ARBORIST REPORT-

Tree Survey & Preliminary Impact Assessment

130 Center Street

APN: 007-023-26

Santa Cruz, CA

December 13, 2020

Prepared for:

Swenson
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SUMMARY

This report provides the following information:

1. A summary of the health and structural condition of 6 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.

- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
- Parcel improvements are proposed for the property at 130 Center Street, APN: 007-023-26, Santa Cruz.
- Six trees within or near the parcel boundaries were inventoried.
- Four trees are suitable for incorporation in the proposed project.
- Two trees are not suitable for retention in the project due to poor condition, high construction impacts or a combination of both.
- Two trees are recommended for removal.
- If removals are permitted, replacement trees will be required.
- This is a preliminary evaluation, once final plans are completed, tree protection specifications based on the final plans will be required.

Background

Plans will be submitted to the City of Santa Cruz, to construct a mixed-use complex at 130 Center Street. Mr. Jessie Bistrow, Development Project Manager Swenson has requested my services, to assess the condition of 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), and suitability for preservation ratings. Further, to review the preliminary development plans and assess the potential construction impacts.

To complete this assignment, the following services were performed:

- **Tree Resource Evaluation:** Inventory, evaluate and assign suitability for preservation ratings for subject trees.

Assignment continued:

- **Plan Review: Reviewed provided plans including:** Preliminary Site Plan Set, by Swenson Builder, dated 6/16/200 and Boundary & Topographic Survey, 130 Center Street, by Ifland Engineers, dated 8/2/2013.
- **Construction Impact Assessment:** Combine tree resource data with anticipated construction impacts, to provide recommendations for removal or retention of trees.
- **Mapping:** Tree locations were plotted onto: Boundary & Topographic Survey, 130 Center Street, by Ifland Engineers, dated 8/2/2013, 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 12/7/2020.

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, 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:

- Preliminary Site Plan Set, by Swenson Builder, dated 6/16/200.
- Boundary Topographic Survey 130 Center Street, by Ifland Engineers, dated 8/2//2013.
- Site Visit, Tree Inventory & Condition Evaluation at 130 Center Street, Santa Cruz, date 12/7/2020.
- City of Santa Cruz Municipal Code – Chapter 9.56 *Preservation of Heritage Trees* (applicable sections).

OBSERVATIONS

The proposed project at 130 Center Street is bordered on the north by commercial buildings, to the south by a hotel and to the east by an apartment complex, (Image #1).

