California Tree and Landscape Consulting, Inc.

December 21, 2022

CWE-RFE
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ARBORIST REPORT & TREE PROTECTION PLAN

RE: 2000 & 2001 Helena Avenue, (APN 266-0261-008 & 266-0261-009) County of Sacramento, California

Executive Summary:

Tony McCreary of CWE-RFE, on behalf of the owner, contacted California Tree and Landscape Consulting, Inc. to inventory and evaluate the trees included in the footprint of the proposed preliminary development plans provided by CWE-RFE[1] and provide a tree protection plan. The property is located at 2000 & 2001 Helena Avenue in Sacramento, California, and is subject to the jurisdiction of Sacramento County. See Supporting Information Appendix A –Tree Location Map.

Tyler Thomson, ISA Certified Arborist WE-12751A, was on site on December 6, 2022 to inventory and assess the trees. A total of 25 trees were included in the inventory. Nine (9) trees are located off-site and included because of their proximity to proposed development. Five (5) trees are protected by the Sacramento County Tree Preservation Ordinance. A total of 17 trees are proposed for removal. Four (4) of the trees proposed for removal are protected trees.

Tree Species	Trees Inventoried	Trees on the Site[2]	Protected by Sacramento County Tree Preservation, 19.12[1]	Trees Proposed for Removal	Trees impacted by the proposed development and requiring special protection measures and/or mitigation[1]
Protected (by species):					
Valley Oak (*Quercus lobata*)	**6**	**6**	**4**	**6[3]**	**4[*]**
Interior Live Oak (*Quercus wislizeni*)	**1**	**1**	**1**	**–**	**–**
Non-Protected (by species):					
Chinese Elm, Crape Myrtle, Honey Locust, Liquidambar, Mexican Fan Palm, Mulberry, Pecan, Prunus sp.	18	9	0	11	–
Totals	25	16	5	17	4

See Appendices for specific information on each tree and additional preservation requirements and/or development restrictions.

[1] Preliminary grading plans dated 3-10-23: C5.1 & C5.2.

[2] CalTLC is not a licensed land surveyor. Tree locations are approximate and we do not determine tree ownership. Trees which appear to be on another parcel are listed as off-site and treated as the property of that parcel.

[3] Tree #101 appears to be off-site or shared by the adjacent parcel to the west: 'Shy Trust' APN- 266-0284-004. Permission to remove the tree may need to be obtained by the owner of the adjacent parcel.

[*] Only four (4) of the six (6) valley oak trees proposed for removal meet the size requirement for protection status.

Methods

Appendix B in this report is the detailed inventory and recommendations for the trees. The following terms and Table A – Ratings Description will further explain our findings.

A Level 2 – Basic Visual Assessment was performed in accordance with the International Society of Arboriculture's best management practices. This assessment level is limited to the observation of conditions and defects which are readily visible. Additional limiting factors, such as blackberries, poison oak, and/or debris piled at the base of a tree can inhibit the visual assessment.

Tree Location: The GPS location of each tree was collected using the ESRI's ArcGIS collector application on an Apple iPhone or Samsung. The data was then processed in ESRI's ArcMap by Julie McNamara, M.S. GISci, to produce the tree location map.

Tree Measurements: DBH (diameter breast high) is normally measured at 4'6" (above the average ground height for "Urban Forestry"), but if that varies then the location where it is measured is noted. A diameter tape or Biltmore stick was used to measure the diameter. Pacing method was used to measure distances. Canopy radius measurements may also have been estimated due to obstructions, such as steep slopes, fences, or other trees.

Terms

Field Tag #	The pre-stamped tree number on the tag which is installed at approximately 6' above ground level on the north side of the tree.
Old Tag #	If additional field tags are found on the trees and are legible, they are listed here.
Species	The species of a tree is listed by our local and correct common name and botanical name by genus (capitalized) and species (lower case). Oaks frequently cross-pollinate and hybridize, but the identification is towards the strongest characteristics.
DBH	Diameter breast high' is normally measured at 4'6" (above the average ground height for "Urban Forestry"), but if that varies then the location where it is measured is noted in the next column "measured at"
Measured at	Height above average ground level where the measurement of DBH was taken
Canopy radius and Protection Area	The farthest extent of the crown composed of leaves and small twigs. Most trees are not evenly balanced. This measurement represents the longest extension from the trunk to the outer canopy. The dripline measurement is from the center point of the tree and is shown on the Tree Location Map as a circle. This measurement further defines the protection zone and can indicate if pruning may be required for development. Sacramento County specifies this measurement as the required 'Protected Root Zone'
Critical Root Zone	The radius of the critical root zone is a circle equal to the trunk diameter" converted to' and factored by tree age, condition and health pursuant to the industry standard. Best Management Practices: Managing Trees During Construction, the companion publication to the Approved American National Standard, provides guidance regarding minimum tree root protection zones for long term survival. In instances where a tree is multi-stemmed the protected root zone is equal to the extrapolated diameter (sum of the area of each stem converted to a single stem) factored by tree age, condition and health.

