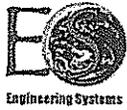


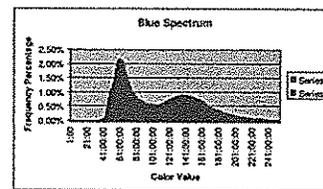
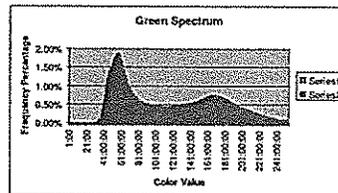
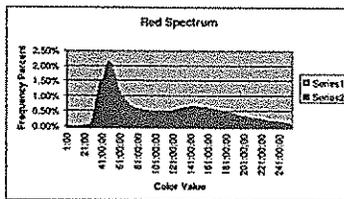
**(j) OAK TREE PRESERVATION INCLUDING SYCAMORE AREA
INVENTORY BASELINE MATERIAL IN EIR/CONCERN WITH
CONCRETE LINED DITCHES IMPACTING RIPARIAN VEGETATION.**

**ATTACHMENT 1
CITY OF SANTA CLARITA CALIFORNIA LIVE
OAK INVENTORY
(Los Angeles
County)**



Inventory of California Live Oak in the City of Santa Clarita Using LAR-IAC High Resolution Near Infrared and Color Photography: A Programmed Approach

The City of Santa Clarita contracted with Nag Inc. to utilize LAR-IAC four-inch resolution Near Infrared and Color digital ortho photography to inventory California Live Oak trees within their jurisdiction. This species is protected under the City's Oak Tree Ordinance formulated along the guidelines provided by a similar ordinance of the County of Los Angeles. Development of any property within the City jurisdiction requires mitigation measures to compensate for any oak tree that may be impacted, an expensive operation, since the cost of mitigation for a heritage oak may exceed \$100,000.



A pilot area was defined comprising four tiles in an area with an abundance of oak trees towards the southeastern portion of the jurisdiction for the development of a prototype application.

The pilot area was field surveyed with the assistance of City GIS staff and an Arborist of the Parks and Recreation Department. Oak trees were identified at site and delineated on a printout of a single tile. Back at the ES GIS facility, polygons were created to envelop the corresponding tree canopies observed on the geo-referenced photography.

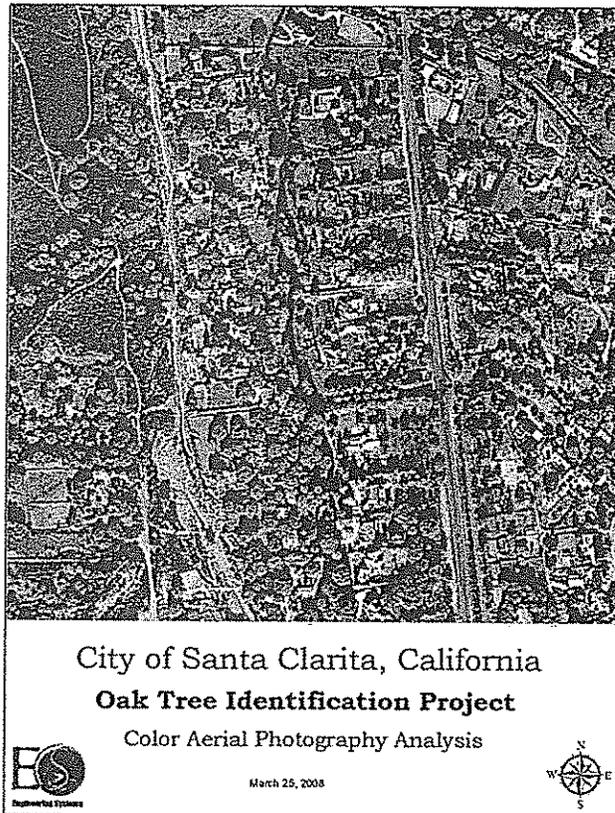
Engineering Systems developed an application in the Microsoft Visual C++ .NET environment to scan four-inch resolution raster images of near-infrared and color aerial photography that the City licenses from LAR-IAC in native tagged image file format (TIFF). Each tile comprised an 8000 x 8000 4-inch pixel grid comprising 64 million pixels that were analyzed to prepare histograms to represent the





frequency of individual Red, Green and Blue values. Frequencies were independently derived for pixels contained within the boundaries of each polygon representing a known oak tree and separately for pixels outside these polygons. The two histograms were compared to select peak values that would represent the spectral signature of the presence of an oak tree.

A second program rescanned each tile to select pixels with these signature values to as a preliminary means of identification of oak trees. Each identified pixel was represented as a point feature on a graphic overlay of the geo-referenced ortho-photo tile. Circles were then drawn to represent each oak tree canopy. The resulting maps were then used for a second field survey to validate the results of the program. It was determined that the program was relatively accurate in identifying mature oak trees, but that younger trees with smaller canopies were not being identified. ES is now in the process of analyzing the signature of these younger trees for inclusion in the model. Three errors were also noted of trees that were not oak trees, requiring a separate analysis to ensure that these signature values were not selected in subsequent processing.



ATTACHMENT 2
OAK TREE REPORT ESTRELLA RIVER
VINEYARD
(San Luis Obispo
County)

Oak Tree Report

for the

Estrella River Vineyard

Tract 2905

Estrella Road
Paso Robles
San Luis Obispo County



Prepared for:

Estrella River Vineyard, LLC
c/o Kirk Consulting
8830 Morro Road
Atascadero, CA 93422

by

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES
1875 Wellsona Road
Paso Robles, CA 93446
(805) 467-1041

April 2008

Table of Contents

I.	Introduction	1
II.	Project Information	1
	A. Responsible Parties	1
	B. Location of Project	2
	C. Brief Summary of Overall Project	2
III.	Methods.....	4
IV.	Results.....	5
	A. Species Included in the Inventory	5
	B. Oak Tree Inventory	5
	C. Oak Tree Impacts	5
	D. Mitigation Requirement	7
	E. Monitoring Requirement.....	8
V.	Recommendations for Tree Protection and Mitigation.....	9
	Exhibit A – Oak Tree Map and Inventory	12
	Exhibit B – Figures	26
	Exhibit C – Photographs	29
	Exhibit D – Oak Tree Protection Plan	34

List of Tables

Table 1.	Responsible Parties	1
Table 2.	Oak Tree Species	5
Table 3.	Impacted Oak Trees.....	6
Table 4.	Recommended Protection and Mitigation Measures.....	9
Table 5.	Oak Tree Inventory.....	14

List of Maps and Figures

Figure 1.	Aerial Photograph.....	3
	Oak Tree Map.....	13
Figure 2.	Location Map	27
Figure 3.	USGS Topographic Map	28

I. Introduction

This document provides information on native oak trees in the vicinity of roadways and lots on the Estrella River Vineyard property at Estrella Road, Paso Robles, San Luis Obispo County. The project is a 24-lot residential subdivision on a 560 acre agricultural property. Trellised vineyards comprise more than 200 acres of the property, and most of the remaining acreage is in dry-farmed grain and vegetables.

A biological report was completed for the property in 2007 (Althouse and Meade, Inc. 2007). The report identified two species of native oaks on the property: blue oak (*Quercus douglasii*) and valley oak (*Quercus lobata*).

In this document we provide an inventory of native oak trees near the project areas, assess potential impacts to oak trees from the proposed project, and provide mitigation and protection recommendations designed to reduce potential impacts to a less than significant level. The oak tree inventory, included in Appendix A, provides the type, size, health, location, and impact analysis for each tree.

Discretionary permit projects in the County of San Luis Obispo require approval and mitigation for removal of oak trees. General mitigation measures are included that are designed to guide landowners and contractors with performance criteria and reporting obligations that would fulfill the CEQA obligation to mitigate vegetation impacts to a less than significant level.

II. Project Information

A. Responsible Parties

TABLE 1. RESPONSIBLE PARTIES. Applicant, agent, engineer, biological consultant, and lead agency are provided.

Applicant (Owner)	
Estrella River Vineyard, LLC 523 South Cascade Avenue, Suite E Colorado Springs, CO 80903	
Agent	Engineering
Kirk Consulting 8830 Morro Road Atascadero, CA 93422 (805) 461-5765 Contact: Jamie Kirk	North Coast Engineering, Inc. 725 Creston Road, Suite B Paso Robles, CA 93446 805-239-3127 Contact: Greg Jaeger, PE

Biological Consultant	Lead Agency
Althouse and Meade, Inc. 1875 Wellsona Road Paso Robles, CA 93446 (805) 467-1041 Contact: Daniel E. Meade, Ph.D.	County of San Luis Obispo Department of Planning and Building County Government Center San Luis Obispo, CA 93408 (805) 781-5600

B. Location of Project

The subject property is located at Estrella Road, east of the Paso Robles city limits, in San Luis Obispo County, California. The parcel is on the south side of Estrella Road, bordered on the south by Dusty Place and agriculture fields, the west by Fa-Rouse Way, and the east by an unnamed creek. The property is within the Estrella United States Geological Survey (USGS) 7.5 minute quadrangle (Figure 2). The approximate coordinates for the center of the property are N35° 41' 25" W120° 35' 50". Elevation varies from approximately 740 feet to 882 feet above sea level.

C. Brief Summary of Overall Project

The proposed project, Estrella River Vineyard Tract 2905, is a 24-lot residential development on a large agricultural property currently planted in vineyards, dry farmed grain, and vegetables. Each lot is one acre in size. Primary and secondary access is from Estrella Road, through the existing vineyards. Vineyards would not be removed for the proposed project. Two drainage crossings would be required for access to the lots.

North Coast Engineering, Inc. provided the Estrella River Vineyard Site Plan Tract 2905 for our review. The site plan is used as the base for our Oak Tree Map (Appendix A).

