



Consultants in Morticulture and Arboriculture P.O Box 1261, Glen Ellen, CA 95442

December 1, 2017

Mr. Danny Abdelmalak The Santa Rosa Farm Group 9030 National Blvd. Los Angeles. CA 90034

Re: Completed Tree Preservation and Mitigation Report, 800 Yolanda Avenue, Santa Rosa, CA

Danny,

Attached you will find our completed *Tree Preservation and Mitigation Report* for the above noted site in Santa Rosa. A total of 78 trees were evaluated on the property, and this includes all trees that are present and larger than 4 inches in trunk diameter, per the Santa Rosa Tree Ordinance.

Each tree in this report was evaluated and documented for species, size, health, and structural condition. The *Tree Inventory Chart* also includes information about expected impacts of the proposed commercial development plan and recommendations for action based on the plan reviewed. The *Tree Location Plan* shows the location and numbering sequence of all evaluated trees. A *Tree Protection Fence* detail is included, as well as *Tree Protection Guidelines*.

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred, and assessment has included only external visual examination without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition.

EXISTING SITE CONDITION SUMMARY

The project site consists of a variety of structures including residential, outbuilding, and barns.

EXISTING TREE SUMMARY

Native tree species found on the site include Coast Live Oak and Valley Oak in very small quantities.

Most trees present are ornamentals, or native species planted as ornamentals. A majority are Coast Redwoods, but also present are Honey Locust, Black Walnut, English Walnut, Blue Gum, Almond, Evergreen Ash, and Crabapple.

CONSTRUCTION IMPACT SUMMARY

Of the 78 trees in this inventory the following impacts can be expected:

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(20) Preservation appears to be possible

(58) Removal recommended due to expected development impacts

No grading, drainage, or utility plans were reviewed as part of this assignment, and these activities may have impacts on trees that are considered preservable in this study. Further review may be necessary after this information becomes available.

Please feel free to contact me if you have questions regarding this report, or if further discussion would be helpful.

Regards

John C. Meserve Consulting Arborist and Horticulturist American Society of Consulting Arborists ISA Certified Arborist, WE #0478A ISA Tree Risk Assessment Qualified



TREE INVENTORY CHART

TREE INVENTORY 800 Yolanda Avenue Santa Rosa, CA

Tree #	ase print	Common Name	Trunk (dbh± inches)	Height (± feet)	Radius (± feet)	Health 1-5	Structure 1-4	Expected Impact	Recommendations
1	Prunus dulcis	Almond	10+8+8+11+11	15	12	2	2	3	2
2	Sequoia sempervirens	Coast Redwood	6	14	9	4	3	3	2
3	Juglans regia	English Walnut	19+20	16	18	3	3	2	1, 6, 7, 8, 9
4	Juglans nigra	Black Walnut	23	30	18	4	3	1	1, 6, 7, 8, 9
a	Sequoia sempervirens	Coast Redwood	2	18	10	2	4	3	2
9	Sequoia sempervirens	Coast Redwood	7	18	10	3	4	2	1, 6, 7, 8, 9
7	Sequoia sempervirens	Coast Redwood	6	18	10	3	4	2	1, 6, 7, 8, 9
80	Sequoia sempervirens	Coast Redwood	4	12	10	1	4	2	1, 6, 7, 8, 9
6	Sequoia sempervirens	Coast Redwood	7	20	10	3	4	2	1, 6, 7, 8, 9
10	Sequoia sempervirens	Coast Redwood	9	18	10	2	4	2	1, 6, 7, 8, 9
11	Sequoia sempervirens	Coast Redwood	9	18	10	2	4	3	2
12	Sequoia sempervirens	Coast Redwood	2	20	10	3	4	3	2
13	Sequoia sempervirens	Coast Redwood	9	20	10	1	4	3	2
14	Sequoia sempervirens	Coast Redwood	12	22	12	1	4	3	2
15	Sequoia sempervirens	Coast Redwood	8	21	12	4	3	3	2
16	Sequoia sempervirens	Coast Redwood	13	25	12	4	3	3	2