Arborist Rating

Subjective to condition and is based on both the health and structure of the tree. All of the trees were rated for condition, per the recognized national standard as set up by the Council of Tree and Landscape Appraisers and the International Society of Arboriculture (ISA) on a numeric scale of 5 (being the highest) to 0 (the worst condition, dead) as in Chart A. The rating was done in the field at the time of the measuring and inspection.

Arborist Ratings			Sacramento County Ratings
No problem(s)	Excellent	**5**	Excellent
No apparent problem(s)	Good	**4**	Good
Minor problem(s)	Fair	**3**	Fair
Major problem(s)	Fair to Poor	**2**	Declining
Extreme problem(s)	Poor	**1**	Severe Decline
Dead	Dead	**0**	Dead

Rating #0: This indicates a tree that has no significant sign of life.
Rating #1: The problems are extreme. This rating is assigned to a tree that has structural and/or health problems that no amount of work or effort can change. The issues may or may not be considered a dangerous situation.
Rating #2: The tree has major problems. If the option is taken to preserve the tree, its condition could be improved with correct arboricultural work including, but not limited to: pruning, cabling, bracing, bolting, guying, spraying, mistletoe removal, vertical mulching, fertilization, etc. If the recommended actions are completed correctly, hazard can be reduced and the rating can be elevated to a 3. If no action is taken the tree is considered a liability and should be removed.
Rating #3: The tree is in fair condition. There are some minor structural or health problems that pose no immediate danger. When the recommended actions in an arborist report are completed correctly the defect(s) can be minimized or eliminated.
Rating #4: The tree is in good condition and there are no apparent problems that a Certified Arborist can see from a visual ground inspection. If potential structural or health problems are tended to at this stage future hazard can be reduced and more serious health problems can be averted.
Rating #5: No problems found from a visual ground inspection. Structurally, these trees have properly spaced branches and near perfect characteristics for the species. Highly rated trees are not common in natural or developed landscapes. No tree is ever perfect especially with the unpredictability of nature, but with this highest rating, the condition should be considered excellent.

Notes: Provide notable details about each tree which are factors considered in the determination of the tree rating including: (a) condition of root crown and/or roots; (b) condition of trunk; (c) condition of limbs and structure; (d) growth history and twig condition; (e) leaf appearance; and (f) dripline environment. Notes also indicate if the standard tree evaluation procedure was not followed (for example - why dbh may have been measured at a location other than the standard 54”). Additionally, notes will list any evaluation limiting factors such as debris at the base of a tree.

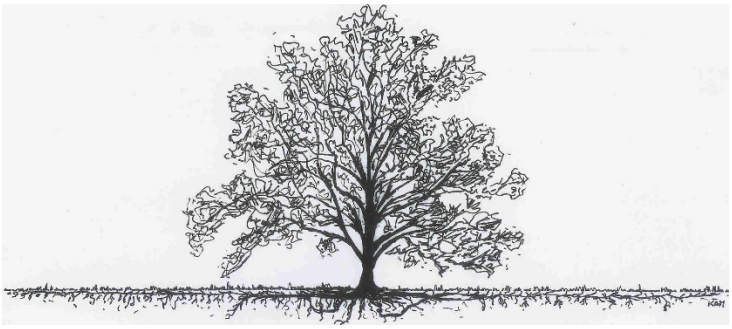
Discussion

Trees need to be protected from normal construction practices if they are to remain healthy and viable on the site. Our recommendations are based on experience and the County ordinance requirements to enhance tree longevity. This requires their root zones remain intact and viable despite the use of heavy equipment to install foundations, driveways, underground utilities, and landscape irrigation systems. Simply walking and driving on soil can have serious consequences for tree health. Tree Protection measures should be incorporated into the site plans in order to protect the trees.

Root Structure

The majority of a tree’s roots are contained in a radius from the main trunk outward approximately two to three times the canopy of the tree. These roots are located in the top 6” to 3’ of soil. It is a common misconception that a tree

underground resembles the canopy. The correct root structure of a tree is in the drawing below. All plants' roots need both water and air for survival. Poor canopy development or canopy decline in mature trees a'er development is o'en the result of inadequate root space and/or soil compaction.



The reality of where roots are generally located

Pruning Mature Trees for Risk Reduction and/or Development Clearance

There are few good reasons to prune mature trees. Removal of deadwood, directional pruning, removal of decayed or damaged wood, and end-weight reduction as a method of mitigation for structural faults are the only reasons a mature tree should be pruned. Live wood over 3" should not be pruned unless absolutely necessary. Pruning cuts should be clean and correctly placed. Pruning should be done in accordance with the American National Standards Institute (ANSI) A300 standards.

Pruning causes an open wound in the tree. Trees do not "heal" they compartmentalize. It is far better to use more small cuts than a few large cuts as small pruning wounds reduce risk while large wounds increase risk. Any wound made today will always remain, but a healthy tree, in the absence of decay in the wound, will 'cover it' with callus tissue. Large, old pruning wounds which did not close with callous tissue o'en have advanced decay. These wounds are a likely failure point. Mature trees with large wounds have a high risk of failure.

Overweight limbs are a common structural fault in suppressed trees. There are two remedial actions for over- weight limbs (1) prune the limb to reduce the extension of the canopy, or (2) cable the limb to reduce movement. Cables do not hold weight they only stabilize the limb and additionally require annual inspection.