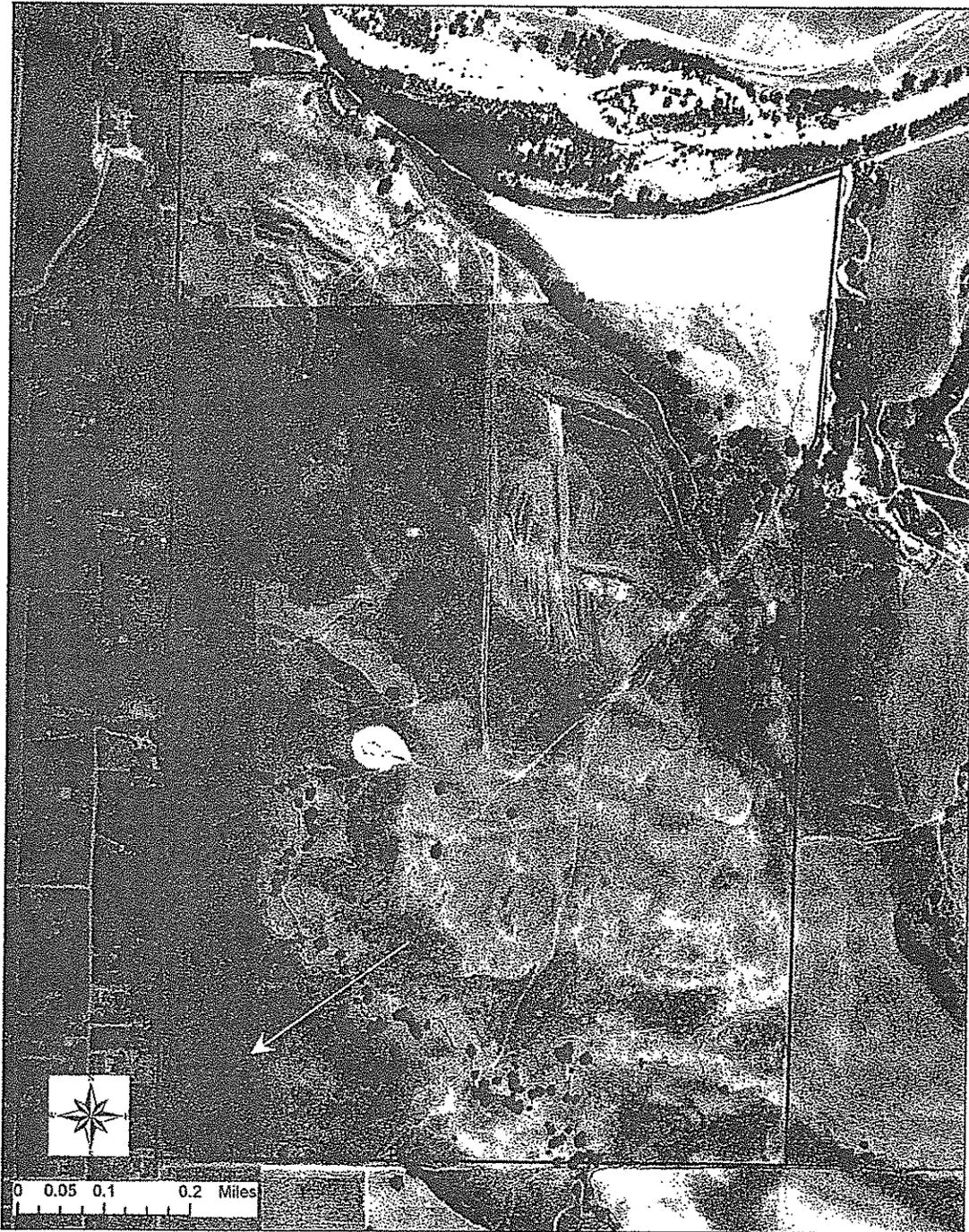


Figure 1. 1993 AERIAL PHOTOGRAPH. Approximate property boundaries are shown in red on an aerial photograph of the site. The proposed development area is located in the southwest corner of the property between the oak woodland and the property boundaries (note arrow). Access to the development would be on two entrance roads from Estrella Road at the north end of the property.

III. Methods

The initial tree inventory and assessment was conducted on April 9, 2008 by Althouse and Meade, Inc. biologists Jason Dart and Kerri Johnson. Oak trees were included in the inventory if they were within approximately 50 feet of proposed limits of disturbance (based on site plans). Some trees in the blue oak woodland adjacent to the lots were not included in the inventory because they were located far downhill from potential building envelopes. All oak trees included in the inventory were marked with a metal numbered tag.

A map of oak trees included in the inventory was prepared by Althouse and Meade, Inc. using field sketches transferred to CAD drawings. The CAD drawings, provided by North Coast Engineering, Inc. (NCE), contained the site plan layers and approximate locations of the tree canopies. An Oak Tree Map (Appendix A) was created by overlaying our tree numbers on NCE tree canopy layers. Precise trunk locations have not been surveyed and are not shown on the map.

The tree impact analysis is based on the NCE site plan and tree canopy layers. Lots and roads were not staked in the field to confirm potential impacts.

The condition of each tree was rated from A to D: A = excellent health and form; B = good condition, but not excellent form; C = fair condition, not good form; D = poor condition, not good form. The diameter of each tree was measured at 4.5 feet with a diameter tape (Spencer 35'L ProTape). Diameters were measured to the nearest inch. Our impact analysis is based on the NCE tract map. Roads and lots were not marked in the field, therefore our analysis is considered preliminary.

A database was compiled to summarize tree data and proposed impacts for this report. A complete list of trees in the database is provided in Appendix A.

The Critical Root Zone (CRZ) is defined as an area of root space extending out from the trunk of the tree one and a half times the radius of the canopy. Any trenching or earthwork within the CRZ is considered an impact requiring mitigation.

IV. Results

A. Species Included in the Inventory

Two species of native oak tree occur within fifty feet of the project areas (Table 2). Thirteen valley oaks (*Quercus lobata*) and 90 blue oaks (*Quercus douglasii*) were mapped and assessed in the vicinity of the project areas. Some of the oak trees appear to be hybrids, however we did not conduct a formal analysis of tree taxonomy. The trees are categorized based on the species they most closely resemble.

Mitigation for oak tree impacts and removals is required by the County of San Luis Obispo. Table 2 provides the mitigation ratios currently accepted by the County.

TABLE 2. OAK TREE SPECIES. Two species of native oak tree are located within 50 feet of the project areas.

Common Name	Scientific Name	State/Federal/CNES Protection Status	Mitigation Ratio
Valley Oak	<i>Quercus lobata</i>	No state or federal protection; Protected by County of San Luis Obispo	2:1 for impacted oaks 4:1 for removed oaks
Blue Oak	<i>Quercus douglasii</i>	No state or federal protection; Protected by County of San Luis Obispo	2:1 for impacted oaks 4:1 for removed oaks

B. Oak Tree Inventory

There are 103 oak trees in the project areas that were included in our database (Appendix A). Blue oak trees occur in two woodland areas on north-facing slopes. Valley oak trees included in our inventory occur in deeper soils in open grassland areas now converted to agriculture (refer to Oak Tree Map in Appendix A). Oak trees included in our inventory range in diameter from 4 inches to 55 inches. Blue oaks averaged approximately 19 inches in diameter (range from 4 to 49 inches), and valley oaks averaged approximately 30 inches (range from 9 to 55 inches). Two dead oak trees are located in the project areas. Dead trees are not shown on the Oak Tree Map and do not require mitigation for removal. Removal of any tree, dead or alive, should be conducted from August 15 through March 15, outside the nesting bird season.

C. Oak Tree Impacts

The proposed project would not require removal of any living oak trees. Impacts to 13 oak trees are anticipated from construction activities associated with the primary roads, including five valley oaks and eight blue oaks (Table 3). Two trees with a health value of

"A", seven trees with a health value of "B", and four trees with a health value of "C" would be impacted. The impacts would result from encroachment into the CRZ or from pruning of branches four inches in diameter or greater. Oak trees occurring in the lots should be protected by designation of suitable building envelopes that would prevent soil disturbance within the CRZ. Ten of the 24 lots contain at least one mature oak tree. After examining the site plan and canopy locations, there appears to be ample room for construction of a home site and driveway within each lot without impacting oak trees.

In addition to anticipated oak tree impacts, there is always a potential for incidental impacts from construction activities. We provide protection recommendations to reduce the potential for incidental oak tree impacts to a less than significant level. If incidental impacts do occur, additional mitigation plantings shall be incorporated into the mitigation plan per the standard mitigation ratio (refer to Table 2).

Many of the anticipated oak tree impacts could be avoided by modifications of the road alignments.

TABLE 3. IMPACTED OAK TREES. Information is provided for each of the 13 oak trees anticipated to incur impacts as a result of construction activities. No trees are proposed for removal.

Tag Number	Species	DBH (in)	Health Value	Location	Impact Assessment	Recommendations
1	Valley Oak	26	B	Rio Robles Road, Front Gate at Estrella Road	Grading and paving within CRZ	
3	Valley Oak	46	A	Rio Robles Road, Front Gate at Estrella Road	Grading and paving within CRZ	Large healthy tree, protect to the maximum extent feasible
15	Blue Oak	33	C	Along main road, southeast of central reservoir within existing spinach field	Grading and paving within CRZ	
17	Blue Oak	41	C+	NW of central reservoir, on north side of road	Grading and paving within CRZ	
20	Blue Oak	23	B+	Within drainage, S of northern road crossing location	Grading and paving within CRZ	

Tag Number	Species	DBH (in.)	Health Value	Location	Impact Assessment	Recommendations
25	Blue Oak	15, 18	C-	Within drainage, W of northern road crossing location	Grading and paving within CRZ	
26	Blue Oak	21	A	Within drainage, W of southern road crossing location	Grading and paving within CRZ	
91	Blue Oak	25	B	In open space along main road, SW of Lot 14	Grading and paving within CRZ	
92	Blue Oak	41	C	Lot 13, along main road	Grading and paving within CRZ	Driveway and bldg envelope should be designed outside of CRZ
94	Valley Oak	43	B	Lot 11, along main road	Grading and paving within CRZ	Driveway and bldg envelope should be designed outside of CRZ
95	Valley Oak	30	B-	Lot 21, along main road	Grading and paving within CRZ	Driveway and bldg envelope should be designed outside of CRZ
101	Blue Oak	16	B	Rio Robles Road, Front Gate at Estrella Road	Grading and paving within CRZ	
102	Valley Oak	16	B	Rio Robles Road, Front Gate at Estrella Road	Grading and paving within CRZ	

D. Mitigation Requirement

The standard mitigation ratio for non-life threatening impacts to oak trees is 2:1 (refer to Table 2). Thirteen mature oak trees are anticipated to be impacted from the current site plan design, requiring 26 mitigation trees. Ten of the mitigation trees shall be valley oaks (five valley oaks impacted), and 16 mitigation trees shall be blue oaks (eight blue oaks impacted). This impact analysis is subject to change if the project site plan changes prior to project approval.

