

3.5 BIOLOGICAL RESOURCES

This section is based on information from the California Natural Diversity Database (CNDDDB) (CDFG 2005); the Initial Study for the proposed project, prepared by the City of Lafayette; field surveys conducted by LSA Associates on April 13 and June 9, 2005; and three reports by Sycamore Associates: a biological reconnaissance survey (Sycamore, 1999), a survey for rare amphibians (Sycamore, November 2000), and a wetland delineation (Sycamore, January 2000).

3.5.1 Environmental Setting

The project site consists mainly of non-native grassland with patches of oak woodland and willow riparian vegetation. Seeps that support mesic herbaceous (wetland) vegetation and two seasonal watercourses also occur on the project site. One watercourse flows across the southern corner; the other flows westward in the middle of the site. These unnamed watercourses flow through residential areas before discharging to Grizzly Creek, which is a tributary of Las Trampas Creek. Both Grizzly Creek and Las Trampas Creek also flow through residential areas. Most of the site lies along a west-facing portion of Burton Ridge.

3.5.1.1 Vegetation

The project site is dominated by non-native grassland. Other vegetation types on the project site include oak woodland, willow riparian vegetation, and mesic herbaceous vegetation. Figure 3.5-1 (Vegetation Map) shows the vegetation of the project site.

Non-Native Grassland

Non-native grassland occurs throughout the project site. This vegetation is dense and tall, in part, because of the high rainfall during the 2004-2005 rainy season. The dominant plants are wild oats (*Avena* sp.), which grow in dryer areas, and Italian ryegrass (*Lolium multiflorum*), which grow in the moister areas. These two species, in association with the other grassland species, form a vegetative cover of 100 percent. The height of the grass varies between two to three feet tall.

Non-native species that occur on the site in patches as codominants include milk thistle (*Silybum marianum*), yellow star thistle (*Centaurea solstitialis*) and mustard (*Brassica* sp.). Summer lupine (*Lupinus formosus*) is the only native species that occurs as a codominant in the grassland. Other species common in the grassland are Italian thistle (*Carduus pycnocephala*), short-pod mustard (*Hirschfeldia incana*) and rose clover (*Trifolium hirtum*).

A small portion of the non-native grassland is dominated by native species at an outcropping of Lafayette Tuff in the northeastern portion of the project site. This is notable for the occurrence of Diablo helianthella (*Helianthella castanea*) and robust monardella (*Monardella villosa* ssp. *globosa*), both special-status species. Other species in this location are golden aster (*Heterotheca villosa*), naked-stemmed buckwheat (*Eriogonum nudum*), purple needlegrass (*Nassella pulchra*), clarkia (*Clarkia unguiculata*), yarrow (*Achillea millifolium*) and soap root (*Chlorogalum pomeridianum*).



Source: LSA 2005



7/11/05 RBF534

SOLDIER FIELD SUBDIVISION EIR
Vegetation Map

Figure 3.5-1

Mesic Herbaceous Vegetation

The mesic herbaceous vegetation occurs in seeps and watercourses that are at least seasonally wet. At the time of the site visit, the soils of the areas supporting mesic herbaceous vegetation were saturated. This vegetation was mapped as jurisdictional wetland by Sycamore (2000).

The mesic herbaceous vegetation was dominated by brown-headed rush (*Juncus phaeocephalus*) and bristly ox-tongue (*Picris echioides*) in the center of the seeps. One seep was dominated by spike rush (*Eleocharis* sp.). The upper edges of the seeps were dominated by Italian ryegrass, rabbit's foot grass (*Polypogon monspeliensis*) and bristly ox-tongue. Associated species that grow at a lesser density are seep-spring monkeyflower (*Mimulus guttatus*), bent grass (*Agrostis* sp.), curly dock (*Rumex crispus*), soft rush (*Juncus effuses*) and blue rush (*Juncus patens*).

Willow Riparian

Willow riparian vegetation occurs in the watercourses of the project site and in some of the seeps. This vegetation consists of three species of willow trees and an occasional oak (coast live, valley and/or white oak) or California bay tree. The willow trees in the riparian vegetation are arroyo willow (*Salix lasiolepis*), yellow willow (*Salix lucida* ssp. *laevigata*) and red willow (*Salix lasiandra*). Some of the willow trees are approximately 30 inches in diameter; most are between 6 and 18 inches in diameter. The red and yellow willows approach 30 feet tall and grow in the form of a tree with a rounded or narrow crown; the arroyo willow grows to 15 feet tall, with a branching trunk, and in the form of a large shrub. The understory is mesic herbaceous vegetation where the overhead canopy allows for some light penetration.

Oak Woodland

Oak woodland occurs in patches throughout the west-facing portions of the site and in solid stands on the east-facing portions. This oak woodland is composed of coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), white oak (*Quercus garryana*) and California bay (*Umbellularia californica*). These trees grow as a single stand at almost 100 percent cover on the east-facing slope of the project site and in patches on the slopes and in the drainages on the west-facing portion. Most of these trees are greater than 12 inches in diameter at breast height and they average 30 feet tall. Some of these trees on the west-facing slope are majestically-shaped with trunk diameters greater than 30 inches and crown diameters approaching 100 feet. The understory of the oak woodland is non-native grassland.

3.5.1.2 Wildlife

Wildlife on the project site is characterized by those species that occur in wooded (oak woodland and riparian), grassland and wetland areas. The large amount of edge habitat between oak woodland and grassland and the dense but small patches of willow riparian habitat make for a diversity of wildlife habitats on the project site. The water provided by the wetlands also increases the project site's wildlife diversity. The willow riparian vegetation occurs in small and discrete patches that are not large enough to provide habitat for a diverse and extensive assemblage of wildlife, but remain valuable none the less.

Mammals on the site are expected to include rodents such as meadow vole (*Microtus californicus*) [observed on the site], western harvest mice (*Reithrodontomys megalotis*), deer mice (*Peromyscus maniculatus*) and western gray squirrel (*Sciurus griseus*). Some of these species occur in grasslands, while others occur in woodlands, but all are prey of larger animals that are expected to frequent the site.

Western fence lizards (*Sceloporus occidentalis*) [observed], western skink (*Eumeces skiltonianus*), and northern and southern alligator lizards (*Elgaria coerulea* and *Elgaria multicarinata*) are expected to occur in the grasslands and oak woodland edges of the project site. Alligator lizards feed upon insects, smaller lizards, and young mice and birds; these lizards, along with the smaller lizards, would also fall prey to larger animals on the project site.

Garter snakes (*Thamnophis* spp.) would occur near the watercourses and feed on western toads (*Bufo boreas*), Pacific treefrogs (*Hyla regilla*), lizards and possibly small mice. Western racers (*Coluber constrictor*), gopher snakes (*Pituophis melanoleucus*) and king snakes (*Lampropeltis getulus*) feed on lizards, mice and snakes.

