

RINCON DEL RIO PROJECT
BIOLOGICAL INVENTORY

Prepared for Rincon del Rio LLC

Prepared by Adrian Juncosa, Ph.D.

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SITE AND SURVEY INFORMATION

Site name: Rincon del Rio
APN: 57-240-17, -18, -19, and 57-130-13
Location: Section 33, T. 14 N, R. 8 E and Section 4, R. 13 N, R. 8 E (USGS Lake Combie quadrangle). Site adjoins the Bear River on the north side, approximately 0.3 to 1 mile to the east of Highway 49.
Prepared for: Rincon del Rio LLC.
Survey dates: December 20, 2008; February 21 and 28, 2009
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Biologist: Adrian Juncosa, Ph.D.

SUMMARY

The Rincon del Rio site is covered mostly by Ponderosa Pine – California Black Oak and several kinds of oak-dominated woodlands, and Annual Grassland. There are small areas of Foothill Riparian, Freshwater Emergent Wetland, and Wet Meadow habitats.

Other waterbodies found within the site include the Bear River and one main unnamed tributary, which was dammed at some unknown time in the past to create a large pond in the center of the site. There is also a smaller tributary which flows into the main unnamed one just north of the pond. Both tributaries support woody riparian and some herbaceous wetland habitat. Three small areas of mixed riparian and herbaceous wetland habitat, which are supported by springs emanating from rocky slopes, are found adjoining the Bear River in the southeastern part of the site. Finally, there are two sections of Nevada Irrigation District irrigation canals, one being the named Magnolia Ditch. Other areas of concave (valley) topography were examined, and most proved not to have characteristics of jurisdictional tributaries.

One special-status species was observed on the site (Cooper's hawk), observed transiting the upper part of the site (east of Magnolia Ditch). Suitable nesting habitat for this species is found within some upland and riparian woodlands within the site. Suitable nesting habitat for yellow warbler is found within portions of the Foothill Riparian woodland. Habitat suitable for California red-legged frog may occur within the large pond on site. Habitat suitable for Brandegees' clarkia occurs on steep slopes adjoining the Bear River. Most of the areas that are suitable for special-status species are avoided by the project. For any habitat that is suitable for special-status species that is within the area of proposed development, survey and contingent mitigation actions are recommended.

Sixteen landmark oak trees and many areas of landmark oak groves (>33 percent hardwood canopy coverage) are found within the site.

SITE LOCATION AND SETTING

The study site lies in Section 33, T. 14 N, R. 8 E and Section 4, R. 13 N, R. 8 E; USGS Lake Combie quadrangle, adjoining the north side of the Bear River. The elevation of the site varies from approximately 1,280 to 1,700 feet.

The regional setting of the study site is low density rural residential development and agricultural (grazing). Prior to settlement, the area probably supported nearly unbroken oak and ponderosa pine forest, with some scrub habitat on the steep rocky slopes above the Bear River.

Unless otherwise noted, plant community names that are capitalized in this report are those developed for the California Department of Fish and Game Wildlife Habitat Relationship system and slightly refined in the Nevada County Natural Resources Report (NCNRR; Nevada County, 2002). They are useful habitat names regardless of the regulatory status of the respective sources. To the extent possible, the vegetation that was observed is also described in terms of series and associations defined by the Manual of California Vegetation (Sawyer and Keeler-Wolf, 1995) and list of communities recognized by the California Natural Diversity Data Base (CNDDDB; DFG, 2008).

The site supports the following plant communities, in approximate order of coverage area:

- Ponderosa Pine – Black Oak
- Foothill Hardwood (Blue Oak, Interior Live Oak, and Interior Live Oak – Canyon Live Oak Woodland)
- Annual Grassland
- Foothill Riparian habitat
- Fresh Emergent Wetland
- Soft Scrub – Annual Grassland Mosaic

REGIONAL VEGETATION

The study site lies in the 6,334-acre Lake of the Pines watershed as defined by the NCNRR. The 5,185 non-urbanized acres in this watershed include the following acreages of the plant community types that occur on the project site:

Ponderosa Pine	781 acres
Foothill Hardwood	1,854
Annual Grassland	999
Oak-Foothill Pine	707
Foothill Riparian habitat	115
Fresh Emergent Wetland	41

METHODS

The site was surveyed with the aid of an excellent color aerial photograph with topographic base map. All distinctive vegetation types were studied on foot, and areas of flat or valley topography were examined for the presence of wetland vegetation or other indicators of potential jurisdictional waters such as incised channel banks or scoured channel bed. The limits of the larger wetland and riparian plant communities, and the locations of some of the landmark oak trees, were mapped by recording GPS waypoints with a Garmin GPSMap 60CSx. The remainder of the landmark oak trees were identifiable in the aerial photograph and were marked on the field map.

All plant species present were identified by sight or by reference to Hickman (1993), and were noted on a proprietary checklist of the local flora. Birds were identified by sight. Identifications and nomenclature follows that used in Sibley (2000). Mammals were identified by direct observation or by sign (scat, tracks, or characteristic burrows).

The site was studied in December 2008 and February 2009, which is outside the blooming time for the special-status plant species that are recorded from the region. The areas of suitable habitat for these species are discussed where relevant, and circumstances that would require future survey work, if any, are explained.

SURVEY RESULTS

A map of habitats and other notable biological resources is included in a pocket inside the back cover of this report. These are described in detail below under Upland and Wetland subheadings. Appendix A includes a list of species that were observed.

Upland Habitats

PONDEROSA PINE – CALIFORNIA BLACK OAK

This woodland and forest type on the Rincon del Rio mostly fits the NCNRR description of the Ponderosa Pine community type, but also includes some significant patches where the proportion of ponderosa pine itself is lower than is typical for the defined community type. The pine-oak areas belong to MCV black oak and ponderosa pine series (no CNDDDB association matches the vegetation on site exactly; the one that is ecologically most similar overall is ponderosa pine-incense cedar-black oak, but very little incense cedar is found in this woodland type on the Rincon del Rio site). The dominant trees are almost all ponderosa pines (*P. ponderosa*) and California black oak (*Quercus kelloggii*), with practically no other conifers or other canopy trees present in any significant abundance throughout most of the mapped pine forest area. Foothill pine (*P. sabiniana*) is scattered throughout this habitat type and other oak woodlands. Understory shrubs vary depending upon aspect, and include California buckeye (*Aesculus hippocastaneum*; generally only on south facing slopes), hoary coffeeberry (*Rhamnus tomentella*), coyote bush (*Baccharis pilularis*), deer brush (*Ceanothus integerrimus*), and poison oak (*Toxicodendron diversilobum*). Toward the higher elevations of the site, seemingly where the granitic parent material is either closer to the surface or forms a more acidic soil for some geochemical reason, some areas of the Ponderosa Pine

– California Black Oak woodland have whiteleaf manzanita (*Arctostaphylos viscida*) and/or ceanothus in the understory. One portion of this woodland type, between the Magnolia Ditch and the rounded crest that is the highest point of the site, includes several landmark sized black oak trees close together. Although this small area does not form landmark oak canopy due to the spacing of the trees and the presence of pine, it is a much more ecologically valuable area of woodland than other areas within the Rincon del Rio site where the oak canopy does exceed 33 percent coverage. This area also includes several large pine trees whose thick bark is ideally suited to the excavation of acorn storage holes by woodpeckers, which these birds have done enthusiastically, creating granary trees whose acorn storage opportunity supports survival of the birds in seasons and even whole years when the supply of acorns is below normal. Finally, the same area was the location where a Cooper's hawk was seen transiting the site flying southward.

FOOTHILL HARDWOOD

Several main types of oak woodland occur on the site. Notwithstanding the species composition definitions provided in the NCNRR, all oak woodlands are discussed here under Foothill Hardwood in consideration of the low elevation of the site and the fact that the woodland types that might be termed "Montane Hardwood" under the NCNRR (black and canyon live oak dominated) intergrade with ones defined as Foothill Hardwood (blue and interior live oak).

The largest area by far corresponds to MCV blue oak series (CNDDDB associations: blue oak/grass and blue oak-interior live oak/grass) and is dominated by blue oak (*Quercus douglasii*), rarely mixed with a small proportion of interior live oak (*Q. wislizenii*). Throughout most of the blue oak woodland, the canopy is somewhat open and the trees are of small to moderate size (generally 6 to 18 inches dbh). All of the landmark-sized (>36 inch) blue oaks occur in open savanna with gentle slopes and presumably deeper soil, near the western property boundary. The blue oak woodland has relatively little shrubby understory; the herb stratum supports mostly non-native species (bromes, *Bromus diandrus* and *hordeaceus*; medusa-head grass, *Taeniatherum caput-medusae*; and filaree, *Erodium botrys*). Small patches of pure or primarily interior live oak occur within or adjoining the blue oak woodland. One of the more significant patches of blue oak/grass association in terms of age class diversity, potential for regeneration, and likely diversity of associated species occurs in the upper portion of the site, adjoining and intergrading with the area of black oak-ponderosa pine discussed above (including several landmark black oaks).

In the eastern part of the site, oak woodland comprised of a mixture of canyon live oak (*Q. chrysolepis*) and interior live oak occurs on the extensive, steep, southwest facing slopes between the Magnolia Ditch and the Bear River (MCV canyon live oak series; CNDDDB canyon live oak and canyon live oak-ponderosa pine). Due to the relatively dense canopy and steep dry southwest-facing slopes, there is relatively little understory in this area, but gaps in the tree canopy support poison oak, deer brush, grasses, and a variety of forbs.

Finally, one small patch of oak woodland that is dominated by valley oak (*Q. lobata*) occurs on the north and northwest side of a small knoll that adjoins Foothill Riparian vegetation along the main unnamed tributary. This patch of valley oak woodland (MCV valley oak series; CNDDDB valley oak/grass) stands on a hillside well above the riparian zone. Additional valley oaks, including several of landmark size (>36 inches dbh) occur within the Foothill Riparian woodland along the unnamed tributaries.

