ATTACHMENT 7

BRSP TREE MITIGATION PLAN

Bickford Ranch
Tree Mitigation Plan

November 12, 2014

The 1,927.9-acre Bickford Ranch Specific Plan (BRSP or Project) site is located southwest of the City of Auburn in unincorporated Placer County. The site is located east of Sierra College Boulevard, south of State Route 193 and north of English Colony Way.

The following describes the Tree Mitigation Plan for the BRSP.

1.0 Project Background

The BRSP was approved by the Placer County Board of Supervisors in 2001. With the project approval, the Board certified the Bickford Ranch Final Environmental Impact Report (EIR). In 2004, the Board reconsidered and approved the project. At that time, the Board considered the previously certified the Bickford Ranch EIR (2001), together with an Addendum to the EIR (2004). The Addendum addressed the changes between the project evaluated in the Bickford Ranch EIR (2001) and minor modifications to the project as described in the Bickford Ranch Specific Plan (BRSP). The Board approved the BRSP and the Addendum to the EIR (2004). The Bickford Ranch EIR is comprised of the EIR (2001) and the Addendum to the EIR (2004). The project approved in 2001 and subsequently modified in 2004 is known as the 2004 Project.

2.0 2014 Project

LV Bickford Ranch, LLC (Applicant) plans to develop the BRSP with minor modifications. Minor modifications to the project include:

- Reduction of approximately 230± acres in the size of the development footprint and corresponding increase of 230± acres in the open space preserve area;
- Removal of the golf course and associated facilities;
- Adjustments to the mix of residential uses and lot sizes;
- Adjustments to the circulation plan and project entry locations; and
- Minor adjustments to the shape of the development footprint (elimination of the golf course).

Modifications to the unit count (1,890 units) and land use intensity are not proposed. The proposed project, with modifications is known as the 2014 Project.

3.0 Tree Survey

A total of 78,700 trees were estimated to occur on the entire project site in 2002. A Tree Survey of the site (Tree Care Incorporated, 1998) (Tree Survey) identified a total of 22,991 trees within a diameter at breast height (DBH) of six inches or greater, located within the development footprint of the 2004 Project. An additional 55,709 trees with a DBH of six inches or greater were estimated to occur within proposed open space areas, outside of the development footprint. The trees in the open space preserve were not included in the Tree Survey that located and measured trunks and determined the extent of canopy of individual trees.

4.0 Evaluation of Trees in Bickford Ranch Environmental Impact Report (EIR) (2004)

Tree Removal under 2004 Project. The EIR identified 10,660 trees, measuring six inches DBH or greater, that would be removed with construction of the 2004 Project. The 10,660 trees proposed for removal were located within the development footprint of the 2004 Project and, of these, 6,500 trees were located in graded areas and 4,150 trees were located in non-graded areas. Most of the trees impacted would be oaks, although a few trees of other species within oak woodlands and riparian forests would be affected.

Mitigation Measures to Address Impacts. The EIR includes the following four mitigation measures to address impacts to trees:

- Mitigation Measure B-A: Implement the Applicant's oak forest conservation and revegetation plan
- Mitigation Measure B-B: Hire a project biologist for construction monitoring.
- Mitigation Measure B-C: Implement Off-Site Tree Mitigation
- Mitigation Measure B-D: Implement A Tree Protection Plan

Appendix A includes the full text of the four mitigation measures of the 2004 Project and proposed revisions and additions to the measures for the 2014 to implement the Tree Mitigation Plan.

Oak Woodland Conservation & Revegetation Plan (1998). As required by Mitigation Measure B-A (Appendix A), the EIR included the Bickford Ranch Oak Woodland Conservation & Revegetation Plan (Oak Plan) (1998). The Oak Plan outlines an approach for mitigation of tree impacts by planting native oak trees, grown from acorns collected on-site or in the immediately vicinity. The Oak Plan calls for the planting of trees on-site in identified planting areas. The Oak Plan also describes measures for the long-term conservation of woodland areas on-site.

5.0 Status of Tree Removal and Mitigation Efforts

Following approval of the 2004 Project, site development activities commenced including initiation of mass grading, tree removal and wetland species mitigation. Consistent with 2004 Project approvals, approximately 8,200 oak trees were removed and approximately 21,000 oak seedlings were planted in the northwest portion of the site as mitigation for trees removed. Over time and because the project developer withdrew, most of the oak seedlings planted failed due to lack of irrigation.

6.0 Placer County Regulatory Framework

The 1994 Placer County General Plan Policy Document contains policy language, explicitly written to protect oak woodland habitat. In 1987, Placer County adopted a new tree ordinance (Chapter 12, Article 12.16 PCC). In addition, Placer County has developed the draft Placer County Conservation Plan (PCCP) with the goal to protect and conserve open space and agricultural lands. The draft PCCP has identified oak woodlands as natural communities within the single greatest opportunity for large-scale conservation.

Impacts to oak woodlands within the Project are further regulated *by Placer County's Oak Woodlands Management Plan* (2009) which provides a consistent policy for oak woodland habitats throughout the County and complements programs and policies including: (1) projects subject to an environmental assessment under CEQA; (2) projects subject to the Placer County Tree Preservation Ordinance; and (3) projects evolving out of the draft PCCP. The goal of the management plan is to mitigate the impact of the loss of oak woodland communities and to provide guidance on the conservation of the oak woodland communities. The management plan also takes into consideration other trees and plants associated with the oak woodland-dominated natural communities and the value these communities contribute to wildlife, to air and water quality benefits, and to quality of life. While the plan is countywide in nature, it provides opportunities to address oak woodland issues on a project-priority basis to achieve oak woodland protection. A secondary purpose of the Oak Woodlands Management Plan is to provide the opportunity to obtain funding for special projects designed to conserve and restore Placer's oak woodlands.

In order to assess and mitigate impacts to oak woodlands for development projects considered before the Oak Woodland Management Plan implementation program is adopted, the County issued *Draft Guidelines for Evaluating Development Impacts on Oak Woodlands* (Guidelines) (2008). These guidelines define the oak woodlands and significant trees to which the guidelines apply. The guidelines also establish methodologies for inventorying oak woodlands and assessing impacts to them, and identify mitigation measures required to offset impacts to oak woodlands.

7.0 Tree Impacts and Mitigation

The BRSP tree mitigation strategy consists of two components to mitigate impacts of the 2014 Project:

1) **Mitigation of Impacts to Oak Woodland Canopy** (Section 7.1 below). The 2014 Project will result in impacts to 216.7 acres of on-site oak woodland canopy. As mitigation, the 2014 Project will provide 433.4 acres of canopy on-site as mitigation.

2) **Mitigation for Restoration and Compensation of Impacts to Significant Trees** (Section 7.2 below). The 2014 Project will result in impacts to 17.6 acres of canopy of significant trees (trees with 24-inch DBH or greater). To address restoration and compensation for impacts to Significant Trees, the 2014 Project will pay to Placer County a Tree Fee of $1,318 per market rate unit. The fund created by the fees will be used to acquire and conserve open space, restore existing open space, or for the restoration and/or conservation of oak woodland habitat in locations prioritized by the County.

7.1 Mitigation of Impacts to Oak Woodland Canopy

Construction of the 2014 Project will result in impacts to trees still remaining within the development footprint, although some significant "interior" oak groves will be preserved in set-aside natural open space areas.

HortScience's *Land Cover, Oak Woodland Associations and Canopy Coverage* (HortScience, August, 2014) analysis of the Bickford Ranch site is contained in Appendix B. The HortScience analysis is a geographic information system (GIS) analytical comparison of land cover and tree canopy for the 2004 and 2014 Projects and is the basis for the summary table below.

Table 1 summarizes tree canopy impacts and mitigation in the 2004 Project and 2014 Projects.

