

March 27, 2017

Mr. Chuck Centers
2625 Sheridan Way
Sacramento, CA 95812

RE: Biological Site Assessment for the Cameron Ranch Project, Cameron Park, CA.

HELIX Environmental Planning, Inc. (HELIX) conducted a biological site assessment for the Cameron Ranch Project. The approximately 5.5-acre project site consists of assessor parcel numbers (APN) 102-110-24, 102-110-14, and 102-421-01 at the northwest corner of Cameron Park Drive and Green Valley Road in Cameron Park, Ca. HELIX understands that Tentative Subdivision Map, Zone Change, and Planned Development applications have been submitted to El Dorado County (County). Due to the time lapse since preparation of the Biological Site Assessment (BSA) conducted in support of the project in 2007, the County has requested an updated BSA and letter report (i.e., this document) from the author that re-verifies the conclusions of the previous assessment (as applicable).

BACKGROUND

A BSA was prepared for the site in August, 2007 (HDR 2007) in support of a prior project proposal. No special-status plant or animal species were identified on the property during the BSA inventory conducted in 2007; this BSA concluded that the project site lacked habitat for special-status species and that no wetlands or other waters of the U.S. were present on the site. HELIX has been asked to conduct an updated inventory and BSA letter report for the current project in order to determine if the results of the prior assessment are still valid.

METHODS

Studies conducted in preparation of this BSA consisted of a desktop review to determine regionally-occurring special-status species with the potential to occur in the project site and vicinity and a biological site reconnaissance. The desktop review consisted of a review of the previous BSA (HDR 2007) and an updated search of the following databases, which are included as Attachment A. The database search consisted of the following resources:

- The Sacramento Fish and Wildlife Office list of threatened and endangered species that may occur in the project site and/or may be affected by the project (USFWS 2017).

- The California Native Plant Society (CNPS) list of special-status plants documented in the “Shingle Springs, CA” 7.5-minute quad (CNPS 2017).
- The California Natural Diversity Database (CNDDDB) list of special-status species documented within the “Shingle Springs, CA” 7.5-minute quad (CDFW 2017).

The biological site reconnaissance consisted of a pedestrian survey of the project site to document existing conditions and evaluate the potential for regionally-occurring special-status species or other sensitive biological resources (i.e., waters of the U.S or State) to be present on the site or be affected by site development. Site photos were taken to document current site conditions (See Attachment B). The biological site reconnaissance was conducted on March 23, 2017 by HELIX Senior Scientist, Stephen Stringer M.S., the surveyor and primary author of the previous BSA prepared in August 2007.

RESULTS

Environmental Setting/Site Conditions

No significant changes have occurred on the site since the prior BSA was prepared in August 2007. The property is located in a suburban setting in the community of Cameron Park, CA and the site is highly disturbed. The majority of the site has been cleared/graded in the past, likely in anticipation of future development. The site is surrounded by developed parcels, including a Rite Aid Pharmacy and single- and multi-family residential structures.

An existing apartment building and parking area are present in the northeastern portion of the site. The vegetation on the remainder of the site consists of non-native annual grassland, with a mix of ruderal areas (dominated by weedy vegetation) and other areas with a higher percentage of native shrubs and forbs. In general, the site lacks a recognizable native or naturalized plant community. The dominant plant species on the site are non-native grasses, such as wild oat (*Avena* sp.), Italian ryegrass (*Festuca perennis*), brome (*Bromus* spp.), and medusahead (*Taeniatherum caput-medusa*) and scattered coyote bush (*Baccharis pilularis*). Also present in the non-native grassland are scattered native trees, including native oaks (*Quercus douglasii* and *Q. wislizenii*) and foothill pine (*Pinus sabiniana*).

Special-Status Species and Other Sensitive Biological Resources

No special-status species were observed on the site during the biological site reconnaissance and none have been previously documented on the site. The site lacks habitat for any of the regionally-occurring special-status species identified in Attachment B. Regionally-occurring special-status species consist primarily of animal species that occur in aquatic habitats (e.g., amphibians and fish) and rare plants associated with chaparral habitats and rescue soils in the Pine Hill formation. There is no aquatic habitat on the site to support amphibians or fish. The site also lacks chaparral habitats or other native habitats and does not provide habitat for special-status plants.

No wetlands or other waters of the U.S. or State, or other sensitive biological resources, were identified on the site.

SUMMARY

Our updated BSA indicates that the conclusions of the previous BSA are still valid. It is our professional opinion that special-status plant and animal species are absent from the Cameron Ranch site. The site also lacks wetlands or other waters of the U.S. Therefore, no impacts to special-status species or other sensitive biological resources are anticipated as a result of development of the project site. Feel free to contact me with any questions by email at StephenS@helixepi.com or by phone at 916-365-8712.

Sincerely,

Stephen Stringer

Stephen Stringer, M.S.
Senior Scientist

Attachments: A, Regionally-Occurring Special-Status Species
B, Site Photos

References:

California Department of Fish and Wildlife (CDFW). 2017. California Department of Fish and Wildlife, Natural Diversity Database Biogeographic Data Branch. Sacramento, California. Accessed online March 24, 2017. Information expires on September 3, 2017.

California Native Plant Society, Rare Plant Program (CNPS). 2017. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website <http://www.rareplants.cnps.org> [accessed March 24, 2017].

HDR. 2007. Biological Site Assessment of Cameron Park Property. Prepared for Dover Construction. August 13, 2007.

U.S. Fish and Wildlife Service (USFWS). 2017. List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. March 24, 2017.

Attachment A

USFWS, CNDDDB, and CNPS Lists of Regionally Occurring Special-Status Species



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:

March 24, 2017

Consultation Code: 08ESMF00-2017-SLI-1527

Event Code: 08ESMF00-2017-E-03823

Project Name: Cameron Ranch

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2017-SLI-1527

Event Code: 08ESMF00-2017-E-03823

Project Name: Cameron Ranch

Project Type: DEVELOPMENT

Project Description: The project site is approximately 8 acres in size and consists of a proposed residential development. Timing is unknown.

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/38.6996617747391N120.99708628927935W>



Counties: El Dorado, CA

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

Amphibians

NAME	STATUS
California Red-legged Frog (<i>Rana draytonii</i>) There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt (<i>Hypomesus transpacificus</i>) There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened
Steelhead (<i>Oncorhynchus (=Salmo) mykiss</i>) Population: Northern California DPS There is a final critical habitat designated for this species. Your location is outside the designated critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1007	Threatened

Flowering Plants

NAME	STATUS
El Dorado Bedstraw (<i>Galium californicum ssp. sierrae</i>) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5209	Endangered
Layne's Butterweed (<i>Senecio layneae</i>) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4062	Threatened
Pine Hill Ceanothus (<i>Ceanothus roderickii</i>) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3293	Endangered
Pine Hill Flannelbush (<i>Fremontodendron californicum ssp. decumbens</i>) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4818	Endangered
Stebbins' Morning-glory (<i>Calystegia stebbinsii</i>) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3991	Endangered

Critical habitats

There are no critical habitats within your project area.



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad IS (Shingle Springs (3812068))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Allium jepsonii</i> Jepson's onion	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive USFS_S-Sensitive	1,175 1,200	27 S:2	1	0	0	0	0	1	0	2	2	0	0
<i>Calystegia stebbinsii</i> Stebbins' morning-glory	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	1,400 1,500	13 S:7	0	1	4	0	2	0	1	6	5	1	1
<i>Carex xerophila</i> chaparral sedge	G2 S2	None None	Rare Plant Rank - 1B.2	1,360 2,000	15 S:6	2	3	0	0	0	1	0	6	6	0	0
<i>Ceanothus roderickii</i> Pine Hill ceanothus	G1 S1	Endangered Rare	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	1,350 2,059	8 S:5	0	3	1	0	0	1	1	4	5	0	0
<i>Chlorogalum grandiflorum</i> Red Hills soaproot	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	1,400 1,800	127 S:8	1	4	2	0	0	1	1	7	8	0	0
<i>Crocanthemum suffrutescens</i> Bisbee Peak rush-rose	G2Q S2	None None	Rare Plant Rank - 3.2	1,200 1,800	31 S:8	1	1	4	1	0	1	2	6	8	0	0
<i>Fremontodendron decumbens</i> Pine Hill flannelbush	G1 S1	Endangered Rare	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden SB_UCBBG-UC Berkeley Botanical Garden	1,400 2,000	10 S:5	1	0	2	0	0	2	2	3	5	0	0
<i>Galium californicum ssp. sierrae</i> El Dorado bedstraw	G5T1 S1	Endangered Rare	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden	1,200 1,920	16 S:12	2	5	0	1	0	4	2	10	12	0	0
<i>Packera layneae</i> Layne's ragwort	G2 S2	Threatened Rare	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden	1,000 1,800	48 S:18	1	8	4	2	1	2	4	14	17	1	0
<i>Pekania pennanti</i> fisher - West Coast DPS	G5T2T3Q S2S3	Proposed Threatened Candidate Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern USFS_S-Sensitive	2,000 2,000	728 S:1	0	0	0	0	0	1	1	0	1	0	0



Summary Table Report

California Department of Fish and Wildlife California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Phrynosoma blainvillii</i> coast horned lizard	G3G4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	1,400 1,880	754 S:4	0	0	2	0	0	2	1	3	4	0	0
<i>Riparia riparia</i> bank swallow	G5 S2	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	2,000 2,000	297 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Wyethia reticulata</i> El Dorado County mule ears	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	1,200 2,059	25 S:14	0	7	3	1	0	3	3	11	14	0	0

CNPS *California Native Plant* Rare and Endangered Plant Inventory

Plant List

12 matches found. *Click on scientific name for details*

Search Criteria

Found in Quad 38120F8

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Allium jepsonii	Jepson's onion	Alliaceae	perennial bulbiferous herb	1B.2	S2	G2
Calystegia stebbinsii	Stebbins' morning-glory	Convolvulaceae	perennial rhizomatous herb	1B.1	S1	G1
Carex xerophila	chaparral sedge	Cyperaceae	perennial herb	1B.2	S2	G2
Ceanothus fresnensis	Fresno ceanothus	Rhamnaceae	perennial evergreen shrub	4.3	S4	G4
Ceanothus roderickii	Pine Hill ceanothus	Rhamnaceae	perennial evergreen shrub	1B.1	S1	G1
Chlorogalum grandiflorum	Red Hills soaproot	Agavaceae	perennial bulbiferous herb	1B.2	S2	G2
Clarkia biloba ssp. brandegeae	Brandegee's clarkia	Onagraceae	annual herb	4.2	S4	G4G5T4
Crocanthemum suffrutescens	Bisbee Peak rush-rose	Cistaceae	perennial evergreen shrub	3.2	S2	G2Q
Fremontodendron decumbens	Pine Hill flannelbush	Malvaceae	perennial evergreen shrub	1B.2	S1	G1
Galium californicum ssp. sierrae	El Dorado bedstraw	Rubiaceae	perennial herb	1B.2	S1	G5T1
Packera layneae	Layne's ragwort	Asteraceae	perennial herb	1B.2	S2	G2
Wyethia reticulata	El Dorado County mule ears	Asteraceae	perennial herb	1B.2	S2	G2

Suggested Citation

CNPS, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society, Sacramento, CA. Website <http://www.rareplants.cnps.org> [accessed 24 March 2017].