ANNUAL GRASSLAND

Grassland pasture occurs as one large area north of the pond and several much smaller patches within the woodland areas. The large pasture supports a mixture of annual and perennial non-native grasses: bromes, wild oats (*Avena* sp.), orchard grass (*Dactylis glomerata*), tall fescue (*Festuca arundinacea*), blue wild-rye, and dog-tail grass. At the time of the field surveys, very few native forbs were evident either as growing plants or as dried fragments from the prior growing season.

SOFT SCRUB – ANNUAL GRASSLAND MOSAIC

Small portions of the south-facing steep rocky slopes above the Bear River support a soft-leaved scrub (not true Foothill Chaparral, which is hard-leaved and dominated by different species) dominated by poison oak, coyote bush, and coffeeberry. There is no NCNRR community type that properly accommodates this vegetation; in the CNDDDB natural communities list (DFG, 2003), it is intermediate between Coffeeberry Scrub and Poison Oak Scrub, but lacking thimbleberry which is supposed to be a co-dominant in the latter. Occasional patches of California buckeye and scrub oak (*Q. berberidifolia*) occur where there are, respectively, either deeper or rockier soils. This scrub occurs as a mosaic with annual grassland, which significantly includes a greater component of native species than is the case in the pasture and woodland areas.

Wetlands and Riparian Areas

FOOTHILL RIPARIAN HABITAT

Riparian habitat occurs along the entire length of the one main tributary system, along the Bear River, including the lower extremity of the small wetland tributary that flows through the large pasture. The total acreage of riparian habitat is approximately 3.75 acres. The floodplain of the main tributary (which flows into and out of the large pond) supports habitat dominated by white alder (*Alnus rhombifolia*) and willows (*Salix laevigata* and *lasiolepis*). The riparian vegetation understory varies from absent, to dominated by freshwater emergent wetland species, to dominated heavily by Armenian blackberry (*Rubus armeniacus*; formerly erroneously known as Himalayan blackberry), Valley oaks, including several of landmark size, occur at the fringe of, or mixed with, the alder-willow riparian woodland. The limit of the Foothill Riparian community was mapped to include all of the riparian-associated valley oaks.

WET MEADOW

Wet Meadow occurs adjacent to part of the shore of the large pond, and between the upland pasture and Foothill Riparian woodland (approximately 0.77 acre). The majority of the area of the herbaceous wetland is characterized by plants that are facultative indicator species (occurring equally commonly within and outside of wetlands) such as perennial rye-grass (*Lolium perenne*), curly dock (*Rumex crispus*), and common thistle (*Cirsium vulgare*); the mapping designation (Wet Meadow) was based upon the vegetation that is most prevalent within the map unit. Small areas close to the drainageways and to the shore of the pond would, by themselves, be termed Freshwater Emergent Wetland on the basis of dominance by by facultative-wetland and obligate species (almost always found in wetlands): umbrella sedge (*Cyperus eragrostis*), rushes (*Juncus* spp.), and willow herb (*Epilobium glaberrimum*).

FRESHWATER EMERGENT WETLAND

The largest area of emergent wetland is found in the northeastern part of the project site. This may be partially or entirely supported by seepage from the NID canal, or it may be entirely supported by natural seepage. Absent a determination of whether the hydrology is natural or artificially supported, it is mapped as a wetland area according to its vegetation. Three additional seep-supported wetland areas occur on the lower part of the rocky slopes near the Bear River. The four areas together total about 0.57 acre.

The field mapping of Freshwater Emergent Wetland was made by walking the apparent boundary between upland pasture grasses and meadow vegetation that was at least partially dominated by hydrophytic species (facultative or “wetter”). This boundary is not necessarily exactly the same as the limit of jurisdictional wetlands, which must not only be dominated by hydrophytic plants, but also have hydric soils and wetland hydrology. However, the area that meets all three mandatory criteria must necessarily occur entirely within the area mapped in this report as having hydrophytic vegetation.

Landmark Oaks and Groves

Sixteen landmark oak trees (greater than 36 inches dbh) were found on the site, belonging to three of the oak species that are present on the site: blue oak, valley oak, and black oak. Most of these seemed to occur in specific small areas that provide highly suitable growing conditions for oaks. Although not all of the areas where the landmark individual trees occur also support high canopy coverage hardwood woodland, they are all almost entirely avoided by proposed developments. The exception is near the main project entrance, where existing gravel-surfaced roads would be improved to a paved roads within the general blue oak savanna area that supports several landmark sized blue oaks (the individual landmark trees will of course be preserved).

Landmark oak groves (with hardwood canopy coverage >33 percent) occur in 24 scattered large and small patches in all parts of the site, having an aggregate area of about 39.9 acres. In the western half of the site (where all of the development except the secondary fire access road is located), the majority of these groves are dominated or co-dominated by interior live oak, often with a low dense canopy formed by small to medium diameter trees with relatively low diversity of other plants, and providing only limited special wildlife values.

The landmark oak groves which seem most likely to support the special wildlife and plant diversity values for which oak woodlands are prized all occur in the eastern half of the project site, specifically on the west- and southwest-facing slopes above the Bear River, adjoining the Foothill Riparian woodlands on their east side, and in the central-east portion of the site.

In this latter area, the adjoining Ponderosa Pine – Black Oak woodland that has hardwood canopy coverage that is definitely less than 33 percent supports large trees and multiple wildlife values (e.g. for deer and for woodpeckers). In my opinion, portions of that woodland would be preferable as long-term conservation opportunities to some of the >33 percent live oak groves. However, long-term conservation would likely entail some level of fuels management, that is, selective cutting of some woody vegetation including certain of the smaller trees (but not all, to ensure long-term sustainability of the woodland from recruitment of new trees), and reduction of fine-caliber ground fuel loads.

Special-status Species

The Rincon del Rio site lies close to the southwest corner of the Lake Combie quadrangle. The CNDDDB was queried for the four relevant quadrangles (Lake Combie, Wolf, Auburn, and Gold Hill; thus providing at least a five-mile radius around the project site) includes the plant and wildlife species shown in the table below. Some of these species have special status under state and federal regulations or laws (CEQA, California Endangered Species Act, or federal Endangered Species Act); others are species of some level of concern but may or may not merit consideration under CEQA Guideline 15380 (species that are in scientific fact threatened or endangered, although they may not yet be so listed by California Department of Fish and Game or U.S. Fish and Wildlife Service). Still others have no U.S. or California status or listing, but are tracked or listed by one or another non-governmental organization such as International Union for Conservation of Nature and Natural Resources (IUCN). All species that appear on the DFG lists of special animals and special plants, and are therefore tracked by the CNDDDB, are discussed in this section. In addition, special-status species for which suitable habitat occurs on the site, but which were not found in the four-quadrangle CNDDDB query, are also discussed in the text which follows.

SCIENTIFIC NAME	COMMON NAME	STATUS
Wildlife		
<i>Actinemys marmorata marmorata</i>	(north)western pond turtle	SC/SC
<i>Ammonitella yatesii</i>	Yates's snail (tight coin)	-
<i>Andrena subapasta</i>	Vernal pool andrenid bee	-
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	-/SC
<i>Banksula galilei</i>	Galile's cave harvestman	-
Plants		
<i>Allium jepsonii</i>	Jepson's onion	-/-/1B
<i>Clarkia biloba ssp. brandegeae</i>	Brandegee's clarkia	-/-/1B
<i>Fritillaria eastwoodiae</i>	Butte County fritillary	-/-/3
<i>Viburnum ellipticum</i>	oval-leaved viburnum	-/-/2

Status definitions (Federal status/State status/California Native Plant Society [CNPS] list):

E or T, listed as endangered or threatened under state or federal Endangered Species Act;

C, candidate for listing as endangered or threatened;

BCC, bird species of conservation concern (FWS)

SC, species of concern (Sacramento FWS) or species of special concern (California DFG);

List 1B, considered rare, threatened or endangered by CNPS and normally regarded by DFG as meriting consideration under CEQA Guideline 15380; List 2, rare, threatened, or endangered in California but more common elsewhere; List 3, plants about which insufficient information is known; List 4, plants of limited distribution (watch list).

WILDLIFE AND INVERTEBRATES

Species are discussed in alphabetical order by scientific name (same order as in table above). Several additional special-status wildlife species, which are not recorded from the CNDDDB four-quadrangle query area but for which suitable habitat occurs within the project site, are discussed at the end of this section.

Northwestern pond turtle inhabits ponds or slow-moving streams with bordering wetlands and submerged aquatic vegetation, and requires gently sloping pond shores and/or logs or rocks to use as basking sites. Although basking features are scarce, the large pond and adjacent wetlands on the Rincon del Rio site is suitable for this species.

Yates's snail inhabits limestone caves and humus on moist north-facing sides of limestone outcrops. The nearest location for this species is in El Dorado Co., in a completely different geologic setting from the Rincon del Rio project site. There is no limestone on the project site, therefore no habitat that is usable by Yates's snail.

Vernal pool andrenid bee nests in grasslands near vernal pools and may be important in pollination of vernal pool species such as goldfields (*Lasthenia* spp.). The nearest locations for this species are in undulating grassland close to Auburn, and near the town of Cool, far to the southeast from the project site, in a completely different type of grassland landscape (shallow non-granitic bedrock, irregular topography) from the valley-bottom pasture of the Rincon del Rio site. Also, vernal pools and therefore the essential early springtime foraging resource for this bee are absent from the present project site; therefore there is no habitat suitable for vernal pool andrenid bee at the site.

Townsend's big-eared bat is found in a wide variety of habitats, but especially in mesic ones. However, it specifically requires caverns, abandoned buildings, or abandoned mine shafts for roosting. The nearest occurrence is at 725 ft, in an abandoned mine with several adits (now bat-gated to exclude human access but permit the bats to continue to roost undisturbed) in hills between Dutch Ravine and Boulder Ridge. There are no suitable roosting sites for this species within the project site.

Galile's cave harvestman (related to the familiar "daddy longlegs" arachnid) lives only in limestone caves. The species is known only from the type locality, Lime Rock caves near the North Fork of the American River. No limestone caves are present on the project site, therefore there is no habitat suitable for the cave harvestman.

The following species were not found in the CNDDDB query but are known from western Nevada County and utilize habitats that are similar to those found on the study site.

