

Tree Survey and Arborist Report

THE TERRACES AT WALNUT OFFSITE (LOTS 17 & 18)
CITY OF WALNUT, CA



Prepared as a coordinated effort by:

Golden State Land & Tree Assessment
George J Wirtes, MS, ISA Certified Arborist

Michael Baker International
5 Hutton Centre Dr, Ste 500
Santa Ana, CA 92707

May 11, 2018



TABLE OF CONTENTS

Section 1: Executive Summary	1
Section 2: Background	2
2.1 - Project Location and Description	2
2.2 - Site and Vicinity Characteristics.....	3
2.3 - Project Site Soils	4
2.4 - Scope of Survey	4
2.5 - Survey Method and Health Assessment	4
2.6 - Hazard Risk Assessment.....	5
2.7 - Local Tree Regulation.....	6
2.8 - Limitations and Exceptions of Assessment	7
Section 3: Subject Trees and Observations	9
3.1 - Tree Species Composition.....	10
3.2 - Observations	11
3.2.1 - Canopy Crowding.....	11
3.2.2 - Inadequate Maintenance	12
3.2.3 - Pest and Disease	13
3.2.4 - Potential or Immanent Hazard.....	15
Section 4: Discussion and Recommendations	16
4.1 - Recommendations.....	16
4.1.1 - Preserved Trees.....	16
4.1.2 - Tree Removal Mitigation	16
4.1.3 - Migratory Bird Treaty Act.....	17
Section 5: Qualifications of Arborist.....	17
Section 6: References.....	18
Appendix A - Tree Species Observed	19
Appendix B - Tree Protection during Construction	32

SECTION 1: EXECUTIVE SUMMARY

This arborist survey has been performed at the request of Michael Baker International for a proposed specific plan (The Terraces at Walnut) project site (TTM78210), which includes a residential development in the City of Walnut, California.

The trees assessed were identified using a Global Positioning System (GPS), and decisions to include individual species were based on their typical growth form (tree vs. shrub), and the City's municipal code (minimum stem circumference of 6 inches (see Section 2.7 below) at breast height). Given the number of trees onsite, the primary goal of this tree survey was to inventory and rapidly assess the health and integrity of each tree within the site boundary. The surveys associated with this report were performed April 19th and 20th, 2018 by George Wirtes (ISA Certified Arborist), Linda Nguyen (biologist), Stephen Anderson (biologist), and Ryan Phaneuf (biologist). During the surveys, 156 trees were assessed onsite involving two distinct, ornamental trees species (see section 3.1 below). Details of each tree were recorded documenting their species, stature, health, environment/conditions in which they occur, and potential for failure (risk). The subject trees were tagged with an aluminum tag containing a unique number. The species onsite are listed in Appendix A below along with each tree's stature and health characteristics.

Many of the trees onsite are diseased, stressed, lacking vigor, or are in a state of decline due to lack of improper maintenance, environmental stressors, and competition from canopies of adjacent trees. In all, 106 trees pose a substantial risk to public safety due to disease, poor vigor, and other conditions, or simply are aesthetically unpleasing. Evidence was found suggesting borer and termite infection along with the persistence of other diseases (viral/bacterial).

No native tree species were found within the site. As indicated, the site is relatively monotypic containing only two species of trees. In addition, 98.7% of the trees onsite are listed as invasive by the California Invasive Plant Council; these specific trees have adaptations that give them an advantage over native tree species and can potentially outcompete for local resources, crowding them out. This is evidenced by the numerous sprouting juveniles within the site and the recurring theme of competing canopies. This situation has in turn, lead to intermingling of canopies and offset canopy mass among many of the trees onsite resulting in increased risk of failure and potential liability.

SECTION 2: BACKGROUND

2.1 - Project Location and Description

This Tree Survey and Arborist Report (report) has been prepared for Michael Baker International in order to quantify the number of trees (and assess their condition) within the grading limits of the proposed specific plan development (project site) TTM 32158. This survey specifically focused on offsite Lots 17 & 18). The proposed development includes construction of up to 293 dwelling units, along with the associated infrastructure.

This report has been prepared according to the City of Walnut's Oak/Walnut Tree Preservation Code and International Society of Arboriculture (ISA) standards. The fieldwork for this report was conducted on April 19-20th, 2018.

The project site is located along the western edge of Valley Boulevard approximately one-quarter mile north of Faure Ave.; it is located approximately 1.5 miles west of State Route (SR) 57 in the City of Walnut, Los Angeles County, California (see Figure 1 below).

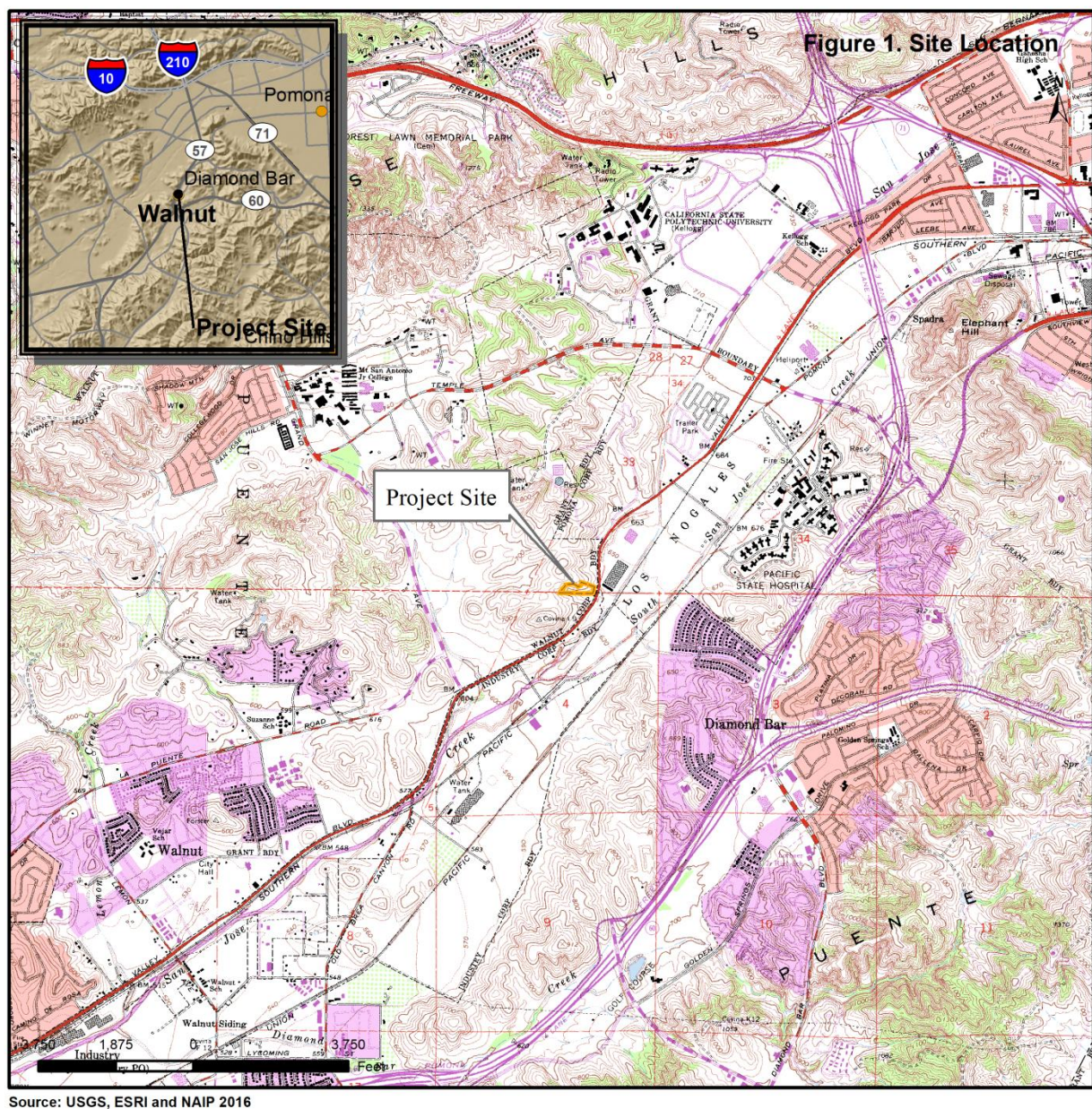


Figure 1. Map of site location.

