4.6 BIOLOGICAL RESOURCES

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INTRODUCTION

The purpose of this section includes the following:

- identify biological resources including vegetation, wetlands, fish and wildlife, and special-status species known or suspected to occur in the planing area;
- assess the potential impacts of the project and alternatives, including impacts on existing vegetative cover, reduction in extent of sensitive natural community types, disturbance to wildlife habitat and disruption of movement corridors, potential "take" of special-status species, and modifications to jurisdictional wetlands or other waters; and
- recommend modifications to the CCRMP to ensure identified significant impacts are adequately mitigated.

This assessment of the biological resources within the planning area involved: a preliminary literature review, interpretation of existing mapping, and a field reconnaissance. Prior to conducting the field reconnaissance, available literature and resource mapping were reviewed to provide information on general resources in the area, the location of known wetland resources, the distribution of special-status species and sensitive natural communities, and opportunities for habitat restoration along the Cache Creek corridor.

Literature and mapping reviewed included: the *Biological Resources Study* (EIP Associates, 1995) of the *Technical Studies and Recommendations for the Lower Cache Creek Resources Management Plan (Technical Studies)*; biological assessments and habitat restoration plans prepared as part of the five individual mining applications now being considered by the County (Jones & Stokes Associates, 1993 and 1993a; Zentner and Zentner, 1994, 1995, 1995a, and 1995b); environmental documentation for previous projects in the vicinity, such as the EIRs prepared for three interim short-term mining use permits (Baseline, 1995; and MBA Associates, 1995); the *Lower Cache Creek Riparian Corridor Restoration Recommendations* (Jones & Stokes Associates, 1995); the *Draft Inventory of the Wetlands and Riparian Habitats of Yolo County, California* (Jones & Stokes Associates, Inc., 1990); the *R4 Draft Report, Northern California Streams, Cache Creek Environmental Restoration, California, Draft Reconnaissance Report* (U.S. Army Corps of Engineers, 1995); the *Yolo County Draft Habitat Conservation Plan* (EIP Associates, 1995a); the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants* (CNPS, 1992); mapping prepared as part of the National Wetland Inventory (U.S. Fish and Wildlife Service, 1985); and review of records maintained by the California Natural Diversity Data Base (CNDDB).

The Technical Studies provide a discussion of the historic condition and existing biological resources of the planning area, and serves as a primary source of information for this section. The Technical Studies provide background information on the ecology of riparian habitat, and describes the changes and trends in vegetation, wildlife, and fisheries in the lower Cache Creek area. This includes information on special-status species and sensitive natural communities, focusing on the riparian habitat of the creek corridor. A discussion of the potential for enhancement and the limitations for riparian habitat restoration within the planning area is also provided in the chapter, together with general planting guidelines for restoration sites along Cache Creek. Chapter 6 of the *Technical Studies* includes recommendations pertaining to riparian habitat. A subsequent assessment and *Restoration Recommendations* by Jones & Stokes Associates (1995) provided additional details for restoration of the lower Cache Creek corridor that were incorporated into the draft CCRMP.

Identification of the biological resources within the planning area was based primarily on existing information, and no detailed field surveys were conducted as part of this assessment. A field reconnaissance was conducted by automobile and foot on 13 January 1996 to confirm previous mapping, verify the location of important biological features, and determine the relationship of existing and proposed mining operations to known sensitive resources.

REGULATORY SETTING

In addition to the environmental protection provided by the California Environmental Quality Act (CEQA), other state and federal regulations have been enacted to provide for the protection and management of sensitive biological resources. Relevant policies of the State Mining and Reclamation Act (SMARA) serve to protect important habitat and establish minimum reclamation standards for mined lands, although the CCRMP may be exempt from compliance with the SMARA regulations. Implementation of policies contained in the Yolo County General Plan also serves to regulate development and provide for conservation of important resources on a local level.

State and federal agencies have a leading role in the protection of biological resources through their authority as set forth in various statues and regulations. The U.S. Fish and Wildlife Service (USFWS) is responsible for implementation of the federal Endangered Species Act and the Migratory Bird Treaty Act, while the U.S. Army Corps of Engineers (Corps) has primary responsibility for protecting wetlands under §404 of the Clear Water Act. At the state level, the California Department of Fish and Game (CDFG) is responsible for administration of the State Endangered Species Act, and for protection of streams, waterbodies, and riparian corridors through the Streambed Alteration Agreement process under §1601-1606 of the California Fish and Game Code.

Special-Status Species and Sensitive Natural Communities

Special-status species[1] are plants and animals that are legally protected under the state and/or federal Endangered Species Acts[2] or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with legal protection under the Endangered Species Acts often represent major constraints to development, particularly when they are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take"[3] of these species.

The primary information source on the distribution of special-status species in California is the CNDDB inventory, which is maintained by the Natural Heritage Division of the CDFG. Occurrence data is obtained from a variety of scientific, academic, and professional organizations, private consulting firms, and knowledgeable individuals, and entered into the inventory as expeditiously as possible. The CNDDB records have been included in the

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[1]Special-status species include:

- Officially designated (rare, threatened, or endangered) and candidate species for listing by the CDFG.
- Officially designated (threatened or endangered) and candidate species for listing by the USFWS.
- Species considered to be rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as those identified on lists 1A, 1B, and 2 in the *Inventory of Rare and Endangered Vascular Plants of California.*
- And possibly other species which are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on lists 3 and 4 in the CNPS *Inventory* or identified as animal "Species of Special Concern" by the CDFG. Species of Special Concern have no legal protective status under the state Endangered Species Act but are of concern to the CDFG because of severe decline in breeding populations in California.

[2]The federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal taxa. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California taxa.

[3]"Take" as defined by the FESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a threatened or endangered species. "Harm" is further defined by the USFWS to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modification or degradation. The CDFG also considers the loss of listed species habitat as "take", although this policy lacks statutory authority and case law support under the CESA.

Two sections of FESA contain provisions which allow or permit "incidental take." Section 10(a) provides a method by which a state or private action which would result in "take" may be permitted. The applicant must provide the USFWS with an acceptable conservation plan and publish notification for a permit in the Federal Register. Section 7 pertains to a federal agency which proposes to conduct an action which may result in "take," requiring consultation with USFWS and possible issuance of a jeopardy decision. Under the CESA, "take" can be permitted under Section 2081 of the Fish and Game Code. The applicant must enter into a habitat management agreement with the CDFG, which defines the permitted activities and provides adequate mitigation.

County's GIS files, and are updated regularly. Extensive information on occurrence records has also been compiled during the preparation of the County-wide habitat management program, and has been incorporated into the *Draft Habitat Conservation Plan* (EIP Associates, 1995a).

The presence of a population of species-of-concern in a particular region is an indication that an additional population may occur at another location within the region, if habitat conditions are suitable. However, the absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from the area in question, only that no data has been entered into the CNDDB inventory. Detailed field surveys are generally required to provide a conclusive determination on presence or absence of sensitive resources from a particular location.

In addition to species-oriented management, preserving habitat on an ecosystem-level is increasingly recognized as vital to the protection of natural diversity in the state. The CNDDB has developed a classification system for "natural communities" which are described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (CDFG, 1986). The CDFG maintains occurrence information in the CNDDB inventory of those natural communities which are considered particularly rare or threatened, comprising about 125 of the approximately 375 described as occurring in the state. Although these natural communities have no legal protective status under the state or federal Endangered Species Acts, they are provided some level of protection under the CEQA Guidelines. Based on Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if it would "substantially diminish habitat for fish, wildlife or plants." Further loss of a sensitive natural community could be interpreted as substantially diminishing habitat, depending on the relative abundance, quality and degree of past disturbance, and the anticipated impacts to a known occurrence of a specific community type with a high inventory priority.

Wetlands

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the Corps and the USFWS, which generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation.

The CDFG and Corps have jurisdiction over modifications to stream channels, river banks, lakes, and other wetland features. Jurisdiction of the Corps is established through the provisions of §404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into "waters" of the United States without a permit, including wetlands and unvegetated "other waters." All three of the identified technical criteria must be met for an

area to be identified as a wetland under Corps jurisdiction, unless the area has been modified by human activity. Wetland impacts (defined as direct fill or indirect effects of fill) of less than one acre do not require an Individual 404 permit. Certain activities in wetlands or "other waters" are automatically authorized, or granted a General Permit which allows filling where impacts do not exceed one acre. The Corps assumes discretionary approval over proposed projects which may impact between one and ten acres, issuing either a Nationwide or an Individual Permit. An Individual Permit would be automatically required where 10 acres or more would be affected by a project.

The USFWS classification system is used by the CDFG to determine wetlands. This classification system is generally more encompassing than that used by the Corps, requiring that only one of the criteria be met for an area to be considered wetlands, rather than all three as required by the Corps. Jurisdictional authority of the CDFG over wetland areas is established under §1601-1606 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is "unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake" without notifying the Department, incorporating necessary mitigation, and obtaining a Streambed Alteration agreement. The Wetlands Resources Policy of the CDFG states that the Fish and Game Commission will "strongly discourage development in or conversion of wetlands...unless, at a minimum, project mitigation assures there will be no net loss of either wetland habitat values or acreage." The Department is also responsible for commenting on projects requiring Corps permits under the Fish and Wildlife Coordination Act of 1958.

In recognition of the importance of wetlands, in 1977 the USFWS began a systematic effort to classify and map remaining wetlands in the country, now known as the National Wetlands Inventory Program (NWI). Using the USGS topographic maps as a base, the wetlands mapping effort provides a generalized inventory of wetlands according to the *Classification of Wetlands and Deepwater Habitats of the United States* (USFWS, 1979) used by the USFWS. Mapping has been prepared through interpretation of aerial photographs, with only limited ground confirmation, which means that a more thorough ground and historical analysis may result in a revision to wetland boundaries in a specific location. As noted above, the classification system also varies from that used by the Corps, and the inventory is not an attempt to define the limits of proprietary jurisdiction of any federal, state, or local agency.

Surface Mining and Reclamation Act

Minimum acceptable practices and performance standards have been developed as part of SMARA to provide for the protection of important fish and wildlife habitat and the successful revegetation of mined lands. Although the CCRMP may be exempt from SMARA, the following standards would apply to mining projects within the planning area, including alternatives to the project for which the CCRMP and OCMP would not be implemented.

§3503(c) All reasonable measures shall be taken to protect the habitat of fish and wildlife.

§3503(g) When the reclamation plan calls for revegetation, available research addressing revegetation methods and the selection of species having good survival characteristics, for the topography, resoiling characteristics, and climate of the mined areas shall be used.

§3703(a) Rare, threatened or endangered species and their habitat shall be conserved. If avoidance cannot be achieved through available alternatives, mitigation shall be provided.

§3703(b) Wildlife habitat shall be established in a condition at least as good as that which existed before lands were disturbed by surface mining.

§3703(c) Wetland habitat shall be avoided.

§3705(a) A vegetative cover suitable for the proposed end use and capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer shall be established on disturbed land unless an artificially maintained landscape is consistent with the approved reclamation plan.

§3705(b) Test plots conducted simultaneously with mining shall be required to determine the most appropriate planting procedures to be followed to ensure successful implementation of the proposed revegetation plan.

§3705(g) Native plant species shall be used for revegetation, except when introduced species are necessary to meet the end uses specified in the approved reclamation plan.

§3705(h) Planting shall be conducted during the most favorable period of the year for plant establishment.

