APPENDIX D

Arborist Report

DUDEK

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June 14, 2018 10971-01

Mr. Fred Buderi
City of Vacaville
650 Merchant Street
Vacaville, CA 95688

Subject: ***Arborist Report for the Eldredge Property/Farmstead Project Site, City of Vacaville, California***

Dear Mr. Buderi:

The following report summarizes Dudek's field evaluation of trees on the Eldredge property/Farmstead project site located southwest of the intersection of Fruitvale Road and North Orchard Avenue, near the City of Vacaville, California.[1] This report includes a discussion of tree evaluation methods, a summary of findings, identification of anticipated impacts, and tree protection recommendations consistent with the City of Vacaville's Tree Preservation Standards and Residential Design Requirements. The primary focus of Dudek's field evaluation was to identify and inventory all trees on or adjacent to the project site which may be affected by proposed development, based on the definition included in the Vacaville Municipal Code (Chapter 14.09.131).

SITE AND PROJECT DESCRIPTION

The project site (APN 0125-040-110) is located in unincorporated Solano County, California, although it is completely surrounded by the City of Vacaville and is located within the City's Urban Growth Boundary and Planned Sphere of Influence.[2] The project site is bounded by Fruitvale Road on the north, North Orchard Avenue on the west, two residences and Hemlock Elementary School on the south, and Eldridge Avenue and residential lots along Laramie Way and Fruitvale Road on the east (Figure 1). The site is nearly level at an elevation of approximately 210 feet above mean sea level. The property is a former active fruit orchard and orchard trees are present in remnant rows throughout the site. Other on-site trees include screen trees in rows along the northern and southern boundaries and a row of large pecan trees

[1] The project site is currently within unincorporated Solano County surrounded by land in the City of Vacaville

[2] City of Vacaville Draft 2017 Municipal Service Review for Comprehensive Sphere of Influence Update, March 2017

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SOURCE: ESRI 2018; Bing 2018

FIGURE 1

Project Location

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Arborist Report for the Eldredge Property/Farmstead Project Site

lining the property's western edge along North Orchard Avenue. The remaining trees are located near the existing residential structures situated in the southern portion of the property and include a mix of native and non-native shade and evergreen trees.

The proposed project consists of development of 127 residential lots on 15.56 acres along with development of necessary project access roads and sidewalks. A total of 5.12 acres would be dedicated for a park and trail uses. The proposed park is located in the southern portion near existing residential structures. Preservation of the trees along North Orchard Avenue and in the southern portion of the property was a factor influencing the proposed project design.

REGULATORY FRAMEWORK

The project site is currently located within unincorporated Solano County; although given its location in the City of Vacaville's Urban Growth Boundary and Planned Sphere of Influence,[3] the City's tree regulations have been applied to the inventory and assessment efforts discussed herein. The City of Vacaville's Supplemental Standards, Tree Preservation (Chapter 14.09.131) define a tree as:

> *"…any live woody plant having one or more well defined perennial stems with an aggregate circumference of 31 inches or more, when measured at 4-1/2 feet above ground level."*

These standards also require that development applicants provide a tree permit application including a map indicating the number, species, size and location of affected trees and justification for tree removal. The City exempts from tree removal permit requirements the removal of trees not meeting the aforementioned size specifications, commercial fruit trees, almond trees, or grafted English walnut trees, nursery trees, and hazard trees. The City also identifies tree preservation and maintenance standards in its Municipal Code (Chapter 14.09.131.050) and its Residential Design Requirements[4] to protect trees from construction-related impacts. This Arborist Report has been developed to address City requirements and includes mapped tree locations (Attachment A), tree size and attribute data and impact status (Attachment B), and recommendations for protection of trees to be retained on the project site (Attachment C).

[3] As part of this project the applicant is requesting the project site be annexed to the City of Vacaville
[4] City of Vacaville Residential Design Requirements for New Single Family Development, 1996

METHODS

Dudek International Society of Arboriculture (ISA) Certified Arborists conducted a site evaluation on February 20 and March 6, 2018 to document tree location and attribute information. Tree attribute information was collected for all non-orchard trees meeting the minimum City-defined size criteria.[5] A discussion of orchard tree mapping and data collection efforts is presented below. Attribute data for non-orchard trees collected during the site evaluation included trunk diameter, tree height, canopy spread, general health condition, structural condition and presences of observable pests or other tree maladies. Trunk diameters were measured using a diameter tape which provides adjusted figures[6] for diameter measurements when wrapping the tape around a tree's circumference. Diameter measurements were collected using standard protocol described by the Council of Tree and Landscape Appraisers in the "Guide for Plant Appraisal," published by the ISA.[7]

Trunk diameter measurements were taken at 4.5 feet above the ground along the trunk axis, with a few common exceptions. In cases where a tree's trunk split into multiple stems at approximately 4.5 feet above ground, the measurement was made at the location that best represented the trunk's diameter. Tree height measurements were estimated by the arborist and tree canopy diameter measurements were typically estimated by "pacing-off" the measurement based on the arborist's knowledge of his stride length or by visually estimating the canopy width. The tree crown measurements were made along an imaginary line intersecting the tree trunk that best represented the trees longest canopy diameter.

Pursuant to the Guide for Plant Appraisal, tree health and structure were evaluated with respect to five distinct tree components: roots, trunk, scaffold branches, small branches, and foliage. Each tree component was assessed with regard to health factors such as insect, fungal or pathogen damage, mechanical damage, presence of decay, presence of wilted or dead leaves, and wound closure. Components were graded as *good*, *fair to good*, *fair*, *fair to poor,* and *poor*, with 'good' representing no apparent problems, and 'poor' representing a tree with significant health or structural inferiorities.

Orchard trees that meet the size criteria identified in the City's Standard were mapped and quantified; however, detailed attribute data for these trees was not collected as such trees would be exempt from tree removal permit requirements (commercial fruit trees). Rather, general tree

[5] Vacaville Municipal Code, Chapter 14.09.131.020(E)
[6] Circumference measurement (inches) divided by 3.14 (π) provides diameter measurement in inches
[7] International Society of Arboriculture (ISA). 2000. Guide for Plant Appraisal (9th Edition)

information (e.g., species, trunk diameter sizes, tree heights, general conditions) was collected and is presented in the tree information matrix in Attachment B. Where orchard tree species exist on site and are not located in orchard rows (e.g., two large olive trees along North Orchard Avenue), they were mapped and evaluated as described above. In addition to the orchard trees mapped and quantified in this report, the site contains approximately 80 additional orchard trees that do not meet the size criteria identified in the City's Standard. These trees are not included in the totals presented herein.

The location of each orchard and non-orchard tree meeting the size criteria identified in the City's Standard was hand-mapped using engineering survey base data, which included mapping of the site's trees.[8] Individual tree locations were noted on field maps using unique tree identification numbers. Following field evaluation efforts, tree location data was entered into CAD and GIS formats to facilitate mapping and tree impact determination. Tree locations were then compared with digital (CAD) conceptual site plan mapping data to determine the extent of tree removals necessary for project implementation.