2.2 - Site and Vicinity Characteristics

The project site has topological and ecological features that contribute to a unique set of conditions within the property. The elevation of the site ranges from approximately 660 to 725 feet above mean sea level. There is a steep slope to the south, and the site is completely developed as an equestrian property.

2.3 - Project Site Soils

The soils onsite are comprised of discontinuous human-transported material over mixed alluvium derived from granite and/or sedimentary rock. Below are specific soil types and characteristics as described by the National Resource Conservation Service. By virtue of the property's land use, soils may have elevated stores of nitrogen, phosphorus, and potash.

Map Unit Symbol	Map Unit Name	Typical profile	Percent of AOI
1141*	Zaca-Apollo, warm complex, 20 to 55 percent slopes	A - 0 to 8 inches: clay Bkss1 - 8 to 21 inches: clay Bkss2 - 21 to 37 inches: clay Bk - 37 to 53 inches: clay Cr - 53 to 63 inches: bedrock	100.0%
Totals for Area of Interest			100.0%

* National Resource Conservation Service map Unit Symbols and descriptions.

2.4 - Scope of Survey

In a joint effort, Golden State Land & Tree Assessment (GSLTA) conducted a tree survey and health assessment of all trees within the grading limits of the project area (TTM 32158) with the assistance of Michael Baker International (MBI) biologists determining trees within the area of impact and taking stature and canopy spread measurements. The survey was performed to identify the different tree species found within the project grading limits, assess their health, and provide a compliance evaluation with the City of Walnut's tree removal ordinance. The health assessment included, but was not limited to; recording total diameter at breast height (DBH), canopy spread, tree height, apparent decay, other signs of potential hazard, and pest damage. A potential risk assessment was also conducted keeping public safety in mind. All documentation in this report is in compliance with standards and requirements published by the International Society of Arboriculture (ISA). This report includes recommendations and mitigation measures meant to satisfy all applicable ordinances and permit guidelines.

2.5 - Survey Method and Health Assessment

Prior to the field survey, the City of Walnut's website was accessed to review specific tree protection guidelines. An aerial photograph was used as a visual guide during the assessment. A handheld Global Positioning System (GPS) device and GPS-enabled smartphone and tablet with digitized project boundaries and grading limits were used to identify the precise location of each subject tree. The survey team included ISA arborist George Wirtes of Golden State Land and Tree Assessment (GSLTA) and the MBI staff used this GPS-enabled device to identify all trees within the grading zone. They documented trunk diameters measured in inches at 4.5 feet above ground level (termed total diameter at breast height (DBH)). The crown-width was estimated by pacing, and the height of each subject tree was visually estimated using a tangent height gauge. These data were recorded on field sheets, and associated aluminum numeric tags were affixed to trees on the north side at breast height (BH) for later reference. Trees with a circumference of less than 6 inches at breast height were excluded from this assessment.

Tree status (relative condition, stature, and health) was conducted by arborist, George Wirtes from ground level with the aid of binoculars. To estimate wood integrity, a rubber mallet was often used to assess possible decay within the tree stem and flare. As indicated earlier, no invasive procedures were performed. Visual characteristics were recorded on field sheets and twig/leaf samples as well as digital photographs were taken as needed to assure accurate identification.

The positions of the subject trees were recorded using a GPS whose data was shared among the team and exported into GIS for periodic illustration over aerial photographs. Given that the fieldwork was conducted over several days, the GPS data (.gpx/.kmz) were projected on GIS layouts as available, and communicated among the group to assure all trees affected by the project were identified and assessed to the greatest extent feasible by the team.

During this survey, public safety was the primary goal when determining each tree's ability to remain within the proposed project. Tree health, it's functional and aesthetics were also considered when making a final determination.

2.6 - Hazard Risk Assessment

The International Society of Arboriculture (ISA) recommends a Hazard Assessment be included with arborist reports. Such an assessment is an important component of any such report and is critical if trees are to be located near public areas such as parks, walkways, residences, and buildings. This tree assessment includes a *Level 2 Basic Risk Assessment* as defined by ISA Best Management Practices. This type of assessment is limited to evaluating trees and obvious signs of defects such as:

- Dead or broken structures
- Cracks
- Weakly attached branches and codominant stems
- Missing or decayed wood
- Unusual tree architecture or distribution
- Obvious loss of root support

A risk rating is assigned to each tree based on its defects, aesthetics, apparent health, location and the nearby targets (people or property). The ratings are defined below as defined by ISA:

1. *Low* - Low-risk category applies when consequences are negligible and likelihood is unlikely or consequences are minor and likelihood is somewhat likely.
2. *Moderate* - Moderate risk situations are those for which consequences are minor and likelihood is very likely or likely or likelihood is someone likely and the consequences are significant or severe.
3. *High* - High-risk situations are those for which consequences are significant and likelihood is very likely or likely or consequences are severe and likelihood is likely

4. *Extreme* - The extreme risk category applies in situations in which failure is imminent, there is a high likelihood of impacting the target, and the consequence of the failure is severe. The tree risk assessor should recommend that mitigation measures be taken as soon as possible

It is impossible to maintain a tree free of risk. A tree is considered hazardous when it has a structural defect that predisposes it to failure and it is located near a target.

- A target is person or property that may sustain potential injury or property damage if a tree or a portion of a tree fails.
- Target areas include sidewalks, walkways, roads, vehicles, structures, playgrounds, or any other area where people are likely to gather.
- Structurally sound and healthy trees may also be hazardous if they interfere with utilities, roadways, walkways, and sidewalks, or if they obstruct motorist vision.
- Common hazards include dead and diseased trees, dead branches including bark, stubs from topping cuts, broken branches (hangers), multiple leaders, tight-angled crotches, and an unbalanced crown. Evaluation of risk is as follows: 1-Good, 2-Fair, 3-Poses risk, and 4-Hazardous.

2.7 - Local Tree Regulation

According to Chapter 25-178 (Ord. No. 03-05, § 1) of the Code of the City of Walnut, California (Walnut City Code), the City lies in the Walnut Valley, the beauty and natural setting of which is greatly enhanced by the presence of large majestic trees (see References). These indigenous trees are recognized for their significant historical, aesthetic and environmental value. They are indicator species for the natural communities, in which they exist, supporting a broad spectrum of other native plant and animal species. As one of the most picturesque trees in the Southern California area, they lend beauty and charm to the natural and fabricated landscape, enhance the value of property and preserve the character of the communities in which they exist. Development within the Walnut Valley has resulted in the removal of most of these trees. Further uncontrolled and indiscriminate destruction of this diminishing plant heritage would detrimentally affect the general health, safety and welfare of the citizens of Walnut. The preservation program and procedures outlined in these guidelines contribute to the welfare and aesthetics of the community and retain the great historical and environmental value of these last remaining trees. No person, partnership, firm, corporation, government agency, or other legal entity shall cut, prune, remove, relocate, endanger or damage any tree protected by this division on any land located within the incorporated areas of the City of Walnut except in accordance with the conditions of a valid tree permit issued by the city.

Chapter 25-178 of the Walnut City Code addresses only Oak and Walnut Tree Preservation and Protection. Native trees with a circumference at breast height of 6 inches including oak (*Quercus spp.*), California black walnut (*Juglans californica*), require preservation under this ordinance. *Other tree species within the City are not protected within this regulation.* Specific mitigation ratios are not identified in the ordinance. The City has many provisions outlined in their Municipal Code that must be adhered to during the pre-construction and constructions phase of the proposed developments. A tree location map must be available and a fencing plan in place during ground-disturbing activity.

The Walnut City Code indicates, “It shall be the policy of the City of Walnut to require the preservation of all healthy trees¹ unless compelling reasons justify the removal of such trees. This policy shall apply to the removal, pruning, cutting and/or encroachment into the protected zone of the trees. The community development department shall have the primary and overall responsibility to administer, evaluate and monitor this policy to assure strict compliance” (Ord. No. 03-05, § 1).

Finally, the City also provides specific protection for species of “heritage” oak or walnut trees as defined below (Chapter 25-178.2). *Note: None of the trees within the project footprint qualifies as a candidate for specific protection using the guidelines within this regulation.*

“Heritage oak/walnut tree” means any tree¹ measuring forty inches or more in circumference or, in the case of a multiple trunk tree, two or more trunks measuring thirty inches or greater in circumference, measured three feet above the natural grade surrounding such tree. In addition, the planning commission and/or city council may classify a tree, regardless of size, as a heritage oak/walnut tree if it is determined by a majority vote thereof that such tree has exceptional historic, aesthetics and/or prominence to the community.

