

## CHAPTER 11. ALTERNATIVES TO TAKE

### 11.1 INTRODUCTION

The federal Endangered Species Act (ESA) requires that section 10 permit applicants specify in habitat conservation plans (HCPs) what alternative actions to the taking of federally listed threatened and endangered species were considered and the reasons why those alternatives are not proposed to be used.<sup>1</sup> There is no similar requirement under the Natural Community Conservation Planning Act (NCCPA). This chapter describes alternative actions to take that were considered for each of the covered wildlife and fish species. Federally listed threatened and endangered plants are not protected in the same way as wildlife and fish under the ESA, and the take prohibition does not apply to plants. The ESA requirement to evaluate alternatives to take does not apply to plants; therefore covered plant species are not addressed in this chapter. Although ESA section 10 only requires that alternatives to take be described for federally listed species (Section 11.3.2, *Covered Wildlife and Fish Species with ESA Status*), unlisted Butte Regional Conservation Plan (BRCP) covered wildlife and fish species are also addressed in this chapter (Section 11.3.3, *Covered Wildlife and Fish Species without ESA Status*) because they could become listed at some time during the 40-year permit period.

The U.S. Fish and Wildlife Service (USFWS)/National Marine Fisheries Service (NMFS) *HCP Handbook* (USFWS/NMFS 1996) identifies two types of alternatives typically considered in HCPs: 1) alternatives that would result in take levels below those anticipated for the proposed project, and 2) alternatives that would cause no incidental take, thereby eliminating the need for an incidental take permit. These HCP alternatives to take are not defined in the same way as alternatives in a National Environmental Policy Act (NEPA) process; more detailed project alternatives are considered in the draft environmental impact report/environmental impact statement (EIR/EIS) that accompanies this draft BRCP.

The assessment of alternatives to take for the BRCP is presented for two levels of ecological scale: 1) regional (Plan Area) and 2) individual wildlife and fish species. This approach reflects how the regional local government general plan and the BRCP planning processes developed and selected alternatives that avoided and minimized impacts on covered wildlife and fish species occurrences and habitat and how take of these covered species were further reduced through provisions of the BRCP. At the regional level, a discussion is provided of the process used in developing the County's and cities' general plans and their integration with BRCP development to avoid and minimize take of covered species. As required by the ESA, the reasons for rejecting certain general plan alternatives are provided. At the species level, alternative approaches are described for each covered wildlife and fish species and the reasons for rejecting alternative approaches are given.

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<sup>1</sup> 50 Code of Federal Regulations 17.22(b)(1)(iii)(C).

## 11.2 ALTERNATIVES TO TAKE EVALUATED AT THE REGIONAL SCALE

This section provides a description of planning processes within the BRCP Plan Area that evaluated alternatives with greater and lesser amounts of impacts on and take of federally listed wildlife and fish. Alternatives with different levels of impacts on and take of covered species were evaluated at the regional scale through the County and city (Chico, Oroville, Gridley, Biggs) local general plan update planning process. These general plans were developed with full public input to address local growth and development goals and also in conjunction with development of the BRCP to avoid and minimize take of covered wildlife, fish, and plant species. The development of the BRCP also incorporated alternative approaches to covered activities and conservation actions that further avoid and minimize impacts on and take of federally listed and other covered wildlife and fish species (and also covered plant species) that could have resulted from the chosen general plan preferred alternatives.

Reasons for rejecting specific general plan alternatives that would have lesser impacts on species than other alternatives were as follows:

1. The alternative is not consistent with the overall goals and objectives of the County and city general plans, planned infrastructure improvements, and the BRCP; and
2. The alternative is not practicable in light of cost, logistics and technology.

Because of the large number of covered species and the complexity of habitat distribution across the Plan Area, some alternatives have lesser impacts on certain species and greater impacts on other species relative to the preferred alternative. These instances are noted along with the reasons for rejection listed above.

The coordinated process of general plan development and BRCP development relative to avoidance and minimization of take on covered species is depicted in Figure 11–1, *Coordination of and Relationship between County and City General Plans and BRCP Planning Processes* (see separate file). As the general plans were developed, the BRCP provided information on biological resources and biological constraints to land development to support the local planning agencies in their preparation of land use alternatives and identification of their eventual general plan preferred alternatives. The preferred alternatives from the general plans were incorporated into the BRCP covered activities (Figure 11–1).

In development of the BRCP, several BRCP elements were used to further reduce impacts of planned future development (under the general plans' preferred alternatives) on covered species, specifically impact limits and avoidance and minimization measures (Figure 11–1). The BRCP sets limits on the amount of impacts on natural communities and covered species habitat and occurrences allowable within designated Urban Permit Areas (UPAs) and Conservation Acquisition Zones (CAZs). For several sensitive natural communities (e.g., vernal pool complex, riparian, open waters, and permanent wetlands) those impact limits are set below the level of impacts identified by a full application of the potential land use footprint of the general

plans (see planned development in Figures 4–1 to 4–4 and 4–3, *Maximum Extent of Permanent Direct Impacts on Natural Communities and Land Cover Types within the Plan Area*). These impact limits result in reduced impacts on California black rail, foothill yellow-legged frog, western pond turtle, valley elderberry longhorn beetle, Swainson’s hawk, bald eagle, white-tailed kite, western yellow-billed cuckoo, and yellow-breasted chat. In addition, the BRCP includes avoidance and minimization measures (see Chapter 6, *Conditions on Covered Activities*) that identify specific requirements for the avoidance and minimization of direct and indirect impacts on covered species occurrences and habitats and natural communities based on planning and preconstruction survey results. Covered wildlife species for which specific avoidance and minimization measures are included in the BRCP are California black rail, Conservancy fairy shrimp, western burrowing owl, western spadefoot toad, foothill yellow-legged frog, western pond turtle, Blainville’s horned lizard, giant garter snake, and valley elderberry longhorn beetle; nest sites for all covered raptor species; greater sandhill crane winter roosts; western yellow-billed cuckoo; yellow-breasted chat; vernal pool invertebrates; and all covered fish species.<sup>2</sup>

The following section describes the process to develop and evaluate alternatives to take at the regional level and the reasons for rejecting or selecting each of the alternatives.

### 11.2.1 No Take Alternative

An alternative that would restrict BRCP covered activities to avoid all adverse effects on covered wildlife and fish species and avoid all take of federally listed species would obviate the need for issuance of incidental take permits by USFWS and NMFS. This alternative that would avoid all incidental take was rejected because it would (1) severely constrain the implementation of the general plans and thus preclude achieving the objectives for planned growth and development, including providing state-mandated Regional Housing Need Allocations (RHNA) in the County and cities; (2) preclude improvements and maintenance of infrastructure supporting the health, safety and economy of the Plan Area (e.g., road construction, improvements, and maintenance; wastewater systems improvements and maintenance; solid waste capacity expansion; and agricultural water conveyance facilities improvement and maintenance); and (3) eliminate the need for the BRCP Conservation Strategy and thus preclude implementing actions that exceed mitigation of impacts and would contribute to the recovery of covered wildlife and fish species.

### 11.2.2 County’s and Cities’ General Plan Processes and Alternatives

The County’s and cities’ general plan updates were developed concurrently with the BRCP planning process (Figure 11–1). The General Plan for Butte County was updated during the period of April 2006 through October 2010.

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<sup>2</sup> Avoidance and minimization measures are also provided for covered plant species.

The City of Oroville's General Plan was updated from late 2005 through June 2009; the City of Chico's from January 2008 through April 2011; the City of Gridley's from early 2008 through December 2010; and the City of Biggs' from January 2009 through the present. This section describes how the BRCP biological constraints map was used to inform the general plan updates and to develop alternatives that avoided and minimized impacts of general plan actions on sensitive habitats supporting covered species and presents a comparative analysis of the biological effects of different alternatives under each general plan process relative to the selected preferred alternatives. The preferred alternatives from the general plans were incorporated into the BRCP covered activities.

### **11.2.2.1 Biological Constraints Map**

To support a process that provided for greater avoidance and minimization of impacts on covered wildlife and fish species and their habitats of the land use alternatives being considered under the general plan updates, Butte County Association of Governments (BCAG) provided the County and cities with a "biological constraints map" depicting the location of lands with very high, high, and moderate biological constraints to development based on the location of covered species' occurrences and habitats and sensitive natural communities (see Appendix J, *Biological Constraints Analysis*). Included in these three sensitive biological resource categories were nesting habitat for Swainson's hawk, peregrine falcon, bald eagle, and bank swallow; all habitat for yellow-billed cuckoo and yellow-breasted chat; all giant garter snake habitat; all large vernal pool habitat (at least 0.01 acre) that could support fairy and tadpole shrimp; all salmon, steelhead, and sturgeon habitat; and all riparian habitat that could support valley elderberry longhorn beetle.<sup>3</sup> The constraints map also identified ESA designated critical habitat and recovery core areas from existing USFWS recovery plans within the BRCP Plan Area. This information on sensitive biological resources was used by County and city planners to modify the initial draft general plan land use alternative configurations for future development to avoid and minimize impacts on the most sensitive covered species habitats and natural communities. Avoidance of these areas also minimized impacts on other covered species, including tricolored blackbird, western burrowing owl, and western spadefoot toad, which use grassland with vernal swale complex habitat, and California black rail and western pond turtle, which use emergent wetlands. Figure 11-1 depicts the relationship of the timing of release of the biological constraints map in December 2007 with the timing of preparation of the County and cities' general plan updates.

