

Attachment 2: Baseline Status and Cumulative Effects for the California Red-legged Frog

The following sections provide a summary of the environmental baseline and cumulative effects for the California red-legged frog (CRLF), based on available U.S. Fish and Wildlife Service (USFWS) biological opinions (BOs) for the species. The information contained in this attachment is taken directly from material provided to the Agency by the USFWS on May 29, 2007 (email correspondence between Daniel Russell (USFWS) and Anita Pease (U.S. EPA). The environmental baseline is defined as the effects of past and ongoing human induced and natural factors leading to the status of the species, its habitat, and ecosystem, within the action area. The baseline information provides a snapshot of the CRLF's status at this time. Cumulative effects include the effects of future state, tribal, local, private, or other non-federal entity activities on endangered and threatened species and their critical habitat that are reasonably expected to occur in the action area. A summary of the USFWS BOs that were used to obtain baseline status and cumulative effects information for the CRLF is provided in Table 1. The subsections that follow provide a summary of the relevant baseline and cumulative effects information provided by USFWS for the CRLF from each of the BOs listed in Table 1.

Table 1 Summary of Biological Opinions for the California Red-Legged Frog		
BO # (Date)	Description of Action	Location
1. CB99F21 (3/23/2000) 2. LRMP 00F773.2 (2/27/2001) 3. CB05F773.9 (9/15/2005)	Forest activities such as camping and recreation, ongoing residential and commercial development in surrounding areas, introduction and invasion of exotic species as well as predatory species, and agricultural grazing.	San Diego, Riverside, Orange, Santa Barbra, Ventura, Wrightwood, San Bernardino, and Los Angeles Counties.
4. SB 1464.2 (6/18/2001)	Four grazing allotments on the San Bernardino National Forest	Wrightwood, San Bernardino, and Riverside Counties
5. CON07F5 (11/21/2006)	Vegetation removal on creek bank	Refugio Creek, Santa Barbara County
6. CNF01F1694 (4/27/2001)	Cleveland National Forest's Livestock Grazing Program	Orange, Riverside, and San Diego Counties
7. WRIV-870.19 (6/27/2004)	Loss and modification of approximately 466,000 acres of habitat from implementation of the activities proposed for coverage in the Multiple Species Habitat Conservation Plan (MSHCP)	Riverside County
8. O2F0091 (7/17/2002)	Proposed Pacific Gas & Electric Tri-Valley 2002 Capacity Increase Project	Alameda and Contra Costa Counties
9. 06F0125 (5/24/2006)	Proposed State Route 84, Niles Canyon Safety Widening Project	Alameda County
10. 06F0156 (8/3/2006)	Braddock & Logan Fallon Village Project	Dublin, Alameda County
11. 05F0241 (8/28/2006)	Proposed State Route 4 Bypass Segment 3 Project	Brentwood, Contra Costa County
12. 06F0018 (12/12/2005)	Proposed State Route	Santa Clara County and San

Table 1 Summary of Biological Opinions for the California Red-Legged Frog		
BO # (Date)	Description of Action	Location
	152/StateRoute 156 Improvement Project	Benito County
13. CON06F45 (12/7/2006)	Area 5 Sediment Basin Restoration Project	Hollister Hills State Vehicular Recreation Area, San Benito County
14. CON06F32 (8/11/2006)	San Juan Oaks Golf Club construction activities, golf course development, and land managed as wildlife habitat	San Benito County
15. 05F0226 (8/12/2005)	Pacific Gas and Electric's Jefferson Martin 230kV Transmission Line Project	San Mateo County, California
16. CON06F28 (12/19/2006)	Valencia Creek Fish Ladder Replacement Project	Santa Cruz County
17. CON06F39 (10/10/2006)	San Simeon Creek Road Bridges Replacement Project	San Luis Obispo County
18. CON06F12 (4/26/2006)	Los Berros Creek Restoration Project	San Luis Obispo County
19. CON06F11 (3/16/2006)	Picachio Road Bridge Replacement over Cayucos Creek	San Luis Obispo County
20. CON06F10 (3/13/2006)	State Route 41 Culvert Lining Project	San Luis Obispo County
21. 06F0063 (2/10/2006)	U.S. Route 49, Logtown Highway Widening and Curve Realignment	El Dorado County
22. 06F0204 (9/06/2006)	Proposed Enhancement of the Sailor Flat California Red-Legged Frog Habitat through the Conservation Partnerships Program	Nevada County
23. CON06F25 (8/2/2006)	Biological Opinion for Watsonville Sloughs-Manabe Property Wetland Restoration Project	Santa Cruz County
24. 05F0025 (7/12/2005)	Stage Gulch Road (State Route 116) Curve Correction and Realignment Project	Sonoma County

1. **Biological Opinion on the Effects of Ongoing Forest Activities that May Effect Listed Riparian Species on the Cleveland National Forrester, the Los Padres National Forrester, the San Bernardino National Forrester, and Angeles National Forest in Southern California (1-6-99-F-21) (CB99F21) (USFWS, March 23, 2000)**

1.1 ENVIRONMENTAL BASELINE

Biological screens were developed and used to delineate habitat boundaries for each known occurrence of a listed riparian species within the forests.

1.1.1 Los Padres National Forest

Based on observations of various types, the Forest Service believes that the population of California red-legged frogs within the LPNF numbers in the hundreds of adults and more than one thousand sub-adults (USDA Forest Service 1998). California red-legged frogs are known to occur in portions of the Branch Creek, La Brea, Santa Ynez, Sespe, Sisquoc, Piru Creek, Carmel River, Ventana, and Morro Creek drainages. The largest known populations occur on the upper Carmel River, Mono Creek upstream of Mono Campground, and near Juncal Campground on the Santa Ynez River. These estimates may indicate relative differences in abundance, but none were determined through comprehensive surveys.

1.1.1.1 Branch Creek

California red-legged frogs have been encountered in the Branch Creek drainage in oxbow ponds approximately 0.5 mile upstream of the road crossing area, near Cable Corral. Other populations are likely present in the drainage, but are currently not known due to the lack of good survey data. Livestock ponds within the Rockfront Allotment could be suitable for occupancy by California red-legged frogs. Branch Creek populations could be affected by Branch Creek Road and occasional dispersed use. In the past, California red-legged frogs were negatively affected by maintenance of the road, which consisted of running a bulldozer down the road (the creek bed itself for much of a 4 mile stretch). This practice has been discontinued, which should allow for the establishment of emergent vegetation and an increase in suitable California red-legged frog habitat.

1.1.1.2 North Fork La Brea Creek

California red-legged frogs are known from La Brea Creek. In wet years, the stretch of creek near the road between Barrel Flat and Wagon Flat campgrounds can support up to 12 pool habitats. However, many of these pools were filled in by the high flows during winter 1997-98, which may have negatively affected this population. A 7-mile stretch of La Brea Creek in the South Fork La Brea grazing allotment is occupied by California red-legged frogs. Effects to this habitat likely occurred from grazing activities in the past, but

have been reduced by fencing the stream area to eliminate cattle. La Brea Creek California red-legged frog populations are affected by Barrel Springs and Wagon Flat campgrounds, La Brea Creek Road and La Brea Creek trail, as well as occasional dispersed use. Impacts are thought to be minimal, due to the small size and undeveloped nature of the campgrounds and the dead end nature of the access road.

1.1.1.3 Santa Ynez River

Most of the California red-legged frogs known from the LPNF are from this drainage, with the majority of known locations found upstream of Gibraltar Reservoir. Fox, Alder, Blue Canyon, Agua Caliente and Mono creeks (all tributaries of the Santa Ynez River) and Gibraltar and Jameson reservoirs have documented California red-legged frog populations. The Mono Creek population 2 miles upstream of the campground is estimated at 30 adults. A major California redlegged frog breeding site exists within 100 yards of Juncal Campground. The LPNF is radiotracking individuals here to assist in determining potential impacts to this population. Agua Caliente Creek populations exist adjacent to the hot springs and may exist in scattered pools to the base of the Caliente debris dam. A population of approximately 26 individuals was identified during 1999 surveys of the lower Santa Ynez River, from the Forest Service boundary upstream to Gibraltar Dam. Extensive recreational use and the presence of bullfrogs along the lower Santa Ynez may be impacting California red-legged frogs in this area.

Riparian and aquatic habitats along the Santa Ynez and its tributaries are heavily affected by human use. California red-legged frogs are affected by the use of Paradise, Pendola, Camuesa, Matilija and Caliente roads; Big Caliente, Lower Caliente, and Lower Oso day use areas; Blue Canyon, Indian Creek, Mono-Alamar and Agua Caliente trails; P-Bar, Juncal and Middle Santa Ynez campgrounds. Many California red-legged frogs in Blue Canyon Creek may be affected by use of the hiking trail that meanders along the creek. In the past, trespass OHV use along the Santa Ynez River was a problem and likely resulted in heavy impacts to California red-legged frogs.

1.1.1.4 Sespe Creek

California red-legged frogs have been found in the Sespe drainage, although data concerning the size and extent of their populations are lacking. These populations may be affected by use of Beaver Campground, Lion Campground, Middle Lion Campground, Sespe Creek trail, one weather station, and the Sespe Trail outfitter guide operation.

1.1.1.5 Sisquoc River

California red-legged frogs have been found in the Sisquoc drainage along the Sisquoc River and Manzana Creek. Manzana Creek contains scattered pools which likely provide breeding habitat for California red-legged frogs. Potential impacts to this population occur from the Sisquoc trail, the Sisquoc Trail outfitter guide, the Manzana Creek Trail, Nira Campground, and the Sunset Valley Road. Potential impacts to California red-legged frogs in this area are relatively minimal due to the wilderness designation of much

of the drainage and low accessibility of the sites.

1.1.1.6 Morro Creek

Few data exist regarding California red-legged frog populations along the stretch of creek affected by Cerro Alto Campground. Use of the creek is thought to be quite limited, and effects to California red-legged frogs from human use are minimal.

1.1.1.7 Piru Creek

California red-legged frogs are known from Piru Creek approximately 0.75 mile upstream of Blue Point Campground. This known population may be affected by the Agua Blanca Trail. California red-legged frogs have not been documented in lower areas on Piru Creek, probably due to the high densities of exotic predators such as bullfrogs and centrarchid fishes found near Lake Piru. In the past decade, the LPNF has taken many measures to protect California red-legged frogs. In 1988, before the California red-legged frog was listed, the LPNF Forest Plan designated the California red-legged frog as a "Forest Species of Special Interest" and provided management direction with this in mind. In 1993, the LPNF initiated contact with the Service, CDFG and scientists at the University of California at Santa Barbara to develop a conservation strategy for sensitive riparian and aquatic species. LPNF crews began stream surveys in 1993, accumulating information on the locations of California red-legged frogs to be used to assist in riparian conservation. In 1998, the LPNF initiated formal consultation with the Service on a project to remove exotic fish and bullfrogs which compete with or prey on California red-legged frogs. In addition, the LPNF also consulted on the removal of exotic plant species, which will result in an increase in habitat quality for California red-legged frogs in many of the affected areas.

1.1.2 Angeles National Forest

One population of approximately 12 adult California red-legged frogs was recently discovered within San Francisquito Canyon. No Forest Service activities are currently affecting this population.

1.1.3 Cleveland and San Bernardino National Forests

No California red-legged frogs are known to exist on either Forests.

1.2 CUMULATIVE EFFECTS

Although increased development throughout the southern California region will continue to put increased demands on Forest Service lands for public recreation, thoroughfare and other permitted forest activities, most of the actions that are reasonably expected to occur within the vicinity of the proposed project would be subject to future section 7 consultations due to the presence of listed species, wetlands or the presence of federal lands. Ongoing state and private actions adjacent to the forests may affect these species.

For instance, the increase in cowbirds throughout the coastal slope of southern California apparently has been the result of the proliferation of suitable cowbird feeding areas such as golf courses, parks, stables and agricultural operations. The presence of these birds on lands adjacent to the project area will result in the continued presence or increase of cowbirds within the project area. Other activities nearby and adjacent to the southern California Province Forests may result in the propagation and spread of invasive exotic plant species into the forests. The movement and placement of fill material may result in the transport and establishment of the propagules of invasive species. Plants such as giant reed and salt cedar are an increasing threat to the native riparian flora and fauna in these forests. In picnic or campground areas, vegetation is often illegally used as firewood and could potentially affect active nests or potential nest sites. Additionally, several regional planning efforts including the Multiple Species Conservation Program have been initiated or completed to plan for conservation of multiple species, including those considered in this biological opinion, on non-federal lands at a regional scale. If successful, such efforts could preclude significant adverse cumulative effects on proposed or listed threatened and endangered species.

2. **Biological and Conference Opinions on the Continued Implementation of Land and Recourse Management Plans for the Four Southern California National Forests, as Modified by New Interim Management Direction and Conservation Measures. (1-6-00-F-773.2) (LRMP 00F773.2) (USFWS February 27, 2001)**

2.1 **BASELINE STATUS**

Two previous consultations have addressed Federal actions that may affect red-legged frogs on the southern California national forests. In 1997, a biological opinion (1-8-97-F-33) was issued on the effects of maintenance, repair, and replacement of low water road crossings on arroyo toad and California red-legged frog on the LPNF. In 2000, the Riparian Obligation BO (1-6-99-F-21) addressed the effects of most ongoing Forest Service activities in known occupied habitat on all four southern California national forests. See that biological opinion for a more complete description of the environmental baseline for the red-legged frog.

Most California red-legged frog locations on NFS lands are on the LPNF. Based on observations of various types, the Forest Service believes that the population of California red-legged frogs within the LPNF numbers in the hundreds of adults and more than one thousand sub-adults (Forest Service 1998). California red-legged frogs are known to occur in multiple locations on Branch, La Brea, Sespe, Piru, Ventana, and Morro creeks, and the Santa Ynez, Sisquoc, and Carmel rivers. The largest known populations occur on the upper Carmel River, Mono Creek upstream of Mono Campground, and near Juncal Campground on the Santa Ynez River. These estimates may indicate relative differences in abundance, but none were determined through comprehensive surveys.

On the ANF, the only known red-legged frog location is in San Francisquito Canyon. Nineteen adult frogs were found at this location in September 2000 (USFS 2000a). Factors potentially affecting this population include: road maintenance, modification of a stream channel to protect Powerhouse #2, general recreation in streamside pools, and invasive nonnative species (*e.g.*, giant reed, African clawed frogs, sunfish, goldfish).

Red-legged frogs occurred historically in several locations on the SBNF, but they have not been observed there in at least the last 25 years. There were many historic locations on the CNF, and suitable habitat still occurs there, but red-legged frogs have not been observed on this Forest since the 1980s (Stephenson and Calcarone 1999). A small population still exists on the Santa Rosa Plateau, on the southeastern side of the Santa Ana Mountains, but it does not extend onto NFS lands. Recent surveys of this population have found only 4 males and no females. The primary land uses affecting red-legged frogs on NFS lands are: road use and maintenance (particularly stream crossings), use of developed recreation sites, streamflow regulation, livestock grazing, and a variety of activities operating under special use permits. For known occupied habitat, these factors were addressed in detail in the Riparian Obligated BO. The Forest Service has identified and mapped 167,078 acres of modeled habitat, which has some potential to support red-legged frogs.

The Forest Service is currently implementing a number of measures to avoid or minimize impacts to California red-legged frogs, primarily on the LPNF. They have instituted seasonal road closures covering 318 acres of key and occupied habitat plus some additional upland habitat. Also, an active tamarisk and giant reed removal program is ongoing. Efforts to locate and remove bullfrogs or other exotic aquatic fauna are also ongoing. For detailed information on known developed recreation sites, stream crossings, and roads within occupied habitat and the corrective actions taken, refer to the Riparian Obligate Biological Opinion (1-6-99-F-21).