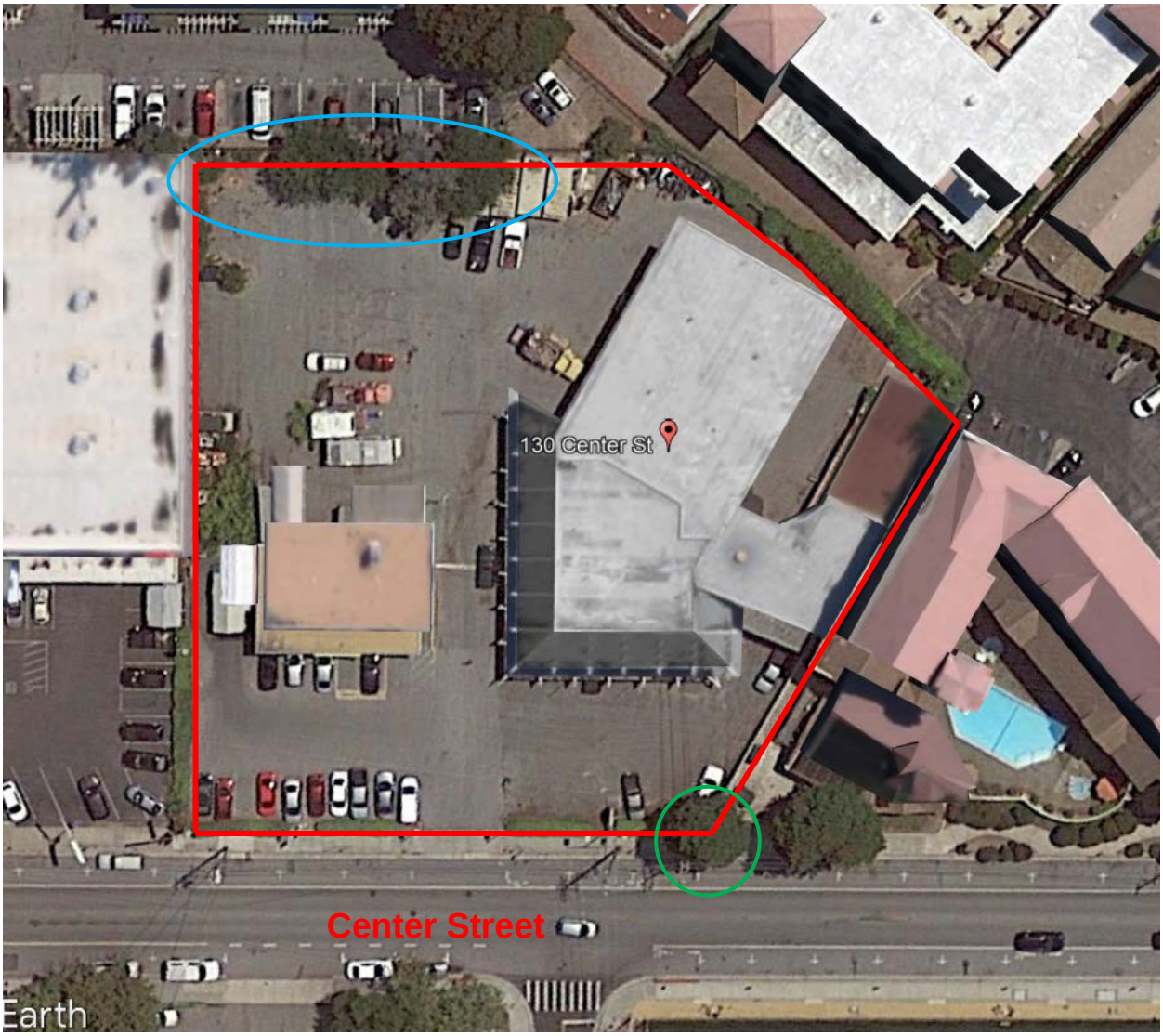

Image #1- 130 Center Street. Project boundary outlined in red. The projects tree resources are towards the rear left of the property (5 trees circled blue) and one tree (circled green), at front right.

The commercial property currently has one main building. More than half of the property is a paved parking area.

I inventoried 6 trees. Only one tree, a mature willow (*Salix spp*.) is located on the property (Image #2).

Image #2 – Trees T2, willow.

The tree is in poor condition. The tree was topped at 8 feet above grade. A cavity and significant amounts of deadwood and decay have developed at the location the tree was topped. Two mostly horizontal trunks with upright growing watersprout limbs have developed where the tree was topped, and branch attachment points are weak.

The remainder of the trees are on adjacent properties, and have canopies that overhang the subject property. The total tree canopy cover as a percentage of the property is less than five percent.

Four trees are growing in a planting strip in the apartment complex to the rear of the property. These trees include three silver dollar gum (*Eucalyptus polyanthemos*), images #2 & #3.

Image #3 – Trees T3 & T4, silver dollar gum, as seen from the apartment complex adjacent to the subject property.

Silver dollar gum trees T3 and T4 are in fair condition. The branching structure of tree T4 overhangs the subject property by 15 feet. Tree T3 is half the size of the other two silver dollar gums and is not a “protected” size tree.

Image #4 – Tree T1, silver dollar gum, as seen from apartment complex.