¹ “Tree” means any oak tree of the genus *Quercus* including, but not limited to, Blue Oak (*Quercus douglasii*), California Black Oak (*Quercus kelloggii*), Valley Oak (*Quercus lobata*), California-Live Oak (*Quercus agrifolia*), Canyon Oak (*Quercus chrysolepis*), Interior Live Oak (*Quercus wislizenii*), Scrub Oak (*Quercus dumosa*), and California Black Walnut (*Juglans californica*).

2.8 - Limitations and Exceptions of Assessment

This survey was conducted in accordance with industry standards and ethics. This survey was conducted in a manner that draws upon past education, acquired knowledge, training, experience, and research. It was conducted to the greatest extent feasible, and although the information gathered reduces risk of tree failure/decline, it does not fully remove it. No diagnostic testing was performed during this assessment. This survey associated with this Arborist Report included no soil sampling, root excavation, trunk coring/drilling or any other invasive procedure. The determinations of damage due to pest infestation and decay were made solely on outward appearance and inspection of the tree structures. Not all tree defects may be visible from the ground. Epiphytic growth and structures can also obscure defects on the stem, limbs and in the canopy of a tree. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms subject to attack by disease, insects, fungi and other forces of nature. Many aspects of tree health and environmental conditions are often not detectable (internal decay, poor root anchoring, etc.). Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time.

The statements made in this report do not take into account the effects of extremes of climate, wind, vandalism, or accident (whether physical, chemical, or fire). In addition, this area is known to have periodic, high velocity Santa Ana winds from transient high-pressure ridges. Golden State Land & Tree Assessment cannot therefore, accept any liability in connection with these factors, or where prescribed work is not carried out in a correct and professional manner in accordance with current ISA good practice. The authority of this report ceases at any stated time limit within it, after one year from the date of the

survey (if none stated), when any site conditions change, or after pruning (or other activity) not specified in this report.

The goal of this survey was not to diagnose all pathogens noted, but to assess each tree's potential to serve the project long term. It is also to recommend measures to limit risk exposure. The trees assessed within the grading limits of the project were surveyed, and decisions and conclusions were based primarily on public safety going forward. Other features of the trees were taken in consideration to draw conclusions. Property owners may choose to accept or disregard the recommendations contained within this report, or seek additional advice. ***To live near trees is to accept some degree of risk. The only way to eliminate all risk is to remove all trees onsite.***

SECTION 3: SUBJECT TREES AND OBSERVATIONS

During the site survey, specific measurements and parameters of all trees onsite were recorded on tree assessment worksheets; the data have been transferred into the table in Appendix A at the end of this document. In total, 156 ornamental trees consisting of two distinct species were found within the project impact area. The species observed are displayed in the figure below (see Figure 2) and characterized in Table 1 below.

There were many trees onsite that were in slight need of maintenance or in a state of decline. Numerous instance were also noted where trees had been planted in close proximity to an adjacent tree resulting tree canopies were poorly developed leading to situations with increased liability of tree failure (stem lean, offset canopy mass, etc.). In addition, many of the trees had noticeably decreased vigor possibly stemming from excessive nutrient loads in the soil from equestrian manure over the years.

Table 1. Tagged Tree Species

Common Name Botanical Name	Species Profile	Qty.
Carrotwood tree <i>Cupaniopsis anacardiodes</i>	This species is native to Australia and tolerates hot and dry winds. Some mature trees produce marble size fruits, which drop and can be a nuisance, some never fruit. It growth habit is erect or spreading with a low canopy. Has evergreen foliage. Height: 40 feet. Width: 30 feet. Growth Rate: 12 to 24 Inches per Season. Longevity 50 to 150 years. It prefers moist soil clay, loam or sand type soil. Its branch strength is rated as medium weak. Its Root damage potential is rated as moderate.	2
This species of tree was present only along the eastern portion of the project along Valley Blvd.		
Peruvian pepper ** <i>Schinus molle</i>	This species tolerates saline soil and smog. Susceptible to Texas root rot, especially in desert. Cal-IPC (California Invasive Plant Council) classifies the invasiveness of this plant as limited. It is native to Northern South America and has Evergreen foliage. Height: 25 - 50 feet. Width: 25 - 40 feet. Growth Rate: 36 Inches per Season. Longevity 50 to 150 years. This species tolerates full sun and it prefers partial shade and moist to dry soil. It is drought tolerant and can be planted in clay, loam or sand textured soils. Susceptible to aphids, psyllid, scales and thrip, phytophthora, root rot, sooty mold and verticillium. Its branch strength is rated as medium weak and root damage potential is rated as high.	154
Peruvian pepper trees planted onsite have been permitted to grow or sprout with limited maintenance. There are many instances with offset or overlapping canopies, failed branches, poor pruning, and a few of the individuals are senescent and pose a liability risk to future development. This particular species is the most abundant type of tree within the site.		
** Cal-IPC (California Invasive Plant Council) invasive tree species		

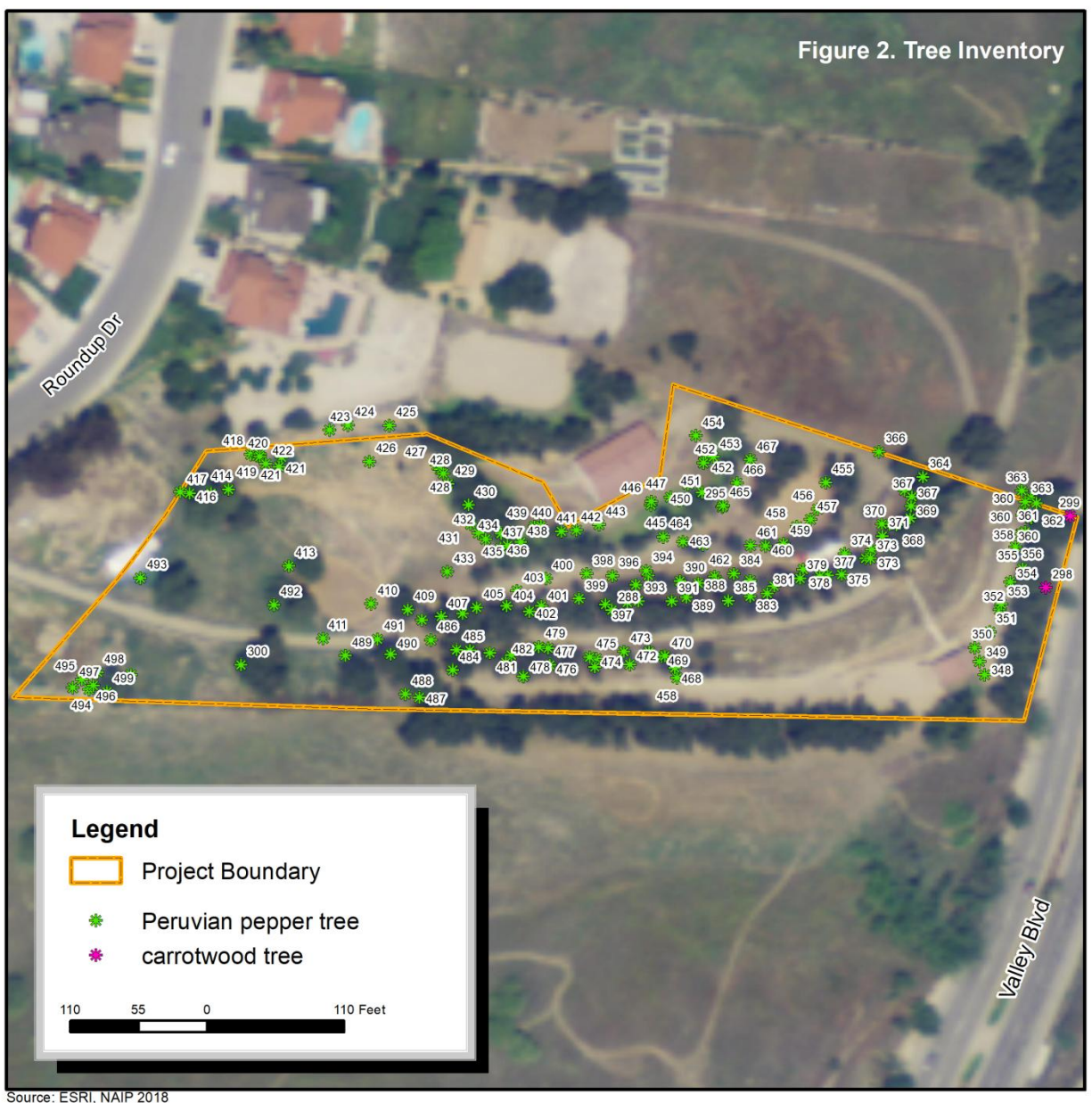


Figure 2. Tree Inventory

3.1 - Tree Species Composition

During the survey, tree assessments were conducted according to general ISA and City requirements; GPS waypoints were recorded, as were specific details of each tree. The species onsite are described in detail below, and a comprehensive table is provided in Appendix A of this report. In general, the variety of species onsite was appropriate for the location.