### **11.2.2.2 County General Plan Alternatives**

#### **11.2.2.2.1 Alternatives in Early County General Plan Development – 2006 to 2009**

The preferred alternative adopted in the County 2030 General Plan, when compared to three draft general plan alternatives prepared prior to input from the BRCP constraints map, results in

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<sup>3</sup>Note that for covered plant species, the sensitive resources data included all known occurrences of Butte County meadowfoam, veiny monardella, Butte County golden clover, Butte County checkerbloom, hairy Orcutt grass, Hoover's spurge, Greene's tuctoria and all modeled habitat for Butte County meadowfoam, Butte County golden clover, and Butte County checkerbloom.

reductions in the acreage of development impacts of approximately 40–80 percent for very highly sensitive biological resources, 0–41 percent<sup>4</sup> for highly sensitive biological resources, and 39–74 percent for moderately sensitive biological resources. The avoidance and minimization of very high, high, and moderate categories of biological constraints resulted in avoidance and minimization of take for all of the covered wildlife and fish species.

The County General Plan Citizen Advisory Committee evaluated proposals for 34 potential growth areas, and the County Board of Supervisors ultimately considered three land use alternatives (the Existing General Plan, the Concentrated Growth, and the Rural Extension Alternatives) and the Preferred Alternative land use plan in the County 2030 General Plan development process (Figure 11–2, *Butte County General Plan 2030 Existing General Plan Alternative (September 28, 2007)*, Figure 11–3, *Butte County General Plan 2030 Concentrated Growth Alternative (September 28, 2007)*, and Figure 11–4, *Butte County General Plan 2030 Rural Extension Alternative (September 28, 2007)* [see separate files]). Impacts on natural communities that support important habitat for federally listed threatened and endangered species and other covered species, such as vernal pool, grassland with swale complex, riparian, wetland, and stream habitats, were substantially reduced by incorporating the biological constraints analysis in the process of developing the Preferred Alternative for the County General Plan (see Figure 11–5, *Butte County General Plan 2030 Preferred Alternative (2009)* [separate file]). The Preferred Alternative has reduced impacts on natural communities compared to each of the three alternatives. For seasonal wetland habitats such as large vernal pools (at least 0.01 acre) and grassland with swale complex, the reductions in impacts ranged from 39 to 53 percent and 38 to 75 percent, respectively. In absolute terms, the Preferred Alternative would impact 500 to 2,500 fewer acres of grassland with swale complex compared to the other three land use scenarios. Avoidance of these habitats will benefit vernal pool shrimp species and western spadefoot toad, as well as covered raptor species and tricolored blackbird that use grassland with vernal swale as foraging habitat.

The reduction in impacts on permanent emergent wetlands attributable to the Preferred Alternative when compared to one alternative was 46 percent while the preferred alternative was 4 percent higher than two other alternatives (in absolute terms this difference is only about 3 acres). Species such as giant garter snake, California black rail, and western pond turtle will benefit from the avoidance of impacts to wetland habitat. The reduction in impacts on drainages attributable to the Preferred Alternative relative to the other alternatives was 17–48 percent, while the reductions for irrigated rice ranged from 55 percent to 91 percent for two alternatives. While the impact of the Preferred Alternative was 5 percent higher on rice than one alternative, the impact in absolute terms was only about 5 acres larger. Species that use drainages, including the covered fish, foothill yellow-legged frog, giant garter snake and western pond turtle will benefit from the reductions in impacts on their habitat attributable to the Preferred Alternative,

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<sup>4</sup>One alternative had 3 percent less impact on highly sensitive biological resources than the preferred general plan alternative, but this same alternative had 40 percent more impact on very highly sensitive biological resources and 39 percent more impact on moderately biological sensitive resources than the Preferred Alternative (combined, this alternative had 18 percent more impact than the Preferred Alternative on mapped sensitive resources).

and giant garter snake and greater sandhill crane will benefit from the avoidance of rice land. The reductions in impacts on riparian forest and scrub attributable to the Preferred Alternative relative to the other alternatives were 16–25 percent. Avoidance and minimization of impacts to riparian habitat will benefit nesting covered raptor species as well as obligate riparian species like western yellow-breasted chat, yellow-billed cuckoo, and valley elderberry longhorn beetle.

#### 11.2.2.2.2 Alternatives Evaluated In the County General Plan EIR – 2009 to 2010

The County 2030 General Plan EIR evaluated three land use alternatives in addition to the land use plan Preferred Alternative (the Draft General Plan Update, Figure 11–5): an alternative that maintained the existing 1995 General Plan (the No-Project-“Existing General Plan” or Character Alternative, Figure 11–6, *Butte County General Plan 2030 EIR No Project Alternative (2009)* [see separate file]), an alternative that concentrated new development in the urban spheres of Chico and Oroville (the Concentrated Growth Alternative, Figure 11–7, *Butte County General Plan 2030 EIR Concentrated Growth Alternative (2009)* [see separate file]), and an alternative that maintained the current pattern of rural residential sprawl at the fringes of Chico and Oroville (the Rural Extension Alternative, Figure 11–8, *Butte County General Plan 2030 EIR Rural Extension Alternative (2009)* [see separate file]).

The No Project Alternative assumes General Plan 2030 would not be adopted and the existing General Plan would remain in effect. Thus, new development would occur according to the existing General Plan land use designations, as well as the County’s existing General Plan policies.

The No Project Alternative differs from the Preferred Alternative in terms of the amount of residential and non-residential growth proposed. When compared to the Preferred Alternative, the No Project Alternative would allow for 3.65 percent more residential units, 72 percent less retail/office uses, 36 percent more industrial uses, and 1,300 fewer people at the 2030 build-out horizon.

The Concentrated Growth Alternative assumes that the same goals, policies, and actions included in General Plan 2030 would be adopted. However, development would be directed toward the existing urban areas. Outlying areas would instead be designated for very low density residential, agriculture, and resource conservation. Meanwhile, higher density development would occur in and around the existing urban areas.

The Concentrated Growth Alternative would provide for approximately 3.65 percent more new residential units than Preferred Alternative, which would equate to 1,300 more residents at projected 2030 build-out. This alternative includes the same amount of new industrial space and 11 percent more new commercial space.

The Rural Extension Alternative assumes that the same goals, policies, and actions included in General Plan 2030 would be adopted. However, development would be distributed more widely throughout the county with less emphasis on locating new development in or next to existing

urban areas than General Plan 2030. Typically, outlying areas under this alternative would allow more dwelling units than under the Preferred Alternative and densities would often be lower in and around the existing urban areas.

The Rural Extension Alternative would provide for approximately 4.4 percent more new residential units than Preferred Alternative, which would equate to about 1,500 more residents in Butte County at projected 2030 build-out. Similarly, this alternative includes 9 percent more new industrial use and 38 percent more square feet of new commercial space.

The Preferred Alternative has substantially reduced impacts on most of the important habitats for covered wildlife and fish when compared to each of the three alternatives. For seasonal wetland habitats such as large vernal pools (at least 0.01 acre) and grassland with vernal swale complex, the reductions in impacts ranged from 57 to 84 percent and 76 to 82 percent, respectively. In absolute terms, the reduced impacts under the Preferred Alternative for grassland with swale complex ranged from approximately 2,500 to 3,600 acres. Avoidance of this habitat will benefit vernal pool shrimp species, western spadefoot toad, covered raptor species, and tricolored blackbird, as well as other wildlife. The reduction in impacts on permanent emergent wetlands under the Preferred Alternative when compared to the other three alternatives ranges from 76 to 79 percent, which will benefit giant garter snake, California black rail, and western pond turtle. The reduction in impacts on riparian forest and scrub attributable to the Preferred Alternative relative to the other alternatives is 34–65 percent.

This avoidance of riparian habitat will benefit nesting raptor species as well as riparian obligates, including western yellow-breasted chat, yellow-billed cuckoo, and valley elderberry longhorn beetle. The impact of the Preferred Alternative on rice is relatively large compared to the other three alternatives (300–1,500 percent greater), but amounts to only 1.4 percent of the total rice in the Plan Area. Reducing impacts on rice land to the level of the other alternatives was not considered practicable because it would not allow the achievement of development goals desired by the community. However, most impacts to rice land occur in the vicinity of the Gridley-Biggs UPA and lie on the periphery of areas considered important for associated covered wildlife species such as giant garter snake and greater sandhill crane.

The County adopted the Preferred Alternative after analyzing the other alternatives and determining that it exhibits the highest degree of consistency with the overall vision, purpose and intent of the 2030 General Plan update. The Preferred Alternative reflects a balanced approach to directing new residential development to the urban areas or spheres of influence of the incorporated cities, and providing the appropriate land opportunities to accommodate economic development for expected growth in the agricultural services, professional and business services, government, healthcare, education and wholesale trade industries that are critical to maintaining the county's sustainable economic base. In addition, the Preferred Alternative provides the land area necessary to meet the state-mandated Regional Housing Needs Allocation assigned to the unincorporated area. The Rural Extension Alternative would impact larger areas of sensitive habitat (such as the vernal pool core area north of Oroville and east of

Chico) by allowing increased parcelization in the Planning Area, although the resulting development would occur at a lower building density than the other three alternatives.