RESULTS

A total of 533 trees meeting the size criteria identified in the City's Standard (196 non-orchard trees and 337 orchard trees) were mapped on the project site, including 47 different species. Tree quantities are presented in Table 1 and tree size and attribute data is presented in Attachment B. Tree impacts were determined by evaluating surveyed tree locations relative to proposed project development areas. Seven (7) trees not subject to construction-related impacts were recommended for removal due to poor health and/or structural condition. Additionally, the project's landscape architect and the City identified 20 trees for removal based conflicts with maintenance criteria. Impact totals presented herein are based on the project's conceptual site plan as of the date of this report. The actual number of trees that are subject to impact may change if site plan modifications are made. Table 1 summarizes tree preservation and removal totals, by species. A total of 396 trees (95 non-orchard trees and 301 orchard trees) would require removal and 137 trees (101 non-orchard trees and 36 orchard trees) would be retained on site. It is anticipated that most trees retained on site would require some level of canopy or root pruning or may be subject to construction-related dripline encroachment. Recommendations to minimize impacts to retained trees are provided in Attachment C.

[8] Haddox Consulting Engineers, 2018

Table 1
Summary of Trees and Impacts – Eldredge Property/Farmstead Project Site

Species		Tree Quantity		
Botanical Name	Common Name	Total on Site	Remove	Retain
Individual Trees				
Acacia baileyana	Bailey acacia	1	1	0
Acer palmatum	Japanese maple	2	0	2
Acer saccharinum	Silver maple	2	0	2
Acer spp.	Maple	1	1	0
Aesculus californica	Buckeye	1	0	1
Albizia julibrissin	Silk tree	2	2	0
Alnus rhombifolia	White alder	1	1	0
Calocedrus decurrens	Incense cedar	3	2	1
Carya illinoinensis	Pecan	32	2	30
Casuarina cunninghamiana	River she-oak	1	1	0
Cedrus deodara	Deodar cedar	1	0	1
Cinnamomum camphora	Camphor tree	1	0	1
Citrus spp.	Citrus	5	2	3
Eriobotrya japonica	Loquat	1	0	1
Eucalyptus globulus	Bluegum	5	5	0
Eucalyptus rudis	Flooded gum	1	1	0
Eucalyptus sideroxylon	Red ironbark	1	1	0
Hesperocyparis arizonica	Arizona cypress	4	3	1
Juglans californica var. hindsii	California black walnut*	3	3	0
Juglans regia	English walnut	3	0	3
Juglans regia	English walnut (grafted)**	16	2	14
Juniperus virginiana	Eastern red cedar	1	1	0
Laurus nobilis	Laurel	5	3	2
Ligustrum japonicum	Japanese privet	3	3	0
Magnolia grandiflora	Southern magnolia	1	0	1
Metasequoia glyptostroboides	Dawn redwood	4	0	4
Olea europaea	Olive	3	1	2
Persea americana	Avocado	1	0	1
Pinus halepensis	Aleppo pine	14	14	0
Pinus strobus	White pine	1	1	0
Pistacia chinensis	Chinese pistache	1	1	0
Populus fremontii	Cottonwood	3	3	0
Prunus spp.	Fruit tree	7	7	0
Quercus acuta	Japanese evergreen oak	1	0	1
Quercus agrifolia	Coast live oak	4	3	1
Quercus ilex	Holly oak	3	0	3

Table 1
Summary of Trees and Impacts – Eldredge Property/Farmstead Project Site

Species		Tree Quantity		
Botanical Name	Common Name	Total on Site	Remove	Retain
Individual Trees				
Quercus lobata	Valley oak	28	13	15
Quercus rubra	Red oak	1	1	0
Robinia pseudoacacia	Black locust	2	0	2
Salix laevigata	Red willow	1	1	0
Schinus molle	California pepper	4	4	0
Sequoia sempervirens	Coast redwood	9	6	3
Triadica sebifera	Chinese tallow tree	5	1	4
Ulmus alata	Winged elm	1	0	1
Ulmus parvifolia	Chinese elm	1	1	0
Ulmus pumila	Siberian elm	1	0	1
Washingtonia robusta	Mexican fan palm	4	4	0
	Subtotal:	*196*	*95*	*101*
Orchard Trees				
Carya illinoinensis	Pecan	28	28	0
Eriobotrya japonica	Loquat	1	1	0
Olea europaea	Olive	147	142	5
Punica granatum	Pomegranate	1	0	1
Prunus spp.	Fruit tree	160	130	30
	Subtotal:	*337*	*301*	*36*
	Grand Total:	533	396	137

*The City tree ordinance covers only live trees
**Grafted English walnut trees are exempt from City tree removal permit requirements (Chapter 14.09.131.030(E))

RECOMMENDATIONS

The following management recommendations are provided to address tree removal and protection of retained trees on site:

- The conceptual project site plan requires removal of 95 trees, 92 of which would be subject to the City's tree removal permit requirements[9]. A proposal for tree replacement was not available at the time of this report preparation; however, the project applicant shall prepare and submit a tree replacement plan to the satisfaction of the Director (City

[9] Two grafted English walnut trees and one dead California black walnut tree would not be subject to the City's tree removal permit requirements.

Municipal Code Chapter 14.09.131.030(B)) prior to tree removal activities. Replacement trees should be planted on site and incorporated into the project's landscape plan. If replacement trees cannot be incorporated into the project's landscape plan, they should be planted at another off-site location at the City's direction.

- Replacement trees species shall be selected in coordination with the City and trees shall be planted to the standards identified in the City's Tree Removal Permit Application or those established by the ISA.

- Removal of 7 trees not subject to construction-related impacts is recommended due to poor health and/or structural condition. These trees are identified in the tree information matrix in Attachment B and include: Tree #4 (Arizona cypress), Tree #65 (Aleppo pine), Tree #114 (Bluegum), Tree #131 (California black walnut), Tree #146 (Incense cedar), Tree #169 (Valley oak), and Tree #194 (Grafted English walnut).

- Removal of 20 trees not subject to construction-related impacts is recommended by the project's landscape architect and the City due to conflicts with maintenance criteria. These trees are identified in the tree information matrix in Attachment B and include: Trees #3, 87, and 127 (Cottonwoods), Trees #78, 79, 80, and 81 (California peppers), Trees #103 and 104 (Palms), Trees #145, 156, 157, 158, and 167 (Fruit trees), Trees #152 and 153 (Privets), Tree #70 (Bluegum), Tree #123 (Red ironbark), Tree #83 (Silk tree), and Tree #106 (Bailey acacia).

- The retained large pecan trees lining the property's western boundary along North Orchard Avenue, as well as other large trees designated for retention on site, should be evaluated for risk by an ISA Certified Arborist. The risk evaluation should be no less than a Level 2 Risk Assessment, per ISA standards. Any management actions identified during this assessment should be performed during site preparation activities.

- Retained trees on site shall be protected from construction-related impacts pursuant to City Municipal Code Chapter 14.09.131.050, the standards outlined in the City's Residential Design Requirements, and the tree protection recommendations provided in Attachment C.

ARBORIST'S DISCLOSURE

This report provides conclusions and recommendations based only on a visual examination of the trees and surrounding site by an ISA Certified Arborist and reasonable reliance upon the

completeness and accuracy of the information provided to the arborist. The examination did not include subterranean or internal examination of the trees.

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near them. Although trees provide many benefits to those who live near them, they also include inherent risks from breakage or failure that can be minimized, but not eliminated.

Arborists cannot detect every condition that could possibly lead to the failure of a tree. Trees are living organisms subject to attack by disease, insects, fungi, weather, and other forces of nature, and conditions that lead to failure are often hidden within trees and below ground. There are some inherent risks with trees that cannot be predicted with any degree of certainty, even by a skilled and experienced arborist.