As indicated, the project site includes 156 trees within two distinct species. Of the tagged tree species within the property, all are considered exotic. The tree species composition within the site is relatively monotypic in this respect. The most prominent species of these exotics is classified as invasive (“Limited”) by the California Invasive Plant Council (Cal-IPC) making up 98.7% of the species onsite. The age of the trees onsite ranged from mature to senescent and the health from rigorous to in significant decline.

3.2 - Observations

As previously indicated, the stature and condition of each tree within the project boundary were assessed at the time of the survey. Below are a few representative examples of the conditions found within the project site among the trees.

3.2.1 - Canopy Crowding

Plants and trees compete for available resources such as light, water and nutrients. Strategies employed by each individual plant take place above and below the soil. If adequate spacing is not permitted, it can also lead to offset canopies/above ground biomass, poor uptake of nutrients, stressed trees with lack of vigor and canopy dieback among many other conditions. Overcrowded plants must compete with each other for soil nutrients, which can result in increased fertilizer needs. Soil contains a finite amount of nitrogen and other necessary plant nutrients. The more plants there are in a small space, the more quickly these nutrients are used up.



Plate 1. This a view of densely planted trees in which the competing canopies have resulted in poor canopy development and offset tree mass (tree #349).

3.2.2 - Inadequate Maintenance

Trees need periodic maintenance and regular irrigation; this is especially important as trees become established and flourish. Poor pruning practices can promote infection and potential tree failure.



Plate 2. This is a view of an improper flushcut pruning where the branch collar was cut impacting wound closure (tree # 388).



Plate 3. This is a view of an improper pruning cut where the partially cut branch ripped open the underside bark and cambial layer (tree # 408).

3.2.3 - Pest and Disease



Plate 4. This is a view of a large canker within a stem of a tree (tree #351).



Plate 5. This is a view of internal decay stemming from an unclosed branch cut (tree # 372).



Plate 6. This is a view of an exuding canker from a localized infection (tree # 360).



Plate 7. This is a view of possible infected tissue (tree # 417).



Plate 8. This is a view of localized fungal mass resident on decayed tissue (tree #463).

3.2.4 - Potential or Immanent Hazard

Because of localized conditions, several trees within the site pose a significant threat of failure. These trees may show signs of stem cracking, significant lean, or serious decay. Trees showing indication for immediate removal include the following individuals:



Plate 9. This is a view of a significant lean of a tree stem (tree #350).



Plate 10. This is a view of severe internal stem/flare decay posing a hazard of tree failure (tree #299).

SECTION 4: DISCUSSION AND RECOMMENDATIONS

No California black walnuts, western sycamores, oak or Heritage Trees are present onsite as defined in the City's Municipal Code (see Section 2.7 above). The tree species composition of the site is relatively monotypic with poor species richness. Within Lots 17 & 18, 156 trees composed of two distinct species were assessed. Of these, 106 trees should be removed due to their increased liability of failure, diseased status, poor structural integrity or vigor, reduced functionality and poor aesthetics (a few are marginal and may be preserved with treatment and evaluation once project is implemented). Given the nature of the land use within the property, excess nutrient loading within the soil may have contributed to the decreased health and vigor of many of the trees onsite. A total of 154 trees (98.7%) of the 156 trees onsite are classified by CAL-IPC as invasive. This status basically means these species have evolved characteristics that give them an advantage over native flora.

Table 2. Tree Designation

Prune and Monitor –These trees appeared to possess the requisite health and stature necessary for long-term preservation. According to the site plan, all trees within Lots 17 & 18 are marked for removal. If any trees within these lots are to be preserved, tree protection during construction is necessary, and re-evaluation is warranted once project has been implemented.	50
Remove - These trees present certain health, stature, or liability risks that replacement with younger, more viable trees will benefit future community and natural environment.	106
Total*	156

4.1 - Recommendations

Decisions to label a tree as viable were made primarily keeping future public safety in mind and secondarily by the ecological contribution and aesthetics of each individual tree.

4.1.1 - Preserved Trees

There were as many as 50 trees that appeared viable; however, they are comprised of ornamental, non-native species. Any trees preserved require maintenance and ongoing monitoring; this is to ensure public safety and minimize liability due to potential tree failure. In addition, strategic pruning compliant with ISA standards must be performed to subordinate codominant stems, and canopy deadwood removal are recommended. Measures to minimize the impacts of construction and regular maintenance according to ISA standards and are recommended for all trees preserved onsite (see Appendix B below).

4.1.2 - Tree Removal Mitigation

There were 106 trees that have been determined to be in decline, or have substantial defects to where they pose a liability or are aesthetically unappealing. Recommended mitigation for living trees removed is replacement with “approved” species in accordance with Section 25-178.8 of the City's municipal code. Replacement mitigation involving replacement ratio and species type are at the discretion of the Community Development Director.

4.1.3 - Migratory Bird Treaty Act

Pursuant to the Migratory Bird Treaty Act (MBTA) and CDFG Code, removal of any trees, shrubs, or any other potential nesting habitat should be conducted outside the avian nesting season. The nesting season generally extends from early February through August, but can vary slightly from year to year based upon seasonal weather conditions.

SECTION 5: QUALIFICATIONS OF ARBORIST

Mr. Wirtes is a Certified Arborist with the International Society of Arboriculture (CH-08084). Mr. Wirtes was certified in November of 2005 and has conducted numerous tree assessments for residential properties that involve oak and other tree species. Most notably, Mr. Wirtes has created an oak regeneration plan for a 2.3-acre project site in Ventura County as mitigation within a specific plan development. Mr. Wirtes' education includes a Bachelor of Science in Biology and a Master of Science in Environmental Science from California State University at Fullerton.

I certify that the details stated herein this report are true and accurate:



George Wirtes, MS


ISA Certified Arborist, CH-08084

SECTION 6: REFERENCES

- Calflora. 2007. Website at <http://www.calflora.org>.
- California Geological Survey, 2016. Website at <https://mrdata.usgs.gov/geology/state/state.php?state=CA>
- City of Walnut 2016. Municipal Code website at http://qcode.us/codes/walnut/view.php?topic=vi-25-xvi-5-25_178&frames=on
- Hickman, J.C. 1993. *The Jepson Manual: Higher Plants of California*. University of California Press. Berkeley, California.
- Natural Resource Conservation Service. 2008. Website at <http://ortho.ftw.nrcs.usda.gov/>
- University of California, 2016. California Tree Failure Report Program website at <http://ucanr.edu/sites/treefail/>
- University of Florida Environmental Horticulture Department 2008. Website at <http://hort.ifas.ufl.edu/>
- UFEI, 2016. Urban Forest Ecosystems Institute website at <https://selectree.calpoly.edu/>
- Virginia Tech, Dendrology Dept. 2008. Website at <http://www.cnr.vt.edu/DENDRO/dendrology/main.htm>
- Virginia Tech, Virginia Cooperative Extension, 2009. Horse Manure Management. Publication 406-208

APPENDIX A - TREE SPECIES OBSERVED

Note - This tree survey and the details recorded below are meant to characterize the trees within the property. The assessment is not exhaustive, but is a balance between the competing forces of in-depth description and cost effectiveness. The goal was to accumulate enough data to make a judgment as to what role, if any, the existing trees may have in the proposed project.