Cooper's hawk (*Accipiter cooperi*, a DFG species of special concern) nests in woodlands and other habitats throughout California, including chaparral and urbanized areas with sufficient trees (Johnsgard, 1990; Kaufman, 1996; Roberson and Tenney, 1993; Rosenfield and Bielefeldt, 1993). In the Sierra Nevada foothills, it seems especially to favor riparian habitats or other high-canopy cover broadleaved woodlands. In the central/northern Sierra Nevada, I have personally observed Cooper's hawk in riparian forest, live oak/blue oak woodland at <1,000 ft elevation, black oak woodland near Nevada City, and in coniferous forest including moderately densely developed residential areas (parcel sizes <0.5 acres). Nesting season is generally from April through July, depending

upon geographic area (Roberson and Tenney, 1993; Rosenfield and Bielefeldt, 1993). Cooper's hawk nests in deciduous or coniferous trees, specifically where there are plenty of tall ones, and builds its bulky stick nest usually 25-50 ft above ground in a large tree with openings or woodland edge habitat nearby. An individual of this species was seen flying over the Ponderosa Pine – Black Oak woodland uphill of the Magnolia Ditch, and suitable nesting habitat occurs there and elsewhere on the project site.

Yellow warbler (*Dendroica petechia*) is another species that nests in riparian woodlands at all elevations in California. Occurrence data, scientific references, and personal field observations indicate that it nests only where the riparian habitat is relatively extensive or dense at lower levels in the canopy (Kaufman, 1996; Roberson and Tenney, 1993). The riparian habitat along the Bear River and the main tributary is suitable nesting habitat for yellow warbler.

California red-legged frog (*Rana aurora draytoni*) is not known to occur anywhere close to the Rincon del Rio site, but has a historical range that includes the site, and recorded occurrences at higher and lower elevations. It requires permanent or near-permanent aquatic habitat that is ponded or very slowly flowing for breeding, but may disperse long distances up or down tributaries and even over upland habitats at certain times of the year. The flow velocities in the Bear River, as evidenced by the observed whitewater, exposed bedrock, and large particle sizes of the bank sediments, are much too high to provide breeding habitat for any regionally known species of *Rana*. However, the large pond provides permanent surface water. Although the paucity of emergent wetland vegetation at the pond banks greatly reduces the suitability of this water body for frog breeding, it is potentially suitable habitat. We were unable to determine conclusively whether bullfrogs are present. This non-native species is present in the great majority of larger aquatic features in western Nevada County and, where present, precludes the possibility of occurrence of red-legged frog because bullfrogs consume red-legged frogs at all stages of life from eggs to adults.

PLANTS

Species are discussed in alphabetical order by scientific name (as in table above).

Jepson's onion is a plant of open slopes or flats in Sierra Nevada foothills woodland, on volcanic or (especially) serpentine soils (Hickman, 1993). The CNDDB records an occurrence at Dry Creek Road and Blue Grass Road, north of Auburn and east of Hwy 49. Either this occurrence is on a small exposure of serpentine that does not appear in the County-wide serpentine map in the NCNRR, or it is on some other type of volcanic or metamorphic rock with sufficiently distinctive chemistry to support the plant. Soils of the Rincon del Rio site are Boomer loam, derived from metamorphic or metavolcanic rocks (Brittan, 1974), therefore, open slopes or flats within the oak woodland on the site could potentially include suitable habitat for Jepson's onion.

Brandege's clarkia is reported from many quadrangles in the region, including a recent record within the Grass Valley quadrangle (Alta Sierra area). In all cases, as for the whole species *C. biloba* (all spp.), subspecies *brandegeae* occurs exclusively on steep

slopes or road cuts, typically steeper than 30 percent, where competing vegetation is relatively sparse and does not include substantial biomass of large perennial grasses or yellow star-thistle. Within the Rincon del Rio site, suitable habitat for Brandegee's clarkia occurs on the steep open slopes above the Bear River. Historic and more recently observed occurrences of the species are recorded from this exact type of habitat, on both sides of Hwy 49. Additional occurrences are recorded from other parts of the four-quadrangle area, also from steep rocky slopes and roadcut embankments (Newcastle, near the Auburn Post Office, and along Lake Clementine Road).

Butte County fritillary. This lily relative grows in various oak and mixed oak and coniferous woodland sites, widely scattered throughout the Sierra Nevada foothills, including two locations near and just south of the confluence of the middle and north forks of the American River. The plant is probably specific to certain soil conditions, but other than an apparent preference for soils with at least some clay content and a humus layer on the surface (which includes a very wide range of foothills soils), the exact nature of its soil requirements is not at all clear from CNDDDB records or other sources. Accordingly, nearly every site with open woodland habitat in western Nevada County could include habitat that is potentially suitable for Butte County fritillary.

Oval-leaved viburnum is the only California species in a large genus of shrubs of moist and mesic broadleaved forests in North America, northeast Asia, and Europe. As would be expected for the genus, oval-leaved viburnum grows in shrub- and woodland on shady, (relatively) humid, north-facing slopes, especially in large river canyons where moist air persists. Specifically, the species is recorded from the north facing slopes above North Fork Lake (off Lake Clementine Road). The occurrence is in mixed coniferous forest with madrone, *Philadelphus lewisii*, *Styrax officinalis*, and *Adiantum jordanii*, all of which are indicative of much more mesic conditions than occur anywhere on the Rincon del Rio site. Although madrone is a widespread species in oak and mixed coniferous forests at low and middle elevations, *Philadelphus* and *Styrax* are confined to high-humidity settings in the major river canyons of the west slope, and *Adiantum* is also indicative of moist conditions (either in higher humidity wooded habitats or, more commonly, along streams). None of those four associated species were found within the site, so we can definitively conclude that there is no habitat suitable for oval-leaved viburnum.

SPECIAL-STATUS SPECIES SUMMARY

A single Cooper's hawk was observed flying over the eastern part of the site, and suitable nesting habitat for this species occurs in woodlands with large trees, throughout the site. Suitable nesting habitat for yellow warbler occurs in densely vegetated portions of the riparian habitat along the Bear River and the main tributary.

Suitable habitat for Brandegee's clarkia occurs on the steep slope above the Bear River, and occurrences are recorded from no more than one or two miles away. The species probably occurs on the Rincon del Rio site also, but only in locations where no project development is proposed. Potentially suitable habitat for Jepson's onion and Butte County fritillary occurs in open woodland areas throughout the site.

PROJECT DESCRIPTION

The proposed project includes a variety of multi-unit residential structures and other associated development (roads, infrastructure), clustered entirely in the western half of the site except for a second access road to meet public safety requirements. This road enters the site at the northwestern corner and connects to an existing dirt road (to be upgraded) north of the pond. Because the site is bisected by an unnamed tributary, one road crossing is necessary to achieve subdivision design requirements (specifically, for the second access road). Also, in order to cluster all development in the western half of the site, where the woodlands support lesser habitat values than in the eastern half, some minor impacts on landmark oak groves are unavoidable.

IMPACT ASSESSMENT AND MITIGATION

WETLANDS, RIPARIAN AREAS, AND TRIBUTARIES

The proposed development avoids any intrusions into wetland or riparian areas, except that it will require widening or minor realignment of one or more roads which cross tributaries. Replacement or extension of the culverted crossings may necessitate small amounts of fill, or excavation and backfill, of small areas of tributary waters of the U.S., possibly including adjacent wetlands. Total amounts of fill will certainly be less than the 0.5 acre ceiling that applies to the nationwide permits that are applicable to culverted road crossings with a residential development. If the existing culverts are adequate and no fill is required to build a County-standard road over the tributary, then the impact would not occur and no mitigation is required.

Impact BIO-1: *The project may result in small areas of wetland or non-wetland tributary fills for culverted crossings that are required to construct or improve roads to the necessary standard. This would be an unavoidable significant impact under applicable CEQA guidelines.*

The following mitigation measure is recommended, which will reduce this impact to a less-than-significant level:

Mitigation Measure BIO-1: *In the event that any fills of wetlands or other waters of the U.S. are required, the project shall submit pre-construction notification for use of a nationwide Section 404 permit (NWP) or permits to U.S. Army Corps of Engineers. The project shall also obtain Section 401 water quality certification from the Regional Water Quality Control Board and, if applicable, a Section 1602 streambed alteration agreement from the Department of Fish and Game prior to construction. The project shall implement mitigation as approved by the agencies. Mitigation actions shall include appropriate temporary and permanent BMPs to protect water quality, as well as compensatory mitigation for loss of habitat by means of payment of in-lieu fees, construction or enhancement of habitat, or a combination of these actions.*

Although notification to the Corps is not required for all nationwide permits, the two State agencies require copy of the Corps submittal for the applications to be deemed complete. If fills will affect wetlands, a wetland delineation is required prior to, or included with, the notification. Consultation with US Fish and Wildlife Service may or may not be carried out by the Corps, with unknown survey and documentation needs.

Impact BIO-2: *It is likely that a portion of the secondary access road will be constructed within 100 feet of a long-seasonal tributary and/or adjacent riparian area. Other project elements will probably also be located closer than 100 feet from wetlands (for example, portions of the road where it approaches the culverted crossing). This could result in indirect degradation of habitat values due to sedimentation and/or disturbance of wildlife habitat during construction or during project operation. This would be an unavoidable significant impact under applicable CEQA guidelines.*

The prevalence of slopes steeper than 30 percent, and other constraints such as the location of the access point itself, make it impossible to locate all project features more than 100 feet from all riparian and wetland areas. The following mitigation measure is recommended, which will reduce this impact to a less-than-significant level:

Mitigation Measure BIO-2: *For all project elements that must unavoidably be constructed within 100 feet of riparian or wetland areas, the project shall prepare and implement a habitat management plan addressing the following subject areas:*

- *during-construction BMPs to prevent sediment delivery to downslope wetlands, riparian areas, or water bodies;*
- *permanent stabilization of disturbed soil surfaces to minimize the generation and transport of sediment, relying, to the extent that is compatible with civil engineering practice, on enhanced infiltration and biotechnical/vegetation based means of stabilization;*
- *minimization of operational impacts on wildlife habitat by ensuring that lighting, if any, shall be directed and shielded to prevent bulbs/illuminators from being directly visible from any portion of the wetland or riparian habitat within 100 feet.*

SPECIAL-STATUS SPECIES

Wildlife

The only special-status wildlife species for which there is a reasonable likelihood of occurrence within the development area of the site are yellow warbler and Cooper's hawk. Habitat suitable for yellow warbler occurs in the riparian systems along the Bear River and main tributary. An individual Cooper's hawk was observed during the inventory, and suitable nesting habitat occurs in several scattered areas of woodland which include large trees (preferred as nest sites by this species).