### **11.2.2.3 City of Chico General Plan Alternatives – January 2008 to April 2011**

The City of Chico evaluated three alternatives and the proposed land use plan in their General Plan EIR process: the No Project Alternative (Chico's prior 1994 General Plan), an Expanded Urban Development Alternative, the Increased Density Alternative, and the Preferred Alternative (Figure 11–9, *Chico 1994 Existing General Plan EIR Alternative*, Figure 11–10, *Chico General Plan 2030 Expanded Urban Development EIR Alternative (March 2009)*, Figure 11–11, *Chico General Plan 2030 Increased Density EIR Alternative (March 2009)*, and Figure 11–12, *Chico General Plan 2030 EIR Preferred Alternative* [see separate files]). Impacts on natural communities that support important habitat for federally listed threatened and endangered species and other covered species, such as vernal pool, grassland with swale complex, riparian, wetland, and stream habitats, were substantially reduced by incorporating the biological constraints analysis in the City of Chico's General Plan development process (see Figure 11–1). The Preferred Alternative has reductions in impacts when compared to the No Project and Expanded Urban Development alternatives. For seasonal wetland habitats such as large vernal pools (at least 0.01 acre) and grassland with swale complex, the reductions in impacts ranges from 24 to 29 percent and 16 to 45 percent, respectively. These reduced impacts benefit vernal pool shrimp species and western spadefoot toad, as well as covered raptor species that use these areas as foraging habitat and tricolored blackbird that may use it as both breeding and foraging habitat. The reduced impact on permanent emergent wetlands attributable to the Preferred Alternative when compared to the No Project and Expanded Urban Development alternatives is 20–23 percent.

Greater avoidance of emergent wetland under the Preferred Alternative benefits many covered species, including tricolored blackbird, California black rail, giant garter snake, and western pond turtle. Impacts on rice are the same for all alternatives, but the overall impact is small (less than 50 acres, or 0.04 percent, of existing rice in the Plan Area). The reduction in impacts on riparian forest and scrub attributable to the Preferred Alternative relative to the other alternatives is 21–58 percent. This avoidance of riparian habitat will benefit nesting raptor species as well as riparian obligates, including western yellow-breasted chat, yellow-billed cuckoo, and valley elderberry longhorn beetle.

The Increased Density Alternative has less development than the Preferred Alternative, and was identified as the environmentally superior land use alternative in General Plan Update Draft Environmental Impact Report. The Increase Density Alternative did not include the Bell Muir and Doe Mill/Honey Run developments (referred to as "Special Planning Area 3" in the Preferred Alternative), and would impact less than a third of the Blue Oak Savannah and less than half of the Blue Oak Woodland that would be impacted by the adopted General Plan update.



The City of Chico adopted the Preferred Alternative after analyzing the other alternatives and determining it reflected the highest degree of consistency of the overall vision, purpose and intent of the 2030 General Plan update. The Preferred Alternative was considered an appropriate balance between the status quo No Project Alternative (existing general plan) and the environmentally superior Increased Density Alternative, based on the City's needs to accommodate anticipated growth and economic development.

While the Increased Density Alternative would result in less development, it assumes growth would occur exclusively on lands north and south of the urban core and in 17 redevelopment "Opportunity Sites" in the existing city limits. These lands do not enjoy equal opportunity and development costs (such as market availability or available infrastructure), and some carry constraints that would preclude development in an economically viable manner within the 2030 General Plan forecast horizon. The Urban Expansion Alternative was rejected because it relied on a continuation of current City growth patterns that jeopardize the integrity of the Green Line (a boundary identified in both the City's and County's General Plan for the protection of agricultural lands), foothill areas, and important farmlands of local, regional or state significance.

#### **11.2.2.4 City of Oroville General Plan Alternatives – Late 2005 to June 2009**

The City of Oroville General Plan EIR evaluated three alternatives to the preferred general plan alternative: the No Project Alternative (i.e., Oroville's prior general plan), Reduced Density Alternative, and Neighborhood Focused Alternative (Figure 11–13, *Oroville General Plan 2030 EIR No Project Alternative*, Figure 11–14, *Oroville General Plan 2030 EIR Reduced Density Alternative*, Figure 11–15, *Oroville General Plan 2030 EIR Neighborhood-Focused Growth Alternative*, and Figure 11–16, *Oroville General Plan 2030 EIR Preferred Alternative* [see separate files]). Impacts on natural communities that support important habitat for federally listed threatened and endangered species and other covered species, such as vernal pool, grassland with swale complex, riparian, wetland, and stream habitats, were significantly reduced by incorporating the constraints analysis in the process of developing the City of Oroville's General Plan Preferred Alternative.

The Preferred Alternative has reduced impacts to important natural communities when compared to each of the three alternatives. For large vernal pools (at least 0.01 acre) the reductions in impacts range from 7 to 21 percent. For grassland with swale complex the reduction in impacts under the Preferred Alternative when compared to the Reduced Density and Neighborhood Focus Alternative is 15 percent, while impacts under the Preferred Alternative are 7 percent higher than the No Project Alternative.

Avoidance of these habitat impacts will benefit vernal pool shrimp species and western spadefoot toad, as well as raptor species and tricolored blackbird that use grassland with vernal swale as foraging and sometimes breeding habitat. The Preferred Alternative has a greater relative impact of 9 percent on permanent emergent wetlands compared to the other alternatives. There are no impacts on irrigated rice attributable to any of the alternatives analyzed in the EIR.

Impacts on riparian forest and scrub under the Preferred Alternative are 12–17 percent greater than the other alternatives, corresponding to about 80–100 acres greater loss. These impacts, however, are addressed under the BRCP through more restrictive impact limits and avoidance and minimization measures to be implemented at the individual project level for riparian forest and scrub habitats.

The City of Oroville adopted the Preferred Alternative after analyzing the other alternatives and determining it reflected the highest degree of consistency of the overall vision, purpose and intent of the 2030 General Plan update. The economic development and land use goals of the General Plan focus growth on lands to the south and east of the city, which represent the most logical areas for expansion from a land use perspective (see *Land Use Element*, Oroville General Plan pages 3-16 and 3-17), but also affect a variety of wildlife habitats, including vernal pools, and grasslands with vernal swale complex. The majority of these targeted growth areas are also designated as Redevelopment Areas and Enterprise Zones (see Oroville General Plan Figure LU-3), as future locations where the City may realize its goals for a sustainable economy, with a dependable tax base and quality jobs, goods and services (see *Vision Statement and Guiding Principles*, Oroville General Plan page 2-3). Lastly, it is unlikely that all of the lands indicated for development on the Preferred Alternative (Figure 11–16) will occur during the General Plan’s 25 year build-out horizon, based on the City’s historic growth rate (2.9 percent per annum) in the city limits and sphere of influence. Therefore, the area impacted by build-out of the General Plan will likely be less than that assumed in the BRCP covered activities.

#### **11.2.2.5 Cities of Gridley and Biggs General Plans – 2008–2012**

Gridley and Biggs are the two smallest incorporated areas in Butte County, with respective populations of 6,454 and 1,787 based on the 2010 U.S. Census. Both cities engaged in updates to their General Plans during the general timeframe as the County, Chico, and Oroville updates. Gridley’s updated 2030 General Plan was adopted in February 2010, while the City of Biggs 2030 General Plan update is still pending approval (anticipated late 2012). The two cities are located at the southwest quadrant of the BRCP Plan Area, and share a 2,864-acre overlapping Planning Area boundary (north of Gridley and south of Biggs) that has been designated as a special “Area of Concern” by the Butte County Local Agency Formation Commission (LAFCO). Both cities’ General Plans contain land use assumptions for portions of the Area of Concern.

The City of Gridley’s adopted General Plan expands the city’s planned development footprint from 375 acres to 1,224 acres, and concentrates new growth within 1,200 acres of the northerly Sphere of Influence and Area of Concern. Other land use alternatives considered during the 2030 General Plan update included a No Project Alternative (maintaining the existing General Plan), a Centralized Development with Urban Reserve Alternative, and a Centralized Development Alternative. All three of the alternatives would result in a smaller area of urban development in the Area of Concern, corresponding to a reduced impact on irrigated cropland and rice land in the BRCP. However, each of the alternatives would still result in urban

development in areas currently undeveloped but designated for future growth. Impacts to natural communities and biological resources (including BRCP covered species) would be slightly reduced under the three land use alternatives. The city adopted the 2030 General Plan update (Preferred Alternative) because it most closely aligns with the land use, housing, economic development, and conservation goals outlined in the General Plan Vision and Guiding Principles. Further, the Centralized Development with Urban Reserve Alternative would result in substantially less land available for commercial and industrial growth (30–40 percent less), which would be inadequate to satisfy the anticipated demand for agricultural-related industrial uses planned east of the central city.

The City of Biggs 2030 General Plan update is pending adoption in late 2012. However, the City has reviewed various land use alternatives and selected a Preferred Alternative that will be the focus of the General Plan Update programmatic Environmental Impact Report (EIR). The City considered three other alternatives that were used to inform selection of the Preferred Alternative. The first Alternative (Alternative A) focused on maintaining existing low-density residential development patterns in the town center, while aggressively expanding to incorporate lands east of the city at the Highway 99-B Street junction for development with commercial, industrial, agricultural industrial, mixed-use and medium density residential uses. The second alternative (Alternative B) proposed a similar eastern expansion with roughly double the high-intensity mixed-use development. The southern one-third of the overall 4,375-acre planning area would be designated as Urban Reserve for consideration as future development. The third alternative (Alternative C) included the easterly expansion as well as a significant expansion of higher intensity residential and mixed uses in the south Planning Area. Alternative C would accommodate more than three times the number of residential units than Alternative A (22,000 versus 6,000). The Preferred Alternative is comprised of elements from both Alternatives A and B, incorporating an expansion to the Highway 99-B Street junction developed with lower intensity uses, and an expanded area of heavy industrial and agricultural industrial west of the city to accommodate job-generating uses that would help diversify the city's traditional agricultural-based economy. The remainder of the overall Planning Area north, east and south of the city would retain an agricultural designation consistent with that approved on the County's 2030 General Plan update.

The City of Biggs Preferred Alternative was prepared in consideration of the BRCP biological constraints map balanced with the mixed use, commercial and industrial expansion areas deemed critical to the city's economic future. Of the land use alternatives considered to date in the Biggs 2030 General Plan Update, the Preferred Alternative best represents the city's goals for retaining Biggs' rural small-town character, and would result in lesser impacts to irrigated cropland and rice land than Alternatives B and C.