Arborists cannot predict acts of nature including, without limitation, storms of sufficient strength, which can cause even an apparently healthy tree to fail. Additionally, arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for any specific period of time. A tree's condition could change over a short or long period of time due to climatic, cultural or environmental conditions. Further, there is no guaranty or certainty that recommendations or efforts to correct unsafe conditions will prevent future breakage or failure of a tree.

To live or work near trees is to accept some degree of risk. Neither the author of this report nor Dudek have assumed any responsibility for, nor will either of them be liable for, any claims, losses or damages for damage to any tree, death or injury to any person, or any loss of or damage to any personal or real property.

Sincerely,

Scott Eckardt
ISA Certified Arborist #WE-5914A

Cc: Tony Craig, AJ Craig Development
Christine Kronenberg, Dudek

Att: Attachment A – Tree Location Exhibit
Attachment B – Tree Information Matrix
Attachment C – Tree Protection Measures

ATTACHMENT A

Tree Location Exhibit

Fruitvale Road

North Orchard Avenue

0 30 60 Feet

Tree Locations

- Individual Trees
- Orchard Tree - Loquat
- Orchard Tree - Pomegranate
- Orchard Tree - Olive
- Orchard Tree - Pecan
- Orchard Tree - Fruit Tree (Prunus spp.)

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SOURCE: Haddox Consulting Engineers 2018; Dudek 2018

Attachment A-1

Tree Locaton Exhibit

Arborist Report for the Eldredge Property/Farmstead Project Site

North Orchard Avenue

Eldridge Avenue

0 30 60 Feet

Tree Locations
- Individual Trees
- Orchard Tree - Loquat
- Orchard Tree - Pomegranate
- Orchard Tree - Olive
- Orchard Tree - Pecan
- Orchard Tree - Fruit Tree (Prunus spp.)

