

COUNTY CROSSINGS

BIOLOGICAL RESOURCES REPORT

COUNTY CROSSINGS DEVELOPMENT

ANTIOCH, CONTRA COSTA COUNTY, CALIFORNIA

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1.0 SUMMARY

This report presents the results of reconnaissance-level, and focused surveys for special-status wildlife and plant species, and an evaluation of potential jurisdictional wetlands, for the proposed County Crossings development in Antioch, California. The proposed project is for a mixed use retail and transit village development on the approximate 190-acre site along the north side of State Highway 4 between Hillcrest Avenue on the west and State Highway 160 on the east (Figure 1 – *Project Location*).

The report is intended to provide background and site-specific information pertaining to biological resources and to identify permitting issues and potential constraints to be considered in project planning. It includes a discussion of the existing plant communities, wildlife associations, natural communities, and potentially-occurring special-status plant and wildlife species within the study area.

The site is much disturbed due to a long history of impacts from industrial, agricultural, off-road vehicle, and illegal dumping activities that have impacted both wetland and upland habitat communities.

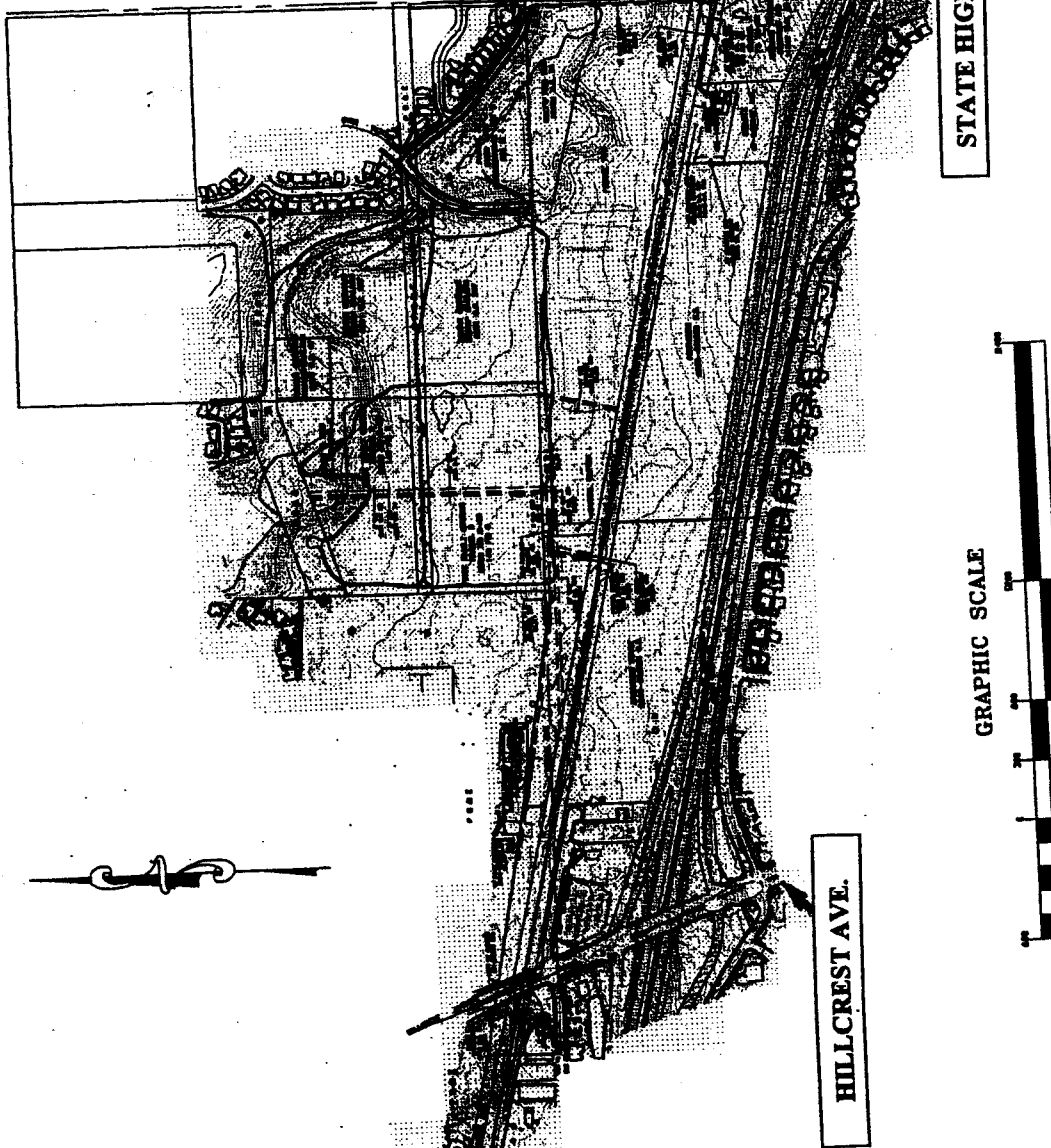
East Antioch Creek, including a southern tributary, flows through the area from east to west and then empties into the San Joaquin River approximately 1½-miles northwest of the site. Vegetation along the creek is composed of Coastal and Valley freshwater marsh, a natural community type.

This portion of the creek is a perennial system fed by both storm water and irrigation runoff from adjacent, as well as upstream residential developments, and partially serves as a flood control channel. Other wetland features include a ruderal seasonal wetland complex, drainage swale and ponds. The seasonal wetland, composed of three segments in the northeast portion of the site, is the result of a previous sand mining operation that excavated through the Delhi sands soil type down to the clay subsoil and now impounds runoff from adjacent residential properties as well as Highway 160. An approximate 0.26 acre pond occurs within the marsh just east of Willow Avenue, and a smaller, approximately 0.03 acre pond occurs in the upper reach of the southern tributary just south of the railroad line.

The potential for occurrence of 29 special-status plant species was evaluated for this project. Due to the level of disturbance and lack of suitable habitat only 5 species were considered to have the potential to occur. Focused surveys were conducted for these plants during their respective flowering periods with negative findings. Therefore, these species were also considered not to occur (Appendix A – *Potentially-Occurring Special-Status Plants*).

FIGURE 1

**COUNTY CROSSINGS
DEVELOPMENT**
Antioch, California



STATE HIGHWAY 160

STATE HIGHWAY 4

HILLCREST AVE.



GRAPHIC SCALE



(IN FEET)
1 inch = 600 ft.

The potential occurrence of 47 special-status animal species was also evaluated. Richard Arnold, Ph.D., Entomological Consulting Ltd., evaluated the site for the potential occurrence of 23 species of insects and invertebrates including several federally listed species occurring on the nearby USFWS Antioch Dunes Wildlife Refuge, but found none of these to be present due to degraded nature of the site (Attachment 3). In addition, protocol site assessments were conducted by Randall Long, biologist, RCL Ecology, to determine the potential for occurrence of federally listed and State special concern wildlife including the federally listed threatened California tiger salamander (*Ambystoma californiense*), and California red-legged frog (*Rana aurora draytonii*), and State special concern burrowing owl (*Athene cucularia*) with negative findings (Report section 5.3 and Appendix B – *Potentially-Occurring Special-Status Animals*).

2.0 INTRODUCTION

The proposed County Crossings project is for a mixed use retail and transit village development on the approximate 190-acre site along the north side of State Highway 4 between Hillcrest Avenue on the west and State Highway 160 on the east. The project is designed to complement the future Hillcrest BART Station as well as the planned E-BART rail line expansion into East County by providing transit village housing, shopping, and restaurants located adjacent to the planned transit hub.

This report is intended to provide background and site-specific information pertaining to biological resources and to identify potential biological constraints to development of the project. It includes a discussion of the existing plant communities, wildlife associations, potentially-occurring special-status plant and wildlife species, natural communities, conclusions and recommendations.

3.0 METHODS AND LIMITATIONS

The findings for this report are based on the following:

- 1) An analysis of the "Antioch North", "Antioch South", "Jersey Island" and "Brentwood, California" 7.5-minute quadrangles from the California Natural Diversity Database (CNDDDB 2005);
- 2) Assessment of habitat types and surrounding land use completed by reviewing recent aerial photographs; and
- 3) Reconnaissance-level and focused biological surveys.