Table 1
Summary of Tree Canopy Impacts and Mitigation

		2004 Project	2014 Project
Total Canopy on Site			
1	Pre-Development Tree Canopy (2002 aerial of site)	759.5 acres	759.5 acres
Canopy Impacts			
2	Canopy impacted within Development Footprint (100%)	366.4 acres	156.3 acres
3	Canopy removed following 2004 Project approval	-	60.4 acres
4	Total Canopy Impacted	366.4 acres	216.7 acres
Mitigation Required			
5	Canopy Mitigation Required (2:1)	732.8 acres	433.4 acres
Mitigation Provided			
6	Mitigation Canopy (on-site)	393.1 acres	542.8 acres
Ratio of Canopy Mitigation Provided to Canopy (Mitigation) Required			
7	Mitigation Canopy Provided vs. Mitigation Canopy Required	0.54 to 1	1.3 to 1

Pre-Development Tree Canopy (Line 1)**.** A 2002 aerial photograph of the site was used to measure the tree canopy on the site before development of the 2004 Project (Pre-Development Tree Canopy). The Pre-Development Tree Canopy consisted of 759.5 acres.

Impacts to Canopy (Line 2)**.** To measure the impacts to canopy, the 2004 Project and 2014 Project development footprints were individually superimposed on an aerial photograph of the site depicting the canopy and land cover types. The methodology used for canopy measurement is consistent with the County's *Draft Guidelines for Evaluating Development Impacts on Oak Woodlands*. The area of canopy inside and outside the development footprint was measured separately for the 2004 and 2014 Projects. The land cover and canopy density was evaluated for each scenario.

In 2004 there were 759.5 acres of canopy on the entire Bickford Ranch property. Within the development footprint of the 2004 Project, there were approximately 366.4 acres of canopy impacted. In the 2014 Project, there were 156.3 acres of canopy impacted in the development footprint. The difference in

canopy impacted sizes between the 2004 and 2014 Projects is largely the result of a removal of the golf course contained in the 2004 Project and shift in the shape of the development footprint. Tree removals authorized with the 2004 Project accounts for some differences in tree canopy sizes as shown on Line 3 and described below.

Accounting for Canopy Removed with Previous Development Activity (Line 3)**.** Development activities (grading, site clearing) consistent with the 2004 Project approvals resulted in the removal of 60.4 acres of canopy. The amount of canopy removed was measured by comparing the tree canopies shown on aerial photographs of the site from 2002 and 2014.

The 60.4 acres of canopy removed after the 2004 approval is included in the 2014 Project impact to account for failed on-site planting mitigation associated with the 2004 Project, although not all trees planted for mitigation failed.

Total Canopy Impacted (Line 4)**.** The 2014 Project will impact a total of 216.7 acres of canopy which includes 156.3 acres of canopy located within the development footprint and 60.4 acres of canopy removed as a result of site development activities after the 2004 approvals. Although it is not likely, it is assumed for the purpose of this analysis, that the entire canopy within the development footprint will be impacted by the 2014 Project. Although this assumption overstates impacts to the canopy, it accounts for the possibility that private landowners may remove trees after the 2014 Project is constructed.

Mitigation Requirement (Line 5)**.** Consistent with the County's Draft *Guidelines for Evaluating Development Impacts on Oak Woodlands*, to mitigate for impacts to oak woodlands, the Project may dedicate to private or public ownership one or more areas equivalent to twice the area of the oak woodland impacted. These areas must be acceptable to the County as being equivalent or better in quality to the canopy impacted.

As an alternative to providing canopy, the County permits projects to pay an in lieu payment to the County Tree Trust Fund for each acre of oak woodland impacted. Tree Trust Funds are used by the County to purchase conservation easements or fee title to other oak woodlands in the County and to manage preserved property.

The 2014 Project impacts 216.7 acres of canopy and would be required, based on this standard, to provide two times the canopy impacted, or 433.4 acres of canopy.

Mitigation Canopy Provided (Line 6)**.** The Project proposes to provide on-site mitigation for impacts to canopy. The 2014 Project will provide 542.8 acres of canopy mitigation.

Open space preserves are located outside of the development footprint within the 2014 Project. Open space preserves include natural features such as wetlands, wildlife habitat, other resources and trees. The open space preserve in the 2014 Project includes a tree canopy measuring 542.8 acres.

A conservation easement will be recorded over the open space preserves on-site, including the canopy. A third party preserve manager will own and manage the open space preserve with an endowment funded by the Project. The recordation of the conservation easement will be completed concurrent with the recordation of any final map (large lot or small lot) or prior to construction of any on-site improvements, whichever occurs first. The open space preserves will be accessible to the public via public multi-use trails.

Ratio of Canopy Mitigation Required vs. Provided (Line 7). The amount of canopy provided on-site is 1.3 times greater than the amount of canopy mitigation required for the 2014 Project. The 2014 Project requires 433.4 acres of canopy mitigation which is satisfied in full by the on-site canopy (542.8 acres) that will be preserved in open space preserves.

7.2 Mitigation for Impacts to Significant Trees

Definition of Significant Trees. Significant Trees are trees that are 24-inch DBH or greater or 72 inches or greater in circumference measured at ground level (CGL).

Methodology for Estimating Significant Tree Canopy. Because of the number of trees on the site, and irregular information regarding the extent of tree removals after land development activities of the 2004 Project, the data were not conducive to generating an accurate list of Significant Trees with greater than 24-inch DBH or 72-inch CGL within the 2014 Project development footprint. Moreover, it was not practicable to physically inspect each multi-trunk tree in the field to measure its circumference at ground level.

For these reasons, the original Tree Survey data was evaluated to estimate the percentage of Significant Trees. Using a random number generator, twenty-three random samples of 100 trees each were taken from the Tree Survey, for a total sample of 2,300 trees. The 2,300-tree sample represents 10% of the trees in the Tree Survey and is a statistically-significant sample size. Data from the sampling is included in Appendix C.

Within the sample, 232 trees (10.1% of the total 2,300 trees sampled) meet the definition of a Significant Tree. The average DBH for the Significant Trees in the sample is 34.7 inches.

The percentage of Significant Trees in the sample (10.1%) was applied to the canopy within the 2014 development footprint (174.0 acres) to estimate the acreage of impacted canopy in the 2014 development footprint that comprises Significant Trees. Of the tree canopy impacted within the 2014 Project development footprint, the estimated canopy of Significant Trees is 17.6 acres, as calculated in Table 2.

Table 2
Calculation of Significant Tree Canopy
Applying Findings from Sample to 2014 Project

	Sample	2014 Project
Total Number of Trees	2,300 trees	
Percentage of Significant Trees	232 Significant Trees/ 2,300 trees in sample =10.1%	10.1% (from sample)
Average DBH for Significant Trees	34.7 inches DBH	34.7 inches DBH
Total Canopy Impacted in 2014 Project		174.0 acres
Canopy Comprised of Significant Trees		174.0 acres x 10.1% = 17.6 acres
Estimated Number of Trees in Significant Tree Canopy		17.6 acres x 40.8 trees/acre[1] = 718 trees
Total Inches (DBH) of Significant Trees		718 trees x 34.7 inches DBH = 24,915 inches

[1] Tree density of 40.8 trees per acre is based on density measured in Bickford Ranch Tree Survey (2002) (78,700 trees on site/1,927.9 acre site = 40.8 trees per acre).

Impacts to Significant Trees. The Significant Trees are located within the woodland on-site and the impacts to the overall oak woodland canopy are described in Section 7.1. Some Significant Trees will be preserved in planned open spaces within the development footprint of the 2014 Project. For the purpose of this analysis, it is assumed, however, that all Significant Trees within the development footprint will be impacted, which overstates the number of Significant Trees impacted.

As shown in Table 2, the 2014 Project is estimated to impact approximately 17.6 acres of tree canopy consisting of Significant Trees. The Significant Tree canopy is within the overall canopy that will be impacted as part of the 2014 Project. The 2014 Project proposes to conserve 542.8 acres of on-site canopy as mitigation for impacts to the overall oak woodland canopy, which will include some Significant Trees.