SOURCE: Haddox Consulting Engineers 2018; Dudek 2018

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Attachment A-2

Tree Locaton Exhibit

Arborist Report for the Eldredge Property/Farmstead Project Site

ATTACHMENT B

Tree Information Matrix

Tree Information Matrix and Impact Status

Tree Number	Scientific Name	Common Name	Quantity of Stems	Individual Trunk Diameters (in.)					Cumulative Diameter	Height (ft.)	Canopy Dripline Diameter (ft.)	Health Condition	Structural Condition	Regulated by City	Impact Status	Construction Impact/Removal Notes	General Notes
				1	2	3	4	5									
Individual Trees																	
1	*Hesperocyparis arizonica*	Arizona cypress	1	13					13	30	18	Good	Fair	Yes	Retain		Crowded from adjacent oak, power pole in drip line
2	*Quercus agrifolia*	Coast live oak	1	19					19	40	20	Fair to Good	Fair	Yes	Retain		Power line to north, directional pruning
3	*Populus fremontii*	Cottonwood	1	21					21	40	35	Fair	Fair to Poor	Yes	Remove	Maintenance issues	Power line to north, directional pruning
4	*Hesperocyparis arizonica*	Arizona cypress	5	14	8	6	6	7	41	35	20	Fair	Poor	Yes	Remove	Poor health/structure	Power line to north, directional pruning, dead limbs
5	*Casuarina cunninghamiana*	River she-oak	3	8	8	4			20	30	20	Fair to Good	Poor	Yes	Remove	Lot access	Topped, beneath power line
6	*Eucalyptus globulus*	Bluegum	5	10	8	6	6	8	38	30	18	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
7	*Hesperocyparis arizonica*	Arizona cypress	1	11					11	30	20	Fair to Good	Poor	Yes	Remove	Lot access	Topped, beneath power line
8	*Quercus agrifolia*	Coast live oak	3	18	18	11			47	40	40	Fair	Fair to Poor	Yes	Remove	Lot access	Topped, beneath power line
9	*Prunus spp.*	Fruit tree	2	8	3				11	20	15	Fair	Fair to Poor	Yes	Remove	Lot access	Beneath power line, non-orchard tree
10	*Quercus agrifolia*	Coast live oak	5	11	11	10	9	6	47	30	40	Fair	Fair to Poor	Yes	Remove	Lot access	Topped, beneath power line
11	*Eucalyptus rudis*	Flooded gum	1	15					15	35	20	Fair to Good	Fair to Poor	Yes	Remove	Lot access	Topped, beneath power line, lean
12	*Quercus lobata*	Valley oak	3	14	7	7			28	25	25	Fair to Good	Fair to Poor	Yes	Remove	Lot access	Topped, beneath power line
13	*Pinus halepensis*	Aleppo pine	1	16					16	45	20	Good	Fair	Yes	Remove	Lot access	Lean, directional prune
14	*Pinus halepensis*	Aleppo pine	1	16					16	45	25	Good	Fair to Poor	Yes	Remove	Lot access	Lean, directional prune
15	*Pinus halepensis*	Aleppo pine	1	20					20	50	30	Good	Fair to Poor	Yes	Remove	Lot access	Lean, directional prune
16	*Ligustrum japonicum*	Japanese privet	5	4	4	3	3	2	16	25	18	Fair to Good	Fair	Yes	Remove	Lot access	
17	*Pistacia chinensis*	Chinese pistache	3	10	7	5			22	20	18	Fair to Good	Fair to Poor	Yes	Remove	Lot access	Crowded by adjacent pine trees
18	*Pinus halepensis*	Aleppo pine	1	12					12	35	15	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
19	*Pinus halepensis*	Aleppo pine	1	15					15	40	20	Fair to Good	Fair to Poor	Yes	Remove	Lot access	Lean, directional prune
20	*Pinus halepensis*	Aleppo pine	1	16					16	40	20	Fair to Good	Fair	Yes	Remove	Lot access	Lean, directional prune
21	*Quercus lobata*	Valley oak	1	10					10	25	20	Fair to Good	Fair to Poor	Yes	Remove	Lot access	Topped, beneath power line
22	*Quercus lobata*	Valley oak	1	10					10	20	20	Good	Poor	Yes	Remove	Within access road	Topped, beneath power line
23	*Quercus agrifolia*	Coast live oak	1	10					10	18	20	Good	Poor	Yes	Remove	Access road/curb	Topped, beneath power line
24	*Albizia julibrissin*	Silk tree	2	6	6				12	20	25	Good	Fair to Poor	Yes	Remove	Access road/curb	Topped, beneath power line
25	*Pinus halepensis*	Aleppo pine	1	13					13	35	18	Good	Fair	Yes	Remove	Lot access	
26	*Pinus halepensis*	Aleppo pine	1	10					10	30	18	Fair	Fair	Yes	Remove	Lot access	
27	*Juglans californica var. hindsii*	California black walnut	3	7	5	3			15	15	18	Good	Fair	Yes	Remove	Lot access	Beneath power line
28	*Quercus lobata*	Valley oak	1	13					13	20	25	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
29	*Olea europaea*	Olive	3	6	5	5			16	20	15	Good	Fair	Yes	Remove	Lot access	Beneath power line
30	*Pinus halepensis*	Aleppo pine	1	15					15	35	20	Fair to Good	Fair	Yes	Remove	Lot access	Lean, directional prune
31	*Quercus lobata*	Valley oak	1	19					19	35	30	Fair to Good	Fair	Yes	Remove	Lot access	Directional prune
32	*Eucalyptus globulus*	Bluegum	1	13					13	25	18	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
33	*Pinus halepensis*	Aleppo pine	1	16					16	45	20	Fair to Good	Fair	Yes	Remove	Lot access	Directional prune
34	*Eucalyptus globulus*	Bluegum	5	22	8	10	12	6	58	35	35	Fair to Poor	Poor	Yes	Remove	Lot access	Topped, beneath power line
35	*Quercus lobata*	Valley oak	1	10					10	15	20	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
36	*Quercus rubra*	Red oak	1	10					10	35	15	Fair to Good	Fair to Good	Yes	Remove	Lot access	
37	*Quercus lobata*	Valley oak	2	8	6				14	18	20	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
38	*Hesperocyparis arizonica*	Arizona cypress	2	16	7				23	35	25	Fair	Fair to Poor	Yes	Remove	Lot access	Directional prune