EVALUATION FORMS FOR PROTECTED TREES																			
Tree Tag #	Species1	Diameter at Breast Height	Height (feet)	Canopy Width (feet)								Canopy Width (feet)			Notes	Health	Env	Risk	Conclusion
				N	N E	E	SE	S	S W	W	N W								
348	Peruvian pepper	6	13	6	4	8	7	8	10	2	10	10	6	4	topped, competing canopy, unclosed cut	2-3	2-3	2-3	remove
349	Peruvian pepper	13	27	1	1	6	2	2	15	6	0	2	8	8	large stem canker, competing canopy, poor structure	3	2-3	3	remove
												10	7						
350	Peruvian pepper	19	20	4	8	1	1	1	16	1	6	6	20	21	significant lean, competing canopy, some canopy deadwood	2-3	2-3	3	remove
												15	15						
351	Peruvian pepper	14	31	6	10	2	1	9	10	2	10	16	18	15	interior stem rot, large canker, on slope, lean, pest infested	2-3	2-3	2-3	remove
												16	15						
352	Peruvian pepper	13	35	6	10	1	1	1	15	2	11	10	9	15	can be preserved, minor inner canopy deadwood	2	2	2	preserve
												20	15						
353	Peruvian pepper	6	17	8	2	8	8	4	6	1	4	15	15	10	poor canopy development, lean, competing canopy	3	3	2	remove
												19	8						
354	Peruvian pepper	13	30	6	2	1	1	2	25	2	10	4	4	8	adventitious suckers at flare, competing canopy, some decay at crotch	2	2-3	2	prune and monitor
												6	8						
355	Peruvian pepper	17	30	8	8	2	2	1	15	1	13	10	25	15	some competing canopy, some unclosed branch cuts	2-3	2-3	2	prune and monitor
												25	15						
356	Peruvian pepper	13	25	1	10	1	2	1	10	1	17	13	8	8	competing canopy, fair canopy development	2	2-3	2	prune and monitor
												15	20						
												15	15	20					

357	Peruvian pepper	8	20	4	2	2	5	6	10	4	11	13 10 10 22	11 4 2	topped, poor aesthetics	3	3	2	remove
358	Peruvian pepper	10	32	6	5	1 2	1 2	2 5	25	2 5	6	10 6 5	6 6 5	large branch cut at stem, water sprouting, questionable prognosis	2- 3	2- 3	2-3	prune and monitor
359	Peruvian pepper	18	22	2	2	1 5	1 5	2 0	20	1 2	10	10 2 2	2 2 2	water sprouting at branch cut, exuding branch cut, competing canopy	2	2- 3	2-3	preserve
360	Peruvian pepper	28	42	1	4	2 0	1 8	2 0	25	2 5	5	5 1 4	1 4	decay at flare, poor prognosis, multiple cankers	2- 3	2- 3	3	remove
361	Peruvian pepper	8	18	4	6	1 2	1 0	8	4	5	5	5 4 8	4 10	poor structure, growing in under story	3	3	2-3	remove
362	Peruvian pepper	9	18	8	12	1 0	1 0	6	1	4	5	5 4 1	8 10 10	poor structure, growing in under story	3	3	2-3	remove
363	Peruvian pepper	11	43	1 4	14	2 0	2 0	2 0	20	2 0	20	20 14 14	14 20 20	significant interior stem deadwood, poor prognosis, good canopy development	2- 3	2- 3	2-3	remove
364	Peruvian pepper	8	22	1 0	10	1 2	1 0	1 0	6	4	4	4 10 10	10 12 10	primary stem cut, water sprouting, poor prognosis, poor structure, some decay at stem	2- 3	2	2-3	remove
365	Peruvian pepper	22	27	1 6	16	1 2	2 0	20	1 8	22	22	16 16 6	16 12 8	large stem canker, poor prognosis	2- 3	2	2-3	remove
366	Peruvian pepper	10	23	1 2	8	1 0	1 2	1 5	15	1 5	18	15 12 8	8 10 12	water sprouting at stem, flare, fair structure	2	2	2	preserve
367	Peruvian pepper	8.5	21	7	7	1 0	1 2	1 1	11	7	5	5 7 11	7 10 12	some competing canopy, poor development, low aesthetics, project better served by replacement	2- 3	2- 3	2	preserve
368	Peruvian pepper	9.5	24	5	6	8	1 2	7	6	1 0	5	5 5 6	5 5 6	poorly pruned (branch collar), decay at cut, poor canopy development	2- 3	2- 3	2	remove

Tree Survey and Arborist Report

369	Peruvian pepper	8.5	25	6	7	1 2	1 2	6	6	5	5	5	6	7	poor branch cut at collar, poor canopy development, competing canopy	2-3	2-3	2-3	remove
370	Peruvian pepper	12	35	7	7	8	1 2	1 5	13	8	10	10	7	7	fair structure, low vigor, some unclosed branch cuts, adventitious sprouting at flare	2	2	2	remove
371	Peruvian pepper	9	30	6	10	1 5	1 0	1 1	7	6	5	5	6	10	poor canopy development, low aesthetics, vigor ok, competing canopy	2-3	2-3	2	prune and monitor
372	Peruvian pepper	13	33	5	5	7	1 0	1 3	12	1	10	10	5	5	significant internal decay at primary branch, water sprouting at branch cut	3	2	3	remove
373	Peruvian pepper	9	25	5	5	1 0	1 2	1 1	6	5	5	5	5	5	internal decay, diseased limb	3	2	3	remove
374	Peruvian pepper	3.5	18	2	2	1 2	3	4	5	4	2	2	2	2	poor vigor, dead primary meristem	3	2	2-3	remove
375	Peruvian pepper	6	16	6	8	6	4	6	5	2	2	2	6	8	copious modules, poor canopy development, low aesthetics	3	2	2-3	remove
376	Peruvian pepper	16	26	1 0	12	4	4	1 5	4	1	13	13	10	12	poorly developed canopy, water sprouting at large cut, off center mass, canopy deadwood	2-3	2	2-3	remove
377	Peruvian pepper	6	17	2	4	1 2	2	6	2	2	2	2	2	4	poor vigor, poor canopy development	3	2	2-3	remove
378	Peruvian pepper	9	35	8	10	6	4	1 1	14	7	5	5	8	10	poor branch cut, fair canopy	2	2	2-3	preserve
379	Peruvian pepper	9	30	5	6	1 5	1 5	1 0	4	2	2	2	5	6	poor vigor, decay at flare, distressed, adventitious flare sprouting	3	2	2-3	remove
380	Peruvian pepper	10	29	8	8	7	1 0	1 5	6	5	5	5	8	8	fair vigor, adventitious sprouting	2-3	2	2-3	preserve
381	Peruvian pepper	7	25	2	5	1 2	1 0	5	4	2	2	2	2	5	branch cut led to canker, vigor fair	2-3	2	2-3	prune and monitor

382	Peruvian pepper	10	30	7	8	5	5	1	0	15	4	5	2	4	5	12	lean, some canopy deadwood, sprouting at cut	2-3	2-3	2-3	prune and monitor
383	Peruvian pepper	9.5	25	7	10	1	1	1	5	5	4	11	11	7	10	5	some canopy deadwood, fair canopy structure	2	2	2-3	prune and monitor
384	Peruvian pepper	8	24	7	6	4	4	3	4	4	4	5	5	7	6	15	internal decay, decay at flare	3	2	2-3	remove
385	Peruvian pepper	3	13	1	2	2	2	1	6	2	1	1	1	1	2	4	diseased, upper canopy deadwood	3-4	2	3-4	remove
386	Peruvian pepper	6	25	2	2	3	1	1	12	1	5	5	5	2	2	3	some upper canopy deadwood, canopy competition	2-3	2	2	prune and monitor
387	Peruvian pepper	9	28	5	12	1	5	5	16	1	2	2	5	5	12	10	termites, poor prognosis, diseased limbs, poorly trimmed	2-3	2	2-3	remove
388	Peruvian pepper	4	17	2	2	4	4	4	4	2	2	2	2	2	2	4	competing canopy, stunted growth, canopy deadwood, distressed	3	2	2-3	remove
389	Peruvian pepper	13	31	1	10	1	1	1	15	2	7	7	12	12	10	10	pest damage (sap sucker), unclosed branch cut	2-3	2	2	prune and monitor
390	Peruvian pepper	10	17	6	5	1	1	7	8	1	11	11	6	5	5	1	diseased upper limbs, poor vigor	3	2	2-3	remove
391	Peruvian pepper	8	30	7	5	6	1	5	5	1	4	4	7	5	5	6	poorly trimmed, low aesthetics, canopy deadwood	2-3	2	2-3	remove
392	Peruvian pepper	11	24	6	5	8	7	6	8	7	5	5	6	5	5	8	may be treated, poor vigor	2-3	2	2	prune and monitor
393	Peruvian pepper	11	31	1	6	1	1	1	17	2	5	5	12	6	15	12	fair scaffolding, some canopy deadwood, competing canopy, sap sucker damage	2-3	2-3	2-3	prune and monitor