Arborist Classifications

There are different types of Arborists:

Tree Removal and/or Pruning Companies: These companies may be licensed by the State of California to do business as a tree removal company, but they do not necessarily know anything about trees biology.

Arborists: Arborist is a broad term intended to mean someone with specialized knowledge of trees, but it is o'en used to imply knowledge that is not there.

ISA Certified Arborist: An International Society of Arboriculture Certified Arborist is someone who has trained, met the qualifications for application, and been tested to have specialized knowledge of trees. You can look up certified arborists at the International Society of Arboriculture website: isa-arbor.org.

Consulting Arborist: An American Society of Consulting Arborists Registered Consulting Arborist is someone who has been trained and then tested to have specialized knowledge of trees; and trained and tested to provide high quality reports and documentation. You can look up registered consulting arborists at the American Society of Consulting Arborists website: ASCA-consultants.org.

RECOMMENDATIONS: Summary of Tree Protection Measures

The Owner and/or Developer should ensure the project arborist's protection measures are incorporated into the site plans and followed. Tree specific protection measures will be developed when the final grading plans are produced.

1. The project arborist is required to inspect the tree protection fencing prior to grading and/or grubbing for compliance with the required protection zones.

2. Clearance pruning should include removal of all the lower foliage that may interfere with equipment PRIOR to having grading or other equipment on site. The Project Arborist should approve the extent of foliage elevation and oversee the pruning to be performed by a contractor who is an ISA Certified Arborist.

3. Chemical Stress Treatments to be performed by a licensed pesticide applicator under the project arborist supervision should include a (1) tree growth regulator, such as Paclobutrazol; (2) preventative leaf fungicide; and (3) preventative insecticides for leaf feeding insects and boring insects unless otherwise directed by the project arborist.

4. Any and all work to be performed inside the protected root zone fencing shall be supervised by the project arborist.

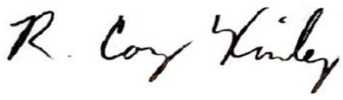
5. All stumps within the root zone of trees to be preserved shall be ground out using a stump router or left in place. No trunk within the root zone of other trees shall be removed using a backhoe or other piece of grading equipment.

6. Trenching inside the protected root zone shall be by a hydraulic or air spade, placing pipes underneath the roots, or boring deeper trenches underneath the roots.

7. The project arborist will monitor the site during (and after) construction to ensure protection measures are followed and make recommendations for care of the trees on site, as needed.

Follow all of the General Development Guidelines, Appendix 3, for all trees not identified as requiring special preservation measures in the summary and in Appendix 2.

Report Prepared by:



R. Cory Kinley
ISA Certified Arborist #WE-9717A, TRAQ

Attachments

Appendix 1 – Tree Location Map
Appendix 2 – Tree Data
Appendix 3 – General Development Guidelines
Appendix 4 – Site Photographs

Bibliography

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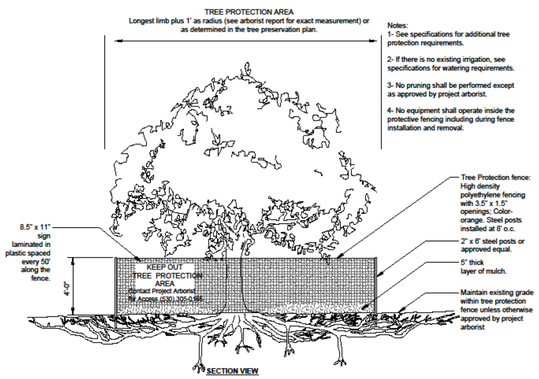
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California Tree & Landscape Consulting, Inc.

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Tree Protection General Requirements

1. The project arborist for this project is California Tree & Landscape Consulting. The primary contact information is R. Cory Kinley (916) 955-6162. The project arborist may continue to provide expertise and make additional recommendations during the construction process if and when additional impacts occur or tree response is poor. Monitoring and construction oversight by the project arborist is recommended for all projects and required when a final letter of assessment is required by the jurisdiction.
2. The project arborist should inspect the exclusionary root protection fencing installed by the contractor prior to any grading and/or grubbing for compliance with the recommended protection zones. Additionally, the project arborist shall inspect the fencing at the onset of each phase of construction. The protection zone for trees is specified as the 'canopy radius' in Appendix 2 unless otherwise specified in the preservation requirements. The location of the tree protection fencing shall be depicted on the plans pursuant to the arborist recommendations. Note 'dripline' is not an acceptable location for installation of tree protection fencing.
3. The project arborist should directly supervise any clearance pruning, irrigation, fertilization, placement of mulch and/or chemical treatments. If clearance pruning is required, the Project Arborist should approve the extent of foliage elevation and oversee the pruning to be performed by a contractor who is an ISA Certified Arborist. Clearance pruning should include removal of all the lower foliage that may interfere with equipment PRIOR to having grading or other equipment on site.
4. No trunk within the root protection zone of any trees shall be removed using a backhoe or other piece of grading equipment.
5. Clearly designate an area on the site outside the drip line of all trees where construction materials may be stored, and parking can take place. No materials or parking shall take place within the root zones of protected trees.
6. Any and all work to be performed inside the protected root zone fencing, including all grading and utility trenching, shall be approved and/or supervised by the project arborist.
7. Trenching, if required, inside the protected root zone shall be approved and/or supervised by the project arborist and may be required to be by a hydraulic or air spade, placing pipes underneath the roots, or boring deeper trenches underneath the roots.