§3705(j) Operator must demonstrate that vegetation has been self-sustaining without irrigation for minimum of two years prior to release of the financial assurances by the lead agency, unless an artificially maintained landscape is consistent with the approved end use.

§3705(k) Noxious weeds shall be managed: (1) when they threaten the success of the proposed revegetation; (2) to prevent the spreading to nearby areas; and (3) to eliminate fire hazard.

§3705(m) Success of revegetation shall be judged based on effectiveness of the vegetation for the approved end use, and by comparing the quantified measures of vegetative cover, density, and species-richness of the reclaimed lands to similar parameters of naturally occurring vegetation in the area.

Yolo County General Plan

One of the goals of the Yolo County General Plan is to establish natural and wildlife areas. The following policies pertain to this goal and aspects of the proposed project, numbered here as they area in the Open Space and Conservation elements of the General Plan:

OS 11 Yolo County shall plan to safeguard existing and encourage additional areas of wildlife habitat as part of its open space preservation program.

CON 28 Yolo County shall establish a tree planting program. Yolo county shall adopt a tree preservation ordinance and shall require extensive use of trees on private and public lands.

CON 30 Yolo County shall safeguard existing and encourage development and protection of additional wildlife habitat and shall coordinate with other agencies and programs to enhance and create wildlife preserves and to preserve and rehabilitate wildlife habitat areas suitable for ecological education sites.

CON 33 Existing natural vegetation shall be conserved where possible, integrated into new development and its life and continuity shall be assured by means of Conditional Use Permit procedures applied to permit approvals for new or reconstruction work.

BIOLOGICAL SETTING

Vegetation

In the last century, grazing, agricultural production, and mining activities have substantially altered the vegetative cover in the planning area. The introduction of livestock grazing in the mid-1800s, followed by removal of oak woodland, and eventual irrigation and year-round farming in the 1900s has resulted in the elimination of most of the native plant communities. In-channel aggregate mining during the past 90 or more years has resulted in substantial modification to the historic riparian cover along the Cache Creek corridor. Most of the original native riparian forest, oak woodland, and perennial grassland communities have been replaced by agricultural crops, with remnants of the native communities generally limited to small segments along the Cache Creek corridor. Native riparian cover has also partially regenerated along the creek through natural processes, forming a narrow band of herbaceous cover and willow scrub within the in-channel area.

Figure 4.6-1 shows the extent of the remaining natural communities in the planning area, indicating their concentration within the in-channel area proposed under the CCRMP. These include: riparian forest, willow scrub, oak woodland, and isolated oak trees. The extent of exposed gravel wash and herbaceous cover in Figure 4.6-1, neither of which represent distinct natural communities, provides an indication of the degree of past and on-going disturbance within the creek channel. Portions of the planning area with no distinct natural community type support agricultural crops and non-native grassland cover. Outside the in-channel area, vegetative cover in the Mineral Resource Zone is dominated by agricultural crops, with ornamental landscaping occurring in the vicinity of the communities of Capay, Esparto, and Madison. Large stands of oak woodlands and bands of riparian forest and willow scrub remain outside the in-channel area upstream from Capay Bridge. Remnants of riparian forest also occur outside the in-channel area upstream from Stevens Bridge, forming a large stand at the Yolo Flying Club south of the creek and extending along Gorton Slough north of the creek and just south of Road 20.

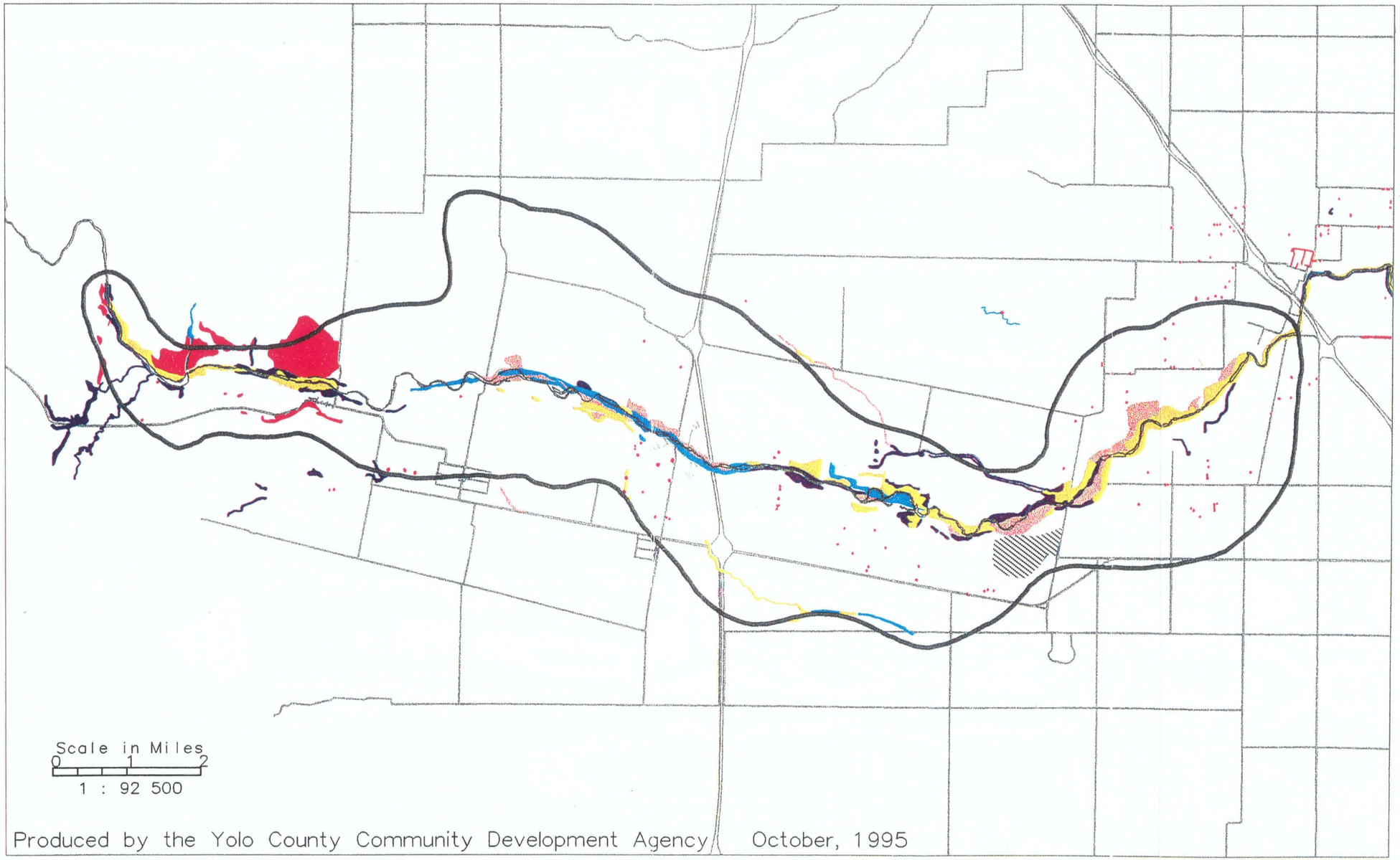

Figure 4.6-1 Habitat Types

SOURCE: YOLO COUNTY COMMUNITY DEVELOPMENT AGENCY

Riparian Habitat

The riparian habitat of the in-channel area reflects the numerous factors currently influencing Cache Creek in the planning area, including mining activities, flood velocities and erosional forces, and availability of surface water and groundwater. Most of the original riparian forest has been eliminated, with only 200 acres of taller forest remaining in the entire Mineral Resource Area, forming valley oak, cottonwood, and mixed riparian forest. Out of the total area of creek-associated land coverage, only six percent is mature riparian forest. By comparison, an estimated 821 acres of willow (*Salix* spp.) scrub, which is an early successional stage of low-floodplain and sandbar woody riparian vegetation, occurs in the Mineral Resource Area (EIP Associates, 1995). Two weedy species of concern, tamarisk (*Tamarix ramossissima*) and giant reed (*Arundo donax*), are present to varying degrees throughout the creek corridor, forming dense thickets which compromise native cover in some reaches.

The following provides a summary of the existing vegetative cover for each of the subreaches in the planning area, extending west from the I-5 overcrossing in the Rio Jesus Maria subreach to the Capay Dam in the Capay subreach. Subreach 1 is located completely outside the planning area, extending from the Yolo Bypass to Subreach 2, and is therefore not summarized below. Figures 6 and 7 of the CCRMP show each of the subreaches in the planning area.

Rio Jesus Maria (Subreach 2)

Most of this subreach occurs outside the planning area, to the east of I-5. Limited areas of woody riparian vegetation, consisting primarily of scattered mature oaks and clumps of willow occur along the levees and deeply incised creek banks.

Hoppin Subreach (Subreach 3)

This subreach has been extensively mined, yet some segments continue to support dense riparian vegetation. Tamarisk dominates the upper banks, and giant reed also occurs in scattered clumps along the northern bank and the middle of the active channel in some locations. Recently mined pits along the northern bank of the channel have developing stands of willow and cottonwood, as well as emergent marsh vegetation.

Dunnigan Hills (Subreach 4)

This subreach has the most extensive and highest quality contiguous riparian vegetation along the creek corridor in the planning area. Particularly high quality habitat occurs along the north side of the creek upstream from the confluence with Gorton Slough, and within 1,000 feet of Moore Dam. Areas of mature forest are dominated by Fremont cottonwood (*Populus fremontii*), willow, valley oak (*Quercus lobata*), and Oregon ash (*Fraxinus latifolia*), with an understory of blue elderberry (*Sambucus mexicana*), California grape (*Vitis californica*), California blackberry (*Rubus ursinus*), and Himalaya blackberry (*Rubus*

discolor). The channel is not actively mined, has well-defined low flow meanders, and several in-channel levees. Occurrences of giant reed and tamarisk are relatively few in number and areal extent.

Guesisosi Subreach (Subreach 5)

This subreach is heavily mined, preventing establishment of a well-defined low flow channel. Vegetation is present on both banks, composed of scattered shrubs and small trees. Volunteer riparian vegetation is establishing along the channel bottom, but is suppressed by mining activities. Pits located along the northern bank have large stands of willow and cottonwood forest.

Madison Subreach (Subreach 6)

This subreach is also heavily mined and large segments are nearly devoid of vegetation. Widely scattered shrubby vegetation occurs between I-505 and Road 89, and some undisturbed areas are subject to colonization by tamarisk and giant reed.

Hungry Hollow Subreach (Subreach 7)

A major portion of this subreach is actively mined, greatly affecting riparian establishment. Gravel wash and herbaceous cover dominate this creek subreach. Young native riparian seedlings occur along portions of the creek that have a more stable low flow channel and pockets of fines.

Capay Subreach (Subreach 8)

Native riparian vegetation is limited to older valley oak and cottonwood trees, generally outside of the active channel floodplain. Narrow strips of willow line the banks of the creek, but the subreach is heavily infested with tamarisk and giant reed. These noxious weeds have begun to colonize gravel bars and the low floodplain upstream from the Capay bridge. Control and eradication of these two species is likely to be a major component of long-term management efforts in this subreach.

Oak Woodland

Valley oak forms remnant stands of oak woodland in the western portion of the planning area, generally on the upper terraces of Cache Creek, but at times intergrading with valley oak riparian forest along the fringe of the in-channel area. The Technical Studies estimate that 76 acres of oak woodland remain in the Mineral Resource Area, most outside the in-channel area (EIP Associates, 1995). The understory layer is generally poorly developed or composed of non-native grassland species. Other tree species and shrubs, such as live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), and elderberry occasionally occur in the woodland. Poison oak (*Toxicodendron diversilobum*) sometimes forms dense thicket on the woodland floor or up the trunks of trees.