The USFWS maintains the conference opinion that the proposed action (continued implementation of land and resource management plans) is not likely to adversely modify proposed critical habitat for the California red-legged frog. This conclusion was based on the following: Seasonal closures of some roads and recreation areas in red-legged frog habitat, as called for in the Riparian Species Biological Opinion (1-6-99-F-21), should help maintain and enhance the upland and aquatic primary constituent elements within proposed critical habitat of the California red-legged frog.

2.2 CUMULATIVE EFFECTS

Many ongoing state and private actions adjacent to the forests may affect these species. For instance, the increase in cowbirds throughout the coastal slope of southern California apparently has been the result of the proliferation of suitable cowbird feeding areas such as golf courses, parks, stables and agricultural operations. The presence of these birds on lands adjacent to the project area will result in the continued presence or increase of cowbirds within the project area. Other activities nearby and adjacent to the southern California Province Forests may result in the propagation and spread of invasive exotic

plant species into the forests. The movement and placement of fill material may result in the transport and establishment of the propagules of invasive species. Plants such as giant reed and tamarisk are an increasing threat to the native riparian flora and fauna in these forests.

3. Biological and Conference Opinions on Revised Land and Resource Management Plans for the Four Southern California National Forests, California (1-6-05-F-773.9) (CB05F773.9) (USFWS September 15, 2005)

The Angeles, Cleveland, Los Padres, and San Bernardino national forests include about 3.5 million acres of land including major portions of the San Diego, Santa Ana, San Jacinto, San Bernardino, San Gabriel, Castaic, southern Los Padres, and northern and southern Santa Lucia mountain ranges (USFS 2000a). These four forests extend from Monterey south to near the Mexican border. An expanded description of elevation and precipitation patterns, major vegetation classes and ecological communities, biological resources, non-native species, important areas of ecological significance, fire regimes and watersheds is presented in the Southern California Mountain and Foothills Assessment (Stephenson and Calcarone 1999). The action area is also the area in which baseline conditions and cumulative effects are analyzed. For this consultation, the action area is considered to be the four southern California national forests and areas downstream that are subject to indirect effects.

3.1 ENVIRONMENTAL BASELINE

The Forest Service has identified and mapped approximately 11,828 acres of California redlegged frog occupied habitat. Several previous consultations have addressed Federal actions that may affect red-legged frogs within the action area. In 2001, non-jeopardy biological and conference opinions (1-6-00-F-773.2) were issued on the continued implementation of Land and Resource Management Plans for the four southern California national forests and for some ongoing activities. These opinions included an analysis of the impacts of some ongoing activities on the California red-legged frog from dispersed recreation, fuelbreaks and prescribed burn plans, livestock grazing, and road and trail use and maintenance. In 2004, a non-jeopardy biological opinion (1-8-04-F-32) addressed the effects to listed species, including the California red-legged frog and 393 acres of potentially suitable California red-legged frog habitat, that could be subject to oil- and gas-related development within three HOGPAs (High Oil and Gas Potential Areas) on Los Padres National Forest lands.

Most California red-legged frog locations on national forest lands are on the Los Padres National Forest. California red-legged frogs are known to occur in multiple locations on Branch, La Brea, Sespe, Piru, Ventana, and Morro creeks, and the Santa Ynez, Sisquoc, and Carmel rivers. The largest known populations occur on the upper Carmel River, Mono Creek upstream of Mono Campground, and near Juncal Campground on the Santa Ynez River. Population estimates may indicate relative differences in abundance, but none were determined through comprehensive surveys. Results of 2002 amphibian

population monitoring indicate that the lower Santa Ynez River does not support large numbers of California red-legged frogs. The Forest Service has acquired about 44 acres of California red-legged frog occupied habitat at Trout Creek (Tom White, pers. comm. 2005).

San Francisquito Canyon is the only site known to be occupied by California red-legged frogs on the Angeles National Forest. No healthy population of California red-legged frogs is known to occur south of this site to the Mexican border. Biologists from the U.S. Geological Survey have been monitoring the California red-legged frog in San Francisquito Canyon since their discovery in 1999. They occupy a 1,300 to 3,280 foot elevation segment of San Francisquito Creek, referred to as the Saint Francis Dam reach (Hitchcock *et al.* 2002). Despite the fact that nearly all riparian vegetation in this reach was burned during the Copper Fire in June 2002, no mortality of California red-legged frogs was observed. In fact, more California red-legged frogs were found during post-fire surveys than prior to the fire, presumably due to their concentration into the creek during the fire and their increased detectability after the fire consumed vegetative cover. By December, 2002, over 100 California red-legged frogs from this population had been marked with passive integrated transponders (PIT-tagged) and are being monitored by the U.S. Geological Survey biologists. The 2002 California red-legged frog population monitoring results estimated between 302 and 367 adult breeding-sized individuals (USFS 2005a). California red-legged frogs have not been found during protocol-level surveys in Bouquet Canyon (Backlin *et al.* 2002).

The primary ongoing threats to California red-legged frogs in San Francisquito Canyon are from exotic species and disease. The exotic species include mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), goldfish (*Carasius auratus*), crayfish, and giant reed. The outfall from Drinkwater Reservoir is a potential source of exotic species introduction into Lower San Francisquito Creek (Hitchcock *et al.* 2002). Some of the California red-legged frogs in this same reach are infected with a chytrid fungus (*Batrachochytrium dendrobatidis*). Fortunately, bullfrogs have not been reported from San Francisquito Canyon.

Historically, California red-legged frogs inhabited streams within the Piru Creek drainage but have not been observed in any surveys. Suitable habitat for the California red-legged frog exists within Canton, Resor, and Dominquez Canyons, as well as along Piru Creek. California red-legged frogs likely still inhabit Agua Blanca Creek, which enters Piru Creek. Habitat within and along lower Piru Creek appears to be suitable for California red-legged frogs, but the presence of exotic predators, such as bullfrogs, prickly sculpins (*Cottus asper*), and largemouth bass (*Micropterus salmoides*) (Sweet 1992) may keep California red-legged frogs from inhabiting most or all of Piru Creek. Beginning in the spring of 2005, the number of exotic aquatic predators inhabiting Piru Creek should decline when the flow regime from Pyramid Dam will be changed to simulate natural flows.

Red-legged frogs occurred historically in several locations on the San Bernardino National Forest, but they have not been observed there in at least the last 25 years. There

were many historic locations on the Cleveland National Forest, and suitable habitat still occurs there, but red-legged frogs have not been observed on this Forest since the 1980s (Stephenson and Calcarone 1999). A small population existed recently on the Santa Rosa Plateau, on the southeastern side of the Santa Ana Mountains, but it does not extend onto national forest lands.

The project area is located within California red-legged frog proposed critical habitat units 22, 24, 25, 26, 27, 28, 30, and 31 and designated critical habitat unit 31, which are described below:

Unit 22. Lopez Lake-Arroyo Grande Creek Unit consists of the watersheds of Arroyo Grande Creek and its tributaries; these include Los Berros Creek, Tarspring Creek, Guaya Canyon, Carpenter Canyon, Wittenberg Creek, Clapboard Canyon, Vasquez Creek, Big Falls Canyon, Nipomo Mesa, and Cienega Valley in San Luis Obispo County. The unit encompasses approximately 85,254 acres, of which 79 percent is privately owned and the remaining 21 percent is managed by Los Padres National Forest and Bureau of Land Management. Unit 22 is occupied. This unit provides connectivity from the San Simeon Unit-Morro Bay Unit down into the Sisquoc River Unit and Transverse Ranges.

Unit 24. Santa Ynez River Unit consists of watersheds forming the Santa Ynez River in Santa Barbara County. The unit encompasses approximately 244,004 acres, of which approximately 60 percent is privately owned; the remaining 40 percent is managed by the Bureau of Reclamation and Los Padres National Forest. Unit 24 is occupied and represents a core population. Frogs are found on the Santa Ynez River from the headwaters to the estuary. The headwaters serve as source populations to the Sisquoc River Unit and the Matilija-Sespe-Piru Creek Unit. This unit provides essential connectivity from the Santa Ynez River up to the headwaters of the transverse range.

Unit 25. Sisquoc River Unit consists of watersheds forming the drainages of the Sisquoc River in Santa Barbara County. These include the Cherokee Spring, Ernest Blanco Spring, Horse Canyon, La Brea Creek, Manzano Creek, Peach Tree Spring, and the Lower Sisquoc River watersheds. The unit encompasses approximately 121,785 acres, of which 39 percent is privately owned, and 61 percent is managed by the Los Padres National Forest. Unit 25 is occupied. This unit represents a core population that provides connectivity from Lopez Lake- Arroyo Grande Creek Unit into the westernmost portion of the Transverse Ranges. It is the only undammed river included as critical habitat; for this reason, the threats of exotic fish are minimal.

Unit 26. Coastal Santa Barbara Unit consists of coastal tributaries including the Bear Creek watershed, east to and including the Ellwood Canyon watershed in Santa Barbara County. The unit encompasses approximately 98,791 acres, of which 23 percent is managed by the Los Padres National Forest and the California Department of Parks and Recreation; the remaining 77 percent is privately owned. Unit 26 is occupied. It contains a unique ecological setting; numerous and relatively small watersheds along a south-facing coastal terrace drain directly into the Pacific Ocean. This type of habitat is not found elsewhere in California.

Unit 27. Matilija-Sespe-Piru Creek Unit consists of watersheds that comprise portions of the Matilija, Sespe, and Piru Creek drainages in Santa Barbara, Ventura, and Los Angeles counties. The unit encompasses approximately 313,716 acres, of which 96 percent is managed by the Los Padres National Forest and 4 percent is privately owned. Unit 27 is occupied and provides for connectivity across the Transverse Ranges from the Santa Ynez River Unit to the San Francisquito-Amargosa Creek Unit. The Sespe Creek area, which includes portions of the Sespe Wilderness and provides the primary east-west connectivity, currently supports large numbers of bullfrogs and predatory fish.

Unit 28. San Francisquito-Amargosa Creek Unit consists of San Francisquito and Amargosa Creeks in Los Angeles County, including all or parts of the Lancaster, Rock Creek, Acton, Bouquet Eastern, Mint Canyon, and Sierra Pelona watersheds. The unit encompasses approximately 105,890 acres, of which 85 percent is primarily managed by the Angeles National Forest, the remaining 20% is privately owned. Unit 28 is occupied, supporting a substantial core population and may be a source population for units to the south and west. This unit also supports the only known population occupying a drainage flowing into the Mojave Desert.

Unit 30. Santa Rosa Plateau/Santa Ana Mountains Unit consists of portions of the watersheds comprising the Santa Rosa Plateau and the Santa Ana Mountains in Riverside and San Diego counties. The unit encompasses approximately 57,627 acres, of which 69 percent is managed by the Forest Service and 31 percent is privately owned. Unit 30 had contained a small, genetically unique population on The Nature Conservancy's Santa Rosa Plateau Ecological Reserve, which is the focal point of recovery efforts for California red-legged frog conservation and genetic diversity in southern California. Since the last male was seen several years ago, this population may no longer exist (Farris 2005a).

Unit 31. Tujunga Unit consists of portions of Tujunga watersheds in Los Angeles County. It encompasses approximately 73,500 acres, of which 100 percent is managed by the Angeles National Forest. Unit 31 is not occupied but contains habitat essential to the conservation of California red-legged frogs and is within a core recovery area. This unit is a focal point for reestablishment of the species in southern California.

3.2 CUMULATIVE EFFECTS

USFWS is unaware of any non-Federal actions affecting listed species that are reasonably certain to occur in the action area considered by these opinions.

4. Biological/Conference for Four Grazing Allotments on the San Bernardino National Forest California (SB 1464.2) (USFWS June 18, 2001)

The USFWS biological opinion is based on a review of the proposed continuation of

livestock grazing practices on four grazing allotments within the San Bernardino National Forest (SBNF) located in San Bernardino County, California and its effects on 13 federally listed species, 1 species proposed for listing, designated critical habitat for 6 species, and proposed critical habitat for 2 species. This document was prepared in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The biological opinion addresses the potential effects of grazing activities on four allotments on the Mountaintop and San Jacinto Ranger Districts of the SBNF.

Under section 7(a)(2) of the Act, the action area is defined as the reach of direct and indirect effects, as well as the analysis area for the biological opinion. The action area is also the area in which baseline conditions and cumulative effects are analyzed. For this consultation, the action area is considered to be the Rattlesnake (1,200 acres on National Forest lands), Rouse (6,900 acres), Garner (approximately 8,910 acres), and Wellman (20,840 acres) allotments. The portion of the Wellman Allotment potentially used is 15,373 acres due to the removal of cattle from Peninsular bighorn sheep critical habitat. The Rattlesnake Allotment is on the Mountaintop Ranger District, while the Rouse, Garner, and Wellman allotments are on the San Jacinto Ranger District. These areas are described in the Forest Service biological assessments dated October 13, 2000, and April 2, 2001.

4.1 ENVIRONMENTAL BASELINE

Red-legged frogs occurred historically in several locations on the SBNF, but they have not been observed there in at least the last 25 years. This species is not currently known to occur within or near the four allotments, but modeled habitat that has not been surveyed exists on the San Jacinto District allotments. California red-legged frog modeled habitat occurs on the east side of the Wellman Allotment along the State Game Refuge border and in some spots in the Rouse Allotment. It also occurs in the northern section of the Garner Allotment along Herkey Creek and along the Garner Valley past the southern border of the Garner Allotment. No designated critical habitat occurs within or near the four allotments.

4.2 CUMULATIVE EFFECTS

Many ongoing state and private actions adjacent to the SBNF may affect these species. For instance, cowbirds may proliferate due to the presence of suitable feeding areas such as golf courses, parks, stables, agricultural operations, and livestock grazing on nearby private lands. The presence of these birds on lands adjacent to the project area will result in the continued presence or increase of cowbirds within the project area, with potential subsequent effects to riparian bird species. In addition, land use activities off of the SBNF may affect potential downstream populations of riparian species through sedimentation, increased flow rates, and pollution. Finally, unauthorized activities occurring on SBNF land may have negative effects including trash dumping, off-road vehicle use, target shooting, wood theft, camping, trail creation, and wildfires.

5. **Biological Opinion for the Removal of Invasive vegetation on Refugio Creek, Santa Barbara County, California (File No. 200601798 JCM)(1-8-07-F-5) (CON07F5) (USFWS November 21, 2006)**

For the purposes of this biological opinion, the action area is identified as the entire 1.5-mile stretch of lower Refugio Creek where the vegetation removal would occur. The USFWS recognizes that all of the vegetation removal will not be completed during the period when the Trust is working outside of the September 16 – November 1 window; however, USFWS cannot discern where along the entire project area the vegetation removal is occurring. Therefore, USFWS is analyzing activities along the entire 1.5-mile stretch that would be authorized by the Corps.

Refugio Creek is a relatively undisturbed drainage bordered by agriculture and open space. The dominant vegetation along the creek consists of willows (*Salix* spp.), oaks (*Quercus* spp.), western sycamore (*Platanus racemosa*), and Fremont cottonwood (*Populus fremontii*), with an understory of poison oak (*Toxicodendron diversilobum*), Mexican elderberry (*Sambucus mexicana*), blackberry (*Rubus ursinus*), and numerous non-native plant species named in the project description section of this biological opinion. In some locations, the creek is wide with a broad riparian corridor, while in other areas the creek is narrow with only a think strip of riparian vegetation. The creek flows all year and supports pools and riffles along its length.