A general habitat assessment, preliminary wetland delineation and protocol special-status plant and wildlife site assessments and surveys were conducted by RCL Ecology principal biologist Randall Long during the spring and summer of 2005. An assessment of the potential for occurrence of special-status insect and invertebrate species was conducted by Richard Arnold, Ph.D., principal entomologist, Entomological Consulting Services, Ltd., during the spring of 2005. An analysis of current hydrologic conditions was conducted by David Mattern, P.E., principal engineer/hydrologist, Mattern and Associates during the spring of 2005.

Wetland surveys were conducted in accordance with the methodology outlined in the *U. S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987).

Due to previous site surveys by RCL Ecology in 2004, and numerous site visits during the current studies, limitations on study results are expected to be minimal.

4.0 EXISTING CONDITIONS

4.1 Hydrology, Topography, and Soils

With the exception of two steep hills adjacent to Highway 4, the project site is primarily a shallow valley bisected by East Antioch Creek that flows through the area from east to west and then empties into the San Joaquin River approximately 1½-miles northwest of the site. This portion of East Antioch Creek is a perennial system fed by both storm water and irrigation runoff from adjacent, as well as upstream residential developments. Two Contra Costa County Flood Control basins, the Oakley and Trembath basins, control storm water runoff within the creek. The County has plans to enlarge these facilities to accommodate projected build out (Attachment 1 – *Drainage Analysis*).

Topography varies from gentle slopes of 2-3 percent on the valley floor to 15-30 percent slopes on the hilly areas in the southeast. Elevations range from approximately 20 feet above mean sea level at the western edge of the site, to approximately 200 feet in the southeast.

Soils are of the Capay-Rincon Association. Soils in this association occur on nearly level to strongly sloping topography and are composed of moderately well drained and well drained clays and clay loams on valley fill. Within the project area, individual soil types consist of Sycamore silty clay loam, Zamora silty clay loam, and Delhi sands in the lower areas; and Capay clay, Los osos clay loam, and Diablo clay in the hilly areas. None of these soils are listed as hydric.

4.2 Plant Communities

Plant communities occurring within the study area include: non-native annual grassland, Coastal and Valley freshwater marsh, and ruderal seasonal wetland species.

Non-Native Annual Grassland

This type dominates the uplands and has been greatly influenced by a variety of past uses such as dryland farming, livestock grazing, almond orchards, off road vehicles, dumping, sand mining, and residential and commercial activities. Dominant grasses and forbs in this community consist of wild oats (*Avena fatua*), Italian ryegrass (*Lolium multiflorum*), ripgut brome (*Bromus diandrus*), common vetch (*Vicia sativa*), rose clover (*Trifolium hirtum*) soft chess (*Bromus hordeaceus*), hoary mustard (*Hirschfeldia incana*), chicory (*Cichorium intybus*) yellow star thistle (*Centaurea solstitialis*),

California poppy (*Eschscholzia californica* var. *californica*), and fiddleneck (*Amsinckia menziesii* var. *intermedia*). Tree cover is sporadic throughout this type with the exception of the invasive tree of heaven (*Ailanthus altissima*) that forms thick sapling stands in several areas. Scattered orchard remnants include almond (*Prunus dulcis*) California black walnut (*Juglans californica*), and Russian olive (*Elaeagnus angustifolius*). Others, such as iron bark eucalyptus (*Eucalyptus sideroxylon*), have been planted as windbreaks and landscape features near residential and commercial properties.

A smaller subset of this community exists along the sandy slope on the south side of Oakley Road, where other species such as deer weed/California broom (*Lotus scoparius*), and valley gumplant (*Grindelia camporum*) are predominant.

Coastal and Valley freshwater marsh

This community is the primary vegetative type within East Antioch Creek. Narrow-leaved cattail (*Typha angustifolia*) is the most abundant species, followed by peppergrass (*Lepidium latifolium*), Italian thistle (*Cynara cardunculus*), and water parsley (*Oenanthe sarmentosa*). Where ponded water occurs within the marsh, willows such as red willow (*Salix laevigata*) and arroyo willow (*Salix lasiolepis*) are found along the banks. The seasonally wet flood plain portion of the marsh is dominated by creeping wildrye (*Leymus triticoides*) and associated species such as Italian ryegrass, Mediterranean barley (*Hordeum marinum* var. *gussoneanum*), willow herb (*Epilobium brachycarpum*) and curly dock (*Rumex crispus*).

Ruderal seasonal wetland

A ruderal seasonal wetland complex occurs on the disturbed soils within the old sand pit in the northeastern corner of the project area that captures runoff from Oakley road and adjacent residences, as well as road drainage from Highway 160. Species occurring in this type include spiny cocklebur (*Xanthium spinosum*), foxtail (*Alopecurus aequalis*), curly dock, rabbit foot grass (*Polypogon monspeliensis*), narrow-leaf milkweed (*Asclepias fascicularis*), pappose tarweed (*Centromadia parryi* var. *parryi*), and Fremont cottonwood (*Populus fremontii*).

4.3 Wildlife Habitats

Non-Native Annual Grassland

This vegetative type provides habitat for a variety of common wildlife species. Typically, the grassland attracts reptiles, such as southern alligator lizard (*Gerrhonotus multicarinatus*) and western fence lizard (*Sceloporus occidentalis*). This habitat also attracts seed-eating and insect-eating birds. Birds that would nest and forage in the area include California quail (*Callipepla californica*), mourning dove (*Zenaidura*

macroura), meadowlark (*Sturnella neglecta*) loggerhead shrike (*Lanius ludovicianus*), white-crowned sparrow (*Zonotrichia leucophrys*), western scrub jay (*Aphelocoma coerulescens*), barn swallow (*Hirundo rustica*), northern mockingbird (*Mimus polyglottus*), western kingbird (*Tyrannus verticalis*), and ring-necked pheasant (*Phasianus colchicus*). Mammals such as California vole (*Microtus californicus*), deer mouse (*Peromyscus maniculatus*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*) and black-tailed jackrabbit (*Lepus californicus*) are also known to forage and nest within the grassland type. These small rodents in turn attract raptors (birds of prey) such as the great horned owl and red-tailed hawk to the site.

Coastal and Valley Freshwater Marsh

The freshwater marsh provides nesting sites for a variety of birds. For example, the marsh is a favorite nesting site for the red-winged blackbird (*Agelaius phoeniceus*), and mallard (*Anas platyrhynchos*), while the willow segments provide nesting sites for other birds such as the northern mockingbird and western scrub jay. Mammals inhabiting this type include raccoon (*Procyon lotor*), skunks (*Mephitis mephitis*) and opossum (*Didelphis virginiana*). Common amphibians using this habitat include the Pacific tree frog (*Hyla regilla*), and California toad (*Bufo boreas halophilus*).

Ruderal Seasonal wetlands

Shore birds forage around the edges of the ruderal seasonal wetlands. Of these, the killdeer (*Charadrius vociferous*) is the most common.

Ponds

Largemouth bass (*Micropterus salmoides*) have been introduced into the larger pond by a local resident (S. White, personal communication). Other species inhabiting the pond include mosquitofish (*Gambusia affinis*), Pacific tree frog, red swamp crayfish (*Procambrus clarkia*), northern river otter (*Lontra canadensis*) and a variety of common aquatic insects such as dragon flies (*Libellula* sp.) and blue darners (*Aeshna multicolor*). The riparian and upland system surrounding the pond provides larger nesting trees for raptors such as the red-tailed hawk, white-tailed kite (*Elanus leucurus*), and great horned owl. Willows and emergent vegetation provide fishing habitat for green heron (*Butorides virescens*), and great blue heron (*Ardea herodias*). Dense blackberry clumps provide cover for California quail.

The smaller pond is inhabited by Pacific tree frogs, red swamp crayfish and mosquitofish. Surrounding willow riparian provides cover for passerines (songbirds) raccoon, and California quail.

Structures

Structures such as an abandoned house and an old factory on site may provide roosting and reproduction habitat for several species of both common as well as special-status bats.

A list of wildlife species occurring on the project site is included as Appendix D.

4.4 Wildlife Movement Corridors

East Antioch Creek, with its fairly continuous marsh and willow habitat serves as a wildlife movement corridor throughout the site. Such corridors provide pathways for daily travel, and potential linkage between populations both upstream and downstream from the project area.

5.0 SPECIAL-STATUS BIOLOGICAL RESOURCES

5.1 Special-status Natural Communities

Special-status natural communities are those that are considered rare in the region, support special-status plant or wildlife species, or receive regulatory protection (i.e. §404 of the clean Water Act and/or the CDFG §1600, *et seq.* of the California Fish and Game Code). In addition, the CNDDDB has designated a number of communities as rare. These communities are given the highest inventory priority. Within the study area, the Coastal and Valley freshwater marsh is the only natural community. Marsh characteristics are further described in sections 4.2 and 4.3.