Tree Survey and Arborist Report

394	Peruvian pepper	7	29	5	5	5	5	7	12	1	0	2	2	5	5	stressed, poorly trimmed, adventitious sprouting	2-3	2	2-3	prune and monitor
													10		5					
													12	7	5					
395	Peruvian pepper	12	29	6	7	1	1	1	15	1	5	10	10	6	7	flare sprouts, stem decay multiple locations, poor prognosis	2-3	2	2-3	remove
													15		12					
													15	15	10					
396	Peruvian pepper	5	20	4	5	6	4	5	6	4	8	8	4	5	5	diseased limb, low vigor	2-3	2	2-3	remove
													4		6					
													6	5	4					
397	Peruvian pepper	11	25	6	6	1	1		10	6	5	5	6	6	6	Internal decay, poorly healed cuts, lean to side, poorly trimmed. diseased tree	2-3	2	2-3	remove
													6		15					
													10	7	15					
398	Peruvian pepper	8	25	1				1					8	12	10	vigor poor, poor prognosis, fungal bodies on cuts	2-3	2	2-3	remove
				2	10	2	2	0	6	2	8									
													2		2					
													6	10	2					
399	Peruvian pepper	15	34	1		1	1	1					15	11	15	severe internal decay, flare sprouting, vigor fair, poor prognosis	2-3	2	2	remove
				1	15	5	5	5	10	9	15		9		15					
													10	15	15					
400	Peruvian pepper	6	22	4	8	4	4	1	10	1	5	5	4	8	8	some internal decay, poor vigor, trouble closing wounds	2-3	2	2	remove
								2												
													11		4					
													10	12	4					
401	Peruvian pepper	11	30	1		1	1	1		2			20	10	12	diseased limb, callus wood, may be treated	2-3	2	2-3	preserve
				0	12	4	2	2	18	0	20									
													20		14					
													18	12	12					
402	Peruvian pepper	10	28	5	5	1	1			1		2	2	5	5	internal stem decay, low vigor	2-3	2	2-3	remove
						5	2	5	5	1	2									
													11		15					
													5	5	12					
403	Peruvian pepper	4.5	18	4	4	4	4	2	2	2	2	2	4	4	4	dead canopy approx. 75%	3-4	2	2-3	remove
													2		4					
													2	2	4					
404	Peruvian pepper	13	22	7	8	1	1	1		1		5	5	7	8	sprouting at flare, fair structure	2-3	2	2-3	prune and monitor
													10		16					
													15	17	16					
405	Peruvian pepper	9	26	8	10	1	4	5	3	3	3	3	8	10	10	stressed, poor prognosis, exuding sap, internal decay	3	2	2-3	remove
						0														
													3		10					
													3	5	4					
406	Peruvian pepper	24	30	9	10	2	1	1				16	9	10	10	internal decay, upper canopy deadwood, decay at crotch	2-3	2	3	remove
						0	5	4	15	8	16									

407	Peruvian pepper	16	30	5	5	2	1	2	1	12	8	15	14	20	possible borer, decay stemming from branch cut at crotch	2-3	2	2-3	remove
408	Peruvian pepper	18	32	6	6	2	2	2	2	0	0	6	6	20	internal decay, broken major limbs, termites	3	2	3	remove
409	Peruvian pepper	10	26	5	5	1	1	1	1	2	2	5	5	20	decay at branch cut, poor prognosis, low vigor	2-3	2	2-3	remove
410	Peruvian pepper	11	23	1	10	1	1	1	2	15	0	15	10	10	good structure, small unclosed branch cut	2	2	2	preserve
411	Peruvian pepper	2.5	12	6	5	5	5	9	5	4	4	4	5	5	sprouting burl, low aesthetics	3	3	2	remove
412	Peruvian pepper	6.5	15	4	4	4	4	4	4	4	4	4	4	4	sprouting stump, low aesthetics, next to fence post	3	3	2	remove
413	Peruvian pepper	10	27	1	12	1	1	1	1	12	2	12	12	12	some internal decay from unclosed branch cut, canker, good structure	2	2	2-3	prune and monitor
414	Peruvian pepper	14	18	2	7	1	1	5	2	2	2	2	2	7	sprouting clump, not conducive to good growth, competing canopy	2	2	2	remove
415	Peruvian pepper	3	17	1	0	8	8	8	0	0	0	3	10	8	competing canopy, sprouting clump, not conducive to good growth	2	2	2	remove
416	Peruvian pepper	21	33	1	0	8	5	1	1	7	15	5	5	8	competing canopy, large branch failure, sweep lean, internal decay	2-3	3	3	remove
417	Peruvian pepper	19	32	1	4	8	1	1	1	8	20	0	15	8	Infected mass, vigor fair, burl?	2	2	22-3	remove
418	Peruvian pepper	10	15	5	5	6	6	5	5	5	5	5	5	5	sprouting burl, bush-like	2	3	1	remove

Tree Survey and Arborist Report

419	Peruvian pepper	12	15	4	6	6	6	6	6	6	6	6	4	6	sprouting burl, bush-like	2	3	1	remove
													6	6					
420	Peruvian pepper	9	17	6	6	6	6	6	6	6	6	6	6	6	sprouting burl, bush-like, Invasive Nature	2	3	1	remove
													6	6					
421	Peruvian pepper	7.5	15	5	5	5	5	5	5	5	5	5	5	5	sprouting burl, bush-like, Invasive Nature	2	3	1	remove
													5	5					
422	Peruvian pepper	5.5	15	5	5	5	5	5	5	5	5	5	5	5	sprouting burl, bush-like, Invasive Nature	2	3	1	remove
													5	5					
423	Peruvian pepper	8.5	12	4	4	5	5	6	6	6	6	6	4	4	sprouting burl, bush-like, Invasive Nature	2	3	1	remove
													6	5					
424	Peruvian pepper	8	10	5	5	6	5	5	5	5	5	6	4	4	sprouting burl, bush-like, Invasive Nature	2	3	1	remove
												6	6	5					
425	Peruvian pepper	7.5	17	8	5	2	4	6	8	8	8	5	5	5	sprouting burl, bush-like, Invasive Nature	2	3	1	remove
												5	5	6					
426	Peruvian pepper	17	19	8	8	9	1	0	7	7	6	8	8	5	good vigor, sprouting from root ball, prune	1-2	1-2	1	preserve
												8	6	4					
427	Peruvian pepper	10	25	5	6	7	1	0	8	8	5	6	8	8	diseased upper canopy, competing canopy, low aesthetics	2-3	3	2-3	remove
												6	7	10					
428	Peruvian pepper	13	31	8	5	0	1	2	5	15	2	8	5	6	competing canopy, viable tree, large branch cuts	2	2-3	2	preserve
												5	8	10					
429	Peruvian pepper	20	27	1	12	5	1	2	0	0	22	10	8	5	sap sucker damage, sprouts, viable, competing canopy	2	2-3	2	preserve
												12	10	12					
430	Peruvian pepper	12	25	5	15	0	2	2	1	8	7	6	15	12	sweep lean due to competing canopy, offset mass, upper canopy deadwood	3	3	2-3	remove
												20	15	20					
431	Peruvian pepper	8	17	2	2	2	1	2	3	3	2	6	5	15	approx. 30 degree lean, competing canopy, offset mass	3	3	2-3	remove