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TREE INVENTORY 800 Yolanda Avenue Santa Rosa, CA

ase print		Common Name	Trunk (dbh± inches)	Height (± feet)	Radius (± feet)	Health 1-5	Structure 1-4	Expected Impact	Recommendations
Sequoia sempervirens		Coast Redwood	4	18	10	3	4	3	2
Sequoia sempervirens		Coast Redwood	7	20	10	4	4	3	2
Sequoia sempervirens		Coast Redwood	12	25	12	4	4	3	2
Sequoia sempervirens		Coast Redwood	4	14	8	3	4	3	2
Sequoia sempervirens		Coast Redwood	4	16	8	3	4	3	2
Sequoia sempervirens		Coast Redwood	5	18	10	3	4	3	2
Sequoia sempervirens		Coast Redwood	3	20	10	3	4	3	2
Sequoia sempervirens		Coast Redwood	9	22	10	3	4	3	2
Sequoia sempervirens		Coast Redwood	5	20	10	3	4	3	2
Sequoia sempervirens		Coast Redwood	7	18	10	3	4	3	2
Sequoia sempervirens		Coast Redwood	4	15	10	3	4	3	2
Sequoia sempervirens		Coast Redwood	3	12	9	2	4	3	2
Sequoia sempervirens		Coast Redwood	9	16	10	2	4	3	2
Sequoia sempervirens		Coast Redwood	12	25	12	1	4	3	2
Juglans nigra	B	Black Walnut	23	35	18	3	3	3	2
Juglans nigra	B	Black Walnut	9+10+11+12+13	35	18	2	3	3	2

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TREE INVENTORY 800 Yolanda Avenue Santa Rosa, CA

-	ase print	Common Name	Trunk (dbh± inches)	Height (± feet)	Radius (± feet)	Health 1-5	Structure 1-4	Expected Impact	Recommendations
33	Juglans nigm	Black Walnut	14+14	35	20	3	3	3	2
34	Juglans nigm	Black Walnut	12+19	35	20	3	3	3	2
35	Juglans nigra	Black Walnut	15	15	12	2	1	2	1, 6, 7, 8, 9
36	Fraxinus ulidei	Evergreen Ash	24	15	12	2	1	3	2
37	Sequoia sempervirens	Coast Redwood	23	50	15	4	3	3	2
38	Gleditsia triacanthos	Honey Locust	6	25	12	3	3	3	2
39	Sequoia sempervirens	Coast Redwood	30	50	15	4	3	3	2
40	Sequoia sempervirens	Coast Redwood	24	50	15	4	3	3	2
41	Sequoia semperoirens	Coast Redwood	26	50	15	4	3	3	2
42	Sequoia sempervirens	Coast Redwood	20	50	15	4	3	3	2
43	Sequoia sempervirens	Coast Redwood	20	50	15	4	3	3	2
44	Sequoia sempervirens	Coast Redwood	20	50	15	4	3	3	2
45	Sequoia sempervirens	Coast Redwood	4	12	5	3	3	3	2
46	Sequoia sempervirens	Coast Redwood	5	12	5	3	3	3	2
47	Sequoia sempervirens	Coast Redwood	4	16	8	3	3	3	2

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TREE INVENTORY 800 Yolanda Avenue Santa Rosa, CA

Recommendations	2	2	2	2	2	2	2	2	2	2	1, 6, 7, 8, 9	1, 6, 7, 8, 9	1, 6, 7, 8, 9	1, 6, 7, 8, 9	1, 6, 7, 8, 9
Expected H	3	3	3	3	3	ю	3	3	3	3	2	1	1	1	1
Structure 1-4	3	3	3	3	3	3	3	3	3	2	4	4	4	4	4
Health 1-5	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3
Radius (± feet)	9	9	9	8	8	8	8	8	8	8	10	10	10	10	10
Height (± feet)	15	15	12	20	20	20	20	20	20	10	18	18	18	18	18
Trunk (dbh± inches)	4	5	4	5	5	5	7	5	5	4+3+2+2	9	9	5	9	5
Common Name	Coast Redwood	Crabapple	Coast Redwood												
ase print	Sequoia sempervirens	Malus floribunda	Sequoia sempervirens												
Tree #	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62