39	*Quercus lobata*	Valley oak	2	8	6				14	25	18	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
40	*Quercus lobata*	Valley oak	2	7	5				12	20	18	Fair	Fair to Poor	Yes	Remove	Lot access	Suppressed
41	*Pinus halepensis*	Aleppo pine	1	20					20	40	25	Good	Fair	Yes	Remove	Lot access	Directional prune
42	*Quercus lobata*	Valley oak	1	11					11	25	18	Fair	Poor	Yes	Remove	Lot access	Topped, beneath power line
43	*Carya illinoinensis*	Pecan	3	6	4	3			13	20	12	Good	Fair	Yes	Retain		
44	*Washingtonia robusta*	Mexican fan palm	2	20	14				34	8	15	Good	Good	Yes	Remove	Lot interior	
45	*Carya illinoinensis*	Pecan	1	40					40	60	45	Fair to Good	Fair to Good	Yes	Retain		Tag 4573, small cavities in main limbs
46	*Carya illinoinensis*	Pecan	1	40					40	65	45	Fair to Good	Fair to Good	Yes	Retain		Tag 4572, scaffold limbs pruned, small cavities in limbs, canopy dominant to west side, broken limbs
47	*Carya illinoinensis*	Pecan	1	42					42	55	35	Fair	Fair	Yes	Retain		Tag 4571, diameter measured at 3' due to split main stems, decay cavity in south limb
48	*Carya illinoinensis*	Pecan	1	38					38	70	40	Good	Good	Yes	Retain		Tag 4570, old limb break
49	*Carya illinoinensis*	Pecan	1	64					64	70	50	Fair to Good	Fair to Good	Yes	Retain		Tag 4569, old limb break, large spreading crown, epicormic sprouting
50	*Olea europaea*	Olive	2	17	12				29	25	20	Fair to Good	Fair	Yes	Retain		Cavities in limbs
51	*Olea europaea*	Olive	2	10	9				19	22	18	Fair	Fair	Yes	Retain		Broken limb, cavities
52	*Carya illinoinensis*	Pecan	1	48					48	75	45	Fair to Good	Fair	Yes	Retain		Tag 4566, large basal cavity on west side, cavities in main limbs
53	*Carya illinoinensis*	Pecan	1	43					43	55	50	Fair to Good	Fair	Yes	Retain		Tag 4565, small cavities in limbs
54	*Carya illinoinensis*	Pecan	1	35					35	55	45	Fair to Good	Fair	Yes	Retain		Tag 4564, cavities in limbs, canopy lopsided to south
55	*Carya illinoinensis*	Pecan	1	38					38	45	40	Fair to Good	Fair to Poor	Yes	Retain		Tag 4563, heavy lean to south away from adjacent tree, lopsided canopy to south
56	*Carya illinoinensis*	Pecan	1	52					52	75	55	Fair to Good	Fair to Good	Yes	Retain		Tag 4563, small cavity in limbs
57	*Carya illinoinensis*	Pecan	1	47					47	55	45	Fair to Good	Fair	Yes	Retain	Near sidewalk/path	Tag 4561, canopy lean to south away from adjacent tree, minor cavities in canopy
58	*Carya illinoinensis*	Pecan	1	52					52	70	45	Fair	Fair	Yes	Remove	Within access road	Tag 4560, basal cavity on south side, small cavities in canopy branches
59	*Carya illinoinensis*	Pecan	1	43					43	65	50	Fair	Fair	Yes	Retain	Near sidewalk/path	Tag 4559, old broken main limb and cavity on southeast side of trunk at 20'
60	*Carya illinoinensis*	Pecan	1	39					39	65	40	Fair to Good	Fair to Good	Yes	Retain		Tag 4558, minor limb breakage, small limb cavities
61	*Carya illinoinensis*	Pecan	1	44					44	65	55	Fair to Good	Fair	Yes	Retain		Tag 4557, basal cavity on south side, old broken limbs in canopy
62	*Carya illinoinensis*	Pecan	1	38					38	50	35	Fair	Fair	Yes	Retain		Tag 4556, cavity in old limb cut on south side of tree at 8', supprressed from adjacent tree and canopy lopsided to southwest side
63	*Carya illinoinensis*	Pecan	1	41					41	45	50	Fair	Fair	Yes	Retain		Tag 4555, old limb breakage observed in canopy, cavity in old limb on east side at 20'
64	*Carya illinoinensis*	Pecan	1	58					58	80	55	Fair	Fair	Yes	Retain		Tag 4554, old limb cut on northeast side with cavity at 20', canopy lopsided to south
65	*Pinus halepensis*	Aleppo pine	5	12	14	10	10	8	54	25	20	Fair	Poor	Yes	Remove	Poor health/structure	Multi-stem tree, suppressed, lean , pruned away from adjacent roadway
66	*Quercus lobata*	Valley oak	1	13					13	25	18	Fair to Good	Fair to Poor	Yes	Retain		Tag 4552, lean to north
67	*Carya illinoinensis*	Pecan	1	35					35	55	55	Fair to Good	Fair	Yes	Retain	Near sidewalk/path	Tag 4550
68	*Quercus ilex*	Holly oak	1	12					12	25	15	Good	Fair to Good	Yes	Retain	Near sidewalk/path	
69	*Carya illinoinensis*	Pecan	3	6	5	4			15	12	15	Good	Good	Yes	Remove	Within access road	
70	*Eucalyptus globulus*	Bluegum	1	17					17	25	18	Fair to Good	Fair to Poor	Yes	Remove	Maintenance issues	
71	*Citrus spp.*	Citrus	4	4	3	2	2		11	10	10	Good	Good	Yes	Remove	Within access road	
72	*Citrus spp.*	Citrus	3	4	3	3			10	15	15	Good	Fair to Good	Yes	Remove	Within access road	
73	*Pinus strobus*	White pine	1	10					10	18	12	Good	Good	Yes	Remove	Lot interior	
74	*Alnus rhombifolia*	White alder	4	6	4	4	3		17	15	12	Good	Good	Yes	Remove	Lot access	
75	*Salix laevigata*	Red willow	3	14	12	10			36	25	30	Fair to Good	Fair	Yes	Remove	Lot access	
76	*Pinus halepensis*	Aleppo pine	1	15					15	30	18	Fair to Good	Fair	Yes	Remove	Lot access	
77	*Pinus halepensis*	Aleppo pine	1	17					17	30	20	Fair to Good	Fair	Yes	Remove	Lot access	
78	*Schinus molle*	California pepper	1	22					22	30	30	Good	Fair	Yes	Remove	Maintenance issues	
79	*Schinus molle*	California pepper	1	15					15	35	25	Good	Fair to Good	Yes	Remove	Maintenance issues	
80	*Schinus molle*	California pepper	1	13					13	30	25	Fair to Good	Fair	Yes	Remove	Maintenance issues	