Grassland and Agricultural Fields

Agricultural fields form the margin of the in-channel area, supporting agricultural crops and a cover of ruderal species and non-native grassland in setbacks along the creek. Grassland species typical of the setback margins include: wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum leporinum*), wild radish (*Rhaphanus sativus*), bindweed (*Convolvulus arvensis*), cheeseweed (*Malva parviflora*), bur clover (*Medicago polymorpha*), and yellow-star thistle (*Centaurea solstitialis*). Valley oak and black walnut trees (*Juglans hindsii*) compromise the dominant tree species along these margins. Several shrubs sometimes form dense thickets as well, including California rose (*Rosa californica*), Himilaya blackberry and occasionally blue elderberry.

Wetlands

Mapped wetlands in the planning area consist primarily of emergent, scrub, and forested palustrine and riverine systems[4] along the Cache Creek corridor, which are generally restricted to the in-channel area of the CCRMP. Several smaller tributary drainages are located outside the in-channel area, such as Gorton Slough. The fringe of the in-channel mining pits and a few irrigation canals and ditches also support wetland indicator species, but these features are of man-made origin and would most likely be exempt from jurisdictional authority of the Corps or the CDFG. No areas of extensive seasonal wetlands or unique vernal pools have been mapped within the planning area, and extensive agricultural development precludes occurrence of the latter. Detailed wetland delineations and verification by jurisdictional agencies would be required to conclusively determine presence or absence of jurisdictional wetland resources on individual parcels. A background discussion of the regulatory framework regarding wetlands is provided at the beginning of this section.

Wildlife

Although native vegetation within the planning area has been substantially altered, the Cache Creek corridor remains a feature of regional importance and contributes to the habitat value of the surrounding agricultural lands, collectively supporting a diverse assemblage of resident and migrant wildlife species. In general, each habitat differs in its relative value to specific species and can be characterized by both vegetation and associated animal species, although the majority of wildlife species utilize more than one habitat type. The relative value and wildlife species typically associated with each of the habitat types in the planning area is summarized below.

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[4]As defined by the USFWS (1979), the riverine system generally includes all wetlands and deepwater habitats contained within a channel, with the exception of (1) wetlands dominated by trees, shrubs, persistent emergents, and emergent mosses or lichens, and (2) habitat with water containing ocean derived salts. The palustrine system generally includes all the nontidal wetland exceptions to the riverine system, specifically wetlands dominated by trees, shrubs, persistent emergents, and emergent mosses or lichens.

Riparian

Cache Creek is a habitat feature of regional importance for wildlife, providing a source of drinking water, protective cover and nesting substrate, and serving as a movement corridor. The creek channel is used as a movement corridor for larger wildlife species, such as grey fox, black-tailed deer, striped skunk, muskrat, beaver, raccoon, and opossum. The creek supports aquatic amphibians, reptiles, and resident and migratory fish species. Species dependent on aquatic habitat of the creek include: carp, green sunfish, bluegill, bass, perch, pacific treefrog and bullfrog. Areas with emergent vegetation and seasonal ponding are particularly attractive features to waterfowl and colonial nesting birds, such as herons, egrets, and red-winged blackbird. Several species of swallow use the varied habitat along the creek corridor for foraging and nesting, including bank swallows, a state-listed threatened species. Mammals typically found in adjacent grassland and agricultural fields, such as California vole, California ground squirrel, and numerous species of birds, most likely use areas of dense riparian growth as protective cover and refuge from summer heat and drought. Blue elderberry shrubs along the riparian corridor provide suitable habitat for a federally-listed threatened insect, valley elderberry longhorn beetle.

One of the limiting factors in the overall habitat value of the Cache Creek corridor is the current discontinuity of the riparian cover. The suppression of riparian growth due to mining activities and other factors precludes the establishment of important cover along much of the corridor. The lack of well-developed vegetation limits the amount of cover, roosting and nesting opportunities, and food for wildlife. The effects of a reduced riparian ecosystem, have resulted in lowered streamflows, increased water temperatures, increased turbidity, streambed siltation, and alteration of aquatic microhabitat of Cache Creek.

Agricultural

Agricultural practices and intensive grazing tend to eliminate important cover for wildlife, but the relative vastness of the planning area and limited human activity permits utilization by smaller mammals and birds as well as larger predatory species. Insect and rodent populations fluctuate with the seasons as cover becomes reestablished and the hay and grain crops mature in early summer. When prey population levels are high, they provide an abundant food source for mammalian predators such as long-tailed weasel, raccoon, and coyote, as well as avian predators such as white-tailed kite, American kestrel, red-tailed hawk, barn owl, great horned owl, common egret, and great blue heron. Because of its four-year average lifespan, alfalfa tends to provide a relatively stable foraging base for rodents such as California meadow vole, Bottae pocket gopher, and western harvest mouse, and can provide important foraging habitat for raptors, including Swainson's hawk, a state-listed threatened species.

Fencerow

The lack of protective cover in the agricultural fields intensifies the importance of fencerows and isolated trees which serve as nesting, denning, and retreat areas for a variety of birds and mammals. Established fencerow vegetation and areas of grassland margins provide protective cover and permit recolonization of agricultural fields. Species commonly associated with fencerows, ruderal grassland, and fringes of agricultural fields include ring-necked pheasant, American kestrel, California ground squirrel, California vole, striped skunk, black-tailed jackrabbit, gopher snake, and western fence lizard.

Oak Woodlands

The scattered oaks and remnant woodlands provide important nest sites, roosting substrate, and cover for wildlife, particularly for raptors and other birds. Wildlife commonly associated with woodland habitat include: deer mouse, ringneck snake, California newt, California slender salamander, western flycatcher, plain titmouse, rufous-sided towhee, and bushtit. Dead limbs and cavities in older trees are often used for nesting or denning by owls, raccoon, and opossum. The abundant crop of acorns in the fall provide an important source of food for numerous woodpeckers, jays, squirrels, and black-tailed deer.

Special-Status Species and Sensitive Natural Communities

Review of records maintained by the CNDDB, together with other relevant information, indicates that occurrences of several plant and animal species with special-status have been recorded from or are suspected to occur in western Yolo County. A number of the natural communities in the planning area have a high inventory priority with the CNDDB due to rarity and threats, and are considered sensitive resources. As noted previously, detailed biological surveys would be necessary to determine presence or absence of any species of concern or sensitive natural communities in a particular location. A background discussion of the regulatory framework regarding special-status species and sensitive natural communities is provided at the beginning of this section.

Plant Species

No special-status plant species have been reported from the planning area or vicinity by the CNDDB. Based on recorded geographic range and characteristic habitat, some other plant species with special-status have a limited potential for occurrence within the planning area. These include: deep-scarred cryptantha (*Cryptantha excavata*), palmate bird's-beak (*Cordylanthus palmatus*), adobe-lily (*Fritillaria pluriflora*), wooly-headed lessingia (*Lessingia hololeuca*), and Heller's bush mallow (*Malacothamnus helleri*). Most of these are considered rare (list 1B) by the CNPS, but only palmate bird's-beak actually has legal protective status, which is a state- and federally-listed endangered species. Due to the extent of past disturbance, however, the likelihood that populations of any plant species of concern occurring in the planning area is considered very low. Northern California black walnut (*Juglans californica* var. *hindsii*), which is a candidate (Category 2) for federal-

listing, occurs throughout the riparian habitat and occasionally along fencerows and developed areas. However, its occurrence within the planning area is a result of naturalization from agricultural practices, and therefore not considered of significance.

Animal Species

The Technical Studies provide information on a total of 11 animal species which are: 1) known from the planning area or reliably believed to be present; 2) known from the region and for which suitable habitat is present within the planning area; and 3) species for which habitat is marginally suitable or unsuitable, but which could benefit from reclamation or habitat restoration efforts. These include: Swainson's hawk (*Buteo swainsoni*), bank swallow (*Riparia riparia*), tricolored blackbird (*Agelaius tricolor*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), Cooper's hawk (*Accipiter cooperi*), California yellow warbler (*Dendroica petechia brewsteri*), ringtail (*Bassariscus astutus*), northwestern pond turtle (*Clemmys marmorata marmorata*), Sacramento anthicid beetle (*Anthicus sacramento*), white-faced ibis (*Plegadis chihi*), and double-crested cormorant (*Phalacrocorax auritus*).

Review of biological assessments for the five individual mining applications and other information sources indicate that several other special-status species have been reported or are suspected to occur in the planning area and should be included in the above list of species of concern. These include: loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), prairie falcon (*Falco mexicanus*), white-tailed kite (*Elanus caeruleus*), burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*), giant garter snake (*Thamnophis couchi gigas*), American badger (*Taxidea taxus*), valley oak ant (*Proceratium californicum*), and ancient ant (*Smithistruma reliquia*).

Table 4.6-1 provides information on the name, status, and preferred habitat for each of these species. It should be noted that there remains a potential for occasional use of theplanning area by other species of concern as well, such as Ferruginous hawk (*Buteo regalis*), long-billed curlew (*Numenius americanus*), mountain plover (*Charadrius montanus*), merlin (*Falco columbarius*), American peregrine falcon (*Falco peregrinus anatum*), osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), sharp-shinned hawk (*Accipiter striatus*), pale big-eared bat (*Plecotus townsendii pallescens*), Townsend's western big-eared bat (*Plecotus townsendii townsendii*), and pallid bat (*Antrazous pallida*). This potential, however, tends to be restricted to occasional wintering activity by migratory bird species or possible foraging activity by bat species for which essential breeding habitat would not be affected by mining or reclamation activities.

Table 4.6-1
Special-status Species Known or Suspected from Planning Area

Species	Status Federal/State	Habitat Type
Insects:		
Valley elderberry longhorn beetle	FT/-	Riparian, fencerows with elderberry
Ancient ant	*/-	Oak woodland
Valley oak ant	*/-	Oak woodland
Sacramento anthicid beetle	*/-	Riverine sand deposit
Reptiles:		
Giant garter snake	FT/ST	Marshland, streams, channels, ponds
Northwestern pond turtle	*/CSC	Ponds, rivers, streams
Birds:		
Swainson's hawk	-/ST	Riparian, grassland, agricultural
Golden eagle	-/CSC, CP	Grasslands, agricultural
Northern harrier	-/CSC	Grasslands, agricultural, marshland
Prairie falcon	-/CSC	Grasslands, rock outcrops
Cooper's hawk	-/CSC	Riparian, woodland, agricultural
White-tailed kite	-/CP	Riparian, grassland, agricultural
Burrowing owl	-/CSC	Grassland, agricultural
Tricolored blackbird	*/CSC	Marshland, agricultural
Bank swallow	-/ST	Riparian, agricultural
Loggerhead shrike	*/CSC	Grassland, agricultural
California yellow warbler	-/CSC	Riparian
Double-crested cormorant	-/CSC	Open water
White-faced ibis	*/CSC	Emergent wetlands, agricultural
Mammals:		
Ringtail	-/CP	Riparian
American badger	-/CSC	Grassland

Federal Status
FE = Listed as Endangered under the Federal Endangered Species Act.
FT = Listed as Threatened under the Federal Endangered Species Act.
* = These species were considered to be category 2 candidate taxa for federal listing until 28 February 1996 when the USFWS revised their status classification system. These species no longer have any candidate designation, but are unofficially classified as species of concern and could be added to the candidate list if information demonstrates they warrant listing.