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TREE INVENTORY 800 Yolanda Avenue Santa Rosa, CA

63Sequoia sempervirentsCoast Redwood 5 15 8 3 4 1 1 64 Sequoia sempervirentsCoast Redwood 5 12 8 3 4 1 1 65 Sequoia sempervirentsCoast Redwood 4 12 8 3 4 1 1 66 Sequoia sempervirentsCoast Redwood 4 12 8 3 4 1 1 67 Sequoia sempervirentsCoast Redwood 4 12 8 3 4 1 1 67 Sequoia sempervirentsCoast Redwood 5 12 8 3 4 1 1 68 Sequoia sempervirentsCoast Redwood 5 12 8 3 4 1 1 70 Sequoia sempervirentsCoast Redwood 5 12 8 3 4 1 1 71 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 2 71 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 2 3 72 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 2 3 73 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 73 Sequoia sempervirentsCoast Redwood 6 15 8 <th>Tree #</th> <th>ase print</th> <th>Common Name</th> <th>Trunk (dbh ± inches)</th> <th>Height (± feet)</th> <th>Radius (± feet)</th> <th>Health 1-5</th> <th>Structure 1-4</th> <th>Expected Impact</th> <th>Recommendations</th>	Tree #	ase print	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health 1-5	Structure 1-4	Expected Impact	Recommendations
Sequois semperativentsCoast Redwood5158341Sequois semperativentsCoast Redwood51283411Sequois semperativentsCoast Redwood41283411Sequois semperativentsCoast Redwood41283411Sequois semperativentsCoast Redwood41283411Sequois semperativentsCoast Redwood501583411Sequois semperativentsCoast Redwood5015834111Sequois semperativentsCoast Redwood5015834322322Sequois semperativentsCoast Redwood6158343322Sequois semperativentsCoast Redwood6158343323Sequois semperativentsCoast Redwood61583433433Sequois semperativentsCoast Redwood61583433433Sequois semperativentsCoast Redwood61583433433Sequois semperativentsCoast Redwood615834334 <td>63</td> <td>Sequoia sempervirens</td> <td>Coast Redwood</td> <td>5</td> <td>15</td> <td>8</td> <td>3</td> <td>4</td> <td>1</td> <td>1, 6, 7, 8, 9</td>	63	Sequoia sempervirens	Coast Redwood	5	15	8	3	4	1	1, 6, 7, 8, 9
Sequoia semperativentsCoast Redwood5128341Sequoia semperativentsCoast Redwood41283411Sequoia semperativentsCoast Redwood41283411Sequoia semperativentsCoast Redwood51583411Sequoia semperativentsCoast Redwood51583411Sequoia semperativentsCoast Redwood51583411Uncrus IobataBlue Gum805050302.52332Sequoia semperativentsValley Oak174060432343Sequoia semperativentsCoast Redwood6158343343Sequoia semperativentsCoast Redwood6158343434Sequoia semperativentsCoast Redwood6158343435Sequoia semperativentsCoast Redwood6158343435Sequoia semperativentsCoast Redwood61583435555555555555555555555	64	Sequoia sempervirens	Coast Redwood	5	15	8	3	4	1	1, 6, 7, 8, 9
Sequoia sempervirensCoast Redwood 4 12 8 3 4 1 1 Sequoia sempervirensCoast Redwood 4 12 8 3 4 1 1 Sequoia sempervirensCoast Redwood 5 15 8 3 4 1 1 Sequoia sempervirensCoast Redwood 5 15 8 3 4 1 1 Uercus lobutusBlue Gum 800 50 30 2.5 2 3 2 3 Uercus lobutusValley Oak 17 400 60 4 3 2 3 2 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3 4 3 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirensCoast Redwood 6 15 8 3 4 3	65	Sequoia sempervirens	Coast Redwood	5	12	8	3	4	1	1, 6, 7, 8, 9
Sequoia sempervirentsCoast Redwood 4 12 8 3 4 1 1 Sequoia sempervirentsCoast Redwood 5 15 8 3 4 1 1 Sequoia sempervirentsCoast Redwood 5 50 30 2.5 2 3 2 Eucatyptus globutusBlue Gum 80 17 40 60 4 3 2 3 Quercus lobutuValley Oak 17 40 60 4 3 2 3 2 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3 3 Sequoia sempervirentsCoast Redwood 6 15 8 3 4 3	99	Sequoia sempervirens	Coast Redwood	4	12	8	3	4	1	1, 6, 7, 8, 9