Tree Fee for Significant Tree Restoration and Compensation. To address restoration and compensation for Significant Trees impacted by the 2014 Project, the 2014 Project will pay to Placer County mitigation totaling $2,491,500, based on 24,915 inches of Significant Trees and mitigation of $100 per inch.

The tree mitigation will be paid in two components:

- A lump sum payment of $491,500 will be paid at issuance of first Grading Permit for backbone infrastructure in Phase 1.
- The balance of $2,000,000 will be converted to a fee known as the Bickford Ranch Tree Fee (Tree Fee), in the amount of $1,058.21 per residential unit, paid at time of building permit for each residential unit in the 2014 Project.

Funds from the lump sum payment and Tree Fee will be available to the County to acquire and conserve open space, restore existing open space, or for the restoration and/or conservation of oak woodland habitat in locations prioritized by the County.

The Tree Mitigation is calculated in Table 3 and described below.

Table 3
Bickford Ranch Tree Mitigation Calculation
Significant Tree Restoration and Compensation

Total Mitigation	Per Inch Mitigation for Significant Trees	24,915 inches (significant trees)[2] x $100 per inch	$2,491,500

Lump Sum Due at Grading Permit Issuance for Backbone Infrastructure in Phase 1	$491,500
Bickford Ranch Tree Fee Per Unit – Due at Building Permit	$2,000,000 (1,890 units x $1,058.21/unit)
Total Fee	$2,491,500

To compensate for impacts to Significant Trees in the oak woodland, the Tree Fee includes mitigation of $100 per inch for each inch of Significant Trees removed. The 2014 Project will remove approximately 718 Significant Trees, which is equivalent to 24,915 inches (DBH), as calculated on Table 2.

[2] See Table 2 for calculation of total inches (DBH) of significant trees.

8.0 Long Term Management of On-Site Oak Woodland

A Tree Protection Plan will be prepared to minimize direct and indirect impacts on oaks and other native trees retained on the Project site. The elements of this plan are included as standards in Mitigation Measure B-D (Appendix A), the tentative map conditions and, where applicable, in the CC&Rs for homeowners. At a minimum, the plan will include the following measures:

- Guidelines contained in Appendix E of Placer County Guidelines for Evaluating Development Impacts on Oak Woodland and the conservation goals and policies contained in the Placer County Oak Woodland Management Plan.

- During construction on the Project site, measures will be taken to protect trees, including erecting orange construction barrier fencing, that will remain for the duration of construction activity in the area affected by the particular phase of development, located at least one foot outside the drip line of each tree or groves of trees to be retained. Tree protection measures also include minimizing trenching for installation of utility lines by conducting hand work, as needed, within drip lines of trees to be retained.

- Construction activities within tree drip lines shall minimize damage to roots over two inches in diameter. The project biological monitor (see Mitigation Measure B-B) will report root damage to Placer County and have a certified arborist inspect the tree damage prior to backfilling. The arborist will determine if the damage is likely to be fatal to the tree.

- Tree preservation notes and specifications will be included on all plans and in contractor contracts.

- Irrigation and other potential sources of runoff associated with the constructed project will be diverted away from oak trees retained to the extent practical. To protect oaks from fungal root infection, drainage features will be constructed to intercept runoff from development upslope of the retained trees.

- The Bickford Ranch Development Standards identifies certain areas (ungraded lots and partially-graded lots) within the Plan Area where an additional Tree Permit will be required to remove trees outside of the building envelope. Ungraded lots and partially-graded lots are located along the ridges on the north and south of Bickford Ranch Road. The process for obtaining a tree permit and mitigation requirements will be consistent with the Placer County Tree Preservation Ordinance (Chapter 12, Article 12.16 PCC).

- Homeowners will be provided with information regarding the care of native trees and landscaping measures to use beneath oak trees. An example of such literature includes *Living Among the Oaks*, a publication of the University of California Cooperative Extension, Natural Resources Program.

- Construction of all equestrian, bicycle, and pedestrian trails, in particular the trails to be constructed within the natural open space, will avoid removal of protected trees, except where infeasible.

9.0 Additional Measures to Preserve Trees

On-Site Tree Planting. Construction of the 2014 Project will include planting of approximately 10,000 trees throughout the development footprint. Trees will be planted at project and neighborhood entries, within landscape corridors, park sites, and within residential lots as street and landscape screens. Of the approximately 10,000 trees that will be planted on-site, twenty percent (20%) of the trees will be oaks and other native species.

Expanded Tree Permitting Requirements. For the purpose of anticipating potential impacts of the 2014 Project, Section 7.1 of this analysis assumes that all trees within the 2014 Project 156.3-acre development footprint will be removed. As the 2014 Project develops, all of the trees in the development footprint will not be removed, even though they are considered for removal in this analysis. Many trees will be preserved in park sites, landscape corridors, open space areas inside the development footprint and within residential neighborhoods.

To reduce the likelihood of future tree removals by private property owners and home builders, the Bickford Ranch Development Standards (BRDS) will require a Tree Permit for removal of trees located outside the building envelope on ungraded lots and partially-graded lots. Ungraded lots and partially-graded lots are located along the ridges on the north and south of Bickford Ranch Road. The process for obtaining a tree permit and mitigation requirements will be consistent with the Placer County Tree Preservation Ordinance (Chapter 12, Article 12.16 PCC).

Tree removal subject to the Tree Permit requirements were considered in the canopy impact analysis (Section 7.1) and mitigation resulting from the Tree Permits will be in excess of the mitigation requirements described in Section 7.1 and 7.2

Off-Site Canopy Preservation. In 2006, as the result of litigation related to the 2004 Project, to address impacts to oak woodlands, the project provided $6.05 million for the acquisition of eight properties (Mitigation Properties) within Placer County. Funding was provided for acquisition of the Mitigation Properties to create oak woodland preserves and to enhance the following eight preserves.

- Garden Bar Preserve
- Kirk Ranch Preserve
- Kotomyan Big Hill Preserve
- Liberty Ranch Big Hill Preserve
- Oest Ranch – Cold Springs Preserve
- Oest Ranch – Lake Clementine Preserve
- Outman Big Hill Preserve
- Taylor Ranch Preserve

The Mitigation Properties, owned and managed by the Placer Land Trust with funding provided by the Project comprise 2,636 acres in land area, of which 1,987 acres are covered in oak woodland canopy.

The 1,987 acres of oak woodland canopy located on the Mitigation Properties is in addition the 542.8 acres of oak woodland canopy preserved on-site. The on-site (542.8 acres) and off-site (1,987 acres) oak woodland canopies preserved by the project total 2,529.8 acres.

Appendix A
Bickford Ranch EIR Mitigation Measures
Related to Tree Impacts

The Bickford Ranch EIR includes four mitigation measures to address impacts to trees (MMs B-A, B-B, B-C and B-D).

Implementation of this Tree Mitigation Plan requires deletion of MMs B-A and B-C, revisions to MM B-D and addition of new MMs B-X and B-Y. Below are the mitigation measures, redlined to reflect the proposed Tree Mitigation Plan.

