code – Chapter 9.56 *Preservation of Heritage Trees* (applicable sections).

## OBSERVATIONS

The three-parcel project site fronts Water Street and Stanford Avenue. Roughly half of the project will front Water Street and half will front Stanford Avenue. The properties currently consist of three commercial buildings and one single-family home. A corner parcel containing two commercial buildings is sited on both Water Street and Stanford Avenue, (Image #1).



**Image #1 – The three parcels with commercial building on left, home in center and commercial building on right. View from Water Street. The parcel with commercial building on right is on the corner of Water Street & Stanford Avenue. Trees T1, coast redwood and T3 Monterey pine can be seen in background.**

The grade is flat on all three parcels.

I surveyed four *Heritage trees*. Two of the trees are on the parcel containing the single-family home, (Image #2).



Image #2 – Trees T1, coast redwood & T2 blackwood acacia.

The coast redwood is 46" in diameter and shows water deficit symptoms including a thin canopy density. The trunk swells at 5' to 15' above grade. A fungal conk is visible at 15' above grade. Trunk swelling and conk are indicators of an internal or subsurface issue. The redwood is in fair condition.

The 16" acacia has co-dominant trunks with included bark at 3' above grade. Bark is missing from the trunk base possibly due to mechanical trauma. Several shallow surface roots are damaged as they have no protective bark. The acacia is in fair condition.

A 24" Monterey pine grows on the neighboring property adjacent to the parcel fronting Stanford Avenue, (Image #3).



**Image #3 – Tree T3, Monterey pine. Applicants' property is left of tree and fence line. The neighboring pine grows near the property line, and half of its canopy overhangs the project site, (circled).**

The pine grows near the property line and roughly half of the canopy overhangs the project site.

The pine has water deficit symptoms including a thin canopy density. The trunk has a 10 degree lean to the west. There is a minor infestation of Sequoia pitch moth. The pine is in fair condition.

A 32" coast live oak grows on a neighboring property, to the west of the project site, (Image #4).



**Image #4 – Tree T4, coast live oak.**

The oak is about 15-feet from the applicant's west property line, and a portion of its canopy overhangs the project site.

The main trunk has a 15 degree lean to the east. At 5' above grade it separates into two co-dominant trunks, (Image #5).



**Image #5 – Tree T4, coast live oak. One trunk grows to east towards applicants' property.**

One of the trunks grows east towards the applicant's property. Several limbs between 3" and 10" in diameter overhang the applicant's property.

The oak is vigorous with good canopy density and is in good health.

## DISCUSSION

### Species List

#### TOTAL TREE COUNT: 4

##### Heritage Trees: 4

|   |                  |                                 |
|---|------------------|---------------------------------|
| 1 | coast redwood    | ( <i>Sequoia sempervirens</i> ) |
| 1 | coast live oak   | ( <i>Quercus agrifolia</i> )    |
| 1 | Monterey pine    | ( <i>Pinus radiata</i> )        |
| 1 | blackwood acacia | ( <i>Acaia melanoxylon</i> )    |

A complete species list can be found in the Tree Assessment Chart spreadsheet, Appendix A.

### Tree Evaluation and Recording Methods

Site evaluations were made on 9/7/2022. *The inventory included all trees on the property within the project limits.* The health and structural **condition** of each tree was assessed and recorded. Based on the trees health and structural condition, each trees **suitability for preservation** was rated and recorded.

The recorded data is included in the *Tree Assessment Chart, Appendix A*, of this report. Tree numbers were plotted on the attached *Tree Protection Plan sheet, T1*. **To correlate the data in the Tree Assessment Chart to the tree's location on the site, refer to Sheet T1, Tree Location Map - Appendix C.**

### Condition Rating (*Heritage Trees*)

A trees condition is determined by an assessing both the **health** and **structure**, then combining the two factors to reach a *condition rating*. Tree condition is rated as poor, fair or good. The quantity of trees assigned for each category (good, fair or poor), is indicated below:

#### Tree Condition Rating

- Good - 0
- Fair - 4
- Poor - 0

### Suitability for Preservation (*Heritage Trees*)

A trees suitability for preservation is determined based on its health, structure, age, species characteristics and longevity using a scale of good, fair or poor. The quantity of trees assigned to each category (good, fair or poor), is listed below.

#### Suitability Rating

- Good - 0
- Fair – 4
- Poor - 0

## Tree Protection Zone

The tree protection zone (TPZ), is a defined area (radius from trunk), within which certain activities are prohibited or restricted to minimize potential injury to designated trees during construction.

The size of the optimal TPZ can be determined by a formula based on 1) trunk diameter 2) species tolerance to construction impacts, and 3) tree age (Matheny, N. and Clark, J 1998). In some instances, tree drip line is used as the TPZ. Development constraints can also influence the final size of the tree protection zone.