State Status
SE = Listed as Endangered under the California Endangered Species Act.
ST = Listed as Threatened under the California Endangered Species Act.
CP = California fully protected species; individual may not be possessed or taken at any time.
CSC = Considered a species of special concern by the California Department of Fish and Game; taxa have no formal legal protection but nest sites and communal roosts are generally recognized as significant biotic features.

Five of the species in Table 4.6-1 are considered to be of particular concern due to their legal status under the Endangered Species Acts, or their dependence on riparian habitat which could be affected by management objectives of the CCRMP and OCMP: Swainson's hawk, bank swallow, valley elderberry longhorn beetle, tricolored blackbird, and giant garter snake. The following provides a discussion of the status, relevant management information, and occurrence records for each of these five species. Nesting habitat for the numerous raptors and other bird species of concern is also of importance, and general information on these species is summarized below.

Swainson's Hawk

Swainson's hawk is a summer breeding resident of the Central Valley, generally occurring in areas where riparian woodland and surrounding agricultural lands provide roosting, nesting, and foraging habitat. The loss of nesting and foraging habitat has greatly reduced the breeding range and abundance of Swainson's hawk in California, with an estimated decline of 90 percent in the breeding population between 1900 and 1979. Originally adapted to open grasslands, it has become increasingly dependent on agricultural lands as native plant communities have been converted to agricultural uses.

Agricultural crop patterns currently influence the distribution and abundance of Swainson's hawk in the Central Valley, and foraging behavior reflects changes in prey density and availability. Swainson's hawk is an opportunistic feeder, foraging in different areas as agricultural practices expose prey or prey populations become abundant. Suitable foraging habitat currently includes open grassland or lightly-grazed dryland pasture, alfalfa and other hay crops, fallow fields, and combinations of hay, grain, and row crops such as tomato and beets. Areas devoted to alfalfa generally remain in production for four to five years after planting because this is a perennial species, contributing to the importance of this crop-type as relatively stable foraging habitat for the hawk. Unsuitable foraging habitat includes any crop-type in which prey are inaccessible, or which do not support adequate prey populations, such as vineyards, orchards, and cotton fields.

Records maintained by the CNDDB indicate several active nests and numerous sightings in the eastern portion of the planning area. Biological assessments conducted for individual mining applications detected additional nests in the planning area. These include a nest in the dense riparian forest along Gorton Slough (Jones & Stokes Associates, 1993) and a nest in an isolated tree approximately one half mile west of I-505, midway between the creek and Road 19. The majority of the reported sightings are from isolated nest trees in agricultural fields (Jones & Stokes Associates, 1993a). Based on the concentration of recorded nesting activity to the east, the planning area may represent the western fringe of the range for nesting pairs in this part of Yolo County.

Most of the agricultural fields within the planning area meet the two basic criteria used by the CDFG in determining presence of potential foraging habitat for Swainson's hawk (CDFG, 1993). These criteria include: location within a ten-mile radius of an active nest site, and suitable foraging habitat type. All of the CCRMP area falls within a ten-mile radius

of known nesting territories, considering the CNDDB occurrence records and other nest locations reported from the planning area. The CDFG considers all agricultural and pasture land within an active nesting territory not devoted to unsuitable crop types (i.e., vineyards, mature orchards, and cotton) to be potential foraging habitat, including plowed or fallow lands and fields under crop rotation which are currently planted with a crop where prey are inaccessible.

Bank Swallow

This migrant species is found primarily in riparian and other lowland habitat of the state, arriving from South America in early April and leaving California by mid-September. Typically a colonial breeder, this species requires vertical banks and cliffs with fine-textured or sandy soils along stream banks, rivers, ponds, and other bodies of water for nesting, where it excavates a hole for breeding. Although it generally nests along exposed channel banks, stockpiled or exposed topsoil in gravel mines and even trenches have been used for nesting. It has been known to colonize the vertical faces of trenches within one day of excavation. This species was once believed to be more common as a breeder in California, but now only a few larger colonies remain.

The CNDDB records indicate that several active colonies of bank swallows have been observed along Cache Creek from the late 1980's. These include: colonies within a few thousand feet of either side of the I-505 crossing; a colony midway between the I-505 crossing and Stevens Bridge; and a colony to the west of the planning area. Suitable habitat for this species is generally restricted to the in-channel area, where steep, exposed banks are present. Two of the reported occurrences are from gravel pits, providing an indication of the need to ensure mining activities do not inadvertently result in "take" of individual birds and the potential to establish additional suitable nesting habitat as part of reclamation of off-channel aggregate mining.

Valley Elderberry Longhorn Beetle

This subspecies is dependent on elderberry plants (*Sambucus* spp.) for food, cover, and pupation. It is known primarily from riparian habitats of the Central Valley from near Red Bluff south to the Tule River in Tulare County, though occurrences in other areas have been recorded. The presence of valley elderberry longhorn beetle (VELB) is usually detected by characteristic exit holes in young stems of elderberry shrubs where larvae have emerged. The USFWS considers any stand of elderberry to be potentially suitable habitat for the beetle, and generally requires that existing plants be protected, transplanted, or replaced at a specified ratio specified in the USFWS *General Compensation Guidelines for the Valley Elderberry Longhorn Beetle*. While the CNDDB contains no records for VELB occurrence in the planning area, detailed mapping of elderberry shrub locations and evidence of VELB presence have been noted in biological assessments conducted for individual mining applications.

Tricolored Blackbird

Although it has declined substantially in recent years, the tricolored blackbird is widespread in marshes and agricultural fields of the Central Valley. It usually nests in cattails or tules, sometimes in thickets of willow, blackberry and other riparian habitat near available surface water. Due to the absence of well-developed marshland vegetation, suitable nesting habitat is generally absent outside the immediate Cache Creek corridor. A colony of approximately 1,000 tricolored blackbird was reported from the in-channel area near the Coors parcel on Teichert Aggregates property west of Road 94B in 1992 (Jones & Stokes Associates, 1993). Emergent wetlands associated with reclaimed quarry wet pits could provide suitable nesting habitat for this species in the future.

Giant Garter Snake

The historic range of the giant garter snake once encompassed the Central Valley from Butte County to Kern County. Today its distribution is fragmented and its numbers are diminished, with the snake altogether absent from the southern San Joaquin Valley. Agricultural development, especially the draining of wetlands and channelization of sloughs and streams, has adversely affected the status of this species. It frequents areas of permanent fresh water (particularly sloughs and marshes overgrown with tules and willows) and can also be found in temporary bodies of water such as irrigation canals and flooded rice fields.

Giant garter snake has not been detected from the lower Cache Creek planning area, according to the CNDDB records. The general absence of freshwater marsh habitat along the creek corridor, and distance to suitable habitat were giant garter snake has been detected in the Yolo Bypass limits the likelihood of even occasional dispersal into the planning area. As with tricolored blackbird, the establishment of emergent freshwater marsh vegetation around the perimeter of reclaimed wet pits could provide suitable habitat for this species in the future.

Other Birds and Raptors

Several other bird species of concern are known to forage in the agricultural fields of the planning area and vicinity, including: loggerhead shrike, white-tailed kite, northern harrier, Cooper's hawk, prairie falcon, burrowing owl, and golden eagle. Of particular concern for these species, which have no legal protective status under the Endangered Species Acts, is the protection of active nest locations. Raptor nests in active use are protected under the provisions of the Migratory Bird Treaty Act[5] and the State Fish and Game Code. Information on each of these species is summarized below:

[5] The Migratory Bird Treaty Act does not provide protection for habitat of migratory birds, but does prohibit the destruction or possession of individual birds, eggs, or nests in active use without a permit from the USFWS.

- White-tailed kite is a fairly common permanent resident of annual grasslands and agricultural fields of the Central Valley. The CDFG gives special consideration to communal roosts and nests of this species when reviewing environmental documents.

- Northern harrier is a fairly common resident of grasslands, marshlands, and agricultural areas of the Central Valley.

- The remnant woodlands and riparian forest in the planning area may provide nesting locations for Cooper's hawk, which utilize a wide range of habitat types and generally nests in riparian zones.

- Prairie falcon is probably a regular winter visitor to agricultural fields and grasslands in the planning area, but requires cliffs and rock outcrops for nesting, which are absent.

- Golden eagle is occasionally observed over grasslands and agricultural areas in western Yolo County, but no nests have been reported from the planning area. Golden eagles typically prefer to nest in tall trees or cliffs in remote areas.

- Loggerhead shrike is most likely a resident of the planning area, foraging in grasslands and agricultural areas, and nesting in areas with dense cover.

- Burrowing owl is a ground nesting species, which tends to occupy burrows of ground squirrels and other rodents. Suitable habitat occurs throughout the planning area, although no records of established colonies have been reported.

Natural Communities

The riparian forest, riparian scrub, and valley oak woodland natural community types within the planning area are considered to have a high inventory priority with the CNDDB. These communities have been designated as sensitive due to rarity and continuing loss as a result of development, flood control improvements, and other factors, and should receive appropriate recognition in planning for the CCRMP and the OCMP.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

The project would have a significant effect on biological resources if it would:

- Substantially fragment, eliminate, or otherwise disrupt foraging areas and/or access to food sources.
- Substantially limit or fragment range and movement (geographic distribution of animals and/or seed dispersal routes).

- Disrupt critical time periods (nesting, breeding) for fish and other wildlife species.
- Reduce the numbers of any rare, threatened, or endangered species or their habitats (including, but not limited to, the removal of any healthy oak tree or tree containing a Swainson's hawk nest).
- Substantially impact locally designated species or locally designated natural communities.
- Remove wetland habitat (e.g., marsh, riparian, and vernal pool).
- Conflict with adopted plans or programs designed to preserve or enhance biological resources.

Impact 4.6-1
Impact on Existing Vegetative Cover

Mining, flood protection improvements, and erosion control activities would result in disturbance to existing vegetation, including areas of riparian vegetation within the in-channel area. Disturbance would continue to suppress establishment of riparian habitat and would create ideal conditions for establishment of noxious weeds such as tamarisk and giant reed unless revegetation is successfully accomplished and weeds adequately controlled.

Draft CCRMP

The CCRMP would prohibit commercial mining and hauling within the active channel, and serve to minimize the associated disturbance to riparian cover. Modifications to the existing vegetative cover would eventually be made along portions of the creek corridor to achieve the conceptual design established by the Test 3 Run. While the CCRMP provides a conceptual approach to the modifications necessary to implement the Test 3 Run Boundary, most of the details regarding treatment of a particular reach of the creek would be defined through implementation of the CCIP. The TAC would identify priority channel improvement projects on the basis of a monitoring program on an annual basis. Following establishment of the Test 3 Run channel boundaries, further modifications would be limited to creek restoration efforts and channel reshaping to improve low-flow characteristics and minimize erosion.

Most of the policies in the Biological Resources Element of the CCRMP address habitat restoration of the creek corridor. The Technical Studies discuss the potential for enhancement and the limitations for riparian habitat restoration, and includes recommendations for management zones along the creek corridor. Following a subsequent assessment which reevaluated the potential for restoration along the various subreaches of the creek, recommendations developed by Jones & Stokes Associates (1995) were incorporated into the draft CCRMP. Independent review by the EIR biologist generally confirms the appropriateness of the recommendations by Jones & Stokes Associates. Management recommendations were compiled into Figures 6 and 7 of the CCRMP which identify appropriate activities for each subreach, locations of specific

restoration areas, and a general time table which prioritizes implementation, and includes schematics for recommended channel modifications.