S-X TREE PROTECTION

URBAN TREE FOUNDATION © 2014 OPEN SOURCE FREE TO USE

TREE LOCATION & PROTECTION MAP

>Tree locations are approximate and were collected using apple iOS products.
>Property line information was downloaded from Sacramento County.

- Property Line
- Measured Tree Canopy
- Tree Removals
- Tree Protection Fencing

Arborist Rating

- 0 Dead
- 1 Extreme Structure or Health Problems
- 2 Major Structure or Health Problems
- 3 Fair - Minor Problems
- 4 Good - No Apparent Problems
- 5 Excellent

2000-2001 Helena Avenue, Sacramento

APN# 266-0261-008 & 266-0261-009

Sheet No.
TPP 1.0

Date: 03/28/2023

Appendix 2 – Tree Data

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
100				Morus alba	Mulberry			54	13	1 Extreme Structure or Health Problems	Remove	many mature sprouts growing off old flush cut stumps, severe base decay. poor structure and vigor.	N/A
101		Yes	Yes or shared	Quercus lobata	Valley Oak	10		54	15	3 Fair - Minor Problems	Remove - for 30" storm drain and asphalt	base and trunk 1' from wooden fence. drip line overlaps property line east by 10'. fair structure and vigor. codom at 10'.	N/A
102			Yes	Ulmus parvifolia	Chinese Elm	16		6	16	2 Major Structure or Health Problems	Retain	base 10' west of property line. crowded codom union with included bark at 1', weak attachment. fair canopy structure. drip line overlaps property line by 7'.	Excavation for the storm drain, compaction for asphalt and concrete curb should be limited to a minimum of 12' away from off-site tree trunk. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site construction vehicles and equipment.
103		Yes	Yes	Quercus wislizeni	Interior Live Oak	14		36	18	2 Major Structure or Health Problems	Retain	root matt mostly covered in asphalt. 30% dead bark on west base and trunk. codom at 5'. large flush cuts west side at 6 and 7' feet. unbalanced canopy east, overlaps property line by 15'.	Excavation for the storm drain, compaction for asphalt and concrete curb should be limited to a minimum of 10' away from off-site tree trunk. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
													construction vehicles and equipment.
104			Yes	Liquidam-bar styraciflua	Liquid-ambar	12		54	16	3 Fair - Minor Problems	Retain	fair base. healthy foliage. moderately unbalanced upper canopy main stem southwest. fair vigor.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site construction vehicles and equipment.
105			Yes	Liquidam-bar styraciflua	Liquid-ambar	8		54	18	2 Major Structure or Health Problems	Retain	fair base. tree leans heavy and low over lot west, poor structure. fair/low vigor.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site construction vehicles and equipment.
106			Yes	Lagerstroe-mia indica	Crape Myrtle	7		12	10	3 Fair - Minor Problems	Retain	5' east of property line. drip line overlaps property line by 4'. fair/poor structure. fair vigor.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
													to the presence of on-site construction vehicles and equipment.
107			Yes	Lagerstroe-mia indica	Crape Myrtle	10		12	12	3 Fair - Minor Problems	Retain	1' east of property line. drip line overlaps property line by 11'. multi stem at 3'. good structure and vigor.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site construction vehicles and equipment.
108			Yes	Lagerstroe-mia indica	Crape Myrtle	10		12	12	3 Fair - Minor Problems	Retain	1' east of property line. drip line overlaps property line by 5'. multi stem at 3'. good structure and vigor. topped canopy.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site construction vehicles and equipment.
109			Yes	Washingtonia robusta	Mexican Fan Palm	14		54	6	3 Fair - Minor Problems	Retain	2' east of property line. drip line overlaps property line by 1'. good structure and vigor.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
													construction vehicles and equipment.
110			Yes	Carya illinoinen-sis	Pecan	14		54	22	3 Fair - Minor Problems	Retain	7' east of property line. drip line overlaps property line by 15'. good base, structure and vigor. canopy leans slightly west.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site construction vehicles and equipment.
111			Yes	Carya illinoinen-sis	Pecan	17		54	29	3 Fair - Minor Problems	Retain	26' east of property line. drip line overlaps property line by 3'. good base, structure and vigor. south canopy pruned for powerlines. healthy foliage.	Erect exclusiionary tree protection fencing a minimum of 5' west of property line running the width of the tree's canopies. Clearance pruning to prevent canopy damage should be completed prior to the presence of on-site construction vehicles and equipment.
112				Quercus lobata	Valley Oak	3		54	5	3 Fair - Minor Problems	Remove - undersized	small diameter oak. good base, structure and vigor.	N/A
500								54		0 Dead	Remove	no longer there, no stump present.	N/A