Fencing is installed to delineate the (TPZ), and to protect tree roots, trunk, and scaffold branches from construction equipment. *The fenced protection area may be smaller than the optimal or designated TPZ area in some circumstances.* Tree protection may also involve the armoring of the tree trunk and/or scaffold limbs with barriers to prevent mechanical damage from construction equipment. *See Tree Protection Guidelines & Restrictions – Appendix E.*

Once the TPZ is delineated and fenced (prior to any site work, equipment and materials move in), construction activities are only to be permitted within the TPZ if allowed for and specified by the project arborist.

Where tree protection fencing cannot be used, or as an additional protection from heavy equipment, tree wrap may be used. Wooden slats at least one inch thick are to be bound securely, edge to edge, around the trunk. A single layer or more of orange plastic construction fencing is to be wrapped and secured around the outside of the wooden slats. Major scaffold limbs may require protection as determined by the City arborist or Project arborist. Straw wattle may also be used as a trunk wrap and secured with orange plastic fencing.

Data has been entered in the *Tree Assessment Chart – Appendix A*, which indicates the optimal Tree Protection Zone for each tree.

Additional general tree protection guidelines are included in *Tree Protection Guidelines & Restrictions – Appendix G*.

## Critical Root Zone

The CRZ is the biological limit of a tree's capacity to recover from root loss. It is "the area of soil around a tree where the minimum number of roots that are biologically essential to the structural stability and health of the tree are located. There are no universally accepted methods to calculate the CRZ." (Clark, Metheny, Smiley, et al, *The Tree Protection Zone & the Critical Root Zone*, 12/2021). The methods utilized to determine the Critical Root Zone are varied and can be based on professional guidelines and/or industry standards. Criteria such as trunk diameter, tree age and vigor, species tolerance, tree architecture and existing site constraints are commonly used criteria.

Using this information, the arborist can find the distance from the trunk that should be protected per unit of trunk diameter. The CRZ does not always represent a radius around the tree. When necessary, the area can be offset or shaped in a manner that accepts tree canopy constraints or existing conditions.

## Critical Root Zone, Continued:

For purposes of this report the CRZ is the minimum tolerable distance between the trunk, and excavation that requires root cutting. I have estimated it to be five times the trunk Diameter at Breast Height, (DBH is 4.5' above grade). For example, if a tree has a one-foot trunk diameter, the CRZ extends to five feet from the trunk.

If encroachment into the CRZ or TPZ is required to retain the tree during development, the arborist must provide alternative construction methods or preconstruction treatments to reduce impacts.

## Root Disturbance Distance

No one can estimate and predict with absolute certainty what distance from a tree, a soil disturbance such as excavation for construction should be, to ensure it will not significantly affect tree stability or health. Or to what degree, (low, moderate or high), a tree might be impacted. There are simply too many variables involved that we cannot see or anticipate. However, three times the D.B.H. (diameter at breast height), is a widely accepted minimum used in the industry for root disturbance, *on one side of the trunk*, and is supported by several research studies including (Smiley, Fraedich & Hendrickson 2002, Bartlett Tree Research Laboratories). This distance is often used during the design and planning phases of a project in order to estimate root loss due to construction activities. This distance is a guideline only and should be increased for trees with significant leans, decay or other structural problems.

The ISA, International Society of Arboriculture- Root Management (2017) publication recommends, "cutting roots at a distance greater than six times the trunk diameter (DBH) minimizes the likelihood of affecting both health and stability. This recommendation is given further direction by the companion publication, A.N.S.I. (*American National Standard*) A300 (Part 8)- 2013 Root Management, when roots are cut in a *non-selective* manner, i.e. in a straight line on one side of a tree. It says, if the cutting is "within six times the trunk diameter (DBH), mitigation shall be recommended". Further, A.N.S.I. recommends the "minimum distance from the trunk for root cutting should be adjusted according to trunk diameter, species tolerance to root loss, tree age, health and site condition".

In general, root cutting that occurs at a distance less than six times the diameter of a tree should be undertaken by hand digging and hand (or Sawzall), root pruning. These methods help mitigate root loss impacts.

## Construction Impacts to Protected Trees

Two *Heritage Trees* will be in direct conflict, (in apartment footprint), with the project, and their removal will be necessary. Impacts to one *Heritage Tree*, T3, Monterey pine, on a neighboring property will be moderate to high depending on the type and location of the final site elements located near the tree. Impacts to one *Heritage Tree*, T4, coast live oak, on a neighboring property will be moderate.

The elements that will impact the trees include:

- Installation of Building Foundation
- Installation of Hardscape Elements

Tree T3, a 24" diameter Monterey pine is 12.5 feet from the building foundation, (Image #6).