Sequoia sempervirens Coast Redwood 5 15 8 3 4 1 Eucadyptus globulus Blue Gum 80 50 30 2.5 2 3 3 Eucadyptus globulus Blue Gum 80 50 30 2.5 2 3 3 Quercus lobata Valley Oak 17 40 60 4 3 2 Sequoia sempervirens Coast Redwood 6 15 8 3 4 3 Sequoia sempervirens Coast Redwood 6 15 8 3 4 3 Sequoia sempervirens Coast Redwood 6 15 8 3 4 3 Sequoia sempervirens Coast Redwood 6 15 8 3 4 3 Sequoia sempervirens Coast Redwood 6 15 8 3 4 3 Sequoia sempervirens Coast Redwood 6 15 8 3 4 3 <td>67</td> <td>Sequoia sempervirens</td> <td>Coast Redwood</td> <td>4</td> <td>12</td> <td>8</td> <td>3</td> <td>4</td> <td>1</td> <td>1, 6, 7, 8, 9</td>	67	Sequoia sempervirens	Coast Redwood	4	12	8	3	4	1	1, 6, 7, 8, 9
Eucatyptus globutusBlue Cum8050302.5233Quercus lobutaValley Oak17406043232Sequoiu sempervirensCoast Redwood615834333Sequoiu sempervirensCoast Redwood615834333Sequoiu sempervirensCoast Redwood61583433Sequoiu sempervirensCoast Redwood6158343343Sequoiu sempervirensCoast Redwood6158343343Sequoiu sempervirensCoast Redwood6158343343Sequoiu sempervirensCoast Redwood61583433 </td <td>68</td> <td>Sequoia sempervirens</td> <td>Coast Redwood</td> <td>5</td> <td>15</td> <td>8</td> <td>3</td> <td>4</td> <td>1</td> <td>1, 6, 7, 8, 9</td>	68	Sequoia sempervirens	Coast Redwood	5	15	8	3	4	1	1, 6, 7, 8, 9
Quercuts lobatu Valley Oak 17 40 60 4 3 2 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 7 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 7 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 7 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 7 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 7 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 7 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 7 Sequois sempervirents Coast Redwood 6 15 8 3 4 3 5 Sequois sempervirents Coa	69	Eucalyptus globulus	Blue Gum	80	50	30	2.5	2	3	2
Sequoia sempervirentsCoast Redwood615834Sequoia sempervirentsCoast Redwood615834	70	Quercus lobata	Valley Oak	17	40	60	4	3	2	1, 6, 7, 8, 9
Sequoia sempervirentsCoast Redwood615834Sequoia sempervirentsCoast Redwood615834	71	Sequoia sempervirens	Coast Redwood	9	15	8	3	4	3	2
Sequoin sempervirentsCoast Redwood615834Sequoin sempervirentsCoast Redwood615834Sequoin sempervirentsCoast Redwood615834Sequoin sempervirentsCoast Redwood615834Sequoin sempervirentsCoast Redwood615834Sequoin sempervirentsCoast Redwood615834Sequoin sempervirentsCoast Redwood615834	72	Sequoia sempervirens	Coast Redwood	9	15	8	3	4	3	2
Sequoia semperairensCoast Redwood615834Sequoia semperairensCoast Redwood615834Sequoia semperairensCoast Redwood615834Sequoia semperairensCoast Redwood615834Sequoia semperairensCoast Redwood615834	73	Sequoia sempervirens	Coast Redwood	9	15	8	3	4	3	2
Sequoia semperairensCoast Redwood615834Sequoia semperairensCoast Redwood615834Sequoia semperairensCoast Redwood615834	74	Sequoia sempervirens	Coast Redwood	9	15	8	3	4	3	2
Sequoia semperairensCoast Redwood615834Sequoia semperairensCoast Redwood615834	75	Sequoia sempervirens	Coast Redwood	9	15	8	3	4	3	2
Sequoia sempervirens Coast Redwood 6 15 8 3 4	76	Sequoia sempervirens	Coast Redwood	9	15	80	3	4	3	2
	11	Sequoia sempervirens	Coast Redwood	9	15	8	3	4	3	2