Mitigation trees are to be a minimum of one gallon container size of locally grown material. Locally grown material means the trees are to be propagated from acorns collected in the vicinity of the project site, and preferably from trees on site.

We identified a location near the front entrance gate that is proposed as the oak tree mitigation area (refer to Oak Tree Map in Appendix A). Mature valley and blue oaks are present adjacent to the mitigation area, and we expect the site would be excellent for establishment of the mitigation trees. A water source is nearby that would be able to provide irrigation. The mitigation area is along the main entrance road near the front gate and would provide usable wildlife habitat. Mitigation trees should be planted in locations indicated in the field by a qualified biologist.

E. Monitoring Requirement

The mitigation oak trees shall be monitored annually for a period of at least seven years. The mitigation project shall maintain all 26 trees in good health for the length of the monitoring period. If any trees die, they shall be replaced immediately with like material. The project biologist or arborist shall provide a written report annually to the lead agency by July 15th of each year.

V. Recommendations for Tree Protection and Mitigation

This section provide protection and mitigation recommendations designed to reduce the potential for incidental impacts to oak trees at the project site due to construction related activities.

Table 2 on page 5 provides the standard County approved mitigation ratios for impacts and removals of oak trees greater than five inches in diameter at breast height (dbh).

TABLE 4. SUMMARY OF RECOMMENDED PROTECTION AND MITIGATION MEASURES.

Recommendation 1.	All trees within 50 feet of disturbance shall be inventoried, numbered, mapped, and assessed by a qualified biologist or certified arborist.
Recommendation 2.	All trees within 50 feet of disturbance shall be shown on final grading plans. Trunk locations shall be surveyed by licensed land surveyor.
Recommendation 3.	Protect all trees using orange construction fencing placed at the outer edge of the Critical Root Zone, defined as 1.5 times the radius of the tree canopy. Tree protection fencing shall be shown on all site and grading plans.
Recommendation 4.	Impacts or removals of oak trees shall be monitored by a qualified biologist or certified arborist.
Mitigation 1.	If oak trees on the site are impacted or removed, replacement trees must be planted per County guidelines (refer to Table 2).
Mitigation 2.	For impacted trees, judiciously prune branches and roots as needed under the supervision of a tree care specialist; treat large wounds and cuts to roots and branches.
Mitigation 3.	Maintain and monitor all mitigation trees annually for at least seven years.
Mitigation 4.	Use porous pavers when paving within the CRZ of any oak tree.

Recommendation 1. All mature oak trees within approximately 50 feet of project construction activities shall be inventoried, numbered, mapped, and assessed by a qualified biologist or certified arborist. **Completed April 2008.**

Recommendation 2. Trunk and canopy locations of all oak trees included in the inventory shall be shown on final grading plans. Trunk and canopy locations shall be surveyed by a licensed land surveyor for accuracy.

Recommendation 3. All oak trees shall be protected to the maximum extent feasible.

- a. Tree protection fencing (orange construction fencing) will be installed at the outer limit of the CRZ with t-posts placed in the ground no further apart than six (6) to eight (8) feet. Construction fencing will be firmly affixed with wire or zip ties. Trees that may be impacted shall be protected with construction fencing, depending on the impacts expected within the dripline.
 - o Protective fencing is required between all construction activities and oak trees. Fencing will be established prior to start of construction, and shall be approved by the project environmental monitor.
 - o Protective fencing shall be installed prior to any site disturbance or construction, and shall remain in place until all construction is complete.
 - o No grading, trenching, materials storage, soil storage, debris or site disturbance shall occur within the protected area. No concrete, plaster, or paint washouts shall be allowed within the protected area.
 - o Weather-proof signs shall be permanently posted on protection fences every 50 feet (maximum) with the following information:

Tree Protection Zone

**No personnel, equipment, materials, or vehicles are allowed. Do not remove or replace this fence.
Project Manager [name and phone number].**

- b. An environmental monitor or arborist shall conduct a worker education meeting for the contractors and operators prior to ground-breaking activities. The briefing shall include a walk-through to identify each of the trees in the work area: the trees to be protected, and the trees that may be impacted or removed. The project Manager shall be responsible for instructing workers about tree protection goals, implementing protection of root zones, dust control, and installing and maintaining protective fencing.
- c. The monitor shall check weekly to determine if the listed trees are being protected.

Recommendation 4. Monitor all tree impacts and removals.

- a. Any ground disturbance within the CRZ will be monitored by the project biologist and/or the project arborist. Proposed root disturbance may require air-spading the proposed disturbance area and the roots trimmed and treated by the project arborist, prior to construction activities. A tree care specialist shall treat damaged roots and keep exposed roots covered with moist burlap.

- b. All impacts and disturbance within the root zone shall be documented and reported to the project manager and to the arborist who must treat and/or assess damaged branches and roots.
- c. Removals will be documented by the monitor who will tabulate mitigation obligations. No tree removals are anticipated.

Mitigation 1. Impacted oak trees must be mitigated at a 2:1 ratio. Removed oak trees must be mitigated at a 4:1 ratio. Impacts to and removal of mature oak trees must be approved by the lead agency. The current site plan is estimated to incur CRZ impacts to 13 oak trees, requiring 26 mitigation trees. Replacement trees shall be locally grown, native stock of the same species as the removed tree.

The project biologist or arborist shall keep a running tally of the total number of trees removed or impacted during construction of the project. A final mitigation obligation determination will be provided by the monitor to the project manager and to the lead agency.

Mitigation 2. Pruning and wound care shall be done under the supervision of a Certified Arborist or County approved tree care specialist.

- a. All cuts to roots over 1 inch and branches over 3 inches in diameter will be treated, as appropriate, to reduce fungal, bacterial, and insect infections. A Certified Arborist or tree care specialist shall be contracted to care for damaged roots and branches during construction. Appropriate antifungal, antibacterial, and pesticide treatments should be used on cut roots and branches. Black tree paint shall not be used on either roots or branches.
- b. Treat large wounds to roots and branches by cutting perpendicular to the root direction. Cut back to undamaged wood.
- c. Roots exposed during demolition and construction shall be treated, as appropriate, by a tree care specialist and covered by a layer of soil.

Mitigation 3. Maintain and monitor all mitigation oak trees annually for at least seven years. The trees shall be irrigated and weeded seasonally to promote health and vigorous growth. The project biologist or arborist shall provide a written report annually to the lead agency by July 15th of each year. The mitigation program shall have a no net loss of mitigation trees throughout the seven year monitoring period. Dead trees shall be replaced immediately.

Mitigation 4. Use porous pavers when paving is required within the CRZ.

- a. It appears from the site plan that paving would occur within the CRZ of several oak trees. Any paving within the CRZ shall be done with porous pavers that will allow oxygen and moisture exchange to occur within the root zone.

Exhibit A – Oak Tree Map and Inventory

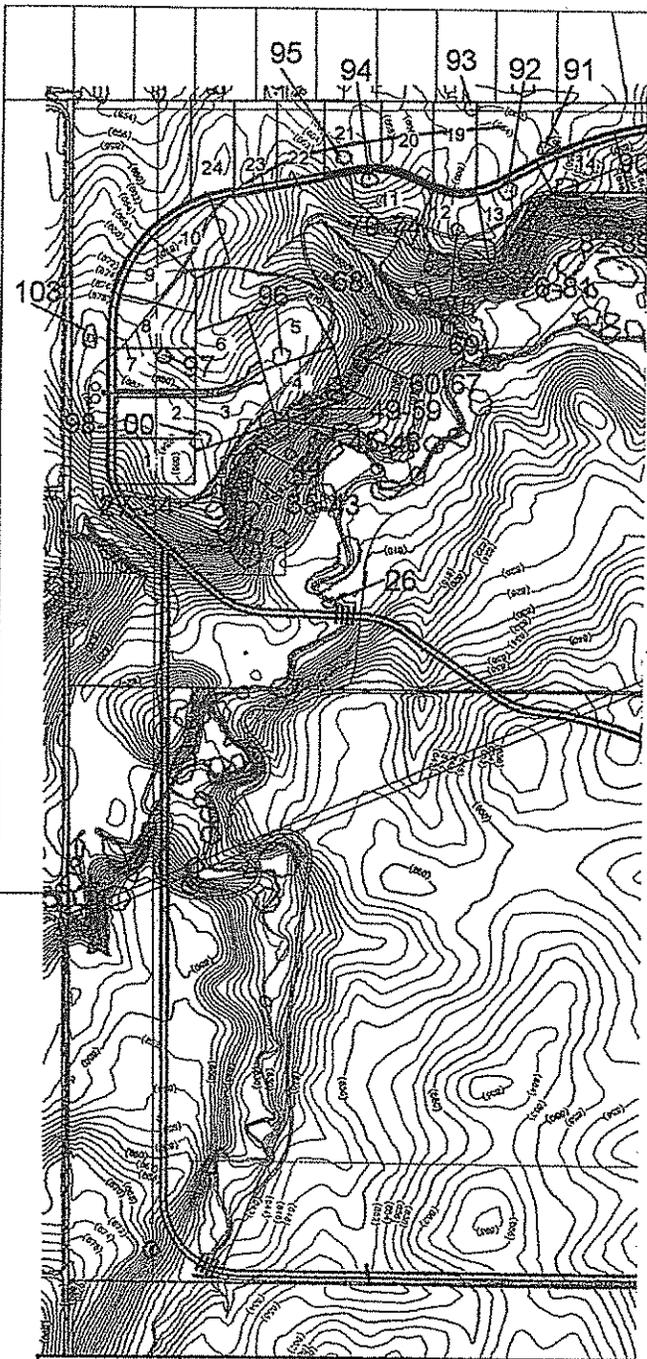
- **Estrella River Vineyard, Tract 2905 Oak Tree Map, April 2008**
- **Oak Tree Inventory**

Estrella River Vineyard Tract 2905 Oak Tree Map

Prepared For:
Estrella River Vineyard, LLC
c/o Kirk Consulting
8830 Morro Road
Atascadero, CA 93422

April 2008

Site Plan by:
North Coast Engineering Inc.
725 Creston Road, Suite B
Paso Robles, CA 93446



Tag #	Common Name	# of Trunks	DBH 1 (in.)	DI
1	Valley Oak	1	26	
8	Valley Oak	1	46	
15	Blue Oak	1	33	
17	Blue Oak	1	41	
20	Blue Oak	1	23	
25	Blue Oak	2	15	
26	Blue Oak	1	21	
91	Blue Oak	1	25	
92	Blue Oak	1	41	
94	Valley Oak	1	43	
95	Valley Oak	1	30	
101	Blue Oak	1	16	
102	Valley Oak	1	16	



TABLE 5. OAK TREE INVENTORY. Mature oak trees near the project areas included in the database include 13 valley oaks and 90 blue oaks, for a total of 103 oak trees.