Tree Information Matrix and Impact Status

Tree Number	Scientific Name	Common Name	Quantity of Stems	Individual Trunk Diameters (in.)					Cumulative Diameter	Height (ft.)	Canopy Dripline Diameter (ft.)	Health Condition	Structural Condition	Regulated by City	Impact Status	Construction Impact/Removal Notes	General Notes
				1	2	3	4	5									
81	*Schinus molle*	California pepper	2	16	15				31	20	25	Fair to Good	Fair	Yes	Remove	Maintenance issues	
82	*Laurus nobilis*	Laurel	4	3	3	3	2		11	18	10	Good	Fair	Yes	Remove	Within access road	
83	*Albizia julibrissin*	Silk tree	1	32					32	35	45	Fair	Fair	Yes	Remove	Maintenance issues	Deadwood in canopy, broken limbs
84	*Washingtonia robusta*	Mexican fan palm	1	14					14	6	10	Good	Good	Yes	Remove	Within access road	
85	*Sequoia sempervirens*	Coast redwood	1	28					28	50	20	Good	Good	Yes	Remove	Within access road	
86	*Juglans californica var. hindsii*	California black walnut	2	26	22				48	30	35	Fair to Good	Fair	Yes	Remove	Lot interior	
87	*Populus fremontii*	Cottonwood	1	34					34	40	50	Fair to Good	Fair	Yes	Remove	Maintenance issues	Located along fenceline
88	*Sequoia sempervirens*	Coast redwood	1	11					11	25	15	Good	Good	Yes	Remove	Lot interior	
89	*Sequoia sempervirens*	Coast redwood	1	17					17	30	18	Good	Fair	Yes	Remove	Lot interior	Multi-stem, trunk splits at 5', diameter measured at 3.5'
90	*Sequoia sempervirens*	Coast redwood	1	14					14	35	18	Good	Good	Yes	Remove	Lot interior	
91	*Acer spp.*	Maple	3	6	6	4			16	25	15	Fair to Good	Fair	Yes	Remove	Within access road	
92	*Laurus nobilis*	Laurel	4	8	6	5	4		23	25	16	Good	Fair	Yes	Remove	Within access road	
93	*Laurus nobilis*	Laurel	5	5	5	5	4	3	22	20	15	Good	Fair	Yes	Remove	Within access road	
94	*Prunus spp.*	Fruit tree	4	4	4	3	3		14	20	18	Fair	Fair	Yes	Remove	Within access road	
95	*Sequoia sempervirens*	Coast redwood	1	34					34	70	25	Good	Good	Yes	Remove	Lot interior	
96	*Sequoia sempervirens*	Coast redwood	1	28					28	65	20	Good	Good	Yes	Remove	Lot interior	
97	*Metasequoia glyptostroboides*	Dawn redwood	1	11					11	30	12	Good	Good	Yes	Retain		
98	*Ulmus parvifolia*	Chinese elm	2	8	5				13	22	22	Fair to Good	Fair to Poor	Yes	Remove	Lot interior	Small trunk laying on ground
99	*Acer palmatum*	Japanese maple	2	9	2				11	12	18	Good	Fair to Good	Yes	Retain		
100	*Acer saccharinum*	Silver maple	3	10	8	5			23	25	18	Fair to Good	Fair to Good	Yes	Retain		
101	*Carya illinoinensis*	Pecan	3	6	6	4			16	18	15	Good	Fair to Good	Yes	Retain		
102	*Citrus spp.*	Citrus	4	5	3	3	3		14	15	16	Good	Fair to Good	Yes	Retain		
103	*Washingtonia robusta*	Mexican fan palm	1	18					18	16	8	Good	Good	Yes	Remove	Maintenance issues	
104	*Washingtonia robusta*	Mexican fan palm	1	10					10	6	6	Good	Good	Yes	Remove	Maintenance issues	
105	*Laurus nobilis*	Laurel	3	6	5	4			15	25	18	Good	Fair	Yes	Retain		
106	*Acacia baileyana*	Bailey acacia	1	14					14	25	20	Fair	Fair	Yes	Remove	Maintenance issues	
107	*Acer palmatum*	Japanese maple	2	8	7				15	18	18	Fair	Fair	Yes	Retain		
108	*Triadica sebifera*	Chinese tallow tree	1	16					16	25	25	Fair to Good	Fair	Yes	Retain		
109	*Triadica sebifera*	Chinese tallow tree	1	17					17	35	18	Fair to Good	Fair to Good	Yes	Retain		
110	*Juglans regia*	English walnut	1	20					20	25	25	Fair to Poor	Fair to Poor	Yes	Retain		Deadwood and broken limbs in canopy
111	*Triadica sebifera*	Chinese tallow tree	1	10					10	30	14	Fair to Good	Fair to Good	Yes	Retain		
112	*Triadica sebifera*	Chinese tallow tree	1	10					10	30	16	Fair to Good	Fair to Good	Yes	Retain		
113	*Aesculus californica*	Buckeye	3	6	4	4			14	16	16	Good	Fair	Yes	Retain		
114	*Eucalyptus globulus*	Bluegum	3	16	16	14			46	25	50	Fair to Poor	Poor	Yes	Remove	Poor health/structure	Fallen over tree, stems growing from downed trunk
115	*Eriobotrya japonica*	Loquat	3	6	5	3			14	22	16	Good	Fair	Yes	Retain		
116	*Juglans regia*	English walnut	1	20					20	35	30	Fair to Poor	Fair	Yes	Retain		Deadwood and canopy dieback
117	*Juglans regia*	English walnut (grafted)	3	13	13	12			38	30	35	Good	Fair to Good	No	Remove	Within access road	Grafted
118	*Calocedrus decurrens*	Incense cedar	1	24					24	35	35	Good	Fair	Yes	Remove	Within sidewalk/path	
119	*Juglans regia*	English walnut (grafted)	1	20					20	25	25	Good	Good	No	Retain		Grafted
120	*Quercus lobata*	Valley oak	2	9	6				15	25	20	Good	Fair	Yes	Remove	Lot interior	
121	*Quercus lobata*	Valley oak	1	12					12	30	20	Good	Fair to Good	Yes	Remove	Lot interior	
122	*Juniperus virginiana*	Eastern red cedar	1	17					17	30	20	Good	Good	Yes	Remove	Within access road	
123	*Eucalyptus sideroxylon*	Red ironbark	2	18	11				29	25	35	Good	Fair to Good	Yes	Remove	Maintenance issues	
124	*Ulmus pumila*	Siberian elm	5	6	6	4	4	4	24	20	20	Good	Good	Yes	Retain		
125	*Citrus spp.*	Citrus	5	5	4	4	4	4	21	15	15	Good	Fair	Yes	Retain		
126	*Juglans regia*	English walnut (grafted)	2	15	12				27	30	30	Fair to Good	Fair to Good	No	Retain		Grafted
127	*Populus fremontii*	Cottonwood	1	30					30	50	40	Good	Fair to Good	Yes	Remove	Maintenance issues	
128	*Laurus nobilis*	Laurel	1	10					10	20	20	Good	Fair to Good	Yes	Retain		
129	*Cedrus deodara*	Deodar cedar	1	32					32	65	45	Good	Fair to Good	Yes	Retain		
130	*Sequoia sempervirens*	Coast redwood	1	41					41	75	40	Good	Good	Yes	Retain		
131	*Juglans californica var. hindsii*	California black walnut	1	16					16	20	15	Dead	Dead	Yes	Remove	Poor health/structure	
132	*Magnolia grandiflora*	Southern magnolia	1	36					36	60	45	Good	Fair to Good	Yes	Retain		
133	*Acer saccharinum*	Silver maple	2	12	10				22	30	20	Fair to Good	Fair	Yes	Retain		
134	*Robinia pseudoacacia*	Black locust	1	23					23	30	30	Good	Fair to Good	Yes	Retain		
135	*Robinia pseudoacacia*	Black locust	1	20					20	35	30	Good	Fair to Good	Yes	Retain		
136	*Sequoia sempervirens*	Coast redwood	1	20					20	75	25	Good	Good	Yes	Retain		
137	*Sequoia sempervirens*	Coast redwood	1	32					32	75	30	Good	Good	Yes	Retain		
138	*Persea americana*	Avocado	2	16	14				30	45	30	Fair	Fair	Yes	Retain		
139	*Cinnamomum camphora*	Camphor tree	1	17					17	30	25	Fair	Fair	Yes	Retain		
140	*Calocedrus decurrens*	Incense cedar	2	26	20				46	45	20	Good	Fair	Yes	Retain		
141	*Ulmus alata*	Winged elm	2	10	8				18	35	25	Good	Good	Yes	Retain		
142	*Metasequoia glyptostroboides*	Dawn redwood	1	17					17	45	25	Good	Good	Yes	Retain		
143	*Metasequoia glyptostroboides*	Dawn redwood	1	10					10	35	18	Good	Good	Yes	Retain		
144	*Metasequoia glyptostroboides*	Dawn redwood	2	28	26				54	50	25	Good	Fair	Yes	Retain		
145	*Prunus spp.*	Fruit tree	3	8	6	5			19	25	18	Fair to Good	Fair	Yes	Remove	Maintenance issues	Non-orchard tree
146	*Calocedrus decurrens*	Incense cedar	1	32					32	50	30	Poor	Poor	Yes	Remove	Poor health/structure	Forked stem, both tops dead
147	*Carya illinoinensis*	Pecan	4	6	4	4	3		17	25	10	Good	Fair	Yes	Retain		Located along fenceline
148	*Carya illinoinensis*	Pecan	3	5	4	4			13	25	15	Good	Fair	Yes	Retain		Located along fenceline
149	*Carya illinoinensis*	Pecan	2	6	4				10	25	15	Good	Fair	Yes	Retain		Located along fenceline
150	*Carya illinoinensis*	Pecan	4	5	4	2	2		13	25	15	Fair	Fair	Yes	Retain		Located along fenceline
151	*Carya illinoinensis*	Pecan	2	7	5				12	25	15	Fair to Good	Fair to Good	Yes	Retain		Located along fenceline
152	*Ligustrum japonicum*	Japanese privet	3	6	5	5			16	25	10	Fair to Good	Fair	Yes	Remove	Maintenance issues	Located along fenceline
153	*Ligustrum japonicum*	Japanese privet	2	7	4				11	30	10	Fair to Good	Fair	Yes	Remove	Maintenance issues	Located along fenceline
154	*Carya illinoinensis*	Pecan	2	9	4				13	30	10	Fair to Good	Fair	Yes	Retain		Located along fenceline
155	*Quercus lobata*	Valley oak	1	32					32	60	55	Good	Fair to Good	Yes	Retain		Located along fenceline
156	*Prunus spp.*	Fruit tree	2	11	11				22	25	25	Fair to Good	Fair	Yes	Remove	Maintenance issues	Located along fenceline
157	*Prunus spp.*	Fruit tree	2	10	9				19	25	20	Fair to Good	Fair	Yes	Remove	Maintenance issues	Located along fenceline
158	*Prunus spp.*	Fruit tree	1	10					10	25	25	Fair to Good	Fair	Yes	Remove	Maintenance issues	Located along fenceline
159	*Carya illinoinensis*	Pecan	3	10	8	8			26	40	15	Good	Good	Yes	Retain		Located along fenceline
160	*Quercus lobata*	Valley oak	3	7	7	6			20	30	15	Fair to Good	Fair to Poor	Yes	Retain		Located along fenceline
161	*Carya illinoinensis*	Pecan	2	8	7				15	30	15	Good	Fair to Good	Yes	Retain		Located along fenceline