Tree T1 is in fair condition. The foliar canopy of this tree overhangs the subject property by five feet.

One coast live oak (*Quercus agrifolia*) is growing in the same planting strip as silver dollar gums T1,T3 & T4 (Image #5).

Image #5– TreeT5, coast live oak. The oak is growing in a planting strip in the adjacent apartment complex.

The oak is in fair condition. The branching structure of the tree overhangs the subject property by 15 feet.

One tree, a mature coast redwood (*Sequoia sempervirens*) is growing in the right of way, between 130 Center Street and the subject property (Image #6).

Image #6 – Tree T6, coast redwood. The redwood is growing in a planting strip between the sidewalk on Center Street, and the subject property. Note lack of canopy on left side due to clearance pruning from adjacent high voltage lines.

The coast redwood is in fair condition. The tree is growing in a planting strip with limited soil volume compared to the mature size of the tree. Shallow surface roots are cracking and lifting the adjacent sidewalk. English ivy grows over its lower canopy. The upper canopy has been clearance pruned from the adjacent high voltage lines.

DISCUSSION

Species List

TOTAL SUBJECT TREES: 6 Trees

Protected: 5

2	Silver Dollar Gum	(*Eucalyptus polyanthemos)*
1	Coast Live Oak	(*Quercus agrifolia*)
1	Willow	(*Salix spp*.)
1	Coast Redwood	(*Sequoia sempervirens*)

Not Protected: 1

1	Silver Dollar Gum	(*Eucalyptus polyanthemos)*

Tree Evaluation and Recording Methods

Site evaluations were made on 12/7/2020. *The inventory included trees on two parcels 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 Location Map sheet, T1*. **To correlate the data in the Tree Assessment Chart to the tree's location on the site, refer to the Tree Location Map sheet T1 - Appendix C.**

Condition Rating - Protected Trees

A trees condition is determined by an assessing both the **health** and **structure**, then combining the two factors to reach a *condition rating*. If the health rating and the structure rating differ, the lower rating becomes the default *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 - 5
- Poor - 1

Suitability for Preservation – Protected 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 – 5
- Poor - 1

Trees Recommended for Removal Due to Poor Condition/Suitability for Preservation – Protected Trees

“Protected Trees”

- Willow T2

Tree Protection Zone

The tree protection zone (TPZ), is a defined area 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.

Critical Root Zone

Critical Root Zone (CRZ) is the area of soil around the trunk of a tree where roots are located that provide critical stability, uptake of water and nutrients required for a tree's survival. The CRZ is the minimum distance from the trunk that trenching that requires root cutting should occur and can be calculated as three to the five times the trunk Diameter at Breast Height (DBH). For example, if a tree is one foot in trunk diameter then the CRZ is three to five feet from the trunk location. We will often average this as four times the trunk diameter or 1ft. DBH = 4ft. CRZ (Smiley, E.T., Fraedrich, B. and Hendrickson, N. 2007).

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.

Impacts to Subject Trees

Construction impact assessments are based on the Preliminary Site Plan Set, by Swenson Builder, dated 6/16/200, and my site visit on 12/7/2020.

Impacts to four trees will be moderate, and they can be retained. Impacts to two tree trees will be high and their removal will be required. Root loss impacts and/or canopy loss impacts will affect all the trees (Image #7).