Delete Mitigation Measure B-A: Implement the Applicant's Oak Forest Conservation and Revegetation Plan

- ~~**Mitigation Measure B-A: Implement the Applicant's Oak Forest Conservation and Revegetation Plan**~~

~~The Applicant proposes to include an on-site oak replacement plan in its proposed oak forest conservation and revegetation plan (Ralph Osterling Consultants, 1998). The plan will require replacement of approximately 10,653 oak trees at a ratio of 2:1 using native oak trees grown from acorns collected onsite or in the immediate vicinity. A total of approximately 21,200 trees will be planted at an average density of 100 trees per acre. Plantings will be installed within two years of tree removal. The plan will be developed and implemented in cooperation with the CDFG, U.S. Department of Agriculture Natural Resource Conservation Service, the California Department of Forestry and Fire Protection, and the University of California Cooperative Extension.~~

~~Planting sites will be indicated on a project site map and will include areas within all proposed Bio Filter zones, the proposed nature area in the Meadows community park, along selected portions of the project site edges, between natural open space areas and roads, in the Ridges community park, and in additional areas of existing oak woodland where young trees do not currently exist. Site selection criteria will include slope aspect, soil conditions, accessibility for maintenance and monitoring, irrigation water availability, potential for ecosystem enhancement, and potential for prescribed burning to prepare and manage planting sites.~~

- ~~Tree spacing will be as follows:~~

~~Trees per Acre (approximate)~~	~~Spacing Between Trees (feet)~~
~~10~~	~~66~~
~~20~~	~~46~~
~~40~~	~~33~~
~~80~~	~~23~~
~~100~~	~~21~~
~~200~~	~~15~~
~~400~~	~~10~~

- ~~Irrigation will occur from May through September for the three years after planting, unless post-irrigation monitoring determines that tree survival requires additional irrigation – see Response 14-217 in the FEIR. This timing can be modified as necessary for extremely wet or dry years.~~

- ~~Maintenance will occur according to the following schedule:~~

~~Year Following Planting~~	~~Irrigation Schedule~~	~~Weed Removal~~	~~Replanting~~

1	Weekly	4 times per year	Once per year in fall
2	Every other week	4 times per year	Once per year in fall
3	Every other week	4 times per year	Once per year in fall
4	Every other week	4 times per year	Once per year in fall
5	Every other week	4 times per year	Once per year in fall

- The 80 percent survival rate applies to each planting area.

- Survival will be measured in late summer of each year to allow for assessment of replacement needs in fall.

- Minimal survival rate will be as follows for each year:

Year Following Initial Planting	Percent Survival
1	95
2	90
3	90
4	90
5	80

Species to be planted will be native oaks and riparian species, including interior live oak, blue oak, California sycamore, willows, Fremont cottonwood, California buckeye, big-leaf maple, flowering ash, and native shrubs. Revegetation size stock (2- by 2- by 10-inch containers) will be used for plantings.

Plants installed will be drip irrigated for the first three years of growth. The Applicant's staff will monitor the irrigation systems for damage. Maintenance of all plantings will include biannual fertilization, spring and summer weed control, and replacement of damaged or dead plants.

Plantings will be required to meet a minimum survival rate of 80 percent at the end of a five-year establishment period. If this rate is not met at the end of the five years, replanting and continued monitoring will be conducted. Monitoring of the replacement plantings will be conducted annually for a minimum of five years to collect survival and growth data and provide photographic documentation of tree growth. An annual inventory and inspection of the growth and condition of all plants will be conducted annually by a qualified arborist approved by Placer County. A meeting to report on research and need for mitigation refinements will be conducted annually for five years following the planting.

Additional habitat conservation programs to be developed with the University of California Cooperative Extension, University of California at Davis, and Sierra College will include an inventory of natural open space areas to assess potential as habitat enhancement sites, an avian habitat improvement program, and a fire-safe fuel management program.

No change to Mitigation Measure B-B: Hire a project biologist for construction monitoring.

- **Mitigation Measure B-B: Hire a project biologist for construction monitoring.**

  The Applicant will retain a County-approved biologist to monitor all construction in areas of sensitive biological resources, including oaks and other protected trees to be retained, red-legged frog habitat, and wetlands and other waters of the United States. The monitor will be responsible for the following:

  - Scheduling and/or conducting pre-construction surveys identified in other mitigation measures (e.g., special-status plant and wildlife surveys, raptor nest surveys);

- Approving placement of the orange barrier fencing and performing weekly monitoring to ensure the fencing remains in good condition for the duration of construction activity in the area affected by the particular phase of development;

- Monitoring construction activities occurring near sensitive biological resources, as defined above, and delaying construction activities that threaten these resources until appropriate mitigation measures can be implemented; and

- Identifying any impacts occurring within areas protected by the orange barrier fencing and reporting to Placer County for additional compensatory mitigation.

Delete Mitigation Measure B-C: Implement Off-Site Tree Mitigation

- ~~**Mitigation Measure B-C: Implement Off-Site Tree Mitigation**~~

  ~~Inadequate open space is likely available for implementation of on-site compensation of approximately 21,200 oak trees and riparian tree species. The proposed density of approximately 100 trees per acre is likely too high to support the trees at maturity. The Applicant, therefore, partially mitigates loss of trees with off-site plantings and contribution of in-lieu fees to the Placer County Tree Preservation Fund. Suitable off-site plantings areas will be established in coordination with Placer County and may include a site along SR 193 in the vicinity of the proposed Caltrans improvements.~~

Revise Mitigation Measure B-D: Implement a Tree Protection Plan

- **Mitigation Measure B-D: Implement a Tree Protection Plan**

  Unless stated otherwise, all measures will be the sole responsibility of the Applicant. The Applicant will develop and implement a Tree Protection Plan to minimize direct and indirect impacts on oaks and other native trees that are to be retained on the project site. The elements of this plan will be included as standards in the tentative map conditions and, where applicable, in the CC&Rs for homeowners on the project site. At a minimum, the plan will include the following measures:

  - Guidelines contained in Appendix E of Placer County Guidelines for Evaluating Development Impacts on Oak Woodland and the conservation goals and policies contained in the Placer County Oak Woodland Management Plan.

  - ~~If the proposed construction area for an individual lot matches that shown in the development notebook on file with Placer County, the Applicant's proposed mitigation will be sufficient, and no further tree mitigation will be required. If the proposed construction area for an individual lot differs from the development notebook, a final tree count within the new construction area will be prepared to identify all trees with a DBH of 6 inches or more. For mitigation of removing any trees in excess of those identified in the Applicant's tree removal plan, the home builder will pay into either the Placer County Tree Preservation Fund or into a mitigation fund to be established by the Applicant and used to plant additional native trees onsite. Home builders owning a cluster of lots may remove the net total of trees for the lots as identified in the Applicant's tree removal plan. Any additional trees removed will be mitigated by payment into either the County's Tree Preservation Fund or a mitigation fund for on-site plantings.~~

  - During construction on the project site, measures will be taken to protect trees, including erecting orange construction barrier fencing, that will remain for the duration of construction activity in the area affected by the particular phase of development, located at least one foot outside the drip line of each tree or groves of

trees to be retained. Tree protection measures also include minimizing trenching for installation of utility lines by ~~and~~ conducting ~~by~~ hand ~~any~~ work, as needed, within drip lines of trees to be retained.

- ~~o~~ Construction activities ~~A contractor seeking a variance to machine excavate~~ within tree drip lines ~~will be required to~~ shall minimize damage to roots over two inches in diameter. The project biological monitor (see Mitigation Measure B-B) will report root damage to Placer County and have a certified arborist inspect the tree damage prior to backfilling. The arborist will determine if the damage is likely to be fatal to the tree. ~~Any fatally damaged tree will be mitigated by payment into either the Placer County Tree Preservation Fund or into a mitigation fund to be established by the Applicant and used to plant additional native trees on site.~~

- o Tree preservation notes and specifications will be included on all plans and in contractor contracts.

- o Irrigation and other potential sources of runoff associated with the constructed project will be diverted away from oak trees retained to the extent practical. ~~within all areas outside of the designated natural open space.~~ To protect oaks from fungal root infection, drainage features will be constructed to intercept runoff from development upslope of the retained trees.

- ~~o Before any tree removal following home construction, homeowners will be required to obtain approval from the Homeowners Association and a permit from Placer County for any protected trees.~~

- o The Bickford Ranch Development Standards identifies certain areas (ungraded lots and partially-graded lots) within the Plan Area where an additional Tree Permit will be required to remove trees outside of the building envelope. Ungraded lots and partially-graded lots are located along the ridges on the north and south of Bickford Ranch Road. The process for obtaining a tree permit and mitigation requirements will be consistent with the Placer County Tree Preservation Ordinance (Chapter 12, Article 12.16 PCC).