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TREE INVENTORY 800 Yolanda Avenue Santa Rosa, CA

Tree #	ase print	Common Name	Trunk (dbh ± inches)	Height (± feet)	Radius (± feet)	Health Stru 1-5 1	Structure 1-4	Expected Impact	Recommendations
78	Sequoia sempervirens	Coast Redwood	6	15	80	3	4	3	2

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KEY TO TREE INVENTORY CHART

KEY TO TREE INVENTORY CHART

800 Yolanda Avenue Santa Rosa, California

Tree Number

Each tree has been identified in the field with an aluminum tag and reference number. Tags are attached to the trunk at approximately eye level and the *Tree Location Plan* illustrates the location of each numbered tree that is outside the creek setback area. Trees in the creek setback area have been tagged and numbered, but only their approximate locations have been illustrated.

Species

Each tree has been identified by genus, species and common name. Many species have more than one common name.

Trunk

Each trunk has been measured, to the nearest one half inch, to document its diameter at 4 feet above adjacent grade. Trunk diameter is a good indicator of age, and is commonly used to determine mitigation replacement requirements.

Height

Height is estimated in feet, using visual assessment.

Radius

Radius is estimated in feet, using visual assessment. Since many canopies are asymmetrical, it is not uncommon for a radius estimate to be an average of the canopy size.

Health

The following descriptions are used to rate the health of a tree. Trees with a rating of 4 or 5 are very good candidates for preservation and will tolerate more construction impacts than trees in poorer condition. Trees with a rating of 3 may or may not be good candidates for preservation, depending on the species and expected construction impacts. Trees with a rating of 1 or 2 are generally poor candidates for preservation.

- (5) Excellent health and vigor are exceptional, no pest, disease, or distress symptoms.
- (4) Good health and vigor are average, no significant or specific distress symptoms, no significant pest or disease.
- (3) Fair health and vigor are somewhat compromised, distress is visible, pest or disease may be present and affecting health, problems are generally correctable.
- (2) Marginal health and vigor are significantly compromised, distress is highly visible and present to the degree that survivability is in question.

 Poor - decline has progressed beyond the point of being able to return to a healthy condition again. Long-term survival is not expected. This designation includes dead trees.

Structure

The following descriptions are used to rate the structural integrity of a tree. Trees with a rating of 3 or 4 are generally stable, sound trees which do not require significant pruning, although cleaning, thinning, or raising the canopy might be desirable. Trees with a rating of 2 are generally poor candidates for preservation unless they are preserved well away from improvements or active use areas. Significant time and effort would be required to reconstruct the canopy and improve structural integrity. Trees with a rating of 1 are hazardous and should be removed.