Raptors frequent the project site and feed on mice, lizards and snakes. American kestrel (*Falco sparverius*) and red-tailed hawk (*Buteo jamaicensis*) were observed on the site, and red-shouldered hawk (*Buteo lineatus*) and Cooper's hawk (*Accipiter cooperii*) are also likely to forage on-site. Mammalian predators would include gray fox (*Urocyon cinereoargenteus*), striped skunk (*Mephitis mephitis*) and opossum (*Didelphis virginiana*), foraging throughout the site for insects, reptiles and rodents. An occasional coyote (*Canis latrans*) may also forage on the site. Raccoons (*Procyon lotor*) are expected to forage for amphibians and other animals along the watercourses of the site.

Deer (*Odocoileus hemionus*) were observed throughout the project site. Because of their large numbers, the deer are likely to exert an influence on the height of the shrubs on-site. The deer appear to prefer the flower or seed heads of the Diablo helianthella and only one intact flower head was observed; the other flower heads had been eaten.

3.5.1.3 Special-Status Species

The project site is within the range of a number of plant and animal special-status species. The Diablo helianthella plant is known to occur on the project site and robust monardella (*Monardella villosa* ssp. *globosa*) was recently identified on the site. In addition, various species of raptors could nest in the trees on-site.

Special-status species are defined as:

- Species afforded protection, proposed for listing, or candidates for listing under the Federal Endangered Species Act (FESA) and/or California Endangered Species Act (CESA);
- Species afforded protection under a section of the California Fish and Game Code;
- Birds afforded protection under the Migratory Bird Treaty Act (MBTA) of 1918;
- Species considered as either Federal Species of Concern or Federal Species of Local Concern, or California Species of Special Concern;
- Species that meet the definitions of rare or endangered species under CEQA;
- Plants listed on List 1A, List 1B, or List 2 of the California Native Plant Society (CNPS);
- Species of local significance, such as those on the outer limits of known distribution, range extension, or rare or uncommon in a local context (Lake 2001); or
- Species considered sensitive or important by local resource groups or agencies, or the scientific community.

Plants

A total of 20 special-status plant species were identified as having the potential to occur on or in the vicinity of the project site according to the CNDDDB and Sycamore Associates (1999). Those species are listed in Table 3.5-1 (Special-Status Species That Potentially Occur On-Site). This table includes those species whose habitat and geographical range overlap that of the project site; this table does not include any species that occurs in habitats that do not occur on the project site or whose geographic range does not include the project site, such as those that occur on serpentine, saltmarsh or alkali areas, or on high peaks such as Mt. Diablo and Mt. Hamilton.

Two special-status species occur on the project site: Diablo helianthella and the robust monardella. Both grow in an outcropping of the Lafayette Tuff in the northeastern portion of the project site. The outcropping of Lafayette Tuff supports a relatively high diversity of native species and a much lower density of non-native species than does the rest of the grassland on the project site. The shallow soils of the outcrop allow the native plants, including these two special-status species, to successfully compete with the non-native grasses.

The other plant species listed in Table 3.5-1 are not likely to occur on the project site because they were not observed during surveys of the site in April and June. (April and June represent a cross-section of the season in which these potentially-occurring special-status plant species are in bloom. Plant species are more easily detected when in bloom and therefore the timing of the surveys was best for observation of these potentially-occurring special-status species.) In addition, the dense non-native grassland further reduces the likelihood of the occurrence of special-status plant species. The number of native plants growing in the grassland was very low, and such areas with a low diversity of native plant species are unlikely to support special-status plants. The special-status plant species that were observed on-site are in an area supporting a high diversity of native plants.

Table 3.5-1. Special-Status Plants That Potentially Occur On-Site

Species	Legal Status Federal/State/CNPS	Habitat	Potential for Occurrence
Asteraceae			
Franciscan thistle <i>Cirsium andrewsii</i>	--/--/1B	Mesic grassland or open scrub	Not observed during surveys
Diablo helianthella <i>Helianthella castanea</i>	--/--/1B	Grassland edge of oak woodland, chaparral, and scrub	Occurs in a small area on-site on an outcrop of Lafayette Tuff
Santa Cruz tarplant <i>Holocarpha macradenia</i>	FT/SE/1B	Heavy clay soils of grasslands, areas of summer fog	Not observed during surveys
Showy madia <i>Madia radiata</i>	--/--/1B	Grassland and open oak woodland	Not observed during surveys
Mt. Diablo cottonweed <i>Micropus amphibolus</i>	--/--/1B	Sparse grassland, open oak woodland and scrub	Not observed during surveys
Boraginaceae			
Large-flowered fiddleneck <i>Amsinckia grandiflora</i>	FE/SE/1B	Grassland	Not observed during surveys
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	--/--/1B	Grassland	Not observed during surveys

Species	Legal Status Federal/State/CNPS	Habitat	Potential for Occurrence
Hoover's cryptantha <i>Cryptantha hooveri</i>	--/--/1B	Sparse grassland, rocky or shallow soils	Not observed during surveys
Cyperaceae			
Bristly sedge <i>Carex comosa</i>	--/--/1B	Wet areas and margins of ponds and sloughs	Not observed during surveys
Fabaceae			
Loma Prieta hoita <i>Hoita strobilina</i>	--/--/1B	Chaparral woodland, oak woodland, riparian woodland	Not observed during surveys
Geraniaceae			
Round-leaved filaree	--/--/1B	Open areas of clay grassland	Not observed during surveys
Laminaceae			
Robust monardella <i>Monardella villosa</i> ssp. <i>globosa</i>	--/--/1B	Rocky or shallow soil of grassland, scrub, chaparral, woodland edge	Observed on-site near the Diablo rockrose
Liliaceae			
Mt. Diablo fairy lantern <i>Calochortus pulchellus</i>	--/--/1B	Chaparral, scrub, oak woodland, and grassland	Not observed during surveys
Fragrant fritillary <i>Fritillaria liliacea</i>	--/--/1B	Grassland and scrub	Not observed during surveys
Linaceae			
Brewer's dwarf flax <i>Hesperolinon breweri</i>	--/--/1B	Rocky or shallow soil in grassland, scrub, chaparral, or open oak woodland	Not observed during surveys
Malvaceae			
Hall's bush mallow <i>Malacothamnus hallii</i>	--/--/1B	Chaparral	Not observed during surveys
Papaveraceae			
Diamond-petaled poppy <i>Eschscholzia rhombipetala</i>	--/--/1A	Clay soils of grasslands	Not observed during surveys
Oregon meconella <i>Meconella oregona</i>	--/--/1B	Grassland, open scrub	Not observed during surveys
Polygonaceae			
Mt. Diablo buckwheat <i>Eriogonum truncatum</i>	--/--/1B	Rocky areas, sandy soil in grassland or chaparral edge	Not observed during surveys
Thymelaeaceae			
Western leatherwood <i>Dirca occidentalis</i>	--/--/1B	Oak woodland, riparian woodland, scrub, chaparral	Not observed during surveys
FE – Federally Endangered FT – Federally Threatened 1A – Designation of plants presumed extinct by the California Native Plant Society (CNPS). 1B – CNPS designation of plants considered rare, threatened, or endangered in California and elsewhere Source: Sycamore (1999) and CNDDB (2005)			

Animals

A total of 30 special-status animal species were identified as having the potential to occur within the vicinity of the project site, according to the CNDDDB (CDFG 2005) and Sycamore Associates (1999). Those species are listed in Table 3.5-2. This table includes those species whose habitat and geographical range overlap that of the project site; it does not list any fish species or salt marsh species because habitats for those species do not occur on the site.