5.1 ENVIRONMENTAL BASELINE

California red-legged frogs have been observed several times in Refugio Creek. In 2005, two juvenile California red-legged frogs were observed during a reconnaissance to delineate areas of *Arundo* to be removed (Santa Barbara County Public Works 2006). More recently, five adult frogs were observed in three pools along the creek within the action area (Vince Semonsen, biologist, pers. comm. 2006). Mr. Semonsen stated that because the individuals were observed during the daylight hours, it is likely that the creek supports a rather healthy population; i.e., many more California red-legged frog are likely to be present in Refugio Creek but were taking refuge under vegetation or undercut banks.

Refugio Creek is within the Santa Maria-Santa Ynez River Core Area of the Northern Transverse Range and Tehachapi Mountains Recovery Unit (Recovery Core Area 24), as defined in the California red-legged frog Recovery Plan (Service 2002). The Service (2002) has determined that this area is important for recovery of the California red-legged frog because it is currently occupied by the species, has the potential to provide a source population for reintroductions, and provides habitat connectivity between populations.

5.2 CUMULATIVE EFFECTS

USFWS is not aware of any non-federal actions that are reasonably certain to occur in the action area.

6. Reinitiated Biological Opinion on the Cleveland National Forest's Livestock Grazing Program, Orange, Riverside, and San Diego Counties, California (1-6-01-F-1694) (CNF01F1694)(USFWS April 27, 2001)

6.1 ENVIRONMENTAL BASELINE

Red-legged frogs historically occurred in many drainages within the Cleveland National Forest (CNF). Suitable habitat is still present in many areas, but the species has not been observed on the Forest since the 1980s (Stephenson and Calcarone 1999). A small population still exists on the Santa Rosa Plateau, on the southeastern side of the Santa Ana Mountains, but there are no recent observations of frogs on nearby CNF lands. Recent surveys at the Santa Rosa Plateau have found only 4 males and no females. The widespread invasion of non-native predators, particularly bullfrogs, sunfish, and crayfish, into aquatic habitats is probably a major factor in the dramatic decline and perhaps disappearance of red-legged frogs from the CNF. Previous studies have documented a strong correlation between the presence of these non-natives and the absence of red-legged frogs (Hayes and Jennings 1986, Fisher and Shaffer 1996).

A substantial amount of potential habitat on the CNF, including areas within grazing

allotments, has been surveyed for red-legged frogs in the past ten years, although the intensity of these survey efforts appear to have seldom meet the Service protocol recommendations – 2 day surveys and 2 night surveys between May 1 and November 1 (USFWS 1997). There are basically two categories of potential red-legged frog habitat within CNF grazing allotments: (1) historically occupied areas, and (2) areas near the one known frog population on the Santa Rosa Plateau. Although past surveys have often not been to protocol, the lack of recent sightings together with the prevalence of non-native aquatic predators, makes it probable that red-legged frogs have been extirpated from historic habitat within grazing allotments on the CNF.

The Santa Rosa Plateau/Santa Ana Mountains critical habitat unit for the California red-legged frog encompasses the southern end of the Trabuco District, including the Tenaja and Miller Mountain allotments and portions of the Verdugo Allotment. Due to its proximity to the Santa Rosa Plateau population, aquatic habitats within this area have been surveyed extensively in recent years, but no red-legged frogs have been found (S. Christopher, pers. comm.; R. Fisher, pers. comm.). Although potentially unoccupied at this time, areas of suitable habitat in this critical habitat unit are considered essential to the recovery of this species.

6.2 CUMULATIVE EFFECTS

Most of the livestock use within the action area occurs on non-federal lands, thereby providing the majority of the foraging opportunities for brown-headed cowbirds, particularly in the Palomar District. Major areas that are grazed by domestic livestock within or adjacent to the Forest boundaries in the allotment vicinity include, City of San Diego's Pamo Valley, Vista Irrigation District's Lake Henshaw, the Rey River Ranch and other private ranches. The City of San Diego has discontinued grazing at Barrett Reservoir due to water quality concerns. Adjacent private property also includes listed species' habitat that is directly impacted by grazing.

Other activities on adjacent private lands include recreation activities, pan and sluice box dredge mining, and road maintenance and use. Most recreational use occurs along streams and includes off-highway vehicles, horseback riding, hiking, and biking. Such activities degrade the stream beds and surrounding vegetation, possibly affecting vireo, willow flycatcher, arroyo toad. Activities within the stream, particularly suction dredge mining, also increase siltation that smothers arroyo toad eggs and larvae.

Road maintenance of stream crossings can also cause excessive siltation of arroyo toad breeding pools. Adult arroyo toads also forage on roads and therefore are subject to crushing. Pine Creek Road, for example, is a well-traveled road with a stream crossing near a large breeding population of arroyo toad. A June 14, 1994, site visit confirmed an adult foraging on the roadway. Vehicles crossing the stream can also crush eggs, larvae, and juveniles as well. Activities on private lands will likely continue to degrade riparian habitats.

7. Intra-Service Formal Section 7 Consultation/Conference for Issuance of an Endangered Species Act Section 10(a)(1)(B) Permit (TE-088609-0) for the Western Riverside County Multiple Species Habitat Conservation Plan, Riverside County, California (FWS-WRIV-870.19) (USFWS June 22, 2004)

The proposed action is the issuance of a section 10(a)(1)(B) incidental take1 permit that addresses 146 species (14 listed animals, 11 listed plants and 121 unlisted plants and animals) that will be affected by the loss and modification of approximately 466,000 acres of habitat from implementation of the activities proposed for coverage in the MSHCP.

The proposed MSHCP Plan Area includes an area of approximately 1.26 million acres (1,966 square miles) and encompasses unincorporated portions of western Riverside County and 14 incorporated cities (Banning, Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Moreno Valley, Murrieta, Norco, Perris, Riverside, San Jacinto, and Temecula). The Orange and San Bernardino County lines define the western boundary of the proposed Plan Area. The San Bernardino and San Diego County lines form the northern and southern boundaries of the proposed Plan Area, respectively. The eastern boundary of the proposed Plan Area is formed by Banning Pass and the crest of the San Jacinto Mountains. The MSHCP Plan Area is divided into Area Plans for development planning purposes and bioregions for conservation planning purposes. Area Plans are a composite of identified areas in the County General Plan and City boundaries. The Area Plan boundaries provide a framework for analyzing the Criteria Area using established planning boundaries.

The proposed MSHCP Conservation Area (500,000 acres) will be comprised of approximately 153,000 acres of Additional Reserve Lands (e.g. new conservation lands) and 347,000 acres of existing PQP Lands. The MSHCP proposes to acquire, protect, and manage 153,000 acres of habitat for the Covered Species generally contiguous with, or linked to, existing PQP Lands that provide conservation value. The Permittees will acquire 103,000 acres of the Additional Reserve Lands as mitigation for Covered Activities in the Plan Area. Of these 103,000 acres, State Permittees (Caltrans and State Parks) will acquire 6,000 acres as mitigation for their projects. The County, Cities, and other Local Permittees will be responsible for the remaining 97,000 acres as mitigation for private development and Local Permittee projects. The Plan estimates 56,000 acres of the 97,000 acres will be acquired through acquisition and the remaining 41,000 acres from the Local Permittees using their land use authority. The Permittees will be responsible for managing, in perpetuity, 55,000 acres of locally owned PQP lands and the 103,000 acres of Additional Reserve Lands. It is anticipated that the State and Federal Agencies will acquire 50,000 acres of new conservation lands through grants, bond, etc., which will complement the 103,000 acres of Permittee's mitigation. These actions will result in approximately 153,000 acres of land being acquired as Additional Reserve Lands for the conservation of Covered Species . If the State and Federal contribution commitment to the MSHCP Conservation Area cannot be provided, the MSHCP will be reevaluated, with possible adjustments made to Permit coverage and assurances .

7.1 ENVIRONMENTAL BASELINE

Within the Plan Area, historical or suspected locations for the California red-legged frog included the vicinity of Temescal, Vail Lake, Kolb Creek, Murrieta Creek, Santa Ana River, Santa Ana Mountains, Anza, Glen Ivy, Pedley, and the City of Riverside. Today, the only known population of the California red-legged frog within the Plan Area consists of two males that occur within the Santa Rosa Plateau Ecological Reserve located at the southern end of the Santa Ana Mountains (Fish and Wildlife Service 2002a). This population is the only known extant population in the United States south of Ventura County.

The Santa Rosa Plateau Ecological Reserve is cooperatively managed by the Riverside County Regional Park and Open-Space District, the California Department of Fish and Game, the Service, the Metropolitan Water District of Southern California, and The Nature Conservancy. The Santa Rosa Plateau Ecological Reserve and adjacent watershed lands contain riparian habitat that is essential to the maintenance of the California red-legged frog population and the reestablishment of the subspecies in southern California. Current management activities for the California red-legged frog on the Santa Rosa Plateau include surveys, habitat restoration, and annual removal of exotics (particularly bullfrogs). Additional efforts to recover this species are currently underway, including a joint project by the Service, the Los Angeles Zoo, The Nature Conservancy, and the Mexican government to augment and reestablish the population on the Santa Rosa Plateau.

The Plan Area is located within the Southern Transverse and Peninsular Ranges recovery unit for the California red-legged frog (Fish and Wildlife Service 2002a). This is one of eight recovery Units considered essential to the recovery of this subspecies. Within this recovery unit, the following three Core Areas are identified: 1) Santa Rosa Plateau, 2) San Luis Rey, and 3) Santa Ana Mountain. These Core Areas all occur along the western border of Riverside County, and while a large portion of the Santa Rosa Plateau Core Area occurs within the Plan Area, the San Luis Rey and Santa Ana Mountain Core Areas only have very small portions within the Plan Area.

There are 49,054 acres of modeled habitat for the California red-legged frog within the Plan Area. These modeled acres are located entirely within the “RLFR” Amphibian Survey Area that largely occurs within the Santa Ana Mountains Bioregion, but there is also a small amount of modeled habitat within the Riverside Lowlands Bioregion. The primary vegetation types used to model breeding habitat for this species were playas/vernal pools, riparian/scrub/woodland/forest, riversidean alluvial fan sage scrub, and openwater. Based on this analysis, a total of 807 acres of primary habitat is located in the Plan Area, of which approximately 803 acres occur within the Santa Ana Mountains Bioregion and 4 acres of primary modeled habitat occur within the Riverside Lowlands Bioregion. Of the 807 acres of primary modeled habitat, 730 acres (90 percent) occur on PQP Lands.

The secondary vegetation types used to model upland habitat for this species were agricultural land, chaparral, coastal sage scrub, grasslands, and woodland/forests. Based on this analysis, a total of 48,247 acres of secondary modeled habitat is located in the Plan Area, of which 48,203 acres occur within the Santa Ana Mountains Bioregion and 44 acres occur within the Riverside Lowlands Bioregion. Of the 48,247 acres of secondary modeled habitat, 38,091 acres (79 percent) occur on PQP Lands. In summary, there are a total of 49,054 acres of modeled habitat for the California red-legged frog within the Plan Area, of which 38,821 acres (79 percent) occur on PQP Lands.

7.2 CUMULATIVE EFFECTS

We anticipate that the proposed action will directly and indirectly affect the California redlegged frog as described in the analyses above, including the loss of 5 percent of modeled breeding habitat and 18 percent of modeled upland habitat in the Plan Area. Implementation of the avoidance, minimization, and mitigation measures identified in the Plan will reduce the impacts to this species. We anticipate that this species will persist in the remaining 95 percent of modeled breeding habitat and 82 percent of modeled upland habitat within both the existing PQP Lands and the Additional Reserve Lands. Together these lands form a system of large, contiguous habitat blocks that are inter-connected within the Plan Area. We anticipate that these areas will be monitored and managed cooperatively to benefit this species. After reviewing the current status of this species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog. We reached this conclusion because 95 percent of the modeled breeding habitat and 82 percent of modeled upland habitat for the California red-legged frog and the only known population of this species in Riverside County will be conserved or remain within the MSHCP Conservation Area. Thus, the impacts to this species and its associated modeled habitat, when viewed in conjunction with the protection and management of the MSHCP Conservation Area, is not anticipated to result in an appreciable reduction in the numbers, reproduction, or distribution of this species throughout its range. Critical habitat has been vacated for this species; therefore, none will be affected.

8. Formal Endangered Species Consultation on the Proposed Pacific Gas & Electric Tri-Valley 2002 Capacity Increase Project, Alameda and Contra Costa Counties, California (Corps File No. 24753S) (O2F0091) (USFWS July 17, 2002)

8.1 ENVIRONMENTAL BASELINE

Within Alameda and Contra Costa counties, USFWS is not aware of California red-legged frogs inhabiting ponds within golf courses. In Solano County, red-legged frogs were found in large numbers immediately after the construction of water features within

one golf course, however this population has been nearly eliminated by a substantial bullfrog population, and perhaps by water chemistry manipulation by the golf course in a pond used as a watering source.

Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990, Twedt 1993), red swamp crayfish (*Procambarus clarkii*), signal crayfish (*Pacifastacus leniusculus*), and several species of warm water fish including sunfish (*Lepomis* spp.), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*) (L. Hunt, in litt. 1993, S. Barry, in litt. 1992, S. Sweet, in litt. 1993). Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range.

The draft recovery plan for the California red-legged frog identifies eight recovery units. Each recovery unit reflects areas with similar conservation needs. The strategy for recovery of California red-legged frogs includes promoting and protecting populations that are geographically distributed in a manner that allows for the continued existence of viable metapopulations. The establishment of these recovery units is based on the recovery team's determination that various regional areas of the species' range are essential to its overall survival and recovery because these units will ensure that the strategy for recovery of the species will be implemented. The draft recovery plan specifies that the status of the California red-legged frog should be considered within the smaller scale of recovery units as opposed to the overall range of the species because these units reflect areas with similar conservation needs. Furthermore, this strategy will promote and protect the continued existence of viable metapopulations. These recovery units are delineated by major watershed boundaries, as defined by U.S. Geological Survey hydrologic units and California Department of Fish and Game's Ichthyological Provinces, and the limits of the range of the California red-legged frog. The goal of the draft recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

This project is located within the proposed Southeast San Francisco Bay Recovery Unit, which extends from the northernmost portion of Contra Costa County, includes a portion of San Joaquin County south to Santa Clara County, includes the eastern portion of San Mateo County, and all of San Francisco County. Contra Costa and Alameda counties contain the majority of known California red-legged frog localities within the eastern San Francisco Bay area. Within this recovery unit, California red-legged frogs seem to have been nearly eliminated from the western lowland areas near urbanization, they still occur

in isolated populations in the East Bay Foothills (between Interstate 580 and Interstate 680), and are abundant in several areas in the eastern portions of Alameda and Contra Costa counties. This proposed recovery unit is essential to the survival and recovery of California red-legged frogs, as it contains the largest number of occupied drainages in the northern portion of its range. The eastern and western edges of this core area is heavily urbanized and the northern and southern edges are bounded by major highways, however, there are numerous small drainages flowing underneath both Interstate 580 and Highway 84 that California red-legged frogs could disperse through. Therefore, this core area is somewhat connected to other populations of California red-legged frogs in the foothills of central Alameda and Contra Costa Counties and the populations found in eastern Alameda County. Within this core area, California red-legged frogs historically bred in several ponds and drainages within the proposed project area, Garin/Dry Creek Regional Park, Pleasanton Ridge Regional Park, and Sinbad Creek, where the recently approved Pleasanton Ridge Conservation Bank is located. There are currently two known breeding locations near but outside the project site: along Pleasanton Ridge and in Garin/Dry Creek Regional Park, where California red-legged frogs were recently observed amplexing with bullfrogs (Bobzien pers. comm.. 1999). Only adults have been found in the upper reaches of Sinbad Creek.