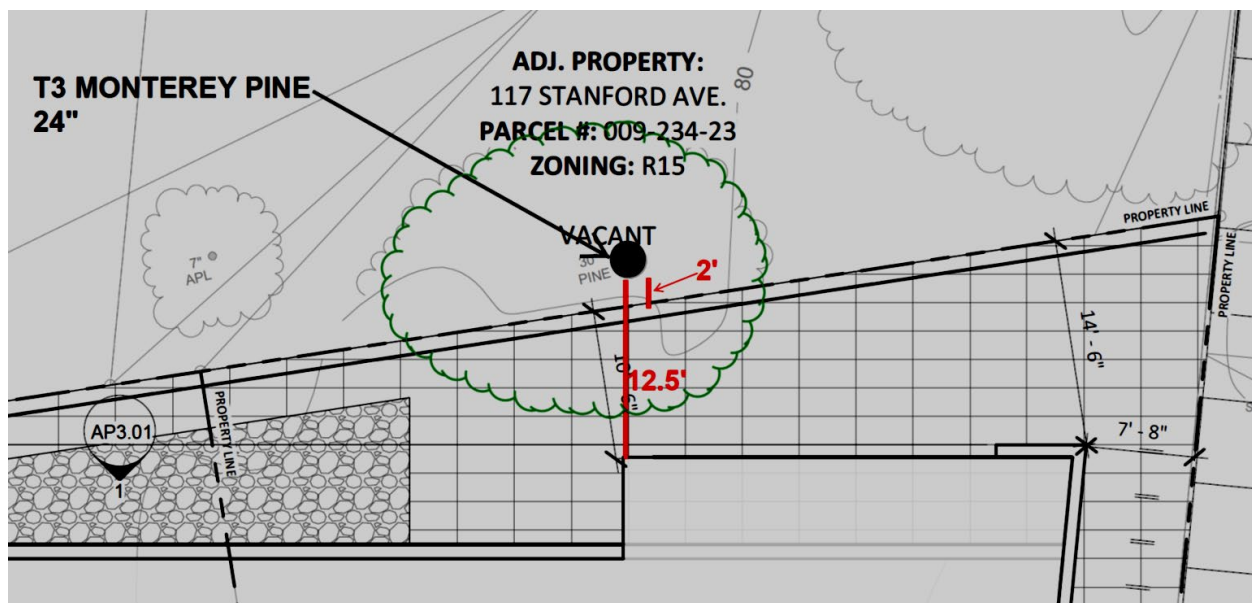


Image #6 – Tree T3, Monterey pine, and distance to building foundation and property line.

This is outside the critical root zone,  $12.5' \times 12' \div 24''$  trunk diameter = 6.25X the trunk diameter. The pine can tolerate estimated root loss impacts at this distance and will need tree protection treatments to reduce root loss impacts.

The pine is 2 feet from the property line. If hardscape is installed adjacent to the tree it would need to be a minimum of 6 feet from the tree:  $6' \times 12' \div 24''$  trunk diameter = 3X the trunk diameter. The pine can tolerate estimated root loss impacts at this distance, and would need tree protection treatments to reduce root loss impacts.

If over excavation is required for the foundation (estimated at 5'), it would be within the pine's critical root zone,  $7.5' \times 12' \div 24''$  trunk diameter = 3.75X the trunk diameter. Excavation for the foundation could exceed the tree's root loss tolerance. Many anchoring roots could be cut, and the trees stability could be affected. If excavation occurs at this distance, pre-construction root exploration would be necessary to determine the number, size and location of roots that would need to be pruned. With this information a determination to remove or retain the tree could be made.

## Construction Impacts to Protected Trees, Continued:

Minor canopy clearance pruning from the building may also be necessary for pine tree, T3..

Tree T4, a 32" coast live oak is 17-feet from the building foundation, (Image #7).