5.2 Special-status Plant Species

Special-status plants include those listed as endangered, threatened or candidates for listing by the U.S. Fish and Wildlife Service (USFWS 1996, 1998, 2003), the CDFG (2004), and the CNPS (2003). The CNPS listing is sanctioned by the CDFG and serves essentially as their list of "candidate" plant species.

The potential for occurrence of 29 special-status plant species was evaluated for this project. Due to the level of disturbance and lack of suitable habitat only 5 species were considered to have the potential to occur. These plants were the San Joaquin saltbush (*Atriplex joaquiniana*), round-leaved filaree (*Erodium macrophyllum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), Contra Costa goldfields (*Lasthenia conjugens*), and Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*). Their blooming periods are shown in Table 1.

Table 1 – Special-Status Plants with Potential to Occur

PLANT NAME	SURVEY PERIOD
Antioch Dunes evening primrose <i>Oenothera deltoides</i> ssp. <i>howellii</i>	Mar - September
Contra Costa goldfields <i>Lasthenia conjugens</i>	March - June
diamond-petaled California poppy <i>Eschscholzia rhombipetala</i>	March - April
round-leaved filaree <i>Erodium macrophyllum</i>	March - June
San Joaquin spearscale <i>Atriplex joaquiniana</i>	April - September

Focused surveys were conducted for these plants during their respective flowering periods from March through June with negative findings. Therefore, these species were also considered not to occur (Appendix A – *Potentially-Occurring Special-Status Plants*). A list of all plants on the project area is included as Appendix C.

5.3 Special-status Animal Species

Special-status animals include those listed as endangered, threatened, or candidates for listing by the USFWS and/or CDFG. Other species regarded as having special-status include special animals, as listed by the CDFG (2004 c). Additional animal species receive protection under the Bald Eagle Protection Act and the Migratory Bird Treaty Act (16 U.S.C. 703-711). The California Fish and Game Code provides protection for “fully protected birds” (§3511), “fully protected mammals” (§ 4700), “fully protected reptiles and amphibians” (§ 5050), and fully protected fish” (§ 5515).

Based on the California Natural Diversity Database (CNDDDB 2005), a total of 47 special-status animals were evaluated as part of this analysis. Richard Arnold, Ph.D. Entomologist evaluated the site for the potential for 23 species of insects and invertebrates including several federally listed species occurring on the nearby USFWS Antioch Dunes Wildlife Refuge, and other regional habitats but found none of these to be present due to the degraded nature of the site and lack of suitable host plants (Attachment 3 – *Insect and Invertebrate Habitat Assessment*).

In addition, protocol site assessments were conducted to determine the potential for occurrence of federally listed and State special concern wildlife including the federally listed threatened California tiger salamander (*Ambystoma californiense*), and California red-legged frog (*Rana aurora draytonii*), and State special concern burrowing owl (*Athene cucularia*) with negative findings. These results are shown in Appendix B – *Potentially-Occurring Special-Status Wildlife*, and further discussed below.

California Tiger Salamander

The California tiger salamander (CTS) inhabits grasslands and oak savanna habitats in the valley and low hills of central and northern California and has been recorded from all nine bay area counties. CTS require vernal pools, ponds (natural or man-made), or semi permanent calm waters (where ponded water is present for a minimum of three to four months) for breeding and larval habitat and adjacent upland areas that contain small mammal burrows or other suitable refugia for aestivation. CTS have been recorded to travel up to 1.24 miles between these habitats (CDFG 2003).

CDFG interim site assessment guidance for determining presence or a negative finding of the species (CDFG 2003) requires a three element process:

- Element 1: Determine if the project site is within the range of the CTS
- Element 2: Determine if there are known sightings in the general region of the project within 3.1 (5.0 km) of the project site.
- Element 3: Describe the habitats and map sightings within 1.24 miles (2 km) of the project boundaries.

Results and conclusions from the assessment are then furnished to the USFWS who will decide if focused surveys are required to make the determination of presence or absence. Focused surveys consist of two years of aquatic larval sampling during the breeding season, or one aquatic and one pitfall winter survey within the same year.

Locations

As the project site is within CTS range, CNDBB records for "Antioch North, Antioch South, Brentwood, and Jersey Island, California" quadrangles were analyzed to determine the occurrence of previous records within 3.1 miles and 1.24-miles of the project boundary. Only one record was found to occur within 1.24-miles of the site. This was CNDBB occurrence # 535 located approximately 1.0- mile west of the project boundary. However, this site is labeled "extirpated" by the recorder Mark Jennings, Ph.D. Four records are located within 3.1-miles south of the site. These are CTS #101 (2½-miles), CTS # 479 (2½-miles), CTS # 301 (3.1-miles), and CTS # 100 (3.1-miles). (Figure 2).

Habitats within and adjacent to the project area.

Two shallow ponds exist within the project area that could provide potential breeding habitat for CTS. The larger, approximately 0.3-acre, 2-3-foot deep pond is a permanent water located within East Antioch Creek just east of Willow Ave. The other is a smaller approximately 0.02-acre, 1-foot deep permanent pond located within the un-named tributary just upstream from the railroad crossing. The larger pond was partially seined

with a cast seine during the breeding season. No amphibians were found. Although the smaller pond was not seined, numerous tree frog (*Hyla regilla*) larvae were visible.

Non-native predators

Largemouth bass (*Micropterus salmoides*) have been introduced into the larger pond in small numbers by a local resident. Other predatory species inhabiting the pond include mosquitofish (*Gambusia affinis*) and red swamp crayfish (*Procambrus clarkia*). The crayfish also occur in the smaller pond as well as throughout the creek system.

Upland habitat

The non-native annual grassland uplands could potentially provide aestivation habitat for CTS where California ground squirrel and Botta's pocket gopher habitat occurs. However, both of these species occur only sporadically.

Barriers to colonization

Highways 4 and 160 would present a formidable barrier to migration onto the site from the south and east. A similar situation exists on the eastern and western sides of the project area where residential neighborhoods would also tend to block access to the site.

Conclusions

Due to the only nearby sighting being extirpated, the presence of non-native predators in potential breeding waters, and the blocking nature of overland colonization due to highways and residential development, RCL Ecology concludes that the species is unlikely to be present.

California red-legged frog

The California red-legged frog (CRF) inhabits lakes, ponds, and seasonal pools and upland areas in coastal and foothill riparian settings from the central coast to northern California, and occurs in all Bay area counties. CRF require ponds that remain for at least at least 3½ months to complete transformation from larval to juvenile stage. Older CRF may take shelter in small mammal burrows and other refugia on the banks up to several dozen meters from water any time of year and can also be found in ephemeral situations in seeps and springs in upland grassland areas. Juveniles however often disperse during the first rains of winter traveling up drainages and have been recorded to travel from 0.6 miles to over 2 miles from the nearest pond over the course of a wet season (USFWS 2001).

USFWS guidance for determining presence or negative finding of the species (USFWS 1997) requires a site assessment, and if required, focused field surveys.

Site assessment is a three-step process:

1. Determine if the project is in CRF range.
2. Map the known locations of CRF within five miles of the project site.
3. Map and describe the upland and aquatic sites within the project site and within one mile of the site.

Assessment report

An assessment report, including maps, photographs, and survey details is then sent to the USFWS for evaluation. The USFWS will then analyze the information and decide whether focused surveys are required.

Focused surveys

Surveys follow the following protocols:

1. Surveys should be conducted between May 1 and November 1 to avoid the breeding season.
2. All aquatic habitat identified during the site assessment should be surveyed four times. Twice during the day and twice at night.
3. Day-surveys should be conducted on clear, sunny days using binoculars. Night "eyeshine" surveys should be conducted on warm, still nights between one hour after sunset and 12 midnight using flashlights or head lamps to identify all amphibians seen.

Locations

CNDDDB records for "Antioch North, Antioch South, Brentwood, and Jersey Island, California" quadrangles were analyzed to map locations within five miles and 1.0 miles of the project boundary. No locations occur within one-mile of the site. Five sites occur within five miles south/southwest of the project site. These are CRF # 531 (3½-miles), CRF # 612 (3.9-miles), CRF # 32 (4.0-miles), CRF # 252 (4.1-miles), and CRF # 193 (4½-miles) (Figure 2).