According to the California Natural Diversity Data Base (1999), California red-legged frogs have been recorded in a number of locations in the Dublin/Livermore vicinity, mostly in small farm ponds but also along some perennial drainages having pools suitable for breeding. Surveys for the Eastern Dublin General Plan Amendment and Specific Plan Environmental Impact Report (EIR) (Wallace, Roberts, and Todd 1992) detected red-legged frogs at 11 sites in the General Plan Amendment area, including springs, ponds, windmill cisterns, and pools in Cottonwood Creek and along two tributaries of Tassajara Creek. This EIR concluded that red-legged frogs were probably more widespread in the General Plan Amendment area than indicated by these surveys.

The drainages in the vicinity of the Tri-Valley 2002 Capacity Increase Project have been modified by long-term cattle grazing and vineyards. They do not support riparian vegetation and most of them are incised. Surveys have been conducted by the applicant on the sites of the proposed expansion of the Tri-Valley 2002 Capacity Increase Project for California red-legged frogs. California red-legged frog habitat occurs approximately 300 feet from the transition station on the S2/S2A south route and at several drainage crossings on the P4 north route. Potential habitat for California red-legged frog was also identified in an unnamed tributary to Tassajara creek along the access road to the proposed Dublin substation.

8.2 CUMULATIVE EFFECTS

Numerous non-Federal activities continue to negatively impact the San Joaquin kit fox, California tiger salamander and California red-legged frogs in the Tri-Valley 2002 Capacity Increase Project area. Habitats are lost or degraded as a result of urbanization,

road and utility construction and maintenance, overgrazing, agricultural expansion, and water irrigation and storage projects that may not be funded, permitted, or constructed by a Federal agency. Other threats include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may impact listed species, such as conversion of land, ground squirrel reduction efforts, mosquito control, and residential development, may occur without consultation with or authorization by the Service or the Department of Fish and Game pursuant to their respective Endangered Species Acts.

The Service expects that additional effects to San Joaquin kit foxes, California tiger salamanders and California red-legged frogs will occur in the Tri-Valley 2002 Capacity Increase Project area due to future developments and other land disturbing activities in San Joaquin, Contra Costa, and Alameda Counties. The Service has been working closely with the counties to ensure compliance with the Act on future private actions that may affect listed species.

In addition to the developments mentioned above, California red-legged frogs and California tiger salamanders are threatened by development occurring in Contra Costa and Alameda counties, especially the Livermore and Amador Valleys. Within these two valleys, forty-one urban developments are proposed, are under construction, or have recently been completed within eastern Contra Costa and Alameda counties (East Bay Regional Park District 1999). These developments involve 78,924 acres of oak grassland habitat at the core of the East Bay population of these two species, and could fragment and destroy large parts of the populations. In the Livermore Valley, an estimated 35,897 acres of grazing land is being converted to subdivisions or vineyards (EBRPD 1999). Almost the entire valley floor and large portions of the adjacent hills are being developed, or are being considered for development and eventual annexation. Land within city limits in eastern Alameda County more than tripled from 1980 to 1993 (EBRPD 1999). The North Livermore and South Livermore Valley Specific Plans have identified another 28,977 acres of planned urban development in and around Livermore Valley (EBRPD 1999).

9) **Biological Opinion on the Proposed State Route 84, Niles Canyon Safety Widening Project, Alameda County, California (06F0125) (USFWS May 24, 2006)**

9.1 ENVIRONMENTAL BASELINE

During other parts of the year, California red-legged frog habitat includes nearly any area that stays moist and cool through the summer within 1-2 miles (1.6-3.2 kilometers) of a breeding site (Fellers 2005). According to Fellers (2005), this can include vegetated areas with coyote bush (*Baccharis pilularis*), California blackberry thickets (*Rubus ursinus*), and root masses associated with willow (*Salix* species) and California bay trees (*Umbellularia californica*). Sometimes the non-breeding habitat used by red-legged frogs is extremely limited in size. For example, non-breeding red-legged frogs have been

found in a 6-foot (1.8-meter) wide coyote bush thicket growing along a tiny intermittent creek surrounded by heavily grazed grassland (Fellers 2005). Sheltering habitat for red-legged frogs is potentially all aquatic, riparian, and upland areas within the range of the species. This includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Sheltering red-legged frogs have also been found in agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks. Incised stream channels sections narrower and deeper than 18 inches (45.7 centimeters) also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

Red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adult frogs are often associated with permanent bodies of water. Some frogs remain at breeding sites all year while others disperse. Dispersal distances are typically less than 0.5 mile (0.8 kilometers), however some individuals have been known to move up to 2 miles (3.2 kilometers) (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005). In one study, dispersing frogs in northern Santa Cruz County were found to travel distances from 0.25 miles (0.4 kilometers) to more than 2 miles (3.2 kilometers) without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003).

The California red-legged frog may be susceptible to many of the same pathogens, fungi, water mold, bacteria, and viruses have been known to adversely other amphibian species. Chytridiomycosis and ranaviruses may be a particular developing concern for California red-legged frog populations. Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frogs infected with an iridovirus, which was also present in sympatric three-spined sticklebacks (*Gasterosteus aculeatus*) in northwestern California. Ingles (1932a, 1932b, and 1933 cited in Fellers 2005) reported four species of trematodes from red-legged frogs, but he later synonymized two of them (found them to be the same as the other two). Nonnative species, such as bullfrogs, are located within the range of the California red-legged frog and have been identified as potential carriers of these diseases. Human activities can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (i.e. contaminated boots or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in red-legged frogs being more susceptible to the effects of disease. Disease will likely become a growing threat because of the relatively small, fragmented remaining California red-legged frog breeding sites; the many stresses on these sites due to habitat losses and alterations; and the many other potential disease-enhancing anthropogenic changes which have occurred both inside and outside the species' range.

The State Route 84, Niles Canyon Project is located within the East San Francisco Bay Recovery Unit, which extends from the northernmost portion of Contra Costa County,

and includes a portion of San Joaquin County south to Santa Clara County, the eastern portion of San Mateo County, and all of San Francisco County (Service 2002b). This recovery unit is essential to the survival and recovery of the California red-legged frog, as it contains the largest number of occupied drainages in the northern portion of its range. Within this recovery unit, the frog appears to have been nearly eliminated from the western lowland areas near urbanization. However, they still occur in isolated populations in the East Bay Foothills (between Interstate 580 and Interstate 680), and are abundant in several areas in the eastern portions of Alameda and Contra Costa counties. Contra Costa and Alameda counties contain the majority of known California red-legged frog localities within the eastern San Francisco Bay area. The eastern and western edges of this area are heavily urbanized and the northern and southern edges are bounded by major highways. However, the Niles Canyon portion of State Route 84, between Sunol and Niles Junction, is largely undeveloped and parallels Alameda Creek. Alameda Creek is one of the defining hydrologic basins in the recovery unit and provides connectivity between several documented red-legged frog populations. Overall, there is a connection between red-legged frog populations in the foothills of central Alameda and Contra Costa Counties and the populations found in eastern Alameda County. Current survey data is inadequate in determining red-legged frog activity in the State Route 84, Niles Canyon Project vicinity however the species historically bred in several ponds and drainages within Garin/Dry Creek Regional Park, Pleasanton Ridge Regional Park, and Sinbad Creek.

There are several documented California red-legged frog observations within 5 miles (8 kilometers) of the action area and areas that are hydrologically connected to the aquatic habitat within the action area (CDFG 2005; Caltrans 2005). California red-legged frogs were not observed during 2002 protocol surveys conducted for the State Route 84, Niles Canyon Project (Caltrans 2004). However, Alameda Creek, Stonybrook Creek, and the associated riparian habitat within and adjacent to the action area was identified as likely California red-legged frog dispersal and foraging habitat in a June 2005 technical memorandum (Caltrans 2005) and during an August 11, 2005 field visit with the Service (personal communication from J. Wilkenson, H.T. Harvey and Associates to J. Cleckler, Service). Habitat for this listed species occurs along the entire State Route 84, Niles Canyon Project corridor. The presence of predators such as bullfrogs and largemouth bass (*Micropterus salmoides*) does not necessarily preclude California red-legged frog from the local areas of Alameda Creek, Stonybrook Creek, or the associated riparian and adjacent upland habitat. Adult California red-legged frogs are highly mobile and may move considerable distances from their breeding ponds. California red-legged frogs have been documented to move more than 2 miles (3.2 kilometers). Areas containing aquatic and upland habitat exist within and adjacent to the action area (Caltrans 2005; Cleckler personal observation, August 2005). The action area contains components that can be used by the California red-legged frog for feeding, resting, mating, movement corridors, and other essential behaviors. Therefore, the Service believes that the California red-legged frog is reasonably certain to occur within the action area because of the biology and ecology of the animal, the presence of suitable habitat in and adjacent to the action area, as well as local observations of this listed species.

9.2 CUMULATIVE EFFECTS

From 1995 to 2020, the human population is projected to increase by 18 percent for the San Francisco Bay hydrologic region; while at the same time agricultural crop land use in the region is projected to remain around 65,000 acres (California Department of Water Resources 1998). According to the California Department of Forestry, from 2000 to 2020, the human population in the Bay Area region is expected to grow by 29 percent (5.3 million people to 6.8 million people), and by 60 percent from 2000 to 2040 (5.3 million people to 8.4 million people) (California Department of Forestry 1998). There will likely be many other development projects that occur during this timeframe due to increases in human population growth that will continue to imperil the California red-legged frog and the Alameda whipsnake.

Within this region of Alameda County, there is a continued demand for new housing, vineyards, and recreation opportunities. Considering this, the remaining open space adjacent to the State Route 84, Niles Canyon Project is likely threatened by increased activity and habitat loss due to road, residential, and commercial development. The development of adjacent wildlife habitat will continue to result in the loss of not only breeding, resting, and foraging habitat, but the loss of dispersal corridors between breeding populations, thereby further isolating and fragmenting wildlife populations. Additionally, potential development of small reservoirs or water bodies, such as golf course hazards, and water diversions may pose further threats such as disruption of dispersal corridors for terrestrial species, and competition or predation from non-native species such as bullfrogs for aquatic species.

10. **Biological Opinion on the Braddock & Logan Fallon Village Project, Dublin, Alameda County, California (Corps File No. 26698S) (0640156) (USFWS August 3, 2006)**

10.1 ENVIRONMENTAL BASELINE

According to the April, 27, 2006, biological assessment for this project, there are documented observations of red-legged frogs within the action area. Red-legged frogs have been observed in breeding ponds, drainages, and upland areas on the project site and adjacent parcels within the Fallon Village planning area during site assessments and surveys. However, there are no apparent records of the animal or suitable breeding ponds at Brown Ranch. Therefore, the Service has determined it is reasonable to conclude the red-legged frog breeds, disperses through and inhabits the Fallon Village portion of the action area, based on the biology and ecology of this listed species, and the presence of suitable habitat.

10.2 CUMULATIVE EFFECTS

Numerous non-Federal activities continue to negatively impact the kit fox, tiger salamander, and red-legged frogs in the project area. Private actions that may impact

listed species may occur without consultation with or authorization by the Service or the Department of Fish and Game pursuant to their respective Endangered Species Acts.

Activities with the potential to adversely affect the red-legged frog, tiger salamander, and kit fox within the foreseeable future include continued urban encroachment on rangeland habitat, continued development of infrastructure such as roads that create barriers to movement, continued recreational activities (i.e., off-road vehicle use, collecting, etc.), predation by nonnative animal species, conversion of rangeland habitat to agricultural land, and invasion of native habitats by nonnative plant species.

It is anticipated that population increases and development pressures will continue to affect land use and growth in Alameda County for the foreseeable future. Population growth in Alameda County was 10.7% between 1990 and 2000 (U.S. Census Bureau 2006). Increased demand for housing will likely result in loss of suitable habitat for all listed species discussed in this opinion as housing developments replace agricultural and ranch lands. Increased urbanization in the region will contribute to the degradation of water quality in streams, altered flow regimes, increased contaminated road runoff, loss of upland habitat, and increased human presence in natural areas.

Livermore, Pleasanton, and Dublin were some of the fastest growing urban areas in Alameda County during the last decade. Dublin grew with 29 percent between 1990 and 2000, and is expected to continue to grow at similar rate, while growth of Livermore and Pleasanton slowed down during the same period. A growth-control initiative, Measure D, was approved by Alameda County voters in 2000. The County's Measure D draws urban growth boundaries around the three cities served by Zone 7 that can be changed only by a public vote. This measure halted the plans for developing 12,500 homes north of Livermore and protects open landscape for further urban expansion outside the growth boundaries. However, several development projects are occurring or planned within the growth boundaries, e.g. Isabel Avenue Interchange on I-580 that affect aquatic and upland habitat used by amphibians. The accumulation of a large population also affects the species environment outside of the city boundaries, and within the western portion of the action area, through contamination, noise, human activities, and vehicle traffic. In addition, vineyards and golf courses have been, and are being, developed south of the cities of Livermore and Pleasanton.

As urban development continues, it will likely adversely impact upland areas that serve as primary habitat for the kit fox and serve as dispersal and aestivation habitat for red-legged frogs and tiger salamanders. Continued development and maintenance of roadways to serve expanding urban areas may further fragment and isolate populations of red-legged frogs, kit fox, and tiger salamanders from other nearby populations. Increased predation associated with domesticated pets or feral animals generally accompanies urban expansion. As urban development encroaches on rural areas, the need increases for mosquito abatement programs that may introduce exotic fish into ponds used for breeding by red-legged frogs and tiger salamanders, thus impacting the reproductive success of these species.

Cattle-grazing is a common land use practice in rural Alameda and Contra Costa Counties. Overgrazing results in degradation and loss of riparian vegetation, increased water temperatures, streambank and upland erosion, and decreased water quality in streams. Livestock operations may also degrade water quality with pesticides and nutrient contamination. However, light to moderate livestock grazing is generally thought to be compatible with continued successful use of rangelands by the kit fox, tiger salamander, red-legged frog, and other listed species, provided the grazed areas do not also have intensive burrowing rodent control efforts (T. Jones, in litt. 1993; Shaffer *et al.* 1993). The shorter vegetation associated with grazed areas may make the habitat more suitable for ground squirrels whose burrows are utilized by both red-legged frogs and tiger salamanders. Rodent control in rural areas in Alameda and Contra Costa Counties could contribute to the decline of tiger salamanders and red-legged frogs in the region, as well as other sensitive species that utilize burrows created by burrowing rodents.

Agricultural development, impoundments, and irrigation can reduce stream flows, resulting in the loss of aquatic habitat during the summer for red-legged frogs. Discing is a common practice on agricultural lands which can result in substantial losses of upland habitat for red-legged frogs, tiger salamanders, and kit fox. Significant conversion of rural, undeveloped land to agricultural land, particularly vineyards, is currently occurring in Alameda County, resulting in loss of upland habitat for listed species.

11. Biological Opinion on the Proposed State Route 4 Bypass Segment 3 Project in Brentwood, Contra Costa County, California. (05F0241) (USFWS August 28, 2006)

The Service considers the action area to contain the footprint of the SR 4 Bypass Segment 3 Project and the developed and undeveloped areas immediately adjacent (east and west) to the full SR 4 Bypass corridor, including all areas west of the corridor that lies within the city limits of Brentwood. The action area is determined by construction of segment one, two and three, from the northern intersection with the existing SR 4 to the southern connection with Vasco Road; the distance extending east and west of the proposed SR 4 bypass road alignment where construction and traffic noise can be distinguished from background noise; construction activities and traffic on Marsh Creek Road; and the construction of commercial business centers connected to the Balfour Road and Marsh Creek Road intersections.