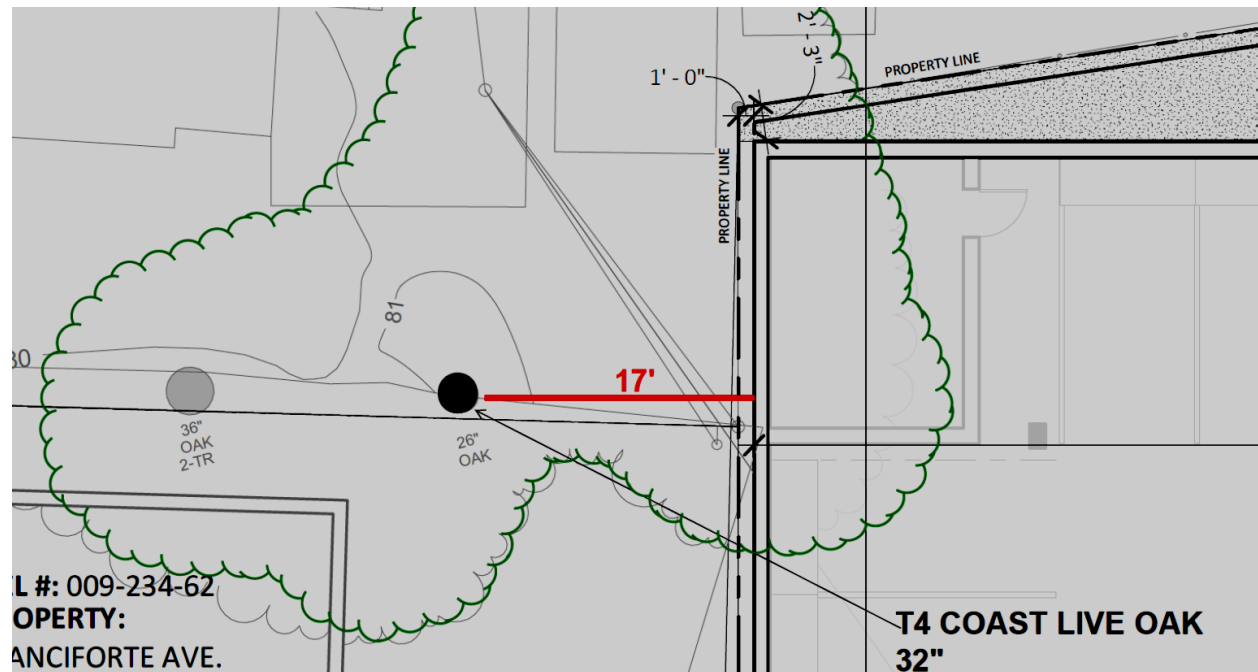


Image #7 – Tree T4, coast live oak, and distance to building foundation.

This is outside the critical root zone,  $17 \times 12" \div 32" \text{ trunk diameter} = 6.4X$  the trunk diameter. The oak can tolerate estimated root loss impacts at this distance and would need tree protection treatments to reduce root loss impacts.

The coast live oak would also need extensive clearance pruning from the new building. At least two scaffolds between 8-inches and 14-inches in diameter would need to be pruned. This pruning would result in removal of between 15% and 25% of the total canopy area.

## Impact Level

Impact level rates the degree a tree may be impacted by construction activity and is primarily determined by how close the construction procedures occur to the tree. Construction impacts are rated as low, moderate, high. The quantity of trees assigned for each category (low, moderate, high), is indicated below:

### Impact Rating (Protected Trees)

- Low - 0
- Moderate – 2
- High - 2

## Mitigation Measures for Retained Trees

The trees retained on this project will require some or all the following methods to protect them from the impacts described above and to minimize root loss during the construction phases.

- Tree Protection Fencing
- Hand trenching.
- Supervised root pruning.

When final plan documents are submitted, a Tree Protection Plan, Sheet T1, will be necessary to provide tree protection methods for retained trees.

## Certificate of Performance

I, Kurt Fouts, certify:

That I have personally inspected the tree(s) and/or the property referred to in this report and have stated my findings accurately to the best of my professional judgement.

- That I have no current interest in the vegetation or the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions and conclusions stated herein are my own, and were developed and prepared according to commonly accepted arboricultural practices.
- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party, nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events;
- That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices;
- That no one provided significant professional assistance to the consultant, except as indicated within the report.

I further certify that I am an International Society of Arboriculture Certified Arborist and carry an International Society of Arboriculture Tree Risk Assessment Qualification. I have been involved in the practice of arboriculture and the care and study of trees for more than 20 years.

Signed: Kurt Fouts

Date: 9/14/2022

## CONCLUSION

- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
- An apartment complex consisting of 105 Single Room Occupancy Units and commercial spaces fronting Water Street is proposed.
- Four *heritage trees* on or near the property were surveyed
- The trees are in good or fair condition.
- Two Heritage Trees, T1, coast redwood and T2, blackwood acacia, are in direct conflict with the project and their removal will be necessary.
- Two *Heritage Trees*, T3, Monterey pine and T4, coast live oak, are on neighboring properties, will be moderately impacted, can be incorporated into the project, and will require mitigation methods to reduce construction impacts including tree protection fencing.

## RECOMMENDATIONS

1. Obtain all necessary permits prior to removing or significantly altering any trees on site.
2. Follow tree protection specifications when a Tree Protection Plan, sheet T1, is developed.

Respectfully submitted,

*Kurt Fouts*

Kurt Fouts    ISA Certified Arborist   WE0681A  
ISA Tree Risk Assessment Qualification



**109 Stanford Ave. - 917,919, & 923 Water Street, Santa Cruz**

**Tree Assessment Chart - Appendix A**

**Suitability for Preservation Ratings:**

**Good:** Trees in good health and structural condition with potential for longevity on the site

**Fair:** Trees in fair health and/or with structural defects that may be reduced with treatment procedures

**Poor:** Trees in poor health and/or with poor structure that cannot be effectively abated with treatment

**Retention or Removal Code:**

**RT:** Retain Tree

**RI:** Remove Due to Construction Impacts

**I.M.** Impacts Can Be Mitigated With Pre-Construction Treatments

**R.C.** Remove Due to Condition

**Protected Tree City of Santa Cruz** Any tree 14 inches or greater in diameter measured at 4.5 feet above grade. Street trees regardless of size.