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
1	Valley Oak <i>Quercus lobata</i>	1	26		60	50	B	Rio Robles Road, Front Gate at Estrella Road	Impact	None	Some dead wood, many galls	Grading and paving within CRZ
2	Valley Oak <i>Quercus lobata</i>	1	33		45	50	A	Rio Robles Road, Front Gate at Estrella Road	Protect	None		
3	Valley Oak <i>Quercus lobata</i>	1	21		35	40	C	Rio Robles Road, Front Gate at Estrella Road	Protect	None	Shaded, lop sided, pruned	
4	Valley Oak <i>Quercus lobata</i>	1	13		40	15	D	Rio Robles Road, Front Gate at Estrella Road	Protect	None	Lopsided, mistletoe	
5	Valley Oak <i>Quercus lobata</i>	1	9		30	12	D	Rio Robles Road, Front Gate at Estrella Road	Protect	None	Lopsided, dead wood	
6	Valley Oak <i>Quercus lobata</i>	1	23		45	40	C	Rio Robles Road, Front Gate at Estrella Road	Protect	None	squirrel trauma to roots, dying mistletoe	
7	Valley Oak <i>Quercus lobata</i>	1	11		35	20	C	Rio Robles Road, Front Gate at Estrella Road	Protect	None	Lopsided, not much branching	

Tag #	Common Name Scientific Name	# of Trunks	DBH (in.)	DBH/2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact/ Remove/ Protect	Nests/ Cavities	Notes	Impact Notes
8	Valley Oak <i>Quercus lobata</i>	1	46		65	70	A	Rio Robles Road, Front Gate at Estrella Road	Impact	None	Old, very large tree in excellent condition	Grading and paving within CRZ
9	Blue Oak <i>Quercus douglasii</i>	1	22		50	40	B	Oak Woodland, at access road on east property line	Protect	Natural and Acom. woodpecker cavities; nesting Oak Titmouse		
10	Blue Oak <i>Quercus douglasii</i>	1	14		30	35	A	Oak Woodland, at access road on east property line	Protect	None		
11	Blue Oak <i>Quercus douglasii</i>	1	49		50	65	A	Oak Woodland, at access road on east property line	Protect	None		
12	Blue Oak <i>Quercus douglasii</i>	1	30		45	50	A	Oak Woodland, at access road on east property line	Protect	None		
13	Blue Oak <i>Quercus douglasii</i>	1	23		45	50	A	Oak Woodland, at access road on east property line	Protect	None		
14	Blue Oak <i>Quercus douglasii</i>	1	28		50	50	A	Oak Woodland, at access road on east property line	Protect	Few woodpecker cavities, one small stick nest		

Tag #	Common Name Scientific Name	# of Trunks	DBH (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
15	Blue Oak <i>Quercus douglasii</i>	1	33		45	50	C	Along main road, southeast of central reservoir within existing spinach field	Impact	Natural Cavities, one large cavity containing a bee hive	Burl, disked root zone, old burn scar on trunk, possible internal rot	Grading and paving within CRZ
16	Blue Oak <i>Quercus douglasii</i>	2	28	24	40	60	A	South edge of central reservoir	Protect	None		
17	Blue Oak <i>Quercus douglasii</i>	1	41		60	55	C+	NW of central reservoir, on north side of road	Impact	Few woodpecker cavities	dead wood and limb, old fire damage	Road grading within CRZ
18	Blue Oak <i>Quercus douglasii</i>	1	21		45	35	B	In drainage NW of central reservoir, north of road	Protect	None	Dead wood, late to leaf out	
19	Blue Oak <i>Quercus douglasii</i>	1	33		50	45	A	Within drainage, N of northern road crossing, location	Protect	Some natural cavities	roots exposed in drainage	
20	Blue Oak <i>Quercus douglasii</i>	1	23		30	30	B+	Within drainage, S of northern road crossing location	Impact	None		Grading and paving within CRZ
21	Blue Oak <i>Quercus douglasii</i>	1	18		30	35	B	Within drainage, W of northern road crossing location	Protect	None	dead wood	
22	Blue Oak <i>Quercus douglasii</i>	1	29		40	35	B-	Within drainage, W of northern road crossing location	Protect	None	lopsided, some erosion at root base	

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
23	Blue Oak <i>Quercus douglasii</i>	2	28	22	50	40	B -	Within drainage, W of northern road crossing location	Protect	Many natural cavities and woodpecker cavities	Lopsided, smaller trunk is dead but good habitat	
24	Blue Oak <i>Quercus douglasii</i>	1	29		35	40	C	Within drainage, W of northern road crossing location	Protect	Low acorn storage in rotted limbs	Heavily shaded	
25	Blue Oak <i>Quercus douglasii</i>	2	15	18	25	35	C -	Within drainage, W of northern road crossing location	Impact	None	Growing horizontally, roots exposed in drainage	Grading and paving within CRZ
26	Blue Oak <i>Quercus douglasii</i>	1	21		40	30	A	Within drainage, W of southern road crossing location	Impact	None		Grading and paving within CRZ
27	Blue Oak <i>Quercus douglasii</i>	1	18		25	35	B+	Oak Woodland, NE of Lot 1	Protect	None	Shaded	
28	Blue Oak <i>Quercus douglasii</i>	1	31		40	50	A	Oak Woodland, NE of Lot 1	Protect	None	Some dead wood	
29	Blue Oak <i>Quercus douglasii</i>	1	19		20	35	D	Oak Woodland, NE of Lot 1	Protect	Natural cavities and woodpecker cavities	Mostly dead	
30	Blue Oak <i>Quercus douglasii</i>	1	32		50	55	B -	Oak Woodland, NE of Lot 1	Protect	High natural cavities and High nettles woodpecker cavities	Major branch failure	

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
31	Blue Oak <i>Quercus douglasii</i>	1	23		40	45	B+	Oak Woodland, NE of Lot 1	Protect	None	Furrowed bark, some dead wood	
32	Blue Oak <i>Quercus douglasii</i>	1	17		45	30	C	Oak Woodland, NE of Lot 1	Protect	None	Lopsided, on steep slope, branch leaning on hill slope	
33	Blue Oak <i>Quercus douglasii</i>	1	28		40	40	C+	Oak Woodland, NE of Lot 1	Protect	High natural cavities and High acorn storage in dead branch	Steep slope, dead branch	
34	Blue Oak <i>Quercus douglasii</i>	1	26		55	60	B+	Oak Woodland, NE of Lot 1	Protect	Some natural cavities and woodpecker cavities	Bee hive, some dead wood	
35	Blue Oak <i>Quercus douglasii</i>	1	7		25	15	B	Oak Woodland, N of Lot 1	Protect	None	Blue oak woodland on slope, young tree, shaded.	
36	Blue Oak <i>Quercus douglasii</i>	1	8		30	20	B	Oak Woodland, N of Lot 1	Protect	None	Blue oak woodland on slope, young tree, shaded.	
37	Blue Oak <i>Quercus douglasii</i>	1	8		30	15	B	Oak Woodland, N of Lot 1	Protect	None	Blue oak woodland on slope, young tree, shaded.	

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
38	Blue Oak <i>Quercus douglasii</i>	2	7	5	30	15	B	Oak Woodland, N of Lot 1	Protect	None	Blue oak woodland on slope, young tree, shaded.	
39	Blue Oak <i>Quercus douglasii</i>	1	7		35	25	B	Oak Woodland, N of Lot 1	Protect	None	Same Blue Oak woodland, larger trees on this side	
40	Blue Oak <i>Quercus douglasii</i>	1	6		35	25	B	Oak Woodland, N of Lot 1	Protect	None	Same Blue Oak woodland, larger trees on this side	
41	Blue Oak <i>Quercus douglasii</i>	2	7	8	35	25	B	Oak Woodland, N of Lot 1	Protect	None	Same Blue Oak woodland, larger trees on this side	
42	Blue Oak <i>Quercus douglasii</i>	1	16		40	30	B	Oak Woodland, N of Lot 1	Protect	None	Same Blue Oak woodland, larger trees on this side	
43	Blue Oak <i>Quercus douglasii</i>	2	12	13	40	30	B	Oak Woodland, N of Lot 1	Protect	None	Same Blue Oak woodland, larger trees on this side	
44	Blue Oak <i>Quercus douglasii</i>	1	12		40	25	A	Oak Woodland, E of Lot 3	Protect	None	Young, healthy, nice shape	