The SR 4 Bypass alignment follows what was, in 1998, the interface between agricultural and orchard fields to the west, and rolling grassland hills to the east. The westerly grassland provided denning and foraging for kit fox while the farmland to the east provided possibilities for foraging. Several west to east running watercourses, stock ponds, seasonal wetlands, and pools within the action area provided breeding habitat for tiger salamander and red-legged frog; the grasslands provided upland habitat.

Segment one is located to the north, between the cities of Antioch and Oakley, and consisted in 1998 of open grassland surrounded by various agricultural uses. Since 1998 the City of Antioch has continued to expand south and the City of Brentwood west and

south; the segment 1 alignment is now surrounded by urban development that provides limited and marginal habitat for listed species. The Segment 2 Project was located just south of the cities of Antioch and Oakley, and northeast of Brentwood. In 1998 the area west of the road alignment consisted mostly of open grassland that extended west to the foothills of Mount Diablo and south to Alameda County. Approximately 1,634 acres of development projects were, however, approved or constructed within one mile of the SR 4 Bypass Segment 2 Project between 1994 and 1998. Most of these developments occurred on both sides of Lone Tree Way just west of the SR 4 Bypass Segment 2 right-of-way. The area to the east between the proposed SR 4 road alignment and the urban center of Brentwood, located about one mile to the west, consisted mainly of agricultural fields and orchards. Urban development and grading for new urban development occurred, however, east of and adjacent to about 1.4 miles of the proposed road alignment between Balfour Road to the south and Sand Creek Road to the north. Urban development did not exist just west of the segment 3 alignment; the area consisted of open grassland that extended west to the foothills of Mount Diablo. However, though occurring after 1998, Vineyards at Marsh Creek LLC consulted in 2004 with the Service to construct a mixed use development on 473 acres of land, located north of Marsh Creek road and west of the proposed SR 4 Bypass segment-three alignment. The area to the east of segment three consisted mostly of farmland and orchards. However, a larger patch of open grassland existed east of the northern portion of the proposed Segment 3A. This area consists today of residential housing. Open grassland also existed, and still exists, at the southern portion of Segment 3B where it will connect with Vasco Road.

Four primary hydrologic features are present along Segment 3: (1) Dry Creek is a 10-foot wide realigned channel which crosses the Bypass right-of-way at a location approximately one-half mile south of Balfour Road. The channel conveys surface flows. Downstream of the alignment, the channel empties into a 60 inch reinforced concrete pipe. Dry Creek empties into Marsh Creek. Dry Creek is identified as a freshwater marsh which falls under the jurisdiction of the Corps. (2) Marsh Creek is a large (25 feet at ordinary high water - OHV) creek channel draining a very large watershed extending to Mount Diablo. A reservoir upstream of the action area retains water during summer and the creek goes dry by early summer. Marsh Creek is identified as an unvegetated water of the US. (3) Kellogg Creek crosses the Bypass at its southern connection with existing Vasco Road. The channel is an old, deeply incised surface tributary, varying in width at OHW from 10-28 feet. The creek goes dry in early summer. Kellogg Creek becomes channelized less than one mile east of the Bypass alignment. (4) A roadside ditch that flows north along the west side of Concord Avenue, outside the Bypass right-of-way. The swale, which is 1-2 feet wide and shallowly incised, connects to the segment of Dry Creek. An existing irrigation channel operated by the East Contra Costa Irrigation District (ECCID) crosses the Bypass project right-of-way and the roadside just to the south of the Dry Creek crossing. This channel is currently being placed underground in a buried pipe, pursuant to Corps and CDFG permits, in order to accommodate the proposed Segment 3 roadway improvements.

In 1993, the Service issued a biological opinion (1-1-92-F-48) to the Bureau of Reclamation on the construction and operating effects of Contra Costa Water District's

(CCWD) Los Vaqueros Reservoir on the San Joaquin kit fox and the threatened bald eagle (*Haliaeetus leucocephalus*) Contra Costa County. In 1996, the Service issued a subsequent biological opinion (1-1-96-F-151) that addressed effects on the red-legged frog. Los Vaqueros Reservoir is located approximately seven miles south of Brentwood in an unincorporated area of Contra Costa County. The project incorporates approximately 19,000 acres of land. The reservoir inundates approximately 1,460 acres. Approximately 6,500 acres of these lands are managed as specified management lands for listed species. This includes, but is not limited to, modifying grazing and rodenticide practices enhancing grasslands for kit fox, creating or enhancing approximately 10.5 acres of stockponds and restoring the riparian vegetation along Kellogg Creek. Although management of the entire watershed primarily is to protect water quality, direct and indirect actions to protect water quality will also benefit kit foxes and red-legged frogs. In addition to habitat protection, the Los Vaqueros biological opinion included a provision that CCWD address the effects of future growth on listed species from future water deliveries resulting from the construction of the reservoir.

At the time of the Los Vaqueros Reservoir consultation, CCWD started discussions with the cities of Pittsburgh, Antioch, and Brentwood and Contra Costa County to develop a habitat conservation plan (HCP) and pursue obtaining a section 10(a)(1)(B) permit from the Service. The HCP would address future growth that is facilitated by water deliveries and provide a regional plan for the conservation of listed species. In 2000, the East Contra Costa Conservation Plan Association was formed to start developing a habitat conservation plan for East Contra Costa. The East Contra Costa Habitat Conservation Plan (East Contra Costa HCP) will cover approximately 173,680 acres of the 425,000-acre County. It is intended to provide a comprehensive framework for species and ecosystem conservation, short- and long-term local land use decision-making in a rapidly urbanizing region, and environmental conservation permitting process. Five major terrestrial vegetation communities and twenty-six species are proposed for coverage in the draft plan. Proposed species include the kit fox, red-legged frog, giant garter snake, Alameda whipsnake, and listed fairy shrimp. The East Contra Costa HCP has not yet been finalized and City of Antioch is no longer participating.

11.1 ENVIRONMENTAL BASELINE

In the 1999 biological opinion for Segment 2 Project and the 2004 Segment 1 Project biological opinion, it was established that the baseline for all segments would be based on conditions as they existed in 1998.

The California red-legged frog has been found in the Marsh and Kellogg creeks drainages upstream and west of the project area. The closest recorded observation is in Kellogg Creek about 2 miles upstream of the proposed road alignment. Suitable dispersal habit for red-legged frog juvenile and adults exists in the Marsh and Kellogg creeks within the project area. Further, Marsh Creek Reservoir just southwest of the proposed Marsh Creek Road and SR 4 Bypass intersection could support breeding habitat for red-legged frog. Grasslands adjacent and west of the proposed road alignment and surrounding Vasco Road provides suitable upland habitat. Adult California red-legged frogs are

highly mobile and may move considerable distances from their breeding ponds. Based on the presence of dispersal habitat within the project area, nearby potential breeding habitat, and suitable upland habitat, red-legged frog may occur within the action area.

The red-legged frog is also likely to have occurred, and may still occur, in the Marsh and Kellogg creeks east and downstream of the project. However, agricultural and urban development had destroyed most red-legged frog breeding and upland habitat within the city limits of Brentwood and Oakley to the east of the bypass alignment by 1998. Agricultural use of insecticides and pesticides is likely to have affected the red-legged frog within the action area because of the proximity of the action area to large areas of agriculture.

11.2 CUMULATIVE EFFECTS

The revised 2001 Brentwood General Plan (plan) provides for a build-out population of 76,226 (however, this is a reduction of 13,203 from the 1993 plan) and includes rezoning areas from open space or agricultural use to residential, commercial, and industrial development (City of Brentwood 2006). Along the western side of the SR 4 bypass corridor, the plan provides for mixed development consisting of school, parks, and single family residents between the commercial and business centers planned connected to the interchanges. The seven Special Planning Areas (SPA) west of the SR 4 bypass corridor provides for conversion of approximately 2,300 acres of open grassland and agricultural fields. In addition, approximately 1,300 acres of residential areas and golf course has recently been developed just north and south of Balfour Road west of the Balfour Road – SR 4 intersection. Several of these developments have occurred or are occurring without consultation with the Service, and it is likely that most of the planned developments will occur without consultation with the Service in the future. Other completed urban development projects include the John Muir Hospital and clinic facilities at the southwest corner of the Bypass and Balfour Road.

In 2002, 3,746 acres were acquired from the Cowell Foundation and added to the existing 14-acre large John Marsh State Park. The John Marsh/Cowell Ranch is located adjacent to the southwestern portion of the project area and shares boundaries with Brentwood's urban planning area. The transfer of this land to state park property will restrict any further southwest expansion of Brentwood City and conserve open grassland savanna and oak woodland habitat. The California State Parks is working in a partnership with the City of Brentwood to develop a joint planning plan.

An expanding development will result in loss and degradation of red-legged frog aquatic and upland habitat. Loss and degradation of habitat do not only directly affect the distribution and abundance of the species but also can indirectly affect survival of remaining populations through fragmentation and isolation into small populations vulnerable to extermination. Presence of food associated with human population will attract omnivore predators such as ravens and raccoons that also prey on red-legged frog. Pesticide use and introduction of mosquito fish for mosquito control in areas adjacent to residential developments could also overlap with red-legged frog distribution. However, it

is unlikely that cumulative effects will affect the likelihood of survival of red-legged frog populations in Contra Costa County because of their low abundance and lack of breeding habitat within the action area.

12. Biological Opinion for the Proposed State Route 152/State Route 156 Improvement Project in Santa Clara County and San Benito County, California (Caltrans EA 04230-0A830)(06F0018 152-156) (USFWS December 12, 2005)

12.1 ENVIRONMENTAL BASELINE

The State Route 152/State Route 156 interchange is within Recovery Unit 6 (Diablo Range and Salinas Valley) (Service 2002). The majority of the action area falls within Core Area #16 (East San Francisco Bay) and the southern end extends into Core Area #17 (Santa Clara Valley) (Service 2002). The conservation needs for the East San Francisco Bay core area are: (1) protect existing populations; (2) study the effects of grazing on habitat; (3) reduce grazing impacts; (4) protect habitat connectivity; (5) minimize impacts from off-road travel and other recreational activities; (6) reduce impacts of urban development; and (7) protect habitat buffers from nearby urbanization. The conservation needs for the Santa Clara Valley core area are: (1) protecting existing populations; and (2) controlling non-native predators.

According to the Biological Assessment, there are several potential breeding ponds for California red-legged frogs and documented observations of California red-legged frogs within 2 miles (3.2 kilometers) of the action area. The CNDDDB includes a California red-legged frog observation from the State Route 156 crossing of Pacheco Creek, approximately 0.7 miles (1.1 kilometers) from the action area. Observations have also been recorded at two breeding ponds located approximately 1.0 miles (1.6 kilometers) from the action area. Caltrans has also documented breeding from a stock pond located along State Route 152, approximately 0.45 miles (0.7 kilometers) west of the action area (Caltrans 2000). California red-legged frog egg masses and juvenile red-legged frogs were observed at this location in 2000. There are numerous potential California red-legged frog breeding ponds within 1.3 miles (2.1 kilometers) west of the action area that Caltrans/VTa was unable to investigate due to the limitations of private property access. These ponds are also described as potential breeding locations for California tiger salamander. There is potential for California red-legged frogs to be moving from the local breeding ponds to the west, through the action area to Pacheco Creek to the east. Pacheco Creek is located between 0.15 and 0.6 miles (0.24 and 0.97 kilometers) east of the action area. Therefore, the Service has determined it is reasonable to conclude the red-legged frog disperses through and inhabits the action area, based on the biology and ecology of this listed species, the presence of suitable habitat, as well as the recent observations of this animal.

12.2 CUMULATIVE EFFECTS

Numerous non-Federal activities continue to negatively affect the San Joaquin kit fox, California red-legged frog, and California tiger salamander in the action area. Habitats are lost or degraded as a result of road and utility construction and maintenance, overgrazing, agricultural expansion, and water irrigation and storage projects that may not be funded, permitted, or constructed by a Federal agency. Other threats include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may impact listed species, such as conversion of land, ground squirrel reduction efforts, mosquito control, and residential development, may occur without consultation with or authorization by the Service or the California Department of Fish and Game pursuant to their respective Endangered Species Act.

From 1995 to 2020, the human population is projected to increase by 18 percent for the San Francisco Bay hydrologic region while at the same time agricultural crop land use in the region is projected to remain around 65,000 acres (California Department of Water Resources 1998). According the California Department of Forestry, from 2000 to 2020, the human population within counties in the Bay Area region is expected to grow by 29 percent (5.3 million people to 6.8 million people), and by 60 percent from 2000 to 2040 (5.3 million people to 8.4 million people) (California Department of Forestry 1998). There will likely be many other development projects that occur during this timeframe due to increases in human population growth that will continue to imperil the California tiger salamander, San Joaquin kit fox, and the California red-legged frog.

There is a continued demand for new housing in Santa Clara and San Benito counties. Considering this, the remaining open space adjacent to the State Route 152/State Route 156 interchange is likely threatened by development. Development of adjacent wildlife habitat will continue to result in the loss of not only breeding, resting, and foraging habitat, but the loss of dispersal corridors between breeding populations, thereby further isolating and fragmenting wildlife populations. Additionally, development of small reservoirs or water bodies, such as golf course hazards, and water diversions may occur which may pose further threats such as disruption of dispersal corridors for terrestrial species, and competition or predation from with non-native species such as bullfrogs for aquatic species.

13. Biological Opinion for Area 5 Sediment Basin Restoration Project at Hollister Hills State Vehicular Recreation Area, San Benito County, California (File No. 400031S) (1-8-06-F-45) (CON06F45) (USFWS December 7, 2006)

For the purposes of this biological opinion, and based upon the information provided in the biological assessment (State Parks 2004), USFWS identifies the action area as follows: the Area 5 sediment basin (0.63 acre), Garner Pond (1 acre), the hardened crossing at Bonanza Gulch (0.008 acre), and the streambank improvement areas A through G along Bonanza Gulch (0.03 acre total).

13.1 ENVIRONMENTAL BASELINE

The action area for the proposed project occurs within the range of the California red-legged frog (Service 2002). California red-legged frogs have been found at five locations within the SVRA, and one location along the Park's boundary on Cienega Road (CDFG 2006; State Parks 2004, 2005). In addition, there are 10 occurrence records of California red-legged frogs within 5.0 miles of the SVRA (CDFG 2006). California red-legged frogs have been found in the action area at the Area 5 Sedimentation Basin, and at Garner Pond, located approximately 500 feet southeast of the Area 5 Sedimentation Basin (State Parks 2005).

The action area for the proposed project does not occur within designated critical habitat for the California tiger salamander (70 FR 49380). The action area for the proposed project occurs within designated critical habitat unit SNB-1 for the California red-legged frog (71 FR 19244). Critical habitat unit SNB-1 unit consists of approximately 11,386 acres of private land and approximately 2,899 acres of State land, and is mapped from occurrence records at the time of listing and subsequent to the time of listing near Saint Frances Retreat, San Juan Oaks, Azalea Canyon, Bird Creek, and the Hollister Hills State Vehicle Recreation Area. The action area comprises approximately 0.01 percent of SNB-1. SNB-1 contains the following features that are essential for the conservation of the subspecies: aquatic habitat for breeding and non-breeding activities, and upland habitat for foraging and dispersal activities. SNB-1 is occupied by the California red-legged frog, the designation is intended to prevent further fragmentation of habitat in this portion of the subspecies' range, and it contains permanent and ephemeral aquatic habitats suitable for breeding and accessible upland areas for dispersal, shelter, and food. Threats that may require special management in this unit include removal and alteration of aquatic and upland habitat due to recreational and residential development, off-road vehicular activities, and predation by nonnative species.