| Tree #                                                                                                                                                                            | Species                                       | Trunk Diameter @ 54 inches a.g. | Protected Tree | Crown Height & Spread | Health Rating | Structural Rating | Suitability for Preservation (Based Upon Condition) | Tree Protection Zone (in feet) | Construction Impacts (Rating & Description)                      | Retention or Removal Code | Comments                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------|----------------|-----------------------|---------------|-------------------|-----------------------------------------------------|--------------------------------|------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T1                                                                                                                                                                                | coast redwood ( <i>Sequoia sempervirens</i> ) | 46"                             | Yes            | 60'X20'               | Fair          | Fair              | Fair                                                | 25'                            | High- Within grading limits                                      | R.I.                      | Water deficit symptoms including thin canopy density. Trunk swells at 5'-15' above grade. Fungal conk at 15' above grade. Swelling and conk are indicators of internal or subsurface issue.              |
| T2                                                                                                                                                                                | blackwood acacia ( <i>Acaia melanoxylon</i> ) | 16",13"                         | Yes            | 60'X25'               | Good          | Fair              | Fair                                                | 20'                            | High- Within grading limits                                      | R.I.                      | Co-dominant trunks with included bark at 3' above grade. Missing bark at trunk base. Several damaged surface roots, (missing bark).                                                                      |
| T3                                                                                                                                                                                | Monterey pine ( <i>Pinus radiata</i> )        | 24" (estimated)                 | Yes            | 55'x25'               | Good          | Fair              | Fair                                                | 20'                            | Moderate (Root loss- excavation)                                 | R.T., I.M.                | On neighboring property. 2' from property line. Water deficit symptoms including thin canopy density. Minor infestation of Sequoia pitch moth. May need clearance pruning from new building if retained. |
| T4                                                                                                                                                                                | coast live oak ( <i>Quercus agrifolia</i> )   | 32" (at 3' above grade)         | Yes            | 45'x35'               | Good          | Fair              | Fair                                                | 25'                            | Moderate (Root loss- excavation, Canopy loss, clearance pruning) | R.T., I.M.                | On neighboring property. 17' from property line. Co-dominant trunks at 5' above grade. 15 degree trunk lean to east. Will need extensive clearance pruning from new building if retained.                |
|  <p>826 Monterey Avenue<br/>Capitola, CA 95010<br/>831-359-3607<br/>kurtfouts1@outlook.com</p> |                                               |                                 |                |                       |               |                   | Page 1 of 1                                         |                                |                                                                  |                           | 9/14/2022                                                                                                                                                                                                |

## APPENDIX B – CRITERIA FOR TREE ASSESSMENT CHART

Following is an explanation of the data used in the tree evaluations. The data is incorporated in the *Tree Assessment Chart, Appendix A*.

### Trunk Diameter and Number of Trunks:

Trunk diameter as measured at 4.5 feet above grade. The number of trunks refers to a single or multiple trunked tree. Multiple trunks are measured at 4.5 feet above grade.

### Health Ratings:

**Good:** A healthy, vigorous tree, reasonably free of signs and symptoms of disease

**Fair:** Moderate vigor, moderate twig and small branch dieback, crown may be thinning and leaf color may be poor

**Poor:** Tree in severe decline, dieback of scaffold branches and/or trunk, most of foliage from epicormics

### Structure Ratings:

**Good:** No significant structural defects. Growth habit and form typical of the species

**Fair:** Moderate structural defects that might be mitigated with regular care

**Poor:** Extensive structural defects that cannot be abated.

### Relative Age:

I estimated tree age as young, semi-mature, mature, or over-mature.

### Suitability for Preservation Ratings:

Rating factors:

**Tree Health:** Healthy vigorous trees are more tolerant of construction impacts such as root loss, grading, and soil compaction, then are less vigorous specimens.

**Structural integrity:** Preserved trees should be structurally sound and absent of defects or have defects that can be effectively reduced, especially near structures or high use areas.

**Tree Age:** Over mature trees have a reduced ability to tolerate construction impacts, generate new tissue and adjust to an altered environment. Young to maturing specimens are better able to respond to change.

**Species response:** There is a wide variation in the tolerance of individual tree species to construction impacts.

Rating Scale:

**Good:** Trees in good health and structural condition with potential for longevity on the site

**Fair:** Trees in fair health and/or with structural defects that may be reduced with treatment procedures.

**Poor:** Trees in poor health and/or with poor structure that cannot be effectively abated with treatment. Trees can be expected to decline or fail regardless of construction impacts or management . The species or individual may possess characteristics that are incompatible or undesirable in landscape settings or unsuited for the intended use of the site.

#### Construction Impacts:

Rating Scale:

**High:** Development elements proposed that are located within the Tree Protection Zone that would severely impact the health and /or stability of the tree. The tree impacts cannot be mitigated without design changes. The tree may be located within the building footprint.

**Moderate:** Development elements proposed that are located within the Tree Protection Zone that will impact the health and/or stability of the tree and can be mitigated with tree protection treatments.

**Low:** Development elements proposed that are located within or near the Tree Protection Zone that will have a minor impact on the health of the tree and can be mitigated with tree protection treatments.