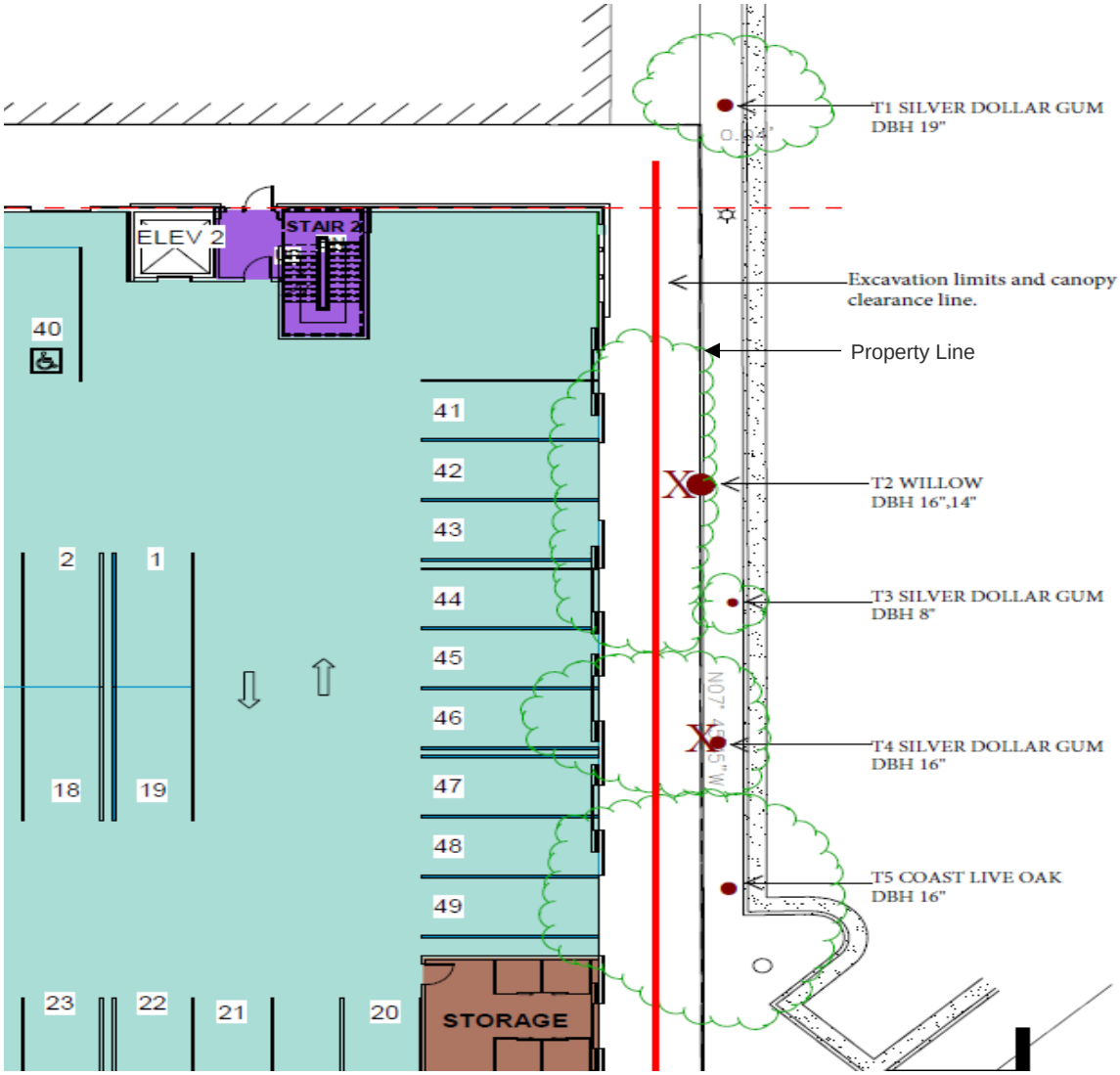

Image #7 – Trees T1-T5. The red line between the building and trees is 5' from the building and represents the limit of both root loss from excavation, and canopy loss from clearance pruning.

Impacts to Subject Trees, Continued:

The building set back to the property line, where five of the trees are located, is 10 feet. Grading and excavation for the project will occur close the property line of the parcel, root losses to retained trees will be moderate, and can be tolerated. Canopy clearance pruning will be necessary to achieve a minimum clearance of 5 feet from the new building, to allow for construction activities.