- (4) Good structure minor structural problems may be present which do not require corrective action.
- (3) Moderate structure normal, typical structural issues which can be corrected with pruning.
- (2) Marginal structure serious structural problems are present which may or may not be correctable with pruning, cabling, bracing, etc.
- Poor structure hazardous structural condition which cannot be effectively corrected with pruning or other measures, may require removal depending on location and the presence of targets.

Development Impacts

Considering the proximity of construction activities, type of activities, tree species, and tree condition - the following ratings are used to estimate the amount of impact on tree health and stability. Most trees will tolerate a (1) rating, many trees could tolerate a (2) rating with careful consideration and mitigation, but trees with a (3) rating are poor candidates for preservation due to their very close proximity to construction or because they are located within the footprint of construction and cannot be preserved.

- (3) A significant impact on long term tree integrity can be expected as a result of proposed development.
- (2) A moderate impact on long term tree integrity can be expected as a result of proposed development.
- A very minor or no impact on long term tree integrity can be expected as a result of proposed development.
- (0) No impact is expected

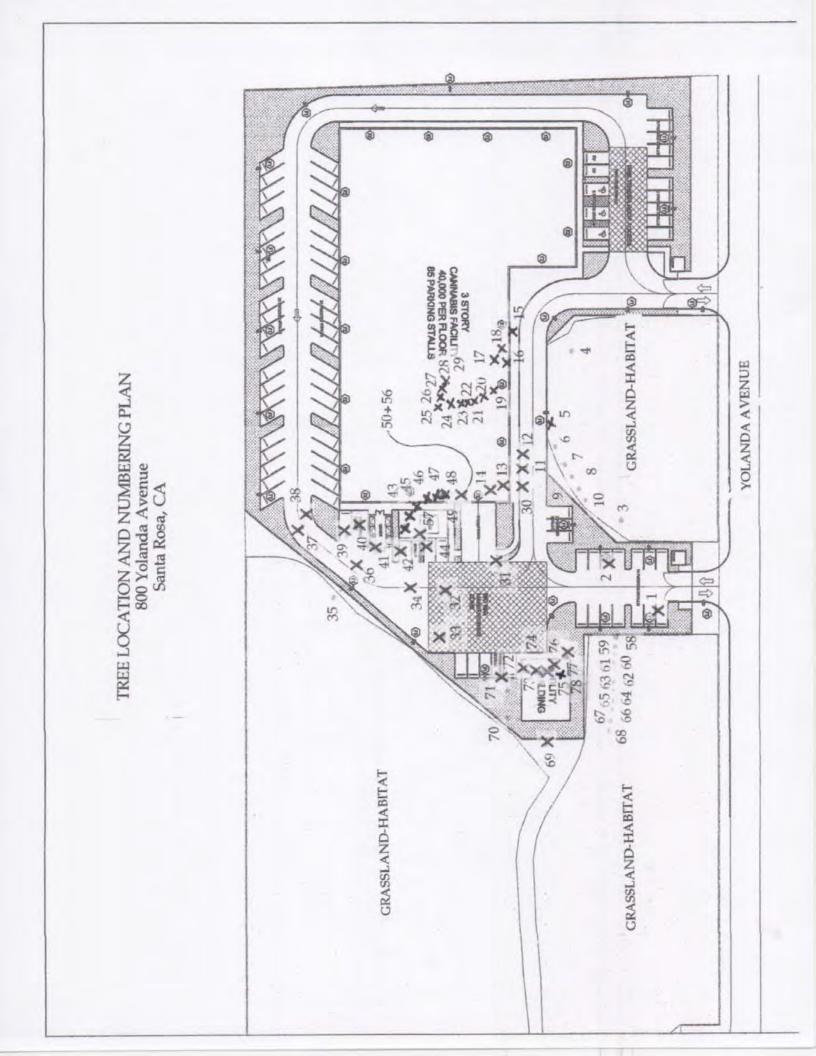
Recommendations

Recommendations are provided for removal or preservation. For those being preserved, protection measures and mitigation procedures to offset impacts and improve tree health are provided.