### **11.2.3 Additional BRCP Reduction in Take**

The BRCP evaluated the effects of implementing the combined build-out of the preferred alternatives of the general plans for the County and the cities of Chico, Oroville, Gridley, and

Biggs, as part of the BRCP covered activities. Following completion of an assessment of impacts of BRCP covered activities on natural communities (see Chapter 4, *Impact Assessment and Estimated Level of Take*), the extent of riparian and wetland land cover types that could be removed by the covered activities was further reduced to avoid impacts on covered wildlife species habitats supported by those land cover types (e.g., western yellow-billed cuckoo, yellow-breasted chat, California black rail, giant garter snake, Swainson's hawk, western pond turtle) in specified locations. These reduced impacts are reflected in the impact limits provided for natural communities in 4-3.

In addition, the Conservation Strategy includes avoidance and minimization measures (see Chapter 6, *Conditions on Covered Activities*) that are required to be implemented at the time each of the covered activities is implemented. These measures are designed to avoid or further minimize direct and indirect impacts on covered wildlife and fish individuals and habitat that would otherwise be incurred under the covered activities.

## **11.2.4 Conclusions for Regional Alternatives**

Each of the cities and the County developed and evaluated alternatives to their general plans that collectively encompass the BRCP Plan Area. In identifying their preferred alternatives, the local governments selected the alternative that met their community's goals, was practicable, and avoided and minimized impacts on covered species. The BRCP provides additional limits on impacts and specific impact avoidance and minimization measures that further reduce impacts on covered species from activities identified in the various general plans.

## **11.3 EVALUATION OF ALTERNATIVES TO TAKE BY SPECIES**

### **11.3.1 Evaluation Criteria**

Alternative approaches to covered activities that would avoid or minimize take for each covered wildlife and fish species were evaluated and are described in this section. Alternative approaches were assessed based on the following criteria:

1. Level of incidental take expected to result and conservation benefits to the species;
2. Consistency with the overall goals and objectives of the County and city general plans, planned infrastructure improvements, and the BRCP; and
3. Practicability in light of cost, logistics and technology.

The evaluation describes potential alternatives to take considered for each of the species and the reasons that each of the alternatives to take was not adopted in the BRCP Conservation Strategy.

## 11.3.2 Covered Wildlife and Fish Species with ESA Status

### 11.3.2.1 Western Yellow-Billed Cuckoo

The western yellow-billed cuckoo is a riparian obligate species typically found in willow-cottonwood riparian forest; however, alder and box elder can also be important habitat elements. Nests are found primarily in willow trees. Four confirmed or probable breeding locations have been verified within the Plan Area, along with numerous other detections. Breeding pairs have also been reported from between Oroville and the western Butte County border. Known occurrences of this species in the Plan Area are associated primarily with the Sacramento River. Habitat areas occur along the Feather River and several smaller tributaries to the Sacramento River. Patch size is an important landscape feature for western yellow-billed cuckoo, which require minimum patches greater than 20 acres and apparently prefer patch sizes greater than 50 acres (Laymon 1998).

Implementation of covered activities could result in the removal of 50 acres of modeled western yellow-billed cuckoo habitat (0.9 percent of all modeled habitat in the Plan Area), predominantly in the Oroville UPA and to a lesser degree outside of UPAs in the Northern Orchard and Southern Orchard CAZs (Table 4–9, *Maximum Extent of Permanent Direct Impacts on Modeled Covered Species Habitat Types and Known Occurrences by CAZ and UPA*). The BRCP prohibits removal of modeled habitat that would reduce the patch size of affected modeled habitat areas below 25 acres to minimize the adverse effects associated with habitat fragmentation, to which nesting cuckoos are sensitive (Hughes 1999). Direct mortality of individuals and removal of occupied nest sites will be avoided as a requirement of the BRCP. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

Alternatives to avoid any removal of modeled western yellow-billed cuckoo habitat would require not implementing covered activities that affect modeled habitat. This alternative, beyond avoidance of habitat areas incorporated into the general plans as described in Section 11.2, *Alternatives to Take Evaluated at the Regional Scale*, was considered not practicable because it would be too prohibitive to planned development and infrastructure projects and would not necessarily avoid take of western yellow-billed cuckoo. Other alternatives considered for the County and Chico general plans all impacted larger amounts of riparian habitat than the preferred alternatives and would therefore remove more potential habitat for western yellow-billed cuckoo. The Oroville General Plan Preferred Alternative impacts a greater amount of riparian habitat than the other alternatives considered, because the goals of the general plan cannot be satisfactorily met through those alternatives. However, as discussed below, BRCP impact limits reduced the allowable impacts on riparian habitat in the Oroville UPA, and BRCP conservation measures (CMs) protect and restore a much greater amount of riparian habitat than will be impacted. The potential for the destruction of nests, eggs, nestlings, and adult birds will be avoided with implementation of the BRCP avoidance and minimization measures.

As described in Section 5.6, *Conservation Provided for Covered Species*, the BRCP will protect 1,785 acres of currently unprotected modeled western yellow-billed cuckoo habitat, resulting in combination with existing protected habitat protection of approximately 50 percent of habitat in the Plan Area (see Table 5–21a, *Expected Extent of Conserved Covered Species Habitat Types in the Plan Area with BRCP Implementation*). Restoration of 50 acres of western yellow-billed cuckoo habitat and 138 additional acres of riparian habitat (see Table 5–6, *BRCP Restoration Targets*) in locations that establish patches of riparian habitat of at least 25 acres will increase the extent of cuckoo habitat in the Plan Area. Implementation of these conservation actions and applicable avoidance and minimization measures are expected to benefit the species to a greater degree than any alternatives that may reduce take.

### 11.3.2.2 *Bald Eagle*

The bald eagle occurs as permanent resident and uncommon winter migrant. It is an uncommon breeding species in Butte County with two nesting territories reported within the Plan Area (Appendix A, Figure A.11–1, *Bald Eagle Modeled Habitat and Recorded Occurrences*). Bald eagles regularly winter in and around the Plan Area, including at Lake Oroville, Thermalito Forebay and Afterbay, along the Feather and Sacramento Rivers, and in the wetlands associated with Llano Seco and the Gray Lodge Wildlife Area (Figure A.11–1). One winter roost site near Lake Oroville has been occupied by at least 60 individuals. Bald eagles require large bodies of water or free-flowing rivers with abundant fish for foraging habitat and large, old-growth or dominant live trees for nest sites, typically near a permanent water source (see Appendix A, *Covered Species Accounts*).

Implementation of the covered activities would result in the removal of up to 3,570 acres of modeled bald eagle seasonal foraging habitat and 2,708 acres of nesting habitat, representing approximately 2.0 percent and 1.4 percent, respectively, of the current extent of these modeled bald eagle habitats in the Plan Area (Table 4–8, *Maximum Extent of Permanent Direct Impacts on Modeled Covered Species Habitat Types and Known Occurrences within the Plan Area*, Figure 4–30, *Bald Eagle: Direct Impacts of Covered Activities*). Implementation of BRCP covered activities will avoid removal of active bald eagle nests. The majority of habitat to be removed would be in the Sierra Foothills CAZ (3,272 acres). The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be avoided and minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

Alternatives to reduce the allowable removal of modeled bald eagle habitat would require not implementing covered activities that affect modeled habitat. This alternative provided additional avoidance of habitat areas incorporated into the general plans as described in Section 11.2 was considered impracticable because it would be too prohibitive to planned development and transportation projects. Out of the three preferred alternatives for Butte County, Chico, and Oroville, only the Oroville preferred alternative removes a larger amount of riparian bald eagle nesting habitat compared to the other alternatives considered. In nearly all cases the three

preferred alternatives remove relatively less foraging habitat than the other alternatives. Overall, the preferred alternatives are the ones that maximize avoidance of bald eagle habitat.

As described in Section 5.6 the BRCP will protect an additional 4,435 acres of modeled bald eagle nesting habitat and 21,195 acres of modeled seasonal foraging habitat, resulting in protection of over 25 percent and 28 percent of these habitat types, respectively, in the Plan Area (see Table 5–21a). Protection of riparian and woodland land cover types will ensure the availability of bald eagle nest and winter roost sites to accommodate the potential future expansion of the nesting and wintering populations in conjunction with protection and management of a large proportion of its foraging habitat. In addition, restoration of 121 acres of emergent wetland and restoration of salmonid spawning habitat will increase the habitat area supporting the bald eagle’s primary prey species. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

### **11.3.2.3 Giant Garter Snake**

The giant garter snake occurs in the Plan Area predominantly in lowland aquatic habitats, such as emergent wetlands, agricultural ditches and rice fields, and other wetland communities of the Butte Basin. Giant garter snake has been found in numerous locations in the western portion of Butte County area near the Sacramento River, south of Chico and west of Biggs and Gridley, in the 1990s (California Natural Diversity Database [CNDDDB] 2006) (see Appendix A, Figure A.12–1, *Giant Garter Snake Modeled Habitat and Recorded Occurrences*) and occurrences have been reported near Chico (USFWS 2006a). Eric Hansen (pers. comm.) notes that few if any records occur east of Highway 99 in Butte County and that no definitive records occur east of Highway 70.