432	Peruvian pepper	9	25	0	1	2	5	1	7	1	0	2	5	7	18	20	approx. 40 degree lean, competing canopy	2-3	2-3	2-3	remove
433	Peruvian pepper	8	17	1	0	10	8	4	1	2	8	6	5	5	10	10	vigor fair, flare sprouts	2	2	2	preserve
434	Peruvian pepper	7	17	5	3	3	6	8	7	5	4	4	4	5	3	3	poor vigor, maybe salvageable	3	2	2-3	prune and treat
435	Peruvian pepper	7.5	25	5	6	6	4	7	7	6	6	6	6	5	6	6	diseased canopy, did stressed, competing canopy	3	2-3	3	remove
436	Peruvian pepper	6	18	4	4	4	4	4	6	4	4	4	4	4	4	4	stressed, unclosed branch cuts	2-3	2-3	2	preserve
437	Peruvian pepper	8	24	2	1	3	6	7	11	1	0	6	6	2	1	3	poor scaffolding, project better served by replacement (maybe)	2-3	2-3	2	preserve
438	Peruvian pepper	9	16	5	2	4	2	1	0	15	4	4	4	5	2	4	poor scaffolding, poor aesthetics, significant lean	3	2	2	remove
439	Peruvian pepper	8.5	27	2	0	1	3	4	1	1	12	2	15	15	20	1	fair vigor, sprouting branch cut, questionable prognosis	2	2	2	preserve
440	Peruvian pepper	6	22	3	4	5	5	4	4	4	4	4	4	3	4	4	poorly trimmed, poor aesthetics, project better served and replaced	3	2	2	remove
441	Peruvian pepper	11.5	30	1	0	8	6	6	1	5	16	3	14	14	10	8	unclosed branch cut, flare sprouting	2-3	2	2	preserve
442	Peruvian pepper	6.5	22	2	1	3	6	6	5	5	2	2	2	2	1	3	poor structure, soil heave, poor canopy development	2-3	2	2-3	remove
443	Peruvian pepper	10	27	6	3	3	0	1	0	12	5	8	8	6	3	3	internal stump decay, cracked at flare	2-3	2	2-3	remove

Tree Survey and Arborist Report

444	Peruvian pepper	6.5	21	5	2	2	6	4	5	5	4	4	5	2	vigor fair, form fair to poor	2-3	2	2	preserve
												5	5	2					
445	Peruvian pepper	13	25	5	2	2	6	4	5	5	4	4	5	2	good vigor, form ok	2	2	2	preserve
												5	5	2					
446	Peruvian pepper	10	20	3	2	3	5	1	0	12	6	8	3	2	good vigor, fair form, large branch cuts	2	2	2	preserve
												6	12	3					
447	Peruvian pepper	11	23	1	10	3	5	1	2	12	1	13	13	15	vertical split, remove ASAP, hazardous, large branch cut at sprout	2-3	2	3-4	remove
				5				2		3		13	12	5					
448	Peruvian pepper	8	20	7	5	4	5	7	7	5	4	4	7	5	some upper canopy deadwood, sprouting branch cuts	2-3	2-3	2-3	preserve
												5	7	5					
449	Peruvian pepper	7.5	15	3	5	4	6	1	2	10	8	5	5	3	poor vigor, rust fungal infection	2-3	2	3	remove
												8	10	4					
450	Peruvian pepper	6.5	14	5	3	2	6	5	7	5	5	5	5	3	diseased leaders, poor vigor	3	2	2-3	remove
												5	7	2					
451	Peruvian pepper	8.5	22	8	4	3	6	9	10	9	10	10	8	4	poor prognosis, internal decay on limb	3	2	2-3	remove
												9	10	3					
452	Peruvian pepper	10	22	1	10	6	6	1	3	13	8	8	12	10	strategic prune, competing canopy, vigor fair, may be preserved	2-3	2-3	2-3	preserve
				2				3				8	13	6					
453	Peruvian pepper	7.5	23	6	5	5	7	1	5	17	8	6	6	5	substantial lean, sprouting branch cuts	3	2-3	3	remove
												8	17	5					
454	Peruvian pepper	18	35	2	14	1	1	1	3	20	2	12	12	20	good form, large branch cuts	2	2	2-3	prune and monitor
				0		5	0						22	15					
455	Peruvian pepper	15	30	1	16	1	9	1	8	17	1	15	15	16	sap sucker damage(sealed), large branch cuts	2-3	2	2-3	preserve
				5		5							16	15					
456	Peruvian pepper	8	18	5	4	6	8	8	8	9	6	6	5	4	comp canopy, poor canopy development	3	3	2-3	remove
												17	18	9					

457	Peruvian pepper	7	16	4	2	3	4	6	7	5	5	9	8	6	distressed poor canopy development	3	2	2-3	remove
458	Peruvian pepper	7	20	7	6	6	6	1	6	6	7	5	4	2	vigor fair, structure ok	2-3	2-3	2	preserve
459	Peruvian pepper	7.5	21	1	9	9	8	9	9	1	10	6	6	6	distressed, diseased	3	2-3	2	remove
460	Peruvian pepper	7.5	20	1	6	5	7	7	10	7	10	10	10	6	distressed, epicormic sprouts, diseased	3	2-3	2	remove
461	Peruvian pepper	12	17	5	2	3	7	6	11	9	13	10	7	7	diseased bark signs, included bark	3	2-3	3	remove
462	Peruvian pepper	9	23	1	12	1	1	9	7	1	5	12	10	12	signs of internal decay, distressed, low vigor	2-3	2-3	2-3	remove
463	Peruvian pepper	8	14	4	5	6	5	5	5	4	6	6	4	5	fungal mass, poor scaffolding, internal decay	2-3	2-3	2-3	remove
464	Peruvian pepper	8	18	6	5	9	0	0	10	9	5	5	6	5	signs of internal decay at flare, basal sprouts	3	2-3	3	remove
465	Peruvian pepper	10	22	6	6	7	7	1	9	1	9	9	6	6	basal sprouts, internal decay, sprouting branch cuts, high upper canopy deadwood	3	2-3	2-3	remove
466	Peruvian pepper	8	24	4	4	5	1	1	14	1	10	10	4	4	upper canopy deadwood, some stem decay at branch cut	2-3	2-3	2-3	remove
467	Peruvian pepper	14	33	2	15	2	2	1	16	1	13	13	20	15	some seated sapsucker damage	2	2	2-3	preserve
468	Peruvian pepper	8	21	3	4	4	4	1	10	8	2	2	3	4	good form	2	2	2	preserve

Tree Survey and Arborist Report

469	Peruvian pepper	8.5	20	4	8	1 0	1 2	6	5	5	6	6 5 5	4 6	8 10 12	internal cavity possibly occupied, poor prognosis	2	2	2	remove
470	Peruvian pepper	2.5	13	4	3	1	1	3	3	2	2	2 2 3	4 3	3 1 1	poor form, low aesthetics	3	2	2	remove
471	Peruvian pepper	5	12	7	4	3	3	4	3	3	5	5 3 3	7 4 3	4 3 3	high canopy deadwood, diseased	3	2	2	remove
472	Peruvian pepper	8.5	29	7	6	5	4	1 1	11	6	4	4 6 11	7 11	6 5 4	good form, vigor ok	2	2	2	preserve
473	Peruvian pepper	7	25	3	3	3	1	4	7	1 2	15	15 12 7	3 4	3 1	vigor ok, poor growth form, some diseased branches	3	2	2-3	remove
474	Peruvian pepper	6.5	20	7	4	4	3	6	5	5	12	12 5 5	7 6	4 3	diseased branches, low vigor	3	2	2-3	remove
475	Peruvian pepper	7	25	6	6	5	6	8	12	1 1	6	6 11 12	6 8	6 5 6	vigor fair to poor, may be treated	2-3	2	2-3	prune and monitor
476	Peruvian pepper	7.5	26	5	7	7	6	1 5	13	1 1	6	6 11 13	5 15	7 6	poorly pruned, about a 30 degree lean	2-3	2	3	remove
477	Peruvian pepper	5	26	3	3	1	1	4	5	1	2	2 1 5	3 4	3 1 1	diseased	3	2	3	remove
478	Peruvian pepper	17	36	6	5	4	5	1 6	15	1 1	8	8 11 15	6 16	5 5	good form, decayed branch cut	2-3	2	2-3	preserve
479	Peruvian pepper	7	30	3	2	1	1	1 8	17	1 5	11	11 15 17	3 18	2 1 1	extra small sloughing of bark, distressed	3	2	2-3	remove
480	Peruvian pepper	9	28	6	8	2	3	1 5	15	6	0	0 6 15	6 15	8 2 3	Completing canopy, poor development, low aesthetics, decayed branch cut	3	3	2-3	remove
481	Peruvian pepper	10	37	1 0	15	1 0	5	1 5	20	1 8	10	10	10	15	Fair development and vigor, large branch cut	2	2	2	prune and monitor