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Contributors

[The Calflora Database](#)

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Attachment B

Site Photos Taken March 23, 2017



Photo 1: View of the eastern portion of the site showing cleared/leveled areas with ruderal vegetation and an apartment building and parking lot in the background.



Photo 2: View of the western portion of the site showing non-native annual grassland and an adjacent residential development.



Photo 3: View of the southern portion of the site showing non-native annual grassland with scattered coyote bush.



Photo 4: View of the central portion of the site showing disturbed soil areas, ruderal vegetation, and scattered coyote bush.

RECEIVED

FEB 10 2017

EL DORADO COUNTY
DEVELOPMENT SERVICES DEPT

BIOLOGICAL SITE ASSESSMENT OF CAMERON PARK PROPERTY

Cameron Park Property

August 13, 2007

Reviewed by: MICHELE S. STERN, Ph.D.

Prepared by: STEPHEN STRINGER 817-4877

Introduction:

On behalf of Dover Construction, HDR Engineering, Inc. (HDR) prepared this biological site assessment report (report) for the Cameron Park Property located at the northwest corner of Cameron Park Drive and Green Valley Road, Cameron Park, CA. The Cameron Park Property (property) consists of the following four parcels: APN 102-421-011, 102-110-141, 102-110-13, and 102-110-11. The boundaries of the property (as well as the study area) are based on the Site Plan for Cameron Park (William Hezmalhalch Architects, Inc., 2006).

The purpose of the biological site assessment was to document environmental resources on the property, to evaluate the potential for the property to contain or provide habitat for special-status plant and/or animal species, and to determine if the property contains wetlands or other waters of the U.S. This report documents the results of a database search of special-status species with the potential to occur in or be impacted by projects in the region and a reconnaissance level biological survey.

Methods:

HDR biologist Stephen Stringer conducted a reconnaissance level biological survey of the property on August 10, 2007. Prior to conducting the survey, a list of special-status species known to occur and/ or having the potential to occur in the project areas was obtained from U.S. Fish and Wildlife Service (USFWS), the California Dept. of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB), and the California Native Plant Society (CNPS) database. The potential for each regionally occurring special-status species to occur on the property was then evaluated based on the results of the reconnaissance survey. In addition, the property was evaluated for potential wetlands or other waters of the U.S. Site photos are included as Attachment A. A list of plant and animal species observed during the survey was compiled and is included as Attachment B. Lists of regionally occurring special-status species are included as Attachment C.

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Results:

Environmental Setting

The property is located in a suburban residential setting in the community of Cameron Park, which is located in western El Dorado County, CA. The property is located at an elevation of approximately 1,400 feet above sea level in the foothills of the Sierra Nevada. The surrounding land use consists primarily of medium to high density residential developments and commercial/ retail centers. The property is bordered by residential development on the north, east, and west and by a retail center on the south.

The entire subject property appears to have been cleared and/or leveled during previous construction projects including an existing apartment complex that occurs in the northeast portion of the property and adjacent residential/ commercial development. The northern portion of the property was cleared and leveled for construction of the apartment complex and parking lot. The southern portion of the property has also been cleared and leveled and contains dirt roads and graveled areas.

The habitat types on the property are urban/developed and non-native annual grassland (Mayer and Laudenslayer, Jr., 1988). No undisturbed vegetative communities occur on the property. The urban/ developed habitat is the existing apartment complex and parking lot. The remainder of the property is non-native annual grassland. The vegetation in the non-native annual grassland is dominated by non-native weedy grasses and forbs typical of disturbed areas such as medusa head (*Taeniatherum caput-medusa*), oat (*Avena* sp.), barley (*Hordeum murinum*), ripgut brome (*Bromus diandrus*), Italian ryegrass (*Lolium multiflorum*), Italian thistle (*Carduus pycnocephalus*), and yellow star-thistle (*Centaurea solstitialis*). Several trees including native oaks (*Quercus douglasii* and *Quercus wislizenii*), box elder (*Acer negundo*), and foothill pine (*Pinus sabiniana*) occur in the non-native annual grassland along with a few scattered native shrubs (see attachment A) that have re-established since the property was cleared and/or leveled.

Special-Status Species (Including Raptors and Other Migratory Birds)

The primary special-status species with the potential to occur in or be impacted by projects in Cameron Park are special-status plants, especially those associated with the Pine Hill formation. Other special-status species that could potentially be impacted by projects occurring in the Cameron Park area are primarily animal species associated with aquatic habitats (e.g., California red-legged frog, fish species), Valley elderberry longhorn beetle (which lives only on elderberry shrubs), and raptors and other migratory birds.

No special-status plant or animal species or their habitats were identified on the property. No elderberry shrubs were observed on or adjacent to the property. The reconnaissance survey was conducted outside of the blooming season for regionally occurring special-status plant species. However, special-status plants are not expected to occur on the property because it has been

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previously cleared and leveled and is dominated by non-native weedy species. Trees on the property provide potential nesting habitat for raptors and other migratory birds, but no bird nests were observed on the property.

Wetlands and Other Waters of the U.S.

No jurisdictional wetlands or other waters of the U.S. were identified on the property. A manmade drainage feature, which appears to be a daylighted segment of the storm drain system, occurs on the eastern portion of the property. The manmade drainage feature enters the property from the residential development to the north and runs south along the east side of the existing apartment, exiting the property on the south side of Camarc Road (the driveway to the apartment complex). On the south side of Camarc Road south of the property, the drainage feature loses a defined channel and appears to flow overland into a culvert under Green Valley Road. The portion of the manmade drainage feature on the property is a dirt and rock lined channel approximately two to three feet wide and six inches deep. The drainage feature appears to have been constructed in uplands to direct storm water runoff around the apartment complex. It is the opinion of HDR that the drainage feature does not qualify as a jurisdictional water of the U.S., because it is a manmade feature dug in uplands and does not have a "significant nexus" to another water of the U.S. However, the U.S. Army Corp of Engineers is the final decision making authority for this classification.

Summary:

The entire property has been previously disturbed. No special-status plant or animal species or bird nests were identified on the property during the reconnaissance level biological survey. Due to previous development that has occurred on the property, the property is not expected to contain special-status plant species known to occur in the region. No jurisdictional wetlands or other waters of the U.S. were identified on the property. A man-made drainage feature occurs on the property. It is the opinion of HDR that the man-made drainage feature is not subject to U.S. Army Corps of Engineers jurisdiction.

References:

Mayer, K. E., and W. F. Laudenslayer, Jr., eds. 1988. A Guide to Wildlife Habitats of California. State of California, Resources Agency, Department of Fish and Game. Sacramento, CA. 166 pp. Available at http://www.dfg.ca.gov/bdb/html/wildlife_habitats.html.

William Hezmalhalch Architects, Inc. 2006 Site Plan for Cameron Park, Cameron Park, CA, Sacramento Pacific Development. February 2, 2006

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Attachment A: Site Photos



Photo 1. View of the northern portion of the property looking east from the west side of the property.



Photo 2. View of the southern portion of the property looking east from the west side of the property.



Photo 3. View of the southern portion of the property looking west from the east side of the property.



Photo 4. View of the northern portion of the property looking west from the east side of the property.

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ATTACHMENT B: LIST OF PLANT AND ANIMAL SPECIES OBSERVED

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PLANT SPECIES OBSERVED		
Family	Scientific Name	Common Name
Conifers		
Cupressaceae	<i>Juniperus sp.</i>	Horticultural juniper
Pinaceae	<i>Pinus sabiniana</i>	Foothill Pine
Dicots		
Aceraceae	<i>Acer negundo</i>	Box elder
Apiaceae	<i>Torilis arvensis</i>	None
Asteraceae	<i>Baccharis pilularis</i>	Coyote brush
	<i>Carduus pycnocephalus</i>	Italian thistle
	<i>Centaurea solstitialis</i>	Yellow star-thistle
	<i>Cichorium intybus</i>	Chicory
	<i>Lactuca serriola</i>	Prickly lettuce
	<i>Tragopogon sp.</i>	Goat's beard
Convolvulaceae	<i>Convolvulus arvensis</i>	Field bindweed
Fabaceae	<i>Trifolium hirtum</i>	Rose clover
	<i>Vicia sp.</i>	Vetch
Fagaceae	<i>Quercus douglasii</i>	Blue oak
	<i>Quercus wislizenii</i>	Interior live oak
Hypericaceae	<i>Hypericum perforatum</i>	Klamath weed
Plantaginaceae	<i>Plantago lanceolata</i>	English plantain
Polygonaceae	<i>Rumex crispus</i>	Curly dock
Rhamnaceae	<i>Ceanothus cuneatus</i>	Buck brush
Rosaceae	<i>Heteromeles arbutifolia</i>	Toyon
Rubiaceae	<i>Galium aparine</i>	Goose grass
Monocots		
Poaceae	<i>Avena sp.</i>	Wild oat
	<i>Bromus diandrus</i>	Ripgut brome
	<i>Bromus hordeaceus</i>	Soft chess
	<i>Cynodon dactylon</i>	Bermuda grass
	<i>Cynosurus echinatus</i>	Dogtail grass
	<i>Hordeum murinum</i>	Barley
	<i>Lolium multiflorum</i>	Italian ryegrass
	<i>Phalaris aquatica</i>	Harding grass
	<i>Taeniatherum caput-medusa</i>	Medusa head

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ANIMAL SPECIES OBSERVED	
Scientific Name	Common Name
Birds	
<i>Aphelocoma coerulescens</i>	Scrub jay
<i>Carpodacus mexicanus</i>	House finch
<i>Zenaida macroura</i>	Mourning dove
Reptiles	
<i>Sceloporus occidentalis</i>	Western fence lizard

Dover Construction
Cameron Park Property

6
August 17, 2007

Deleted: August 15, 2007

Attachment C: Regionally Occurring Special-Status Species Lists

California Department of Fish and Game Natural Diversity Database List of Special-Status Species Reported on the Shingle Springs USGS 7.5 Minute Quad

California Native Plant Society List of Special-Status Plants Reported on the Shingle Springs USGS 7.5 Minute Quad

Sacramento Fish and Wildlife Office List of Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Shingle Springs USGS 7.5 Minute Quad

Dover Construction
| Cameron Park Property

7
August 17, 2007

Deleted: August 15, 2007



Inventory of Rare and Endangered Plants

v7-07c 7-09-07

Status: search results for "+Shingle Springs (510B) 3812068" - Fri, Aug. 17, 2007 18:37 c

Tip: +Lathyrus +coastal dunes" returns only those Lathyrus in coastal dunes. Note the "+" and quotes.[all tips and help.]
[\[search history\]](#)

Hits 1 to 9 of 9
 Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.

Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
		1	<u>Allium jepsonii</u>	Jepson's onion	Liliaceae	List 1B.2
		1	<u>Calystegia stebbinsi</u>	Stebbins' morning-glory	Convolvulaceae	List 1B.1
		1	<u>Ceanothus roderickii</u>	Pine Hill ceanothus	Rhamnaceae	List 1B.2
		1	<u>Chlorogalum grandiflorum</u>	Red Hills soaproot	Liliaceae	List 1B.2
		1	<u>Fremontodendron decumbens</u>	Pine Hill flannelbush	Sterculiaceae	List 1B.2
		1	<u>Galium californicum ssp. sierrae</u>	El Dorado bedstraw	Rubiaceae	List 1B.2
		1	<u>Helianthemum suffrutescens</u>	Bisbee Peak rush-rose	Cistaceae	List 3.2
		1	<u>Packera layneae</u>	Layne's ragwort	Asteraceae	List 1B.2
		1	<u>Wyethia reticulata</u>	El Dorado County mule ears	Asteraceae	List 1B.2

To save selected records for later study, click the ADD button.

Selections will appear in a new window.

California Department of Fish and Game
 Natural Diversity Database
 Selected Elements by Scientific Name - Landscape
 Summary Report for Shingle Springs USGS Quad

Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
1 <i>Allium jepsonii</i>	Jepson's onion	PMLIL022V0			G1	S1.2	1B.2	
2 <i>Calystegia stebbinsii</i>	Stebbins' morning-glory	PDCON040H0	Endangered	Endangered	G1	S1.1	1B.1	
3 <i>Ceanothus roderickii</i>	Pine Hill ceanothus	PDRHA04190	Endangered	Rare	G2	S2.1	1B.2	
4 <i>Chlorogalum grandiflorum</i>	Red Hills soaproot	PMLIL0G020			G2	S2.2	1B.2	
5 <i>Fremontodendron decumbens</i>	Pine Hill flannelbush	PDSTE03030	Endangered	Rare	G1	S1.2	1B.2	
6 <i>Galium californicum ssp. sierrae</i>	El Dorado bedstraw	PDRUB0N0E7	Endangered	Rare	G5T1	S1.2	1B.2	
7 <i>Hellanthenum suffrutescens</i>	Bisbee Peak rush-rose	PDCIS020F0			G2Q	S2.2	3.2	
8 <i>Packera laynense</i>	Layne's ragwort	PDAST8H1V0	Threatened	Rare	G2	S2.1	1B.2	
9 <i>Phrynosoma coronatum (frontale population)</i>	Coast (California) horned lizard	ARACF12022			G4G5	S3S4		SC
10 <i>Wyethia reticulata</i>	El Dorado County mule ears	PDAST9X0D0			G2	S2.2	1B.2	

Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species
that Occur in or may be Affected by Projects in the
SHINGLE SPRINGS (510B)
U.S.G.S. 7 1/2 Minute Quad
Database Last Updated: June 9, 2007
Document Number: 070813021325

Species of Concern - The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. See www.fws.gov/sacramento/es/spp_concern.htm for more information and links to these sensitive species lists.

Red-Legged Frog Critical Habitat - The Service has designated final critical habitat for the California red-legged frog. The designation became final on May 15, 2006. See our [map index](#).

Listed Species

Invertebrates

Desmocerus californicus dimorphus
valley elderberry longhorn beetle (T)

Fish

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus mykiss
Central Valley steelhead (T) (NMFS)

Oncorhynchus tshawytscha
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Rana aurora draytonii
California red-legged frog (T)

Plants

Calystegia stebbinsii
Stebbins's morning-glory (E)

Ceanothus roderickii
Pine Hill ceanothus (E)

Fremontodendron californicum ssp. decumbens
Pine Hill flannelbush (E)

Galium californicum ssp. sierrae
El Dorado bedstraw (E)

Senecio layneae
Layne's butterweed (=ragwort) (T)

Candidate Species

Fish

Oncorhynchus tshawytscha
Central Valley fall/late fall-run chinook salmon (C) (NMFS)

Key:

(E) *Endangered* - Listed (in the Federal Register) as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed (in the Federal Register) for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Marine Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regard-less of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the quad or quads covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the nine surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All plants and animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [critical habitat page](#) for maps.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be November 11, 2007.

RECEIVED

FEB 10 2017

EL DORADO COUNTY
DEVELOPMENT SERVICES DEPT

DAVIS²

CONSULTING EARTH SCIENTISTS, INC.

P.O. Box 734 · Georgetown, CA 95634 · Tel. (530) 333-1405; Fax (530) 333-1009

September 1, 2004

Ms. Joyce Tomlinson
Gene E. Thorne & Associates
3025 Alhambra Drive, Suite A
Cameron Park, CA 95682-7999

RE: Sacramento Pacific Developers – Cameron Park (APNs 102-110- 13 & 14)

Dear Ms. Tomlinson:

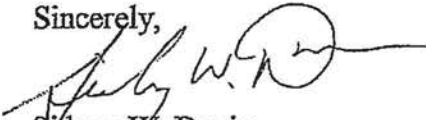
At your request I have visited the two above referenced parcels to evaluate the presence of potential jurisdictional wetlands, as regulated under Section 404 of the Clean Water Act by the U.S. Army Corps of Engineers, Regulatory Branch, Sacramento District.

A site survey on August 13, 2004 turned up nothing in the way of wetlands or hydrophytic vegetation that would be regulated by §404. Vegetation consisted of wildoats (*Avena fatua*), medusahead (*Taeniatherum caput-mrdusae*), yellowstar thistle (*Centaurea solstitialis*), coyote bush (*Baccharis*, sp.) and blue oak (*Quercus douglasii*). None of these species appear on the *List Of Plant Species That Occur In Wetland: California (Region 0)* (U.S. Fish and Wildlife, 1988). Additionally there are no other indicators of wetlands as described in the *Corps of Engineers Wetlands Delineation Manual* (1987).

Attached is an aerial photo of the sites, (USDA-County of El Dorado, 2003) showing only upland terrain on the parcel in question.

If I can be of further assistance, please do not hesitate to call me at 530-333-1405.

Sincerely,


Sidney W. Davis,
Certified Professional
Soil Scientist No. 1031

Enclosures

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SEP 17 2004

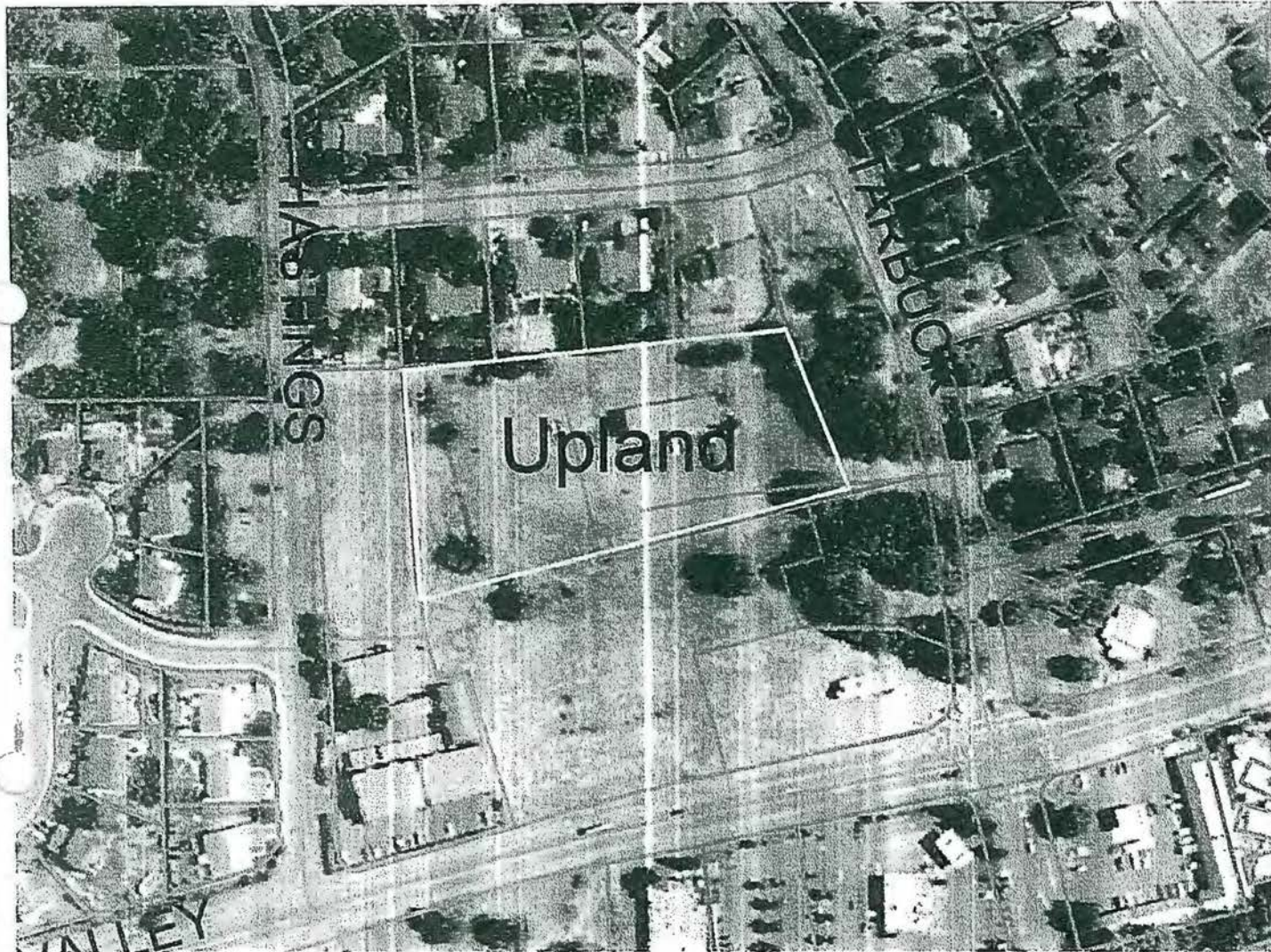
Gene E. Thorne & Associates, Inc.

Z17-0001/PD17-0001/TM17-1531

18-0578 | 31 of 65

Sacramento Pacific Development - Cameron Park (APNs 102-110-13 & 14)

Wetlands Evaluation Graphic



200 0 200 400 Feet



MAPSCALE 1:2,400

Legend



Project Boundary

September 1, 2004



DAVIS²

CONSULTING EARTH SCIENTISTS

Data Sources: Image- USDA, El Dorado County, 2003.
Map Data State Plane 2, NAD 83

P.O. Box 734
Georgetown, CA 95634

Tel. (530) 333-1405
FAX (530) 333-1009



Rob Bjorgum
 ISA Certified Arborist #674
 (530) 677-3858



3365 Skylane
 Shingle Springs, CA 95682
 Fax (530) 672-8821

October 12, 2007

Dover Construction Inc.
 5176 Hillsdale Circle
 El Dorado Hills, CA 95762
 Attn: Jerry Dover

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FEB 10 2017

**EL DORADO COUNTY
 DEVELOPMENT SERVICES DEPT**

RE: Cameron Ranch Tree Survey.