Habitats within and adjacent to the project area

The two ponds on site could provide breeding habitat for CRF if present. However, no larvae were found during sampling at the larger pond, and only tree frog larvae were seen in the smaller pond.

Non-native predators

The largemouth bass and mosquito fish in the larger pond are both predatory on CRF, with the bass preying on juveniles and adults and the mosquito fish on the larvae.

Upland habitat

Willows surrounding the ponds would provide cover and foraging opportunity for CRF and the adjacent uplands could provide a limited amount of rodent burrows for aestivation.

Barriers to colonization

Highways 4 and 160 would prevent migration onto the site from the south and east, and no sightings have been recorded from the north and west.

Conclusions

Due to the lack of sightings north of the highways, the presence of non-native predators in potential breeding waters, and the blocking nature of both highway and surrounding residential development, RCL Ecology concludes that the species is unlikely to be present.

Burrowing Owl

Foraging and breeding habitat for the burrowing owl includes native and non-native grasslands and agricultural areas. Three habitat conditions are characteristic – lack of canopy cover, short vegetation, and burrow availability. Vegetation height has been defined as a limiting factor in occupancy. Burrowing owls utilize raised elevations that facilitate hunting of small rodents, birds, lizards and insects, with their main prey being the Jerusalem cricket (*Stenopelmatus fuscus*).

Burrowing owl survey protocols

USFWS guidance for determining presence or negative finding of the species requires a four phase approach. (California Burrowing Owl Consortium. 1993)

Phase I

Perform pedestrian surveys of the entire site and a 150-meter (approximately 500 feet) area adjacent to the site to determine if burrows and signs of owls are present.

Phase II

If burrows and signs of owls are present, map all burrows within the site.

Phase III

Conduct protocol nesting season surveys to determine presence. Conduct site visits on four separate days during the peak of the nesting season April 15 through July 15. Using binoculars, observe burrow sites from higher vantage points to determine activity. Conduct visits from two hours before sunset to one hour after or from one hour before to two hours after sunrise.

Phase IV

Prepare report for submission to the CDFG.

Survey Results - 2004

A general assessment of habitat suitability of the project area was conducted during August 2004. From this general reconnaissance, analysis of soil types, and search of previous sighting records (Figure 2), the Delhi sands soil type in the northeastern portion of the project was selected for pedestrian surveys. One burrow was mapped on the Oakley Road bluff above the large seasonal wetland during this survey. Old cast pellets were found near the mouth of the burrow, but no owls were seen (Figure 3)

Survey Results -2005 surveys

Pedestrian surveys were made throughout the above area in April 2005. Two additional burrows were mapped (Figure 3). One along the Oakley Road bluff west of the first site, and the other on a mounded area on the southern side of the old sand pit. As, with the first burrow, old castings were seen, but no fresh sign of owl use was observed. Four protocol surveys were made during the period of April through June to observe these sites with binoculars to detect activity. None was seen.

Non-native annual grassland vegetation in this area is higher than desired for optimal burrowing owl habitat and burrowing rodents are scarce. Due to the longer wet season in 2005, vegetation averaged 1-1½ feet tall, considerably above the approximate six-inch height preferred by the species.

Conclusions

RCL Ecology concludes that while burrowing owls occupied the site in limited numbers previously, they are not using the site currently. However, as owls could move back onto the site in the future, a preconstruction survey should be conducted 30-days in advance of construction.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Special-status Natural Communities

Coastal and Valley freshwater marsh is the only natural community. This type, as well as all other hydrologic features, were mapped as part of the preliminary wetland delineation and jurisdictional determination (Attachment 2). Any project impacts to jurisdictional waters will be mitigated at ratios required by the agency permit conditions.

6.2 Special-status Plant Species

Of the 29 special-status plant species analyzed, focused surveys were conducted for those with potential to occur. Due to negative findings, these as well as the other 24 species are considered unlikely to occur.

6.3 Special-status Animal Species

Focused protocol surveys were conducted for the federally-listed Threatened California tiger salamander and California red-legged frog, as well as the State special concern burrowing owl. Due to negative survey results, all three of these species were considered unlikely to occur. However, as burrowing owls can move onto a site after initial surveys, preconstruction surveys for this species are warranted. Roosting or material colonies of special-status bat species, although not observed during the field surveys, may occur and warrant preconstruction surveys of buildings prior to removal. Other special-status birds protected under the federal Migratory Bird Treaty Act and/or the California Fish and Game Code such as protected raptors, occur on site, and warrant preconstruction surveys if construction is planned during the nesting season. As East Antioch Creek serves as a wildlife movement corridor, lighting of facilities and parking areas could impact movement if the lighting faces the creek. Therefore, all such lighting should face away from the creek to avoid this potential impact.

The above potential impacts would be reduced to *less-than-significant* with implementation of the following mitigation measures:

Mitigation measure 1 – Burrowing Owl

A qualified biologist shall conduct a presence/absence survey for burrowing owls 30-days in advance of construction if construction is planned to occur within the breeding season (February 1-August 31). The survey will utilize the protocol methods outlined in the *Burrowing Owl Survey Protocol and Mitigation Guidelines*, California Burrowing Owl Consortium, 1993. Should construction be delayed beyond 30 days from the previous survey, another survey will be conducted to make sure that burrowing owls have not moved onto the site.

Mitigation measure 2 – Special-status Bats

A qualified biologist shall survey buildings for bat activity 45 days in advance of demolition. If no activity is observed, demolition can proceed. If roosting activity is observed, humane eviction can be carried out by a biologist holding an MOU with the CDFG. If there is an active bat nursery present, building demolition shall not occur between September and February in order to avoid interfering with nursery activity.

Mitigation measure 3 – Nesting Raptors

If construction is planned to occur during the nesting season (March 1 – September 1); a qualified biologist shall conduct a preconstruction nesting survey 30-days in advance of construction. If nesting is occurring the nest tree will be protected by a suitable buffer dependent on line-of-sight distance from the nest tree to construction disturbance as determined by the biologist. The buffer will remain until the end of the nesting season or until the young have fledged as determined by the biologist.

Mitigation measure 4 – Riparian Corridor Lighting

Any lighting of facilities and parking areas adjacent to the East Antioch Creek riparian corridor shall face away from the creek in order to avoid interference with wildlife movement through the area.

6.4 Tree removal and protection

City of Antioch

The City of Antioch tree ordinance requires approval for the removal of any indigenous “established, “mature”, or “landmark tree”. Trees to be removed or protected will be shown on a site map that includes a description including species, size, general health, and reason for removal. Approval of tree removal and replacement size will be considered during project approval. A bond is required to ensure compliance with replacement and protection conditions specified in the approval document.

Indigenous trees are defined as those species shown in Table 2.

Table 2 – Indigenous Trees

Scientific Name	Common Name
<i>Quercus douglasii</i>	Blue oak
<i>Quercus lobata</i>	Valley oak
<i>Quercus agrifolia</i>	Coast live oak
<i>Quercus chrysolepis</i>	Canyon live oak
<i>Quercus wislizenii</i>	Interior live oak
<i>Aesculus californica</i>	California buckeye
<i>Umbellularia californica</i>	California bay

Definitions:

Established tree: Any tree which is at least 10-inches in diameter, as measured four and one half feet above natural or finished grade.

Mature tree: Any tree that is at least 26-inches in diameter, as measured four and one-half feet above natural grade.

Landmark tree: This shall be any tree which is at least 48 inches in diameter and/or in excess of 40 feet in height.

Protected tree: This shall be defined as any of the following:

Any tree required to be preserved as a condition of an approval from a “regular development application” and/or any tree that is shown to be preserved on an approved development plan as submitted by the applicant and subsequently approved by the city.

All established indigenous trees as defined by this section.

All street trees as defined by this section

All mature and landmark trees as defined by this section.

Table 2 lists the tree species occurring on the project site. None of which are indigenous species.

Table 2 – Trees Occurring on the Project Site

Scientific Name	Common Name
<i>Ailanthus altissima</i>	Tree of heaven
<i>Elaeagnus angustifolius</i>	Russian olive
<i>Eucalyptus sideroxylon</i>	Iron bark eucalyptus
<i>Juglans californica</i> var. <i>hindsii</i>	Northern California black walnut
<i>Populus fremontii</i>	Fremont's cottonwood
<i>Prunus dulcis</i>	Almond
<i>Robinea pseudoacacia</i>	Black locust
<i>Salix laevigata</i>	Red willow
<i>Salix lasiolepis</i>	Arroyo willow
<i>Schinus molle</i>	Peruvian peppertree
<i>Tamarix parviflora</i>	Tamarisk
<i>Washingtonia filifera</i>	California fan palm

California Department of Fish and Game

The CDFG requires replacement of all native trees removed at a 3:1 mitigation to impact ratio.