Fifteen of the species listed in Table 3.5-2 have the potential to occur on the project site based on microhabitat preferences. Of those species, four would occur only incidentally (an occasional and unpredictable occurrence on-site for no more than a few days), because of their low numbers in the vicinity of the site, the site's geographic location and/or the absence of habitat on the site. The incidentally occurring species are ferruginous hawk, merlin, prairie falcon and peregrine falcon.

Habitat for the following species occurs on the project site: California red-legged frog (*Rana aurora draytonii*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), western burrowing owl (*Athene cunicularia hypugea*), northern harrier (*Circus cyaneus*), yellow warbler (*Dendroica petchia*), white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus*) and American badger (*Taxidea taxus*). None of these species has been observed on the project site and their occurrence is unlikely, although they could colonize the site in the future.

Habitat for Alameda whipsnakes consists of open scrub and chaparral, rocky areas providing refuges for snakes (and habitat for their primary food, western fence lizards), and grassland and oak woodland adjacent to scrub, chaparral or rock outcrops. The project site has reduced value for whipsnakes because there is no core habitat of rocky areas, open scrub and/or chaparral in the vicinity. Nevertheless, there is core habitat for Alameda whipsnakes approximately a half-mile south and on the same ridge as the project site. This area is contiguous to areas that support a healthy population of Alameda whipsnakes adjacent to the Rossmoor Community. There is also such core habitat north of the site, but whipsnakes are not known there. Because there is known habitat for Alameda whipsnakes approximately a half-mile from, and on the same ridge as, the project site, these whipsnakes could potentially travel through the project site while searching for core habitat or to connect with the habitat north of the site. Alameda whipsnakes are unlikely to reside on the site because of the dominance of grassland and absence of cover.

Habitat for the California red-legged frog consists of two seasonal watercourses, each averaging 3 - 6 feet wide and a few inches deep. Cover along these watercourses consists of willow riparian and mesic herbaceous vegetation. Some areas along the watercourses are bare and would be habitat for sunning and foraging. The habitat is too shallow to support breeding, but is adequate for foraging.

The California red-legged frog is known in the Las Trampas Creek watershed. The CNDDDB (CDFG 2005) recorded two occurrences along Las Trampas Creek and two occurrences in stock ponds within the Creek's watershed. It is unlikely that these frogs would disperse from these known localities through urbanized areas and onto the project site. Nevertheless, suitable areas that could support these frogs could potentially occur just off-site, and they could gain access to the project site from suitable habitat off-site, if it is occupied.

Table 3.5-2. Special-Status Animals That Potentially Occur On-Site

Species	Legal Status Federal/State	Habitat	Potential for Occurrence
Invertebrates			
Monarch butterfly (aggregations) <i>Danaus plexippus</i>	--/SSC	Monterey pine or eucalyptus near the coast (for aggregation)	Suitable habitat absent
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT/--	Sparse grassland supporting dwarf plantain (<i>Plantago erecta</i>)	Not present due to absence of dwarf plantain (larval host plant)
Callippe silverspot butterfly <i>Speyeria callippe callippe</i>	FT/--	Sparse grassland supporting Johnny jump-up (<i>Viola pedunculata</i>)	Not present due to absence of Johnny jump-up (larval host plant)
Bridge's Coast Range shoulderband snail <i>Helminthoglypta nickliniana bridgesi</i>	SC/SSC	Rock piles in grassland, probably rodent burrows	Potentially in the grassland and riparian edges
Amphibians			
California tiger salamander <i>Ambystoma californiense</i>	FT/SSC	Ponds (breeding), burrows in grassland	Not likely because breeding habitat absent
Foothill yellow-legged frog <i>Rana boylei</i>	SC/SSC	Shallow flowing streams with cobble substrate (breeding)	Not observed during surveys; habitat absent
California red-legged frog <i>Rana aurora draytonii</i>	FT/SSC	Fishless stock ponds or relatively deep pools in streams (breeding)	Potentially in nonbreeding habitat along watercourses; breeding habitat absent
Reptiles			
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	FT/ST	Chaparral, coastal scrub, grassland, riparian areas, savanna	Unlikely because core area (scrub or chaparral) not on or adjacent to the project site
Western pond turtle <i>Actinemys marmorata</i>	SC/SSC	Ponds, streams, and rivers	Unlikely because of the small size of the on-site stream
Birds			
Cooper's hawk (nesting) <i>Accipiter cooperii</i>	--/SSC	Woodlands (nesting)	Potentially in trees on the project site
Sharp-shinned hawk (nesting) <i>Accipiter striatus</i>	--/SSC	Woodlands (nesting)	Potentially in trees on the project site
Tricolored blackbird (nesting) <i>Agelaius tricolor</i>	SC/SSC	Freshwater marshes, tules (<i>Scirpus</i> spp.) and cattails (<i>Typha</i> spp.)	Not present, habitat largely absent
Golden eagle (nesting) <i>Aquila chrysaetos</i>	--/FP	Tall trees and cliffs (nesting); grassland (foraging)	Not present, nesting habitat absent
Long-eared owl <i>Asio otus</i>	--/SSC	Dense riparian areas consisting of tall trees (nesting)	Habitat not present (dominated by low growing willow trees)
Western burrowing owl <i>Athene cunicularia hypugea</i>	--/SSC	Grassland with California ground squirrels (<i>Spermophilus beecheyi</i>)	Burrowing owls and California ground squirrels not observed
Ferruginous hawk <i>Buteo regalis</i>	SC/SSC	Grasslands at the edge of valleys in winter	Incidental occurrence probable