Policies in the CCRMP include general goals for restoration along Cache Creek, as well as detailed guidelines for recommended channel modifications, vegetation plantings, erosion control, and treatment of noxious weeds. Action policies 4.4-1 and 4.4-9, and Performance Standards 4.5-4 through 4.5-11, 4.5-16 through 4.5-19, and 4.5-22 listed below, address revegetation along the in-channel area. Additional detailed provisions regarding establishment of sensitive natural communities such as riparian woodland, oak woodland, and wetlands are addressed in the discussion of sensitive natural communities, under Impact 4.6-2.

4.4-1 Encourage the use of riparian vegetation and other "soft-engineering" methods in bank or channel protection. Methods may include willow spiling (retaining walls constructed of woven willow stems from which trees will sprout); spur dikes to deflect the current away from the bank and create areas for vegetation; and cabling dead trees along the bank to provide both bank stabilization and additional habitat.

4.4-9 Revise the Yolo County Reclamation Ordinance to include specific guidelines for the design, implementation, and maintenance of riparian habitat.

4.5-4 Shallow terraces may be created along the banks of the low-flow channel in Reaches 6 and 7 (from I-505 to the Capay Bridge), with cottonwood and willow pole cuttings planted on the benches. As an alternative, short trenches may be dug diagonally to the low-flow channel (angled downstream), with prerooted willow and cottonwood cuttings planted on the upstream edge of the trench. These measures would allow for the development of a ribbon of vegetation to establish along the low-flow channel in this area, thereby helping to connect the riparian corridor.

4.5-5 Planting shall be conducted immediately after grading, before invasive vegetation has become established. If undesirable vegetation does become established, it should be removed by mechanical means or approved herbicides, such as glyphosphate, under the supervision of a licensed applicator.

4.5-6 Dense vegetation shall be emphasized along the stream bank to create a distribution of velocities within the channel, with the highest velocities occurring within the low-flow channel.

4.5-7 Habitat areas located next to grazing lands shall be fenced in order to prevent vegetation disturbance.

4.5-8 Fertilizer shall not generally be used because its application favors non-native vegetation. Where appropriate, however, trees and shrubs may be planted with a slow-release fertilizer.

4.5-9 All plant materials should be collected in the vicinity of the project site in order to maintain the genetic stock and provide the most site-adapted ecotypes. If seeding of native herbaceous species is proposed, seeds should be collected, cleaned, tested for viability, and stored appropriately by a qualified native seed supplier. Cottonwood cuttings shall be collected and contract-grown at a nursery with staff experienced in the propagation of native plants. Willow cuttings can be collected from vegetation in the project vicinity and stockpiled for planting within 24 hours of collection. Other woody riparian species should be collected and contract-grown from local seed by a qualified native plant nursery.

4.5-10 Planting should be initiated in the fall after the first soaking rains. Container plants should be planted in holes at least twice as deep and wide as the plant container. The rootball should be thoroughly dampened before planting and the planting holes deeply irrigation prior to planting. After planting, the holes should be backfilled with native substrate material (with no mulch added) and thoroughly tamped to remove air pockets. Willow cuttings may be planted in clusters in planting holes prepared and backfilled in a similar manner. Trees, shrubs, and willow cutting clusters should be located in randomly spaced, naturally clumped patterns. Herbaceous seed mix (if used) should be hydroseeded (without hydromulch) or broadcast over the planting area, then covered with blown rice straw meeting State "weed-free" standards at one ton per acre. Soil stabilizer or tackifier such as Ecology Controls M-Binder should be included at 150 pounds per acre. Hydromulching is not recommended because of a history of poor results with native seedlings.

4.5-11 Irrigation may be necessary for the first one or two summers in drier sites to allow the roots to develop sufficiently to tap into the summer ground water level. A drip irrigation system may be necessary at least twice per month during dry periods for the first two years of establishment.

4.5-16 The following guidelines shall be followed when creating habitat areas within previously mined areas outside of the active channel:

(a) Basins that have floors close to the groundwater level should be restored to seasonal marsh and riparian wetlands. Those that are permeable, dominated by sand and gravel, should promote woodland habitat.

(b) Pit floors shall have sufficient topsoil and overburden to support the proposed habitat. Overburden and soil may be obtained from the diversion of agricultural tailwater, aggregate processing wash fines, of deposition by the creek. Areas to be planted shall be appropriately prepared, prior to planting. If necessary, soils may be tested after preparation has occurred in order to determine the need for soil amendments.

(c) Pits should be planted and irrigated until the plants have established. Agricultural tailwater is encouraged as an irrigation source. It would provide a valuable source of water for revegetation projects, and would also provide bio-filtering for the sediment and residue pesticides contained within the tailwater.

(d) Areas that will not be planted may be graded to create steep, barren slopes to provide habitat for the bank swallow.

(e) Except in important recharge areas, levees may be removed, breached at the downstream end, or a culvert installed at the downstream end to allow for dynamic interaction with the variable water level in the creek. Natural flooding will provide additional water, increase the diversity of tree species through colonization, and allow for the accumulation of organic nutrients and sediment.

(f) Habitat plans shall take into account the range of expected water level fluctuations and shall adjust the siting and design of the pit accordingly.

4.5-17 Topsoil and vegetation removed from the streambed shall be salvaged for use in restoration planting.

4.5-18 Where the low-flow channel is creating excessive bank erosion problems and its relocation becomes necessary, grading within the low-flow channel shall provide a smooth surface, without undulations. This will ensure the safe passage of fish and prevent them from becoming trapped in isolated pockets of water.

4.5-19 Low weirs may be installed, outside of the low-flow channel, to provide shallow pools for encouraging the establishment of riparian vegetation.

4.5-22 Where riparian reforestation is proposed in streambed areas located outside of the low-flow channel, swales should be excavated to a depth within six (6) inches of free water. Cottonwood and willow cuttings should be placed within the swales in order to provide them with sufficient water to survive the summer months.

Most of these policies adequately address re-establishment of native cover, as both a means of habitat enhancement and form of erosion control, identifying standards which can be successfully implemented. One exception to this is the provision for short-term irrigation in Performance Standard 4.5-11, which calls for possible irrigation during the "first one or two summers in drier sites". Plantings receiving irrigation for only one or two summers would most likely not survive. Establishment of trees and shrubs on drier slopes would require irrigation for a minimum of two years, and perhaps longer depending on annual fluctuations in the duration of the rainy period and extremes in summer temperatures. Monitoring should be provided and irrigation prolonged as necessary to ensure establishment of young plants without creating a dependence on an artificial water source.

Goal 4.2-5 and Performance Standard 4.5-23 of the CCRMP, listed below, recognize the need for monitoring of restoration sites. This would ensure successful establishment of vegetative cover, and allow for adjustments to maintenance procedures such as short-term irrigation and control of weeds. Performance Standard 4.5-12 calls for close monitoring, and as necessary control of competing non-native vegetation.

4.2-5 Establish monitoring programs for the continued collection of data and information, to be used in measuring the success of revegetation efforts.

4.5-12 The site should be closely monitored for competing non-native vegetation. Non-native species can be sprayed or removed by hand as necessary to attain the success criteria, as defined in each site-specific plan.

4.5-23 The site should be monitored for a least five years under the direction of a qualified biologist. Habitat development projects should specify monitoring methods and criteria for success, so that future restoration efforts can benefit from their experience.

An important component of restoration along much of the Cache Creek corridor is the control and eradication of giant reed and tamarisk, both highly invasive weeds. Action policies 4.4-2 and 4.4-3 and Performance Standards 4.5-20 and 4.5-21 of the CCRMP, listed below, address the control of these noxious species, including guidelines for chemical applications. Appropriate restrictions have been included to minimize any potential adverse affects of herbicide application, which must be balanced against the habitat improvement which would result from the successful control and revegetation of areas currently occupied by tamarisk and giant reed.

4.4-2 Remove vegetation when it threatens channel stability. In particular, the growth of tamarisk, giant reed, and willow on mid-channel gravel bars shall be controlled to prevent streamflows from being diverted towards nearby banks.

4.4-3 Promote the eradication of invasive species, such as the giant reed and tamarisk, in areas where they inhibit the growth and development of native riparian vegetation, especially in Zone 5 of the Recommended Management Activity Zones described in the Technical Studies.

4.5-20 The in-channel area located west of the Capay Bridge is the highest priority for tamarisk elimination. Weed control shall begin within the first year after ground disturbance in order to prevent tamarisk from outcompeting native vegetation. Chemical control is preferred, since dying trees keep soil in place and retain moisture, encouraging the growth of other species. Options include, but may not be limited to: Rodeo, 4 Roundup, and Garlon 3A. Rodeo is low in toxicity, does not persist in the soil, and is labeled for aquatic use. Chemicals should be applied to freshly cut stumps and must cover the entire cambium layer. Cut plants should be removed from the channel and either disposed of or burned. Cutting and chemical treatment is most effective during November through January, when the plant is entering dormancy. Application should be repeated to control shoots growing from root systems. All chemical spraying must be done by a certified herbicide applicator.

In marshy areas, where chemical treatments are prohibited, tamarisk may be uprooted with a backhoe or tractor. This is best performed when the plants are flowering and more visible. When the soil is moist, saplings may also be removed by hand with relative ease.

4.5-21 Giant reed shall be removed from areas of high flow velocity, especially within the channel area located west of the Capay Bridge. The most effective control is the chemical application of Rodeo during March and April. Optimum results are achieved with total spray coverage, although Rodeo may be sprayed at full strength on stumps that are cut as close to the ground as is practicable. Alternatively, reed may be sprayed with follow up removal of the dead plants. All cut plants should be either disposed of or burned. Applications should be repeated to treat shoots that resprout. All chemical spraying must be done by a certified herbicide applicator.

Alternative 1a - No Project (Existing Conditions)

Existing vegetative cover would continue to be removed in areas with approved mining permits, including in-channel operations. The benefits of riparian habitat restoration associated with the CCRMP would not occur under this alternative. Riparian vegetation would be routinely removed from the Hungry Hollow, Madison, and Guesisosi subreaches, and portions of the Dunnigan Hills and Hoppin subreaches. In-channel mining and skimming would continue to suppress reestablishment of riparian habitat along much of the Cache Creek corridor, and severely limit opportunities for riparian habitat restoration. The current reclamation requirements for the existing in-channel mining operations consist primarily of regrading only with no specified revegetation provisions. As the affected vegetation would generally consist of agricultural crops and disturbed riparian habitat, the primary effect of this alternative and others for which the CCRMP and OCMP are not implemented is the absence of the restoration benefits, which would not be a significant adverse impact requiring mitigation.

Alternative 1b - No Project (Existing Permits and Regulatory Condition)

This alternative would also allow for the continued removal of in-channel mineral resources from subreaches with approved mining permits. As with Alternative 1a, reestablishment of riparian habitat along much of the Cache Creek corridor would be suppressed, limiting restoration opportunities. Revegetation that could or may occur would not be coordinated under an established framework. The current reclamation requirements for the existing in-channel mining operations consist primarily of regrading only with no specified revegetation provisions.

Alternative 2 - No Mining (Alternative Site)

Potential impacts on general vegetation resources under this alternative would depend on the cover types at the alternative site location. It is likely that affected vegetation could include a combination of agricultural crops, pastureland, riparian, grassland, oak savanna, and oak woodland cover. Cessation of mining in the in-channel area of Chace Creek would remove a major factor suppressing natural reestablishment of riparian habitat. However, the beneficial coordinated restoration components of the CCRMP would not occur under this alternative as the County would not approve the Management Plan.