Mitigation measure # 5

A tree removal application will be submitted to the City at the time of the regular development application that will include an inventory of all indigenous trees proposed for removal as well as those proposed to be saved. This information will be placed on a site plan and include a description of each tree including the size (in diameter), estimated height, species, and relative condition (i.e., healthy vs. in decline). Trees removed will be replaced with indigenous species per City ordinance. Ratios for replacement will be in keeping with City and CDFG requirements.

A bond will be required to ensure that avoided trees are protected and replaced if necessary. The amount of the bond will vary with the tree size class in accordance with the City ordinance.

7.0 AGENCY PERMITTING

The project will require permits from the U.S. Army Corps of Engineers (USACE), The Regional Water Quality Control Board (RWQCB) and the California Department of Fish and Game (CDFG).

U.S. Army Corps of Engineers

The USACE regulates fill of waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. "Waters" include features such as creeks, ditches, channels, ponds, marshes, certain riparian woodlands, and seasonally flooded areas. Marshes, riparian woodlands, and seasonally flooded areas are also known as wetlands. The USACE generally uses two types of processes for issuing 404 permits dependent on the amount of fill proposed. These are the Individual Permit and the Nationwide Permit.

Individual Permit

Generally, discharge resulting in the fill of one-half acre or more of waters or wetlands requires a standard Individual Permit from the USACE. As this project will likely require fill exceeding the one-half area limit, the Individual permit will be the appropriate permit vehicle. This type of permit requires the submission of a comprehensive project application and compliance with the USACE multi agency review process. Individual Permit applications require considerably more analyses than the Nationwide process including an analysis of cumulative impacts as well as a thorough analysis of project alternatives and alternative project sites. They also require review by the Environmental Protection Agency (EPA) and a formal public notification and comment process. The granting of an Individual Permit is a discretionary action and the processing time largely depends upon the level of impact of the project. When listed species may be present in the project area, the review and negotiation process may take up to six months or more due to the requirement for the USACE to consult with the U.S. Fish and Wildlife Service (USFWS) and render a Biological Opinion regarding species impacts and avoidance measures required.

Regardless of the permit required, careful project design and efforts to avoid and minimize impacts to special-status species and resources often streamline the permitting process and significantly improve the likelihood of rapid project approval. The USACE requires the proponent to demonstrate how avoidance and mitigation measures were used to reduce biological impacts during project planning.

California Department of Fish and Game

The CDFG exercises jurisdiction over wetland and riparian resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1607. The CDFG has the authority to regulate work that will substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed. California Department of Fish and Game's jurisdictional area along a river, stream or creek is usually bounded by the top-of-bank or the outermost edges of riparian vegetation. Typical activities regulated by CDFG under Sections 1600-1607 authority include installing outfalls, stabilizing banks, implementing flood control projects, constructing river and stream crossings, diverting water, and damming or realigning streams.

Prior to undertaking any activity that will impact any of the above biological resources, a *Lake or Streambed Alteration Agreement* must be obtained from CDFG. An application for a Streambed Alteration Permit usually requires a complete project description, a biological assessment of the project site, analyses of direct, indirect and cumulative impacts, a technically-defensible biological mitigation and monitoring plan, a documented history of project alternatives and efforts to avoid and minimize impacts, a relevant California Environmental Quality Act (CEQA) document, and a Notice of Determination that demonstrates the project has complied with CEQA. The CDFG has authority to reopen CEQA if impacts to resources over which it has jurisdiction have not been adequately addressed.

The CDFG Code also requires protection of nesting raptors (birds of prey) and requires pre-construction raptor nesting surveys to avoid impacts to active nests.

The application fee for a Streambed Alteration Permit is \$154 for portions of the project within the creek channel valued at less than \$25,000, \$772.75 for creek-related project components valued at \$25,000-500,000 and \$1,390.50 for creek-related project components valued at over \$500,000. Fees for extensions to an existing Permit are \$127.25, and fees for amendments to existing Permits are 50 percent of the original fee. A charge of \$800 is required for CDFG review of the CEQA document.

When reviewing applications, CDFG focuses on avoidance and minimization of impacts to biological resources. Resources of greatest concern include riparian areas and wildlife such as nesting birds, state- or federally-listed Endangered or Threatened species. Careful project design, including the minimization of impacts and reduction of hard structure surface area (*i.e.*, minimal amounts of rip-rap), is critical for CDFG approval. The California Department of Fish and Game emphasizes the use of biotechnical or bioengineered creek-related components that minimize the need for hard structures (*i.e.*, cement or rip-rap) in creeks. These applications often utilize vegetation, minimal use of rock, and various soil treatments (*i.e.*, geogrids and erosion control mats) to achieve the desired stabilization. In addition, revegetation plans, pre-construction wildlife surveys, and/or construction monitoring are often required by CDFG as conditions of the final Lake or Streambed Alteration Agreement

Projects resulting in unavoidable impacts to biological resources require measures to minimize adverse environmental effects. These often include replacement of removed trees and mitigation for impacts to wetlands and/or waters. For non-water-dependent projects located near creeks, the CDFG also typically requires the establishment of a buffer zone immediately adjacent to creeks and wetlands. Depending upon the specific project components and the presence of state- or federally-listed species, the buffer zone may be as little as 50 feet or as much as 100 or more, dependent on the resource to be protected.

Regional Water Quality Control Board

Pursuant to Section 401 of the Clean Water Act and EPA 404(b)(1) Guidelines, an applicant for a federal permit to conduct any activity which may result in discharge into navigable waters must obtain a water quality certification from the Regional Water Quality Control Board (RWQCB) that such discharge will comply with the state water quality standards (Cal. Code Regs. tit. 23, §§3830 *et seq.*). The RWQCB has a policy of no-net-loss of wetlands in effect and typically requires a 2:1 compensation to impact ratio. The RWQCB also requires an initial \$500 application review fee, plus an additional sum commensurate with the size of the project. A copy of the approved CEQA document and its Notice of Determination must also accompany the application.

When reviewing applications, the RWQCB focuses on ensuring that project discharge does not adversely affect the downstream "beneficial uses" associated with waters of the state. Generally, the RWQCB defines beneficial uses to include all of the resources, services and qualities of aquatic ecosystems and underground aquifers that benefit the state of California. Numerous beneficial uses have been identified, including agricultural supply, wildlife habitat, recreation, groundwater recharge, and municipal and domestic water supply. Two major requirements of the RWQCB are that (1) Project discharge cannot exceed pre-project flows; (2) Discharge from the project site is to be treated to filter sediment and other pollutants before entering off-site waters. In Contra Costa County this requirement has been refined to require that 85% of the water leaving the site must be treated. Treatment is applied by incorporating Best Management Practices (BMPs) into the project design. These measures include detention ponds, grassy swales, sand filters, modified roof drains, artificial filters, and vegetated buffers between development and water features. Proper integration of these and other features into project design will greatly decrease the necessary negotiation with RWQCB and speed the project approval process. Water quality certification from the Central Valley RWQCB usually takes about 60 days.

U.S. Fish and Wildlife Service

The Federal Endangered Species Act (FESA) requires that actions authorized, funded or carried out by federal agencies do not jeopardize the continued existence of federally listed species or adversely modify designated Critical Habitat for such species. If a federal agency determines that a proposed federal action (*i.e.*, issuance of a Clean Water Act Section 404 permit for wetland fill) "may affect" a listed species and/or designated Critical Habitat, the agency must consult with the USFWS in accordance with Section 7 of the FESA. The USFWS requires that the applicant furnish a Biological Assessment of the impacts and proposed mitigation in order for them to start the consultation process. This document, as well as a complete copy of the application is provided to the USACE for forwarding to the USFWS. The USFWS has 135 days in which to render their 'Biological Opinion' regarding project affects on the listed species. The Biological Opinion evaluates the potential impacts and proposed mitigation to determine if the action will "Jeopardize the Continued Existence of the Species". If the USFWS believes that there is "Jeopardy" they often present conditions that become integrated into the USACE's permit to avoid "Jeopardy". If no such conditions are known, the USFWS will issue a "Jeopardy" Opinion. The USACE cannot grant the 404 permit for the development if a "Jeopardy" Opinion has been issued. At that point, the applicant would need to further modify project plans to further avoid impacts and reenter consultation to see if these changes would eliminate the "Jeopardy".