Species	Legal Status Federal/State	Habitat	Potential for Occurrence
Northern harrier <i>Circus cyaneus</i>	--/SSC	Grasslands (nesting); grasslands and marshes (foraging)	Not observed, although nesting and foraging habitat present
Yellow warbler <i>Dendroica petechia brewsteri</i>	--/SSC	Willow areas, often extensive areas of willow (nesting)	Although willow not extensive, yellow warblers potentially occur
Egret roosts [Snowy egret, <i>Egretta thula</i> ; Black-crowned night heron, <i>Nycticorax nycticorax</i>]		Groves of tall trees (roosting and nesting)	Egret roosts were not observed and are not known on the site
White-tailed kite (nesting) <i>Elanus leucurus</i>	--/FP	Trees (nesting); grasslands and seasonal marshes (foraging)	Not observed, habitat present, potentially occurs
California horned lark <i>Eremophila alpestris actia</i>	SC/SSC	Grasslands (nesting and foraging); often in short grasslands	Not observed on-site, grass tall and probably unsuitable
Merlin <i>Falco columbarius</i>	--/SSC	Grasslands, savannas, and woodlands (in winter)	Potentially incidentally
Prairie falcon <i>Falco mexicanus</i>	--/SSC	Cliffs (nesting); grasslands, and savannas (foraging)	Nesting habitat absent, potentially occurs on an incidental basis
Peregrine falcon <i>Falco peregrinus</i>	--/SE	Cliffs (nesting); grasslands, beeches, marshes (foraging)	Nesting habitat absent, potentially incidentally
Loggerhead shrike <i>Lanius ludovicianus</i>	SC/SSC	Low trees and shrubs in grassland (nesting); grassland (foraging)	Not observed, potentially in grassland
Mammals			
Pallid bat <i>Antrozous pallidus</i>	--/SSC	Caves, crevices, and structures open areas (foraging)	Roosting habitat absent; could forage on- site
Townsend's western big-eared bat <i>Corynorhinus townsendii townsendii</i>	SC/SSC	Caves and buildings (roosting); a variety of habitats (foraging)	Roosting habitat absent; could forage on- site
Western mastiff bat <i>Eumops perotis</i>	--/SSC	Rock crevices, snags (roosting); open areas (foraging)	Roosting habitat absent; could forage on- site
Berkeley kangaroo rat <i>Dipodomys heermanni berkeleyensis</i>	--/--	Sparse grassland and scrub	Habitat coincident with Diablo helianthella; area too small to support a population
American badger <i>Taxidea taxus</i>	--/SSC	Grassland, open scrub and chaparral and savanna	Habitat present, but no badger burrows or badgers observed on-site
FE – Federally Endangered FT – Federally Threatened SC – Federal Species of Concern FP – State Fully Protected Source: Sycamore (1999) and CNDDB (2005)		SE – State Endangered ST – State Threatened SSC – State Species of Special Concern	

3.5.1.3 Sensitive Habitats

Sensitive habitats are defined within the context of the proposed project as:

- Habitats recognized by the California Department of Fish and Game (CDFG) as rare, sensitive, important, or meriting further study (Holland 1986);

- Wetlands, as defined by the U.S. Army Corps of Engineers (ACOE 1987);
- Oak woodlands as defined by a dominance of oak trees and greater than 50 percent cover;
- Riparian woodlands as defined by a dominance of trees adapted to growing adjacent to watercourses lake shores and including species of willow (*Salix* spp.), Fremont cottonwood (*Populus fremontii*), alders (*Alnus* spp.), western sycamore (*Platanus racemosa*), big-leaf maple (*Acer macrophyllum*), box elder (*Acer negundo*) and Oregon ash (*Fraxanus latifolia*); or

These sensitive vegetation types are described in Section 3.5.1.1 (Vegetation) under the following headings: mesic herbaceous vegetation, willow riparian and oak woodland.

3.5.2 Regulatory Setting

3.5.2.1 U. S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over species that are formally listed as threatened or endangered under the FESA. The FESA protects listed wildlife species from harm or “take.” The term “take” is broadly defined as to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” An activity is defined as a “take” even if it is unintentional or accidental. An “endangered” plant or wildlife species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A “threatened species” is one that is likely to become endangered within the foreseeable future. Endangered and threatened species are legally protected under the FESA.

The USFWS also lists proposed and candidate species. “Proposed” species are those for which a rule to list them as endangered or threatened has been proposed and published in the Federal Register. A candidate species is one for which the USFWS currently has enough information to support a proposal to list it as a threatened or endangered species. “Species of concern” and “species of local concern” are informal designations of species that are presumed to be rare but for which adequate information on threats and distribution to support a proposed rule is lacking. These latter species are not afforded legal protection under the FESA. Nevertheless, project-related impacts on federally listed, proposed, and candidate species or their habitats are considered “significant” under *CEQA Guidelines*.

3.5.2.2 California Department of Fish and Game

The CDFG has jurisdiction over threatened or endangered species that are formally listed by the state under the CESA. The CESA is similar to the FESA both in process and substance; it is intended to provide protection to threatened and endangered species in California. The CESA prohibits the “take” of any plant or animal listed or proposed as threatened, endangered or rare (“rare” applies only to plants). The CESA does not supersede the FESA, but operates in conjunction with it. Species may be listed as threatened or endangered under both acts (in which case the provisions of both state and federal law apply) or under only one act. Fully protected species are so designated by the California Fish and Game Code and cannot be taken, possessed, injured or killed.

CDFG also maintains informal lists of “species of special concern.” These species are broadly defined as plants and wildlife that are of concern to CDFG because of population declines and restricted distributions, and/or they are associated with habitats that are declining in California. Project-related impacts on species on the CDFG lists of endangered species, threatened species, and species of special concern are considered “significant” under the *CEQA Guidelines*.

CDFG also has jurisdiction over the beds and banks of watercourses, according to Section 1602 of the Fish and Game Code. The CDFG requires a Streambed Alteration Permit for the alteration of the bed or bank of, or removal of any material from, any natural drainage. The jurisdiction of CDFG extends to the top of the bank and typically includes the outer edge of riparian vegetation canopy cover.

3.5.2.3 U. S. Army Corps of Engineers

Under Section 404 of the Clean Water Act, the ACOE is responsible for regulating the discharge of fill material into waters of the United States (U.S.) and their lateral limits. Its jurisdiction is defined in 33 Code of Federal Regulations (CFR) Part 328.3(a), and includes streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed “isolated wetlands” and may be subject to ACOE jurisdiction.

In general, an ACOE permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit required depends on the amount of acreage and the purpose of the proposed fill, and is subject to the discretion of the ACOE. The ACOE has two categories of permits: nationwide (general) permits and individual permits. To qualify for a nationwide permit, a project must demonstrate that it has no more than a minimal adverse effect on an aquatic ecosystem. The ACOE typically interprets this condition to mean that there would be no net loss of either habitat acreage or habitat value. This usually results in the need to provide mitigation for project-related fill of any creek or wetland.

An individual permit is required where a nationwide permit is not applicable. The consideration of an individual permit includes, but is not limited to, factors such as significant acreage of wetlands or waters of the U.S., areas of high biological or unique value, and length of watercourse affected. Individual permits require review of the project by the public, evidence that wetland impacts have been avoided or minimized to the extent possible, and provision of appropriate compensatory mitigation for unavoidable impacts.

3.5.2.4 Regional Water Quality Control Board

Pursuant to Section 401 of the Federal Clean Water Act (CWA), projects that apply for an ACOE permit for discharge of dredge or fill material into wetlands or other waters of the U.S. or the state must also obtain water quality certification from the Regional Water Quality Control Board (RWQCB). This certification ensures that the project will uphold state water quality standards. Alternatively, the RWQCB may elect to notify an applicant that the state may issue Waste Discharge Requirements in lieu of a Section 401 certification for a project.