- o Homeowners will be provided with information regarding the care of native trees and landscaping measures to use beneath oak trees. An example of such literature includes *Living Among the Oaks*, a publication of the University of California Cooperative Extension, Natural Resources Program.

- o Construction of all equestrian, bicycle, and pedestrian trails, in particular the trails to be constructed within the natural open space, will avoid removal of protected trees, except where infeasible.

Add Mitigation Measure B-X: Replace Oak Woodland Acreage/Canopy

- **Mitigation Measure B-X: Replace Oak Woodland Acreage/Canopy**

  To mitigate impacts to oak woodland within the development footprint, the project shall provide mitigation of 2:1 ratio by any of the following methods:

  (1) Preserve in perpetuity 433.4 acres of oak woodland in Placer County. The oak woodland acreage preserved shall be in perpetuity and the project shall fund an endowment for the long-term management of the oak woodland.

  or

  (2) Make an in-lieu fee payment to the Placer County Tree Preservation Fund equivalent to the fair market value of a conservation easement on 433.4 acres of oak woodland property in Placer County, with such fair market value established via an appraisal within 150 days of the Board of Supervisors' action on the project. Any in-lieu payment shall be paid at the time of recordation of the first final subdivision map on the property. Such in-lieu funds shall include both a conservation component and an in-perpetuity management component.

These funds will be used by the County to purchase conservation easements for other oak woodland in the County.

If changes to the project are required during the Grading Plan process that result in modifications to the development footprint and impact area, the amount of such oak woodland acreage to be mitigated shall be revised accordingly consistent with this mitigation measure.

Add Mitigation Measure B-Y: Provide Funding for Impacts to Significant Trees

- **Mitigation Measure B-Y: Provide Funding for Impacts to Significant Trees**

  To address impacts to Significant Trees within the development footprint, the project shall provide funding for restoration and compensation of impacts to Significant Trees by paying a total amount of $2,491,500 in two components: 1) A lump sum payment of $491,500 shall be paid at issuance of first grading permit for backbone infrastructure in Phase 1 in the BRSP; and 2) payment of Bickford Ranch Tree Fee of $1,058.21 per residential unit at time of building permit. The mitigation funds shall be used by the County to acquire and conserve open space, restore existing open space, or for the restoration and/or conservation of oak woodlands in priority locations.

Appendix B
Land Cover, Oak Woodland Associations and Canopy Coverage
HortScience, August 11, 2014

Land Cover, Oak Woodland Associations and Canopy Coverage
Bickford Ranch
Placer County CA

Introduction and Background

LV Bickford Ranch LLC is planning to develop the 1,927 acre Bickford Ranch project in Placer County. The project received County approvals in 2001 and 2004 (2004 project). Some grading and tree removal occurred after the 2004 approval. Work on the project was then suspended for a number of years. LV Bickford Ranch LLC plans to re-initiate work on the project with a modified site plan and development envelope (2014 project).

Placer County has two policies relevant to tree preservation. The first is its Tree Ordinance (Article 12.16). One element of the Ordinance (12.16.060B2b) is the requirement for a tree location map including all trees ≥6" diameter located within 50' of development activity. In addition, an Arborist Report should include assessment of all trees within 50' of development activity and reporting of proposed preservation and removal by tree number. This policy was in effect when the project was approved in 2001 and 2004.

The second policy is the county's Oak Woodland Management Plan which focuses on the preservation of habitat rather than individual trees. The policy was under development at the time of the 2004 approval. Although the Plan focuses on conservation of woodland canopy, an additional goal is to preserve large trees.

The Environmental Impact Report for the 2004 project estimated approximately 78,700 trees were present at the project site. Estimates were based on field studies conducted by Tree Care Incorporated in 1998. Almost all trees present were "protected" under the Placer County Tree Preservation Ordinance. Of this number, approximately 23,000 were located within development envelope and were individually tagged and assessed. Outside areas proposed for development, field sampling estimated that approximately 55,700 trees were present.

The 2004 EIR also estimated that approximately 10,650 protected trees within the development envelope would be removed with 6,500 located within graded areas and 4,150 trees in areas outside of graded areas. Almost all of the trees to be removed were blue (*Quercus douglasii*), valley (*Q. lobata*) and interior live (*Q. wislizenii*) oak. Removal of the 10,650 protected trees would be mitigated by planting 21,300 native trees on the site. The 5 year goal was to have 80% of the planted trees survive. If the goal was not reached, additional replanting would be required.

The 2004 EIR also identified the presence and extent of six oak woodland associations:

Vegetation	**Area** (acres)
▪ Annual grassland	476
▪ Blue oak savanna	301
▪ Blue oak woodland	424
▪ Mixed interior live oak – blue oak woodland	691
▪ Ravine riparian – interior live oak	12
▪ Valley oak savanna	3
▪ Valley oak – white alder riparian forest	40

The EIR estimated that "up to 960 acres of oak woodland would be lost because of project construction". No estimates of the number of trees present in each association were included in the EIR.

Following the 2004 approval, clearing and grading operations were initiated. It has been estimated by the project team and Placer County that approximately 8,200 were removed of the 10,300 trees authorized to be removed under the 2004 approvals.

At the same time as the site was being cleared, efforts were made to initiate mitigation plantings. Acorns were collected from trees on-site, germinated and grown to plantable size at an on-site nursery constructed for that purpose. It is unknown how many trees were either grown or planted. As best we are aware, no one knows if any of the mitigation plantings are alive.

HortScience, Inc. was retained to assist LV Bickford Ranch LLC in addressing questions pertaining to tree preservation and removal, differences in impacts between the approved (2004 project) plan and the proposed (2014 project) plan, and mitigation requirements. Upon review of the project and existing information, we propose using a canopy analysis approach to address tree preservation and removal rather than the individual tree assessment employed previously. Two factors suggested this approach:

1. The incomplete nature of the tree inventory, tree location map, and records about which trees have been removed and mitigated. Without this information, an individual tree assessment would essentially be starting over, an undertaking that is impractical. In addition, there is no way to identify which trees were removed during the preliminary clearing and grading.

2. The County's transition from a focus on compensation by tree planting to habitat conservation both on- and off-site. This transition reflects a focus on the Oak Woodland Management Plan.

Land Cover and Canopy Analysis

The following describes the GIS-based analysis of the land and canopy cover for the 2004 and 2014 projects as well as for the mitigation parcels.

Proposed Development Envelope

The 2014 Project has a development envelope reduction of 276.3 acres compared to the 2004 Project. The 2004 Project would have developed 1251.5 of the 1927.5 acres with 675.9 acres retained as open space. The 2014 Project would develop 975.2 and retain 952.3 as an open space preserve.

Land Cover

As noted earlier, the 2004 EIR identified 6 oak woodland associations and grassland at the project site. At present, Placer County relies on a slightly different classification of oak woodland (Draft Placer County Natural Resource Report. JSA. 2004. ftp://ftp1.placer.ca.gov/cdra/gis/landcover.zip).

The BRSP land cover types are listed in Table 1. Of the 1927.5 acres, 495.6 are classified as grassland. There are also very small (<1 acre) areas of fresh emergent wetland and water. The dominant oak association are: blue oak woodland (426.1), foothill hardwood woodland (369.0), oak woodland savannah (303.6), oak – foothill pine woodland (227.1) and valley oak foothill riparian woodland (69.4).

Of the 975.2 acres within the development envelope in the 2014 Project, the greatest impact would be on grassland (352.0 acres), oak woodland savannah (232.1 acres), blue oak woodland (212.6 acres) and foothill hardwood woodland (98.5 acres). The 2014 Project proposes to retain almost all the valley foothill riparian savannah (69.3 of 69.4 acres) and all of the 10.7 acres of interior live oak woodland. The 2014 Project would remove 8.7 additional acres of oak – foothill pine woodland.