Implementation of covered activities could result in the removal of 3,194 acres of modeled giant garter snake breeding and movement habitat, representing 1.9 percent of the modeled habitat in the Plan Area (Table 4-8) primarily in the Southern Orchards CAZ and the Gridley-Biggs UPA (Table 4–9 and Appendix A, Figure 4–31, *Giant Garter Snake: Direct Impacts of Covered Activities*). Some covered activities are likely to directly kill or injure individual giant garter snakes. The potential mortality or injury to individual snakes associated with ground disturbing activities (e.g., operation of construction equipment, activities to maintain canals and drains) and effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

BRCP avoidance and minimization measures reduced the allowable impact on modeled giant garter snake wetland breeding and movement habitat to 54 acres. An alternative to reduce such impacts to zero acres was considered not to be practicable because it would be too prohibitive to planned development in the UPAs and infrastructure improvements outside of the UPAs. While the preferred alternatives adopted for the Butte County and Oroville general plans remove a

greater amount of natural communities that support giant garter snake, the majority of habitat removed consists of rice land that will be replaced under the BRCP by higher quality restored wetland habitat in areas that will serve higher functions for giant garter snake. The potential for mortality or injury of individuals associated with maintenance of agricultural water conveyance facilities will be avoided and minimized because these activities are typically undertaken during the giant garter snake's inactive period. Greater restrictions on these activities were not considered to be practicable, because not undertaking maintenance of canals and drains would prevent the delivery and drainage of irrigation water.

As described in Section 5.6 the BRCP will protect 27,547 acres of currently unprotected modeled giant garter snake breeding and movement habitat and restore 500 acres of breeding and movement habitat, resulting in protection of approximately 36 percent of modeled breeding and movement habitat in the Plan Area (Table 5–21a). Maintaining and restoring connectivity across modeled habitat through the north-south BRCP giant garter snake corridor is expected to increase food abundance, contribute to higher reproduction and survival rates, and provide for dispersal and genetic exchange of giant garter snakes. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

#### **11.3.2.4 Central Valley Steelhead**

Central Valley steelhead occur in the Feather River, Little Dry Creek, Butte Creek, Little Chico Creek, Big Chico Creek, Lindo Channel, Mud Creek, and Rock Creek. Spawning occurs in all of these waterways except Lindo Channel and Rock Creek. Adults migrate through Lindo Channel but are not known to spawn within the channel. Rock Creek is used by steelhead as a juvenile rearing location only.

The Conservation Strategy precludes removal of Central Valley steelhead habitat (Table 4–8). Noise and visual disturbances associated with construction-related activities near occupied habitat could temporarily disturb individuals, and the potential exists for discharge of contaminants and sediment from project sites into habitat that could exert sublethal effects on individual steelhead and cause temporary avoidance of habitat areas. These potential effects will be avoided and minimized with implementation of avoidance and minimization measures (see Chapter 6, *Conditions on Covered Activities*).

An alternative to eliminate any possibility of adverse effects on Central Valley steelhead was considered not to be practicable because it would preclude maintenance and improvement of bridges to maintain public safety and transportation facilities within the Plan Area; and it would preclude implementation of conservation actions that are designed to benefit Central Valley steelhead. BRCP conservation measures for steelhead (e.g., placement of spawning gravels, removal of riprap) will have temporary adverse effects on its habitat, but will result in net habitat benefits.



As described in Section 5.6 the BRCP will protect an additional 20 linear miles of currently unprotected Central Valley steelhead habitat, resulting in protection of about 22 percent of habitat in the Plan Area (Table 5–21a). Together with conservation measures CM9, Replenish Spawning Gravels for Salmonids, CM10, Remove Impediments to Upstream and Downstream Fish Passage, and CM11, Remove, Modify, or Screen Unscreened Diversions, implementation of these conservation actions and applicable avoidance and minimization measures are expected to benefit the species to a greater degree than any alternatives that may reduce potential indirect effects to Central Valley steelhead.

### **11.3.2.5 Central Valley Spring-Run Chinook Salmon**

Central Valley spring-run Chinook salmon occur in several Plan Area drainages, including Big Chico Creek, Butte Creek, and the Feather River (see Appendix A).

The covered activities will not result in the removal of modeled Central Valley spring-run habitat (Table 4–8). Noise and visual disturbances associated with construction-related activities (e.g., bridge maintenance and replacement projects) in or near occupied habitat could temporarily disturb individuals, and the potential exists for discharge of contaminants and sediment from project sites into habitat that could exert sublethal effects on individual spring-run Chinook salmon and cause temporary avoidance of habitat areas. These potential effects will be avoided and minimized with implementation of avoidance and minimization measures (see Chapter 6, *Conditions on Covered Activities*).

An alternative to eliminate any possibility of adverse effects on spring-run Chinook salmon was considered not to be practicable because it would preclude maintenance and improvement of bridges to maintain public safety and transportation facilities in the Plan Area; and it would preclude implementation of conservation actions that are designed to benefit spring-run Chinook salmon, but will have temporary adverse effects on its habitat (e.g., placement of spawning gravels, removal of riprap).

As described in Section 5.6 the BRCP will protect an additional 20 linear miles of currently unprotected modeled Central Valley spring-run Chinook salmon habitat, resulting in protection of about 21 percent of habitat in the Plan Area (Table 5–21a). Together with conservation measures CM9, Replenish Spawning Gravels for Salmonids, CM10, Remove Impediments to Upstream and Downstream Fish Passage, and CM11, Remove, Modify, or Screen Unscreened Diversions, implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce potential indirect effects to Central Valley spring-run Chinook salmon.

### **11.3.2.6 Green Sturgeon**

Green sturgeon occurs in the Sacramento River along the western boundary of the Plan Area and the Feather River up to the Thermalito Afterbay. Covered activities will not affect green sturgeon in the Sacramento River (see Chapter 4, *Impact Assessment and Estimated Level of*

*Take*). Because operations and flood control on the Sacramento and Feather Rivers are under the jurisdiction of state and federal agencies, the BRCP does not cover these activities and does not include conservation actions that will benefit this species.

Implementation of the covered activities will not result in the removal of modeled green sturgeon habitat (Table 4-8). On the Feather River, noise and visual disturbances associated with construction-related activities (e.g., bridge maintenance and replacement projects) in or near occupied habitat could temporarily disturb individuals, and the potential exists for discharge of contaminants and sediment from project sites into habitat that could exert sublethal effects on individual green sturgeon and cause temporary avoidance of habitat areas. These potential effects will be avoided and minimized with implementation of avoidance and minimization measures (see Chapter 6, *Conditions on Covered Activities*).

An alternative to eliminate any possibility of adverse effects on green sturgeon was considered not to be practicable because it would preclude maintenance and improvement of bridges to maintain public safety and transportation facilities in the Plan Area.

#### **11.3.2.7 Valley Elderberry Longhorn Beetle**

Only a few verified observations of valley elderberry longhorn beetle have been recorded in the Plan Area; most are along the Sacramento River with a few along Big Chico Creek, Butte Creek, and the Feather River. Its host plant, the elderberry shrub, is a common species in riparian forest and scrub throughout much of the Plan Area, and therefore the species may be more widespread (see Appendix A.21, *Valley Elderberry Longhorn Beetle (Desmocerus Californicus Dimorphus)*).

Implementation of covered activities could result in the removal of 2,280 acres of modeled valley elderberry longhorn beetle habitat, representing 5.3 percent of all modeled habitat in the Plan Area, primarily in the Chico and Oroville UPAs (Table 4-9). The potential effects of removing elderberry shrubs that support valley elderberry beetle habitat will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*. As approved, the general plans for Chico, Oroville, and Butte County could have resulted in the removal of 3,260 acres of modeled valley elderberry longhorn beetle habitat, but BRCP avoidance and minimization measures reduced the allowable impact to 2,280 acres. An alternative to reduce such impacts to zero acres was considered impracticable because it would be too prohibitive to planned development in the UPAs and to infrastructure improvements outside of the UPAs. Other alternatives considered for the County and Chico general plans all impacted larger amounts of riparian habitat than the preferred alternatives and would therefore remove more potential habitat for valley elderberry longhorn beetle. The Oroville General Plan preferred alternative impacts a greater amount of riparian habitat than the other alternatives considered. However, the BRCP impact limits reduce the allowable impacts on riparian habitat in the Oroville UPA and BRCP conservation measures protect and restore a much greater amount of riparian habitat than will be impacted.

As described in Section 5.6 the BRCP will protect 8,282 acres of currently unprotected modeled valley elderberry longhorn beetle habitat, resulting in protection of over 33 percent of all modeled habitat in the Plan Area (Table 5–21a). Restoration of 178 acres of riparian forest and scrub (Table 5–6) will increase connectivity between habitat patches and increase the amount of habitat available for valley elderberry longhorn beetle, as restored habitat will be designed to incorporate plantings of elderberry shrubs. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

### **11.3.2.8 Vernal Shrimp Species (Vernal Pool Tadpole Shrimp, Conservancy Fairy Shrimp, and Vernal Pool Fairy Shrimp)**

Vernal pool shrimp species (vernal pool tadpole shrimp, vernal pool fairy shrimp, and Conservancy fairy shrimp) occur in vernal pools throughout the foothill grasslands of the Plan Area (see Appendix A).

Implementation of the covered activities could result in the removal of up to 1,422 acres of modeled vernal pool shrimp species habitat, representing 4.2 percent of the modeled habitat in the Plan Area, primarily in the Sierra Foothills CAZ (Table 4–9). The Conservation Strategy precludes removal of vernal pools supporting Conservancy fairy shrimp. Implementation of the avoidance and minimization measures described in Chapter 5, *Conservation Strategy*, will minimize disturbances to vernal pools and vernal pool with swale complex land cover types that support vernal pool shrimp habitat.

Proposed widening of Highway 99 could have resulted in the removal of two vernal pools occupied by Conservancy fairy shrimp, but BRCP avoidance measures preclude impacts on these vernal pools and any other vernal pools that are found to support Conservancy fairy shrimp in the future. Alternatives to further avoid removal of modeled vernal pool species habitat would require not implementing covered activities that affect modeled habitat. This alternative of providing for greater reductions in habitat removal than in the general plans was considered not to be practicable because it would be too prohibitive to planned development and infrastructure projects. The preferred alternatives for the Butte County, Chico, and Oroville general plans result in greater avoidance and minimization of impacts to vernal pool shrimp species habitats than the other alternatives considered.