Dear Mr. Dover:

Thank you for the opportunity to evaluate the indigenous oaks at the proposed Cameron Ranch Development. My assignment was to examine each indigenous oak on site that is six inches or greater in diameter. The following are the specific data collected from each tree: The trunk diameters, measured at 4.5 feet above ground level. The dripline radius is determined by its longest branch plus one foot. Each was examine for its basic health and structure to determine its suitability to be preserved on residential property. The data collected is summarized in the excel spreadsheet that is included in the report.

Of the oaks, only the large Interior Live Oaks exhibited evidence of a chronic decline in health. All have been severely weakened by being infested with mistletoe and/or twig blight. The spores of blight diseases easily infect the current seasons foliage and young twigs when moved by splashing rain. This condition is generally severe during unusually wet spring weather. Normally one or two wet seasons does not cause any significant long-term decline in health. A tree that is healthy in the beginning of a wet cycle generally returns to a state of good health as the weather returns to normal.

Many of the mature trees on site show signs of a chronic decline in health and/or structure. It is not possible to expect these trees to return to a state of good health. In the spreadsheet I recommended removing oaks that exhibit these obvious symptoms. Trees that meet my standards for replacement mitigation should be okay to retain if sufficient root zone environment can be retained. This can only be determined once the grading plans have been approved.

In general, large trees may offer tremendous aesthetic value but also may create a significant risk for injury to persons and/or property. A healthy looking full crown tree may be deceiving, often trees can exhibit vigor yet have very weak architectures or sapwood structure. The prudent action prior to the selling of homes would to have a risk assessment of each large tree including ornamentals performed by a qualified person.

Please call if you have questions.

Sincerely,

Robert L. Bjorgum
 ISA Certified Arborist No. WC-0674

FILE COPY

Z17-0001/PD17-0001/TM17-1531

Cameron Ranch

Project Overview and Tree Survey

Cameron Park, California

For
Dover Construction

By
Robert L. Bjorgum
ISA Certified Arborist No. WE-0674
3365 Sky Lane, Shingle Springs, CA 95682
Phone 530-677-3858, Fax 530-672-8821

Under contract with
Dover Construction Co.

October 12, 2007

TABLE OF CONTENTS

1. Project Overview.....

2. Basic construction mitigation guidelines.....

3. Glossary of terms.....

4. Spreadsheet, key to terms and ratings.....

5. Tree Survey.....

Insert---Site Map is furnished by the Applicant.....

1. PROJECT OVERVIEW:

This project has 19 indigenous Blue and Interior Live Oaks that may be exposed to construction impacts. The sizes range from 32" the largest and the smallest oak is 6" in diameter. The preliminary exhibit map that I used in the field, listed the diameters of oaks incorrectly. Blue oaks dominate the species mix with 15. Ornamental tree species are not protected by ordinance but there are several on site that may be desirable to preserve if possible. There are several Gray Pines of varying sizes on site but I do not recommend saving this species at or near residential property. The root zone environments for the oaks ranged from natural to gravel and asphalt

Upon completing the field survey, it is evident that some of the large oaks may be impacted by construction. In general, large trees may offer tremendous aesthetic value but also may create a significant risk for injury to persons and/or property. Many of the large oaks within the property boundaries may be severely impacted by grading. Before homes are sold, a risk assessment of each large tree must be performed. Pruning, bracing and or removal may be required to properly manage the risk potential to people, structures, autos, et cetera.

Many of the mature trees on site show signs of a chronic decline in health and/structure. Their sprawling architecture is often unfavorable to maintaining structural integrity.

A tree that has entered a chronic stage of declining health generally cannot return to good health even with extensive remedial care. Trees that meet my standards for replacement mitigation should be okay to preserve if sufficient root zone environment is protected. This can only be determined once the grading plans have been approved.

The large Live Oaks have been severely weakened by mistletoe and/or disease. The disease commonly known as twig blight infests every large live oak. Spores of this pathogen can easily infect the current seasons foliage and young twigs and is easily dispersed by splashing rain. Unusually wet spring weather for two or more seasons in succession will tend to worsen their condition.

The data found in the tree inventory concerning each tree, are basic observations only. Prior to the start of grading, trees that are to be retained must be delineated by high visibility fence. If it appears on the grading plans that the impact to a tree is severe, it may be necessary to remove that tree. The final determination may require additional observation in the field. Each inventoried tree was photographed and these photos will remain on file at my office. Page 9 through 13 is a summary of my opinion concerning the individual tree data.

2. GENERAL GUIDELINES FOR TREE PROTECTION, PRIOR TO, DURING AND AFTER DEVELOPMENT

Grade changes cause most of the damage to native trees at construction sites. Most trees growing in heavy soils have very shallow root systems; two to three foot maximum depths are the norm. These depths apply even for the largest trees. The current standard for individual tree protection starts with delineating the Root Protection Zone. The signed grading plans for the project will determine the location of the fence. The following are some of the most common tree injuries that occur from site development and some measures that can be taken to mitigate those injuries:

- ❖ **ROOT PROTECTION ZONE (RPZ):** Before the start of the new construction each tree or group of trees that have been chosen for preservation must have a high visibility (a popular option is bright orange) fence installed around the RPZ.
 - The Root Protection Zone (RPZ) may encircle a tree's crown or from a continuous line at the outside the edge of groups where crowns overlap. The new standard for delineating the RPZ is fixed by the radius of the tree's longest branch, plus one foot. The longest branch applies for each tree in a group as well.
 - Signs may be attached to the fence in prominent locations and spaced evenly around the perimeter. The posted signs should describe the purpose of the fence and penalties for its removal.
 - A Certified Arborist must supervise any activities within the RPZ, either above or below the soil surface.
 - Only trees that are identified on the approved grading plans as needing protection will be fenced. The fences will be installed a minimum of one foot outside of the grading limit and possibly five feet for the clearing limits if necessary.

- ❖ **SOIL CUTS:** Changes in elevation or cuts deeper than twelve inches will sever most of the woody roots (readily visible roots) beyond the edge of the cut. All of the finer roots connected to them are also lost. The non-woody roots (fine roots) are instrumental in absorbing moisture and essential elements. Most of the non-woody roots are found within ten inches of the surface.
 - A trench that is cut within the RPZ will sever larger woody roots that are essential to the mechanical support for the tree. When the trench is recovered, in a year or two the extent of damage is completely forgotten. If the tree develops symptoms of decline from these injuries, it is difficult to make reasonable recommendations for treatment. In time, due to decay the weakened support roots may allow the tree to fail unexpectedly. This type of failure may occur without any above ground symptoms to warn of its weak condition. Installing utilities by hand digging around or boring beneath the woody roots is the preferable way to mitigate injuries.
 - Roots that are two-inches in diameter or greater are targeted for preservation when hand digging. While working near roots they can be protected by wrapping them with foam or burlap.
 - Roots that are exposed by excavating must be clean cut and protected with a material that will prevent drying.
 - If root loss is extensive, it may be necessary to establish a supplemental irrigation program in order to provide the tree with adequate moisture during summer months.

- ❖ **SOIL FILLS:** Foreign soil imported to fill a low area can greatly reduce oxygen exchange (aeration) and restrict water movement into the soil. As little as six inches of imported soil can cause root death beneath the fill zone. Also, fills are often engineered to meet compaction standards. Compaction can further

- reduce aeration and water movement. It will take several years for these barriers to be breached with normal water penetration from winter rains.
- ❑ An aeration system may be an option for providing adequate oxygen exchange to the impacted roots. With careful planning the tree may also be deep irrigated through this system. I personally do not find these systems beneficial.
 - ❑ Root paths are also a means of providing areas where roots can grow beyond the fill zone. This is still in experimental stages and should only be done if the value of the tree warrants the expense.
- ❖ *ALTERING THE EXISTING GRADE:* This type of grading alters the natural drainage patterns that were crucial to that tree reaching its present age. The organic layers are usually removed exposing the mineral soil. Often these activities are responsible for creating seasonally abnormal wet or dry conditions. Roots under these conditions, may fail to function when the need for water and elements is at its peak.
- ❑ Avoid stripping of the surface of natural organic layers if it is not necessary.
 - ❑ Soil microbes that assist the tree in maintaining normal root function can only survive where the environment is agreeable to them. If the natural organic has been removed within the RPZ, each injured tree must have three to four inches of quality (organic) mulch re-installed. The mulch will assist in moisture retention, improve soil aeration, and attract beneficial organisms. It is also essential for the proliferation of microorganisms that are necessary for soil fertility.
- ❖ *SOIL COMPACTION:* Problems that result from compaction are the same as described for fill soil. The primary difference is post construction there is no visible evidence of the soils altered condition. Installing proper barricades (chain link or orange snow fence) to delineate the RPZ will prevent compaction problems.
- ❑ If it is necessary to cross over the RPZ of a protected tree with a vehicle. A road can be constructed with using eight to ten inches of shredded mulch as a driving surface. When the project is completed that material may be used, as a top-dressing where needed.
- ❖ *MECHANICAL INJURIES:* Are unnecessary broken stems and abrasions that can cause needless decline in structure and health. These types of injuries expose them to disease pathogens and premature decay. With the appropriate fencing delineating the Root Protection Zone these injuries should not happen.
- ❖ *PRUNING AND BRACING:* If necessary will be performed by or at the direction of a qualified Arborist. The ANSI (American National Standards Institute) A-300 Pruning and the ANSI A-300 Support Systems standards for tree care operations are required guidelines. No live crown should be removed except for the following three conditions:
- ❑ If a dying branch has twenty five percent or less of live crown remaining and is one inch or greater at its attachment to the parent stem.
 - ❑ If it is necessary to raise the crowns for clearance from streets, sidewalks, driveways or structures.
 - ❑ If it is necessary to abate or mitigate hazards due to weak structure.
- ❖ *WATER STRESS:* Trees on construction sites become stressed from insufficient moisture due to all of the activities mentioned above. Indigenous trees that are growing in the foothill of the central valley have evolved over eons to thrive the hot dry summers and still have sufficient water for normal growth. Their root systems are generally shallow but extend well past the drip perimeter (RPZ) of the crown. The large woody roots that are attached to the main stem provide transport of water and elements, energy storage

(starches) and the mechanical support for the tree. Woody roots fan outward in all directions eventually tapering in diameter to nearly microscopic. These small woody roots may grow outward approximately three and one-half times the spread of the tree's crown. The greatest volume can be found near the soil surface to twelve inches.

Growing from woody roots throughout their entire length are the non-woody (fine) roots. Their primary function is to absorb water and essential elements. Non-woody roots are generally only a few inches deep where oxygen levels are more favorable. Water that is stored in the soil from the winter rains will evaporate prematurely if the natural organic layers are stripped from the soil surface. A condition of low water stress may result from a deficit in soil moisture along with extensive root loss. An appropriate mitigation is to establish a program for deep and infrequent irrigating during the summer months.