Aquatic habitats suitable for breeding in the action area include the Area 5 Sediment Basin and Garner Pond (see subsection "Habitat Descriptions in the Action Area"). Aquatic habitats suitable for non-breeding activities (e.g., sheltering and foraging) in the action area include: the Area 5 Sediment Basin; Garner Pond; and Bonanza Gulch, when water is present. Upland habitats suitable for dispersal, shelter, and food include the grasslands, oak woodlands, and scrub (see subsection "Habitat Descriptions in the Action Area") near the proposed restoration activities.

13.2 CUMULATIVE EFFECTS

Off-road vehicular traffic on trails in the action area is not a Federal action and could negatively affect California red-legged frogs and California tiger salamanders. California red-legged frogs and California tiger salamanders could be struck by off-road vehicles and killed. However, USFWS expects few California red-legged frogs and California tiger salamanders to be struck and killed, because these species move primarily at night, and would likely only occur on trails at night, when the use of off-road vehicles is prohibited.

USFWS is unaware of any other non-Federal actions that are reasonably certain to occur and are likely to adversely affect the California red-legged frog and California tiger salamander in the action area.

14. Biological Opinion for the San Juan Oaks Golf Club, San Benito County, California (1-8-06-F-32) (CON06F32) (USFWS August 11, 2006)

The action area for this consultation includes approximately 2,000 acres of land within the property boundaries of the San Juan Oaks Golf Club, including the areas proposed for construction activities, golf course development, and land managed as wildlife habitat. Specifically, the action area includes approximately 937 acres of grasslands, 665 acres of oak woodlands, 260 acres of ruderal/disturbed habitat, 63 acres of mixed riparian forest, 30.7 acres of agricultural lands, 7.02 acres of seasonal ponds, 1.43 acres of ephemeral drainages, 1.39 acres of seasonal isolated wetlands, and 0.14 acre of seeps. Listed species are known to occupy or could occupy the action area in the following ways. The action area includes at least 1.97 acres and 1.14 acres of aquatic breeding habitat for California tiger salamanders and California red-legged frogs, respectively. The action area includes approximately 400 acres of grasslands suitable as upland habitat for the California tiger salamander, approximately 960 acres potential suitable upland habitat for the California red-legged frog, and approximately 1,600 acres of oak woodland and grassland habitats suitable for dispersal or denning by San Joaquin kit foxes.

14.1 ENVIRONMENTAL BASELINE

Three listed species are known to or could occur in the action area: California tiger salamanders, California red-legged frogs, and San Joaquin kit foxes. While this biological opinion analyzes the affects of the proposed project on all three species, particular attention has been focused on the effects of the proposed project on a metapopulation of California tiger salamanders occurring in several ponds and in the uplands at the project site.

The action area for the proposed project occurs within the range of the California red-legged frog (Service 2002). California red-legged frogs have been documented as breeding in three ponds (Ponds 4, 8, and 9) on the property (Rincon 2003a), and sub-adult California red-legged frogs were observed at Pond 7 (Mori 2006). Two sub-adult California red-legged frogs were captured in upland drift fences near the proposed Phase 1 pods (Mori 2006). In addition, California red-legged frogs have been reported from seven locations within 5 miles of the action area (CDFG 2003).

The action area for the proposed project does not occur within designated critical habitat for the California tiger salamander (70 FR 49380). The action area for the proposed project occurs within designated critical habitat for the California red-legged frog (71 FR 19244), and comprises approximately 14 percent of critical habitat unit SNB-1. SNB-1 is mapped from occurrence records at the time of listing and subsequent to the time of listing near Saint Frances Retreat, San Juan Oaks, Azalea Canyon, Bird Creek, and the

Hollister Hills State Vehicle Recreation Area. SNB-1 contains the following features that are essential for the conservation of the subspecies: aquatic habitat for breeding and non-breeding activities, and upland habitat for foraging and dispersal activities. SNB-1 is occupied by the California red-legged frog, the designation is intended to prevent further fragmentation of habitat in this portion of the subspecies' range, and contains permanent and ephemeral aquatic habitats suitable for breeding and accessible upland areas for dispersal, shelter, and food. The unit consists of approximately 11,386 acres of private land and approximately 2,899 acres of State land. Threats that may require special management in this unit include removal and alteration of aquatic and upland habitat due to recreational and residential development, off-road vehicular activities, and predation by nonnative species.

Aquatic habitats suitable for breeding in the action area include Ponds 8 and 9 (see subsection "Habitat Descriptions in the Action Area"). Aquatic habitats suitable for non-breeding activities (e.g., sheltering and foraging) include: all of the ephemeral ponds on the property, adjacent to the existing and proposed golf courses; the wetlands in the western portion of the property; and the seeps in the southern portion of the property. Upland habitats suitable for dispersal, shelter, and food include the grasslands on the property, and the oak woodlands in the southern portion of the property.

14.2 CUMULATIVE EFFECTS

Non-federal actions that could occur adjacent to the action area include increased vehicular traffic along Union Road, approximately 1.0 mile northeast of the property. Vehicles may strike and kill or injure California tiger salamanders, California red-legged frogs, and San Joaquin kit foxes attempting to cross Union Road while dispersing. Because the nearest breeding pond in the action area is approximately 1.0 mile from Union Road, and because San Joaquin kit foxes are not likely to be within the project area, we expect that mortality or injury from vehicle strikes would be minimal and not substantially affect the survival and recovery of California tiger salamanders, California red-legged frogs, and San Joaquin kit foxes.

15. Formal Consultation for Pacific Gas and Electric's Jefferson Martin 230kV Transmission Line Project, San Mateo County, California. (05F0226) (August 12, 2005)

15.1 ENVIRONMENTAL BASELINE

The CNDDDB (2005) reports a total of 45 documented occurrences of California red-legged frogs in San Mateo County, most of which are presumed extant. San Mateo County is located within the South and East San Francisco Bay Recovery Unit, which encompasses all or portions of Contra Costa, Alameda, San Joaquin, Santa Clara, San Francisco and San Mateo Counties. Within this Recovery Unit, California red-legged frogs seem to have been nearly eliminated from the lowland areas near urbanization.

This Recovery Unit is essential to the survival and recovery of the California red-legged frog, as it contains the largest number of occupied drainages in the northern portion of its range (Service 2002). In San Mateo County, few California red-legged frog populations are present in the urbanized areas. Most of the California red-legged frog populations in San Mateo County occur in the coastal mountain ranges and west of the coastal ranges, though watersheds in the vicinity of San Andreas Reservoir and Crystal Springs Reservoir support populations of California red-legged frogs. California red-legged frog habitat continues to be lost in San Mateo County due to urban development, degradation of aquatic habitat, and conversion of upland dispersal habitat into other land uses.

Within the action area, California red-legged frogs have been documented in the Caltrans detention ponds located between existing tower 12/81 and existing tower 12/79 and in the large perennial wetland located near proposed new tower 13/82A. Suitable breeding and foraging habitat exists at the two detention basins and perennial wetland, though current management of the two Caltrans detention basins may prevent successful reproduction of California red-legged frogs due to pumping operations which contribute to the drying of the habitat before California red-legged frog larvae can complete metamorphosis. Current management of the perennial wetland is unknown. Suitable foraging habitat is also present in the wetlands at the Jefferson substation. The entire action area contains suitable dispersal habitat for California red-legged frogs.

Critical habitat for the red-legged frog was proposed on April 13, 2004 (Service 2004). The proposed rule identifies approximately 4,138,063 hectares within 31 critical habitat units based on three primary constituent elements: (a) essential aquatic habitat; (b) associated uplands; and (c) dispersal habitat connecting essential aquatic habitat. Due to the complex life history and dispersal capabilities of the red-legged frog, and the dynamic nature of the environments in which they are found, the primary constituent elements below are found throughout the watersheds that are proposed as critical habitat. Special management, such as habitat rehabilitation efforts (*e.g.*, removal of nonnative predators), may be necessary throughout the area being designated. Critical habitat for red-legged frogs will provide breeding and nonbreeding habitats and for dispersal between these habitats, as well as allowing for expansion of frog populations, which is vital to the recovery of the subspecies.

To be a primary constituent element the aquatic component must consist of two or more breeding sites located within 1.25 miles of each other. At least one of the breeding sites also must be a permanent water source. Aquatic habitat is essential for providing space, food, and cover, necessary to sustain all life stages of red-legged frogs. It consists of virtually all low-gradient fresh water bodies, including natural and man-made (*e.g.*, stock) ponds, backwaters within streams and creeks, marshes, lagoons, and dune ponds, except deep lacustrine water habitat (*e.g.*, deep lakes and reservoirs 49 acres or larger in size) inhabited by nonnative predators. The subspecies requires a permanent water source to ensure that aquatic habitat is available year round. Permanent water sources can include, but are not limited to, ponds, perennial creeks (or permanent plunge pools within intermittent creeks), seeps, and springs. Aquatic habitat used for breeding must have a minimum deep water depth of 1.65 feet, and maintain water during the entire

tadpole rearing season (at least March through July). During periods of drought, or less-than-average rainfall, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but these sites would still be considered essential breeding habitat in wetter years. Ponds that support a small population of red-legged frogs, but are not surrounded by suitable upland habitat, or are cut off from other breeding ponds or permanent water sources by impassable dispersal barriers; do not have the primary constituent elements for red-legged frog critical habitat. Also, the aquatic component can consist of two or more seasonal breeding sites with a permanent nonbreeding water source located within 1.25 miles of each breeding site. Red-legged frogs have been documented to travel 3.6 km in a virtual straight line migration from nonbreeding to breeding habitats (Bulger 2003). We believe this is likely the upward limit of dispersal capability and the 1.25 mile dispersal element will ensure that connectivity between breeding habitats will be maintained within areas designated as critical habitat. In addition, breeding sites must be connected by essential dispersal habitat, described below.

Associated upland and riparian habitat is essential to maintain red-legged frog populations associated with essential aquatic habitat. The associated uplands and riparian habitat provide food and shelter sites for red-legged frogs, and assist in maintaining the integrity of aquatic sites by protecting them from disturbance and supporting the normal functions of the aquatic habitat. Key conditions include the timing, duration, and extent of water moving within the system, filtering capacity, and maintaining the habitat to favor red-legged frogs and discourage the colonization of nonnative species such as bullfrogs. Essential upland habitat consists of all upland areas within 300 feet, or no further than the watershed boundary, of the edge of the ordinary high-water mark. This is based, in part, on the work of Bulger (2003), who found that frogs were capable of inhabiting upland habitats within 200 feet of aquatic habitat for continuous durations exceeding 20 days.

Essential dispersal habitat provides connectivity among red-legged frog breeding habitat (and associated upland) patches. While frogs can pass many obstacles, and do not require a particular type of habitat for dispersal, the habitat connecting essential breeding location and other aquatic habitat must be free of barriers (*e.g.*, a physical or biological feature that prevents frogs from dispersing beyond the feature) and at least 300 feet wide. Essential dispersal habitat consists of all upland and wetland habitat free of barriers that connects two or more patches of essential breeding habitat within 1.25 miles of one another. Dispersal barriers include heavily traveled roads (an average of 30 cars per hour from 10:00 p.m. to 4:00 a.m.) that possess no bridges or culverts; moderate to high density urban or industrial developments; and large reservoirs more than 49 acres in size. Agricultural lands such as row crops, orchards, vineyards, and pastures do not constitute barriers to red-legged frog dispersal. Red-legged frog critical habitat has been affected by activities that destroy essential aquatic and upland habitats, including dispersal habitats providing connectivity between subpopulations. Degradation and loss of these habitats have occurred through urbanization, mining, improper management of grazing, recreation, invasion of nonnative plants, impoundments, water diversions, degraded water quality, and introduced predators.

The action area is located in proposed critical habitat unit 14 which consists of coastal watersheds within San Mateo County and northern Santa Cruz County that drain into the Pacific Ocean. The unit encompasses approximately 237,955 acres, of which 83 percent is privately owned; the remaining 17 percent is primarily managed by the SFPUC and the California Department of Parks and Recreation. Unit 14 is occupied by several core subpopulations and essential breeding habitat is located throughout the unit. The action area contains all the primary constituent elements of proposed California red-legged frog critical habitat.

15.2 CUMULATIVE EFFECTS

Numerous non-Federal activities continue to negatively impact the California red-legged frog, San Francisco garter snake, and Mission blue butterfly in the project area. Private actions that may impact listed species may occur without consultation with or authorization by the Service or the California Department of Fish and Game pursuant to their respective Endangered Species Acts.

Activities with the potential to adversely affect the California red-legged frog, San Francisco garter snake, and Mission blue butterfly within the foreseeable future include continued urban encroachment on natural habitat, continued development of infrastructure such as roads that create barriers to movement, continued recreational activities (*i.e.*, off-road vehicle use, collecting, *etc.*), predation by nonnative animal species, conversion of rangeland habitat to agricultural land, and invasion of native habitats by nonnative plant species. Within the action area, management and maintenance activities on watershed lands by the SFPUC, PG&E and other easement holders may affect the California red-legged frog, San Francisco garter snake, and Mission blue butterfly by removal or alteration of suitable habitat, direct mortality of individuals due to vehicular collisions, and loss of habitat due to the addition of various infrastructures.

16. Biological Opinion for Valencia Creek Fish Ladder Replacement Project, Santa Cruz County, California (File Number 30233S) (1-8-06-F-28) (CON06F28) (USFWS December 19, 2006)

For the purposes of this biological opinion, USFWS considers the action area to include all areas where people and equipment would be working or staging. Based upon the information provided to us, we identify the action area as follows: the approximately 600 ft of Valencia Creek between the upstream end of the Soquel Drive culvert and the downstream end of the Caltrans culvert.

16.1 ENVIRONMENTAL BASELINE

The proposed project site is within the range of the California red-legged frog and potential foraging and sheltering habitat is present onsite (Kittleson Environmental

Consulting and Biosearch Associates 2005). Valencia Creek does not provide high-quality breeding habitat for California red-legged frogs at the project site, primarily due to high flows during the breeding season, which may wash eggs and larvae away. However, if an off-channel breeding pond is present in the area California red-legged frogs may use the project site as “summer habitat.” California red-legged frogs will cross a variety of habitats during winter months to facilitate movements from non-breeding refugia to breeding sites. Juvenile California red-legged frogs could occur on the site during dispersal movements from breeding ponds in the late summer.

A review of the California Department of Fish and Game (CDFG) Natural Diversity Data Base “RareFind 3” (CNDDDB) (CDFG 2005) reveals the presence of California red-legged frogs within 5 miles of the project site. Although there are no records within 1 mile of the project site, there are several records within 5 miles. The nearest known breeding location for the California red-legged frog is the Millsap Pond, which is situated approximately 3.5 miles to the east (Biosearch 2001). There is a historic record from 1963 of a California red-legged frog that was photographed in a fish pond near Mangels Gulch, less than 1.5 miles north-northwest of the project site.

Valencia Creek is a perennial stream within the Aptos Creek watershed in Santa Cruz County. Kittelson Environmental Consulting and Biosearch Associates (2005) report that the primary habitats in the vicinity of the Valencia Creek fish ladder replacement project are big leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*) riparian, and second-growth redwood (*Sequoia sempervirens*) forest. The understory is dominated by Cape ivy (*Senecio mikainoides*), English ivy (*Hedera helix*), and periwinkle (*Vinca minor*), although some California blackberry (*Rubus californica*) and stinging nettle (*Urtica dioica*) is present. Nearby surrounding lands are mostly developed and the riparian corridor is disrupted by major roadways, culverts, and a steel trestle trail bridge, although a few scattered single-family residences are also present. Topography in the area is hilly. At the project location, the creek’s substrate is generally silt and sand. The subject channel is deeply incised into resistant siltstone bedrock and contains a moderate amount of submerged woody material in the reach between the affected culverts.