- (1) Preservation appears to be possible.
- (2) Removal is required due to significant development impacts.

- (3) Removal is recommended due to poor health or hazardous structure.
- (4) Removal is required due to significant development impacts and poor existing condition.
- (5) Removal is recommended due to poor species characteristics.
- (6) Install temporary protective fencing at the edge of the dripline, or edge of approved construction, prior to beginning grading or construction. Maintain fencing in place for duration of all construction activity in the area.
- (7) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and all underground work outside the dripline.
- (8) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Maintain this layer of mulch throughout construction.
- (9) Prune to clean, raise, or provide necessary clearance, per International Society of Arboriculture Pruning Standards. Pruning to occur by, or under the supervision of, an Arborist certified by the International Society of Arboriculture. Pruning Standards are attached to this report.

TREE LOCATION PLAN



TREE PROTECTION GUIDELINES

TREE PROTECTION GUIDELINES FOR CONSTRUCTION AROUND PRESERVED TREES

800 Yolanda Avenue Santa Rosa, CA

TREE PROTECTION ZONE

The Tree Protection Zone is illustrated on the Improvement Plans and represents the area around each tree, or group of trees, which must be protected at all times with tree protection fencing. No encroachment into the Tree Protection Zone is allowed at any time without approval from the project arborist, and unauthorized entry may be subject to civil action and penalties.

The protected area beneath the canopy of each tree will be designated by the project arborist as the Tree Protection Zone at a location determined to be adequate to ensure long term tree viability and health. The Tree Protection Zone may not be consistent with the canopy dripline in many locations.

TREE PROTECTION FENCING

Prior to initiating any construction activity on a construction project, including demolition, vegetation or approved tree removal, grubbing, or grading, temporary protective fencing shall be installed at each site tree or group of trees. Fencing shall be located at the edge of the Tree Protection Zone as specifically designated by the project arborist.

Fencing shall be minimum 4' height at all locations, and shall form a continuous barrier without entry points around all individual trees, or groups of trees. Barrier type fencing such as *Tensar* plastic fencing is recommended, but any fencing system that adequately prevents entry will be considered for approval by the project arborist. The use of post and cable fencing is not acceptable.

Fencing shall be installed in a professional manner using standard quality farm 'T' posts that are placed no more than 8 feet on center. Fencing shall be attached to each post at 5 locations with plastic electrical ties. Fencing shall be stretched tightly between posts in all locations. See fencing detail.

Fencing shall serve as a barrier to prevent encroachment of any type by construction activities including equipment, building materials, storage, outhouses, or personnel.

All encroachment into the fenced Tree Protection Zone must be approved in writing and supervised by the project arborist. Fencing relocation from original placement must also be approved in writing and be approved by the project arborist. Approved Tree Protection Zone encroachment may require additional

TREE PROTECTION GUIDELINES PAGE 2

mitigation or protection measures that will be determined by the project arborist at the time of the request.

Contractors and subcontractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation. All contractors and subcontractors are notified by this specification that there will be no exceptions without prior written approval.

Fencing shall be upright and functional at all times prior to demolition and grading and through completion of construction in the specific area of protected trees. If the project is to occur in phases fencing may be removed as each phase is completed.

GRADING AND TRENCHING

Any construction activity that necessitates soil excavation in the vicinity of preserved trees shall be avoided where possible, or be appropriately mitigated under the guidance of the project arborist. All contractors must be aware at all times that specific protection measures are defined, and non-conformance may generate stop-work orders.

The designated Tree Protection Zone is defined around all site trees to be preserved. Fences protect the designated areas. No grading or trenching is to occur within this defined area unless so designated by the Improvement Plan, and where designated shall occur under the direct supervision of the project arborist.

Trenching should be routed around the Tree Protection Zone whenever possible. Where trenching has been designated within the Tree protection Zone, utilization of underground technology to bore, tunnel or excavate with high-pressure air or water will be specified. Hand digging will be generally discouraged unless site conditions restrict the use of alternate technology.