8.0 REFERENCES

Sources of reference data reviewed for this report included the following:

- Color aerial photos with project alternatives. (1"= 200' scale), Cartwright Aerial Surveys Inc. March and April 2005;
- *Jersey Island, Antioch North, Antioch South and Brentwood, California* 7.5-minute topographic quadrangles. U.S Department of the Interior, Geological Survey.
- California Natural Diversity Database, *Rarefind 2* computer program. Jersey Island, Antioch North, Antioch South, and Brentwood, California quadrangles. California Department of Fish and Game. 2005;
- *Endangered, Threatened, Proposed, and Candidate Species that may occur in the Jersey Island, Antioch Nort, Antioch South, and Brentwood quadrangles*. U.S. Fish and Wildlife Service, Sacramento Field Office. April 2005;
- *Burrowing Owl Survey Protocol and Mitigation Guidelines*. The California Burrowing Owl Consortium. April 1993;

- *Guidance on Site Assessment and Field Surveys for California Red-Legged Frogs.* U.S. Fish and Wildlife Service. February 18, 1997;
- *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander.* California Department of Fish and Game. October 2003.
- *N.E. Antioch Study Area, Constraints Analysis.* RCL Ecology. August 2004.

9.0 APPENDIX

Figures:

- | | |
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| Figure 1 | Project Location |
| Figure 2 | CRF, CTS, and BO Observations in Relation to the Project Area |
| Figure 3 | Previous Burrowing Owl Locations within the Project Area |

Appendices:

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| Appendix B | Potentially Occurring Special-Status Animals |
| Appendix C | Plants Occurring on the Project Site |
| Appendix D | Animals Occurring on the Project Site |

Attachments:

- | | |
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| Attachment 1 | Drainage Analysis |
| Attachment 2 | Preliminary Wetland Delineation and Jurisdictional Determination |
| Attachment 3 | Insect and Invertebrate Site Assessment |

APPENDIX A

Potentially Occurring Special-Status Plants

APPENDIX A

SPECIAL-STATUS PLANTS POTENTIAL FOR OCCURRENCE AT THE COUNTY CROSSINGS PROJECT SITE

Family Scientific Name Common Name	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Blooming Period/ Life Form	Habitat Present/Absent
Apiaceae <i>Lilaeopsis masonii</i> Mason's lilaeopsis	Federal SC State CR CNPS 1B:2-2-3	Intertidal brackish and freshwater marshes along stream banks. Recorded in the San Joaquin and Sacramento River Delta and lower Napa River channel.	April-Oct Perennial herb	Absent
Asteraceae <i>Aster lentus</i> Suisun Marsh aster	Federal SC State CEQA CNPS 1B:2-2-3	Freshwater and brackish marshes. Known from the Napa River and San Joaquin/Sacramento River Delta.	May-Nov Perennial herb	Absent
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> big-scale balsamroot	Federal none State CEQA CNPS 1B:2-2-3	Cismontane woodland, Valley/foothill grassland, sometimes on serpentine. Occurs from the Bay Area to the northern Sacramento Valley and Sierra foothills.	March-June Perennial herb	Absent. Would have been detectable
<i>Blepharizonia plumosa</i> ssp. <i>plumosa</i> big tarplant	Federal none State CEQA CNPS 1B:3-3-3	Valley/foothill grasslands, on dry sites. Extant in Alameda and Contra Costa counties. Believed extirpated in San Joaquin, Stanislaus and Solano counties.	July-Oct Annual herb	Absent, would have been detectable
<i>Helianthella castanea</i> Diablo helianthella	Federal SC State CEQA CNPS 1B:3-2-3	Broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and Valley/foothill grassland. Occurs in Alameda, Contra Costa and San Mateo counties; presumed extirpated in Marin and San Francisco counties.	April-June Perennial herb	Absent

<i>Isocoma arguta</i> Carquinez goldenbush	Federal State CNPS SC CEQA IB:3-3-3	Valley/foothill grasslands, on alkaline sites. Restricted to Contra Costa and Solano counties in the vicinity of the Carquinez Straits.	Aug-Dec Perennial shrub	Absent
<i>Lasthenia conjugens</i> Contra Costa goldfields	Federal State CNPS FE CEQA IB:3-3-3	Mesic sites in Valley/foothill grassland, vernal pools. Restricted to Napa and Solano counties; presumed extirpated in Alameda, Contra Costa, Mendocino, Santa Barbara and Santa Clara counties.	Mar-June Annual herb	Absent, would have been detectable
<i>Madia radiata</i> showy madia	Federal State CNPS none CEQA IB:2-3-3	Valley/foothill grasslands below 250 feet, and cismontane woodland. Occurs throughout the Central Coast and Central Valley. Presumed extirpated in Contra Costa County.	March-May Annual herb	Absent, would have been detectable
<i>Senecio aphanactis</i> rayless ragwort	Federal State CNPS none CEQA 2:3-2-1	Coastal scrub and cismontane woodland on alkaline soils. Known from the South Coast, Central Coast, Central Valley and San Francisco Bay.	Jan-April Annual herb	Absent, would have been detectable
Boraginaceae <i>Amsinckia grandiflora</i> large-flowered fiddleneck	Federal State CNPS FE CE IB:3-3-3	Cismontane woodland, Valley/foothill grassland. Known from only three natural occurrences in Alameda, Contra Costa and San Joaquin counties.	April-May Annual herb	Absent, would have been detectable
<i>Plagiobothrys hystericulus</i> bearded popcorn-flower	Federal State CNPS none CEQA IA	Vernal pools and mesic Valley/foothill grassland. Presumed extinct. Endemic to Solano County.	April-May Annual herb	Absent, would have been detectable
Brassicaceae <i>Erysimum capitatum</i> ssp. <i>angustatum</i> Contra Costa wallflower	Federal State CNPS FE CE IB:3-3-3	Stabilized interior dunes. Known from only two occurrences on the dunes east of Antioch, along the San Joaquin River.	Mar-July Perennial herb	Absent. Would have been detectable
<i>Tropidocarpum capparideum</i> caper-fruited tropidocarpum	Federal State CNPS SC CEQA IA	Valley/foothill grasslands (alkaline hills). Known historically from Alameda, Contra Costa, Glenn, Monterey, Santa Clara and San Joaquin counties; presumed extinct. Last seen in 1957.	Mar-April Annual herb	Absent
Campanulaceae <i>Downingia pusilla</i> dwarf downingia	Federal State CNPS none CEQA 2:1-2-1	Mesic sites in Valley/foothill grassland and vernal pools. Occurs from Sonoma and Napa counties through the Sacramento Valley and Sierra foothills.	Mar-May Annual herb	Absent

Chenopodiaceae <i>Atriplex joaquiniana</i> San Joaquin sparsescale	Federal SC State CEQA CNPS 1B:2-2-3	Chenopod scrub, Valley/foothill grassland and alkali meadows. Occurs from Solano County throughout the Sacramento and San Joaquin valleys. Presumed extirpated in Santa Clara, San Joaquin and Tulare counties.	April-Sept. Annual herb	Absent, would have been detectable
Ericaceae <i>Arctostaphylos auriculata</i> Mt. Diablo manzanita	Federal none State CEQA CNPS 1B:3-1-3	Chaparral, in canyons and on slopes, on sandstone. Known only from Mt. Diablo area in Contra Costa County.	Jan-March Evergreen shrub	Absent
Fabaceae <i>Lathyrus jepsonii</i> var. <i>jepsonii</i> Delta tulle pea	Federal SC State CEQA CNPS 1B:2-2-3	Freshwater and brackish marshes. Occurs throughout the Sacramento San Joaquin River delta, San Francisco Bay and Central Valley.	May-Sept Perennial herb	Absent
Geranaceae <i>Erodium macrophyllum</i> Round-leaved filaree	Federal none State none CNPS 2	Cismontane woodland; valley and foothill grassland	Mar-June Annual herb	Absent, would have been detectable
Lamiaceae <i>Scutellaria lateriflora</i> blue skullcap	Federal none State CEQA CNPS 2:3-2-1	Mesic meadows, marshes and swamps. Reported from Inyo and San Joaquin counties, to New Mexico and Oregon. Known from only two occurrences in California.	July-Sept perennial herb (rhizomatous)	Absent
Liliaceae <i>Calochortus pulchellus</i> Mt. Diablo fairy-lantern	Federal none State CEQA CNPS 1B:2-2-3	Chaparral, cismontane woodland, Valley/foothill grassland. Known from Contra Costa and possibly Solano counties.	April-June Perennial herb (bulbiferous)	Absent
<i>Fritillaria liliacea</i> fragrant fritillary	Federal SC State CEQA CNPS 1B:1-2-3	Coastal prairie, coastal scrub, Valley/foothill grassland near the coast, on clay or serpentine. Known from throughout the Central Coast from Sonoma to Monterey counties and the San Francisco Bay Area.	Feb-April Perennial herb (bulbiferous)	Absent
Linaceae <i>Hesperolinon breweri</i> Brewer's western flax	Federal SC State CEQA CNPS 1B:2-2-3	Chaparral, cismontane woodlands, Valley/foothill grassland, mostly on serpentine. Found in Napa, Solano, and Contra Costa counties.	May-July Annual herb	Absent
Malvaceae				