As described in Section 5.6 the BRCP will protect an additional 21,400 acres of modeled vernal pool shrimp species habitat, resulting in protection of over 75 percent of modeled habitat in the Plan Area (see Table 5–21a). In addition, BRCP mitigation requires the restoration of 306 acres of vernal pools and other seasonal wetlands to mitigate for the removal of vernal pools and other seasonal wetlands and a small portion of managed seasonal wetland. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the shrimp species and will support recovery of the species pursuant to the goals of the USFWS Recovery Plan (USFWS 2005).

### 11.3.3 Covered Wildlife and Fish Species without ESA Status

#### 11.3.3.1 Tricolored Blackbird

Few breeding colonies of tricolored blackbird exist in the Plan Area. As of 1989, three extant tricolored blackbird nesting colonies had been reported from the Plan Area. Since that time, only one active colony comprised of an estimated 500 adult blackbirds has been reported (see Appendix A). Tricolored blackbird forages in grassland, seasonal wetland habitats, and agricultural land (mostly alfalfa and recently tilled fields). Large breeding colonies have historically been established in freshwater wetland habitat, and chosen sites must have open, accessible water, a nesting substrate protected from predators, and suitable foraging space within a few miles of the colony that provides sufficient insect prey (see Appendix A).

Implementation of the covered activities would result in the removal of up to 12,617 acres of modeled tricolored blackbird breeding and foraging habitat, representing approximately 5 percent of the current extent of modeled tricolored blackbird breeding and foraging habitat in the Plan Area (Table 4–8, Figure 4–21, *Tricolored Blackbird: Direct Impacts of Covered Activities*). The Conservation Strategy precludes removal of active nesting colonies. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

Alternatives to further avoid removal of modeled tricolored blackbird habitat would require not implementing covered activities that affect modeled habitat. This alternative to take, beyond reductions incorporated into the general plans as described in Section 11.2 was considered impracticable because it would be too prohibitive to planned development and transportation projects. The preferred alternatives for Butte County and Chico general plans avoid tricolored blackbird habitat to a greater extent than the other alternatives considered. The Oroville preferred alternative impacts more habitat, but only by a relatively small amount. Overall, the preferred alternatives minimize impacts to tricolored blackbird habitat to the greatest degree possible relative to all development alternatives considered.

As described in Section 5.6 the BRCP will protect 48,411 acres of modeled tricolored blackbird habitat in addition to its existing protected habitat, resulting in protection of over 34 percent of habitat in the Plan Area (see Table 5–21a). Current distribution of tricolored blackbirds within this habitat is limited to a small portion of the Plan Area and habitat protection will focus on currently occupied habitat areas, including protection of known nesting colony sites. Restoration of 121 acres of emergent and managed wetland will also increase the amount of high quality tricolored blackbird foraging and nesting habitats. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

### 11.3.3.2 *Yellow-Breasted Chat*

Yellow-breasted chats are rare in California and the Plan Area, where the species has been observed in the Upper Park area of Big Chico Creek, Lower Butte Creek Canyon, Little Chico Creek, and at the Butte Creek Ecological Preserve. Chats are strongly associated with early successional riparian vegetation that includes dense riparian thickets of willows, vines, and brush, though some taller trees are required as song perches (see Appendix A).

Implementation of covered activities could result in the removal of 278 acres of modeled yellow-breasted chat habitat (3.8 percent of all modeled habitat in the Plan Area), predominantly from the Chico and Oroville UPAs (Table 4–9). Modeled yellow-breasted chat known occupied habitat will not be removed. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

As approved, the general plans for the City of Oroville, City of Chico, and Butte County could have resulted in the removal of 941 acres of yellow-breasted chat habitat, but BRCP avoidance and minimization measures reduced the allowable impact to 278 acres. An alternative to reduce such impacts to zero acres was considered impracticable because it would be too prohibitive to planned development in the Oroville and Chico UPAs and infrastructure improvements outside of the UPAs. Other alternatives considered for the County and Chico general plans all impacted larger amounts of riparian habitat than the preferred alternatives and would therefore remove more potential habitat for yellow-breasted chat. The Oroville General Plan preferred alternative impacts a greater amount of riparian habitat than the other alternatives considered because the goals of the general plan cannot be satisfactorily met through the others. However, the BRCP impact limits reduce the allowable impacts on riparian habitat in the Oroville UPA and BRCP conservation measures protect and restore a much greater amount of riparian habitat than will be impacted.

As described in Section 5.6 the BRCP will protect an additional 3,020 acres of modeled yellow-breasted chat nesting and foraging habitat, 185 acres of which will be known use area habitat, resulting in protection of over 48 percent of its modeled habitat in the Plan Area (see Table 5–21a). In addition, BRCP protection of over 48 percent of the riparian habitat present in the Plan Area is expected to maintain patches of habitat suitable for supporting migration and dispersal of the species. Restoration of 178 acres of riparian forest and scrub (see Table 5–6) in locations used by yellow-breasted chat will increase the extent of chat habitat in the Plan Area. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

### 11.3.3.3 *Bank Swallow*

Bank swallows are colony nesting birds that require steep, eroding stream banks where they construct their nesting cavities. Recently, 17 bank swallow colonies have been identified along

the Sacramento River within or immediately adjacent to the Plan Area (nine on the eastern bank and eight on the western bank). An additional 23 colonies along the Feather River between the confluence with the Sacramento River and Oroville have been reported. Several of these colonies occur within the Plan Area and are considered extant.

Implementation of the covered activities will not result in the removal of modeled bank swallow habitat (Table 4–8, Figure 4–23, *Bank Swallow: Direct Impacts of Covered Activities*), and the Conservation Strategy precludes removal of any habitat supporting nesting colonies and disturbances to colony sites during the breeding season. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

As described in Section 5.6 the BRCP will protect at least 20 linear miles of existing unprotected modeled bank swallow habitat along Mud Creek, Lindo Channel, and Butte Creek. Protection of existing stream channels and removal of riprap will help ensure that the erosional processes that provide bank swallow nesting habitat over time are maintained, and it contributes to the goals of the California Department of Fish and Game (DFG) bank swallow Recovery Plan. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

#### **11.3.3.4 Western Burrowing Owl**

Western burrowing owls occur year-round in relatively low densities in the Plan Area. Reported occurrences of western burrowing owl are primarily in the western portion of the Plan Area (see Appendix A). Western burrowing owls are found in open, dry grasslands and agricultural and range lands, and are often associated with burrowing animals whose abandoned burrows they nest in. Low vegetation and sloping terrain are preferred sites that allow for maximum visibility to detect predators while foraging and spending time outside burrows (see Appendix A).

Implementation of the covered activities would result in the removal of up to 14,496 acres of modeled western burrowing owl habitat, representing 8.8 percent of modeled habitat in the Plan Area (Table 4–8, Figure 4–20, *Western Burrowing Owl: Direct Impacts of Covered Activities*). The potential for removal of nesting burrows and effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

Alternatives to further avoid removal of modeled western burrowing owl habitat would require not implementing covered activities that affect modeled habitat. This alternative to take, beyond avoidance of habitat areas incorporated into the general plans as described in Section 11.2 was considered not be practicable because it would be too prohibitive to planned development and infrastructure projects. Other alternatives considered for the Butte County and Chico general

plans all impacted larger amounts of natural communities that support western burrowing owl habitat than the preferred alternatives. The Oroville General Plan preferred alternative impacts a greater amount of western burrowing owl habitat than the other alternatives considered because the goals of the general plan cannot be satisfactorily met through the other alternatives.

As described in Section 5.6 the BRCP will protect an additional 36,388 acres of modeled western burrowing owl habitat (Table 5–8), resulting in protection of 48 percent of its modeled habitat in the Plan Area (Table 5–21a). Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

### **11.3.3.5 Greater Sandhill Crane**

Greater sandhill cranes winter but do not breed in the Plan Area. The majority of cranes that winter in Sacramento Valley winter in the Butte Basin in areas extending from Chico to the Butte Sink between the Sacramento River and State Route 99. The Butte Basin frequently supports up to 70 percent of the Central Valley greater sandhill crane population (Littlefield 2002). Greater sandhill crane in the Plan Area most commonly use harvested rice fields as foraging habitat, along with winter wheat, harvested and unharvested corn, and grasslands. Roost sites are another key habitat element for cranes and consist of shallowly flooded open fields or wetlands close to food sources that offer protection from predators and are free of disturbance (see Appendix A).

Implementation of the covered activities would result in the removal of up to 1,764 acres, (approximately 1 percent) of modeled greater sandhill crane wintering habitat in the Plan Area (Table 4–8, Figure 4–26, *Greater Sandhill Crane: Direct Impacts of Covered Activities*), primarily from the South Orchards and Basin CAZs. The Conservation Strategy precludes removal of greater sandhill crane roosting sites. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

Alternatives to further avoid removal of modeled greater sandhill crane habitat would require not implementing covered activities that affect modeled habitat. This alternative to take, beyond avoidance of habitat areas incorporated into the general plans as described in Section 11.2 was considered not be practicable because it would be too prohibitive to planned development and infrastructure projects. The preferred alternatives for the Butte County and Chico general plans impact the same amount (or less) of greater sandhill crane habitat than the other alternatives considered. While the Oroville general plan has a relatively greater impact, habitat removal occurs at the periphery of the greater sandhill crane modeled habitat area in the Plan Area. In addition, the amount of habitat removed is relatively small compared to the total area available, and will be more than compensated for as discussed below.