- In order to properly deep irrigate a tree, a quality organic material such as shredded cedar bark should be installed over the soil surface. If the soil is compacted it should be aerated to allow for the efficient movement of air and water into the soil. Irrigating every four to six weeks and long enough to allow three to four inches of water to penetrate into the soil each is the objective.
- Deep summer irrigating should continue for several years post construction until we are certain that it has sufficiently recovered from the trauma of construction injuries. The frequency of irrigating and length of time that the water must be left on are determined by the site conditions and size of each tree involved.

3. *GLOSSARY OF TERMS*

Critical root zone (CRZ)

The root system of a tree that is generally considered to be within (under) the dripline of the crown

Crown

The full complement of branches, twigs, and leaves of a tree.

Decaying / Decay

Changes over time of a host (tree) by a decay organism (pathogen) that results in the break down of tissue (wood and bark), which can cause the tree or its parts to become structurally weak.

Decline

A general loss of vitality ("Vigor") over the entire tree caused by a disease or by a series of events that disrupt essential life processes, e.g. too much or too little water, too much fertilizer, improper pruning, soil compaction, or chemical pollution.

Dieback

A reduction in the mass of a tree as twigs and branches die.

Dripline

An area under the canopy of a tree that is equal to the total branch spread (diameter of the branch spread)

Hazard Tree

Any tree or tree part that poses a high risk upon failure or fracture for damage or injury to property, powerlines, or people.

Incipient

When referring to decay, it is the beginning stages, often undetectable without the aid of special tools or equipment.

Root crown (collar) excavation/examination

The methodical and careful removal of soil, sod, and other materials from around the base of a tree to perform a through examination of the health and structure of roots, root flairs, and trunk base.

Tree protection zone (TPZ) / Root protection zone (RPZ)

A designated area around trees where maximum protection and preservation efforts are implemented. RPZ is the area that is delineated where a tree has been selected for preservation at construction sites. This area is defined by the trees longest branch plus one foot. A highly visible fence is installed and encircles the tree at this distance.

Wood

In trees, an orderly arrangement of living, aging, dying and dead cells on the inner side of the vascular cambium; the xylem. Sapwood has four functions: 1) Transport; 2) storage of energy reserves and other materials for maintaining life; 3) mechanical support; 4) protection and defense.

4. TREE INVENTORY AND EVALUATIONS

DEFINITION OF TERMS AND RATINGS

EXCELLENT: Trees that are in this category are free from any stem defect, disease or insect problems. They are vigorous healthy trees that are growing in an environment that is conducive to living a normal life span for the species. It is very rare to find a tree that meets the standards for excellence.

GOOD: Trees that are in this category have no more than minor stem defects. They may have evidence characteristic for the species when it is growing in an open site. The bud development for the coming year and the foliage if present must be of normal size and color. The deadwood present must be no more than that is considered normal shedding for the species in its present environment. Based on all visible evidence its life expectancy must exceed thirty years without remedial care.

FAIR: Trees in this category may have minor to moderate decay in the main stem and scaffold branches. Its branch attachments may have some included bark if it appears that it will not develop into dangerous structural problem for at least ten years. The crown may be asymmetric, sprawling and suppressed, but not exhibiting excess overburden on the main stem or the primary and secondary lateral branches. Dead wood may be moderate to excessive for the species with consideration for its present location. Larger wounds may be present but they must be closing properly. Minor fluxing from wounds is acceptable but no Saprophytes can be present. Foliage color and size may show inconsistencies throughout the crown and greater than normal internal twig die back is present. It may exhibit a general lack of vigor. The large stems may have extensive sprout development throughout. Its life expectancy with hazards mitigation pruning must be at least ten or more years without remedial care.

POOR: Trees in this category exhibit large cavities with extensive decay. Saprophytes may be visible on the outer bark of stems. Fungus fruiting bodies may also be present. Any or all of following structural problems may have developed: Excessively included or separating stems, sprawling main stem or branch or structure, and a suppressed crown. Trees that are rated poor exhibit severe structural abnormalities where failure may be expected at any time. Its crown may exhibit extensive twig die back and the foliage may be sparse, under sized and off color. Trees in this category may live for several more through a process called Phasing Out. It will require hazards mitigation pruning, possible bracing, extensive remedial care and the primary emphasis on safety.

Fair to good and fair to poor are the ratings used to cover the trees that fall between the above categories.

Tree Number	Genus and Species	Common Name	Stem diameters, 4.5' AGL / Dripline radius + 1 foot	Basic Health	Basic Structure	My opinion / Is it suitable to be retained on residential property
328	Quercus douglasii	Blue Oak	34" @ DBH / 46'	Fair / Minor mistletoe	Fair to good / Sprawling, moderate deadwood	Appears to be okay for preservation, Other tag numbers on the main bole are No.200 and 1155 / A risk assessment will be necessary prior to completion of the project
329	Quercus wislizenii	Interior Live Oak	Co-dominant, 27" @ 2' AGL / 25'	Fair to poor / Infested with mistletoe	Fair / Sprawling, moderate internal decay	May be okay for preservation, the other tag number on the main bole is No. 2114 / A risk assessment will be necessary prior to completion of the project, If it must be removed, due to its poor condition no replacement will be required.
330	Quercus wislizenii	Interior Live Oak	24" @ DBH / 26'	Poor / Dying, Infested with mistletoe	Fair / Sprawling, the root-flair has been buried for years	Remove as soon as possible , the other tag number on the main bole is No. 1156 / Due to its poor condition no replacement will be required.
331	Quercus wislizenii	Interior Live Oak	Co-dominant 1, 21", 1, 12" @ 3.5' AGL / 12'	Fair to poor / Extensive twig decline, excess deadwood	Fair / Sprawling, the root-flair has been buried for years	May be okay for preservation, the other tag number on the main bole is No. 2135 / A risk assessment will be necessary prior to completion of the project, If it must be removed, due to its poor condition no replacement will be required.

Tree Number	Genus and Species	Common Name	Stem diameters, 4.5' AGL / Dripline radius + 1 foot	Basic Health	Basic Structure	My opinion / Is it suitable to be retained on residential property
332	Quercus douglasii	Blue Oak	26" @ DBH / 25'	Fair to good / Minor squirrel damage in the upper crown	Fair to good / Sprawling, moderately suppressed	Appears to be okay for preservation, Other tag number on the main bole is not readable / A risk assessment will be necessary prior to completion of the project
333	Quercus douglasii	Blue Oak	30" @ 2' AGL / 45'	Fair to good	Fair / Sprawling, heavily suppressed, excess inclusion between the main stem boles	Appears to be okay for preservation, Other tag number on the main bole is not readable / A risk assessment will be necessary prior to completion of the project
334	Quercus douglasii	Blue Oak	31" @ DBH / 24'	Fair to good	Fair to good / Sprawling, suppressed	Appears to be okay for preservation, Other tag number on the main bole is not readable / A risk assessment will be necessary prior to completion of the project
335	Quercus douglasii	Blue Oak	11" @ DBH / 14'	Fair / Extensive twig decline, excess deadwood	Fair / Excess inclusion between the braches, the root flair is covered with soil from erosion, appears to be infected with crown gall	Appears to be okay for preservation, Other tag number on the main bole is 2119 / The root flair should be excavated to confirm the structural integrity of the buttress roots

Tree Number	Genus and Species	Common Name	Stem diameters, 4.5' AGL / Dripline radius + 1 foot	Basic Health	Basic Structure	My opinion / Is it suitable to be retained on residential property
336	Quercus douglasii	Blue Oak	8" @ DBH / 8'	Fair / Heavily suppressed	Good / The root flair is covered with soil from erosion, appears to be infected with crown gall	Appears to be okay for preservation, Other tag number on the main bole is 2118 / The root flair should be excavated to confirm the structural integrity of the buttress roots
337	Quercus douglasii	Blue Oak	Co-dominant 1, 11", 1, 7" @ 3' AGL / 11'	Fair / Extensive twig decline, excess deadwood	Fair / The root flair is covered with soil from erosion, appears to be infected with crown gall	Appears to be okay for preservation, Other tag number on the main bole is 2117 / The root flair should be excavated to confirm the structural integrity of the buttress roots
338	Quercus douglasii	Blue Oak	Co-dominant 1, 11", 3, 8" @ DBH / 14'	Fair / Extensive twig decline, excess deadwood	Fair / Excessive inclusion between the main stem boles, the root flair is covered with soil from erosion, appears to be infected with crown gall	Appears to be okay for preservation, Other tag number on the main bole is 2116 / The root flair should be excavated to confirm the structural integrity of the buttress roots
339	Quercus douglasii	Blue Oak	Co-dominant 1, 10", 1, 6" @ DBH / 10'	Fair / Extensive twig decline, excess deadwood	Fair / The root flair is covered with soil from erosion, appears to be infected with crown gall	Appears to be okay for preservation, Other tag number on the main bole is 2116 / The root flair should be excavated to confirm the structural integrity of the buttress roots

Tree Number	Genus and Species	Common Name	Stem diameters, 4.5' AGL / Dripline radius + 1 foot	Basic Health	Basic Structure	My opinion / Is it suitable to be retained on residential property
340	Quercus douglasii	Blue Oak	15" @ DBH / 20'	Fair to poor / Infested with mistletoe	Fair to good / Sprawling, moderate internal decay	May be okay for preservation, the other tag number on the main bole is not readable / A risk assessment will be necessary prior to completion of the project, If it must be removed, due to its poor condition no replacement will be required.
341	Quercus douglasii	Blue Oak	24" @ DBH / 22'	Fair / Moderate deadwood	Poor / Cankers at the root flair, large ganoderma fruiting bodie indicates extensive internal decay in the root flair.	Remove now , the other tag number on the main bole is not readable / Due to its poor condition no replacement will be required.
342	Quercus douglasii	Blue Oak	6" @ DBH / 8'	Fair to good	Fair to good	Appears to be okay for preservation
343	Quercus douglasii	Blue Oak	24" @ DBH / 26'	Fair / The foliage is undersized	Fair / Sprawling, moderate deadwood, old pruning scars	Appears to be okay for preservation, other tag number on the main bole is 2104 / A risk assessment will be necessary prior to completion of the project, If a retaining wall is installed to the south this tree may decline in health rapidly

Tree Number	Genus and Species	Common Name	Stem diameters, 4.5' AGL / Dripline radius + 1 foot	Basic Health	Basic Structure	My opinion / Is it suitable to be retained on residential property
344	Quercus douglasii	Blue Oak	28" @ DBH / 31'	Fair to good	Good / Asphalt driveway surrounds it	Appears to be okay for preservation, other tag number on the main is missing / A risk assessment will be necessary prior to completion of the project, due to its good health now the street work proposed may not cause a significant decline in health
345	Quercus douglasii	Blue Oak	20" @ DBH / 16'	Fair / Moderate mistletoe	Poor / Severly headed by pruning for powerline clearance	May be oak to retaine as is / But if it needs to be removed for any reason due to its poor condition no replacement will be required.
346	Quercus wislizenii	Interior Live Oak	24" @ DBH / 12'	Fair	Poor / Extensive internal decay, severly headed by pruning for powerline clearance	Remove as soon as possible / Due to its poor condition no replacement will be required.



SYCAMORE ENVIRONMENTAL CONSULTANTS, INC.