Tree T2, willow has very poor structure, with significant amounts of deadwood and decay and is recommended for removal due to its poor condition. Further, since it is located less than four feet from excavation and clearance pruning limits, the tree will suffer extensive loss of both roots and foliar canopy and is recommended for removal.

Tree T4, silver dollar gum, has an unbalanced canopy with a weight bias to the west. Nearly all of it structural development including two 8-10-inch diameter scaffolds grow to the west overhanging the subject property,(Image #8).

Image #8 – Tree T4, silver dollar gum. Note bend in trunk towards fence. Nearly all the trees branching structure is over the subject property.

There is no lower branching structure close to the trunk where this tree could be pruned back to, for building clearance. More than 75 percent of its foliar canopy is over the subject property and would require removal. The health and structure of this tree will be negatively impacted by the clearance pruning required, to a significant degree, and removal is recommended.

Impacts to Subject Trees, Continued:

Trees T1 and T3 silver dollar gum will require minor canopy clearance pruning and can be retained.

Tree T5 coast live oak will require clearance pruning and has a significant amount of branching structure over the subject property. However, the tree has lower branching structure, that could be pruned back to, for building clearance. The tree can tolerate the amount of clearance pruning required and can be retained.

A loss of several hours of light depending on the season, will occur due to the height of the new building, and the shading affect it will create on trees T1,T3 and T5. However, the trees can tolerate this loss of sunlight and will not be significantly affected.

Tree T6, coast redwood will suffer moderate root loss due to excavation which will occur about 6 feet from the tree. The redwood can tolerate this root loss and can be retained (Image #9).