As described in Section 5.6 the BRCP will protect or create an additional 21,660 acres of greater sandhill crane foraging and roosting habitat, resulting in protection of approximately 33 percent of habitat in the Plan Area (see Table 5–21a), as well as 500 acres of traditional upland use area. Most of the protected wintering habitat is comprised of rice land, which may be replaced at the discretion of BCAG as the Implementing Entity by managed wetlands that support comparable habitat functions for the crane. The Conservation Strategy will also create and maintain two crane winter roost sites located within the Basin CAZ in traditional crane winter use areas. These roost sites will be managed to provide appropriate seasonal wetland vegetation that supports crane roosting habitat and upland berms situated throughout the seasonal wetland as loafing areas. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce impacts on modeled greater sandhill crane habitat.

### 11.3.3.6 California Black Rail

Currently there are seven locations within the Plan Area that are known to be occupied by California black rail (see Appendix A). Within the Plan Area, California black rail occupy emergent wetlands and/or seeps dominated by bulrushes (*Scirpus* spp.) and cattails (*Typha* spp.) with shallow water (usually less than 3 centimeters); see Appendix A.

The Conservation Strategy precludes implementing any actions that would remove occupied California black rail habitat or cause direct mortality or injury of individuals. Implementation of covered activities would result in the removal of up to 35 acres of emergent wetland that could support patches of California black rail habitat (Table 4–3) representing approximately 0.8 percent of the current extent of mapped emergent wetland in the Plan Area (Table 4–3; Figure 4–18, *Wetland: Direct Impacts of Covered Activities*). The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of the avoidance and minimization measures described in Chapter 5, *Conservation Strategy*. As approved, the general plans for Chico, Oroville, and Butte County as a whole could have resulted in the removal of 76 acres of emergent wetland that could support California black rail habitat, but BRCP avoidance and minimization measures will reduce the allowable impact to 35 acres, thereby avoiding the removal of 41 acres of emergent wetland. An alternative to further reduce such impacts was considered not to be practicable because it would be too prohibitive to planned development in the Chico, Oroville, and Bangor UPAs and to other projects such as road improvements outside of the UPAs. The preferred alternatives for the Butte County and Chico general plans avoid natural communities that may support California black rail habitat (i.e., emergent wetland) to a greater extent than the other alternatives considered. While the Oroville general plan impacts a slightly larger area compared to the other alternatives, the BRCP Conservation Strategy protects and restores a much larger amount of habitat than is removed.

Implementation of the BRCP will protect an additional 695 acres of emergent wetland that could support patches of California black rail habitat, resulting in protection of nearly 58 percent of



emergent wetland in the Plan Area (see Table 5–20a, *Expected Extent of Conserved Natural Communities in the Plan Area with BRCP Implementation*). The Conservation Strategy also prioritizes protecting lands that support springs and small patches of wetland that support California black rail habitat. BRCP restoration of any portion of the 121 acres of emergent wetland (see Table 5–6) in locations that support hydrologic conditions required by California black rail would also result in increasing the extent of black rail habitat in the Plan Area. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce impacts on California black rail habitat.

### **11.3.3.7 American Peregrine Falcon**

Breeding pairs of American peregrine falcon have been reported in the Plan Area from upper Butte Creek Canyon, the Upper Bidwell Park area, along the western bluffs of DFG’s Table Mountain Ecological Reserve, and on a suspension bridge across Lake Oroville (see Appendix A).

Implementation of covered activities would result in the removal of up to 3,759 acres of modeled peregrine falcon seasonal and year-round foraging habitat (approximately 1.9 percent of the modeled habitat in the Plan Area), primarily in the Chico UPA (Cascades CAZ), Oroville UPA (Sierra Foothills CAZ), and Gridley-Biggs UPA (Southern Orchards CAZ) (Table 4–9). The Conservation Strategy precludes removal of known and modeled peregrine falcon nesting habitat and includes an objective to protect all currently unprotected peregrine falcon nesting sites from activities that could adversely affect the nesting habitat or reduce nesting success (see Section 5.3.2.3, *Species-Level Goals and Objectives*). The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be avoided and minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

Alternatives to avoid greater amounts of modeled peregrine falcon foraging habitat would require not implementing covered activities that affect modeled habitat. This alternative, providing additional avoidance of habitat in areas incorporated into the general plans as described in Section 11.2 was considered not practicable because it would be too prohibitive to planned development and infrastructure projects. Other alternatives considered under the County, Chico, and Oroville general plans for the most part impact a greater amount of peregrine falcon foraging habitat than the preferred alternative. The greatest relative loss of habitat under the preferred alternative compared to the other alternatives consists of rice land removal and occurs in the Gridley-Biggs area. Given the small peregrine population in the Plan Area and the vast amount of rice land habitat remaining after the implementation of the covered activities, the loss of this small proportion of foraging habitat under the BRCP covered activities is not likely to result in harm to peregrine falcon.

As described in Section 5.6 the BRCP will protect an additional 35 acres of modeled peregrine falcon nesting habitat and 29,157 acres of foraging habitat, resulting in protection of over 65 percent and 33 percent of these habitat types, respectively, in the Plan Area (see Table 5–21a). Protection of suitable cliff faces that support nesting habitat will ensure the availability of peregrine falcon nest sites to accommodate the potential future expansion of the nesting population in conjunction with protection and management of a large proportion of its foraging habitat. In addition, restoration of 121 acres of emergent wetland will increase the habitat area supporting the peregrine falcon's wetland-associated prey species. Implementation of these conservation actions and applicable avoidance and minimization measures are expected to benefit the species to a greater degree than any alternatives that may reduce habitat removal.

### **11.3.3.8 Swainson's Hawk**

Within the Plan Area, Swainson's hawks nest primarily west of State Route 99. Nesting habitat is more abundant in this area and agricultural land use patterns are more compatible with the species' foraging requirements. Important habitat components for Swainson's hawk are large native trees to nest in, located in riparian corridors or sometimes as isolated trees, and suitable foraging habitat, which typically consists of farm and pasturelands that support high densities of small rodent prey and low vegetation cover.

Implementation of covered activities could result in the removal of 11,312 acres of modeled Swainson's hawk habitat (7.5 percent of all modeled habitat in the Plan Area), 92.3 percent of which consists of foraging habitat, primarily in the Oroville UPA and to a lesser degree in the Chico and Gridley-Biggs UPAs (Table 4–9). The Conservation Strategy precludes implementing any actions that would remove occupied nest sites or cause direct mortality or injury of individuals. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of the avoidance and minimization measures described in Chapter 5, *Conservation Strategy*. As approved, the general plans for the cities of Chico, Oroville, and others, as well as for Butte County as a whole, could have resulted in the removal of 11,503 acres of Swainson's hawk habitat, but BRCP avoidance and minimization measures will reduce the allowable impact to 11,312 acres, thereby avoiding the removal of 191 acres of nesting habitat. An alternative to further reduce such impacts was considered not to be practicable because it would be too prohibitive to planned development in the Chico, Oroville, and Durham UPAs and to other projects such as road improvements outside of the UPAs. The preferred alternatives for the Butte County and Chico general plans impact less nesting and foraging habitat than the other alternatives considered. While the Oroville general plan preferred alternative removes a larger amount of habitat compared to the other alternatives, community development goals for Oroville would not be met if impacts were reduced further. In addition, the BRCP Conservation Strategy protects and restores a much greater amount of habitat than is removed.

As described in Section 5.6 the BRCP will protect 23,005 acres of currently unprotected modeled Swainson's hawk habitat, resulting in protection of over 44 percent of habitat in the Plan Area

(Table 5–21a). Restoration of 178 acres of riparian forest (Table 5–11, *Covered Species Habitat Conservation and Mitigation Targets*) will also increase the extent of Swainson’s hawk nesting habitat in the Plan Area. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

### 11.3.3.9 White-Tailed Kite

Few confirmed records exist of white-tailed kite in Butte County; however, the species is known to occur along the Sacramento River, Feather River, Butte Creek, Big Chico Creek, and at Gray Lodge Wildlife Area and other various locations throughout Butte County from the Sacramento River to the Sierra Nevada. As such, white-tailed kite is expected to occur in low densities throughout much of the Plan Area. Important habitat components for white-tailed kite are trees with a dense canopy, located in riparian corridors or sometimes as isolated trees, and suitable foraging habitat, which typically consists of alfalfa and other hay crops, pasture, and grassland that support high densities of small rodent prey, particularly meadow vole.

Implementation of covered activities could result in the removal of 16,183 acres of modeled white-tailed kite habitat (5.3 percent of all modeled habitat in the Plan Area), 83.9 percent of which consists of foraging habitat, primarily in the Oroville UPA and to a lesser degree in the Chico and Gridley-Biggs UPAs (Table 4–9). The Conservation Strategy precludes implementing any actions that would remove occupied nest sites or cause direct mortality or injury of individuals. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of the avoidance and minimization measures described in Chapter 5, *Conservation Strategy*. BRCP avoidance and minimization measures reduce the allowable impact on white-tailed kite habitat to 16,183 acres. An alternative to further reduce such impacts was considered not to be practicable because it would be too prohibitive to planned development in the Chico, Oroville, and Foothill Area UPAs, and to other projects such as road improvements outside of the UPAs. The preferred alternatives for the Butte County and Chico general plans impact less nesting and foraging habitat than the other alternatives considered. While the Oroville general plan preferred alternative removes a larger amount of habitat compared to the other alternatives, community development goals for Oroville would not be met if impacts were reduced further. In addition, the BRCP conservation strategy protects and restores a much greater amount of habitat than is removed.