Tag #	Common Name Scientific Name	# of Trunks	DBH1 (in.)	DBH2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
45	Blue Oak <i>Quercus douglasii</i>	1	20		20	30	C-	Lot 3	Protect	Yes	Old burn scar, new wood alive, new growth is healthy	
46	Blue Oak <i>Quercus douglasii</i>	1	20		35	30	B	Lot 3	Protect	None	Shaded and lopsided	
47	Blue Oak <i>Quercus douglasii</i>	2	18	15	40	50	B	Lot 3	Protect	None		
48	Blue Oak <i>Quercus douglasii</i>	1	21		40	50	B	Lot 3-4	Protect	Low natural cavities	Shaded	Trees 49-50 are in Lot 4, and should be protected from construction activities
49	Blue Oak <i>Quercus douglasii</i>	1	22		45	55	B+	Lot 4	Protect	None		
50	Blue Oak <i>Quercus douglasii</i>	1	27		50	60	A	Lot 4	Protect	None		
51	Blue Oak <i>Quercus douglasii</i>	1	8		25	20	B+	Lot 4	Protect	None		
52	Blue Oak <i>Quercus douglasii</i>	1	26		35	45	A	Lot 4	Protect	None, numerous defined branch crotches		
53	Blue Oak <i>Quercus douglasii</i>	1	7		15	10	B	Lot 4	Protect	None		
54	Blue Oak <i>Quercus douglasii</i>	2	12	11	15	20	B	Lot 4	Protect	None	2 inch Blue Oak under canopy- not tagged	

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
55	Blue Oak <i>Quercus douglasii</i>	1	11		25	20	A	Lot 4	Protect	None		
56	Blue Oak <i>Quercus douglasii</i>	1	13		25	20	A-	Lot 4	Protect	None		
57	Blue Oak <i>Quercus douglasii</i>	1	14		30	30	B	Lot 4	Protect	None		
58	Blue Oak <i>Quercus douglasii</i>	3	7	7.5	25	25	B	Lot 4	Protect	None		
59	Blue Oak <i>Quercus douglasii</i>	1	22		35	45	A	Lot 4	Protect	None		
60	Blue Oak <i>Quercus douglasii</i>	1	4		15	10	B	N of Lot 4	Protect	None	Blue Oak Woodland	
61	Blue Oak <i>Quercus douglasii</i>	12	6		25	20	B	N of Lot 4	Protect	None	Blue Oak Woodland	
62	Blue Oak <i>Quercus douglasii</i>	2	8	7	25	20	B	N of Lot 4	Protect	None	Blue Oak Woodland	
63	Blue Oak <i>Quercus douglasii</i>	2	15	9	35	40	B	N of Lot 4	Protect	None	Blue Oak Woodland	
64	Blue Oak <i>Quercus douglasii</i>	1	12		40	45	B	N of Lot 4	Protect	None	Blue Oak Woodland	
65	Blue Oak <i>Quercus douglasii</i>	1	35		55	55	A	N of Lot 4	Protect	Some natural cavities		
66	Blue Oak <i>Quercus douglasii</i>	3	14	8.8	40	35	A	N of Lot 4	Protect	None		
67	Blue Oak <i>Quercus douglasii</i>	1	7		30	10	B-	N of Lot 4	Protect	None	Shaded	
68	Blue Oak <i>Quercus douglasii</i>	1	27		45	55	B	N of Lot 4	Protect	Low natural cavities	Some Mistletoe	

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
69	Blue Oak <i>Quercus douglasii</i>	1	30		55	65	A	N of Lot 4	Protect	None	Part of the same Blue Oak woodland as trees 60-64	
70	Blue Oak <i>Quercus douglasii</i>	2	9	8	35	35	B	E of Lot 12	Protect	None	Front Row of Blue Oak Woodland	
71	Blue Oak <i>Quercus douglasii</i>	2	11	13	35	35	B	E of Lot 12	Protect	None	Front Row of Blue Oak Woodland	
72	Blue Oak <i>Quercus douglasii</i>	1	13		25	35	B	E of Lot 12	Protect	None	Front Row of Blue Oak Woodland	
73	Blue Oak <i>Quercus douglasii</i>	1	10		30	25	B	E of Lot 12	Protect	None	Front Row of Blue Oak Woodland	
74	Blue Oak <i>Quercus douglasii</i>	1	15		30	30	B	E of Lot 12	Protect	None	Front Row of Blue Oak Woodland	
75	Blue Oak <i>Quercus douglasii</i>	1	24		35	30	B	Lot 12	Protect	None	Isolated tree	Located in lot 12, design bldg envelope outside of CRZ
76	Blue Oak <i>Quercus douglasii</i>	1	28		40	35	A -	E side of Lots 12 & 13	Protect	None		
77	Blue Oak <i>Quercus douglasii</i>	1	20		55	60	A	E side of Lots 12 & 13	Protect	Few natural cavities	Next Woodland	
78	Blue Oak <i>Quercus douglasii</i>	1	20		35	40	B -	E side of Lots 12 & 13	Protect	Many woodpecker cavities	Shaded, lopstid	

Tag #	Common Name Scientific Name	# of Trunks	DBH (in.)	DBH2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
79	Blue Oak <i>Quercus douglasii</i>	2	14	15	30	15	C	E side of Lots 12 & 13	Protect	Many natural cavities		
80	Blue Oak <i>Quercus douglasii</i>	1	24		45	55	B	E side of Lots 12 & 13	Protect	None		
81	Blue Oak <i>Quercus douglasii</i>	2	16	14	30	45	B-	E side of Lots 12 & 13	Protect	None	Some dead wood	
82	Blue Oak <i>Quercus douglasii</i>	1	24		45	45	C	E side of Lot 13	Protect	None	dead wood	
83	Blue Oak <i>Quercus douglasii</i>	1	24		8	45	D	E side of Lot 13	Protect	None	snapped trunk	
84	Blue Oak <i>Quercus douglasii</i>	1	15		30	5	C-	E side of Lot 13	Protect	None	tree 85 fell on this tree	
85	Blue Oak <i>Quercus douglasii</i>	2	18	18	35	35	C+	E side of Lot 13	Protect	few natural cavities	one trunk fell, both alive	
86	Blue Oak <i>Quercus douglasii</i>	2	15	14	25	50	B	E side of Lot 13	Protect	None		
87	Blue Oak <i>Quercus douglasii</i>	1	26		35	30	C+	E side of Lot 13	Protect	Some woodpecker cavities	Pruned, rotten backside	
88	Blue Oak <i>Quercus douglasii</i>	1	20		20	40	C-	E side of Lot 13	Protect	None	fallen to ground with some new vertical branches	
89	Blue Oak <i>Quercus douglasii</i>	1	6		15	25	B	E side of Lot 13	Protect	None		
90	Blue Oak <i>Quercus douglasii</i>	1	30		40	10	A-	Lot 14	Protect	natural cavities		Located in Lot 14, bid envelope should be designed outside of CRZ

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
90	Blue Oak <i>Quercus douglasii</i>	1	25		35	50	B	In open space along main road, SW of Lot 14	Impact	None	Hollow trunk, not suitable for birds or bats	Grading and paving within CRZ
92	Blue Oak <i>Quercus douglasii</i>	1	41		45	40	C	Lot 13, along main road	Impact	many nests and woodpecker cavities	Major branch failure	Grading and paving within CRZ. Driveway and bldg envelope should be designed outside of CRZ
93	Blue Oak <i>Quercus douglasii</i>	1	39		45	40	C	W edge of Lot 19	Protect	Many woodpecker and natural cavities	Dead tree in Lot 19 not tagged and should be removed	
94	Valley Oak <i>Quercus lobata</i>	1	43		45	55	B	Lot 11, along main road	Impact	Large natural cavity, one woodpecker cavity	Cavity not suitable for birds or bats	Grading and paving within CRZ. Driveway & bldg envelope should be designed outside of CRZ
95	Valley Oak <i>Quercus lobata</i>	1	30		50	40	B-	Lot 21, along main road	Impact	None		Grading and paving within CRZ. Driveway & bldg envelope should be designed outside of CRZ
96	Valley Oak <i>Quercus lobata</i>	1	55		50	55	B	Lot 5	Protect	Many natural cavities	Largest tree on the property, two snag limbs, no woodpecker cavities	Located in Lot 5, driveway & bldg envelope should be designed outside of CRZ

Tag #	Common Name Scientific Name	# of Trunks	DBH 1 (in.)	DBH 2 (in.)	Height (ft.)	Width (ft.)	Health Value	Location	Impact Remove Protect	Nests/ Cavities	Notes	Impact Notes
97	Valley Oak <i>Quercus lobata</i>	1	37		55	45	D+	Lot 7	Protect	Many natural cavities	Nesting Barn Owl	Located in Lot 7, driveaway & bldg envelope should be designed outside of CRZ
98	Blue Oak <i>Quercus douglasii</i>	1	14		20	20	C	Lot 3	Protect	Many natural cavities	Shaded by a dead tree	Remove dead tree adjacent to Trees 98-100
99	Blue Oak <i>Quercus douglasii</i>	2	16	13	15	30	C	Lot 3	Protect	Many natural cavities	Shaded by a dead tree	Remove dead tree adjacent to Trees 98-101
100	Blue Oak <i>Quercus douglasii</i>	1	22		12	25	D	Lot 3	Protect	Many natural cavities	Trunk fell over, some new growth	Remove dead tree adjacent to Trees 98-102
101	Blue Oak <i>Quercus douglasii</i>	1	16		40	40	B	Rio Robles Road, Front Gate at Estrella Road	Impact	None	Possible hybrid, few galls	Grading and paving within CRZ
102	Valley Oak <i>Quercus lobata</i>	1	16		40	35	B	Rio Robles Road, Front Gate at Estrella Road	Impact	None	few galls	Grading and paving within CRZ
103	Blue Oak <i>Quercus douglasii</i>	1	42		40	55	C	South of main road, near Lot 8	Protect	None	Large branch failures, otherwise healthy	

Exhibit B – Figures

- **Figure 2. Location Map**
- **Figure 3. USGS Topographic Map**
- **Figure 4. Aerial Photograph**