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18 April 2017

Mr. Chuck Centers
Starbuck Road 56, LLC
2625 Sheridan Way
Sacramento, CA 95821

Phone: (916) 747-9595

Subject: Oak Canopy Analysis and Replacement Plan for the Cameron Ranch Project, El Dorado County, CA.

Dear Mr. Centers:

This letter is an oak canopy analysis for the Cameron Ranch Project in El Dorado County. The purpose is to identify and quantify existing oak canopy, and quantify oak canopy that will remain after project construction, pursuant to County General Plan Policy 7.4.4.4, Option A. Policy 7.4.4.4 applies to this project because it is over 1 acre and has at least 1% oak canopy cover.

The project includes three parcels (APNs 102-421-01, 102-110-14 and -24) and an access easement on a fourth parcel (APN 102-110-08). One of the parcels contains an existing apartment building, the others are vacant.

Methods

- A reconnaissance survey of the project site was conducted by Jessica Orsolini (ISA Certified Arborist WE-7845A) on 24 January 2012.
- A tree inventory prepared for the site by Dorado Tree Service, dated 12 October 2007, was reviewed.
- Existing oak canopy on the site was identified based on 1) the previous arborist report, 2) the previous reconnaissance survey, and 3) a recent aerial photograph. The entire canopy of any oaks overhanging the project site was included.
- A digital file containing project design and tree trunk location was provided by R.E.Y. Engineers. Project design was overlaid on the map of existing canopy and trunk locations to determine removed and retained oak canopy.
- The project design and tree trunk locations were overlaid on the existing oak canopy map to determine oaks and canopy that will need to be removed.
- Recommendations are made for the successful retention of avoided oak trees, and for replacement oak trees.

Results

- The project area is 5.95 acres. There is 0.746 acre of existing oak canopy, or 12.5% of the project area (Attachment A). The County oak canopy retention standard is 90% retention for projects with 1–19% existing oak canopy.
- The project design will result in removal of one blue oak tree (*Quercus douglasii*; tree #344), comprising 0.062 acre of oak canopy, near the driveway connection to Starbuck Road (Attachment B). The project retains 91.6% of the existing oak canopy ($[(0.746-0.062)/0.746]$). The proposed project meets the County's 90% retention standard.
- Construction work will occur within the root zones of some retained trees. Recommended tree preservation measures are made below.
- The County requires replacement of oak canopy at a 1:1 ratio. A suitable location for sufficient oak canopy replacement is demonstrated in Attachment B. Many other locations on the proposed project design are also suitable. Recommended tree replacement measures are made below.

Recommended Oak Tree Preservation Measures

Most of the oak trees on the Project site will be preserved. Oak preservation measures were developed for the project based on Matheny and Clark (1998). Retained trees may be affected by project activities such as grading, utility installation, and pruning for clearance. The preservation measures below are recommended for preservation of trees near the edges of impact during the construction process.

Tree-Protection Zone

- A tree protection zone (TPZ) shall be established around retained trees. The TPZ shall extend 1 foot beyond the dripline where possible given grading limits. The TPZ around some trees will be much smaller. If a smaller TPZ is required in ungraded areas, six inches of mulch or wood/bark chips shall be placed over areas of vehicle traffic to minimize soil compaction.
- The TPZ shall be marked with minimum 4-foot high orange construction fence hung on posts (such as T-posts) before clearing occurs. The fence shall not be supported by trees or other vegetation. The fence shall remain in place until construction is complete.
- There shall be no driving, parking, or storage of supplies or equipment within the TPZ. Entry of construction personnel into the TPZ is not allowed except for maintenance of the fence or other activities undertaken for the protection of trees.
- The tree canopy along the TPZ boundary shall be inspected prior to vegetation clearing in the area of grading. The canopy of retained trees that overhangs the area to be graded shall be pruned to the minimum height required for construction.

Pruning

- Pruning of retained trees shall be conducted by an International Society of Arboriculture (ISA) certified tree worker or arborist in accordance with American National Standard Institute (ANSI) A300 Pruning Standard and adhere to the most recent edition of ANSI Z133.1.

Roots

- Work will occur within a few feet of the trunks of trees #330 and #343. Structural roots generally begin to taper rapidly at a distance approximately equal to the circumference at breast height measured horizontally from the trunk (Costello and Jones 2003, Hagen 2001). For both Tree #330 and #343, this distance is about 6.3 feet. Root pruning should be conducted beforehand along the limit of work that cuts into the ground within 6.3 feet of the trunks. Roots should be pruned to the same depth, and no more, as adjacent excavation, up to 1 foot below existing grade. Roots should be pruned by a method that cuts them cleanly such as a rock saw, vibrating knife, narrow trencher with sharp blades, or hand excavation and sawing. Roots should not be severed with backhoes, excavators, bulldozers, graders, or other rough grading equipment that may pull or shatter tree roots. No root pruning is necessary for fill.

Landscaping

- The Project landscape and irrigation plan should avoid application of any irrigation water, or planting of landscaping requiring irrigation water, within 15 feet of the trunk of retained native oak trees. Extensive landscaping will disturb the root system and compete for available water and minerals. If plantings are necessary within 15 feet of the trunk, consider drought tolerant landscaping compatible with native oaks (Hagen et al. 2007).
- Drip irrigation should be used in the vicinity of retained oak trees. No sprinklers or spray irrigation should be used where water may reach within 15 feet of the trunk.
- Project stormwater and irrigation runoff should be directed away from retained oak trees.
- The area within the dripline of retained oaks should be kept as natural and undisturbed as possible. Two to four inches of organic compost or mulch (e.g. natural leaf litter) may be used as a ground cover within the dripline of retained oaks. Mulch moderates soil temperature, maintains soil moisture, reduces soil compaction, enhances root growth, and reduces competition with weeds. Care must be taken when using mulch with a high carbon to nitrogen ratio (such as bark and wood chips) because the available nitrogen near the soil surface will be reduced during decomposition. To use non-composted material safely, add three pounds of actual nitrogen per cubic yard of mulch (Hagen et al 2007). Mulch should not be placed within 3 feet of the trunk as it may promote fungal growth.

Recommended Oak Tree Replacement Measures

Attachment B demonstrates one suitable location for native oak replacement. Other on-site locations are also suitable. I recommend native valley oaks (*Quercus lobata*) as the replacement trees. Valley oaks are recommended because they grow relatively quickly when young and are tolerant of some disturbance from surrounding urban land use. Interior live oaks (*Q. wislizeni*) and blue oaks (*Q. douglasii*) are also appropriate for the area. The measures below are recommended for replacement native oak trees.

- If a landscaping plan is prepared for the project, incorporate the replacement native oaks into the landscaping plan. Any plantings near replacement native oaks should be drought resistant landscaping compatible with native oaks.
- Native oak planting material shall consist of container oak seedlings. Source material should be local if possible, such as from El Dorado County or elsewhere in the Sierra Nevada foothills. Container sizes shall not be smaller than 1-gallon. Containers that are deeper than they are wide are preferred to allow for development of the taproot that oaks quickly develop, especially for container sizes of 5-gallons or less.
- The planting hole should be the same depth as the sapling container, but at least three times as wide to allow for lateral development of roots.
- If mulch is applied around the replacement trees, maintain at least six inches of separation from the trunk.
- Replacement trees should be irrigated for at least the first two dry-seasons after planting. Irrigation water should never be applied on or against the trunk. Drip irrigation is preferred.

Oak Resources Management Plan (ORMP)

The County may adopt a new Oak Resources Management Plan (ORMP) that replaces Policy 7.4.4.4 around May or June of 2017. The County does not anticipate changes to the text. The ORMP uses different quantitative standards for impacts and mitigation than Policy 7.4.4.4. Below is a technical analysis of oak resource impacts for the Project pursuant to the County ORMP (El Dorado County 2016), in the event the project chooses to comply with the newly adopted ORMP instead.

Under the ORMP, the oak trees at the Project site would be regulated and mitigated on the basis of individual trees and diameter at breast height (dbh), rather than by acreage of canopy. The ORMP defines individual oak trees as “any live, native oak tree of the genus *Quercus* [...] with a single main trunk measuring greater than 6 but less than 36 inches dbh, or with a multiple trunk with an aggregate trunk diameter measuring greater than 10 but less than 36 inches dbh”. The ORMP defines heritage trees as “live, native oak trees with a trunk or aggregate trunk dbh of 36 inches or greater” (El Dorado County 2016).

ORMP Impacts and Mitigation

- Tree #344, a blue oak tree with a 28 inch dbh will be removed as a result of the Project (Attachment B). The ORMP specifies that individual oak tree impacts shall be mitigated at an inch-for-inch ratio, measured in inches of dbh.
- The Project would mitigate for removal of Tree #344 via payment of the in-lieu fee identified in the ORMP. The in-lieu fee for individual oak trees is \$153 per inch of dbh. The estimated Project in-lieu fee is \$4,284 (28 inches x \$153 per inch). The ultimate determination of the fee amount will be made by El Dorado County.
- The same oak tree preservation measures are applicable under the ORMP.

Please contact me with any questions.

Cordially,



Chuck Hughes, M.S.

Biologist (ISA Certified Arborist WE-6885A)

Attachment A. Existing Oak Canopy Map




Attachment B. Oak Canopy Impacts Map

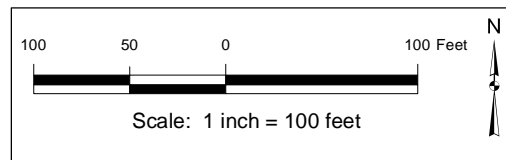
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Cameron Ranch
 El Dorado County, CA
 18 April 2017

-  BSA (5.95 ac)
-  Existing Oak Canopy (0.746 ac)
-  Oak Trunk Location








Aerial Photograph: 16 April 2015
 Google Earth Imagery 2017
 El Dorado County GIS Parcel Data (7 Dec 2011)

Attachment A. Existing Oak Canopy



Cameron Ranch
 El Dorado County, CA
 18 April 2017

Attachment B. Oak Canopy Impacts

-  BSA (5.95 ac)
-  Existing Oak Canopy (0.746 ac)
-  Oak Canopy Removed (0.062 ac)
-  Replacement Oak Canopy (0.079 ac)
-  Oak Trunk Location



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Aerial Photograph: 16 April 2015
 Google Earth Imagery 2017
 El Dorado County GIS Parcel Data (7 Dec 2011)

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**EL DORADO COUNTY
DEVELOPMENT SERVICES DEPT**

ACOUSTICAL ANALYSIS

**CAMERON RANCH
EL DORADO COUNTY, CALIFORNIA**

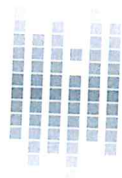
WJVA Project No. 16-014

PREPARED FOR

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SACRAMENTO, CA 95821**

PREPARED BY

**WJV ACOUSTICS, INC.
VISALIA, CALIFORNIA**



wjv acoustics

**JULY 21, 2016
(REVISED JANUARY 31, 2017)**

FILE COPY

Z17-0001/PD17-0001/TM17-1531

INTRODUCTION

The project is a proposed residential development to be located northwest of the intersection of Starbuck Road and Green Valley Road, within the community of Cameron Park in El Dorado County, California. This acoustical analysis was prepared as an update to the original Environmental Noise Assessment prepared by Brown-Buntin Associates (now operating as WJV Acoustics) in July 2008. A subsequent update was also prepared by Brown-Buntin Associates in 2012. Because the site plan has changed since the original Environmental Noise Assessment and the first update, the County of El Dorado has requested that an updated analysis be prepared to address potential noise impacts that may result from the development of the project as described by the Cameron Ranch Preliminary Site Plan prepared by R.E.Y. Engineers (January 2017). The site plan is provided as Figure 1.