All roots greater than one inch in diameter shall be cleanly hand-cut as they are encountered in any trench or in any grading activity. The tearing of roots by equipment of any type shall not be allowed. Mitigation treatment of pruned roots shall be specified by the project arborist as determined by the degree of root pruning, location of root pruning, and potential exposure to desiccation. No pruning paints or sealants shall be used on cut roots.

Where significant roots are encountered mitigation measures such as supplemental irrigation and/or organic mulches may be specified by the project arborist to offset the reduction of root system capacity.

TREE PROTECTION GUIDELINES PAGE 3

Retaining walls are effective at holding grade changes outside the area of the Tree Protection Zone and are recommended where necessary. Retaining walls shall be constructed in post and beam or drilled pier construction styles where they are necessary near or within the Tree Protection Zone.

Placement of fill soils is generally discouraged within the Tree Protection Zone, but in some approved locations may be approved to cover up to 30% of this area. The species and condition of the tree shall be considered, as well as site and soil conditions, and depth of fill. Retaining walls should be utilized to minimize the area of fill within the Tree Protection Zone Type of fill soil and placement methods shall be specified by the project arborist.

Grade changes near or within the Tree Protection Zone shall be designed so that surface drainage will not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%. If grading toward the root collar is unavoidable, appropriate surface and/or subsurface drain facilities shall be installed so that water is effectively diverted away from root collar area.

Approved fill soils within the Tree Protection Zone may also be mitigated using aerated gravel layers as specified by the project arborist.

Tree roots will be expected to grow into areas of soil fill, and quality of imported soil shall be considered. Fill soil shall be site topsoil that closely matches that present within the root zone area. When import soil is utilized it must be the same or slightly coarser texture than existing site soil, should have a pH range comparable to site soils, and generally should have acceptable chemical properties for appropriate plant growth. A soil analysis is required prior to soil importation to evaluate import soil for these criteria.

Grade reduction within the designated Tree Protection Zones shall be generally discouraged, and where approved, shall be conducted only after careful consideration and coordination with the project arborist.

Foundations or footings of any type within the Tree Protection Zone shall be constructed using design techniques that eliminate the need for trenching into natural grade. These techniques might include drilled piers, grade beams, bridges, or cantilevered structures.

TREE DAMAGE

Any form of tree damage which occurs during the demolition, grading, or construction process shall be evaluated by the project arborist. Specific mitigation measures will be developed to compensate for or correct the damage. Fines and penalties may also be levied.

Measures may include, but are not limited to, the following:

- pruning to remove damaged limbs or wood
- bark scoring to remove damaged bark and promote callous formation
- · alleviation of compaction by lightly scarifying the soil surface
- installation of a specific mulching material
- supplemental irrigation during the growing season for up to 5 years
- treatment with specific amendments intended to promote health, vigor, or root growth
- · vertical mulching or soil fracturing to promote root growth
- periodic post-construction monitoring at the developer's expense
- tree replacement, or payment of the established appraised value, if the damage is so severe that long term survival is not expected

MULCHING

Trees will generally benefit from the application of a 4 inch layer of chipped bark mulch over the soil surface within the greater root zone area. Ideal mulch material is a chipped bark containing a wide range of particle sizes. Bark mulches composed of shredded redwood, bark screened for uniformity of size, or chipped lumber are not acceptable.

Chipped bark mulch may not originate from any tree infected with, or exhibiting symptoms of, Sudden Oak Death (SOD) due to the potential of infecting existing site trees.

TREE PRUNING AND TREATMENTS

All recommendations for pruning or other treatments must be completed prior to acceptance of the project. It is strongly recommended that pruning be completed prior to the start of grading to facilitate optimum logistics and access.

All pruning shall be conducted in conformance with International Society of Arboriculture pruning standards, and all pruning must occur under the direct supervision of, an arborist certified by the International Society of Arboriculture.

TREE FENCING DETAIL