3.5.2.5 CEQA Guidelines Section 15380

Although threatened and endangered species are protected by specific federal and state statutes, *CEQA Guidelines* Section 15380(b) provides that a species not listed on the federal or state lists of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the Fish and Game Code dealing with rare or endangered species. Section 15380(b) was included in the guidelines primarily to address situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFG. Thus, CEQA provides a lead agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

3.5.2.6 Lafayette General Plan and Zoning Ordinance

The Open Space and Conservation Chapters of the City of Lafayette *General Plan (General Plan)* outline a series of goals and policies to protect and enhance vegetation and wildlife. Sensitive species and certain groves of trees are also deemed of value for protection. The Tree Protection Ordinance defines the size and species of trees that are protected within the City.

3.5.2.6 California Native Plant Society

The CNPS, a nongovernmental conservation organization that has developed lists of plants of special concern in California, as follows:

- List 1A plant: A species, subspecies, or variety that is considered to be extinct;
- List 1B plant: Considered rare, threatened or endangered in California and elsewhere;
- List 2 plant: Considered rare, threatened, or endangered in California, but is more common elsewhere;
- List 3 plant: A species for which CNPS lacks necessary information to determine whether it should be assigned to a list or not; and
- List 4 plant: Has a limited distribution in California.

All of the plant species on List 1 and List 2 meet the requirements of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (CESA) of the CDFG Code, and are eligible for state listing. Therefore, plants appearing on Lists 1 or 2 are considered to meet CEQA's Section 15380 criteria, and effects on these species are considered "significant" in this document. Species on CNPS' List 3 and List 4 are not addressed in this EIR.

3.5.2.7 Other Statutes, Codes and Policies Affording Limited Species Protection

The Federal Migratory Bird Treaty Act (16 U.S.C., Sec. 703, Supp. I, 1989) (MBTA) prohibits killing, possessing or trading migratory birds, except in accordance with regulations prescribed by the U.S. Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

The Federal Bald and Golden Eagle Protection Act prohibits persons within the U.S. (or places subject to U.S. jurisdiction) from "possessing, selling, purchasing, offering to sell, transporting, exporting or importing any bald eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof."

Birds of prey (hawks, eagles, falcons and owls) are protected in California under Fish and Game Code Section 3503.5. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Disturbance that causes nest abandonment and/or loss of reproductive activity is considered "taking" by the CDFG and would constitute a significant impact on biological resources.

3.5.3 Environmental Analysis

3.5.3.1 Thresholds of Significance

Impacts on biological resources on the project site were evaluated by determining the sensitivity, significance, and rarity of each resource that could be adversely affected (either directly or indirectly) by the proposed project, and by using thresholds of significance to determine the significance of each potential impact. The significance threshold differs by habitat or species. Guidance for determining significance thresholds is based on Appendix G (Environmental Checklist) of the *CEQA Guidelines* and the *General Plan*. Using these guidelines, the proposed project would result in a significant impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFG or USFWS;
- Have a substantial adverse effect on any habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS, and including riparian habitats, native grasslands, etc.;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal wetlands, etc.) and state protected wetlands through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan.

3.5.3.2 Potential Impacts and Mitigation

Impacts on biological resources on the project site may occur where proposed construction or development activities could temporarily or permanently modify sensitive habitats occupied or potentially occupied by a special-status species. These activities could also result in direct impacts on (e.g., death of or injury to) special-status species. Direct and indirect impacts could occur on the sensitive habitats on-site, including willow riparian and mesic herbaceous (wetland) vegetation. There are no conservation plans that would be applicable to the project site.

Potential Impact 3.5-1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFG or USFWS? (Potentially Significant Impact)

Special-Status Plant Species

Two species of special-status plants occur on the project site: the Diablo helianthella and the robust monardella. They occur in the outcropping of the Lafayette Tuff in one small area at the northern end of the project site, at the edge of an oak woodland. This location is away from the location of the proposed development and ridge-top trail. Although these species would be located away from proposed

construction areas, they could potentially be adversely affected by construction equipment of the proposed project. Because they are susceptible to shading, they could also be adversely affected by a change in land use (such as a reduction in grazing) that would allow an increase in cover of the oak woodland. Non-native invasive weeds, including milk thistle, mustard (*Brassica* sp.) and yellow star thistle (*Centaurea solstitialis*), could also adversely affect these species through competition. Impacts would be considered less than significant with the implementation of the following mitigation measures.

Mitigation Measure 3.5-1a: Prior to Final Map approval or issuance of a grading permit, whichever occurs first, a management plan prepared by a qualified biologist shall be developed to ensure that habitat remains on the site for the Diablo helianthella and robust monardella. This management plan shall focus on grazing as the management tool to reduce the incursion of oak woodland onto the habitat of these rare plant species and to manage the thatch production of the non-native grasses.

Mitigation Measure 3.5-1b: The management plan prescribed above shall also address weed management in addition to grazing. The grazing prescriptions shall be designed to minimize the amount of invasive weeds. Weed management shall also entail removal of the weeds by other means than grazing such that the weeds are eradicated or nearly eradicated from the site. This weed management shall be an on-going activity throughout project construction and operation.

Special-Status Animal Species

Incidentally Occurring Species

Species that could occur incidentally (rarely) on the project site include ferruginous hawk, merlin, prairie falcon and peregrine falcon. Because these species would not nest on the project site, would occur only incidentally, and much of their on-site grassland foraging habitat would remain, these species would not experience impacts from the proposed project and mitigation would not be necessary.

Alameda Whipsnake, California Red-legged Frog and American Badger

Alameda whipsnakes could potentially travel through the project site, but are unlikely to remain on-site for extended periods of time because of the absence of core habitat. Project construction could result in harm or injury to any Alameda whipsnake traveling across the site.

California red-legged frogs could potentially occur in the riparian areas and/or seeps of the project site. Protocol-level surveys have not been conducted for the California red-legged frog and, although the species is not known in the project vicinity, it could potentially colonize the project site from an off-site area. The California red-legged frogs could use these riparian areas for cover and foraging. In addition, these frogs are known to travel across upland areas from one wetland to another and, therefore, could occur within the construction areas at the time of construction. If within the construction area, the California red-legged frog could be harmed by construction activity.

In addition, the willow riparian habitat and wetland areas (mesic herbaceous vegetation), that provide habitat for California red-legged frogs could be affected by construction equipment. The willow riparian areas closest to the project's proposed homes are on Lots 1, 5, 6 and 7. On Lot 1, the proposed home would be 12 feet from the willow trees; the willow trees and associated wetlands are likely to experience indirect impacts from the proximity of construction activity and from the residents of the proposed home. The willow riparian areas of Lots 5, 6 and 7 would be located 60 to 75 feet away from the proposed homes, and may experience impacts from construction equipment.

Furthermore, alteration of the hydrology of these wetland areas is an additional potential impact due to the proximity of the homes to the wetlands. A reduction in the amount of water entering the wetlands could reduce the size of the wetlands.