16.2 CUMULATIVE EFFECTS

USFWS is not aware of any non-federal actions that are reasonably certain to occur in the action area.

17. Biological Opinion for the San Simeon Creek Road Bridges Replacement Project, San Luis Obispo County, California (1-8-06-F-39) (CON06F39) (USFWS October 10, 2006)

For the purposes of this biological opinion, USFWS considers the action area to include the 5.4 acres that would be temporarily and permanently affected by the project. The action area consists of the stream corridor and riparian zone of San Simeon Creek, and

the associated upland areas, all extending approximately 0.5 mile upstream and downstream of each bridge.

17.1 ENVIRONMENTAL BASELINE

California red-legged frogs are known from San Simeon Creek (N. Scott pers. comm. 2001, S. Kirkland pers. obs. 2001). Adult California red-legged frogs were also observed within 600 feet of Bridge 1 in August 2000. No California red-legged frogs were observed at Bridge 2 during three surveys efforts. No water was present in the creek 300 feet upstream and 250 feet downstream of Bridge 2, therefore night time surveys were not conducted (Caltrans 2006, Hunt 2002).

Although there are bedrock and scour pools near Bridge 1 that support California red-legged frogs into the dry season, the pools lacks emergent vegetation and do not appear to be present year round. The riparian vegetation in the vicinity of the two bridges is sparse and occurs mainly along the top of the southern stream bank. The banks are generally steep, or vertical, and incised with exposed tree roots in places, showing evidence of scour from high velocity winter flows. However, the incised banks and exposed tree roots probably provide sheltering habitat for California red-legged frogs when flows are low during the drier parts of the year. The reach of stream surveyed near Bridge 2 was dry during August 2000 and the substrate did not show any evidence of scour or bed rock pools. The presence of high velocity winter flows, a lack of back water areas and emergent vegetation likely prohibit California red-legged frogs from breeding in the vicinity of the two bridges.

17.2 CUMMULATIVE EFFECTS

USFWS is not aware of any non-federal actions that are reasonably certain to occur in the action area.

18. Biological Opinion for Los Berros Creek Restoration Project, Near Arroyo Grande, San Luis Obispo County, California (File No.200401924) (1-8-06-F-12) (CON06F12) (USFWS April 26, 2006)

For the purposes of this biological opinion, USFWS considers the action area to include the 115 and 125 linear foot sections of the Los Berros Creek bank and the adjacent uplands where the farm road would be relocated.

18.1 ENVIRONMENTAL BASELINE

The Natural Resource Conservation Service conducted a night-time survey and did not observe any California red-legged frogs at the project site even though the project site provides suitable habitat. The closest known locations of California red-legged frogs are approximately 1-mile upstream of the project site, in a southern tributary to Los Berros Creek where at least 15 adult red-legged frogs were observed in June 2002. Similarly,

one sub-adult was observed approximately 1-mile upstream in a middle tributary to Los Berros Creek (CNDDB 2003).

The creek enters the project site after flowing under El Campo Road Bridge and contains steep banks at the meander bends that are approximately a 1:1 slope and are actively eroding. The creek is typically dry outside of the wet season, although the creek flowed all year in 2005 at the project site (Wylie 2005). The vegetation on the bank varies from bare banks (ruderal annuals) to dense native blackberries (*Rubus ursinus*). In the past, Mr. Kobara has attempted to increase the extant of berries with mixed success; most areas with excessively steep banks failed.

18.2 CUMULATIVE EFFECTS

USFWS is not aware of any non-federal actions that are reasonably certain to occur in the action area.

19. Biological and Conference Opinion for the Picachio Road Bridge Replacement over Cayucos Creek, San Luis Obispo County, California (Document # P53329) (1-8-06-F-11)(CON06F11) (USFWS March 16, 2006)

For the purposes of this biological opinion, USFWS considers the action area to include all portions of Cayucos Creek, extending approximately 140 feet upstream and 140 feet downstream of the existing bridge, and the associated upland areas, extending out approximately 200 feet from the creek banks and subject to disturbance as a result of the proposed project.

19.1 ENVIRONMENTAL BASELINE

Cayucos Creek, within the action area, contains suitable California red-legged frog aquatic habitat. During a daytime site visit on April 20, 2003, Caltrans' biological consultants observed four juvenile California red-legged frogs within 60 feet of the existing bridge in slow moving water, with an overhanging willow canopy (Caltrans 2005). Protocol surveys for California red-legged frogs were conducted in September and October 2003. However, no California red-legged frogs were observed during protocol surveys (Caltrans 2005).

Although water flow in Cayucos Creek is seasonal and intermittent, the presence of juvenile California red-legged frogs in the action area in April suggests that water levels can be of sufficient depth to support breeding. The action area also contains upland habitat consisting of riparian, ruderal, and agricultural land suitable for foraging and dispersal.

The project area is located within California red-legged frog proposed critical habitat unit SLO-5. This unit encompasses approximately 10,870 acres. This unit extends from Point Estero to Cayucos Creek. This unit provides connectivity within the Santa Lucia

Range and between the Santa Lucia Range and inner Coast Ranges in San Luis Obispo County. Areas within the unit contain permanent and ephemeral aquatic habitats suitable for breeding and upland areas for dispersal, shelter, and foraging.

19.2 CUMMULATIVE EFFECTS

USFWS is not aware of any non-federal actions that are reasonably certain to occur in the action area.

20. Biological Opinion for the State Route 41 Culvert Lining Project Near the City of Atascadero, San Luis Obispo County, California (File No. 200600330-HW) (1-8-06-F10)(CON06F10) (USFWS March 13, 2006)

For the purposes of this biological opinion, USFWS considers the action area to include the working areas around the culvert inlets and outlets (a maximum of 1,600 square feet) and approximately 0.25 mile of Morro Creek, from the upstream placement of the cofferdam at Location 1 to downstream of the culvert outlet at Location 2 where the water would be pumped back into the creek bed.

20.1 ENVIRONMENTAL BASELINE

Caltrans biologists (Tom Edell, Torrey Edell, and Karen Bewley) conducted surveys of the project site on October 20, 2004, and July 14 and 27, 2005. During these surveys, Caltrans did not observe any California red-legged frogs although there is one record of a California red-legged frog 0.9-mile downstream of the project site (CNDDDB 2003). While there are no confirmed breeding sites within one mile of the project site, potentially suitable habitat is present along Morro Creek, a permanent water source.

At Location 1, the culvert inlet and outlet are under the canopy of *Umbellularia californica* (California bay) and *Quercus agrifolia* (coast live oak) with *Toxicodendron diversilobum* (poison-oak), *Lonicera involucrata* (twinberry), and *Rubus ursinus* (California blackberry) present in the understory. The inlet and outlet at Location 2 are surrounded by small *U. californica*, *Salix lasiolepis* (arroyo willow), and *Quercus lobata* (valley oak). *Rhamnus californica* (coffeeberry), *Q. agrifolia*, *Baccharis pilularis* (coyote brush), and *Mimulus aurantiacus* (sticky monkey flower) are also present. Non-native grasses dominate the disturbed road shoulder and grasslands that surround the project site. Stream flow keeps the streambed and low banks free of vegetation at the outlet pools.

The culverts convey the flow of Morro Creek under State Route 41. Caltrans observed water at Locations 1 and 2; surface water likely persists during wet years and travels subsurface in dry years. Location 1 and 2 contain scour pools at the culvert outlets that could provide suitable habitat for California red-legged frogs. The scour pool at Location 1 is approximately 30 feet long and 20 feet wide, with a maximum depth of 1.5 feet, with clear water over a gravel bottom. Although there is no overhanging vegetation at

Location 1, the undercut *Umbellularia californica* roots may provide some cover. Downstream of the scour pool, Morro Creek averages only a few inches in depth. The scour pool at Location 2 is approximately 20 feet long and 12 feet wide, less than one-foot deep, with clear water over a gravel bottom. The scour pool was overgrown with vegetation and not easily accessible.

20.2 CUMULATIVE EFFECTS

USFWS is not aware of any non-federal actions that are reasonably certain to occur in the action area.

21. Formal Endangered Species Consultation on U.S. Route 49, Logtown Highway Widening and Curve Realignment, El Dorado County, California (06F0063) (USFWS February 10, 2006)

The action area for this project includes the project area and suitable California red-legged frog habitat within 1.25 miles (2 kilometers) of the project. This action area is based on observations of California red-legged frog migrations from breeding habitats to non-breeding habitats, and their dispersal through a wide diversity of aquatic and upland habitats (Bulger *et al.* 2003).

21.1 ENVIRONMENTAL BASELINE

The California red-legged frog was historically found west of the Sierra-Cascade crest at elevations below 5,000 feet (Jennings and Hayes 1994). Historic records indicate more than 60 California red-legged frog populations in the Sierra Nevada, from Plumas and Butte counties in the north to Tulare County in the south. Today only six documented populations are known to remain in the Sierra Nevada, and breeding has only been documented at five of these sites. The known occurrences from the Sierra Nevada are all isolated populations ranging in elevation from 800 to 3,200 feet (240 to 975 meters); all are currently populated at low densities and none is known to include more than one aquatic breeding habitat.

The designation of core Recovery Units (priority one watersheds) is not intended to limit the scope of recovery plan implementation. Areas of suitable or potentially suitable habitat outside of core areas (in priority two and priority three watersheds) also need to be examined for the recovery of the frog and managed accordingly. Priority two watersheds are those that are not listed as core areas but currently support the California red-legged frog. These watersheds need appropriate conservation and management to ensure population viability and connectivity to core areas and other suitable habitat. Priority three watersheds are areas that historically had California red-legged frogs but where habitat suitability has been degraded and habitat restoration needs to occur prior to recolonization or reestablishment. The likelihood of successful recovery in these watersheds is lower than in the core areas and priority two watersheds.

The California red-legged frog will be considered for delisting when: suitable habitat within all core areas are protected and managed in perpetuity for the frog; ecological integrity of the core areas is not threatened by adverse anthropogenic habitat modification and; populations are stable (with existing populations throughout the range of the species having reproductive rates that allow for long term viability without human intervention, including stable or increasing populations at each core area), well distributed geographically (so that viable metapopulations persist despite fluctuations of local subpopulations), linked by suitable habitat, and successfully reestablished in portions of its historic range (so at least one reestablished population is stable or increasing at each core area where frogs are currently absent). These delisting criteria may be revised over time, based on new information. Because only five small breeding populations are presently known to remain in the Sierra Nevada, to recover this subspecies in this region all efforts must be made to protect known populations from adverse disturbances. Protecting and enhancing habitat at each of the known sites, protecting suitable habitat within dispersal distance of known sites, and maintaining habitat connectivity are critical for the survival and recovery of this subspecies in the Sierra Nevada. Threats to any of the six known locations of California red-legged frogs in the Sierra Nevada may reduce the potential for the recovery of the species in this part of its range. Due to the low population densities and isolation of all known California red-legged frog populations within the Sierra Nevada, their continued survival is vulnerable to disturbances including catastrophic and stochastic events. Conservation of suitable California red-legged frog habitat and the extant California red-legged frog populations in the Sierra Nevada are essential to the survival and recovery of the species because the populations in this area exhibit unique morphological (and possible genetic) characteristics implicating a possible genetic divergence from the remaining extant populations of California red-legged frogs (Bany 1999).

The recovery plan designated three core recovery areas in the Sierra Nevada: the Feather River watershed, the Yuba River and South Fork Feather River watersheds, and the Weber Creek and Cosumnes River watersheds (U.S. Fish and Wildlife Service 2002). Portions of these watersheds have been designated as core recovery areas because they are currently occupied by the California red-legged frog, they have the potential for long-term viability of the existing populations, they have the potential to serve as source populations for the reestablishment and augmentation of populations elsewhere, and they contain suitable California red-legged frog habitat. The project is located in the Weber Creek and Cosumnes River watersheds Core Area. Within the Sierra Nevada Foothills and Central Valley Recovery Unit, the sites with extant California red-legged frog populations are: French Creek, in the Feather River watershed (private land currently being transferred to the Plumas National Forest), Butte County; Little Oregon Creek, in the North Fork Yuba River watershed (Plumas National Forest), Yuba County; Sailor Flat, in the South Fork Yuba River watershed (private land), Nevada County; Ralston Ridge, in the Middle Fork American River watershed (El Dorado National Forest), Placer County; Spivey Pond, Weber Creek, in the South Fork of the American River watershed (Bureau of Land Management), Eldorado County; Young's Creek, in the Calaveras River watershed (private land), Calaveras County. The Placer County population (discovered in 2001) is known only from a single frog, found near the confluence of the Rubicon and

Middle Fork American Rivers; its breeding site is unknown. It is possible that additional, small undocumented populations currently exist within the Sierra Nevada.

On March 31, 1961, E. K. Teberg collected a California red-legged frog "two miles south of El Dorado" and deposited the specimen at the University of California, Berkeley's Museum of Vertebrate Zoology (Specimen No. MVZ-187299). The site description attached to this specimen places the collection locality at the center of the project area. Jason Meigs of Caltrans made daytime visits to accessible aquatic habitats in the action area in 2005 and observed no California red-legged frogs, but no protocol-level surveys have been conducted of the project area or any nearby sites.

The next nearest records of California red-legged frogs are associated with collections from Weber Creek in the vicinity of Placerville, approximately four to five miles (6.4 to 8.0 kilometers) north of the project area. Those collections were made in 1935 (MVZ-19057 -MVZ-19060) and 1957 (Sean Barry, personal communication). Currently, the known breeding population closest to the proposed action is at Spivey Pond. This population is located on North Fork Weber Creek, approximately 10 miles (16 kilometers) upstream of the historic Weber Creek observations and 15 miles (24 kilometers) from the Project area, was only discovered in 1998. In 1996 and 1997, adult California red-legged frogs were detected at two locations on North Fork Weber Creek, upstream of Weber Dam, and from South Fork Weber Creek at Snows Road. Egg masses were first detected at Spivey Pond on April 27, 1998 on North Fork Weber Creek (also upstream of Weber Dam). Multiple annual surveys of this site have confirmed the continued existence of a population at Spivey Pond.

Surveys of Weber Creek outside of Spivey Pond have been limited to small areas. In 1998 (Foothill Associates Environmental Consultants) and 2000 (Greystone Environmental Consultants) surveys of North Fork Weber Creek from Weber Reservoir to 1300 feet (400 meters) downstream, were conducted. Suitable habitat was reported to be present but was not quantified, and no California red-legged frogs were observed. Negative protocol-level surveys of Weber Creek near U.S. Highway 50 were also conducted as part of the Missouri Flat Interchange Project (Service File No. 1- 1-04-F-12). However, these surveys all used the Service's February 18, 1997, *Guidance on Site Assessment and Field Surveys for California Red-legged Frogs*. This protocol has not been successful in detecting California red-legged frog populations where they occur in low numbers. The Service recently revised this protocol to increase its effectiveness in detecting California red-legged frog populations that consist of few individuals (U.S. Fish and Wildlife Service 2005a).

Upland habitats within the project area include interior live oak woodland and valley-foothill riparian forest; an intermittent stream course with associated wetlands parallels the western boundary of the project area. The landscape within the action area includes ephemeral and permanent ponds and a complex mixture of low and moderate density residential development and agricultural lands used for livestock grazing. State Route 49 and the county road network may impede dispersal of California red-legged frogs. The biological assessment notes that State Route 49 is the primary highway serving this

region and experiences moderate to heavy usage, but that roads in the area are equipped with culverts and bridges which would allow safe passage of dispersing or migrating California red-legged frogs. Because the California red-legged frog was collected from this area in the past, and suitable is present in the action area, this species is likely to be present.