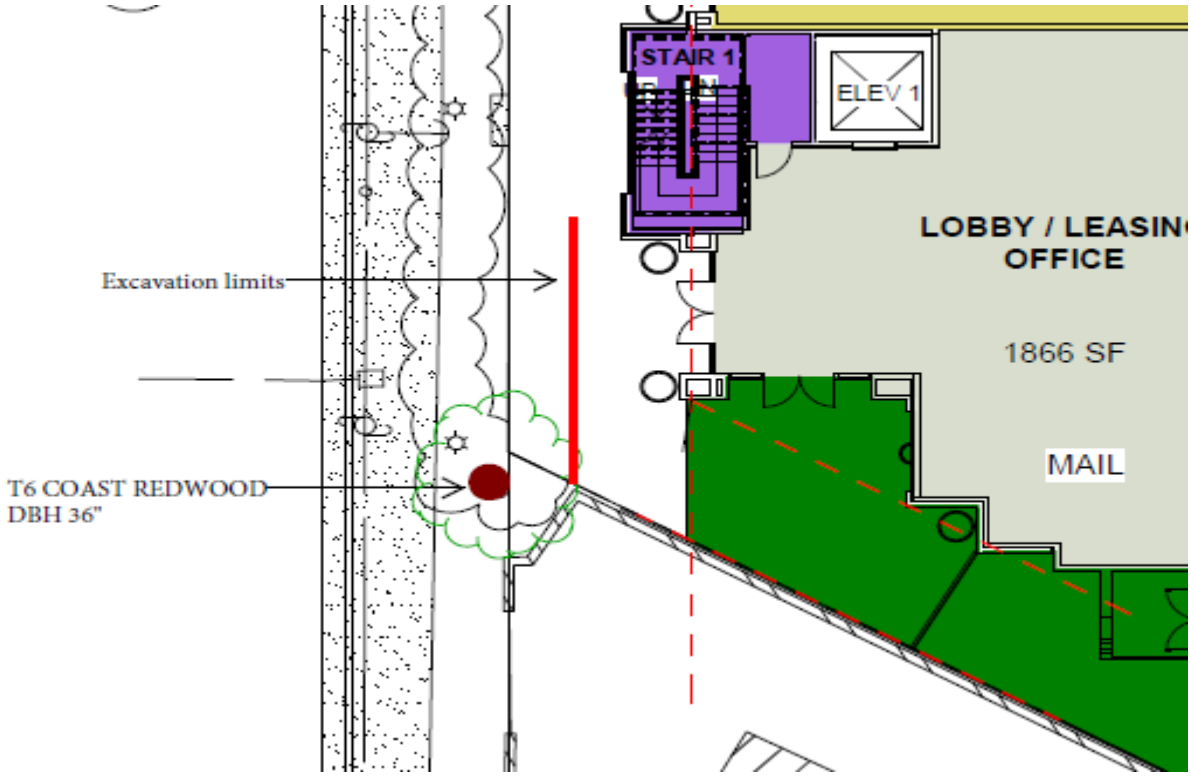

Image #9 – Tree T6, coast redwood. Red line indicates approximate limits of excavation.

Since utility tie-in locations have not been determined, possible impacts to tree T6 from utility lateral connections have not been assessed in this report.

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 – 4
- High - 2

Trees Recommended for Removal Due to Anticipated Construction Impacts

"Protected Trees"

T2	Willow (Also recommended for removal due to poor condition)
T4	Silver Dollar Gum

Tree Replacement

This is a preliminary project submittal. The final number of trees could vary depending on the final design. At present, two “protected” trees are recommended for removal.

Compensation for tree removal necessary to construct the project include:

- Preservation and protection of the retained trees during construction.
- Pre-construction treatments for specific trees.
- Tree replacement planting.

For each protected tree removed, the City of Santa Cruz requires one 15-gallon replacement tree. A total of one replacement tree will be required. If the replacement tree is planted as a street tree, replacement requirements are specified below.

If tree replacement sites are limited within the design constraints of this project, applicants may elect to pay an in-lieu fee for offsite mitigation as described below.

Replacement trees should be planted away from structures and where they have enough room to develop. Do not install trees where overhead wire exist. The trees must receive supplemental irrigation equal to their establishment requirements for the first two years.

Replacement Trees for City of Santa Cruz Street Trees:

- For each tree removed, one replacement tree is required. In some situations, the city will provide 15-gallon trees of an approved street tree species.
- If street trees are replaced, an approved cast iron grate must be installed (Neenah Foundry #8710) with each tree.
- Applicants may elect to pay an in-lieu fee to the tree trust fund of $150 for off- site mitigation. (Contribution to the Tree Trust Fund are used to purchase street trees, trees for projects, etc.)
- If the $250.00 refundable bond is placed and the tree(s) are replanted, permittee must contact the City Urban Forester, 831-420-5246 after 3 months of establishment to the $250.00 bond returned. Once the permit is issued there is a 10-day appeal period as required by ordinance before the permit becomes effective.
- If no appeal is filed, the permit is valid for 45 days. Aggrieved parties wishing to appeal approval of a tree permit may submit a tree appeal application and $100 fee to the Parks and Recreation Department.
- If you choose to make a monetary donation to the City’s Tree Trust Fund, your donation is used to purchase street trees to be planted in the City of Santa Cruz.

CONCLUSION

- The *Tree Assessment Chart*, Appendix A is the condensed reference guide to inform all tree management decisions for the trees evaluated.
- Parcel improvements are proposed for the property at 130 Center Street, APN: 007-023-26, Santa Cruz.
- Six trees within or near the parcel boundaries were inventoried.
- Four trees are suitable for incorporation in the proposed project.
- One “protected” tree, T2, willow, is in poor condition, will suffer high construction impacts and is not suitable for retention in the project.
- One “protected” tree T4, silver dollar gum, will require clearance pruning the will significantly impact the health and structure of the tree and it is not suitable for retention in the project.
- Two trees, T2, willow and T4, silver dollar gum, are recommended for removal.
- If removals are permitted, replacement trees will be required.
- This is a preliminary evaluation, once final plans are completed, tree protection specifications based on the final plans will be required.