Neither American badgers nor their characteristic burrows were observed at the project site. However, badgers could potentially colonize the project site prior to construction, in which case construction activities at the homesites and access roads could potentially harm the badgers. The mitigation measures specified below would mitigate impacts to Alameda whipsnake, California red-legged frog and American badgers to a less than significant level.

Ornamental plant species could invade the habitat areas of the project site, which no longer would continue to support special-status species. Examples of invasive species are broom (*Genista* and *Cytisus*), Pampas grass (*Cortaderia* spp.) and eucalyptus (*Eucalyptus* spp.).

Mitigation Measure 3.5-1c: Prior to Final Map approval, Lot 1 shall be reconfigured such that the home and landscaping would be at least 50 feet from the willow riparian and mesic herbaceous (wetland) vegetation located in Lot 1. Reconfiguration of Lot 1 may also require reconfiguration of Lots 2 and 3 to accommodate the required setback on Lot 1. The homes on Lots 5, 6 and 7 are currently proposed such that they would be at least 50 feet from any mesic herbaceous (wetland) or willow riparian area. Grading, homes and associated landscaping shall not be located closer than 50 feet to the wetland areas. This 50-foot buffer will provide sufficient distance to preclude impacts from alteration of hydrology and from the direct effects of construction equipment.

A permanent fence shall be located between the homes and the wetlands and willow trees to protect them from humans, but at the same time allow deer and other wildlife access. Although grading, homes and landscaping require a setback of at least 50 feet from the wetland, the permanent fence shall be 10 feet from the wetland providing a 10-foot buffer to exclude humans.

Mitigation Measure 3.5-1d: A preconstruction survey shall be conducted for the California red-legged frog and the Alameda whipsnake of the areas of the project site that would be affected prior to construction. Upon completion of the preconstruction survey, survey results shall be reported to the Planning Services Division. Within a day of completion of the preconstruction survey, a fence designed to exclude Alameda whipsnakes and California red-legged frogs shall be established around the construction area. Construction equipment and construction activity shall remain within the fenced construction area. The construction area, including grading, and the fence shall be at least 50 feet from any of the wetland seeps and willow riparian areas on the project site. Silt fencing shall be used for the fence to exclude Alameda whipsnakes and California red-legged frogs from the construction area and to prevent harmful sediment from entering the riparian and wetland habitat of the California red-legged frog. This silt fence shall be installed prior to construction and shall be used to prevent heavy equipment within 50 feet of wetland areas.

Mitigation Measure 3.5-1e: Prior to Final Map approval, a conservation easement shall be established on the willow riparian and wetland vegetation of Lots 1, 5, 6 and 7. This easement shall protect the vegetation from cutting, removal, or other types of destruction, and ensure the long-term protection of this vegetation.

Mitigation Measure 3.5-1f: A preconstruction survey shall be conducted for American badgers at the same time that the preconstruction survey is being conducted for Alameda whipsnake and

California red-legged frogs. Upon completion of the preconstruction survey, survey results shall be reported to the Planning Services Division. Any badgers observed in the construction area shall be relocated by a qualified biologist prior to construction.

Mitigation Measure 3.5-1g: To ensure that Alameda whipsnakes will be able to cross the project site after construction of the homes, the remainder parcel shall be covered by a conservation easement. This conservation easement shall stipulate that no construction, residential development, agricultural development (vineyard, orchard, row crops) or private landscaping is allowed on the remainder parcel. Grazing would be an acceptable land use and may be essential to maintain the grassland. The portions of Lots 5, 6 and 7 that are south of the southern drainage shall also be included in the conservation easement.

Mitigation Measure 3.5-1h: The species listed in Table 3.5-3 are particularly invasive ornamental plants, and shall be prohibited from being planted on the project site through landscape agreements between the private property owners and the City.

Table 3.5-3: Prohibited Ornamental Plant Species

Scientific Name	Common Name
Trees	
<i>Acacia decurrens</i>	Green wattle
<i>Acacia melanoxylon</i>	Black acacia
<i>Ailanthus altissima</i>	Tree-of-heaven
<i>Eucalyptus globulus</i>	Blue-gum
<i>Robinia pseudoacacia</i>	Black locust
<i>Schinus terebinthifolius</i>	Brazilian pepper
<i>Tamarix</i> spp.	Tamarisk
Shrubs	
<i>Cotoneaster franchetii</i>	Cotoneaster
<i>Cotoneaster pannosa</i>	Cotoneaster
<i>Crataegus monogyna</i>	Hawthorn
<i>Cytisus multiflorus</i>	Spanish broom
<i>Cytisus scoparius</i>	Scotch broom
<i>Genista monspessulana</i>	French broom
<i>Pyracantha</i> spp.	Pyracantha
<i>Rubus discolor</i>	Himalayan blackberry
<i>Ulex europaea</i>	Gorse
Vines	
<i>Delairia odorata</i> (= <i>Senecio mikanioides</i>)	Cape ivy (German ivy)
<i>Hedera helix</i>	English ivy
Herbs	
<i>Arctotheca calendula</i>	Capeweed
<i>Cynara cardunculus</i>	Artichoke thistle
<i>Euphorbia esula</i>	Leafy spurge
<i>Euphorbia oblongata</i>	Spurge

Scientific Name	Common Name
<i>Vinca major</i>	Greater periwinkle
<i>Carpobrotus edulis</i>	Ice plant
Grasses	
<i>Arundo donax</i>	Giant reed
<i>Cortaderia jubata</i>	Andian pampas grass
<i>Cortaderia selloana</i>	Pampas grass
<i>Cynodon dactylon</i>	Bermuda grass
<i>Pennisetum clandestinum</i>	Kikuyu grass
<i>Pennisetum setaceum</i>	Fountain grass

Yellow Warbler

Yellow warblers could potentially nest in the riparian areas of the project site, although they prefer extensive areas of willows; nevertheless, nesting yellow warblers cannot be discounted in these areas. The willow riparian areas closest to the project's proposed homes are on Lot 1, 5, 6 and 7. On Lot 1, the proposed home would be 12 feet from the willow trees; the willow trees and associated wetlands are likely to experience indirect impacts from the proximity of construction activity and from the residents of the proposed home. The willow riparian areas of Lots 5, 6 and 7 would be located 60 to 75 feet away from the proposed homes, and may experience impacts from construction equipment or the placement of infrastructure. The buffer and permanent fence of Mitigation Measure 3.5-1c, the construction fence of Mitigation Measure 3.5-1d and the conservation easement of Mitigation Measure 3.5-1e would fully mitigate the impact on yellow warblers to a less than significant level.

Raptors and Loggerhead Shrike

The loggerhead shrike and a number of species of raptors could potentially colonize the project site prior to construction. These species of raptors are Cooper's hawk, sharp-shinned hawk, western burrowing owl, northern harrier and white-tailed kite. The major impact on these species would be the destruction of nests or disruption and abandonment of nesting once started in the spring. Western burrowing owl and northern harrier nest on the ground, Cooper's hawk, sharp-shinned hawk and white-tailed kite nest in trees; and loggerhead shrikes nest in shrubs or small trees. The following measure would mitigate impacts on nesting raptors and loggerhead shrikes to a less than significant level.