Appendix A provides a description of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

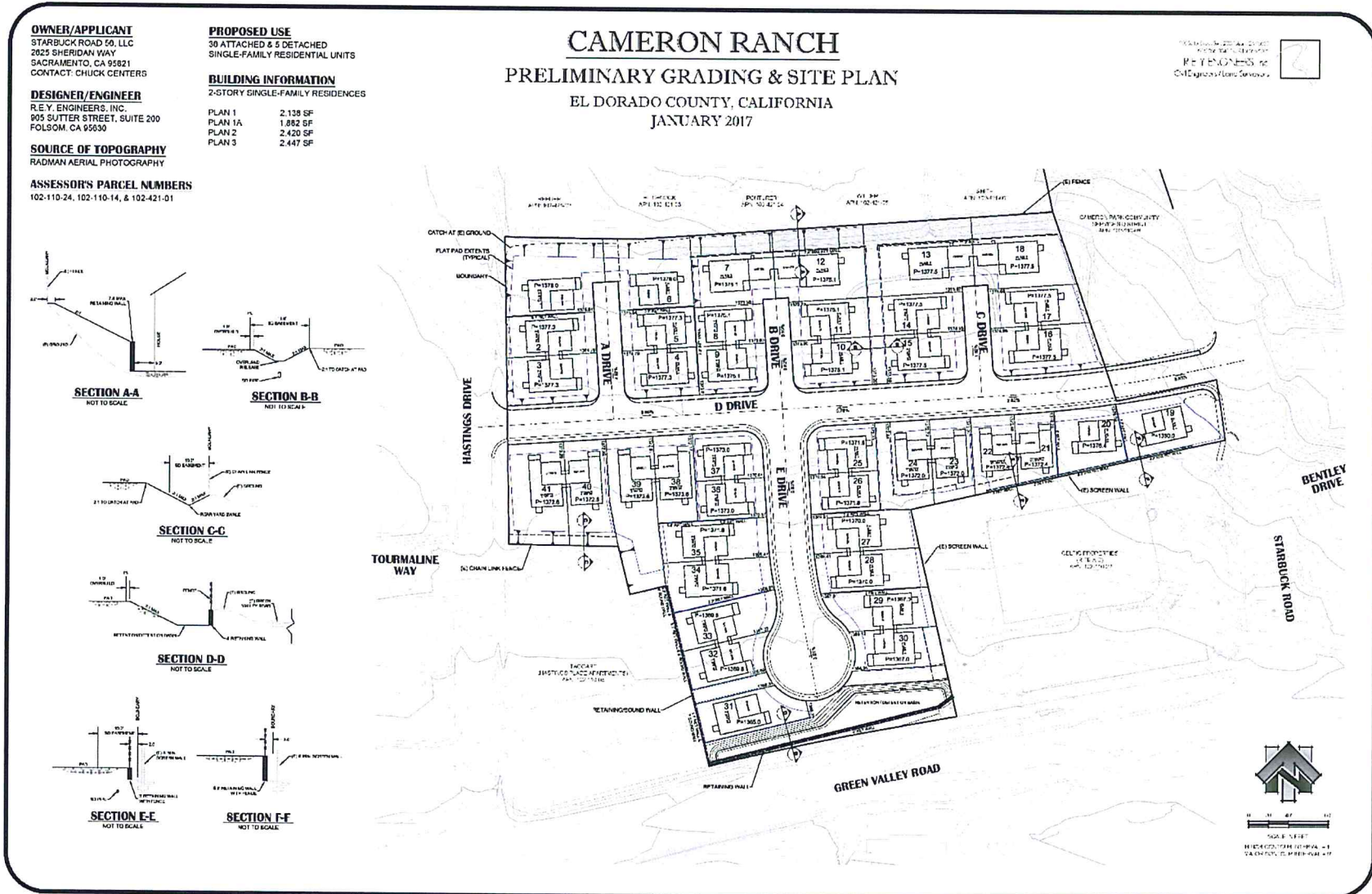
NOISE EXPOSURE CRITERIA

The Public Health, Safety, and Noise Element of the July 2004 El Dorado County General Plan establishes an exterior noise level standard of 60 dB $L_{dn}/CNEL$ for transportation noise sources. An exterior noise level up to 65 dB $L_{dn}/CNEL$ may be allowed if all practical noise mitigation measures are implemented. The exterior noise level standard is applied at the outdoor activity area, which is usually the back yard. Table 6-1 of the Noise Element (reproduced below) applies to noise sensitive land uses affected by transportation noise sources. The following policies guide application of the noise standards.

Policy 6.5.1.1 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 6-1 or the performance standards of Table 6-2, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.3 Where noise mitigation measures are required to achieve the standards of Tables 6-1 and 6-2, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.

FIGURE 1: PROJECT SITE PLAN



**TABLE 6-1
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR TRANSPORTATION NOISE SOURCES**

Land Use	Outdoor Activity Areas ¹ L _{dn} /CNEL, dB	Interior Spaces	
		L _{dn} /CNEL, dB	L _{eq} , dB ²
Residential	60 ³	45	--
Transient Lodging	60 ³	45	--
Hospitals, Nursing Homes	60 ³	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60 ³	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

¹ In Communities and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB L_{dn} shall be applied at the building facade, in addition to a 60 dB L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB L_{dn} shall be applied at a 100 foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

² As determined for a typical worst-case hour during periods of use.

³ Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

SETTING

Ambient Noise Levels:

The project area is currently undeveloped. An existing Rite-Aid store is located on an adjacent lot. To describe ambient noise levels in the project area, WJVA conducted sample noise level measurements on the project site in June 2006. The 24-hour continuous ambient noise measurement site was located at the project site's western border, approximately 60 feet from the Green Valley Road roadway centerline. The continuous noise measurement site is depicted in Figure 1. The noise measurement equipment was a Larson Davis Model 820 Precision sound level meter that was calibrated in the field prior to the measurement using a Bruel & Kjaer Type 4230 acoustical calibrator. The 24-hour measured average noise level was 65.1 dB L_{dn}.

At the project site, noise from traffic on Green Valley Road dominates the local noise environment. The noise environment in the vicinity of the project consists of suburban traffic noise during the daytime hours, and may be described as relatively quiet during nighttime hours.

PROJECT SITE NOISE EXPOSURE

The traffic noise study was prepared using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) for the prediction of traffic noise levels. The model is based upon standard noise emission factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

Sound level measurements and concurrent traffic counts were conducted adjacent to Green Valley Road, and Starbuck Road, at a distance of 50 feet from the roadway centerlines on May 23, 2006 (see Figure 2). The measurements were conducted at a height of 5 feet above the ground to represent ground-level receivers, and 15 feet above the ground to represent second story receivers. The purpose of the noise measurements was to determine the accuracy of the FHWA model in describing traffic noise levels in the vicinity of the project site.

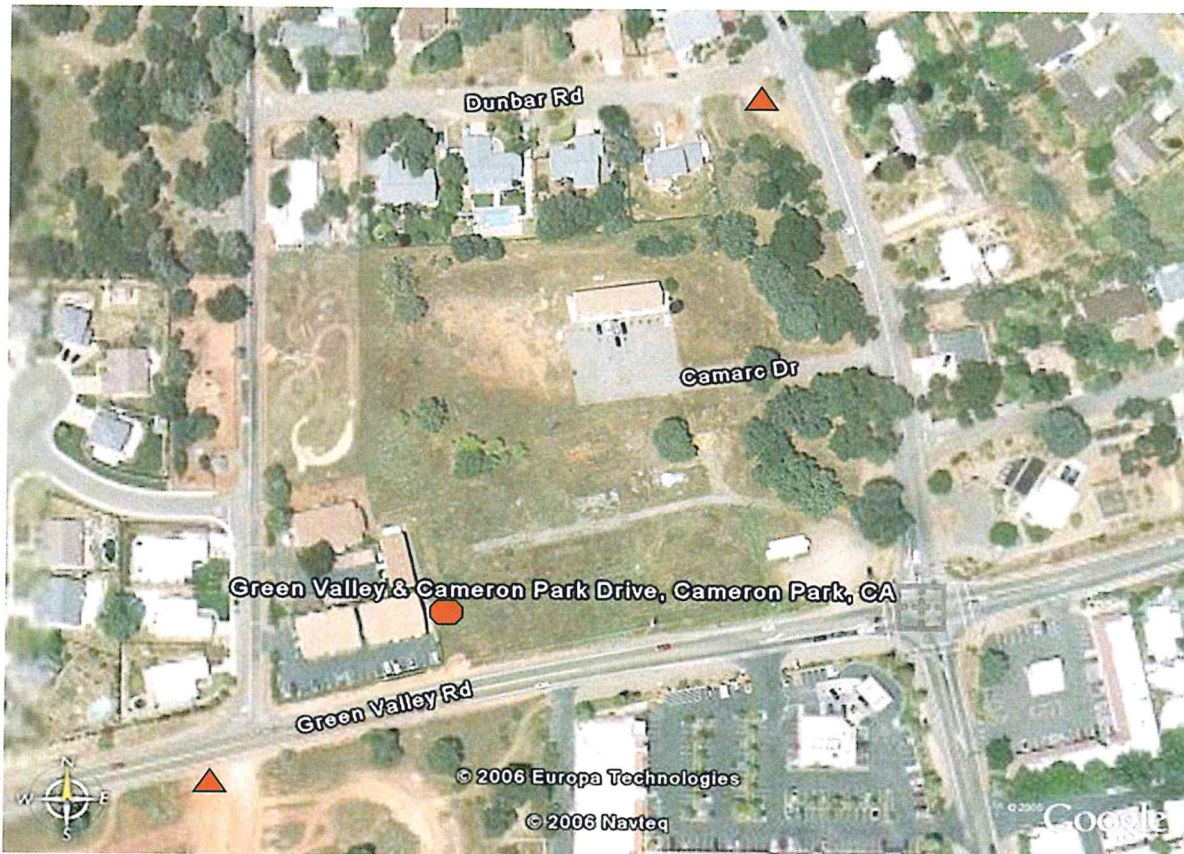
Sound measurement equipment consisted of Larson Davis Model 820 precision sound level meters. The measurement equipment was calibrated in the field immediately before use with a Bruel & Kjaer Type 4230 acoustical calibrator, and meets the specifications of the American National Standards Institute (ANSI) for Type 1 sound measurement systems.