The long-term impact on suitable nesting habitat for Cooper's hawk and yellow warbler is less than significant, because the vast majority of suitable nesting areas for these two species will not be affected by the project.

However, there is a potential temporary impact from disturbance of nesting sites, if any, during construction. If general nesting bird surveys are required to ensure compliance with the Migratory Bird Treaty Act (discussed below), then there would be no additional mitigation required for these two species of special concern. However, if such surveys are not made a project condition, then the following impact would pertain.

Impact BIO-3: *If tree removal and initiation of grading is to occur within the nesting season for Cooper's hawk or yellow warbler (April 1 through July 15), and if equipment operation will occur within 300 feet of suitable nesting habitat for either species (which includes a large portion of the site in the case of Cooper's hawk), nesting activity could be disturbed or disrupted, leading to loss of individual eggs or young, which would be a significant impact under applicable CEQA guidelines.*

The following mitigation measure is recommended, which would reduce the potential temporary impact on Cooper's hawk and yellow warbler to a less-than-significant level.

Mitigation Measure BIO-3: *If tree removal and initiation of grading is to occur within the nesting season for Cooper's hawk or yellow warbler (April 1 through July 15), the project shall carry out surveys for active nests of these two species in all suitable habitat areas within 300 feet of the limits of tree removal or grading. If active nests of either species are found, construction activity shall be temporarily delayed within 300 feet of a Cooper's hawk nest or 100 feet of a yellow warbler nest until July 15 or until young have fledged, whichever is sooner.*

If tree removal and initial grading can be completed outside the nesting season, then no survey would be required. Also, no survey work is required throughout the extensive areas that lie further than 300 feet from the limits of tree removal or grading. Construction disturbance would not reasonably be anticipated to result in nest abandonment in these areas, therefore the impact, if any, would be less than significant.

With respect to other special-status wildlife species (e.g., aquatic species such as pond turtle or California red-legged frog), we determined that the combination of very low likelihood of occurrence and the fact that the only direct project impacts on aquatic habitat, if any, would be in the immediate vicinity of one existing culvert indicates that there is so low a potential for loss of individuals of either species that no significant impact on them is identified in this report.

Plants

The project has been designed to avoid the area that constitutes potential habitat for Brandegees' clarkia (steep slopes above the Bear River), therefore there is no impact on this species. However, potentially suitable habitat for two other special-status plant species occurs in other habitats scattered throughout the site (not the same habitat for both species). Accordingly, it is possible that either might be affected by the project.

Impact BIO-4: *Project construction in open oak woodlands or flats, or within any woodland areas that are sufficiently open to support understory or herbaceous-stratum vegetation, could result in loss of individuals of Jepson's onion and/or Butte County fritillary. This would be a potentially significant impact under applicable CEQA guidelines.*

The following mitigation measure is recommended, and would reduce this impact to a less-than-significant level:

Mitigation Measure BIO-4: *The project shall carry out a floristic plant survey for the presence of Jepson's onion and Butte County fritillary within all woodland, open woodland, or savanna areas that may be affected by project construction or by post-construction fuel management. Survey report including description of methods, map of area surveyed and all project*

construction, staging, and laydown areas, results, and a complete list of all plant taxa found during the survey shall be provided to County staff prior to initiation of any grading or equipment operation. If no occurrences of either species are found, no further mitigation is required. If any occurrences of either species are found, the project design shall be modified to avoid direct and indirect impacts, or the plants shall be marked and their occurrences avoided until their leaves are dry and the plants are dormant (sometime between July and September), at which time the bulbs shall be excavated and transplanted to suitable habitat elsewhere within the site which will not be disturbed during project construction or operation. All phases of the survey, marking of plants, selection of receiving sites, and transplantation shall be carried out by a qualified field botanist who also has experience in the salvage and establishment of native California Liliaceae.

Although transplantation is not a recommended mitigation measure for many other special-status plant species, those with large perennial storage organs such as bulbs (both species are in the lily family) can readily be salvaged and transplanted by botanists with experience in this group of native plants. However, their biology and the means of salvage are neither simple nor similar to those of typical horticultural lilies, hence the required qualifications stated in the mitigation measure.

It is important for project staff to schedule the required plant survey in time to allow for salvage and transplantation, if required, prior to initiation of project grading. Specifically, if construction is to be initiated during or prior to September in any year, the survey may need to have been completed during the *previous calendar year* in order to satisfy the mitigation measure requirements. Project approval conditions should include language which alerts project proponents to this circumstance to avoid costly construction delays or non-performance of the mitigation due to infeasibility.

LANDMARK OAK TREES AND GROVES

The project design was repeatedly adjusted to minimize direct or indirect impact upon the landmark oak trees and groves. All of the individual landmark oak trees are avoided, but no feasible design could be reached which achieved project objectives and regulatory requirements (for example, necessity for a secondary fire protection access road) with no grading within the canopy of any landmark oak grove. Also, in order to achieve the extremely desirable environmental goal of clustering all development in the western part of the site, it was necessary to allow for minor amounts of grading within the limits of some small patches of landmark oak grove.

Impact BIO-5: *The project will result in construction within the limits of some areas of landmark oak grove (canopy cover >33 percent). CEQA guidelines do not address this resource, but the Nevada County General Plan determined that direct impacts within the limits of such oak woodlands constitutes a significant impact.*

The estimated area of impact of the proposed project on landmark oak groves is about 1.35 acre of the total of 39.9 acres of such groves that occur within the site (less than 3.5 percent). In accordance with Zoning Ordinance requirements, if it is impossible for the project design to avoid landmark oak groves (as in the case of the second access road),

or if avoidance would make it impossible to achieve a more important environmental protection goal or requirement (as in the case of clustering development in the western part of the site rather than spreading it out and extending into the eastern part of the site where more valuable habitat resources are located), then the project may be approved and constructed if a Habitat Management Plan is prepared and implemented, as specified in the recommended mitigation measure provided below. This measure provides mitigation for both direct and indirect impacts upon landmark oak grove habitat and will reduce those impacts to a less-than-significant level.

Mitigation Measure BIO-5: *Prior to project approval, a Habitat Management Plan for high-canopy-coverage (landmark) oak woodlands shall be submitted and approved by County staff. Implementation schedule shall be specified in the project approval conditions and shall reflect reasonable timelines for achievement of the habitat management provisions. Specifications of the Habitat Management Plan shall be adjusted during project review to be feasible and effective and not in conflict with provisions of fire protection plans, but shall include one or more of the following compensatory mitigation and habitat protection actions:*

- *Restoration of oak woodland within the project site, at a ratio of at least 2:1 for all acreage of landmark oak grove that is removed to construct the project. Restoration shall be implemented in areas of existing non-native grassland that are suitable for the regeneration of high-canopy-coverage oak woodland, and that are selected to be appropriate to enhance the overall ecological values of the adjoining habitats. The majority of the restoration areas shall be selected with a preference for regeneration of valley oak and blue oak woodland.*
- *Establishment of a conservation easement for permanent protection of some of the important oak woodland areas within the eastern (undeveloped) portion of the site.*
- *Implementation of habitat management actions that will minimize the likelihood that wildfire will completely destroy the protected oak stands and preclude rapid natural regeneration. The purpose of active management (fuel reduction) is to reduce ground-level, understory, and lower canopy fuels sufficiently that the intensity of an inevitable wildfire is sufficiently reduced that the post-fire regeneration is relatively rapid. This shall be achieved without removal of all smaller trees, which would prevent recruitment of new trees to the canopy and would ultimately eliminate the desired values for which the area is being preserved.*

GENERAL HABITAT IMPACTS

Impacts upon nesting birds generally do not fall into the categories of impact questions provided in the current CEQA environmental checklist form (1998 revised Appendix G), nor would such impacts trigger mandatory findings of significance, unless the species in question were candidate, listed, or other of other special status. Such species are addressed above. Potential project effects on non-special-status nesting birds are not significant under CEQA, and therefore no mitigation is required by that law. The subject is discussed further under Regulatory Consistency (below).

REGULATORY CONSISTENCY

General Plan and Zoning Ordinance

Consistency with the policies of the Nevada County General Plan that pertain to biological resources is achieved through compliance with the specific sections of the Zoning Ordinance enumerated below.

§ L-II 4.3.12 (Rare, Threatened, and Endangered Species and Their Habitat)

The site inventory showed that habitat suitable for two special-status wildlife species (Cooper's hawk and yellow warbler) is present on the site. Habitat was also found that is suitable for Brandegee's clarkia, Jepson's onion, and Butte County fritillary. Most of these habitat areas are avoided by project infrastructure and building envelopes, and surveys with contingent mitigation actions are provided above for any circumstances where there is potential impact on a special-status species. With the implementation of these measures, the project will have no significant impact on special-status species or their habitat and would be consistent with this section.

§ L-II 4.3.15 (Trees)

The project design avoids the need for removal of any individual landmark oak trees, but, for reasons explained in the impact analysis, has minor unavoidable impacts on portions of some landmark oak groves (>33 percent canopy coverage). A draft Habitat Management plan has been prepared to provide for replacement of any trees removed from such groves and for other measures to protect oak woodland habitat values within the Rincon del Rio property. Implementation of the elements of this Plan will provide consistency with this section of the Zoning Ordinance.

§ L-II 4.3.17 (Watercourses, Wetlands, and Riparian Areas)

Due to the fact that a continuous tributary extends all the way from the northern to the southern property boundary, and a second access road (in addition to the main western entrance road) is required for fire safety reasons, it is impossible for the project to be built without crossing the tributary. This is proposed to occur at an existing culverted crossing, which may need to be improved. Mitigation measures recommended above provide for mitigation for habitat loss and protection of water quality from potential degradation by sediment. Implementation details will be included in the required regulatory submittals, and the general provisions are stated in the Habitat Management Plan. These measures will ensure consistency with §4.3.17.