Alternative 3 - Channel Bank Widening (Implement Streamway Influence Boundary)

This alternative would establish a wide channel boundary as part of the CCRMP, eliminating mining within the Streamway Influence Boundary. Modifications within the creek proposed as part of the CCRMP to accommodate the Test 3 Run Boundary would not occur under this alternative. Mining activities outside the Streamway Influence Boundary would affect primarily agricultural cover on the Solano and Syar sites, as well as the Lowe property.

Mitigation Measure 4.6-1a (CCRMP, A-3)

The following revisions shall be made to Performance Standard 4.5-11 to provide adequate short-term irrigation of tree and shrub plantings.

4.5-11 Irrigation of tree and shrub plantings may be necessary for the first ~~one or~~ two or three summers in drier sites to allow the roots to develop sufficiently to tap into the summer ground water level. ~~A drip~~ Irrigation ~~system~~ may be necessary at least twice per month during dry periods for the first ~~two~~ three years of establishment, preferably using a drip system. Water requirements of young plantings should be evaluated as part of routine monitoring, with adjustments to the frequency and duration of irrigation made in response to indications of stress.

Mitigation Measure 4.6-1b (A-1a, A-1b, A-2)

None required.

Implementation of Mitigation Measure 4.6-1a would reduce the impact of the CCRMP and Alternative 3 on existing vegetative cover and successful establishment of restoration plantings to a less-than-significant level. The beneficial effects of restoration associated with the CCRMP would not occur under Alternatives 1a, 1b, and 2, but this would not be a significant adverse impact requiring mitigation.

Impact 4.6-2
Impact on Sensitive Natural Community Types

Activities within the in-channel area could affect sensitive natural community types which have a high inventory priority status with the CNDDB, including the remaining riparian forest habitat along Cache Creek. Further loss of these community types would contribute to their rarity in the State, and diminish the extent of habitat available to dependent wildlife species.

Draft CCRMP

A major component of the proposed CCRMP is to provide for the protection, enhancement, and restoration of the remaining sensitive natural communities along Cache Creek. Short-term disturbance to areas supporting sensitive natural communities could occur as modifications are annually made to implement the Test 3 Run boundaries. This could include areas of riparian scrub and woodland, remnants of oak woodland, and freshwater marsh within the limits of the Test 3 Run boundaries. The TAC would consider the effects of implementing channel improvement projects on important biological resources, including sensitive natural communities, as part of implementing the CCIP. Policies of the CCRMP call for protection of sensitive natural communities and other important biological resources, with replacement provided where complete avoidance is not possible. This approach to avoidance and replacement would apply to implementation of the CCIP as well.

With implementation, the CCRMP would eventually have a substantial beneficial effect on the sensitive riparian, oak woodland, and wetland communities of the creek corridor. Goals 4.2-1 and 4.2-3, Objectives 4.3-1 and 4.3-2, Action policy 4.4-6, and Performance Standards 4.5-1 through 4.5-3, listed below, all address protection and enhancement of riparian habitat. These include policies to minimize further disturbance to existing riparian cover and to establish a diverse riparian habitat along the creek corridor.

4.2-1 Provide for a diverse riparian ecosystem within the Cache Creek channel, that is self-sustaining and capable of supporting wildlife.

4.2-3 Develop high quality natural habitat that is dominated by native plants.

4.3-1 Conserve and protect existing riparian habitat within the channel, to the greatest extent possible. Where flood protection, erosion control, channel widening, or other activities result in the removal of riparian habitat, require disturbed areas to be replanted.

4.3-2 Establish conditions to encourage the development of a variety of natural riparian habitat types within the Cache Creek channel.

4.4-6 Favor projects that establish riparian woodlands over emergent wetlands, in appropriate areas within the Cache Creek channel. Riparian forest and scrub habitats have largely disappeared regionally, and are much more difficult to recreate than are emergent wetland habitats. Emergent wetlands can also be established in a greater range of environmental conditions, whereas riparian woodlands require specific considerations in order to thrive.

4.5-1 No new haul roads shall be constructed through significant riparian vegetation. Haul roads shall be realigned or redesigned to avoid established habitat.

4.5-2 No excavation shall take place within twenty-five (25) feet of any mature trees to be retained within the channel.

4.5-3 Oaks and drought-tolerant shrubs should be planted on streambank slopes due to the lack of water on the higher elevations. Oaks and shrubs should be especially encouraged on slopes facing north or east.

Most of the proposed restoration effort would occur within subreaches of Cache Creek which have been recently disturbed by mining activities, limiting the potential for degradation or further elimination of sensitive natural communities. One exception to this would be the proposed improvements in the Capay subreach upstream from the Capay bridge. While little definition on possible channel modifications in this subreach have been prepared, they appear limited to removal of noxious weeds, stabilization of the bed and banks, and providing a smoother transition to the bridge by reshaping in-channel gravel bars which are affecting creek flows and contributing to stability problems with the structure. Objective 4.3-1 and Performance Standard 4.5-2, listed above, would serve to protect existing riparian habitat and mature oaks within this subreach and other segments of the creek corridor.

A number of the policies in the proposed CCRMP provide detailed recommendations regarding restoration, varying from channel modifications which would foster establishment of riparian cover to detailed planting specifications and procedures for restoration efforts. These include Performance Standards 4.5-13 through 4.5-15, listed below, as well as Performance Standards 4.5-4, 4.5-19, and 4.5-22 listed under the discussion of Impact 4.6-1. For the most part the identified plant species would be appropriate for the wetland, riparian woodland, and oak woodland habitat types, although plantings lists which reflect site specific conditions are typically more successful in restoration efforts. Four exceptions to the appropriateness of the generalized plant lists would be the use of slender wheatgrass, creeping wild rye, canary grass, and yerba mansa in the wetland habitat restoration plantings. Reed canary grass is an invasive non-native species and should be eliminated from the plant list. Yerba mansa tends to occur in alkaline wetland conditions, and would be appropriate in plantings for only portions of the creek corridor. Slender

wheatgrass and creeping wild rye are not wetland species, although they may be appropriate in plantings along the fringe of wetland habitat.

While the following performance standards would generally provide for an acceptable planting approach, other species lists and planting densities could also be adequate for restoration efforts. These performance standards should be used as guidelines where detailed restoration plans have not been prepared by a qualified biologist, and not as the single solution to restoration plantings plans. In some instances, it may be appropriate to focus on a smaller number of dominant species in restoration efforts, particularly when funding is limited and adherence to an extensive planting list would make the project prohibitively expensive.

4.5-13 The following guidelines shall be followed when developing wetland habitat areas:

(a) Limit dense stands of aquatic vegetation in shallow areas to lower mosquito harborage and enhance wave action. This will also serve as substrate for mosquito predators.

(b) The banks of areas that retain water after June 1 (the beginning of the optimal mosquito breeding season) shall be steep enough to prevent isolated pooling as the water level recedes, to allow for wave action and to provide access by mosquito predators. Shorelines shall be configured so as not to isolate small channels or shallow ponding areas from the main body of water, to provide continuous access by predators, especially mosquito fish.

(c) Seasonal marshes shall be designated to have at least four months of soil saturation or shallow inundation. Water depths shall not exceed two (2) feet of water.

(d) Marsh species shall be planted every six (6) feet, using plugs salvaged from marshes in the immediate vicinity or obtained from a nursery. Transplanting shall take place within twelve (12) hours after salvage and the root masses shall be kept continuously inundated from the time of transplanting.

(e) Wetland areas shall cover a minimum of one (1) acre. Side slopes shall be no steeper than 3:1 (horizontal:vertical). Small islands and complex shorelines shall be provided to create a diverse environment. Wetland designs shall include provisions for the wetlands to be partially drained periodically, in order to allow for the reseeding of aquatic plants and to promote the decay of built up organic debris.

(f) Pit bottoms should be contoured to create areas for waterfowl nesting and depressions to provide a more permanent water feature. Islands should generally be located on the upwind side of the water body to minimize exposure to the prevailing winds. Island slopes above the water level should be no steeper than 2:1 (horizontal:vertical). Emergent vegetation shall be placed around the edges of islands to reduce wave-related erosion. Shrubs shall be widely spaced. Trees and tall shrubs shall not be planted on the islands, since predators perch in them to prey on waterfowl.

(g) Appropriate species and densities for marsh restoration may include the following:

Species (common name)	Density (plugs per acre)
Creeping spikerush	200
Creeping wild rye	100
Baltic rush	100

Three-square	10
Slender wheatgrass	5
Reed canary grass	5
Beaked sedge	5
Scouring rush	5
Yerba mansa	5
Buttonbush	5

4.5-14 The following guidelines shall be followed when developing riparian woodland habitat areas:

(a) Riparian woodland shall be established only where there are coarse slopes, containing soil types such as cobbly loam, gravelly loam, or other loamy textures. Where slopes contain significant clay layers, open woodlands or grasslands shall be restored instead.

(b) Trees and shrubs shall be planted in clusters, to create alternate patterns of open and enclosed spaces.

(c) Appropriate species and densities for riparian woodland restoration may include the following:

Species (common name)	Density (number or pounds/acre)
Valley oak	33
Wild rose	36
Creeping wildrye	16
Blue elderberry	12
Native blackberry	19
Mule fat	6
Wild grape	16
Box elder	18
Dogwood	16
Fremont cottonwood	26
Black willow	23
Red willow	23
Arroyo willow	23
Sandbar willow	23
Goodings willow	23
Mugwort	10

4.5-15 The following guidelines shall be followed when developing oak woodland habitat areas:

(a) Trees and shrubs shall be planted in clusters of six (6) to seven (7) individuals, typically consisting of a single species. Some mixed groupings, such as valley oak and elderberry may occur where appropriate. Gray pine, however, shall be planted singly (not in clusters) at the higher elevations of the site. Clusters of trees and shrubs shall be planted from twenty-five (25) to fifty (50) feet apart, with native grasses in-between.

(b) Appropriate species and densities for oak woodland restoration may include the following:

Species (common name)	Density (number or pounds/acre)
Gray pine	3
Interior live oak	6
Valley oak	20

California buckeye	5
Blue elderberry	10
Native blackberry	8
Coyote brush	10
Wild rose	15
Purple needlegrass	5
Creeping wildrye	16
California brome	10
California barley	5
Pine bluegrass	5

Alternative 1a - No Project (Existing Conditions)

Continued commercial mining within the in-channel area would suppress the restoration potential of the creek corridor under this alternative. Riparian vegetation would be routinely removed from the Hungry Hollow, Madison, and Guesisosi subreaches, and portions of the Dunnigan Hills and Hoppin subreaches. The benefits of riparian habitat restoration associated with the CCRMP would not occur under this alternative.

Alternative 1b - No Project (Existing Permits and Regulatory Condition)

As with Alternative 1a, continued commercial mining within the in-channel area would suppress the restoration potential and routinely disturb riparian cover along segments of the creek corridor under this alternative.

Alternative 2 - No Mining (Alternative Site)

The degree to which natural communities area affected under this alternative would depend on the vegetation types at the alternative site location, which could include a number of sensitive natural communities such as vernal pools at the Mather Air Force Base location and riparian habitat at the Morrison Creek location, as well as mature native trees. Anticipated impacts associated with mining activities within the planning area would not occur under this and other off-site alternatives. This would include elimination of in-channel mining along the Cache Creek corridor, which would remove a major factor suppressing natural reestablishment of riparian habitat.