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
501				Eucalyptus globulus	Blue Gum Eucalyptus	45		12		0 Dead	Remove	large burnt stump, 2' tall. small diameter sprouts southeast of stump.	N/A
502	651			Carya illinoinen-sis	Pecan	13		54		0 Dead	Remove	lower trunk remaims.	N/A
503	650			Carya illinoinen-sis	Pecan	14		54		0 Dead	Remove	lower trunk remaims.	N/A
4063		Yes		Quercus lobata	Valley Oak	28.5		12	24	2 Major Structure or Health Problems	Remove - Footprint of Building A	codom at 4', stems measure 15 and 16' at 60" high. crowded codom union, possible weak attachment. base and lower trunk has crumbling flared bark, and multiple vertical seams with dead bark. good upper canopy structure. fair/low vigor.	N/A
4064				Carya illinoinen-sis	Pecan	6	3, 4, 4	54	14	2 Major Structure or Health Problems	Remove	codom at 1' and 3'. 5" diameter flush cut at 3', decay present. weak codom attachments at 3'. fair canopy structure. low vigor.	N/A

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
4065		Yes		Quercus lobata	Valley Oak	16		12	15	2 Major Structure or Health Problems	Remove - 30" Storm Drain	good base. severely crowded multi stem union at 3'. crowded canopy stems crossing and rubbing one another. east canopy touching wooden fence on property line. healthy foliage.	N/A
4066				Gleditsia triacant-hos	Honey Locust	16	7, 15	36	15	1 Extreme Structure or Health Problems	Remove	codom at grade, base flare obscured by debris. tag placed on lateral branch west at 6'. dead 12" diameter codom stump. large flush cuts and failers on both stems, leaving exposed heartwood and decay. low vigor. poor structure.	N/A
4067				Carya illinoinen-sis	Pecan	24		54	26	3 Fair - Minor Problems	Retain	base and trunk less than 1' from wooden fence east on property line. good base and trunk. codom at 7 and 10'. small branch failers in canopy. fair/poor canopy structure. healthy foliage. low 7" diameter lateral	Erect exclusiionary tree protection fencing a minimum of 12' from tree trunk.

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
												branch 2' from grade west. fair vigor.	
4068				Carya illinoinen-sis	Pecan	20.5		54	30	3 Fair - Minor Problems	Remove	good base and flare. good trunk, no visible issues. leans moderately west over lot. low west lateral branches west. fair overall structure and vigor.	N/A
4069				Carya illinoinen-sis	Pecan	7		54	12	2 Major Structure or Health Problems	Remove	dense group of sprouts on base southwest, growing off large flush cut. remaining trunk and canopy has a fair structure.	N/A
4070				Carya illinoinen-sis	Pecan	6	2, 2, 2, 3, 3, 3	54	10	1 Extreme Structure or Health Problems	Remove	multi stem trunk flush cut and sprouts grow from stubs. extensive decay on stubs. poor structure. low vigor.	N/A
4071				Prunus sp.	Prunus sp.	4	2, 2, 2, 3.5	54	10	2 Major Structure or Health Problems	Remove	multi stem at grade, old flush cut stems. moderate stem bark damage throughout canopy.	N/A

Tag #	Old Tag #	Protected By Code	Off Site	Species Botanical Name	Species Common Name	DBH (in.)	Multi Stem DBH (in.)	Measured At (in.)	Measured Canopy Radius (ft.)	Arborist Rating	Dvlpmt Status	Notes	Protection Measures
4072				Prunus sp.	Prunus sp.	4		54	12	2 Major Structure or Health Problems	Remove	swollen base, grafted stems, unbalanced northeast. small dead stems north. low vigor.	N/A
4073				Quercus lobata	Valley Oak	4		54	7	3 Fair - Minor Problems	Remove - undersized	2" flush cut stem west at grade. good structure and vigor.	N/A
4074		Yes		Quercus lobata	Valley Oak	6	3, 3.5, 4	54	9	3 Fair - Minor Problems	Remove - undersized, not 10" aggregate	multi stem at 5". included bark in unions. fair trunks. crossing canopy stems. fair canopy balance. healthy foliage. fair overall vigor.	N/A

APPENDIX 3
GENERAL PRACTICES FOR TREE PROTECTION

Definitions

Root zone: The roots of trees grow fairly close to the surface of the soil, and spread out in a radial direction from the trunk of tree. A general rule of thumb is that they spread 2 to 3 times the radius of the canopy, or 1 to 1 ½ times the height of the tree. It is generally accepted that disturbance to root zones should be kept as far as possible from the trunk of a tree.

Inner Bark: The bark on large valley oaks and coast live oaks is quite thick, usually 1" to 2". If the bark is knocked off a tree, the inner bark, or cambial region, is exposed or removed. The cambial zone is the area of tissue responsible for adding new layers to the tree each year, so by removing it, the tree can only grow new tissue from the edges of the wound. In addition, the wood of the tree is exposed to decay fungi, so the trunk present at the time of the injury becomes susceptible to decay. Tree protection measures require that no activities occur which can knock the bark off the trees.