Other Applicable Regulations

CALIFORNIA FISH AND GAME CODE (FGC)

Various sections of the FGC prohibit take of protected species. Fully protected species are included in the CNDDDB and are properly treated as special-status species in CEQA

analysis. Such species do not occur on the study site, therefore these sections are not applicable to the project.

Section 3503.5 prohibits take or possession of raptors, owls, or the destruction of eggs or occupied nests during the nesting season. Measures that could be taken to preclude potential impacts on raptor nests are the same as for nesting birds generally and are discussed below.

MIGRATORY BIRD TREATY ACT

Loss of limited numbers of common species of plants or animals is not a significant impact under current CEQA guidelines pertaining to biological resources. However, the MBTA and FGC §3513 prohibit take of migratory birds, which is defined to include destruction of active nests (presumed to contain eggs or nestlings). Compliance with the MBTA requires that no grading, brush clearing, or tree removal occur during the nesting season without a nesting bird survey that confirms that no occupied nests are present. If nests are present, temporary suspension of nearby construction would be required to achieve full compliance. In the case of tall coniferous trees, it is not scientifically possible to ensure that small bird nests high in the canopy can be found by a survey carried out from the ground. Thus, in coniferous habitat with trees >24 inches dbh, removal must occur outside the nesting season to be consistent with the MBTA.

In western Nevada County, the nesting season for raptors and owls extends from sometime in the late winter (as early as December in the case of great horned owl) through mid-August. Smaller migratory birds begin nesting in March or more usually April and continue to occupy nests until as late as August 15 (in the case of some species that raise two broods per year; depends upon habitat in question). Thus, tree removal and initial grading should preferably occur between August 15 and October 15.

If vegetation removal (tree removal or brush mastication) or ground surface disturbance (any form of grading) are to occur between March 1 and August 15, nesting bird surveys are usually prescribed to occur not less than 14 days nor more than 30 days prior to potentially nest-destroying activities. There is no resource-protection reason for surveys not to occur as little as 7 days prior to the activities. Nesting surveys for small birds are only fully effective if carried out between dawn and 11 AM; many species become inactive during mid-day.

Survey work should cover all habitat within 100 feet of vegetation removal or ground disturbance, or a greater distance in the case of raptor/owl survey, from 200 feet up to a maximum of 1,000 feet in the case of highly disturbance-sensitive species (e.g, northern goshawk; dependent on habitat and target species). Temporary non-disturbance zones should generally be the same width as the survey buffer (100-1,000 feet; less distance is needed where cover is dense, and more distance where line of sight from equipment operation to the nest site is unimpeded by vegetation). A revisit by the biologist, with confirmed observations of fledglings in the nest vicinity, would be required prior to vegetation removal or soil disturbance, unless this were to be delayed past August 15.

FUTURE STUDIES

In order to obtain a nationwide permit from the U. S. Army Corps of Engineers (actually, authorization under the existing nationwide permit system), a formal delineation of wetlands and other waters of the U.S. is required. This should preferably be carried out during the late winter or spring, so that the jurisdictional area is not incorrectly overestimated due to an inability to accurately determine the limits of wetland hydrology. (The 1987 Corps Manual states that, in seasonal areas, wetland hydrology must be assumed to be present if it cannot be definitively determined during the early part of the growing season.) In order to satisfy the information and mitigation requirements of the State Water Quality Control Board, the delineation must include isolated wetlands as well as those that are adjacent to tributaries of navigable waters.

Pre-construction surveys for Cooper's hawk should be carried out in woodland areas with large trees that are within 300 feet of the limits of grading or operation of construction equipment.

Pre-construction surveys for yellow warbler should be carried out in riparian areas or other densely vegetated broad-leaved vegetation that is within 300 feet of the limits of grading or operation of construction equipment.

Surveys for Jepson's onion and Butte County fritillary should be carried out in all open woodland areas that might be affected by grading, operation of equipment, or stockpiling of materials. Surveys for these species must occur during the blooming season (unlike some other special-status plants, these species cannot be reliably distinguished from closely related species without flowers). The blooming season varies from year to year but may occur between March 1 and early summer. Survey timing should be determined by the botanist who will carry out the survey.

Mitigation requirements for these two plant species stipulate that the survey must be carried out during the calendar year prior to the initiation of construction, or this must be delayed until September or later in order to allow for contingent mitigation actions to be performed.

INVESTIGATOR AND QUALIFICATIONS

The site was studied and this report written by Adrian M. Juncosa, Ph.D. (Botany; Duke University). He has completed over 150 site studies, impact analyses, mitigation, and monitoring projects in central and northern California. As principal biologist of EcoSynthesis Scientific & Regulatory Services, he is listed by Nevada County as a pre-approved biological consultant for the preparation of biological inventories and habitat management plans.

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Appendix A. Species observed on the project site.

Plant species are listed first, by major groups, then alphabetically by family. Nomenclature is according to Hickman (1993). Lists of mammals and birds follow, in approximate phylogenetic order within each group. Due to timing of field survey, many spring/summer plant species were probably not observed.

Scientific Name	Common Name	Notes
CRYPTOGAMS	FERNS AND SPIKE-MOSSES	
Blechnaceae		
<i>Woodwardia fimbriata</i>	chain fern	
Polypodiaceae		
<i>Polypodium glycyrrhiza</i>	licorice fern	
Pteridaceae	Brake Family	
<i>Pentagramma triangularis</i>	silverback fern	
Selaginellaceae	Spike-Moss Family	
<i>Selaginella hansenii</i>	spike-moss	
GYMNOSPERMS	CONIFERS	
Pinaceae	Pine Family	
<i>Pinus ponderosa</i>	ponderosa pine	
<i>Pinus sabiniana</i>	foothill pine	
<i>Pseudotsuga menziesii</i>	Douglas-fir	
ANGIOSPERMS-DICOTYLEDONS	FLOWERING PLANTS	
Anacardiaceae	Cashew Family	
<i>Toxicodendron diversilobum</i>	poison oak	
Apiaceae (Umbelliferae)	Carrot Family	
<i>Sanicula bipinnatifida</i>	sanicle	
<i>Sanicula crassicaulis</i>	sanicle	
<i>Tauschia hartwegii</i>	tauschia	
<i>Torilis arvensis</i>	hedge-parsley	
Asteraceae (Compositae)	Sunflower Family	
<i>Achillea millefolium</i>	yarrow	
<i>Artemisia douglasiana</i>	mugwort	

<i>Baccharis pilularis</i>	coyote bush
<i>Carduus pycnocephala</i>	Italian thistle
<i>Centaurea solstitialis</i>	yellow star-thistle
<i>Cichorium intybus</i>	chicory
<i>Cirsium vulgare</i>	common thistle
<i>Ericameria arborescens</i>	golden-fleece
<i>Gnaphalium stramineum</i>	cudweed
<i>Grindelia</i> sp.	gum plant
<i>Hemizonia fitchii</i>	spikeweed
<i>Hypochaeris radicata</i>	cat's-ear
<i>Senecio vulgaris</i>	common groundsel
<i>Silybum marianum</i>	milk thistle
<i>Xanthium strumarium</i>	cocklebur

Betulaceae

Alnus rhombifolia

Birch Family

white alder

Boraginaceae

Amsinckia menziesii var. *intermedia*

Borage Family

fiddleneck

Brassicaceae (Cruciferae)

Draba verna

Rorippa nasturtium-aquaticum

Mustard Family

spring draba

water cress

Caprifoliaceae

Symphoricarpos albus var. *laevigatus*

Honeysuckle Family

snowberry

Convolvulaceae

Convolvulus arvensis

Morning-glory Family

bindweed

Crassulaceae

Dudleya sp. (*cymosa*?)

Stonecrop Family

dudleya

Ericaceae

Arctostaphylos viscida

Heath Family

whiteleaf manzanita

Euphorbiaceae

Eremocarpus setigeris

Spurge Family

dove weed

Fabaceae

Trifolium hirtum

Trifolium sp.

Vicia sp.

Legume Family

rose clover

clover

vetch

Fagaceae

Quercus berberidifolia
Quercus chrysolepis
Quercus douglasii
Quercus kelloggii
Quercus lobata
Quercus wislizenii

Oak Family

scrub oak
canyon live oak
blue oak
California black oak
valley oak
interior live oak

Geraniaceae

Erodium botrys
Erodium cicutarium
Geranium sp.

Geranium Family

storkbill
storkbill
geranium

Not identifiable to species
until flowering.

Hippocastanaceae

Aesculus californica

Horse-chestnut Family

California buckeye

Hydrophyllaceae

Phacelia ramosissima

Waterleaf Family

phacelia

Hypericaceae

Hypericum perforatum

St. John's Wort Family

Klamath weed

Juglandaceae

Juglans californica

Walnut Family

California walnut

Onagraceae

Epilobium glaberrimum
Ludwigia sp.