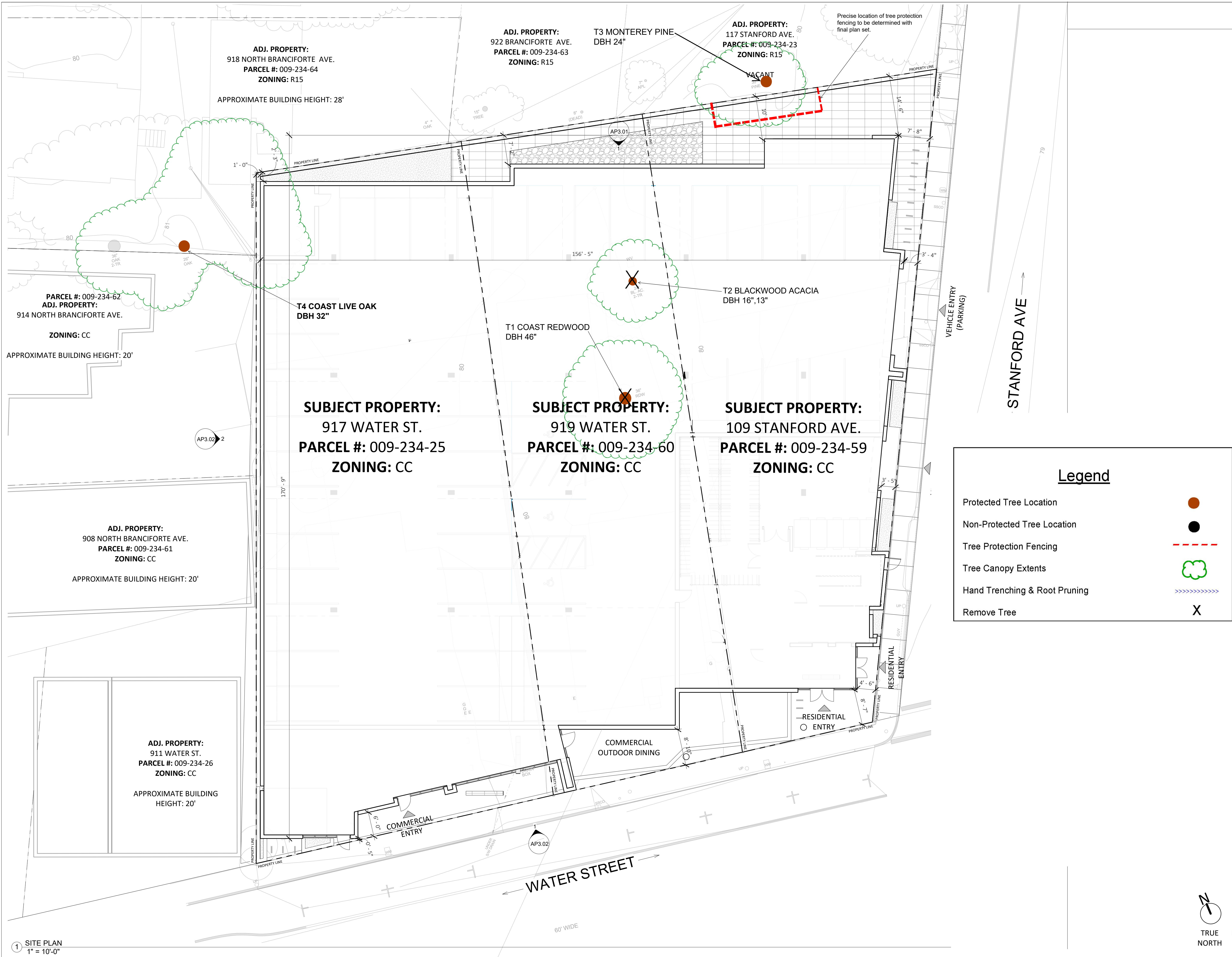
**None:** Development elements will have no impact on the health and stability of the Tree.

#### **Tree Protection Zone (TPZ):**

Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, particularly during construction or development.

5/4/2022 1:24:55 PM

1 SITE PLAN  
1" = 10'-0"



TRUE  
NORTH



PROJECT  
NORTH



826 Monterey Avenue  
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# Tree Location Map

## Water Street & Stanford Avenue, Santa Cruz

Sheet T1  
of one sheet

K.F.

8/14/2022

APN: 009-

234-25 &

59 & 60

# Glossary of Terms

**Basal rot:** decay of the lower trunk, trunk flare, or buttress roots.

**Canker:** Localized diseased area on stems, roots and branches. Often sunken and discolored.

**Critical Root Zone (CRZ):** Area of soil around a tree where a minimum number of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of the DBH, but because root growth can be asymmetric due to site conditions, on-site investigation may be required.

**Codominant branches/stems:** Forked branches (or trunks), nearly the same size in diameter, arising from a common junction and lacking a normal branch union, may have included bark.

**Crown:** Upper part of a tree, measured from the lowest branch, including all branches and foliage.

**Defect:** An imperfection, weakness, or lack of something necessary. In trees defects are injuries, growth patterns, decay, or other conditions that reduce the tree's structural strength.