Mitigation Measure 3.5-1i: A preconstruction survey shall be conducted for nesting raptors and loggerhead shrikes within 250 feet of the construction site within 21 days of construction. A buffer of a radius of at least 250 feet shall be established between any nesting raptor and construction activity. The project sponsor shall submit plans to the Planning Services Division showing the buffer area and protection measures such as fencing or other measure(s) approved by the City. This buffer shall be maintained until the chicks fledge, unless a biologist experienced with raptor nesting behavior determines that the buffer can be reduced without stressing the nesting raptor. The buffer surrounding any loggerhead shrike nest shall be a radius of at least 100 feet and can be reduced if such reduction would not result in the abandonment of the nest or increased stress of the shrike.

Bridge's Coast Range Shoulderband Snail

Bridge's coast range shoulderband snail (*Helminthoglypta nickliniana bridgesi*) could occur in the grassland and the adjacent woodland. This species occurs under fallen debris (such as pieces of wood) in grassland areas; they also probably occur in the holes of rodents and ground squirrels. They have been observed beneath fallen logs in oak woodland areas (MHA 2004). The distribution and abundance of Bridge's coast range shoulderband snail is not well understood. Although they were not observed beneath the wood on the project site, they could occur on-site in the burrows of rodents. The location of project homesites could adversely affect individual Bridge's coast range shoulderband snail (if present) and its habitat. Mitigation Measures 3.5-1d, 3.5-1e and 3.5-1g and the following mitigation measure would reduce impacts on Bridge's coast range shoulderband snail to a less than significant level by protecting most of its on-site habitat in perpetuity.

Mitigation Measure 3.5-1j: The construction area shall be reduced to as small an area as possible while allowing for efficient construction of the proposed project.

Potential Impact 3.5-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS? (Potentially Significant Impact)

The willow riparian areas of the project site are sensitive plant communities because they have experienced a decline due to urban and agricultural development and flood control projects. Riparian vegetation is also sensitive because it provides habitat for many special-status species of animals. The proposed project would comply with the City of Lafayette stream setback guidelines for structures. Nevertheless, the willow riparian area on Lot 1 could experience direct and indirect impacts from its close proximity (12 feet) to the proposed homesite. Infrastructure could also adversely affect the stand of willow trees on Lot 1 and those on Lots 5, 6 and 7. This impact is the same as Potential Impact 3.5-1 with respect to habitat of California red-legged frogs and yellow warblers. The buffer and permanent fence required under Mitigation Measure 3.5-1c, the construction fence required under Mitigation Measure 3.5-1d and the conservation easement required under Mitigation Measure 3.5-1e would fully mitigate the impact on willow riparian vegetation to a less than significant level.

Potential Impact 3.5-3: Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal wetlands, etc.) and state protected wetlands through direct removal, filling, hydrological interruption or other means? (Potentially Significant Impact)

The wetland (mesic herbaceous vegetation) areas of the project site are sensitive plant communities because they have experienced a decline due to urban, agricultural and other types of development. Wetlands also provide habitat for many special-status species of animals and plants. The wetland area on Lot 1 could experience direct and indirect impacts from its close proximity (12 feet) to the proposed homesite. Providing a minimum of a 50-foot buffer between grading, homesites and landscaping and the wetlands, and a 100-foot buffer between access roads (to the homes) and the wetlands would also result in a reduction of hydrological impacts. This impact is the same as Potential Impact 3.5-1 with respect to the wetland habitat of the California red-legged frog. The buffer and permanent fence required under Mitigation Measure 3.5-1c, the construction fence required under Mitigation Measure 3.5-1d and the conservation easement required under Mitigation Measure 3.5-1e would fully mitigate the impact on wetland vegetation to a less than significant level.

Potential Impact 3.5-4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (Potentially Significant Impact)

Animals are likely to pass through the project site while traveling along Burton Ridge to and from the Moore property, which is adjacent to the project site to the north. North, west and east of the Moore property and project site are developed areas that limit animal movement to a north-south direction along Burton Ridge. Animals could move north along Burton Ridge until the developed area of Lafayette is reached to the north of the Moore Property. The proposed project comprises only 8 homes on an 87.9-acre site, and there is ample space for animals to move north-south across the project site, because the arrangement of the lots would allow such movement of animals. Nevertheless, fencing the lots would prevent animal movement through the project site. Mitigation Measures 3.5.1e and 3.5.1g would partially mitigate this impact by placing areas of the project site under a conservation easement, and in conjunction with the following mitigation measure, would reduce this impact to a less than significant level.

Mitigation Measure 3.5-4: Fenced yards in the homesites shall be restricted to an area encompassing a radius of 50 feet from the homesite. The development plans, including the fence location, would be approved by the City through the Design Review and Hillside Development Permit process. The configuration of any fences shall be such that animals could easily move through the project site. Movement corridors shall be provided between Lot 3 and Lot 4 in a corridor no less than 150 feet wide at its narrowest point; on the lower slopes of Lot 5 in a corridor that averages 150 feet wide but can be 100 feet wide at its narrowest point; and on the eastern portion of Lot 7, in a corridor no smaller than 150 feet wide. An animal shall be able to move from the top of the ridge beside Lot 7 to access the watercourse, travel the length of the watercourse and along the bottom of Lot 5; and then travel between Lots 3 and 4 until the ridgetop is attained. The vegetation of this corridor shall be non-native grassland. The corridor area shall not be landscaped unless native plants are used and the cover remains sparse.

Potential Impact 3.5-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (Potentially Significant Impact)

The City of Lafayette has established a Tree Protection Ordinance that is contained in Chapter 6-17 of the City of Lafayette Municipal Code. This ordinance contains provisions regarding protection of trees, the removal of trees as part of development applications, and the replacement of protected trees that are removed. The City requires an application process for the removal of trees, and the project would be subject to its requirements.

Examples of disturbance of an overall site that can affect trees are: (1) altered drainage patterns; (2) diversion of runoff to or away from a tree; (3) removal of surrounding vegetation that ameliorates soil temperature and protects against sunburn; (4) grading, demolition, or vegetation removal that can cause erosion; (5) installation of subdrains, diversion ditches, or drainage swales; and (6) any change in the capacity for soil recharge.

Individual effects of any of the above procedures may be immediate or long-term. It is most common to see the effects of damage over the long term; often trees will slowly decline over several years before eventually dying from construction impacts. Therefore, any change in a tree's natural environment should be considered an impact, and all impacts are cumulative. Maintenance of the tree protection zone (the area surrounding a single tree or group of trees usually corresponding to the dripline of the canopy) is usually the most important monitoring activity of the tree preservation process. Compromising the tree

protection zone incrementally increases the chance of tree decline, depending on the nature and extent of the damage.