RECOMMENDATIONS

1. Obtain all necessary permits prior to removing or significantly altering any trees on site.
2. Remove trees recommended for removal.
3. If the proposed building is built as shown in preliminary plans, have retained trees properly pruned by a licensed tree care company to achieve necessary clearance from the new building.
4. Tree protection specifications will be required once final plan sets are completed.

Respectfully submitted,

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130 Center 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 & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T1	silver dollar gum (*Eucalyptus polyanthemos*)	19"	Yes	30'X15'	Good	Fair	Fair	10'	Moderate (Root loss, excavation, canopy loss, clearance pruning)	R.T.	On adjacent property. In 3' wide planter strip. Canopy overhangs project limits by 5'. Co-dominant trunks at 7' above grade.
T2	willow *(Salix spp* .)	16", 14"	Yes	25'x30'	Poor	Poor	Poor	N/A	High (Within 4' of grading limits)	R.C.,R.I.	Boundary tree. Trunk straddles property line. Co-dominant trunks at 1' above grade. 10 degree trunk lean to east. Topped at 8' above grade. Cavity with significant amount of deadwood and decay at area of cut. Trunks grow horizontally with several poorly attached water sprout limbs. No canopy development on east half of tree.

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12/14/2020

130 Center Street, Santa Cruz

Tree Assessment Chart - Appendix A

Tree #	Species	Trunk Diameter @ 54 inches a.g.	Protected Tree	Crown Height & Diameter Spread	Health Rating	Structural Rating	Suitability for Preservation (Based Upon Condition)	Tree Protection Zone (in feet from trunk)	Construction Impacts (Rating & Description)	Retention or Removal Code	Comments
T3	silver dollar gum	8"	No	20'X10'	Fair	Fair	Fair	8'	Moderate (Root loss, excavation, canopy loss, clearance pruning)	R.T.	On adjacent property. In 3' wide planter strip.
T4	silver dollar gum	16"	Yes	30'X15'	Fair	Fair-Poor	Fair	10'	High - (Root loss, excavation, Canopy Loss, clearance pruning)	R.I.	On adjacent property. In 3' wide planter strip. 10 degree trunk lean to west. Co-dominant trunks at 7' above grade. Two 8-10" diameter scaffolds extend 15' into subject property at 10-20' above grade.
T5	coast live oak (*Quercus agrifolia*)	16"	Yes	30'X20'	Fair	Fair	Fair	10'	Moderate (Root loss, excavation, canopy loss, clearance pruning)	R.T.	On adjacent property. In 3' wide planter strip. Co-dominant trunks at 6' above grade. Unbalanced canopy with weight bias to west. Two 8-10" diameter limbs extend 15' into subject property at 10-20' above grade.
T6	coast redwood (*Sequoia sempervirens*)	36"	Yes	50'x15'	Fair	Fair	Fair	10'	Moderate (Root loss, excavation)	R.T.	Growing in 4' wide planter. Shallow surface roots lifting and cracking concrete sidewalk. Clearance pruned from overhead high voltage wires, creating gap in canopy. English ivy growing over lower canopy.

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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.

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.

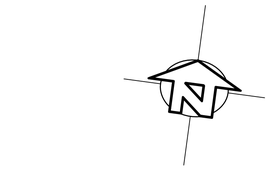
Moderate: Development elements proposed that are located within the Tree Protection Zone that will impact the health and/or stability of the tree and can be mitigated with tree protection treatments.

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.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Legend

- Tree Location & Number
- Tree Protection Fencing
- Tree Canopy Extents
- Hand Trenching & Root Pruning
- Remove Tree

Base map provided by Ifland Engineers, Santa Cruz

K.F.
12/14/2020
APN: 007-023-26

Sheet T1
of 1 sheet

Tree Location Map
130 Center Street, Santa Cruz

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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 of 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)

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.

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.

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MEMBER
INTERNATIONAL SOCIETY OF ARBORICULTURE
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