Tree Information Matrix and Impact Status

Tree Number	Scientific Name	Common Name	Quantity of Stems	Individual Trunk Diameters (in.)					Cumulative Diameter	Height (ft.)	Canopy Dripline Diameter (ft.)	Health Condition	Structural Condition	Regulated by City	Impact Status	Construction Impact/Removal Notes	General Notes
				1	2	3	4	5									
162	*Quercus lobata*	Valley oak	1	11					11	40	15	Fair to Good	Fair to Good	Yes	Retain		Located along fenceline
163	*Quercus lobata*	Valley oak	2	7	4				11	35	10	Fair to Good	Fair	Yes	Retain		Located along fenceline
164	*Carya illinoinensis*	Pecan	2	8	7				15	40	18	Good	Good	Yes	Retain		Located along fenceline
165	*Quercus lobata*	Valley oak	2	12	10				22	40	20	Fair to Good	Fair to Good	Yes	Retain		Located along fenceline
166	*Quercus lobata*	Valley oak	2	13	11				24	45	22	Good	Fair	Yes	Retain		Located along fenceline
167	*Prunus spp.*	Fruit tree	2	8	6				14	25	15	Good	Fair to Good	Yes	Remove	Maintenance issues	Located along fenceline
168	*Quercus acuta*	Japanese evergreen oak	2	6	5				11	25	10	Good	Fair to Good	Yes	Retain		Located along fenceline
169	*Quercus lobata*	Valley oak	1	12					12	35	15	Fair	Poor	Yes	Remove	Poor health/structure	Located along fenceline
170	*Quercus lobata*	Valley oak	2	8	7				15	35	18	Good	Fair	Yes	Retain		Located along fenceline
171	*Quercus lobata*	Valley oak	2	7	6				13	30	15	Fair to Good	Fair	Yes	Retain		Located along fenceline
172	*Quercus lobata*	Valley oak	4	10	7	6	6		29	40	20	Good	Fair	Yes	Retain		Located along fenceline
173	*Quercus lobata*	Valley oak	2	13	13				26	50	25	Good	Fair	Yes	Retain		Located along fenceline
174	*Juglans regia*	English walnut	3	12	12	7			31	25	25	Fair to Good	Fair	Yes	Retain		Non-grafted, located along fenceline
175	*Quercus lobata*	Valley oak	3	10	9	4			23	30	15	Good	Fair	Yes	Retain		Located along fenceline
176	*Quercus lobata*	Valley oak	1	10					10	30	15	Good	Fair	Yes	Retain		Located along fenceline
177	*Quercus lobata*	Valley oak	1	10					10	40	18	Good	Good	Yes	Retain		Located along fenceline
178	*Carya illinoinensis*	Pecan	2	6	4				10	30	15	Good	Fair	Yes	Retain		Located along fenceline
179	*Quercus ilex*	Holly oak	2	10	7				17	30	22	Good	Good	Yes	Retain		Located along fenceline
180	*Quercus ilex*	Holly oak	4	12	12	6	6		36	35	25	Good	Fair	Yes	Retain		Located along fenceline
181	*Quercus lobata*	Valley oak	1	17					17	40	30	Fair to Good	Fair	Yes	Retain		Located along fenceline
182	*Citrus spp.*	Citrus	5	5	5	4	4	3	21	16	18	Fair	Fair	Yes	Retain		
183	*Juglans regia*	English walnut (grafted)	2	22	8				30	30	40	Fair to Poor	Fair	No	Retain		Grafted
184	*Juglans regia*	English walnut (grafted)	3	17	12	10			39	30	40	Fair to Good	Fair	No	Retain		Grafted
185	*Juglans regia*	English walnut (grafted)	2	18	10				28	25	40	Fair to Good	Fair	No	Retain		Grafted
186	*Juglans regia*	English walnut (grafted)	1	32					32	25	45	Fair to Good	Fair	No	Retain		Grafted
187	*Juglans regia*	English walnut (grafted)	2	22	15				37	25	35	Fair to Poor	Fair	No	Retain		Grafted
188	*Juglans regia*	English walnut (grafted)	1	18					18	30	45	Fair to Good	Fair	No	Retain		Grafted
189	*Juglans regia*	English walnut (grafted)	4	14	12	10	8		44	25	30	Fair to Poor	Fair	No	Retain		Grafted
190	*Juglans regia*	English walnut (grafted)	3	18	14	10			42	30	40	Fair to Good	Fair	No	Retain		Grafted
191	*Juglans regia*	English walnut (grafted)	2	14	10				24	30	40	Fair to Good	Fair	No	Retain		Grafted
192	*Juglans regia*	English walnut (grafted)	2	17	12				29	30	40	Fair to Good	Fair	No	Retain		Grafted
193	*Juglans regia*	English walnut (grafted)	3	14	12	12			38	30	40	Fair to Good	Fair	No	Retain		Grafted
194	*Juglans regia*	English walnut (grafted)	2	18	10				28	30	35	Poor	Fair	No	Remove	Poor health/structure	Grafted
195	*Juglans regia*	English walnut (grafted)	1	28					28	30	50	Fair to Good	Fair	No	Retain		Grafted
196	*Triadica sebifera*	Chinese tallow tree	3	9	8	8			25	30	20	Fair to Good	Fair	Yes	Remove	Within access road	
Orchard Trees																	
-	*Olea europaea*	Olive	Multi-stemmed trees, 3-6 stems typical, individual stem diameters range from 3-8 inches, tree heights 15-20 feet, canopy diameters 15-20 feet, good overall health														
-	*Carya illinoinensis*	Pecan	Multi-stemmed trees, 4-6 stems typical, individual stem diameters range from 2-6 inches, tree heights 15 feet, canopy diameters 10-15 feet, good overall health														
-	*Prunus spp.*	Fruit tree	Multi-stemmed trees, 3-6 stems typical, individual stem diameters range from 2-6 inches, tree heights 10-12 feet, canopy diameters 8-10 feet, good overall health														
-	*Punica granatum*	Pomegranate	5	6	6	5	5	3	25	15	15	Good	Good to Fair	No	Retain		
-	*Eriobotrya japonica*	Loquat	4	5	5	4	4		18	15	10	Good	Good to Fair	No	Remove		

ATTACHMENT C

Tree Protection Recommendations

Attachment C
Tree Protection Recommendations

Tree Protection Measures Prior to Construction

Prior to any grading activity, retained trees with canopies that fall within 30 feet of construction activity shall be protected by fencing and signage. All contractors shall be made aware of the tree protection measures. A project arborist shall be assigned to monitor tree health and construction activity near retained trees on site. The project arborist shall be an International Society of Arboriculture (ISA) Certified Arborist or Registered Consulting Arborist.

Inspection: Any large tree proposed for preservation on site should be thoroughly inspected for internal or subterranean decay by an ISA Certified Arborist or Registered Consulting Arborist prior to construction activity to determine if retention/protection on site is a viable management option. A Level 2 Risk Assessment is recommended for all large retained trees on site.

Site Preparation: Tree removal, pruning, and inspection should be conducted during site preparation activities. Where permitted by the City, tree removal and pruning activity should be conducted according to industry standards (ANSI A300).

Fencing and Signage: A 4-foot high, orange web fence with tree protection signs shall be erected around all trees (or tree groups) to be retained. The protective fence shall be installed around the tree's dripline. This will delineate the tree protection zone and prevent unwanted activity in and around the trees in order to reduce soil compaction in the root zones of the trees and other damage from heavy equipment. Fences are to be mounted on stakes at no more than 10-foot spacing. In areas where fencing is located on paving or concrete that will not be demolished, then the stakes may be supported by an appropriate grade level concrete base. Tree protection signs should be attached to every fourth post. The contractor shall maintain the fence to keep it upright, taut, and aligned at all times. Fencing shall be removed only after all construction activities are complete.

Pre-Construction Meeting: A pre-construction meeting shall be held between all contractors (including grading, tree removal/pruning, builders, etc.) and the project arborist. The project arborist will instruct the contractors on tree protection practices and answer any questions. All equipment operators and spotters, assistants, or those directing operators from the ground, shall provide written acknowledgement of their receiving tree protection training. This training shall include information on the location and marking of retained trees, the necessity of preventing damage, and the discussion of work practices that will accomplish such.

Protection and Maintenance during Construction

Once construction activities have begun the following measures shall be adhered to:

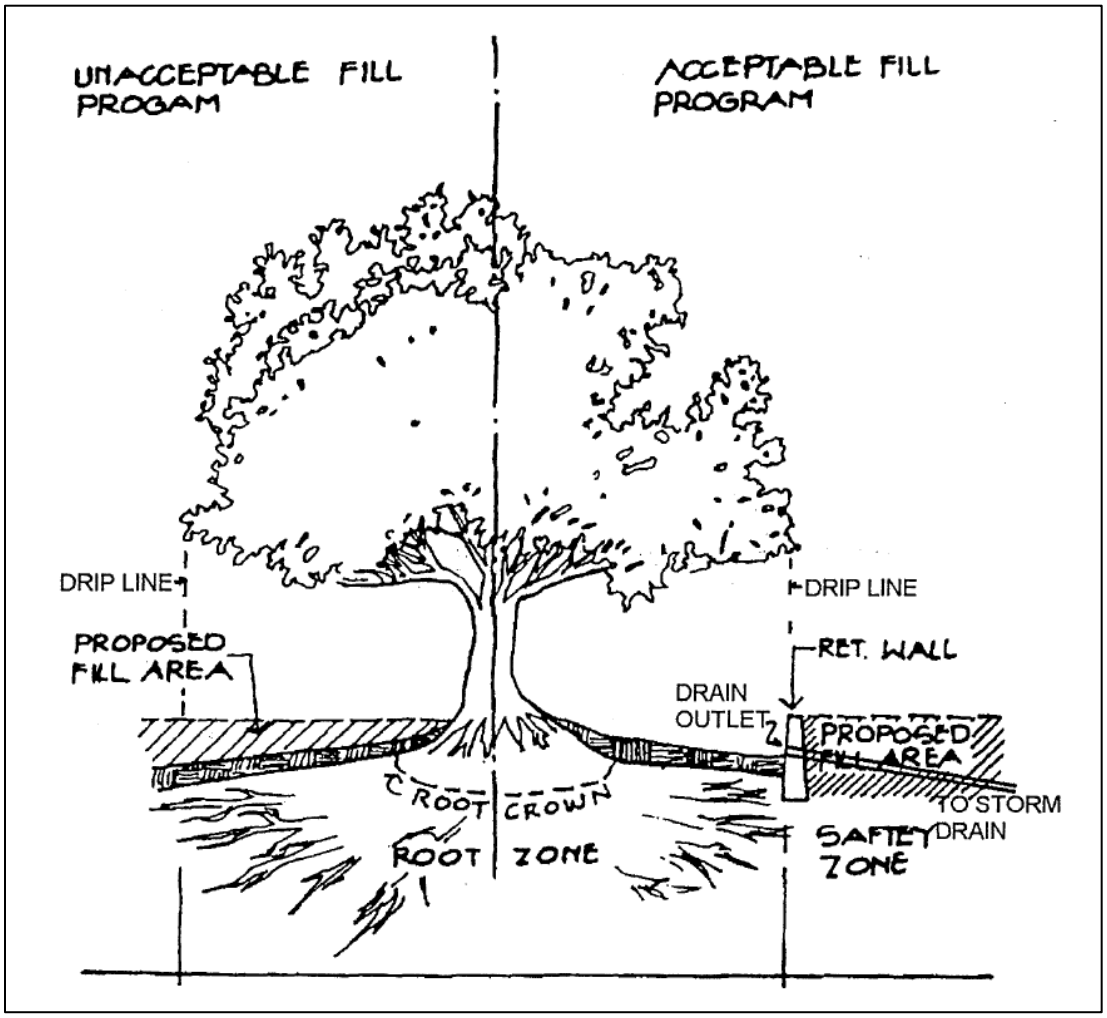
Avoidance: Signs, ropes, cables, or any other items shall not be attached to any retained tree.

Equipment Operation and Storage: Operating heavy machinery around the root zones of trees will increase soil compaction, which decreases soil aeration and subsequently reduces water penetration in the soil. All heavy equipment and vehicles shall stay out of the fenced tree protection zone, unless where specifically approved in writing by the project arborist.

Storage and Disposal: Do not store or discard any supply or material, including paint, lumber, concrete overflow, etc. within the fenced tree protection zone or within 10 feet of any tree. Remove all foreign debris within the fenced tree protection zone; it is important to leave the duff, mulch,

chips, and leaves around the retained trees for water retention and nutrients. Avoid draining or leakage of equipment fluids near retained trees. Fluids such as: gasoline, diesel, oils, hydraulics, brake and transmission fluids, paint, paint thinners, and glycol (anti-freeze) should be disposed of properly. Keep equipment parked outside of the fenced tree protection zone of retained trees to avoid the possibility of leakage of equipment fluids into the soil. The effect of toxic equipment fluids on the retained trees could lead to decline and death.

Grade Changes: Grade changes are not recommended within the dripline of retained trees. No grade changes (cut, fill, compact) shall occur within 4 feet (measured horizontally) of the base of any retained tree. Lowering the grade within a tree's dripline will necessitate cutting main support and feeder roots, jeopardizing the health and structural integrity of the tree(s). Adding soil, even temporarily, on top of the existing grade will compact the soil further, and decrease both water and air availability to the trees' roots. The following figure recommended grading activities near retained trees. A drainage outlet shall be provided, if necessary, to allow for appropriate surface drainage within the tree's dripline.



Source: City of Vacaville Residential Design Requirements for New Single Family Development, 1996

Moving Construction Materials: Care shall be taken when moving equipment or supplies near the

trees, especially overhead. Avoid damaging the tree(s) when transporting or moving construction materials and working around retained trees (even outside of the fenced tree protection zone). Above ground tree parts that could be damaged (e.g., low limbs, trunks) should be flagged with red flagging. If contact with the tree crown is unavoidable, prune the conflicting branch(es) using ISA or ANSI A300 standards.

Trenching: All trenching shall be outside of the fenced tree protection zone. Roots primarily extend in a horizontal direction forming a support base to the tree similar to the base of a wineglass. Where trenching is necessary in areas that contain tree roots, prune the roots using a root pruner. All cuts should be clean and sharp, to minimize ripping, tearing, and fracturing of the root system. The trench should be made no deeper than necessary.

Irrigation: Trees that have been substantially root pruned (30% or more of their root zone) will require irrigation for the first twelve months. The first irrigation should be within 48 hours of root pruning. They should be deep watered every two to four weeks during the summer and once a month during the winter (adjust accordingly with rainfall). One irrigation cycle should thoroughly soak the root zones of the trees to a depth of 3 feet. The soil should dry out between watering; avoid keeping a consistently wet soil. Designate one person to be responsible for irrigating (deep watering) the trees. Check soil moisture with a soil probe before irrigating. Irrigation is best accomplished by installing a temporary above ground micro-spray system that will distribute water slowly (to avoid runoff) and evenly throughout the fenced tree protection zone ***but never soaking the area located within 6- feet of the tree trunk, especially during warmer months***. For trees not subject to root pruning activity, the amount of irrigation provided shall not be changed from that which was provided prior to the commencement of construction activity.

Canopy Pruning: All pruning shall be completed under the direction of an ISA Certified Arborist and following ISA or ANSI A300 standards. Only conflicting limbs, broken limbs and dead wood shall be removed from tree canopies.

Washing: Periodic washing of the foliage is recommended during construction but no more than once every two weeks. Washing should include the upper and lower leaf surfaces and the tree bark. This should continue beyond the construction period at a less frequent rate with a high-powered hose only in the early morning hours. Washing will help control dirt/dust buildup that can lead to mite and insect infestations.

Maintenance after Construction

Once construction is complete the tree protection fencing may be removed and the following measures performed to sustain and enhance the vigor of the retained trees.

Mulch: Provide a 4-inch mulch layer under the canopy of trees. Mulch should include clean, organic mulch that will provide long-term soil conditioning, soil moisture retention, and soil temperature control.

Pruning: Pruning should *only* be done to maintain clearance and remove broken, dead or diseased branches. Pruning shall only take place following a recommendation by an ISA Certified Arborist and performed under the supervision of an ISA Certified Arborist. No more than 15% of the canopy shall be removed at any one time. All pruning shall conform to ISA or ANSI A300 standards.

Attachment C
Tree Protection Recommendations

Watering: Retained trees on site shall be watered as they were prior to the commencement of construction activity. Supplemental irrigation may be necessary for twelve months following substantial root pruning.

Watering Adjacent Plant Material: All plants near the trees shall be compatible with water requirements of said trees. Watering regime included in the site's landscape plan shall be developed with consideration for the water needs of retained trees.

Spraying: If the trees are maintained in a healthy state, regular spraying for insect or disease control should not be necessary. If a problem does develop, an ISA Certified Arborist should be consulted; the trees may require application of insecticides to prevent the intrusion of bark-boring beetles and other invading pests. All chemical spraying should be performed by a licensed applicator under the direction of a licensed pest control advisor.