<i>Iibiscus lasiocarpus</i> rose-mallow	Federal State CNPS Federal State CNPS	none CEQA 2:2-2-1 FE CE 1B:3-3-3	Freshwater marshes. Restricted to the Sacramento-San Joaquin River Delta.	June-Sept Perennial herb (rhizomatous) Mar-Sept Perennial herb	Absent Absent, would have been detectable
<i>Oenothera deltooides</i> ssp <i>howellii</i> Antioch Dunes evening-primrose	Federal State CNPS	SC CEQA 1A	Valley/foothill grassland on clay soils. Presumed extinct. Known historically from Alameda, Contra Costa, Colusa, San Luis Obispo and Stanislaus counties. Last seen in 1950.	Mar-April Annual herb	Absent, would have been detectable
Papaveraceae <i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	Federal State CNPS	none CEQA 1A	Chaparral, coastal scrub, Valley/foothill grassland on sandy soils. Presumed extinct. Known historically from Alameda, Contra Costa and Solano counties. Last seen in 1940.	April-Sept Annual herb	Absent
Potamogetonaceae <i>Potamogeton zosteriformis</i> eel-grass pondweed	Federal State CNPS	none CEQA 2:2-2-1	Assorted freshwater marshes and swamps. Known from Contra Costa, Lake counties, Modoc, Lassen, and Shasta counties and Washington and Oregon.	June-July Annual herb (aquatic)	Absent, would have been detectable
Scrophulariaceae <i>Cordylanthus mollis</i> ssp. <i>mollis</i> soft bird's-beak	Federal State CNPS	FE CR 1B:3-2-3	Coastal saltmarsh. Known from fewer than 10 locations in Contra Costa, Napa, and Solano counties. Extirpated in Marin and Sonoma counties.	July-Sept Annual herb (hemiparasite)	Absent
<i>Limosella subulata</i> Delta mudwort	Federal State CNPS	none CEQA 2:2-3-1	Marshes and swamps, muddy or sandy intertidal flats in the Sacramento and San Joaquin river deltas.	May-Aug Perennial herb (stoloniferous)	Absent

¹ Explanation of sensitivity status codes provided in Appendix B.

APPENDIX B

Potentially Occurring Special-Status Animals

APPENDIX B

POTENTIALLY-OCCURRING SPECIAL-STATUS ANIMAL SPECIES AT THE COUNTY CROSSINGS PROJECT SITE

Scientific Name Common Name Amphibians	Status ¹	Habitat Affinities and Reported Localities in the Project Area	Potential for Occurrence On Site
<i>Ambystoma californiense</i> California tiger salamander	Federal FC State CSC	Breeds in temporary or semi-permanent pools. Seeks cover in rodent burrows in grasslands and oak woodlands. Inhabits the Coast Ranges from Santa Barbara to Sonoma counties along the coast and inland to Colusa, Yolo and Tulare counties.	Unlikely, due to predators and Highway barriers to colonization.
<i>Rana aurora draytonii</i> California red-legged frog	Federal FT State CSC	Prefers semi-permanent and permanent stream pools, ponds and creeks with emergent and/or riparian vegetation. Occupies upland areas especially during the wet winter months.	Unlikely, due to predators and Highway barriers to colonization.
Reptiles <i>Anniella pulchra pulchra</i> silvery legless lizard	Federal none State CSC	Inhabits sparsely vegetated areas on beaches and in chaparral, oak woodlands and riparian. Needs loose soils for burrowing (sand, loam or humus), moisture, warmth and plant cover. Burrows in washes, dune sand and loose soils at the base of slopes or in intermittent streams. Forages in leaf litter during the day, but may emerge on the surface at dusk or night.	Unlikely, no suitable habitat and previous records are all north of the site in dune-type habitat
<i>Clemmys marmorata marmorata</i> north western pond turtle	Federal none State CSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes and irrigation ditches with basking sites and a vegetated shoreline. Requires sandy soils for egg-laying. Occurs from the Oregon border to the San Francisco Bay, inland throughout the Sacramento Valley and south along the coastal zone to San Diego County.	Unlikely, not detected during pond surveys.
<i>Masticophis flagellum ruddocki</i> San Joaquin whipsnake	Federal none State CSC	Inhabits a variety of habitats, with sparse vegetation. Uses rodent burrows, rocks or bushes for refugia.	Unlikely, no suitable habitat
<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	Federal FT State ST	Restricted to chaparral and coastal scrub of the Coast Ranges, inhabits appropriate habitat on south, southwest- and southeast-facing slopes and ravines where the shrubs form a vegetative mosaic with grasses. Requires rodent burrows and large population of <i>Sceloporus occidentalis</i> .	

Unlikely, closest sightings are only from habitats directly connected with the San Joaquin River.

Inhabits sloughs, canals and small water courses with grassy banks and emergent vegetation. Requires high ground for basking and escape during winter flooding. Known from the Central Valley from Fresno north to the Sutter Buttes.

Federal FT
State CT

Thamnophis gigas
giant garter snake

Unlikely, would have been detectable during surveys

Nests primarily in dense freshwater marshes with cattail or tules. Forages in grasslands. Largely endemic to California. Permanent resident in the Central Valley and along the coast from Marin to San Diego counties. Also known from Lake, Sonoma and Solano counties. Grasslands provide suitable foraging habitat only.

Federal MB
State CSC
Audubon none

Agelaius tricolor
tricolored blackbird

Currently absent. Pre-construction survey warranted

Open, dry grasslands, deserts, prairies, farmland and scrublands with abundant active and abandoned mammal burrows. Occurs in lowlands throughout California.

Federal MB
State CSC
Audubon Blue list

Athene curicularia hypugea
burrowing owl

Potential to nest in vicinity of larger pond

Nests in large trees using twigs and branches for nesting material. Forages on small mammals, reptiles and birds.

Federal MB
State none
Audubon none

Bubo virginianus
great horned owl

Present, nesting in Peruvian peppertree near pond.

Nests in trees in stick nests. Forages on small mammals.

Federal MB
State none
Audubon none

Buteo jamaicensis
red-tailed hawk

Unlikely, prefers taller trees for nesting

Nests in oaks or cottonwoods in or near riparian habitat. Forages in grasslands and agricultural fields. Highest nesting densities are in Yolo County. Relatively common throughout the lower Sacramento and San Joaquin valleys.

Federal MB
State CT
Audubon none

Buteo swainsoni
Swainson's hawk

Potentially present. Habitat present

Nests and forages in grasslands. Nests on ground in shrubby vegetation or dense grass, usually at the edge of marshes.

Federal MB
State CSC
Audubon none

Circus cyaneus
northern harrier

Present. Potential nester.

Inhabits low rolling foothills and valley margins with scattered oaks and river bottom-lands or marshes adjacent to deciduous woodlands. Prefers open grasslands, meadows and marshes for foraging close to isolated, dense-topped trees for nesting and perching.