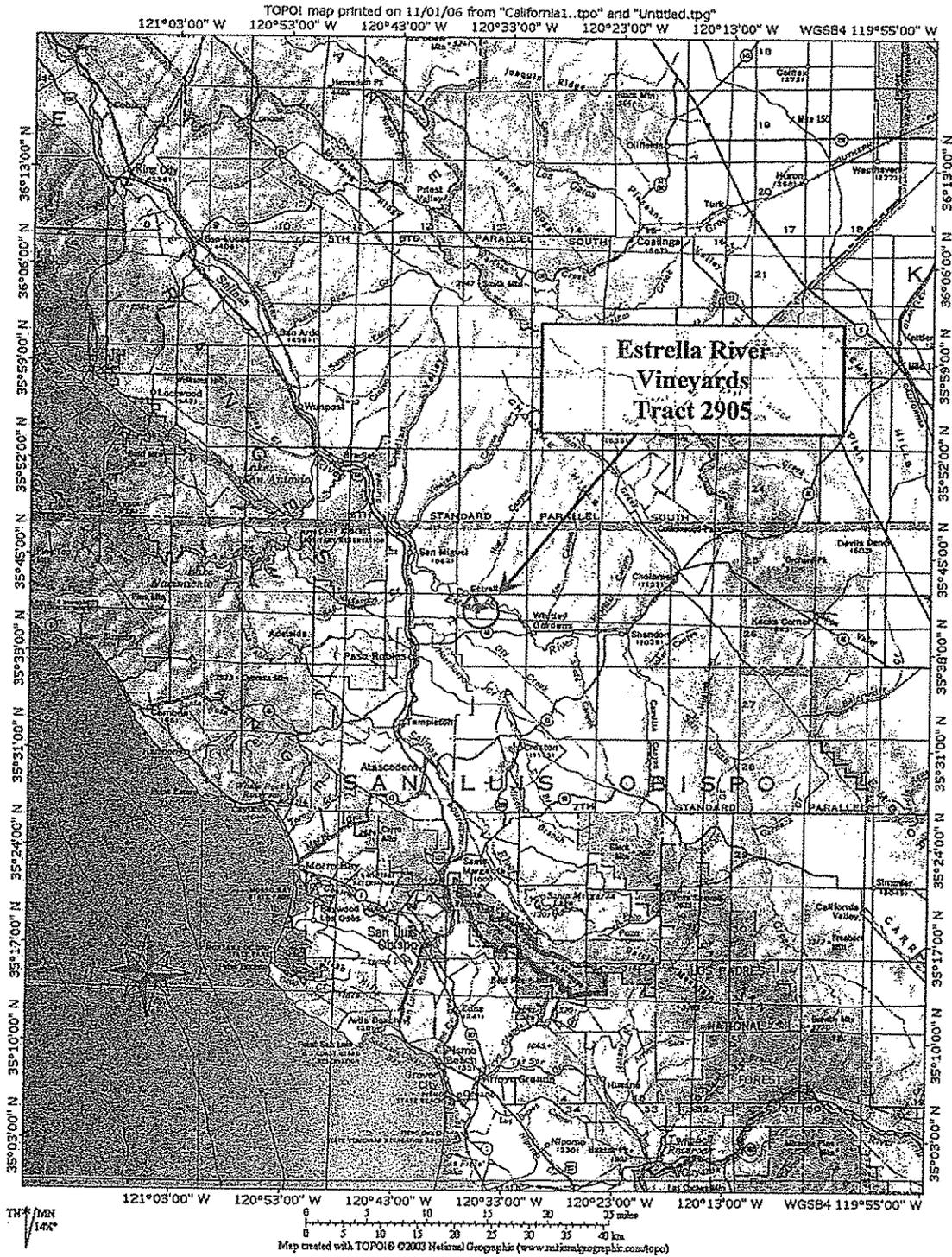


FIGURE 2. LOCATION MAP. The subject property (red circle) is located northeast of Paso Robles, San Luis Obispo County, California.

TOPO! map printed on 06/29/06 from "California.tpo" and "Paso area map.tpg"
120°36.000' W WGS84 120°35.000' W

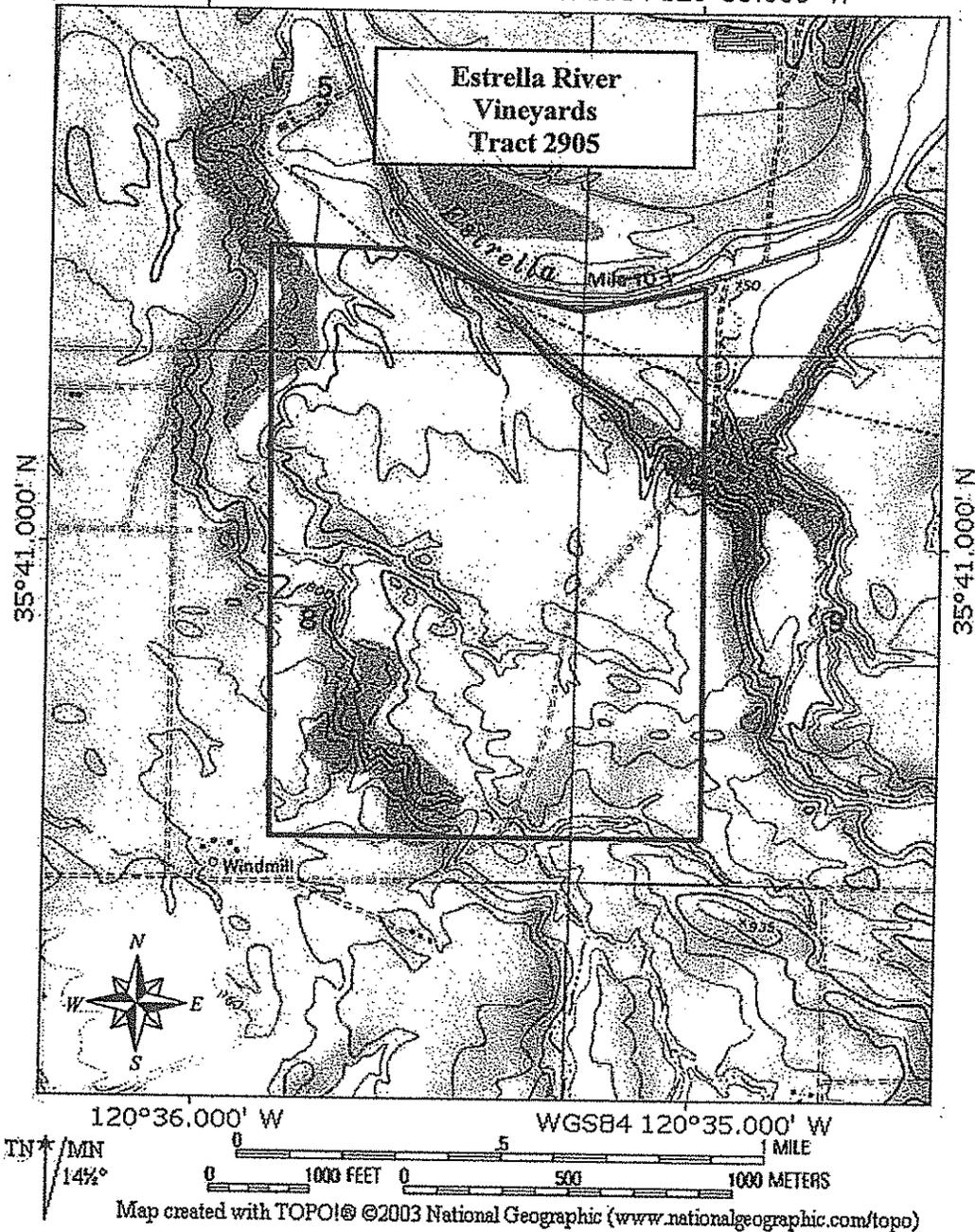


FIGURE 3. USGS TOPOGRAPHIC MAP. The 560-acre property is located on Estrella Road in the Estrella USGS topographic quadrangle. The approximate property boundaries are shown in black.

Exhibit C – Photographs

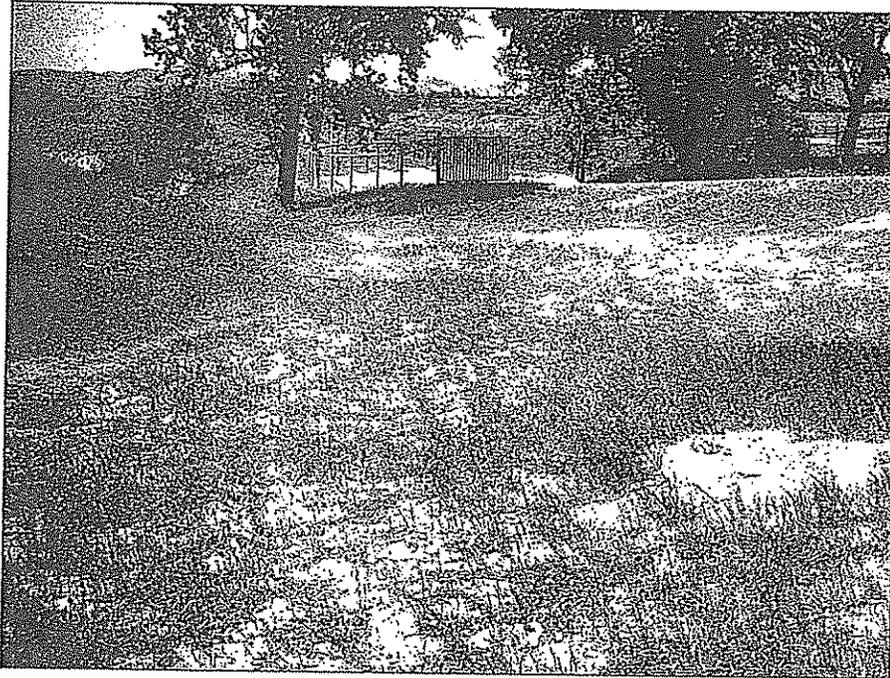


Photo 1. View north of the front gate entrance to the property from Estrella Road. The existing vineyard road would be re-aligned. Tree #1, pictured left of the gate, would be impacted.