The noise measurements were conducted in terms of the average noise level (Leq), and the measured values were later compared to the values predicted by the FHWA model using observed traffic volumes, truck mix, speeds, roadway geometries and distance to the microphone. Table I compares the measured and modeled noise levels for the observed traffic conditions, using the FHWA model.

TABLE I								
NOISE MEASUREMENT SUMMARY AND FHWA MODEL CALIBRATION								
Cameron Ranch Development, Cameron Park, California								
Roadway	Distance, Feet	Mic Height, Feet	Posted Speed, mph	Observed Vehicles/Hour			Leq, dB	
				Autos	Med. Trucks	Hvy. Trucks	Measured	Predicted by FHWA Model*
Green Valley Road	50	5	45	624	4	12	65.5	65.6
Green Valley Road	50	15	45	624	4	12	67.7	65.6
Starbuck Road	50	5	35	88	0	2	56	54.9
Starbuck Road	50	15	35	88	0	2	57.7	54.9

* Assumes acoustically "soft" site

FIGURE 2
Noise Measurement Locations
Cameron Ranch, Cameron Park, California



- ▲ Short-term Traffic Noise Measurement Site
- 24-hour Continuous (Ambient) Noise Measurement Site

The FHWA model over-predicted the measured Green Valley Road traffic noise level by 0.1 dB at a height of five feet, and under-predicted the traffic noise level by 2.1 dB at the fifteen-foot height. For Starbuck Road, the model under-predicted the traffic noise levels by 1.1 dB at the five-foot height, and by 2.8 dB at the fifteen-foot height. Given the close agreement between measured and modeled traffic noises levels at the 5-foot microphone height for both roadways, no offset was applied to the FHWA model. Based on WJVA file data and experience, noise levels at the 15-foot (second floor) height are typically 3 dB higher than the ground floor receiver. This is due to less ground attenuation at that height.

The FHWA model was developed to predict hourly Leq values for free-flowing traffic conditions, and is considered to be accurate within 1.5 dB. To predict Ldn values, it is necessary to determine the day/night distribution of traffic and to adjust the traffic volume input data to yield an equivalent hourly traffic volume.

For the traffic noise impact analysis, it was assumed that worst-case noise exposures would occur at nearest outdoor activity areas (backyards) to the adjacent roadways. The distance between the centerline of Starbuck Road and Green Valley Road to the closest backyard is approximately 55 feet and 80 feet, respectively. Truck mix was estimated from the observed truck counts for Green Valley Road. Day-night distribution of traffic was assumed to be 83%/17%, based upon the 24-hour noise measurement.

The traffic volume analysis prepared by KD Anderson for the Rite Aid at Cameron Ranch project was used to obtain the future Year 2025 Plus (Rite Aid) Project traffic volume on Green Valley Road. The FHWA model was then run to predict the traffic noise level at the nearest building outdoor activity areas. Table II lists the traffic volume input assumptions and noise modeling results.

TABLE II FHWA NOISE MODELING INPUTS AND RESULTS FOR FUTURE TRAFFIC AT CLOSEST OUTDOOR ACTIVITY AREA (BACKYARD) Cameron Ranch Development, Cameron Park, California						
Roadway	Distance	ADT	% Med. Trucks	% Heavy Trucks	Speed	L _{dn} , dB
Green Valley	80 feet	16,650	1	2	45	67.1
Starbuck Road	55 feet	1,480	1	2	35	60.9 ¹
¹ combined noise exposure from Green Valley Rd. and Starbuck Rd.						

NOISE MITIGATION

Exterior Noise Mitigation:

The outdoor activity areas for the project are individual backyards and second-story balconies. The nearest outdoor activity areas (backyard) facing Green Valley Road is approximately 80 feet from the roadway centerline (Lot 31). The future traffic noise level at the closest backyard to Green Valley Road would be 67.1 dB L_{dn}. The predicted exterior traffic noise level for the closest proposed lot facing Green Valley Road exceeds the El Dorado County 60 dB L_{dn} exterior noise level standard. The nearest outdoor activity areas (backyard) facing Starbuck Road is approximately 55 feet from the roadway centerline. The future traffic noise level at the closest backyard to Green Valley Road (Lot 19) would be 60.9 dB L_{dn}. Please note, this noise level exposure represents combined noise levels from both Green Valley Road and Starbuck Road. The lots west of Lot 19 would be shielded from Green Valley Road traffic noise by the existing Rite Aid Store building. The predicted exterior traffic noise level for the closest proposed lot facing Green Valley Road exceeds the El Dorado County 60 dB L_{dn} exterior noise level standard.

To mitigate exterior traffic noise exposure for the lots along Green Valley Road as well as lot 19 along Starbuck Road, it will be necessary to construct a sound wall or earthen berm/sound wall

combination along the Green Valley Road project site frontage. The sound wall will provide acoustical shielding of the outdoor activity areas (backyards) that would otherwise be exposed to exterior noise levels exceeding the County's standard.

WJVA utilized the FHWA Traffic Noise Model Version 2.5 (TNM 2.5) to calculate the insertion loss (noise reduction) provided by the proposed sound wall. TNM 2.5 is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010 (FHWA 1998a, 1998b). Key inputs to the traffic noise model were the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, ground type, and receivers. The model calculates the insertion loss of a wall of a given height based on the effective height of the noise source, height of the receiver, distance from the receiver to the wall, and distance from the noise source to the wall. The standard assumptions used in the sound wall calculations are effective source heights of 8, 2 and 0 feet above the roadway for heavy trucks, medium trucks and automobiles, respectively. The standard height of a residential receiver is five feet above the ground elevation.

Based upon the above-described assumptions and method of analysis, the noise level insertion loss values for sound walls of various heights were calculated. The calculations indicate that a sound wall with a minimum height of seven (7) feet relative to the pad elevation at lot 31 and six-and-a-half (6.5) feet relative to the pad elevation at lot 30 would reduce exterior noise exposure to below 60 dB L_{dn} within individual backyards. The sound wall may be located either along the individual backyard property line or along the overall project line, along Green Valley Road, as long as the above-described wall heights are relative to the respective lot pad elevations. The calculations also indicate that a sound wall with a minimum height of six (6) feet above respective building pad elevations at Lots 28, 29, 32, 33 and 34 would reduce exterior traffic noise exposure to below 60 dB L_{dn} within the individual backyards. It should be noted, the existing sound wall between Rite Aid and lots 28 and 29 will be sufficient to meet the above-described wall height requirements. In regards to lot 19, the calculations indicate that a wall along the southern lot boundary (or at the existing screen wall location) constructed to four (4) feet above lot pad elevation would break line of sight between the backyard and Green Valley Road, and reduce overall traffic noise exposure to below the County's applicable 60 dB L_{dn} noise standard. The wall should turn upward, toward the north for a minimum distance of ten (10) feet along the eastern backyard lot boundary, to avoid acoustical flanking.

The remaining proposed lots would not require a sound wall to comply with the County's exterior noise level standard. It should be noted; the calculations are based on individual lot pad elevations provided in the Preliminary Site Plan (January 2017) provided by R.E.Y. Engineers. The above-described minimum wall heights pertain to feet above each individual lot pad elevation. Changes to the individual lot pad elevations would require a reevaluation of these findings.

The above described sound walls would not be effective at second story elevations. Therefore, second floor exterior balconies facing the roadways should not be incorporated into project design at lot 19 and lots 28-34, if two-story construction is proposed at these lots.

With the incorporation of the above-described sound walls, all proposed lots would comply with the applicable County of El Dorado exterior noise level standard of 60 dB L_{dn}.

Interior Noise Mitigation:

The County of El Dorado interior noise level standard is 45 dB L_{dn}. With the proposed sound walls in place, the proposed single-family residences would need to be capable of providing a minimum outdoor-to-indoor noise level reduction (NLR) of approximately 15 dB (60-45=15).

A specific analysis of interior noise levels was not performed. However, it may be assumed that residential construction methods complying with current building code requirements will reduce exterior noise levels by approximately 25 dB if windows and doors are closed. This will be sufficient for compliance with the County's 45 dB L_{dn} interior standard. Requiring that it be possible for windows and doors to remain closed for sound insulation means that air conditioning or mechanical ventilation will be required.

CONCLUSIONS AND RECOMMENDATIONS

The proposed Cameron Ranch residential development will comply with applicable County of El Dorado exterior and interior noise level requirements provided that the following noise mitigation measures are included in the proposed project design.

1. A sound wall with a minimum height of seven (7) feet at lot 31 and six-and-a-half (6.5) feet at lot 30, relative to the respective lot pad elevations, would reduce exterior traffic noise exposure to below 60 dB L_{dn}. The sound wall may be located at either the southern backyard property line or the southern project boundary, but must be constructed to the prescribed height above lot elevation and must connect with the eastern boundary sound wall (lot 30) and the western boundary sound wall (lot 31). A sound wall with a minimum height of six (6) feet above respective lot pad elevations at lots 28, 29, 32, 33 and 34 would reduce exterior traffic noise exposure to below 60 dB L_{dn} within the individual backyards. It should be noted, the existing wall located between lots 28-30 and Rite Aid, on their eastern lot boundary, will be sufficient to properly mitigate noise levels within the individual backyards. A sound wall with a minimum height of four (4) feet above lot pad elevation at lot 19 should be constructed to reduce noise levels exposure below 60 dB L_{dn}. The wall should turn upward, toward the north, for a minimum distance of ten (10) feet to avoid acoustical flanking. Suitable construction materials include concrete blocks, masonry or stucco on both sides of a wood or steel stud wall. Second-story exterior balconies facing the roadways should not be constructed for the above-described lots.
2. Air conditioning or mechanical ventilation should be installed in the home so that it will be possible for windows and doors to remain closed for sound insulation purposes.

The conclusions and recommendations of this acoustical analysis are based upon the best information known to WJV Acoustics Inc. (WJVA) at the time the analysis was prepared concerning the proposed site plan, proposed grading plan and traffic noise exposure. Any significant changes in these factors will require a reevaluation of the findings of this report. Additionally, any significant future changes in motor vehicle technology, noise regulations or other factors beyond WJVA's control may result in long-term noise results different from those described by this analysis.

Respectfully submitted,



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WJV:wjv

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL:	The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.
CNEL:	Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.
DECIBEL, dB:	A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
DNL/L_{dn}:	Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.
L_{eq}:	Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L _{eq} is typically computed over 1, 8 and 24-hour sample periods.
NOTE:	The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L _{eq} represents the average noise exposure for a shorter time period, typically one hour.
L_{max}:	The maximum noise level recorded during a noise event.
L_n:	The sound level exceeded "n" percent of the time during a sample interval (L ₉₀ , L ₅₀ , L ₁₀ , etc.). For example, L ₁₀ equals the level exceeded 10 percent of the time.

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ACOUSTICAL TERMINOLOGY

**NOISE EXPOSURE
CONTOURS:**

Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

**NOISE LEVEL
REDUCTION (NLR):**

The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of “noise level reduction” combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

SEL or SENEL:

Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL:

The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

**SOUND TRANSMISSION
CLASS (STC):**

The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.