Methods Used in Tree Protection:

No matter how detailed Tree Protection Measures are in the initial Arborist Report, they will not accomplish their stated purpose unless they are applied to individual trees and a Project Arborist is hired to oversee the construction. The Project Arborist should have the ability to enforce the Protection Measures. The Project Arborist should be hired as soon as possible to assist in design and to become familiar with the project. He must be able to read and understand the project drawings and interpret the specifications. He should also have the ability to cooperate with the contractor, incorporating the contractor's ideas on how to accomplish the protection measures, wherever possible. It is advisable for the Project Arborist to be present at the Pre-Bid tour of the site, to answer questions the contractors may have about Tree Protection Measures. This also lets the contractors know how important tree preservation is to the developer.

Root Protection Zone (RPZ): Since in most construction projects it is not possible to protect the entire root zone of a tree, a Root Protection Zone is established for each tree to be preserved. The minimum Root Protection Zone is the area underneath the tree's canopy (out to the dripline, or edge of the canopy), plus 10'. The Project Arborist must approve work within the RPZ.

Irrigate, Fertilize, Mulch: Prior to grading on the site near any tree, the area within the Tree Protection fence should be fertilized with 4 pounds of nitrogen per 1000 square', and the fertilizer irrigated in. The irrigation should percolate at least 24" into the soil. This should be done no less than 2 weeks prior to grading or other root disturbing activities. A'er irrigating, cover the RPZ with at least 12" of leaf and twig mulch. Such mulch can be obtained from chipping or grinding the limbs of any trees removed on the site. Acceptable mulches can be obtained from nurseries or other commercial sources. Fibrous or shredded redwood or cedar bark mulch shall not be used anywhere on site.

Fence: Fence around the Root Protection Zone and restrict activity therein to prevent soil compaction by vehicles, foot traffic or material storage. The fenced area shall be off limits to all construction equipment, unless there is express written notification provided by the Project Arborist, and impacts are discussed and mitigated prior to work commencing.

No storage or cleaning of equipment or materials, or parking of any equipment can take place within the fenced off area, known as the RPZ.

The fence should be highly visible, and stout enough to keep vehicles and other equipment out. I recommend the fence be made of orange plastic protective fencing, kept in place by t-posts set no farther apart than 6'.

In areas of intense impact, a 6' chain link fence is preferred.

In areas with many trees, the RPZ can be fenced as one unit, rather than separately for each tree.

Where tree trunks are within 3' of the construction area, place 2" by 4" boards vertically against the tree trunks, even if fenced off. Hold the boards in place with wire. Do not nail them directly to the tree. The purpose of the boards is to protect the trunk, should any equipment stray into the RPZ.

Elevate Foliage: Where indicated, remove lower foliage from a tree to prevent limb breakage by equipment. Low foliage can usually be removed without harming the tree, unless more than 25% of the foliage is removed. Branches need to be removed at the anatomically correct location in order to prevent decay organisms from entering the trunk. For this reason, a contractor who is an ISA Certified Arborist should perform all pruning on protected trees.[4]

Expose and Cut Roots: Breaking roots with a backhoe, or crushing them with a grader, causes significant injury, which may subject the roots to decay. Ripping roots may cause them to splinter toward the base of the tree, creating much more injury than a clean cut would make. At any location where the root zone of a tree will be impacted by a trench or a cut (including a cut required for a fill and compaction), the roots shall be exposed with either a backhoe digging radially to the trunk, by hand digging, or by a hydraulic air spade, and then cut cleanly with a sharp instrument, such as chainsaw with a carbide chain. Once the roots are severed, the area behind the cut should be moistened and mulched. A root protection fence should also be erected to protect the remaining roots, if it is not already in place. Further grading or backhoe work required outside the established RPZ can then continue without further protection measures.

Protect Roots in Deeper Trenches: The location of utilities on the site can be very detrimental to trees. Design the project to use as few trenches as possible, and to keep them away from the major trees to be protected. Wherever possible, in areas where trenches will be very deep, consider boring under the roots of the trees, rather than digging the trench through the roots. This technique can be quite useful for utility trenches and pipelines.

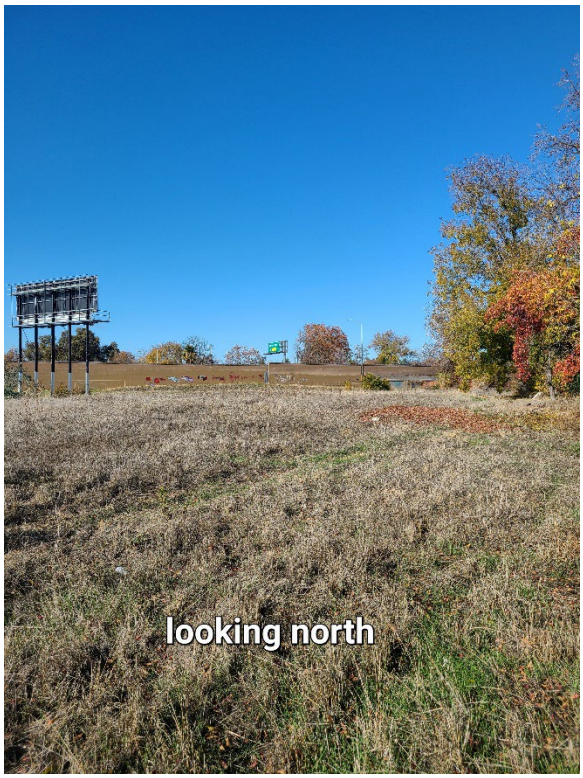
Protect Roots in Small Trenches: After all construction is complete on a site, it is not unusual for the landscape contractor to come in and sever a large number of "preserved" roots during the installation of irrigation systems. The Project Arborist must therefore approve the landscape and irrigation plans. The irrigation system needs to be designed so the main lines are located outside the root zone of major trees, and the secondary lines are either laid on the surface (drip systems), or carefully dug with a hydraulic or air spade, and the flexible pipe fed underneath the major roots.