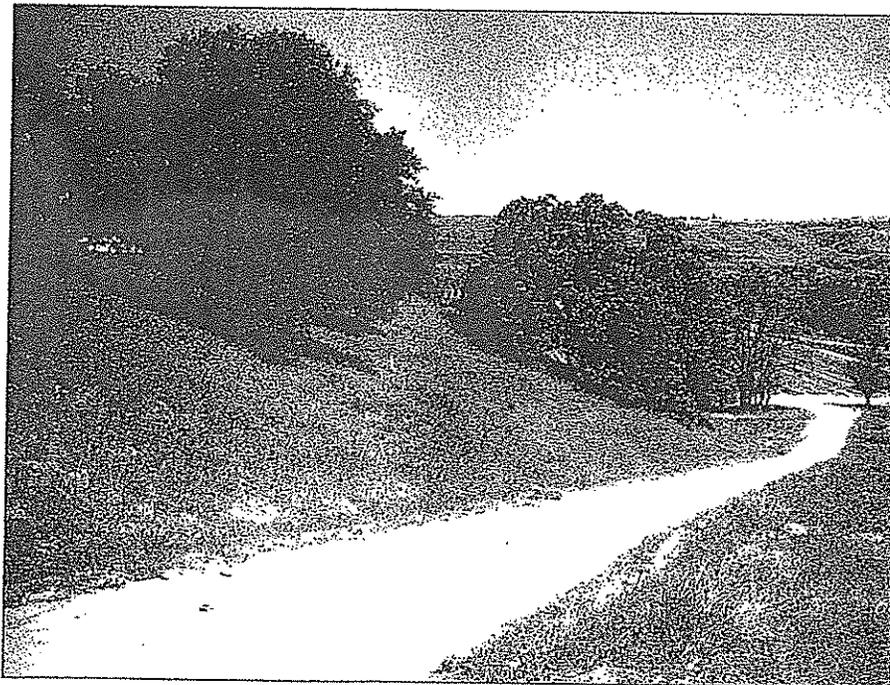


Photo 2. View north of the existing agricultural road along the east property border that would be paved and widened. The deciduous trees at the base of the road are non-native tree of heaven. Native blue oaks are visible at left.

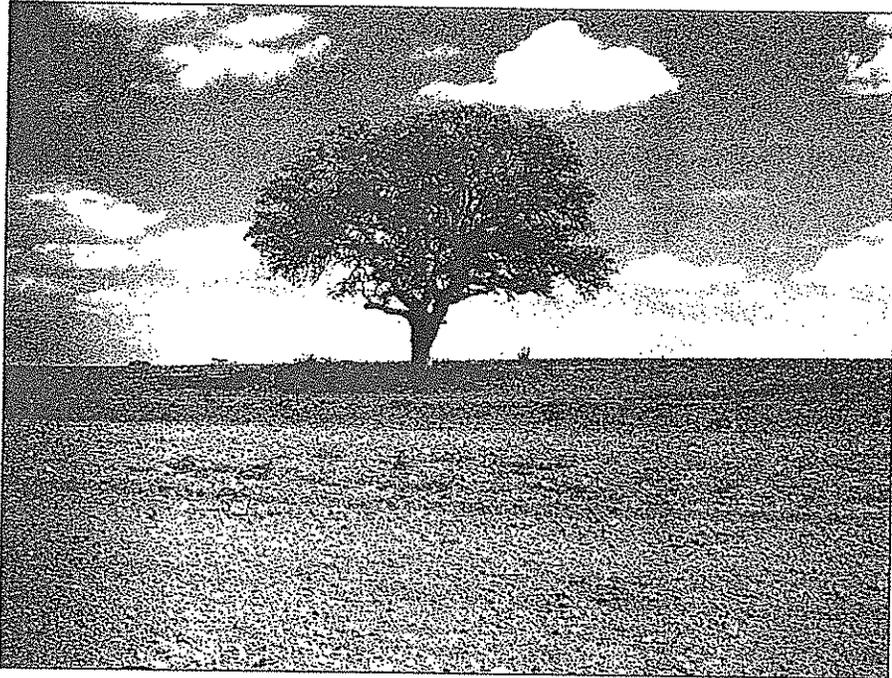


Photo 3. Tree #15 is a 33 inch blue oak (rated "C") located in an existing agricultural field, where the ground is plowed seasonally within the CRZ. The proposed access road would require paving within the CRZ.

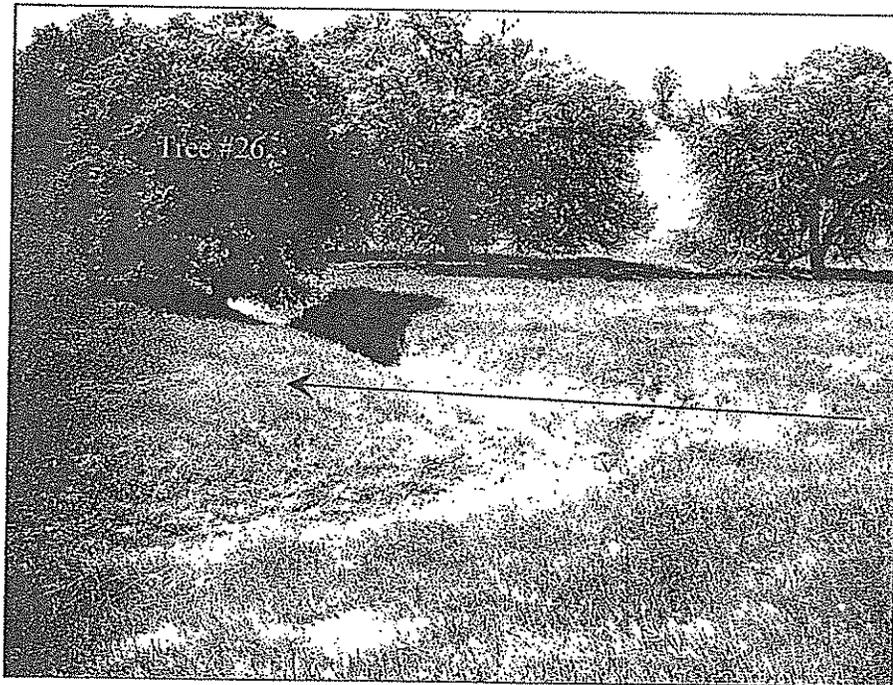


Photo 4. Tree #26 is a very healthy blue oak (rated "A") located along an ephemeral drainage. The southern drainage crossing is proposed at this bend in the stream (note arrow), and would encroach within the CRZ of this tree.

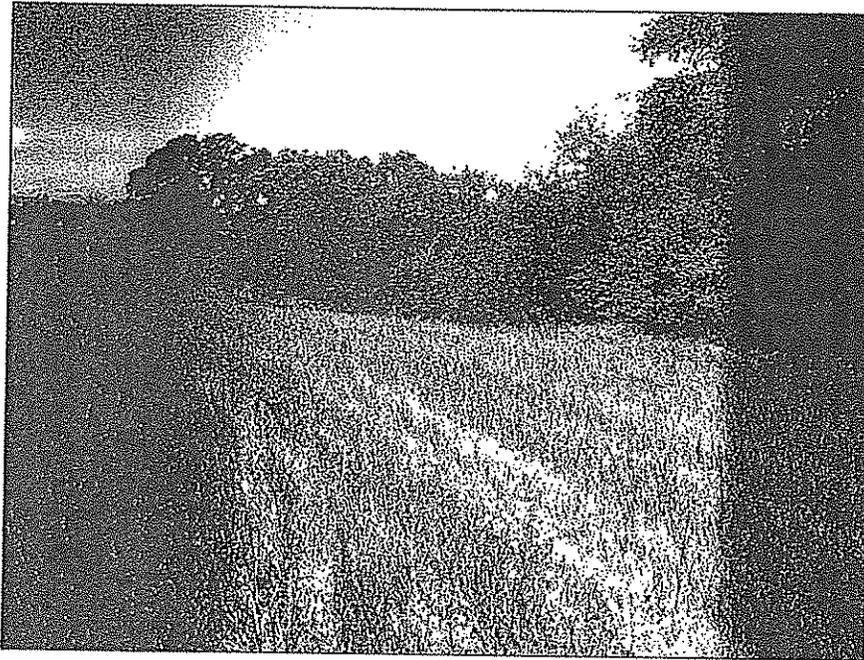


Photo 5. View north of the tree line along at the top of the oak woodland at Lots 3 and 4. Building envelopes have not been established, but there appears ample room to avoid impacts to these trees during home construction.

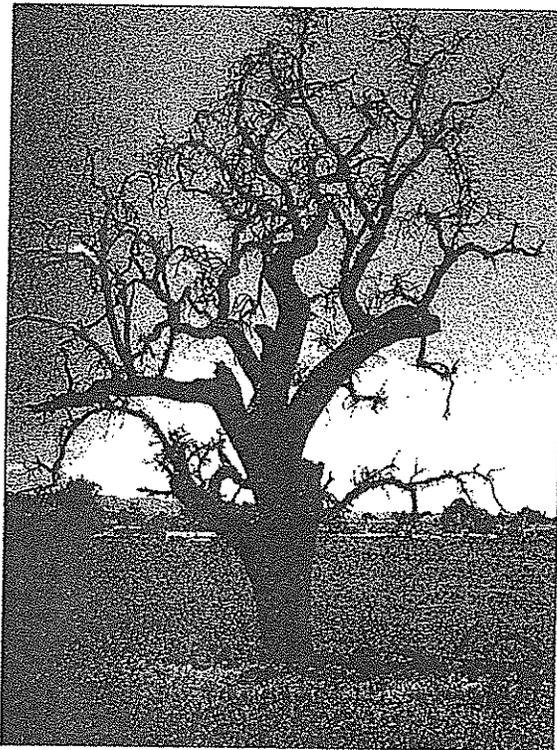


Photo 6. Tree #97 is a valley oak in poor health. It has numerous natural cavities, including one harboring a barn owl nest. Although it is nearly dead, it was rated "D+" because of its habitat value to wildlife.



Photo 7. View northwest of Tree 8 (right) and Trees 101 and 102 (left) near the front entrance gate at Estrella Road. The proposed entrance road would pass between these trees, resulting in CRZ encroachment impacts.