**Diameter at breast height (DBH):** Measurement of trunk diameter at 4.5 feet above grade.

**Frass:** Fecal material and/or wood shavings produced by insects.

**Included Bark Attachments (crotches):** Branch/limb or limb /trunk, or codominant trunks originating at acute angles from each other. Bark remains between such crotches, preventing the development of axillary wood. The inherent weakness of such attachments increases with time, through the pressure of opposing growth and increasing weight of wood and foliage, often resulting in failure.

**Live Crown Ratio (LCR):** Ratio of the the crown length (live foliage), to total tree height.

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

**Suppressed:** Trees that have been overtopped and occupy an understory position within a group or grove of trees. Suppressed trees often have poor structure.

**Tree Protection Zones (TPZ):** Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, especially during construction or development.

**Trunk flare:** Transition zone from trunk to roots where the trunk expands into the buttress or structural roots.

This Glossary of Terms was adapted from the *Glossary of Arboricultural Terms* (ISA, 2015)

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## Appendix F - TREE PROTECTION GUIDELINES AND RESTRICTIONS

### Protecting Trees During Construction:

- 1) Before the start of site work, equipment or materials move in, clearing, excavation, construction, or other work on the site, every tree to be retained shall be securely fenced- off as delineated in approved plans. Such fences shall remain continuously in place for the duration of the work undertaken in connection with the development.
- 2) If the proposed development, including any site work, will encroach upon the tree protection zone, special measures shall be utilized, as approved by the project arborist, to allow the roots to obtain necessary oxygen, water, and nutrients.
- 3) Underground trenching shall avoid the major support and absorbing tree roots of protected trees. If avoidance is impractical, hand excavation undertaken under the supervision of the project arborist may be required. Trenches shall be consolidated to service as many units as possible. Boring/tunneling under roots should be considered as an alternative to trenching.
- 4) Concrete or asphalt paving shall not be placed over the root zones of protected trees, unless otherwise permitted by the project arborist.
- 5) Artificial irrigation shall not occur within the root zone of native oaks, unless deemed appropriate on a temporary basis by the project arborist to improve tree vigor or mitigate root loss.
- 6) Compaction of the soil within the tree protection zone shall be avoided.
- 7) Any excavation, cutting, or filling of the existing ground surface within the tree protection zone shall be minimized and subject to such conditions as the project arborist may impose. Retaining walls shall likewise be designed, sited, and constructed to minimize their impact on protected trees.
- 8) Burning or use of equipment with an open flame near or within the tree protection zone shall be avoided. All brush, earth, and other debris shall be removed in a manner that prevents injury to the tree.
- 9) Oil, gas, chemicals, paints, cement, stucco or other substances that may be harmful to trees shall not be stored or dumped within the tree protection zone of any protected tree, or at any other location on the site from which such substances might enter the tree protection zone of a protected tree.
- 10) Construction materials shall not be stored within the tree protection zone of a protected tree.

## Project Arborist Duties and Inspection Schedule:

The project arborist is the person(s) responsible for carrying out technical tree inspections, assessment of tree health, structure and risk, arborist report preparation, consultation with designers and municipal planners, specifying tree protection measures, monitoring, progress reports and final inspection.

A qualified project arborist (or firm) should be designated and assigned to facilitate and insure tree preservation practices. He/she/they should perform the following inspections:

Inspection of site: Prior to equipment and materials move in, site work, demolition, landscape construction and tree removal: The project arborist will meet with the general contractor, architect / engineer, and owner or their representative to review tree preservation measures, designate tree removals, delineate the location of tree protection fencing, specify equipment access routes and materials storage areas, review the existing condition of trees and provide any necessary recommendations.

Inspection of site: During excavation or any activities that could affect trees: Inspect site during any activity within the Tree Protection Zones of preserved trees and any recommendations implemented. Assess any changes in the health of trees since last inspection.

Final Inspection of Site: Inspection of site following completion of construction. Inspect for tree health and make any necessary recommendations.

Kurt Fouts shall be the Project Arborist for this project. All scheduled inspections shall include a brief Tree Monitoring report, documenting activities and provided to the City Arborist.

## Tree Protection Fencing

Tree Protection fencing shall be installed prior to the arrival of construction equipment or materials. Fence shall be comprised of six -foot chain link fence mounted on eight - foot tall, 1 and 7/8-inch diameter galvanized posts, driven 24 inches into the ground and spaced on a minimum of 10-foot centers. Once established, the fence must remain undisturbed and be maintained throughout the construction process until final inspection.

A final inspection by the City Arborist at the end of the project will be required prior to removing any tree protection fencing.

## Tree Protection Signs

All sections of fencing should be clearly marked with signs stating that all areas within the fencing are Tree Protection Zones and that disturbance is prohibited.

## Monitoring

Any trenching, construction or demolition that is expected to damage or encounter tree roots should be monitored by the project arborist or a qualified ISA Certified Arborist and should be documented.