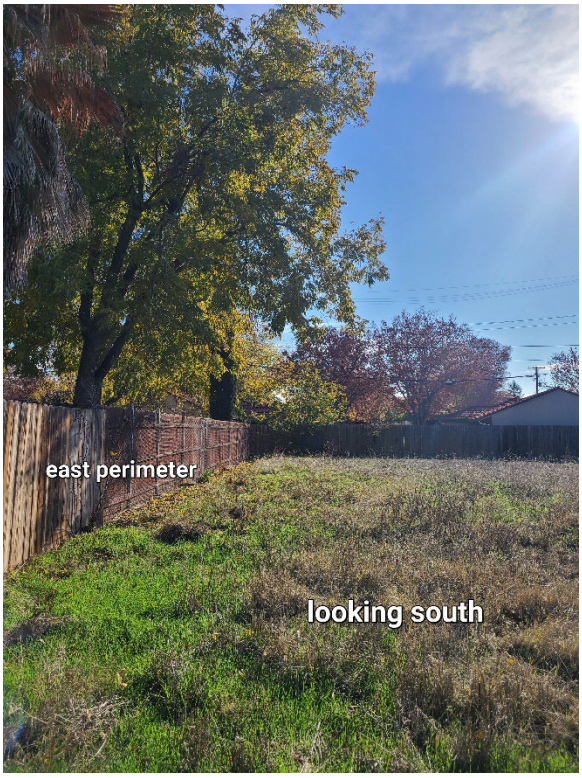
[4] International Society of Arboriculture (ISA), maintains a program of Certifying individuals. Each Certified Arborist has a number and must maintain continuing education credits to remain Certified.

Design the irrigation system so it can slowly apply water (no more than ¼" to ½" of water per hour) over a longer period of time. This allows deep soaking of root zones. The system also needs to accommodate infrequent irrigation settings of once or twice a month, rather than several times a week.

Monitoring Tree Health During and A'er Construction: The Project Arborist should visit the site at least twice a month during construction to be certain the tree protection measures are being followed, to monitor the health of impacted trees, and make recommendations as to irrigation or other needs. A'er construction is complete, the arborist should monitor the site monthly for one year and make recommendations for care where needed. If longer term monitoring is required, the arborist should report this to the developer and the planning agency overseeing the project.