Evening Primrose Family

willow herb
water primrose

Plantaginaceae

Plantago lanceolata
Plantago major

Plantain Family

common plantain
plantain

Polygonaceae

Polygonum punctatum
Rumex crispus

Buckwheat Family

water smartweed
curly dock

Portulacaceae

Calandrinia ciliata
Claytonia perfoliata ssp. *perfoliata*

Purslane Family

red maids
miner's-lettuce

Primulaceae

Anagallis arvensis

Primrose Family

scarlet pimpernel

Ranunculaceae

Ranunculus canus

Ranunculus occidentalis

Ranunculus scleratus

Buttercup Family

buttercup

western buttercup

marsh buttercup

Rhamnaceae

Ceanothus cuneatus

Ceanothus integerrimus

Rhamnus tomentella

Buckthorn Family

wedgeleaf ceanothus

deer brush

hoary coffeeberry

Rosaceae

Cercocarpus betuloides

Heteromeles arbutifolia

Prunus virginiana

Rubus armenicaus

Rubus laciniatus

Rose Family

mountain mahogany

toyon

choke cherry

Armenian blackberry

cut-leaved blackberry

Rubiaceae

Galium aparine

Sherardia arvensis

Madder Family

bedstraw

field madder

Salicaceae

Salix laevigata

Salix lasiolepis

Willow Family

red willow

arroyo willow

Scrophulariaceae

Mimulus guttatus

Verbascum blattaria

Verbascum thapsus

Figwort Family

seep-spring monkeyflower

moth mullein

woolly mullein

Viscaceae

Phoradendron villosum

Mistletoe Family

oak mistletoe

Vitaceae

Vitis californica

Grape Family

wild (California) grape

ANGIOSPERMS-MONOCOTYLEDONS

Cyperaceae

Carex sp.
Cyperus eragrostis

Sedge Family

sedge
 umbrella sedge

Juncaceae

Juncus acuminatus
Juncus balticus
Juncus effusus
Juncus tenuis

Rush Family

rush
 Baltic rush
 soft rush
 rush

Poaceae

Avena sp.
Bromus diandrus
Bromus hordeaceus
Bromus sterilis
Cynodon dactylon
Cynosurus echinata
Dactylis glomerata
Elymus elymoides

Elymus glaucus
Festuca arundinacea
Holcus lanatus
Hordeum marinum ssp. *gussoneanum*
Lolium perenne
Muhlenbergia rigens
Poa pratensis
Taeniatherum caput-medusae
Vulpia myuros

Grass Family

wild oats
 ripgut brome
 soft brome
 poverty brome
 Bermuda grass
 dog-tail grass
 orchard grass
 squirrel-tail grass

 blue wild-rye
 tall fescue
 velvet grass
 Mediterranean barley
 perennial rye grass
 deer grass
 Kentucky bluegrass
 medusa-head grass
 six-weeks fescue

Rocky south-facing slopes only.

Typhaceae

Typha latifolia

Cattail Family

broad-leaved cattail

MAMMALIA

Canis latrans

Odocoileus hemionus

Thomomys (probably *bottae*)

MAMMALS

coyote

mule deer

pocket gopher

AVES

Anser albifrons

Cathartes aura

Accipiter cooperi

Melanerpes formicivorus

Colaptes auratus

Cyanocitta stelleri

Psaltriparus minimus

Sialia mexicana

Dendroica coronata

Pipilo maculatus

Junco hyemalis

Carduelis sp.

BIRDS

greater white-fronted goose

turkey vulture

Cooper's hawk

acorn woodpecker

northern flicker

Steller's jay

Probably a winter visitor
only (not nesting on site).

bushtit

western bluebird

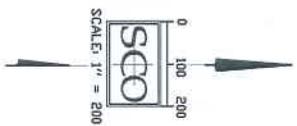
yellow-rumped warbler

spotted towhee

dark-eyed junco

goldfinch

BIOLOGICAL RESOURCES MAP RINCON DEL RIO



LEGEND:

FH	FOOTHILL HARDWOOD (SPECIES)*
PP-BO	PONDEROSA PINE - BLACK OAK
AG	ANNUAL GRASSLAND & PASTURE
LM	LANDMARK OAK GROVE (SPECIES)*
OT	LANDMARK OAK TREE
FR	FOOTHILL RIPARIAN
FEW	FRESHWATER EMERGENT WETLAND
WM	WET MEADOW
(Dotted line)	SEASONAL TRIBUTARY
(Dashed line)	ARTIFICIAL WATERCOURSE (NID)
(Blue line)	PERENNIAL RIVER (BEAR RIVER)

*** SPECIES:**

- BLUE BLUE OAK
- CLD CANYON LIVE OAK
- ILO INTERIOR LIVE OAK
- VO VALLEY OAK
- MIXED MIXED SPECIES
- NOT STATED

NOTES:

1. SEE REPORT TEXT FOR DISCUSSION OF BRANDEGEE'S CLARKIA HABITAT.
2. MOST WOODLAND AREAS HAVE MIXED-SPECIES CANOPY. MAP NOTATIONS INDICATE PREDOMINANT SPECIES (NOT ONLY ONE PRESENT).

EcoSynthesis
SCIENTIFIC & REGULATORY SERVICES INC
16753 Lancaster P. ave, Trucdee, CA 96161

SCO
PLANNING
ENGINEERING
& SURVEYING
140 LITTON DRIVE, SUITE 240, GRASS VALLEY, CA 95946
10000 DOWNEY PASS ROAD, SUITE 300, TRUCDEE, CA 96161
(530) 242-5841

HABITAT MANAGEMENT PLAN

SITE INFORMATION

- Site name:** Rincon del Rio
- APN:** 57-240-17, -18, -19, and 57-130-13
- Location:** Section 33, T. 14 N, R. 8 E and Section 4, R. 13 N, R. 8 E (USGS Lake Combie quadrangle). Site adjoins the Bear River on the north side, approximately 0.3 to 1 mile to the east of Highway 49.
- Prepared for:** Rincon del Rio LLC.
- Report date:** March 11, 2009
- Biologist:** Adrian Juncosa, Ph.D.

SUMMARY

This draft Habitat Management Plan was developed to specify mitigation actions for potential direct and indirect impacts on a tributary and adjacent riparian areas, and upon landmark oak groves. It was prepared in conjunction with the biological inventory report for the same site, to which the reader should refer for more detailed descriptions of vegetation and habitat values.

Refinement of the project design and various related documents (most notably, the fire protection plan) which will occur during project review may affect which of the oak grove protection measures are appropriate, and the specifications for their implementation. A final Habitat Management Plan will be prepared at the time of project approval to accommodate any changes that are made to bring the Plan into conformity with other project elements.

The management plan provisions for protection of water bodies and adjacent hydrophytic vegetation include during-construction measures for control of erosion and sediment transport, permanent soil surface stabilization, and protection of wildlife habitat values by controlling direct illumination of the riparian habitat.

The provisions for landmark oak grove mitigation include a conservation easement over portions of the site, with specifications for habitat management to reduce the likelihood that wildfire will cause lasting damage to the high-canopy-coverage oak woodlands within and outside the easement area.

INTRODUCTION

Tributary, Wetland, and Riparian Areas

Unnamed tributaries cross the site from the northern and eastern boundaries to the southern boundary (Bear River). The entry point for the secondary road access (fire safety requirement) is at the terminus of Rodeo Flat Road, in the northeastern property corner. Therefore, there is no feasible way to design the project without crossing the north-south tributary and the NID Magnolia Ditch. Also, it is not possible to construct the required second road access to the residential units from the available entry point (northeast corner of the site) without passing within 100 feet of wetland and riparian areas and the two water bodies which it crosses. Therefore, both the direct and indirect impacts on the tributaries and associated wetlands or riparian areas are permitted under §4.3.17 of the Zoning Ordinance contingent upon the approval and implementation of a Habitat Management Plan.

The direct impacts are uncertain but likely. A culverted crossing of the tributary already exists, but this may need to be upgraded in size, length, or alignment in order to satisfy engineering requirements of a County-standard road. Also, installation of the sewer main or other infrastructure may require excavation and backfill of the tributary. The potential for indirect effects from constructing the secondary access road within 100 feet of riparian and wetland areas is unavoidable because of the prevalence of slopes >30 percent in the area and the fact that the wetland and riparian area between which the road must pass are separated by less than 100 feet.

Landmark Oak Groves

The project design provides for preservation of all of the individual landmark oak trees (>36 inches dbh) on the site; these are not discussed further in this Plan.

Two overriding factors constrain the project design in ways that make it infeasible to avoid any impacts on landmark oak groves. One is the location of existing landmark oak groves and areas of slopes that are steeper than 30 percent gradient in the northeastern part of the site, where the secondary road access must be located. The other is the guiding principle of clustering all development in the western part of the site so as to avoid fragmentation of the woodland habitats in the eastern part, which support significantly higher habitat values than do the woodlands in the western part, where development is designated to occur. The highly desirable environmental goal of clustering the units in the western part of the site constrains the alignment of internal roads and the locations of building sites, making it infeasible to avoid all of the many scattered patches of landmark oak groves. Abandoning this goal and distributing the units more widely throughout the site would result in additional fragmentation of the high-value habitats and complexes in the eastern part of the site.

In the context of these considerations relating to feasibility and other environmental goals, the minor impacts of the proposed project on existing landmark oak groves are

permitted under §4.3.15 of the Zoning Ordinance contingent on the approval and implementation of a Habitat Management Plan.

AFFECTED RESOURCES

General descriptions of the Rincon del Rio site and its plant communities and other biological resources are provided in the biological inventory report which this Plan accompanies. This section provides additional details about the specific areas that would experience direct or indirect impacts from the proposed project.

Tributary, Wetland, and Riparian Areas

The north-south unnamed tributary that will be crossed by the secondary access road and other infrastructure is a small, seasonal drainage feature that has probably been altered multiple times during the history of grazing, mining, and/or other human activities in the region. At present, it is a seasonal tributary with a bankfull depth of about 6 to 8 inches and a width averaging about 6-8 feet. There is little or no emergent wetland vegetation either within the channel or on the bank in the vicinity of the likely crossing location. There is no known fishery, shellfish, or other aquatic resource of particular economic or ecological importance other than the passage of flood flows.

The isolated Freshwater Emergent Wetland near the secondary access road alignment is supported by a spring at its upper end, which results in saturation at or near the surface throughout most of the wetland area. This spring may in turn actually result from seepage from the NID ditch above, which is a common circumstance. The vegetation of this wetland consists of native and non-native plants with varying wetland indicator status: *Juncus* spp., *Muhlenbergia rigens* (deer grass), an undetermined *Carex* species, and both native and non-native grasses. The wetland vegetation is of relatively low stature and the entire patch is less than 0.5 acre. The site survey took place in winter, at which time it is not possible to determine what level of bird or other wildlife use would be expected at this site.

The Foothill Riparian area downslope of the road alignment is a narrow strip of riparian vegetation lying in a moderately sloped ravine, closely adjoined by oak woodland on both sides. The predominant riparian species is white alder (*Alnus rhombifolia*); also valley oak (*Quercus lobata*) and scattered willows (*Salix* sp.). Herbaceous wetland species such as chain fern (*Woodwardia fimbriata*) and soft rush (*Juncus effusus*) occur here and there in the channel or on its banks. The riparian and adjacent oak woodland vegetation is relatively dense right along the tributary, becoming more open further away. As noted in the biological inventory, this area (and others within the site) provides potentially suitable nesting habitat for yellow warbler, a DFG species of special concern. The loose soils and large amount of leaf and branch litter, and decomposed organic material, that are present within and near the tributary channel are very important in attenuation of flood flows and in filtering pollutants (e.g., sediment) from surface runoff before it enters the tributary.