In comparison to the 2004 Project, the 2014 Project has a 276.3 acre reduction in the development envelope, including reduction of 125.4 acres of foothill hardwood woodland, 64.6 acres of blue oak woodland and 36.7 acres of oak woodland savannah.

Canopy Analysis Methodology

Canopy analyses were prepared for both the 2004 and 2014 Projects.

Canopy analysis was based on a 2002 aerial image of the site (BR-AE-2002.jpg). A canopy classification model was created to delineate canopy from other objects. To illustrate the model, a 10 acre section (Figure 1) within the project area serves as an example.

Figure 1. Aerial image of sample of a 10 acre section of the Bickford site.

An initial run of the canopy classification model resulted in Figure 2. The blue lined areas represent places that the program model classified as tree canopy. Included as canopy are canals, dark patches in the grass and green wetland areas. The model alone estimated 1.86 acres of canopy.

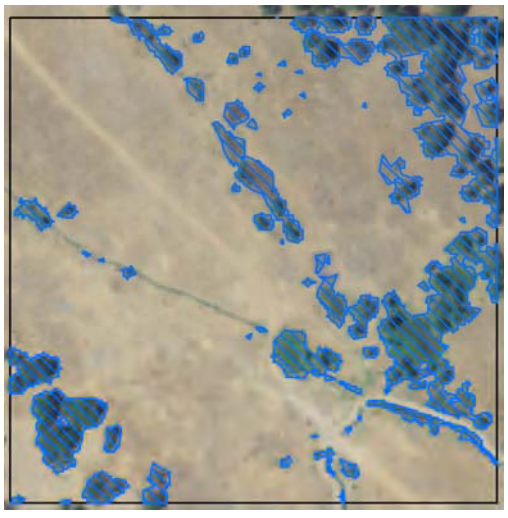

Figure 2. Same site as Figure 1 after initial model run.

Results were manually edited by visual assessment, specifically targeting removal of irrigation canals, ponds, dark areas of grass, green grass from wetland areas from the canopy (Figure 3). With editing, an estimate of 1.78 acres of canopy was obtained.

Figure 3. 10 acre section after editing.

Using this approach, the 2004 and 2014 Projects were analyzed for the amount of canopy to be retained and removed. The development footprints for the 2004 and 2014 Projects were each superimposed on the 2002 aerial photo that depicted tree canopy. These methods likely over-estimate the amount of canopy present on-site by classifying bushes, shadows and dark grass as canopy.

Canopy Characteristics

Canopy classification analysis identified 759.5 acres of vegetation canopy within the 1927.5 acres of the site (Table 2). The majority of tree canopy was in the foothill hardwood woodland (259.1 acres), blue oak woodland (194.8 acres) and oak – foothill pine woodland (163.4 acres) associations. The difference between the canopy acreages of 2004 and 2014 was 60.4 acres, which we consider the net loss of trees mostly due to clearing and grading: 41.3 acres in blue oak woodland, 19.4 acres in oak woodland savannah and 5.6 acres in foothill hardwood woodland. As a result, the 2014 Project encompasses 699.1 acres of canopy as opposed to 759.5 in the 2004 Project.

Canopy density was measured by dividing acres of canopy by the total number of acres in each woodland association. For the Bickford site overall, canopy density was 39% (759.5 acres of canopy / 1927.5 acres overall). Within the oak woodland associations, canopy density ranged from a high of 89% (valley foothill riparian woodland) to a low of 15% (oak woodland savannah). Intermediate between these two extremes were oak -- foothill pine woodland (72%), foothill hardwood woodland (70%) and blue oak woodland (46%). Scattered trees were present in the annual grass association resulting in a canopy density of 4%.

Overall, the 2014 Project would result in the loss of 216.7 acres of canopy, based on 60.4 acres already removed during clearing and grading and an additional 156.3 acres to be removed as the project is developed. This represents 29% of the total canopy at the site. The 2014 Project would result in retention of 149.7 additional acres of canopy compared to the 2004 Project (336.4 vs. 216.7 acres).

Mitigation Properties

As part of the settlement of the litigation resulting from the 2001 project approval, funds were made available for the acquisition or purchase of conservation easement of eight properties within Placer County (Table 3). The properties are owned and managed by the Placer Land Trust. They range in size from 80 (Skip Outman Big Hill Preserve) to 992 (Garden Bar Preserve) acres, and total 2,636 acres. Because the Oest Cold Springs and Oest Lake Clementine properties are located in east Placer County, they are outside the mapped area for the County's land cover association database. We used the Sierra vegetation shapefile from the Cal-Atlas Clearinghouse (http://projects.atlas.ca.gov/frs/download.php/523/sierra_clip_veg.zip) classification as an alternative. The same methods for land cover and canopy analysis of the mitigation properties were used as the Bickford Ranch property.

The dominant vegetation cover of the settlement parcels is oak – foothill pine woodland (1515 acres). Other vegetation associations include blue oak woodland (299 acres), foothill hardwood woodland (199 acres), and oak woodland savannah (110 acres). At the two Oest properties, the dominant cover is hardwood forest (323 acres) and conifer forest (116 acres).

Within the 2,636 acres of the settlement properties there are 1,987 acres of tree canopy. The overall canopy density of the settlement parcels is 75%, almost twice that of the Bickford project site (39%). For individual settlement parcels, canopy density ranged from a low of 59% (Kotomyan Preserve) to a high of 95% (Skip Outman Big Hill Preserve). The canopy acreages are also likely over-estimates to on-site coverage of settlement properties. By using similar methodologies on all sites, the results should be comparable.

Summary

The Bickford Ranch site encompasses 1927.5 acres. The proposed 2014 Project would impact a development footprint of 975.2 acres and retain 952.3 acres as open space preserve. Compared to the 2004 Project, this represents an overall reduction in the area impacted of 276.3 acres.

Among the 1927.5 acres are several oak woodland associations including blue oak woodland, foothill hardwood woodland, interior live oak woodland, oak – foothill pine woodland, oak woodland savannah and valley foothill riparian woodland. The oak woodlands at Bickford Ranch comprise 759.5 acres of vegetation canopy, of which 216.7 acres will be impacted by the 2014 Project. Included in this total are 93.2 acres of blue oak woodland.

Based on this analysis, the Bickford Ranch 2014 project will require mitigation for the 216.7 acres of canopy which have been or will be removed. The canopy in the 8 mitigation properties total 1,987 acres, approximately 9 times the amount of canopy impacted by the Bickford Ranch 2014 Project.

Table 1. Land and oak woodland associations. Bickford Ranch. Placer County CA.

Table 2. Canopy coverage and oak woodland associations. Bickford Ranch. Placer County CA.

Table 3. Land and oak woodland associations. Mitigation properties. Placer County CA.

Table 4. Canopy coverage and oak woodland association. Mitigation properties. Placer County CA.

Table 1. Land and oak woodland associations. Bickford Ranch. Placer County, CA.

	Acres	Land Cover (West Placer County) Annual grass	Blue oak woodland	Foothill Hardwood Woodland	Fesh Emergent Wetland	Interior live oak woodland	Water	Oak - Foothill pine woodland	Oak woodland savanah	Rural Residential	Rural Residential Forested	Seasonal Wetland	Unidenfied	Urban or Surburban	Valley Foothill Riparian Woodland
2004 project plan	**1927.5**	**495.6**	**426.1**	**369.0**	**9.9**	**10.7**	**0.2**	**227.1**	**303.6**	**5.5**	**1.8**	**7.0**	**0.2**	**1.2**	**69.4**
Within development area	1251.5	402.3	277.2	223.9	2.5	-	0.2	64.1	268.8	2.8	-	0.7	-	0.0	9.0
Outside development area	675.9	93.4	149.0	145.1	7.4	10.7	-	163.0	34.7	2.7	1.8	6.4	0.2	1.2	60.4
2014 project plan	**1927.5**	**495.6**	**426.1**	**369.0**	**9.9**	**10.7**	**0.2**	**227.1**	**303.6**	**5.5**	**1.8**	**7.0**	**0.2**	**1.2**	**69.4**
Within development area	975.2	352.0	212.6	98.5	2.2	-	-	72.8	232.1	2.5	1.8	0.6	-	0.0	0.1
Outside development area	952.3	143.7	213.6	270.5	7.7	10.7	0.2	154.3	71.4	3.0	0.0	6.4	0.2	1.2	69.3
Difference 2004 vs. 2014 plans	**276.3**	**50.3**	**64.6**	**125.4**	**0.3**	**-**	**0.2**	**-8.7**	**36.7**	**0.4**	**-1.8**	**0.1**	**-**	**0.0**	**8.9**

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Table 2. Canopy coverage and oak woodland associations. Bickford Ranch. Placer County, CA.