The site should be evaluated by the project arborist or a qualified ISA Certified Arborist after construction is complete, and any necessary remedial work that needs to be performed should be noted.

## Root Pruning

Root pruning shall be supervised by the project arborist. When roots over two inches in diameter are encountered they should be pruned by hand with loppers, handsaw, reciprocating saw, or chain saw rather than left crushed or torn. Roots should be cut beyond sinker roots or outside root branch junctions and be supervised by the project arborist. When completed, exposed roots should be kept moist with burlap or backfilled within one hour.

## Tree Work Standards and Qualifications

All tree work, removal, pruning, planting, shall be performed using industry standards of workmanship as established in the Best Management Practices of the International Society of Arboriculture (ISA) and the American National Standards Institute series, *Safety Requirements in Arboriculture Operations* ANSI Z133-2017,

Contractor licensing and insurance coverage shall be verified.

During tree removal and clearance, sections of the Tree Protection Fencing may need to be temporarily dismantled to complete removal and pruning specifications. After each section is completed, the fencing is to be re-installed.

Trees to be removed shall be cut into smaller manageable pieces consistent with safe arboricultural practices, and carefully removed so as not to damage any surrounding trees or structures. The trees shall be cut down as close to grade as possible. Tree removal is to be performed by a qualified contractor with valid City Business/ State Licenses and General Liability and Workman's Compensation insurance.

## Development Site Tree Health Care Measures

*RECOMMENDED TO PROVIDE OPTIMUM GROWING CONDITIONS, PHYSIOLOGICAL INVIGORATION AND STAMINA, FOR PROTECTION AND RECOVERY FROM CONSTRUCTION IMPACT.*

Establish and maintain TPZ fencing, trunk and scaffold limb barriers for protection from mechanical damage, and other tree protection requirements as specified in the arborist report.

Project arborist to specify site-specific soil surface coverings (wood chip mulch or other) for prevention of soil compaction and loss of root aeration capacity.

Soil, water and drainage management is to follow the ISA BMP for "Managing Trees During Construction" and the ANSI Standard A300(Part 2)- 2011 Soil Management (a. Modification, b. 'Fertilization, c. Drainage.)

Fertilizer / soil amendment product(s) amounts and method of application to be specified by certified arborist.

# City of Santa Cruz

## **9.56.040 HERITAGE TREE AND HERITAGE SHRUB DESIGNATION.**

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Any tree, grove of trees, shrub or group of shrubs, growing on public or private property within the city limits of the city of Santa Cruz which meet(s) the following criteria shall have the "heritage" designation:

(a) Any tree which has a trunk with a circumference of forty-four inches (approximately fourteen inches in diameter or more), measured at fifty-four inches above existing grade;

(b) Any tree, grove of trees, shrub or group of shrubs which have historical significance, including but not limited to those which were/are:

- (1) Planted as a commemorative;
- (2) Planted during a particularly significant historical era; or
- (3) Marking the spot of an historical event.

(c) Any tree, grove of trees, shrub or group of shrubs which have horticultural significance, including but not limited to those which are:

- (1) Unusually beautiful or distinctive;
- (2) Old (determined by comparing the age of the tree or shrub in question with other trees or shrubs of its species within the city);
- (3) Distinctive specimen in size or structure for its species (determined by comparing the tree or shrub to average trees and shrubs of its species within the city);
- (4) A rare or unusual species for the Santa Cruz area (to be determined by the number of similar trees of the same species within the city);
- (5) Providing a valuable habitat; or
- (6) Identified by the city council as having significant arboricultural value to the citizens of the city.

### ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided by the appraiser/consultant is assumed to be correct. No responsibility is assumed for matters legal in character nor is any opinion rendered as the quality of any title.
2. The appraiser/consultant can neither guarantee nor be responsible for accuracy of information provided by others.
3. The appraiser/consultant shall not be required to give testimony or to attend court by reason of this appraisal unless subsequent written arrangements are made, including payment of an additional fee for services.
4. Loss or removal of any part of this report invalidates the entire appraisal/evaluation.
5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person(s) to whom it is addressed without written consent of this appraiser/consultant.
6. This report and the values expressed herein represent the opinion of the appraiser/consultant, and the appraiser/consultant's fee is in no way contingent upon the reporting of a specified value nor upon any finding to be reported.
7. Sketches. Diagrams. Graphs. Photos. Etc., in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering reports or surveys.
8. This report has been made in conformity with acceptable appraisal/evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.
9. When applying any pesticide, fungicide, or herbicide, always follow label instructions.
10. No tree described in this report was climbed, unless otherwise stated. We cannot take responsibility for any defects which could only have been discovered by climbing. A full root collar inspection, consisting of excavating around the tree to uncover the root collar and major buttress roots, was not performed, unless otherwise stated. We cannot take responsibility for any root defects which could only have been discovered by such an inspection.

### CONSULTING ARBORIST DISCLOSURE STATEMENT

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

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

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