Specific project impacts on trees are the removal of one white oak tree on Lot 8 that is 13 inches in diameter; potential damage to trees from trimming or cutting roots; potential damage from overwatering; and constructing too close to a 36-inch-diameter oak on Lot 8. Most of these impacts would occur on Lot 8. The following mitigation measures would reduce these impacts to a less than significant level.

Mitigation Measure 3.5-5a: Prior to approval of any grading permit or in conjunction with an application for Design Review approval, whichever occurs first, the project sponsor shall submit a tree permit application pursuant to Chapter 6-17 of the Lafayette Municipal Code. Compliance with this chapter will result in the replacement or mitigation of any protected tree affected by the project.

Mitigation Measure 3.5-5b: The project sponsor shall install protective measures for all trees to remain as identified on the site plan. Protective measures shall be shown on the grading and/or drainage plan as stated above. All tree protection measures shall be approved, installed and inspected by the City before any construction may begin. All existing trees to remain shall be protected with the following measures during construction:

- a. Protective fencing shall be installed prior to any construction activity, including clearing and grubbing, at the project site. Fencing shall be a minimum of one foot beyond the maximum dripline of all trees and may extend well beyond the dripline under certain site conditions.
- b. Fencing shall be six feet high and shall form a continuous barrier around protected trees. The length, spacing, depth and material of the posts securing the fencing shall be designed to remain solidly in place until the final City inspection is made. Two protection fence detail options are provided in the City's *Construction Policies and Guidelines for Tree Preservation and Protection* to provide direction for this fencing. The City may require modifications to these details depending on the particular site conditions.
- c. Other protection measures may be necessary including using hay bales at the base of the trunk for trunk protection of critical trees, if necessary. In addition, 2 x 4s or other approved material may be necessary to protect overhanging limbs that are proposed to be retained.
- d. The site supervisor shall direct all contractors and subcontractors to remain outside of the fenced area of the dripline and shall not allow any type of construction activity, including parking or storage within the fenced area. The fencing must remain in place for the duration of the project.
- e. All underground work within tree driplines shall be avoided wherever possible to minimize impacts. Locating utilities and necessary trenching outside of the canopy driplines is the best solution; trenching and grading within the dripline has the potential to seriously compromise the health and structural integrity of the trees. If trenching or grading within the dripline is completely unavoidable because of site constraints, then the project arborist or landscape architect shall be consulted on-site to advise on the least damaging course of action. The trenching shall also be reviewed with the City inspector prior to excavation.

- f. Trenches within the dripline shall be hand dug. Cuts to tree roots shall be minimized to the extent feasible and shall be treated as exposed. Roots of trees shall never be pulled because of excessive damage. The project arborist or landscape architect shall be on-site to direct treatment of any damaged roots as they are exposed. Treatment shall include cutting the roots cleanly with sharp tools; no wound dressing products shall be used. The roots shall be trimmed, cleaned, and covered with wet burlap and/or shredded mulch. The project arborist or landscape architect shall assess a tree for structural impacts if roots over two inches in diameter are encountered.
- g. Cutting and filling within the dripline of trees shall be avoided. Any fill mistakenly placed against the trunk of a tree shall be removed to restore the natural flair of the trunk. Appropriate retaining walls shall be constructed along and outside of the dripline area if grade changes approach the drip line and a 2:1 return slope cannot be constructed.
- h. Access within the dripline shall be granted only as a condition of the tree removal application. If pruning is required for safe access and clearance within the dripline, then necessary pruning shall be to the standards and guidelines of the International Society of Arboriculture. The safety of the construction equipment operators is paramount; however, excessive or improper pruning can seriously impact the health and vigor of the tree. Pruning shall be as minimal as possible, so equipment heights shall be measured and trees pruned accordingly under the direction of a certified arborist. Pruning shall be done prior to construction activities and shall not be done by construction personnel. Pruning more than 30 percent of a tree at one time is considered a significant impact. The project arborist shall identify and monitor all pruning activities during construction.
- i. Individual or isolated trees subject to the influences of trenching, grade changes, or altered drainage patterns shall be provided with a protective layer of mulch prior to construction activities. Mulch shall be chipped bark material placed in a layer that is 4 to 6 inches deep. Mulch shall be placed away from the trunk and extend out to the dripline of the canopy or the edge of the protective fencing. Any weeds growing beneath the canopy may be removed by hand before mulch is placed. Weeds shall not be sprayed with herbicide within the tree canopy zone. The area beneath the dripline shall be well-watered prior to the placement of the mulch so that moisture is not wicked out of the soil by the mulch itself.
- j. If necessary, specific instructions for fertilization, disease, pest control, and weed control shall be made for individual trees. In general, chemical controls shall be avoided on the project site so that problems are not exacerbated and overall impacts to the natural balance are minimized.
- k. Watering during construction to minimize tree stress is crucial when $\frac{1}{4}$ or more of a tree's roots have been disturbed. Water shall be slowly applied to a minimum depth of 12 inches for the full outer half of the canopy/dripline area. The area immediately adjacent to a tree trunk shall not be watered. Watering shall occur once a month during the dry season (May through September). Trees near asphalt shall be supplied with additional water because asphalt paving absorbs heat which in turn raises nearby soil temperature and increases moisture loss.
- l. All grading shall be designed to drain water away from the base of the trees to avoid creating areas of ponding within the dripline. The natural drainage across the site shall be retained as much as possible.

- m. If it is necessary to pave beneath the dripline, the maximum allowable cut or fill shall be six inches for paving within the dripline. In addition, paving modifications including gap graded gravel, pier and grade beam footings, steel reinforcement, or aeration breaks in the paving may be required.
- n. If equipment access is absolutely necessary beneath the dripline of a tree, a mulch layer (4-12 inches, depending upon the weight of the equipment) of tree chips or cocoa hulls shall be placed over the area that would be affected prior to allowing the equipment to cross. Work shall be scheduled so that the equipment is only required to cross the root zone once to enter and once to exit. The mulch shall be left on the site since removal may cause damage to surface feeder roots.
- o. Under each circumstance where an arborist is required to supervise or observe construction, the arborist may require additional mitigation measures or halt construction if necessary to protect the subject trees.
- p. Trees which are excessively damaged due to inadequate protection or negligence by the Contractor shall be replaced at the project sponsor's expense. Replacement shall be determined in the same manner as mitigation plantings.

Mitigation Measure 3.5-5c: To protect trees remaining on the project site from the effects of overwatering, the project sponsor shall enter into a landscape maintenance agreement with the City to ensure the long-term maintenance of the protected trees. This maintenance agreement shall stipulate that the remaining oak trees shall not be irrigated, that irrigation runoff shall be directed away from the oak trees, and that landscape plants shall not be installed beneath the oak trees.

Mitigation Measure 3.5-5d: The home on Lot 8 shall be located at least 10 feet from the dripline of the 36-inch-diameter oak that is identified on the site plan. The proposed location of the home would damage the roots and canopy of the tree.

Potential Impact 3.5-6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan? (No Impact)

There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that would be applicable to the project site. There would be no impact and no mitigation is required.