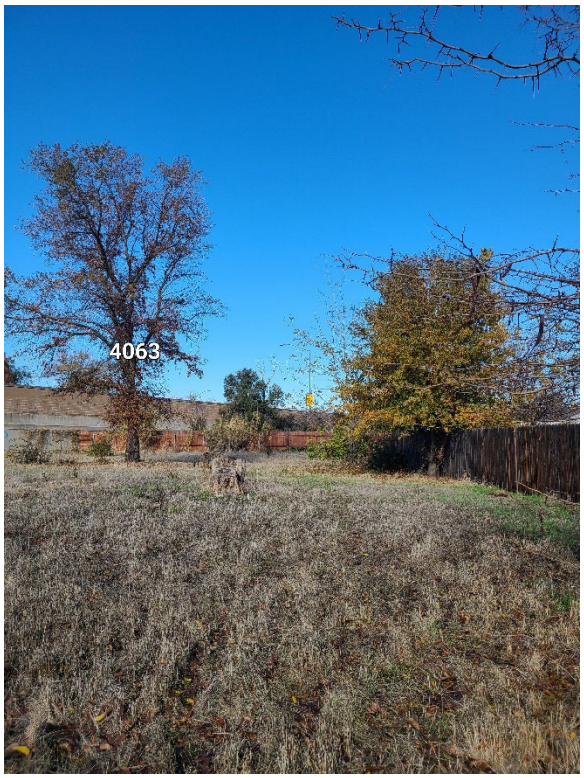
APPENDIX 4 – SITE PHOTOGRAPHS





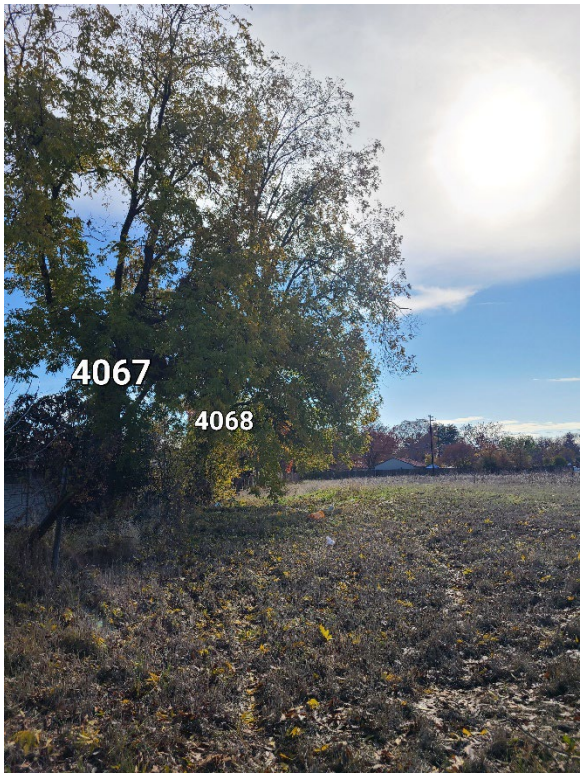


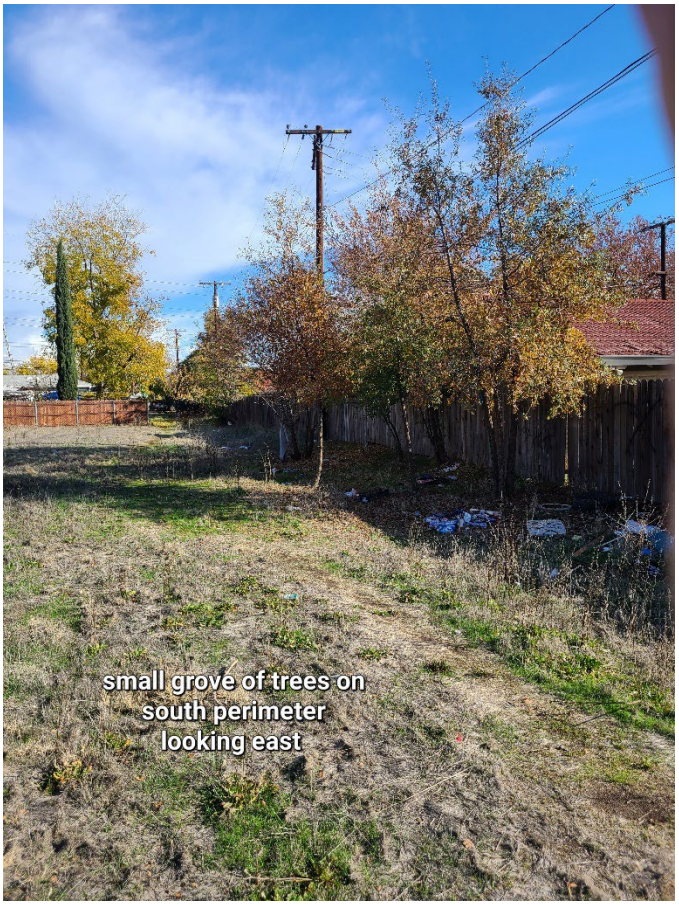


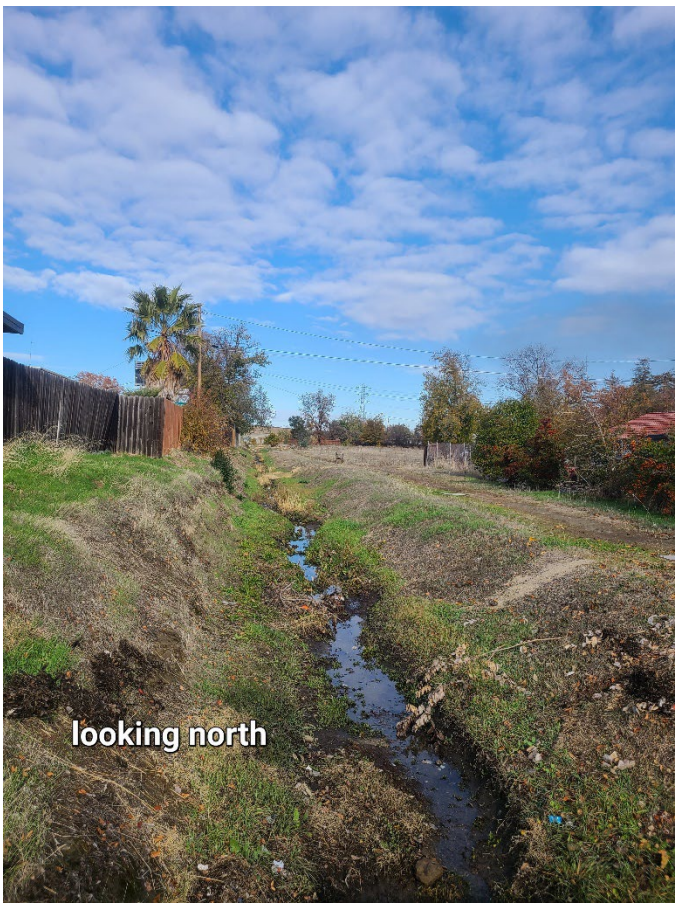

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small grove of trees on
south perimeter
looking east


looking north