21.2 CUMULATIVE EFFECTS

Numerous non-Federal activities continue to negatively affect the California red-legged frog in the action area. Interrelated and cumulative effects are typically difficult to assess because of a lack of specific information on planned growth (non-Federal development and transportation projects). Most often these future development sites have not been intensively surveyed for biological resources. Habitats are lost or degraded as a result of residential development, road and utility construction and maintenance, and water irrigation and storage projects that may not be funded, permitted, or constructed by a Federal agency. Other threats include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may impact listed species, such as conversion of land, ground squirrel reduction efforts, mosquito control, and residential development, may occur without consultation with or authorization by the Service or the California Department of Fish and Game pursuant to their respective Endangered Species Act.

From 2000 to 2025, the human population of West Slope El Dorado County is projected to increase by 68 percent, and from 1990 to 2000 growth was more rapid in unincorporated areas of the county (El Dorado County General Plan 2004). The action area currently supports a mixture of residential development on 1-5 acre (0.4-2.0 hectares) lots, and less dense agricultural and rural residential development (El Dorado County General Plan 2004). There is a continued demand for new housing in El Dorado County. Considering this, the remaining open space adjacent to State Route 49 is likely threatened by additional development. Development of adjacent wildlife habitat will continue to result in the loss of not only breeding, resting, and foraging habitat, but the loss of dispersal corridors between breeding populations, thereby further isolating and fragmenting wildlife populations. However, because this project only modifies the existing road for safety purposes and does not increase traffic capacity, this project will not facilitate future development of California red-legged frog habitat in the action area.

22. Intra-Service Section 7 Formal Consultation of a Proposed Enhancement of the Sailor Flat California Red-Legged Frog Habitat through the Conservation Partnerships Program in Nevada County, California. (06F0204) (USFWS September 06, 2006)

22.1 ENVIRONMENTAL BASELINE

In 1996 when the frog was listed, 243 streams or drainages in 22 California counties were

documented to contain populations (California Natural Diversity Database (CNDDDB) 2004). At the time of listing, the frog was believed to have been extirpated from most of the southern Coastal Mountains from Santa Barbara south to Baja California and east along the Transverse (San Gabriel, San Bernadino, Santa Ynez, and Santa Monica Mountains) and Peninsular Ranges (San Jacinto, Santa Rosa, Agua Tibia, Laguna, Santa Ana Mountains). Since listing, two occurrences have been discovered south of the Tehachapi Mountains (CNDDDB 2005). Five additional occurrences have been recorded in the Sierra Nevada foothills, bringing the total to six known populations, compared to approximately 26 historical records (Berkeley Museum of Vertebrate Zoology 2004; CNDDDB 2004; California Academy of Sciences 2004; Barry in *litt.* 2005).

The Nevada County frog population at Sailor Flat was first documented in 2002. In June 2003, Peter Epanchin of the Service reported observing four adult frogs and one tadpole at this site. During nocturnal surveys on August 15, 2006, Don Hankins of California State University, Chico and Trish Tatarian of Wildlife Research Associates observed six adult and one recently metamorphosed frogs. Other ponds are present on this property, but to date frogs have only been observed at the Barn Pond. In August 2006 the on-site tenant reported that mosquitofish were added to the Barn Pond by representatives of the Nevada County Agriculture Department. Prior to that time, no bullfrogs, fish, crayfish, or other exotic predators or competitors had been observed at this site. Due to sediment accumulation, most of Barn Pond is currently too shallow to provide suitable breeding and tadpole rearing habitat for the frog.

The Service has approved a timber harvest plan (Service File No: 1-1 –TA-05-1876) for this property including. By avoiding areas within 300 feet of the Barn Pond, and completing work during the dry season, this timber harvest plan avoids the potential for take of the frog. This project will occur concurrently with the pond restoration.

22.2 CUMULATIVE EFFECTS

The Service has approved a timber harvest plan (Service File No: 1 -1-TA-05-1876) for this property which will limit operations to the dry season and completely avoid areas within 300 feet of the pond. This project will occur concurrently with the pond restoration. It is the USFWS's understanding that there are no additional projects proposed within the action area.

23. Biological Opinion for Watsonville Sloughs-Manabe Property Wetland Restoration Project, Santa Cruz County, California (File Number 30074S) (1-8-06-F-25) (CON06F25) (USFWS August 2, 2006)

For the purposes of this biological opinion, USFWS considers the action area to include all areas where people and equipment would be working or staging. Based upon the information provided to us, we identify the action area as follows: the 25 acres of habitat

occurring within the area of proposed activities, including the channelized portion of Watsonville Slough between Highway 1 and Harkins Slough Road and the adjacent agricultural land between Ohlone Parkway and Kearney Road.

23.1. ENVIRONMENTAL BASELINE

The action area occurs within the Watsonville Slough watershed and is within the range of the California red-legged frog (Service 2002). California red-legged frogs have been observed at the edge of the open water of the Watsonville Slough approximately 0.3 mile upstream of the project site (Dana Bland & Assoc. 2004). Biologists conducted surveys for sensitive wildlife species and assessed the habitat at the proposed project site in January 2006 (Biotic Resources Group 2006a). The wildlife surveys consisted of walking the project area and, where access was infeasible, surveying the area from public roads. To assess the potential occurrence of special status biotic resources, biologists consulted the California Department of Fish and Game (CDFG) Natural Diversity DataBase "RareFind 3" (CNDDDB)(CDFG 2005) for the quadrangle containing the project site: Watsonville West U.S.G.S. 7.5' quadrangle. Wildlife biologists did not survey for California red-legged frogs according to the Service's Guidance on Site Assessment and Field Surveys for California Red-legged Frogs, dated February 18, 1997.

During these surveys, Biotic Resources Group (2006a) reported that habitat at the proposed project site included agricultural fields/non-native (ruderal) grassland, coastal freshwater marsh, and central coast riparian scrub (both inundated and dry). Open water areas also occur in the project area; the extent of open water varies by season. The project area is mostly agricultural land (22.66 acres); native vegetation is limited to the narrow strip of freshwater marsh (0.25 acre) along the channelized section of Watsonville Slough and a small patch of riparian scrub (0.09 acre).

During these surveys, the Biotic Resources Group (2006) determined that although California red-legged frogs may utilize the project area during dispersal between more suitable habitats within the slough, it is unlikely that they breed on the project site due to unfavorable site conditions, including abundance of non-native predators (i.e., crayfish, fish, and bullfrogs (*Rana catesbeiana*)), variable water levels (including high flows during winter rains) within the ditched portions of the slough, and limited vegetation within the winter open waters areas to provide cover and attachment for eggs.

23.2 CUMULATIVE EFFECTS

USFWS is unaware of any other non-federal actions that are reasonably certain to occur and are likely to adversely affect the California red-legged frog in the action area.

24. Formal Consultation and Conference on the Stage Gulch Road (State Route 116) Curve Correction and Realignment Project, Sonoma County, California (HAD-CA File # 04-Son-116, PM 41.8-44.7, Document # P51361) (05F0025) (USFWS July 12, 2005)

The project area falls within Core Area # 12 (Petaluma Creek-Sonoma Creek). The conservation needs for this core area are: (1) protect existing populations; (2) reduce impacts of urban development; and (3) protect, restore, and/or create breeding and dispersal habitat.

24.1 ENVIRONMENTAL BASELINE

The County of Sonoma is within the current range of the California red-legged frog, and there are 13 records in the California Natural Diversity Data Base. This species was observed in an abandoned man-made pond on Sonoma County Transfer Station property about 0.1 miles northwest of the project area. On August 27, 2004, a Caltrans biologist observed a California red-legged frog on August 27, 2004, in a plunge pool below directly below the double barrel culvert on Champlin Creek under the Sonoma County Transfer Station Road. There are no other reported sightings of the frog within the Champlin Creek watershed; however, there have been several historical sightings within a 10-mile radius of the project area. California red-legged frogs have been recorded moving 1-2 miles. Suitable habitat is located within and adjacent to the action area. Therefore, the Service has determined it is reasonable to conclude the red-legged frog inhabits the action area, based on the observations of animals in the vicinity, the biology and ecology of the animal, the presence of suitable habitat, as well as the recent observation of the animal in the action area.

On March 13, 2001, the final rule determining critical habitat for red-legged frogs was published in the Federal Register (U.S. Fish and Wildlife Service 2001). This rule established 31 critical habitat units based on three primary constituent elements: (a) essential aquatic habitat; (b) associated uplands; and (c) dispersal habitat connecting essential aquatic habitat. In November 2002, the U.S. District Court for the District of Columbia vacated most of the 2001 designation and ordered the Service to publish a new critical habitat proposal. On April 13, 2004, the Service re-proposed 4.1 million acres in 28 California counties as critical habitat for the frog (U.S. Fish and Wildlife Service 2004). This proposed rule basically re-proposes the same areas designated critical habitat in the 2001 final rule.

The Service is required to list the known primary constituent elements together with the critical habitat description. Such physical and biological features include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species (U. S. Fish and Wildlife Service 2004).

Due to the complex life history and dispersal capabilities of the California red-legged frog, and the dynamic nature of the environments in which they are found, the primary constituent elements described below are found throughout the watersheds that are proposed as critical habitat. Special management, such as habitat rehabilitation efforts

(e.g., removal of nonnative predators), may be necessary in the area designated. The proposed critical habitat for the California red-legged frog provides for breeding and non-breeding habitats and for dispersal between these habitats, as well as allowing for expansion of frog populations vital to the recovery of the subspecies. The proposed critical habitat includes: (a) essential aquatic habitat; (b) associated uplands; and (c) dispersal habitat connecting essential aquatic habitat.

Aquatic habitat is essential for providing space, food, and cover, necessary to sustain all life stages of red-legged frogs. It consists of virtually all low-gradient fresh water bodies, including natural and man-made (e.g., stock) ponds, backwaters within streams and creeks, marshes, lagoons, and dune ponds, except deep lacustrine water habitat (e.g., deep lakes and reservoirs 50 acres or larger in size) inhabited by nonnative predators. The subspecies requires a permanent water source to ensure that aquatic habitat is available year-round. Permanent water sources can include, but are not limited to, ponds, perennial creeks, permanent plunge pools within intermittent creeks, seeps, and springs. Aquatic habitat used for breeding usually has a minimum deep water depth of 20 inches, and maintains water during the entire tadpole rearing season (at least March through July). During periods of drought, or less-than-average rainfall, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but because they support breeding in wetter years these sites would still be considered essential breeding habitat. Ponds that support a small population of red-legged frogs, but are not surrounded by suitable upland habitat, or are cut off from other breeding ponds or permanent water sources by impassable dispersal barriers, do not have the primary constituent elements for proposed California red-legged frog critical habitat.

To be a primary constituent element for California red-legged frog proposed critical habitat, the aquatic components within the designated boundaries must include two or more breeding sites (as defined above) located within 1.25 miles of each other; at least one of the breeding sites must also be a permanent water source; or, the aquatic component can consist of two or more seasonal breeding sites with a permanent non-breeding water source located within 1.25 miles of each breeding site. California red-legged frogs have been documented to travel 2.25 miles in a virtual straight line migration from non-breeding to breeding habitats (U.S. Fish and Wildlife Service 2001a). In addition, breeding sites must be connected by dispersal habitat connecting essential aquatic habitat, described below.

Associated upland and riparian habitat is essential to maintain California red-legged frog populations associated with essential aquatic habitat. The associated uplands and riparian habitat provide food and shelter sites for California red-legged frogs, and assist in maintaining the integrity of aquatic sites by protecting them from disturbance and supporting the normal functions of the aquatic habitat. Key conditions include the timing, duration, and extent of water moving within the system, filtering capacity, and maintaining the habitat to favor red-legged frogs and discourage the colonization of nonnative species such as bullfrogs. Essential upland habitat consists of all upland areas within 300 feet, or no further than the watershed boundary, of the edge of the ordinary high-water mark of essential aquatic habitat (U.S. Fish and Wildlife Service 2001a).

Essential dispersal habitat provides connectivity among California red-legged frog breeding habitat (and associated upland) patches. While frogs can pass many obstacles, and do not require a particular type of habitat for dispersal, the habitat connecting essential breeding locations and other aquatic habitat must be free of barriers (e.g., a physical or biological feature that prevents frogs from dispersing beyond the feature) and at least 300 feet wide. Essential dispersal habitat consists of all upland and wetland habitat free of barriers that connects two or more patches of essential breeding habitat within 1.25 miles of one another. Dispersal barriers include heavily traveled roads (an average of 30 cars per hour from 10:00 p.m. to 4:00 a.m.) that possess no bridges or culverts; moderate to high density urban or industrial developments; and large reservoirs more than 50 acres in size. Agricultural lands such as row crops, orchards, vineyards, and pastures do not constitute barriers to California red-legged frog dispersal.

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The Stage Gulch Road project occurs within the American Canyon unit (Unit 11), which consists of watersheds within and adjacent to American Canyon Creek and Sulphur Springs Creek in Napa and Solano counties. Watersheds within this unit include Fagan Creek, a tributary to the Napa River, the Jameson Canyon watershed, and the Sky Valley and Pine Lake watersheds that flow into Lake Herman. The unit encompasses 27,779 acres of which 99 percent is privately owned. Unit 11 is owned by several subpopulations of the California red-legged frog.

Unit 15 has been affected by activities that destroy essential aquatic and upland habitats, and dispersal habitats providing connectivity between subpopulations. Degradation and loss of these habitats have occurred through urbanization, mining, inappropriate management of grazing, recreation, invasion of non-native plants, impoundments, water diversions, degraded water quality, and introduced predators.

The action area is relatively undeveloped, and it contains State Route 116, and several ranches. The surrounding habitat includes several vegetation communities, including valley oak woodland, annual non-native grassland, seasonally wetted areas with associated vegetation, and ponds. As described in the *Stage Gulch Road Curve*

Correction and Re-alignment Project Biological Assessment for the California Red-Legged Frog (Rana aurora draytonii), and other sources of information, essentially all undeveloped lands on and adjacent to the project site contain the constituent elements of proposed California red-legged frog critical habitat, including essential aquatic habitat, associated uplands, and essential dispersal habitat.

24.2 CUMULATIVE EFFECTS

From 1995 to 2020, the human population is projected to increase by 18 percent for the San Francisco Bay hydrologic region, while at the same time agricultural crop land use in the region is projected to remain around 65,000 acres (California Department of Water Resources 998). According the California Department of Forestry, from 2000 to 2020, the human population within counties in the Bay Area region is expected to grow by 29 percent (5.3 million people to 6.8 million people), and by 60 percent from 2000 to 2040 (5.3 million people to 8.4 million people) (California Department of Forestry 1998). There will likely be many other development projects that occur during this timeframe due to increases in human population growth that will continue to imperil the California red-legged frog.

Numerous non-Federal activities continue to negatively impact the frog in the action area. Habitats are lost or degraded as a result of urbanization, road and utility construction and maintenance, overgrazing, agricultural expansion, and water irrigation and storage projects that may not be funded, permitted, or constructed by a Federal agency. Other threats include contamination, poisoning, increased predation, and competition from non-native species associated with human development. Small private actions that may impact listed species, such as conversion of land, ground squirrel reduction efforts, mosquito control, and residential development, may occur without consultation with or authorization by the Service. Caltrans has identified two projects that may adversely affect the red-legged frog. The Transfer Station Road Project and the Carneros View Winery have the potential to impact Champlin Creek with sheet piling and/or soil movement during construction.