482	Peruvian pepper	10.5	32	1 6	10	5	3	2 0	18	1	5	4	18 20	15	10 5	sweep lean, poor development, offset mass	3	3	3	remove
483	Peruvian pepper	8.5	26	1 0	6	3	4	1 7	16	1	5	11	11 15	10	6 3	multiple signs of internal decay, decreased vigor, completing canopy	3	2	2-3	remove
484	Peruvian pepper	8.5	19	1 0	8	3	1	1 1	10	8	5	5	5 8	10	8 3	lean, water sprouting, decay at branch cut, completing canopy	3	2	2-3	remove
485	Peruvian pepper	6.5	26	4	5	7	9	1 1	7	5	5	5	5 7	4	5 7	decreased vigor, completing canopy	2-3	2	2-3	remove
486	Peruvian pepper	14	36	8	15	1 2	1 5	3 0	25	1	7	8	8 17	8	15 12	subordinated, co dominant stem, about 12-14"stem cut, diseased canopy	3	2	3	remove
487	Peruvian pepper	12	30	8	15	1 8	2 0	1 5	13	1	2	11	11 12	8	15 18	Topped, in understory of adjacent, free aesthetics	3	2	3	remove
488	Peruvian pepper	22	45	6	12	1 5	2 0	2 5	22	2	0	12	12 20	6	12 15	large specimen, signs of internal decay, large improper branch cut, completing canopy	2-3	2	3	remove
489	Peruvian pepper	20.5	28	6	10	1 2	1 5	1 5	15	2	0	15	15 20	6	10 12	offset canopy, offset mass in under story	3	3	3	remove
490	Peruvian pepper	23	42	9	8	5	1 2	1 8	20	1	8	15	15 18	9	8 5	liability due to lean, vigor ok, diseased limbs	2-3	2	3	remove
491	Peruvian pepper	26	41	1	1	4	1 2	1 4	15	2	0	25	25 20	1	1 4	Internal decay, liability	2-3	2	3	remove
492	Peruvian pepper	33	32	1 2	13	1 2	1 0	7	8	2	5	23	23 25	12	13 12	Some Canopy deadwood, Sprouting 12-inch branch cut	2-3	2	3	remove
493	Peruvian pepper	31	36	1 4	18	2 0	2 2	1 2	22	1	5	23	23 15	14	18 20	Callus wood from vertical split, large cavity (liability)	2-3	2	3	Remove
													22	12	22					

Tree Survey and Arborist Report

494	Peruvian pepper	5	21	2	2	2	5	7	12	1	3	5	5	2	2	Good vigor, growing in under story, completing canopy	2	2-3	2	Preserve & Relocate
													13		2					
													12	7	5					
495	Peruvian pepper	17	38	1	8	4	4	2	18	1	3	15	15	10	8	Internal decay, Co dominant stem, distressed	3	2	3	remove
													13		4					
													18	20	4					
496	Peruvian pepper	10.5	13	1	5	4	1	1	15	0	3		3	1	5	Stump Sprouter, Termites	3	3	3	Remove
													0		4					
													15	15	14					
497	Peruvian pepper	23	22	8	14	1	1	1	8	7	5		5	8	14	stump sprouter	3	3	3	Remove
													7		10					
													8	15	10					
498	Peruvian pepper	11	28	8	16	1	1	2	1	5	5		5	8	16	Poor growth form, sprouting stump	2	3	3	Remove
													5		10					
													1	2	10					
499	Peruvian pepper	2.5	13	2	3	4	6	1	13	5	5		5	2	3	Co-dominant, subordinated leader, young	2	2	2	Preserve
													5		4					
													13	10	6					
500	Peruvian pepper	6.5	18	8	2	7	7	9	8	7	6		6	8	2	Sprouting clump, subordinated leaders	1-2	2	1-2	Preserve
													7		7					
													8	9	7					
300	Peruvian pepper	28	35	2	15	2	2	2	25	2	5	20	20	25	15	Soil heave, liability, Internal decay, under canopy deadwood	2-3	2	3	Remove
													25		26					
													25	25	25					
299	carrotwood	7.5	20	7	9	1	1	1	10	1	2	9	9	7	9	Internal decay, vigor ok.	2-3	2-3	3	Remove
													12		12					
													10	10	11					
298	carrotwood	9	19	5	8	9	9	1	12	1	3	7	7	5	8	Form is good, somewhat distressed	2	2	2	Preserve
													13		9					
													12	10	9					

APPENDIX B - TREE PROTECTION DURING CONSTRUCTION

Building/grading near trees requires that they are healthy at the start of the project for the stand to recover well. Some older trees have little tolerance for root damage or other stress factors. Younger, more vital trees are more tolerant of changes in their surroundings. However, each change in soil compaction, irrigation, under plantings, and other condition takes some of an older tree's strength and vigor and further diminishes its health. The City of Walnut's Municipal Code contains specific provisions regarding construction.

Work within the Protected Zone. Because of the high sensitivity of these trees, great care must be taken when work is being conducted within the protected zone. For this reason, the city has established specific procedures to ensure that the trees receive maximum protection. The procedures are as follows:

- a) Onsite Supervision. All work conducted within the protected zone of the *tree* shall be performed in the presence of the applicant's oak *tree* consultant, and verified by the city's oak *tree* consultant.
- b) Forty-eight Hour Notice. Except for dead wooding and pruning of limbs, which are six inches, or less in circumference, the applicant shall provide a forty-eight hour notice to the department of community development and the appropriate *tree* consultant before beginning any work within the protected zone.
- c) Hand Tools. Unless otherwise approved, all work conducted within the protected zone underneath the *tree* shall be accomplished using hand tools only. Use of tractors and other vehicles within the protected zone is prohibited. The use of chainsaws for cutting branches is permitted.
- d) Certification Letter. Certification letters are required for all work conducted upon the trees. In this regard, the applicant's *tree* consultant shall submit a certification letter to the department of community development within ten working days after completion

The main stresses and risks of construction are:

- Soil compaction
- Lack of water or changes in the site hydrology
- Change of grade in the root zone
- Physical damage to tree roots and structure
- Dumping of potentially toxic construction wastes
- Lack of pest control and other care
- Dust
- Human error

Mature trees take a long time to heal from, or respond to, injury. It could take 10 years for some trees to make a visible improvement in health after construction impacts occur. On the other hand, it could take 10 years for a tree to visibly start declining after cutting roots, compacting the soil, or raising the grade.

The following measure must be taken for any trees that are to be preserved onsite (or as dictated by the City's guidelines).

1. Dripline fencing must be placed a minimum of 1 foot in radius from the tree per 1 inch of diameter at breast height (for example, 6-inch trunk = 6 feet protection radius/12 feet diameter).

2. Dripline fencing must be erected so that it is visible and structurally sound enough to deter construction equipment, foot traffic, and the storing of equipment under tree canopies.
3. Raising or lowering the grade in the root zone of trees can be fatal or ruin the health of trees for years to come. Grade change and soil compaction force out the oxygen and literally press the life out of the soil. A retaining wall can be used to minimize the amount of the root zone that is affected, but it is essential that the footing not be continuous. Gravel and aeration pipes should be placed inside the retaining wall before the fill is placed. Consult with a qualified civil engineer for proper design calculations.
4. Trenching within the protection zone must be avoided wherever possible. Most of the roots are in the top 1 to 2 feet of soil, and trenching can sever a large percentage of roots.
5. Oil from construction equipment, cement, concrete washout, acid washes, paint, and solvents are toxic to tree roots. Signs should be posted on the fencing around trees notifying contractors of the fines for dumping. Portable latrines that are washed out with strong detergents can damage the fine roots of the trees. Portable latrines should not be placed near trees, nor where frequent and regular foot traffic to them will compact the soil below the trees.

Construction creates large amounts of dust. Trees to be preserved will need to be kept clean. Dust reduces photosynthesis within the leaves of trees. Strict dust control measures must be implemented during construction to minimize this impact, and an occasional rinsing with a solution of water and insecticidal soap will help control pests.