Alternative 3 - Channel Bank Widening (Implement Streamway Influence Boundary)

The wider channel boundary established under this alternative would improve opportunities to protect and restore oak woodland habitat along the upper terrace of the Cache Creek corridor. Agricultural uses would most likely continue to limit establishment of woodland vegetation to the edge of the upper terrace, unless additional land area is set aside for habitat restoration. Problems with severe erosion and down cutting would continue in the active channel, and may limit establishment of riparian vegetation on the lower elevations of the creek corridor.

Mitigation Measure 4.6-2a (CCRMP, A-3)

The following shall be included as an additional Action policy in Chapter 4 of the CCRMP to provide appropriate flexibility in designing site-specific restoration guidelines.

> *4.4-12 Performance standards identifying appropriate species and planting densities for marshland, oak woodland, and riparian woodland restoration efforts should be considered guidelines. Variations from these guidelines shall be acceptable if alternative restoration plans have been prepared by a qualified biologist, consistent with the policies of the CCRMP, and approved by the Resource Management Coordinator or Planning Commission, depending on the magnitude of the proposed modification.*

Performance Standard 4.5-13(g) shall be revised to eliminate creeping wild rye, slender wheatgrass, reed canary grass, and yerba mansa from the planting list for marsh restoration plans.

Mitigation Measure 4.6-2b (A-1a, A-1b, A-2)

None available.

Implementation of Mitigation Measure 4.6-2a would reduce the impact of the CCRMP and Alternative 3 on sensitive natural communities to a less-than-significant level. The beneficial effects of restoration associated with the CCRMP would not occur under Alternatives 1a, 1b, and 2. No enforceable mitigation would be available for these three alternatives, and the potential impacts of Alternatives 1a, 1b, and 2 on sensitive natural community types should be considered significant.

Impact 4.6-3
Disturbance to Wildlife Habitat and Wildlife Movement Corridors

Continued in-channel mining activities would result in disturbance to existing wildlife habitat and would suppress establishment of riparian cover. Small resident mammals and reptiles would be eliminated as reestablishing vegetative cover is routinely removed. Sensitive habitat features, such as nest trees, dense protective cover, or other essential habitat could be eliminated. Standards in the SMARA Reclamation Regulations call for the protection of wildlife and wildlife habitat, focusing on conservation of special-status species and reestablishment of wildlife habitat on disturbed lands.

Draft CCRMP

Implementation of the CCRMP would eliminate commercial in-channel mining activities and the disruption posed to wildlife use of the creek corridor. Short-term disturbance would occur as part of establishing the Test 3 Run Boundary, channel maintenance and shaping, and flood control improvements, but this would be less than the on-going existing levels

associated with commercial aggregate removal, and would not result in any new significant impact on wildlife resources or movement corridors. Eventually, provisions in the CCRMP would provide for substantial enhancement of the existing habitat along Cache Creek, greatly improving the value of individual restoration sites, and eventually the overall value of the corridor.

Goals 4.2-1 and 4.2-2 and Action policies 4.4-5, 4.4-8, and 4.4-10 of the CCRMP, listed below, recognize the importance of maintaining and enhancing the function of Cache Creek as a diverse ecosystem and movement corridor. Habitat enhancement proposed as part of the CCRMP and reclamation for individual mining applications in the OCMP area would contribute to the overall value of the creek corridor, providing additional retreat cover, foraging opportunities, and breeding habitat for a number of wildlife species.

4.2-1 Provide for a diverse riparian ecosystem within the off-channel planning area along Cache Creek, that is self-sustaining and capable of supporting wildlife.

4.2-2 Create a continuous corridor or riparian and wetland vegetation to link the foothill habitats of the upper watershed with those of the settling basin.

4.4-5 Establish a series of wildlife preserves (see Figure 10 [of the CCRMP]) to provide core areas for maximizing wildlife and fish habitat, to help protect areas of high habitat quality from future degradation, and to provide sources areas from which native plants and wildlife can colonize other reaches of the creek. Wildlife preserves should emphasize the preservation of high quality existing habitat; areas with high species diversity, areas supporting unique species or biotic communities; and habitat for rare, threatened, and endangered species.

4.4-8 Restore riparian habitat throughout the plan area in order to create a continuous habitat corridor along Cache Creek. The CCRMP includes a series of recommended restoration sites located throughout the plan area.

4.4-10 Integrate in-channel revegetation plans in order to connect disparate wildlife areas and ensure that elements such as drainage, slopes, and habitat types complement one another in a coordinated effort. In-channel habitat areas shall also be coordinated with proposed wildlife mitigation and "net gain" established as a part of the off-channel mining operations, in order to create a larger riparian habitat area.

The Open Space and Recreation Element of the CCRMP includes policies that would encourage future recreational and educational uses along Cache Creek, with access provided at regular intervals. While access to the creek corridor may increase public awareness and presumably an appreciation of creek ecology, it would also increase opportunities for disturbance to sensitivity wildlife habitat. Goal 5.2-3, Objective 5.3-1, and Action policies 5.4-3 and 5.4-6 of the CCRMP, listed below, provide only limited recognition of the need to minimize disturbance to sensitive habitat areas. Without an additional policy clearly restricting access to sensitive habitat, the potential effect of increased human disturbance should be considered a significant adverse impact of the CCRMP.

5.2-3 Ensure the compatibility of recreational facilities with surrounding land uses, in order to minimize adverse impacts.

5.3-1 Create a continuous corridor of natural open space along the creek and provide for limited access, at specific locations, to recreational and educational uses.

5.4-3 Identify specific locations for future recreational and educational uses along Cache Creek, as shown in Figure 11 [of the CCRMP]. Sites shall be located at regular intervals throughout the planning area, with access to a County Road or State Highway. Intensive recreational uses shall be located away from designated habitat areas.

5.4-6 Design and manage recreational sites so that trespassing, vandalism, and other undesirable activities are discouraged.

Alternative 1a - No Project (Existing Conditions)

In-channel mining associated with this alternative would continue to suppress the riparian habitat of the creek and could disrupt movement of wildlife within the creek corridor. When mining has been completed, the current reclamation plans do not include a revegetation component, which severely limits the potential habitat value of the affected reaches of the creek.

Alternative 1b - No Project (Existing Permits and Regulatory Conditions)

Potential impacts of this alternative on wildlife resources would be similar to those in Alternative 1a, disturbing riparian cover and suppressing the restoration potential of the creek corridor.

Alternative 2 - No Mining (Alternative Site)

The affect of this alternative on wildlife would depend on the habitat types present at the alternative site location, and the degree to which sensitive features such as nest locations, colonial breeding locations, and important movement corridors are protected. Anticipated loss and disturbance of existing wildlife habitat in the planning area due to mining activities would not occur under this alternative.

Alternative 3 - Channel Bank Widening (Implement Streamway Influence Boundary)

The substantially wider channel boundary under this alternative would improve opportunities to protect and restore woodland and riparian habitat along the creek, possibly enhancing the wildlife habitat value of the creek corridor to some species.

Mitigation Measure 4.6-3a (CCRMP, A-3)

The following shall be incorporated as additional Action policies in Chapters 4 and 5 of the CCRMP to prevent disturbance of sensitive wildlife habitat.

4.4-13 and 5.4-8. Avoid disturbance to important wildlife habitat features such as nest trees, colonial breeding locations, elderberry host plants for VELB, and essential cover associated

with riparian forest and oak woodland habitat. This should include sensitive siting of maintenance access, trails, and recreational facilities away from these features.

Goal 5.2-3 of the CCRMP shall be revised as follows to include consideration of sensitive wildlife habitat.

5.2-3 Ensure the compatibility of recreational facilities with surrounding land uses and sensitive wildlife habitat, in order to minimize adverse impacts.

Mitigation Measure 4.6-3b (A-1a, A-1b)

None available.

Mitigation Measures 4.6-3c (A-2)

None required.

Implementation of Mitigation Measure 4.6-3a would reduce the impact of the CCRMP and Alternative 3 on wildlife resources to a less-than-significant level.

Impact 4.6-4
Impact on Special-Status Species

Proposed activities could result in "take" of species with legal protective status under the Endangered Species Acts, and eliminate essential habitat for a number of other special-status species. Loss of essential habitat such as nests, colonial breeding locations, and larval host plants could contribute to a cumulative reduction in population levels, and possibly further aggravate the status of species-of-concern. To the extent that it may be applicable, Section 3703(a) of the SMARA Reclamation Regulations calls for the conservation of rare, threatened or endangered species, with mitigation to be provided where complete avoidance is not possible.

While potential impacts on Swainson's hawk represent a significant impact in off-channel areas, the general absence of suitable foraging habitat limits the potential for adverse impacts for activities within the in-channel area. Although no nests have been reported within the in-channel area, the primary concern regarding Swainson's hawk and other raptors would be possible loss of nest trees as a result of activities in the in-channel area. Habitat loss is the most significant threat to the remaining populations of Swainson's hawk, as agricultural practices change or agricultural lands are converted to urban uses and nest trees are destroyed.

The *Draft Mitigation Guidelines for Swainson's Hawk in the Central Valley of California* were prepared by the CDFG to provide information on recommended management, natural history and population status, nesting and foraging requirements, and mitigation criteria for Swainson's hawk, with a general goal of no net loss of breeding or foraging habitat (CDFG, 1993). The guidelines are intended to provide lead agencies and project sponsors with an

interim framework for developing adequate measures to mitigate the loss of habitat until a comprehensive Swainson's Hawk Habitat Resource Plan is completed by the CDFG. The mitigation criteria specified in the guidelines include: consultation with representatives of the Department; restrictions on disturbance within one half mile of a known nest site from March 1st through August 15th; prevention of loss of nest trees; maintenance of sufficient foraging habitat to support breeding pairs and successful fledging of young; and restoration and enhancement of nesting and foraging habitat.

In addition to Swainson's hawk, potential impacts on bank swallow, tricolored blackbird, and VELB are also of particular concern. Proposed activities in the channel area and expansion proposed as part of implementing the Test 3 Run Boundary could result in the removal of elderberry shrubs and a reduction in suitable habitat for VELB unless existing shrubs are preserved or appropriate mitigation is provided consistent with the USFWS *General Compensation Guidelines* (1994). Bank stabilization efforts and channel bottom modifications could inadvertently destroy nesting colonies of bank swallow and tricolored blackbird, particularly if grading were to occur during the active breeding period.

In 1992, the County entered into a Memorandum of Understanding with the CDFG, USFWS, and the cities of Davis, West Sacramento, Winters, and Woodland to develop a framework to address the potential impacts of development on special-status species, particularly Swainson's hawk. The primary purpose of this effort was to prepare a Habitat Conservation Plan (HCP) for the County. Objectives of the HCP include: evaluation of potential impacts of planned growth on taxa of concern; identification of essential habitat and recommended habitat protection zones; establishment of a funding mechanism through which developers can provide replacement habitat while meeting the goal of no net loss of habitat value; and preparation of a long-range implementation program to carry out the mitigation measures adopted as part of the HCP. Interim measures have been established which allow applicants to pay a development fee or provide for acquisition, enhancement, and long-term management of habitat to offset impacts of specific projects.