Federal MB
State CFP
Audubon none

Elanus leucurus
white-tailed kite
(nesting sites only)

<i>Riparia riparia</i> bank swallow (nesting colonies only)	Federal State Audubon	none CT none	Nests in colonies on sandy cliffs near water, marshes, lakes, streams, the ocean. Forages in fields. Largest remaining populations occur along the Sacramento River from Tehama to Sacramento counties. Also found along the Feather and lower American rivers and in the Owens Valley. Breeding populations also present in San Francisco County and at Año Nuevo in southern San Mateo County	Unlikely, no suitable habitat present
<i>Sturnella neglecta</i> Western meadowlark	Federal State Audubon	MB none	Nests in open grassland of prairies and river valleys, in mountain areas of open and broken woodland, in more open sage brush, in pastures, and in cultivated areas with clover, alfalfa, and grain or similar crops.	Present.
Mammals				
<i>Antrozous pallidus</i> pallid bat	Federal State	none CSC	This colonial species roosts in small colonies of 20 or more individuals in caves, mines, rock piles, tree cavities and occasionally buildings. Night roosts may be in more open sights, such as porches and open buildings. They forage mostly in open habitats.	Potentially, pre-demolitions surveys warranted.
<i>Myotis ciliolabrum</i> small-footed myotis bat	Federal State	none none	Roosts in caves, mine tunnels, crevices in rocks and buildings, generally near forested areas. Feeds low among trees or over shrubs. Distributed from interior California through the Great Plains states to the east coast.	"
<i>Myotis evotis</i> long-eared bat	Federal State	none none	Inhabits thinly forested areas around buildings or trees. Occasionally found in caves. Does not occur in large colonies. Distributed throughout the western U.S.	"
<i>Myotis thysanoides</i> fringed myotis bat	Federal State	none none	Roosts in colonies in caves and attics of old buildings. Distributed throughout the western U.S. and into Mexico.	"
<i>Myotis volans</i> long-legged myotis	Federal State	none none	Roosts colonially in building and small pockets and crevices in rock ledges. Distributed throughout the western U.S., Mexico and Canada.	"
<i>Myotis yumanensis</i> Yuma myotis bat	Federal State	none CSC	Roosts colonially in trees, caves, tunnels and buildings. Inhabits arid regions. Distributed throughout the western U.S., Mexico and Canada.	"
<i>Perognathus inornatus</i> San Joaquin pocket mouse	Federal State	none none	Inhabits grassland and scrub habitats in Central and San Joaquin Valleys.	Unlikely, previous records are all from foothills to the south.
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	Federal State	FE CT	Range includes annual grassland, saltbush scrub and oak savanna at the valley/mountain interface. Recorded near Morgan Hill.	Unlikely, site is north of limit of range

Explanation of sensitivity status codes:

Absent means habitat not present. Unlikely means that the species would have been detectable, or habitat conditions appear to be unsuitable. Present [P] means general habitat is present and species may be present. Status: Federal Endangered (FE); Federal Threatened (FT); Federal Proposed (FP, FPE, FPT); Federal Candidate (FC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); State Species of Special Concern (SSC); California Native Plant Society (CNPS 1B) (Plants rare, threatened, or endangered in California and elsewhere).

APPENDIX C

Plants Occurring on the Project Site

APPENDIX C

PLANTS OCCURRING ON THE PROJECT AREA

SCIENTIFIC NAME	COMMON NAME
TREES	
<i>Ailanthus altissima</i>	Tree of heaven
<i>Elaeagnus angustifolius</i>	Russian olive
<i>Eucalyptus sideroxylon</i>	Iron bark eucalyptus
<i>Juglans californica</i>	California black walnut
<i>Populus fremontii</i>	Fremont cottonwood
<i>Prunus dulcis</i>	Almond
<i>Robinea pseudoacacia</i>	Black locust
<i>Salix laevigata</i>	Red willow
<i>Salix lasiolepis</i>	Arroyo willow
<i>Schinus molle</i>	Peruvian peppertree
<i>Tamarix parviflora</i>	Tamarisk
<i>Washingtonia filifera</i>	California fan palm
GRASS	
<i>Alopecurus aequalis</i>	Foxtail
<i>Avena fatua</i>	Wild oat
<i>Bromus diandrus</i>	Rippgut brome
<i>Bromus hordeaceus</i>	Soft chess
<i>Hordeum brachyantherum</i>	Meadow barley
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Hare barley
<i>Leymus triticoides</i>	Creeping wildrye
<i>Lolium multiflorum</i>	Italian ryegrass
<i>Phalaris paradoxa</i>	Canary grass
<i>Poa annua</i>	Annual bluegrass
<i>Polypogon monspeliensis</i>	Rabbitfoot grass
<i>Vulpia myuros</i>	Foxtail fescue

SCIENTIFIC NAME	COMMON NAME
FORBS	
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Common fiddleneck
<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	Morning-glory
<i>Castilleja exserta</i> ssp. <i>exserta</i>	Owls clover

<i>Centurea solstitialis</i>	Yellow star thistle
<i>Centromadia parryi</i> ssp. <i>parryi</i>	Papoose spike weed
<i>Cichorium intybus</i>	Chickory
<i>Cirsium vulgare</i>	Bull thistle
<i>Cotula coronopifolia</i>	African brass buttons
<i>Cyperus eragrostisc</i>	Umbrella sedge
<i>Eleocharis macrostachya</i>	Creeping spike-rush
<i>Epilobium brachycarpum</i>	Fireweed
<i>Erodium botrys</i>	Long-beaked storkbill
<i>Geranium dissectum</i>	Cranesbill
<i>Grindelia camporum</i>	Great Valley grindelia
<i>Heterotheca grandiflora</i>	Telegraph weed
<i>Hirshfeldia incana</i>	Mediterranean mustard
<i>Juncus balticus</i>	Wire rush
<i>Lepidium nitidum</i>	Peppergrass
<i>Lythrum hyssopifolium</i>	Loosestrife
<i>Madia sativa</i>	Coast tarweed
<i>Medicago polymorpha</i>	Bur clover
<i>Plagiobothrys stipitatus</i>	Stipitate popcorn-flower
<i>Psilocarphus oregonus</i>	Oregon wooly-heads
<i>Rorippa nasturtium-aquaticum</i>	watercress
<i>Rumunculus muricatus</i>	buttercup
<i>Rumex crispus</i>	Curly dock
<i>Rumex pulcher</i>	Fiddle dock
<i>Scirpus americanus</i>	Three-square
<i>Scirpus californicus</i>	California bullrush
<i>Typha angustifolia</i>	Narrow-leaved cattail
<i>Veronica peregrine</i> ssp. <i>xalapensis</i>	Purslane speedwell
SHRUB	
<i>Baccharis pilularis</i>	Coyote brush
<i>Lotus scoparius</i>	Deer weed
<i>Melilotus officinalis</i>	Yellow sweet clovere

APPENDIX D

Animals Occurring on the Project Site

APPENDIX D

ANIMALS OCCURRING IN THE PROJECT AREA

SCIENTIFIC NAME	COMMON NAME
<u>BIRDS</u>	
<i>Agelaius phoeniceus</i>	Red-winged blackbird
<i>Anas platyrhynchos</i>	Mallard
<i>Aphelocoma coerulescens</i>	Western scrub jay
<i>Ardea herodias</i>	Great blue heron
<i>Bubo virginianus</i>	Great horned owl
<i>Butorides virescens</i>	Green heron
<i>Callipepla californica</i>	California quail
<i>Cathartes aura</i>	Turkey vulture
<i>Charadrius voiciferous</i>	Killdeer
<i>Corvus brachyrhynchos</i>	American crow
<i>Elanus leucurus</i>	White-tailed kite
<i>Hirudo rustica</i>	Barn swallow
<i>Mimus polyglottus</i>	Northern mockingbird
<i>Phasianus colchicus</i>	Ring-necked pheasant
<i>Sturnella neglecta</i>	Meadowlark
<i>Tyrannus verticalis</i>	Western kingbird
<i>Zenaidura macroura</i>	Mourning dove
<u>MAMMALS</u>	
<i>Didelphis virginiana</i>	Opossum
<i>Lepus californicus</i>	Black-tailed jackrabbit
<i>Lontra canadensis</i>	Northern river otter
<i>Mephitis mephitis</i>	Skunk
<i>Microtus californicus</i>	California vole
<i>Peromyscus maniculatus</i>	Deer mouse
<i>Procyon lotor</i>	Raccoon
<i>Spermophilus beecheyi</i>	California ground squirrel
<i>Thomomys bottae</i>	Botta's pocket gopher
<u>AMPHIBIANS</u>	
<i>Bufo boreas halophilus</i>	California toad
<i>Hyla regilla</i>	Tree frog

REPTILES	
<i>Gerrhonotus multicarinatus</i>	Southern alligator lizard
<i>Sceloporus occidentalis</i>	Western fence lizard
INSECTS	
<i>Aeshna multicolor</i>	Blue darner
<i>Libellula</i> sp.	Dragonfly