	Acres	Land Cover (West Placer County) Annual grass	Blue oak woodland	Foothill Hardwood Woodland	Fesh Emergent Wetland	Interior live oak woodland	Water	Oak - Foothill pine woodland	Oak woodland savanah	Rural Residential	Rural Residential Forested	Seasonal Wetland	Unidenfied	Urban or Surburban	Valley Foothill Riparian Woodland
2004 project plan	**759.5**	**20.5**	**194.8**	**259.1**	**0.1**	**10.3**	**0.1**	**163.4**	**45.4**	**2.1**	**0.8**	**1.1**	**0.1**	**0.4**	**61.2**
Within development area	366.4	12.2	129.4	138.8	0.0	-	0.1	40.1	38.3	0.2	-	-	-	0.0	7.2
Outside development area	393.1	8.3	65.3	120.3	0.1	10.3	-	123.3	7.1	1.9	0.8	1.1	0.1	0.4	54.0
2014 project plan	**699.1**	**22.1**	**153.5**	**253.5**	**1.2**	**10.4**	**0.2**	**164.9**	**26.1**	**2.2**	**0.9**	**1.4**	**0.1**	**0.6**	**62.0**
Within development area	156.3	7.3	51.9	45.3	0.0	-	-	35.8	14.7	0.2	0.9	-	-	0.0	0.1
Outside development area	542.8	14.8	101.6	208.2	1.2	10.4	0.2	129.1	11.4	2.0	0.0	1.4	0.1	0.6	61.9
Difference 2004 vs. 2014 plans	**60.4**	**-1.6**	**41.3**	**5.6**	**-1.1**	**-0.1**	**0.0**	**-1.6**	**19.4**	**-0.1**	**-0.1**	**-0.3**	**0.0**	**-0.2**	**-0.8**
Within development area	210.2	4.8	77.5	93.5	0.0	-	0.1	4.3	23.6	0.1	-0.9	-	-	0.0	7.1
Outside development area	-149.8	-6.5	-36.2	-87.9	-1.1	-0.1	-	-5.9	-4.2	-0.1	0.8	-0.3	0.0	-0.2	-7.9
Total to be removed	**216.7**	**5.7**	**93.2**	**50.9**	**-1.1**	**-0.1**	**0.0**	**34.2**	**34.1**	**0.1**	**0.8**	**-0.3**	**0.0**	**-0.2**	**-0.7**
Within development area	156.3	7.3	51.9	45.3	0.0	-	-	35.8	14.7	0.2	0.9	-	-	0.0	0.1
Removed post 2004	60.4	-1.6	41.3	5.6	-1.1	-0.1	0.0	-1.6	19.4	-0.1	-0.1	-0.3	0.0	-0.2	-0.8

Table 3. Land and oak woodland associations. Mitigation properties. Placer County, CA.

HORT SCIENCE August 11, 2014	Acres	Land Cover (West Placer County)[1]														Consbio ArcGIS Server[2]			
		Annual grass	Blue oak woodland	Foothill Hardwood Woodland	Fesh Emergent Wetland	Interior live oak woodland	Water	Oak - Foothill pine woodland	Oak woodland savanah	Riverine	Rural Residential	Rural Residential Forested	Seasonal Wetland	Crops	Urban or Surburban	Valley Foothill Riparian Woodland	Herbaceous	Hardwood Forest	Shrub	Conifer Forest
Mitigation Properties																			
Garden Bar	992	5	1	197	-	-	-	721	65	3	-	-	-	-	-	-	-	-	-	-
Kirk Ranch	281	9	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kotomyan	160	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-	-	-
Liberty Ranch Big Hill	313	-	-	-	-	-	-	313	-	-	-	-	-	-	-	-	-	-	-	-
Oest - Cold Springs	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	80	5	73
Oest - Lake Clementine	329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	243	19	43
Skip Outman Big Hill	80	-	-	-	-	-	-	80	-	-	-	-	-	-	-	-	-	-	-	-
Taylor Ranch	321	-	26	2	-	-	-	241	45	-	-	-	-	-	-	7	-	-	-	-
Total, all mitigation properties	**2636**	**14**	**299**	**199**	**-**	**-**	**-**	**1515**	**110**	**3**	**-**	**-**	**-**	**-**	**-**	**7**	**26**	**323**	**24**	**116**

Table 4. Canopy coverage and oak woodland associations. Mitigation properties. Placer County, CA.

	Acres	Land Cover (West Placer County)														Sierra Vegetation			
		Annual grass	Blue oak woodland	Foothill Hardwood Woodland	Fesh Emergent Wetland	Interior live oak woodland	Water	Oak - Foothill pine woodland	Oak woodland savanah	Riverine	Rural Residential	Rural Residential Forested	Seasonal Wetland	Crops	Urban or Surburban	Valley Foothill Riparian Woodland	Herbaceous	Hardwood Forest	Shrub	Conifer Forest
Bickford Ranch canopy to be removed	**217**	**6**	**93**	**51**	**-1**	**0**	**0**	**34**	**34**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**-**	**-**	**-**	**-**
Mitigation Properties																			
Garden Bar	745	0	1	185	-	-	-	536	22	0	-	-	-	-	-	-	-	-	-	-
Kirk Ranch	196	3	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kotomyan	95	-	-	-	-	-	-	95	-	-	-	-	-	-	-	-	-	-	-	-
Liberty Ranch Big Hill	279	-	-	-	-	-	-	279	-	-	-	-	-	-	-	-	-	-	-	-
Oest - Cold Springs	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	75	5	70
Oest - Lake Clementine	233	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	177	12	36
Skip Outman Big Hill	76	-	-	-	-	-	-	76	-	-	-	-	-	-	-	-	-	-	-	-
Taylor Ranch	213	-	25	1	-	-	-	174	7	-	-	-	-	-	-	6	-	-	-	-
Total, all mitigation properties	**1987**	**3**	**220**	**186**	**-**	**-**	**-**	**1160**	**29**	**0**	**-**	**-**	**-**	**-**	**-**	**6**	**10**	**251**	**16**	**105**

Appendix C
Significant Trees in 2,300-Tree Sample

	Tree Number	Species	Inches
Sample 1: 52597-52696			
1	52597	Valley Oak	28
2	52598	Valley Oak	32
Sample 2: 7046-7145			
1	7051	Live Oak	27
2	7074	Live Oak	32
3	7087	Foothill Pine	30
4	7100	Live Oak	36
5	7102	Live Oak	25
6	7107	Live Oak	60
7	7108	Live Oak	44
8	7115	Live Oak	24
9	7123	Live Oak	29
10	7125	Live Oak	27
11	7128	Live Oak	24
12	7130	Live Oak	49
13	7142	Foothill Pine	29
Sample 3: 53103-53202			
0	n/a		
Sample 4: 19039-19138			
1	19040	Live Oak	26
2	19041	Live Oak	34
3	19042	Live Oak	26
4	19043	Live Oak	29
5	19044	Live Oak	53
6	19045	Footfill Pine	34
7	19048	Live Oak	46
8	19050	Live Oak	26
9	19053	Live Oak	44
10	19055	Live Oak	33
11	19056	Live Oak	37
12	19063	Live Oak	25
13	19066	Live Oak	43
14	19070	Live Oak	50
15	19072	Live Oak	30
16	19073	Live Oak	53
17	19076	Blue Oak	30
18	19078	Live Oak	61
19	19086	Live Oak	51
20	19087	Blue Oak	25
21	19088	Blue Oak	27
22	19090	Live Oak	43
23	19094	Live Oak	24
24	19095	Live Oak	26
25	19096	Live Oak	25
26	19099	Live Oak	45
27	19101	Live Oak	25
28	19102	Live Oak	33
29	19109	Live Oak	49
30	19110	Live Oak	56
31	19112	Live Oak	35
32	19114	Live Oak	43
33	19119	Live Oak	28
34	19121	Grey Pine	24