Landmark Oak Groves

Oak woodlands with canopy cover that was estimated, during the wintertime site surveys, to be likely to exceed 33 percent during the growing season occur in 24 patches scattered in all parts of the Rincon del Rio site. Although all of these patches are shown with the same map designation, they differ greatly in species composition, stature of the constituent trees, structure and diversity of associated vegetation, and relationship to adjacent habitat patches.

The Rincon del Rio site is naturally divided into eastern and western parts by a large grassland area, pond, and riparian area extending directly south from the pond to the Bear River. Most of the landmark oak patches in the western part of the project site, which is where all of the proposed development except the secondary access road is located, are dominated by interior live oak (*Quercus wislizenii*), sometimes in combination with blue oak (*Q. douglasii*), and are composed of trees of relatively small stature (fewer trees larger than 12-18 inches dbh than is the case elsewhere in the site). These patches also support low structural and woody plant diversity (little or no other canopy tree species, little or no understory), and feature few of the late-seral-stage (“old-growth”) oak woodland elements that are of particular value to regional wildlife. Specifically, there are few tree cavities formed by lost branches and decomposed portions of trunks, which are a natural and desirable feature of oak woodlands (albeit considered undesirable in standard arborists’ tree assessments). This description also characterizes the landmark oak groves on the hillside above the Magnolia Ditch, which will be affected by the secondary access road.

In contrast, the majority of the landmark oak groves found in the eastern part of the site, where there will be no development except for the aforementioned road, are dominated by canyon live oak (*Q. chrysolepis*), blue oak, or a combination of species (usually interior and canyon live oak). Furthermore, the eastern oak groves are mostly much larger in contiguous densely wooded area, include larger individual trees and a greater variety of size (age) classes, and support a greater diversity of oak and associated species. In terms of landscape habitat values, in the eastern part of the site, a more complex mosaic of different types of habitat occurs adjacent to the landmark oak groves (riparian areas, mixed oak-pine woodland, seep supported wetlands, and grassland gaps). Finally, a particularly high-value example of non-landmark woodland occurs in the area above the Magnolia Ditch. This area, described in the biological inventory report, includes five landmark-sized black oak trees (the only ones of this species within the Rincon del Rio site) in a broken canopy black oak-ponderosa pine vegetation which also includes several large pines with thick bark, which have been converted into acorn storage “granary trees” by woodpeckers. Such food storage opportunities, which are scarce elsewhere in the site, are very important to wildlife (not just the woodpeckers).

Thus, the landscape ecological values of the woodlands in the eastern part of the site are overall much higher than those in the western part, and it is therefore far preferable to cluster all development in the western part and mitigate for minor impacts on the periphery of many of the small landmark oak groves than it would be to space the development more widely and consequently to fragment the habitats in the eastern part.

IMPACTS

Tributary, Wetland, and Riparian Areas

DIRECT IMPACTS

Backfill for the culverted road crossing and/or infrastructure installation will result in a small area (probably about 0.01 acre) of temporary and/or permanent fill within a probable water of the U.S. (intermittent tributary). Little or no wetland habitat will be affected for this action. Hydrogeomorphic and biological values of the tributary at the approximate location of the crossing are very limited and will be largely restored when the culvert or other crossing is completed.

INDIRECT IMPACTS

Two categories of indirect impact could potentially result from the construction of the secondary access road within 100 feet of the seep-supported wetland, the narrow riparian area along the east-west tributary, and the NID ditch itself:

1. Erosion could result from disturbance of the presently stable soil surfaces (compaction, removal of vegetation, and disruption of soil structure), and sediment could travel from the construction area into surface waters. This impact could occur either during construction or afterward (during project operations), or both.
2. Noise and/or lighting could disturb wildlife that depend on the riparian area for nesting and/or foraging. If construction takes place during the breeding/nesting seasons, this impact could occur both during construction and afterward; if not, it could still occur during operations.

Landmark Oak Groves

DIRECT IMPACTS

Small portions of many of the existing patches of landmark oak groves in the western part of the site would be removed to construct buildings and roads. In nearly all cases, the impact would affect only small portions of the edges or ends of the groves, to a distance of 10-30 feet toward the interior. In two cases, both of which are relatively narrow patches of woodland (less than 90 feet), the majority of the patch would be removed. The total landmark oak grove impact, based upon the current project proposal, is approximately 1.35 acre. The precise acreage and the exact number and species of trees to be removed cannot be determined until after project approval, at which time engineering plans would show the location and size of all trees to be removed for construction and to create defensible space. Most of the affected trees in landmark oak groves would be interior live oak, which is the most common tree species in the lower elevations parts of Nevada County. The remainder would be mostly or all blue oaks, which is probably the most abundant, or second most abundant, tree species on the Rincon del Rio site.

INDIRECT IMPACTS

The nature of potential indirect impacts on the portions of groves that are avoided by construction impacts are similar to those noted above for the riparian area: primarily lighting disturbance to species (birds, particularly) that nest in the high-canopy-coverage oak woodlands (see impact number 2, above). However, unlike the circumstance in riparian areas, which support several special-status wildlife species and surround aquatic habitat which can support additional diversity, the species that nest in high-canopy-coverage live and blue oak woodlands are probably exactly the same, or nearly the same, as those which nest in oak woodlands generally. Impact on these common and widespread species is not significant under applicable CEQA guidelines and County General Plan policy.

MITIGATION MEASURES

Tributary, Wetland, and Riparian Areas

COMPENSATORY MITIGATION

Prior to construction of the infrastructure/road crossing, the following discretionary approvals must be obtained:

- Section 404 nationwide permit (U.S. Army Corps of Engineers);
- Section 401 water quality certification (California Water Quality Control Board, Central Valley Region; a mandatory condition for the Section 404 permit); and
- Section 1600 streambed alteration agreement (California Department of Fish and Game).

Acquisition of the Section 404 permit requires delineation of jurisdictional boundaries and satisfaction of all permit conditions. The latter include, among other provisions, the requirement that water quality be protected (as certified by the Regional Water Quality Control Board) and that no impact on listed endangered or threatened species occurs. In order to ensure the latter condition, the Corps may, upon review of the permit submittal, elect to consult with the U.S. Fish and Wildlife Service regarding impacts on listed species that are known from the region. In this event, additional surveys and during-construction protective actions may be necessary.

The direct loss of wetlands and/or other jurisdictional waters is estimated to be approximately 0.01 acre. Impacts within this range are authorized under the existing nationwide Section 404 permits, if all conditions are met. For the Rincon del Rio project, the compensatory mitigation requirement will be satisfied by payment of in-lieu fees to a non-profit independent habitat mitigation company designated by the Corps, and according to the current rates that are established by the Corps at the time of permit approval.

WATER QUALITY PROTECTION

At a minimum, the specifications provided below for control of erosion and sediment transport, or the functional equivalent, should be included in construction plans.

1. Permanent slopes in the immediate vicinity of wetlands or other waters should be no steeper than 3:1, or, where steeper slopes are environmentally preferable to minimize the footprint of wetland impact, the slopes steeper than 3:1 should be protected with vegetated topsoil-matrix riprap. If any fill slopes (hopefully short ones) must exceed 1.5:1, these shall be stabilized with rock or concrete.
2. *Temporary BMPs:* In all situations where wetlands or other jurisdictional waters lie directly downslope from areas where grading (cut or fill, including temporary stockpiling of soils) will occur, silt fencing should be installed as close as possible to topographic contours, preferably as close to the construction area as possible, but in any case a minimum of 10 feet outside the wetland or riparian edge, with the entire

bottom edge buried to the standard depth of six inches. When work is complete AND all disturbed surfaces, including accumulated sediment, are permanently stabilized with sufficient vegetative cover to provide effective erosion and sediment control, silt fencing shall be completely removed. This requirement should be expected to result in maintenance of temporary BMPs for a minimum of one complete growing season (more likely two) following completion of construction.

3. *Winterization*: If soil stockpiles are to remain in place at any time between October 15 and May 1, they should be surrounded by an additional line of silt fence or straw wattles and should be kept covered with plastic sheeting, weighted with rocks or sandbags, at all times except while being actively worked. All disturbed soil surfaces that are to remain exposed during this period, but which will not be subject to additional grading work, should be hydromulched with tackifier.
4. *Permanent revegetation*: Topsoil shall be salvaged during initial site clearing and reapplied to all disturbed areas that are to be revegetated. Stockpile locations shall be shown on construction plans. Final slopes should be thoroughly revegetated using the following seed mix, which is based upon species observed on the site. Minimum application rates are suggested.

Vulpia myuros (foxtail fescue), 10 lbs/acre

Bromus hordeaceus (Blando brome), 10 lbs/acre

Dactylis glomerata (orchard grass) and/or *Festuca arundinacea* (tall fescue), 20 lbs/acre either species or combined

Elymus glaucus (blue wild-rye), 30 lbs/acre

Lupinus nanus (sky lupine) and/or *Trifolium hirtum* (rose clover), 5 lbs/acre

Hydraulic application of seed and mulch should be implemented in two steps: seed is applied first, then hydromulch and tackifier are applied shortly afterward to the wet surface. The latter should be applied at manufacturer's suggested rates for the slopes in question. In case of use of straw or other loose mulch (only applicable on slopes less than 10:1), the coarse mulch should be applied so as to leave 5-10 percent of the soil surface still visible, to allow for germination of pre-applied seed.

If erosion control mats are employed, they should be composed entirely of natural materials (jute twine and/or coconut fiber), including no plastic fiber of any kind. Suitable materials include RoLanka BioD Mat (70 or 90), RoLanka BioD-OCF30, Bonterra CF7 or CF9, or North American Green BioNet series (e.g., C125BN), *no other substitutes*. Plastic fibers used as netting can entrap some wildlife species, and they create a source of plastic fiber pollution when they degrade. This in turn is carried downstream into aquatic habitats where they can adversely affect fish or other aquatic species. If permanent turf reinforcement mats are desired, the recommended alternative is RoLanka BioND-TRM, which is similar to BioD Mat but more durable.