As described in Section 5.6 the BRCP will protect 56,241 acres of currently unprotected modeled white-tailed kite habitat, resulting in protection of over 34 percent of habitat in the Plan Area (Table 5–21a). Restoration of 178 acres of riparian forest (Table 5–6) will also increase the extent of white-tailed kite nesting habitat in the Plan Area. Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce impacts on modeled white-tailed kite habitat.

### 11.3.3.10 *Blainville's Horned Lizard*

Currently the only known occurrence of Blainville's horned lizard in the Plan Area is from Table Mountain. The species can occur in many habitat types, including grassland, oak woodland, and riparian habitats. An exposed gravelly substrate is thought to be a limiting habitat requirement (see Appendix A).

Covered activities will not affect known occupied Blainville's horned lizard habitat located on Table Mountain and thus will not remove its habitat or affect individuals. There is no habitat model for Blainville's horned lizard and the extent of impacts on habitat cannot be calculated, although patches of habitat could be removed by covered activities. Habitat restoration conservation measures will avoid removal of occupied Blainville's horned lizard habitat. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

As described in Section 5.6 the BRCP will protect 5 patches of Blainville's horned lizard occupied habitat (Table 5–8, *BRCP Covered Species Modeled Habitat Protection Targets*). Implementation of conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

### 11.3.3.11 *Western Pond Turtle*

The western pond turtle has been reported to occur in several locations in the Plan Area, including drainages and ponds along the eastern side of the Plan Area, Big Chico Creek, and the Upper Butte Wildlife Area. The species likely occurs in most perennial streams in the Plan Area and in large ponds and other water bodies. However, the species is likely underreported, and probably occurs throughout the Plan Area in suitable aquatic and adjacent upland habitats.

Implementation of the covered activities would result in the removal of up to 4,606 acres of modeled western pond turtle habitat, representing approximately 5 percent of modeled western pond turtle habitats in the Plan Area (Table 4–8, Figure 4–32 *Western Pond Turtle: Direct Impacts of Covered Activities*). Covered activities will also remove up to 24 stock ponds supporting modeled western pond turtle aquatic habitat. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

BRCP avoidance and minimization measures reduced the allowable impact on modeled western pond turtle habitat to 4,606 acres. An alternative to reduce such impacts to zero acres was considered not to be practicable because it would be too prohibitive to planned development in the UPAs and infrastructure improvements outside of the UPAs. The Butte County and Chico general alternatives avoid natural communities that support western pond turtle habitat to a greater extent than the other alternatives considered. While the Oroville preferred alternative

impacts a relatively greater amount, protection and restoration of suitable habitat under the BRCP far exceeds what will be removed, as discussed below. The potential for mortality or injury of individuals associated with in- and near-water maintenance of agricultural water conveyance facilities will be largely avoided because these activities are typically undertaken during the western pond turtle's inactive period. Restricting these activities further was not considered to be practicable, because not undertaking maintenance of canals and drains when it must occur during the active season would prevent the delivery and removal of irrigation water.

As described in Section 5.6 the BRCP will protect an additional 695 acres of modeled western pond turtle aquatic habitat: emergent wetland and 10,270 acres of upland nesting and movement habitat, resulting in protection of over 55 percent and 50 percent of these habitat types in the Plan Area (see Table 5–21a). Enhancement and management of agricultural habitats will include maintaining water in canals and ditches to facilitate movement and dispersion of turtles and providing effective genetic linkages among populations. Implementation of these conservation actions is expected to be sufficient to sustain the existing and provide for future increases in the abundance and distribution of western pond turtle in the Plan Area.

#### **11.3.3.12 Foothill Yellow-Legged Frog**

Foothill yellow-legged frogs are found in or near clear, cool rocky streams in a variety of habitats, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types. Within the Plan Area foothill yellow-legged frogs have been observed in Big Chico Creek, Butte Creek, Feather River, Mud Creek and Rock Creek.

Implementation of the covered activities would result in the removal of up to 1,189 acres of modeled foothill yellow-legged frog stream and adjacent upland habitat in the Plan Area (Table 4–9, Figure 4–33, *Yellow-Legged Frog: Direct Impacts of Covered Activities*). Where impacts to occupied habitat cannot be avoided and foothill yellow-legged frogs are found within the work area, avoidance and minimization efforts (e.g., translocation) will be implemented to minimize take. Noise and visual disturbances associated with construction-related activities near occupied habitat could temporarily disturb individuals, and the potential for discharge of contaminants and sediment from project sites into habitat could exert sublethal effects on individual frogs and cause temporary avoidance of habitat areas. These potential effects will be avoided and minimized with implementation of avoidance and minimization measures (see Chapter 6, *Conditions on Covered Activities*).

Alternatives to further avoid removal of modeled foothill yellow-legged frog habitat would require not implementing covered activities that affect modeled habitat. This alternative to take beyond reductions incorporated into the general plans as described in Section 11.2 was considered not be practicable because it would be too prohibitive to planned development and transportation projects.

As described in Section 5.6 the BRCP will protect 2,025 acres of modeled yellow-legged frog habitat, resulting in protection of over 24 percent of its modeled habitat in the Plan Area (Table 5–21a). Implementation of these conservation actions and applicable avoidance and minimization measures are expected to benefit the species to a greater degree than any alternatives that may reduce take.

### **11.3.3.13 Western Spadefoot Toad**

Western spadefoot toads require an aquatic habitat for breeding and a terrestrial habitat for feeding and aestivation. Optimal aquatic habitat consists of vernal pools and other seasonal wetlands free of native and nonnative predators such as fish, bullfrogs, and crayfish. Terrestrial habitat can consist of grassland and woodland community types up to more than 1,000 feet around aquatic breeding habitat with sandy or gravelly soil suitable for burrowing (see Appendix A). Western spadefoot toads are mostly terrestrial, using upland habitats to feed and burrow in for their long dry season dormancy. Only one record of the western spadefoot toad exists within Butte County, within the city limits of Chico along Intermittent Creek, a tributary to Sycamore Creek.

Implementation of the covered activities would result in the removal of up to 10,142 acres of modeled western spadefoot toad habitat, representing approximately 9.4 percent of the total modeled western spadefoot toad habitat in the Plan Area (Table 4–8, Figure 4–34, *Western Spadefoot Toad: Direct Impacts of Covered Activities*). Covered activities will also remove up to 22 stock ponds that could support western spadefoot toad breeding habitat. The potential effects of noise and visual disturbances on individuals associated with implementation of the covered activities will be minimized with implementation of avoidance and minimization measures described in Chapter 5, *Conservation Strategy*.

Proposed widening of Highway 99 could have resulted in the removal of two vernal pools occupied by Conservancy fairy shrimp that also support modeled western spadefoot toad habitat, but BRCP avoidance measures preclude impacts on these vernal pools and any other vernal pools that are found to support Conservancy fairy shrimp in the future. Alternatives to further avoid removal of western spadefoot toad habitat would require not implementing covered activities that affect modeled habitat. This alternative to take, beyond reductions incorporated into the general plans as described in Section 11.2 was considered not be practicable because it would be too prohibitive to planned development and infrastructure projects. The preferred alternatives for the Butte County, Chico, and Oroville general plans all avoid impacts to the natural communities that support western spadefoot toad habitat to a greater extent than the other alternatives considered.

As described in Section 5.6 the BRCP will protect 30,675 acres of modeled breeding and upland habitats, resulting in protection of over 40 percent of its habitat in the Plan Area (see Table 5–21a). Achieving the BRCP biological goals and objectives applicable to the western spadefoot toad will also help achieve the Recovery Plan (USFWS 2005) goals for western

spadefoot toad (Section 5.3, *Biological Goals and Objectives*). Implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce take.

#### **11.3.3.14 Central Valley Fall/Late Fall-Run Chinook Salmon**

Central Valley fall/late fall-run Chinook salmon occur in the Feather River to Oroville, Butte Creek, Big Chico Creek, Little Chico Creek, Rock Creek, Mud Creek, and the Sacramento River. Butte Creek in particular had consistent returns of 2,000–5,000 fall-run adults between 2001 and 2005, but since then returns have declined to fewer than 400 individuals.

The covered activities do not result in the removal of modeled Central Valley fall/late fall-run Chinook salmon habitat (Table 4–8). Noise and visual disturbances associated with construction-related activities (e.g., bridge maintenance and replacement projects) in or near occupied habitat could temporarily disturb individuals, and the potential for discharge of contaminants and sediment from project sites into habitat could exert sublethal effects on individual fall/late fall-run Chinook salmon and cause temporary avoidance of habitat areas. These potential effects will be avoided and minimized with implementation of avoidance and minimization measures (see Chapter 6, *Conditions on Covered Activities*).

An alternative to eliminate any possibility of adverse effects on fall/late fall-run Chinook salmon was considered not to be practicable because it would preclude maintenance and improvement of bridges to maintain public safety and the Plan Area's transportation system, and would preclude implementation of conservation actions that are designed to benefit fall/late fall-run Chinook salmon, but will have temporary adverse effects on its habitat (e.g., placement of spawning gravels, removal of riprap).

As described in Section 5.6 the BRCP will protect an additional 20 linear miles of currently unprotected modeled Central Valley fall/late fall-run Chinook salmon habitat, resulting in protection of over 25 percent of habitat in the Plan Area (Table 5–21a). Together with conservation measures CM9, Replenish Spawning Gravels for Salmonids, CM10, Remove Impediments to Upstream and Downstream Fish Passage, and CM11, Remove, Modify, or Screen Unscreened Diversions, implementation of these conservation actions and applicable avoidance and minimization measures is expected to benefit the species to a greater degree than any alternatives that may reduce potential indirect and periodic maintenance effects to Central Valley fall/late fall-run Chinook salmon.