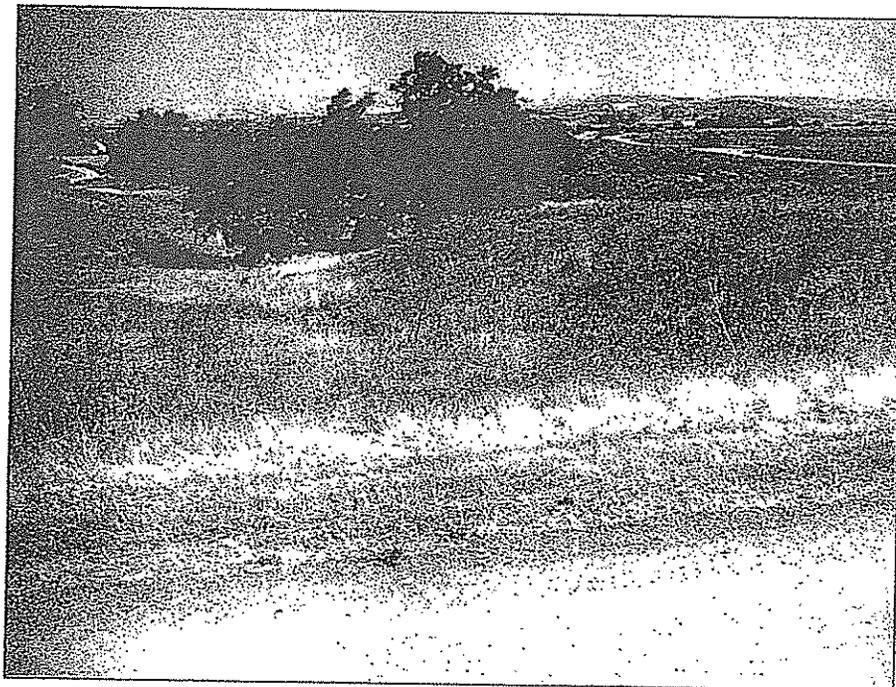


Photo 8. View northwest of the proposed oak tree mitigation area. The mitigation area is a grassy swale close to the northern reservoir where irrigation water would be available.

Exhibit D – Oak Tree Protection Plan

OAK TREE PROTECTION PLAN

County of San Luis Obispo

Pre-Construction Tree Protection and Removal

The project manager, construction manager, and equipment operators will be briefed by an environmental monitor. Monitor will describe oak tree protection and removal practices during a morning safety or planning meeting prior to the start of construction.

All trees within 50 feet of the construction zone will be identified, marked and numbered with metal tags. Information about each tree will be collected, including the following: date, species, number of stems, diameter at breast height (dbh) of each stem, critical root zone (CRZ) diameter, canopy diameter (in all four compass directions), tree height, health, habitat notes, and nests observed. Before construction begins, markings will distinguish trees that are to be removed, impacted, or fully protected. Tree removal will be planned to minimize impacts to adjacent trees. Tree impacts include any activity under the canopy or within the CRZ (CRZ = 1.5 times the diameter of the tree). The site will be checked for compliance by the environmental monitor. Grading, cutting and filling on property that has oak trees but which is planned to occur at least five feet beyond the CRZ of any oak trees of six inches or greater dbh shall not occur unless there is a monitor present to insure that grading occurs in accordance with approved plans and without encroachment into areas within five feet of the CRZ of any oak tree(s) of six inches or greater dbh.

Trees to Remove

- Mark each of the oaks to be removed with a blue "X" at approximately 4.5 feet above ground. Alternatively, trees to be removed may be marked with blue flagging.
- Number each of the oaks to be removed with blue paint (if not already tagged).
- Trees to be removed will be verified by the project manager and the environmental monitor or arborist.
- Trees will be removed with minimal impact to adjacent trees.

Trees to Impact

- Impacts are any disturbance within the diameter of the tree canopy or CRZ, including pruning, grading, parking, driving under or near, trenching, storing material, or adding fill.
- Tag each of the trees with two permanent numbered metal tags on two sides of the tree placed approximately 4.5 feet above ground. Flag with green flagging.

- Install orange construction fencing between the construction zone and the tree to indicate limits of disturbance planned for each tree (Figure A).

The environmental monitor will document pre-construction tree protection activities. An oak tree database will be maintained throughout the construction period that will contain all information related to oak tree impacts and removals.

Construction Tree Protection

- Orange construction fencing will be maintained weekly when heavy equipment is within 50 feet of oak trees.
- If any fully protected oak trees are impacted, the trees will be tagged with permanent metal tags placed approximately 4.5 feet above ground (if not already tagged). An environmental monitor will note the type and severity of the impact.
- Branch and root pruning shall leave clean cuts. Branch pruning shall be at an angle to shed rain water. Torn roots shall be properly trimmed so that all torn sections are removed and the cut is clean.
- Any impacts to trees that involve cut roots over one inch and branches over three inches in diameter shall be treated by a Certified Arborist or County approved tree care specialist qualified to apply fungicides and pesticides to damaged tissue.
- No vehicles, fill soil, rocks, or construction materials shall be placed within the dripline or CRZ of any oak trees.
- Trenching under the tree canopy shall be avoided. Any trenching required within the dripline or CRZ of an oak tree shall be approved by a Certified Arborist, and done by hand. The Arborist may recommend use of an air spade to reduce root impacts.
- The only plant species which shall be located within the dripline or CRZ of oak trees are plants that are indigenous to the Paso Robles area. No permanent irrigation shall occur within the CRZ of any mature oak tree.
- The environmental monitor and/or a Certified Arborist shall be present during construction that impacts oak tree root zones.

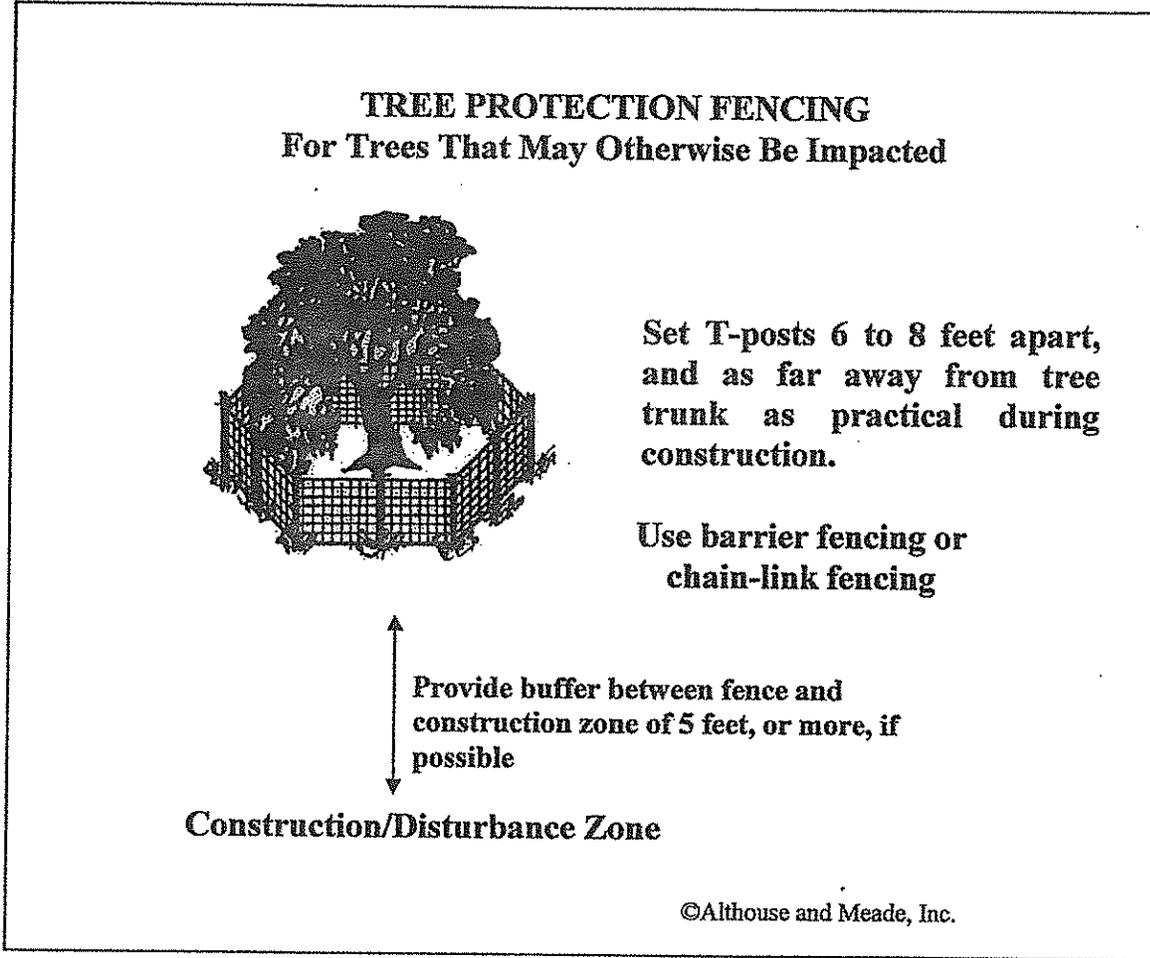


Figure A. Orange barrier fencing shall be used to protect oak trees near construction and disturbance zones. Construction fencing shall be placed at the outer edge of the CRZ.

**ATTACHMENT 3
TULARE COUNTY GENERAL PLAN
POLICIES**

WATER QUANTITY CHANNEL MODIFICATION

TULARE COUNTY GENERAL PLAN 2030 UPDATE POLICIES

WATER RESOURCES ELEMENT

WR-1.10 Channel Modification

Channel modification shall be discouraged in streams and rivers where it increases the rate of flow, rate of sediment transport, erosive capacity, have adverse effect on aquatic life or modify necessary groundwater recharge.

WR-3.9 Establish Critical Water Supply Areas

The County shall designate Critical Water Supply Areas to include the specific areas used by a municipality or community for its water supply system, areas critical to groundwater recharge, and other areas possessing a vital role in the management of the water resources in the County, including those areas with degraded groundwater quality.

WR-3.10 Diversion of Surface Water

Diversions of surface water or runoff from precipitation should be prevented where such diversions may cause a reduction in water available for groundwater recharge.

WATER RESOURCES ELEMENT IMPLEMENTATION

15. Designs, which respect natural topography and vegetation, can usually achieve effective flood control while retaining the dynamic flow and functional integrity of a natural waterway. Further channeling, straightening and lining waterways should be evaluated until alternative multipurpose modes of treatment such as wider berms and landscaped levees in combination with recreation amenities are provided.