In the event that slopes that are steeper than 3:1 are required by the engineering design, additional specifications shall be determined by the project engineer in consultation with a revegetation specialist who has field experience with steep slopes.

WILDLIFE HABITAT PROTECTION

The biological inventory includes recommendations for pre-construction surveys for nesting birds, which would preclude any during-construction disturbance impact.

Ideally, there should be no roadside illumination that points toward the riparian habitat, over the entire length of the road segment that runs along the east-west tributary. However, if illumination is required, the roadside lighting shall be of the minimum wattage allowable by road standards, and shall be fully shielded (not merely full cutoff as for dark sky requirements) so that the bulbs are not directly visible from any part of the riparian habitat within 100 feet. Preferably, shielding would preclude a direct line of sight from *any* part of the riparian area to the bulbs, but this is probably technologically infeasible and should be regarded as an ideal rather than a requirement.

Landmark Oak Groves

The Rincon del Rio site provides a unique opportunity to provide a combination of compensatory and other mitigation for the minor proposed losses of landmark oak groves, which will to achieve long-term replacement and maintenance of the ecological values of oak woodlands that is superior to a simple replacement planting plan. The proposed mitigation will ensure the long-term replacement of lost landmark oak grove area with oak woodland that is newly established (reconverted from non-native grassland) at a minimum area ratio of 2:1, planted so as to initiate ecological succession into landmark oak grove canopy status. In addition, some areas of existing landmark oak groves in the eastern part of the site will be protected by a conservation easement and management plan including ecologically sustainable fuels management to minimize the damage that wildfire could cause to the habitat values of the protected areas.

COMPENSATORY MITIGATION (REPLANTING)

Prior to the initiation of project construction, an estimate of the total number of trees to be removed for the entire project (all phases) and their diameter shall be made, and the locations for replacement plantings shall be designated. Although the replanting shall occur in parallel with the phases of project construction, it is important that the total replanting opportunity be specified before the first phase of construction, so that off-site planting areas or other compensatory mitigation options can be identified in the event that there is insufficient space within the site for the amount of replacement plantings that will be needed.

The total landmark oak grove impact is estimated to be about 1.35 acres. At a 2:1 ratio, about 2.7 acres of oak woodland restoration would be required to provide adequate compensatory mitigation opportunity. There is much more than this area of highly suitable restoration opportunity within the site, in situations where overall habitat values would be substantially increased by the restoration, therefore this approach is feasible on site.

At this same time (prior to initiation of construction of any project element that entails removal of any portion of a landmark oak grove), a final oak mitigation and restoration

plan shall be submitted for County approval. This plan shall be based upon the guidelines provided below, which are intended to identify the mitigation actions with sufficient specificity to complete CEQA compliance and project approval.

- The replanting sites shall be of sufficient size that replacement trees that survive long-term can be expected to be able ultimately to grow to mature crown size in the designated planting spaces. At a minimum, lost landmark oak grove area will be replaced by restoration of non-native grassland to oak woodland at a minimum area ratio of 2:1. Additional replanting, in the form of interplanting in woodland areas that would benefit from supplement to the natural level of regeneration, may also be desirable.
- The preferred method for oak replanting is not based upon individual plantings and numbers, but upon habitat goals. The Zoning Ordinance oak replacement specifications for impacts on landmark oak groves are based upon inch-for-inch replacement of the diameter of trees that are removed. However, the well-documented literature on oak woodland restoration science suggests that this is an ineffective and undesirable way to replace lost oak trees, because it encourages the planting of large diameter replacement trees, indeed, as large as can be obtained. This is undesirable for long-term ecological sustainability for two reasons. Firstly, purchased large-sized oak container stock, which takes many years to grow up to that size, will almost never be derived from local genetic stock, which is best adapted to the ecological conditions of the planting site. Secondly, the long-term survival of native California oaks in a natural habitat setting depends largely upon whether the root system has developed, during early seedling and sapling growth, to take best advantage of the soil of the planting site. Specifically, our native oaks depend upon developing a vigorous and deep tap root, which cannot occur during long years of cultivation in a container. Consequently, oak regeneration in a natural habitat setting that is based on planting of container stock with 1/2 to 1 inch stem diameter will inevitably result in trees that are of poor vigor (and, the larger the container stock, the worse the results). The exceptions that exist to this principle (maintained landscaping plantings) are not applicable to the present project.
- To the extent that is ecologically appropriate in the restoration sites that are selected, oak woodland restoration and interplanting shall emphasize valley oak and blue oak, which are known not to regenerate with as much facility, or as rapidly, as other native oak species. Oak woodland restoration opportunities exist in several parts of the grasslands in the center of the project site which have deep soils and mesic soil moisture regimes (indicated by the species composition of the existing grassland vegetation), and are therefore highly suitable for successful planting of these specific oak species.
- All phases of the oak compensatory mitigation actions shall be carried out under the direct and continuous supervision of a restoration ecologist with specific expertise in the collection and establishment of native California species. General methodology is provide below, however, many details of timing and minutiae of handling and planting procedure cannot be specified in writing, but depend upon the expertise and field judgment of the supervising restoration ecologist.

- Oak replacement will be undertaken by means of planting acorns that are collected within the Rincon del Rio project site and/or very small sized container stock that has been grown from acorns harvested on the site and grown in pots which encourage the development of a vigorous, deep tap root. Acorns shall be collected as they become mature, selected to eliminate non-viable acorns, and stored (if necessary) under cool dry conditions until planting in mid- to late autumn.
- Oak restoration and planting areas shall be greatly overplanted in terms of numbers of propagules, then thinned to a density of saplings that is appropriate based upon studies within, or as near as possible to, the Rincon del Rio site. Planted areas, whether established from acorns directly or from appropriately container-grown seedlings, shall be protected from herbivory by cattle and deer. The extent and nature of individual plant protection, which may be necessary to reduce rodent damage, will be determined by the supervising restoration ecologist.

OAK WOODLAND HABITAT PROTECTION

Rincon del Rio shall grant a conservation easement to an appropriate public entity (such as Department of Fish and Game) or non-profit habitat protection entity (such as a land trust), which provides for the permanent preservation, as sustainable native habitat, of an area of oak woodlands within the site that is equal to or greater than the area of landmark oak woodlands that presently exist within the portion of the site designated for development. This includes all patches of landmark oak grove west of the main north-south tributary (excepting those groves that directly abut the Foothill Riparian habitat or the pond), plus the landmark oak groves north of the subsidiary east-west tributary. The conservation easement shall be recorded prior to construction of any project elements that entail the removal of any portion of a landmark oak grove.

Preferred habitat areas to be considered for coverage by the easement include portions of the mixed habitats east of the Magnolia Ditch, the extensive landmark oak grove area between the ditch and the Bear River, and the area which adjoins the Foothill Riparian habitat south of the pond, and on its east side.

The conservation easement shall include an operations and maintenance (O&M) plan and shall specify a funding mechanism for its implementation. The O&M plan shall include specifications for fuel management that are acceptable to fire protection officials but which also allow for the long-term natural regeneration of the native species which constitute the desired oak woodland vegetation.

It is almost certainly not possible to maintain the high canopy coverage of landmark oak groves of the types which occur at the Rincon del Rio site (specifically, those groves which are entirely or primarily comprised of interior and canyon live oak) and also remove sufficient fuel from the plant communities to preclude the possibility of a crown fire. Therefore, in the conservation easement areas, the fuel management provisions must balance the desire to reduce the intensity of an inevitable wildfire against the importance of maintaining the very habitat elements and vegetation density that qualifies an area of oak woodland as landmark oak grove under the County definition,

and that provide the special habitat values for which County policy requires protection of such groves.

The following conceptual recommendations are provided as guidelines for the development of the O&M plan:

- Specify the location, size, and maintenance regime for fuel breaks that will minimize the likelihood that fires which are ignited in developed areas can spread into the easement area, and vice versa. Fuel breaks shall be designed so that they do not become sources of invasive weed seeds and so that they retain sufficient soil structure (high capacity for infiltration) to minimize the potential for erosion. Ideally, fuel breaks shall be greatly thinned woodland areas rather than completely cleared strips of grassland.
- Remove much of the ground fuel loads, especially medium-caliber material, but preserve a limited number of down logs as habitat elements and retain sufficient quantities of the finest caliber twigs and leaves to maintain the health of the duff layer.
- Specify the degree of ladder fuel reduction that is necessary to minimize the intensity of a wildfire, but also retain a sufficient number of saplings in various size/age classes so as to preserve the long-term ecological regeneration of the oak canopy. Thinning of lower-canopy or understory fuels should be undertaken in rotating patches so that all stages of succession and vegetation structure are represented somewhere in the easement area at all times.
- Preserve all large snags and trees with flaws and cavities, which provide both a basis for the invertebrate food chain upon which native vertebrate wildlife depends, and the nesting sites for many such species.
- Provide for long-term monitoring and adaptive revision of the O&M plan in accordance with monitoring results and the continuing development of the science of fire risk reduction that is compatible with long-term ecological values and sustainability of native, fire-adapted plant communities.

The funding mechanism for the long-term monitoring and maintenance cannot be fully specified until the easement area and O&M plan are finalized. Alternatives could include either a community services district which specifies the deposit of conservation area maintenance costs in a separate account, available only for that purpose, or the establishment of an endowment. In the latter case, the endowment could be accumulated gradually as units are sold, with the project retaining responsibility for implementation of the monitoring and maintenance until proceeds from the endowment are sufficient for that purpose.

MONITORING

Tributary, Wetland, and Riparian Areas

Monitoring of the specifications for slope and lighting design of the secondary access road will be provided by County plan check.

Monitoring of the implementation of these specifications is best provided by the project engineer during construction, and by County inspection during or at the conclusion of construction.

Monitoring of the success of disturbed-soil revegetation shall be specified by the Regional Water Quality Control Board, which has oversight responsibility for control of pollution by stormwater runoff.

Landmark Oak Groves

Because the specifications for oak planting and habitat management will continue to be refined during the development of the restoration plan, conservation easement, and fire protection plan, the monitoring methods, performance standards, and contingent maintenance actions are not specified here, but will be provided in those three project documents.