	Tree Number	Species	Inches
Sample 5: 5244-5343			
1	5246	Blue Oak	27
2	5251	Live Oak	27
3	5255	Live Oak	48
4	5257	Live Oak	25
5	5275	Foothill Pine	34
6	5276	Live Oak	39
7	5298	Blue Oak	29
8	5299	Blue Oak	32
Sample 6: 8484-8583			
1	8493	Foothill Pine	38
2	8501	Blue Oak	33
3	8514	Foothill Pine	28
4	8520	Live Oak	29
5	8524	Blue Oak	27
6	8533	Blue Oak	25
7	8535	Foothill Pine	31
8	8558	Foothill Pine	25
9	8560	Blue Oak	32
10	8578	Live Oak	30
11	8582	Live Oak	36
Sample 7: 10114-10213			
1	10115	Live Oak	28
2	10141	Blue Oak	24
3	10144	Live Oak	45
4	10146	Live Oak	30
5	10152	Live Oak	35
6	10153	Live Oak	26
7	10156	Live Oak	42
8	10157	Live Oak	45
9	10162	Live Oak	33
10	10163	Live Oak	58
11	10175	Live Oak	31
12	10176	Live Oak	35
13	10177	Live Oak	31
14	10180	Live Oak	68
15	10183	Live Oak	24
16	10186	Live Oak	24
17	10191	Live Oak	65
18	10192	Live Oak	28
19	10202	Blue Oak	28
Sample 8: 15643-15742			
1	15659	Live Oak	47
2	15674	Blue Oak	27
3	15683	Foothill Pine	28
4	15684	Blue Oak	41
5	15734	Live Oak	40
6	15740	Live Oak	45
Sample 9: 17865-17964			
1	17878	Foothill Pine	24
2	17901	Live Oak	37
3	17920	Blue Oak	25
4	17924	Blue Oak	24
5	17929	Live Oak	34
6	17960	Live Oak	33
7	17964	Live Oak	34
Sample 10: 17022-17121			
1	17093	Live Oak	29

	Tree Number	Species	Inches
Sample 11: 21798-21897			
1	21828	Flowering Pear	33
2	21869	Flowering Pear	33
3	21872	Flowering Pear	32
4	21896	Live Oak	25
Sample 12: 10696-10795			
1	10696	Foothill Pine	25
2	10708	Blue Oak	33
3	10710	Live Oak	25
4	10711	Live Oak	24
5	10724	Foothill Pine	26
6	10726	Foothill Pine	27
7	10729	Live Oak	26
8	10733	Live Oak	35
9	10734	Live Oak	28
10	10735	Blue Oak	24
11	10738	Live Oak	51
12	10740	Blue Oak	30
13	10742	Blue Oak	25
14	10744	Live Oak	28
15	10745	Blue Oak	24
16	10751	Live Oak	28
17	10759	Live Oak	29
18	10761	Live Oak	25
19	10763	Live Oak	31
20	10780	Live Oak	24
21	10781	Live Oak	42
Sample 13: 21568-21667			
1	21569	Live Oak	29
2	21570	Live Oak	44
3	21571	Live Oak	53
4	21573	Foothill Pine	37
5	21575	Live Oak	51
6	21649	Live Oak	29
7	21650	Live Oak	32
8	21652	Live Oak	24
9	21653	Live Oak	34
10	21658	Live Oak	45
11	21659	Live Oak	24
12	21660	Live Oak	26
13	21662	Live Oak	28
Sample 14: 1119-1218			
1	1145	Live Oak	33
2	1180	Blue Oak	24
3	1191	Live Oak	30
4	1193	Live Oak	36
5	1196	Live Oak	24
6	1202	Live Oak	29
7	1209	Live Oak	34
8	1211	Live Oak	27
9	1216	Live Oak	38

	Tree Number	Species	Inches
Sample 15: 25260-25359			
1	25262	Blue Oak	34
2	25278	Foothill Pine	34
3	25281	Blue Oak	28
4	25290	Blue Oak	34
5	25292	Blue Oak	25
6	25303	Foothill Pine	32
7	25306	Blue Oak	25
8	25311	Live Oak	36
9	25314	Live Oak	36
10	25318	Live Oak	44
11	25320	Live Oak	30
12	25322	Live Oak	50
13	25326	Live Oak	25
14	25328	Blue Oak	25
15	25332	Live Oak	40
16	25338	Live Oak	25
17	25342	Blue Oak	33
18	25345	Blue Oak	30
19	25347	Blue Oak	26
Sample 16: 12754-12853			
1	12829	Blue Oak	28
2	12833	Foothill Pine	26
3	12847	Blue Oak	25
4	12851	Blue Oak	24
Sample 17: 14185-14284			
0	n/a		
Sample 18: 22990-23089			
1	22995	Live Oak	43
2	23002	Walnut	25
3	23008	Cottonwood	49
4	23009	Cottonwood	54
5	23011	Zelkova	40
6	23013	Cottonwood	26
7	23016	Blue Oak	25
8	23022	Blue Oak	26
9	23024	Blue Oak	42
10	23025	Blue Oak	32
11	23028	Live Oak	43
12	23030	Live Oak	35
13	23031	Live Oak	29
14	23032	Live Oak	31
15	23034	Live Oak	52
16	23035	Live Oak	67
17	23039	Live Oak	40
18	23040	Cottonwood	63
19	23041	Cottonwood	28
20	23042	Willow	34
21	23044	Willow	29
22	23045	Valley Oak	30
23	23046	Cottonwood	86
24	23047	Willow	37
25	23048	Willow	71

	Tree Number	Species	Inches
Sample 19: 5257-5356			
1	5257	Live Oak	25
2	5275	Foothill Pine	34
3	5276	Live Oak	39
4	5298	Blue Oak	29
5	5299	Blue Oak	32
Sample 20: 26057-26156			
1	26058	Live Oak	42
2	26059	Live Oak	29
3	26061	Live Oak	30
4	26065	Live Oak	45
5	26069	Live Oak	100
6	26070	Live Oak	40
7	26074	Live Oak	31
8	26081	Live Oak	63
9	26082	Live Oak	30
10	26085	Live Oak	85
11	26090	Live Oak	33
12	26093	Live Oak	40
13	26096	Live Oak	45
14	26113	Live Oak	40
15	26123	Live Oak	30
16	26129	Live Oak	31
17	26131	Live Oak	28
18	26133	Live Oak	32
19	26136	Live Oak	25
20	26138	Live Oak	28
21	26148	Live Oak	56
22	26150	Blue Oak	28
Sample 21: 12938-13039			
1	12940	Blue Oak	25
2	12974	Foothill Pine	32
3	13015	Grey Pine	37
4	13016	Grey Pine	30
5	13023	Grey Pine	24
Sample 22: 14128-14227			
0	n/a		
Sample 23: 14900-14999			
1	14904	Blue Oak	27
2	14918	Blue Oak	29
3	14920	Live Oak	35
4	14948	Live Oak	26

Signficant Tree Sample Summary

Sample Size	2300 trees
Number of Sig Trees	232 trees
Percentage of Sig Trees	10.10%
Average dbh of Sig Trees	34.7 inches