A Draft HCP was recently completed and is undergoing public review and comment (EIP Associates, 1995a). The Draft HCP addresses impacts of anticipated urban development and agricultural facilities on 29 "target" species of concern. The Draft HCP includes: background information and a description of biological, land use, and agricultural conditions; a discussion of alternative conservation strategies; and details on the conservation strategy, mitigation plan, and financing for the HCP. The HCP is intended to form the basis for an "incidental take permit" to be issued by the Federal Government under §10(a)(1)(B) of the ESA, and a "managed take permit" under §2081 of the Fish and Game Code. The HCP is also intended to fulfill mitigation requirements related to significant impacts on biological resources from local development projects requiring CEQA review, exclusive of aggregate mining/reclamation applications. Mitigation options in the Draft HCP include payment of a mitigation fee, land dedication, or other in-kind resources such as habitat restoration services. While mining activities within the Cache Creek Mineral Resource Zone have not been included as part of the anticipated development considered in the HCP, much of the planning area has been designated as having a high

preservation or restoration level as mitigation sites. Lands within the planning area could be used for mitigation required under the HCP, possibly coordinated with restoration proposed as part of mining reclamation plans or other efforts.

Draft CCRMP

Improvements necessary to implement the Test 3 Run Boundary and on-going creek maintenance activities within the in-channel area could affect habitat for a number of special-status species, including bank swallow, tricolored blackbird, VELB, Swainson's hawk and numerous other species of birds. Localized resources such as a raptor nest or elderberry larval host plant for VELB could be protected by preserving the feature and providing an appropriate buffer area. The presence of known populations and essential habitat of special-status species, such as elderberry shrubs and bank swallow colonies, would be identified through required biological inventories and monitored as part of the CCIP. The TAC would consider the presence of sensitive habitat features in determining the appropriateness of creek modifications, consistent with the CCRMP.

The CCRMP currently has no general policies addressing the need to preserve and enhance habitat for special-status species known or suspected to occur within the Test 3 Run Boundary and the in-channel area. The few policies pertaining to special-status species refer to developing a mitigation banking program, establishment of wildlife preserves encompassing areas which support special-status species, and creation of suitable habitat for bank swallow. These include Action policies 4.4-5 and 4.4-11, listed below, and Performance Standard 4.5-16 listed under the discussion of Impact 4.6-1. Including additional policies which address protection and management for all species of concern would provide greater consistency with §3703(a) of the SMARA Reclamation Regulations, should the mining regulations be applicable to the program.

4.4-5 Establish a series of wildlife preserves (see Figure 10 [of the CCRMP]) to provide core areas for maximizing wildlife and fish habitat, to help protect areas of high habitat quality from future degradation, and to provide sources areas from which native plants and wildlife can colonize other reaches of the creek. Wildlife preserves should emphasize the preservation of high quality existing habitat; areas with high species diversity, areas supporting unique species or biotic communities; and habitat for rare, threatened, and endangered species.

4.4-11 Assist the aggregate industry in developing a Mitigation Banking Program, whereby habitat developed as a part of a reclamation plan may be dedicated for preservation to offset development projects elsewhere.

Performance Standard 4.4-4, listed below, calls for coordinating habitat restoration efforts. However, the two primary agencies responsible for approving mitigation plans and habitat restoration efforts for special-status species, the USFWS and CDFG, were not included in the policy, which would greatly limit the effectiveness of the coordination effort. The performance standard also states that revegetation plans be consistent with the County-wide "Habitat Management Program," which is now referred to as the HCP. One of the primary purposes for the Yolo County HCP is to establish a managed take permit under Section 2081 of the Fish and Game Code, addressing all anticipated urban development

but not aggregate mining activities. As such, the performance standard inaccurately implies that the Draft HCP contains provisions to which activities in the planning area must comply. Much of the planning area has been designated as having a high suitability level for use as mitigation sites, and restoration efforts could compliment the mitigation aspects of the HCP. The preservation and enhancement measures identified in the Draft HCP also provide a framework which would improve habitat value in general on reclaimed and restored lands, which should be considered in restoration efforts.

4.4-4 Coordinate with the Cache Creek Conservancy, the H.A.W.K program, the Yolo County Flood Control and Water Conservation District, and the U.S. Army Corps of Engineers to ensure that habitat restoration projects proposed by other entities are consistent with the Cache Creek Resources Management Plan. Ensure that revegetation plans are consistent with the efforts of the Yolo County Habitat Management Program.

Alternative 1a - No Project (Existing Conditions)

In-channel mining associated with this alternative would continue to disturb sensitive habitat within the creek corridor and limit restoration and enhancement opportunities for a number of special-status species. Continued in-channel mining activities could result in the inadvertent take of a state or federally listed species, such as VELB or bank swallow, through destruction of host elderberry shrubs or a bank swallow colony. No provisions are in place to monitor or provide for protection of essential habitat for special-status species which may occur within the in-channel area as part of existing mining operations. Off-channel mining in upland areas would contribute to a reduction in suitable foraging habitat for Swainson's hawk and could affect essential habitat for other species of concern.

Alternative 1b - No Project (Existing Permits and Regulatory Condition)

Potential impacts of this alternative on special-status species would be similar to those in Alternative 1a, disturbing habitat within the creek corridor, limiting opportunities for habitat enhancement, and contributing to a loss of foraging habitat.

Alternative 2 - No Mining (Alternative Site)

Potential impacts of this alternative on special-status species would depend on the presence or absence of essential habitat for species of concern at the alternative site location. As the site would be located outside Yolo County, it would not have to comply with the provisions of the Draft HCP. Anticipated impacts on special-status species associated with mining activities in the CCRMP planning area would not occur once operations ceased.

Alternative 3 - Channel Bank Widening (Implement Streamway Influence Boundary)

The wider channel boundary under this alternative would improve opportunities to protect and enhance essential habitat for special-status species on the edge of the upper terrace. However, continued lateral migration may result in the eventual loss of elderberry shrubs

and nest trees at the edge of the active channel, with provisions to control the continuing degradation of the creek habitat.

Mitigation Measure 4.6-4a (CCRMP, A-3)

The new Action policy (4.4-13) required in Mitigation Measure 4.6-3a would provide protection of essential habitat features for special-status species.

The following shall be included as additional Action policy in Chapter 4 of the CCRMP to ensure protection of essential habitat for special-status species:

> *4.4-14. A biological data base search shall be completed prior to implementation of priority project. The data base shall compile existing information on occurrences of special-status species and areas supporting sensitive natural communities which should be considered for preservation. Where detailed information is not available, the data base shall be supplemented by reconnaissance-level field surveys to confirm the presence or absence of populations of special-status species, location of elderberry shrubs, and extent of sensitive natural communities along the previously unsurveyed creek segment. Essential habitat for special-status species shall be protected and enhanced as part of restoration efforts, or replaced as part of mitigation plans prepared by a qualified biologist.*

The following revisions shall be made to Performance Standard 4.4-4 of the CCRMP to accurately refer to the Habitat Conservation Plan and include review by all jurisdictional agencies.

> *4.4-4 Coordinate with the Cache Creek Conservancy, the H.A.W.K program, the Yolo County Flood Control and Water Conservation District, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers to ensure that habitat restoration projects proposed by other entities are consistent with the Cache Creek Resources Management Plan. ~~Ensure that revegetation~~ Restoration plans shall complement ~~be are consistent with~~ the preservation and enhancement measures in ~~efforts of~~ the Yolo County Habitat ~~Management Program~~ Conservation Plan.*

Implementation of Mitigation Measures 4.6-4a would reduce impacts of the CCRMP and Alternative 3 to a less-than-significant level.

Mitigation Measure 4.6-4b (A-1a, A-1b, A-2)

None available.

Impact 4.6-5
Modifications to Jurisdictional Wetlands or Other Waters

Wetland habitat is generally restricted to the in-channel area along lower Cache Creek, and no unique wetland features such as vernal pools are believed to occur in the planning area. The Corps and CDFG have authorized modifications to jurisdictional wetlands and other waters within the in-channel area as part of the established permits and agreements for the existing mining operations. To the extent that it may be applicable, Section 3703(c) of

the SMARA Reclamation Standards states that wetland habitat shall be avoided as part of mining activities, and that mitigation shall be provided at a minimum one-to-one replacement ratio for both wetland acreage and habitat value.

Draft CCRMP

In comparison to existing in-channel mining operations, implementation of the CCRMP would substantially reduce modifications to jurisdictional areas within the creek channel and serve to improve the wetland and riparian habitat value of creek. The County is working with other jurisdictional agencies to establish standard conditions and "blanket" permits which would allow for a consistent multi-agency approach to managing the creek. This would include 404 permit approval from the Corps and a Streambed Alteration agreement with the CDFG, among other agencies permit requirements. This standardized approach to management has not, however, been identified as one of the goals or objectives of the CCRMP.

Alternative 1a - No Project (Existing Conditions)

Continued mining activities within the in-channel area would limit the wetland and riparian habitat value of the Cache Creek corridor. No additional adverse impacts on wetland resources are anticipated as mining would continue in areas where permit authorization for disturbance within the creek channel has already been obtained.

Alternative 1b - No Project (Existing Permits and Regulatory Condition)

Potential impacts under this alternative would be similar to those in Alternative 1a, with no additional adverse impacts anticipated for in-channel areas. Continued mining within the in-channel area would suppress the habitat value of wetland and riparian habitat along much of the Cache Creek corridor.

Alternative 2 - No Mining (Alternative Site)

Potential impacts of this alternative on jurisdictional wetlands would depend on the presence or absence of wetland resources at the alternative site. This could include disturbance to streams and other drainages, and possibly unique vernal pool wetlands, particularly at the Mather Air Force Base location and the Morrison Creek location. The beneficial effects of wetland and riparian restoration associated with the CCRMP would not occur under this alternative.

Alternative 3 - Channel Bank Widening (Implement Streamway Influence Boundary)

No additional adverse impacts on wetland resources are anticipated under this alternative. Restoration components of the CCRMP would serve to improve the habitat value of the creek corridor. The additional setback area along the creek would increase the amount of land availability of habitat enhancement, including wetland restoration.

Mitigation Measure 4.6-5a (CCRMP, A-3)

The following shall be included as an additional Action policy in Chapter 4 of the CCRMP to ensure a coordinated approach to modifications of wetland resources.

> *4.4-15. Coordinate with jurisdictional agencies to establish "blanket" permits and agreements to ensure a consistent multi-agency approach to managing the creek.*

Mitigation Measure 4.6-5b (A-1a, A-1b, A-2)

None required.

Implementation of Mitigation Measure 4.6-5a would reduce this impact to a less-than-significant level for the CCRMP and Alternative 3.

Impact 4.6-6
Compatibility and Consistency of Restoration Provisions

Habitat restoration objectives for the lower Cache Creek corridor must recognize a number of competing factors which affect management of the creek corridor and adjacent lands. These include mineral resource recovery, flood protection, and agricultural viability. These factors tend to conflict with the restoration objectives and to some degree limit the potential for restoration, and require that a balance be achieved with regard to management of the creek corridor. Successful restoration and enhancement of native habitat will require a clear definition of the ultimate objectives, feasible methods to implement these objectives, and establishment of a mechanism to monitor and manage the effort.

In November of 1994, the Corps initiated a reconnaissance study to examine options for environmental restoration and increased flood control opportunities for the Cache Creek corridor, extending from the tributaries which drain into Clear Lake to the Yolo Bypass. The *R4 Draft Report, Northern California Streams, Draft Reconnaissance Report, Cache Creek Environmental Restoration, California* (Corps, 1995) provides the results of the study. As summarized in the report, the purpose of the study was to: investigate the environmental and water resource problems associated with Cache Creek and formulate potential solutions; estimate the time and cost for a feasibility study phase; and determine Federal and non-Federal sponsor interest in the potential solutions. Three environmental restoration alternatives were formulated as part of the study. These consisted of: (1) a riparian corridor restoration plan; (2) the restoration plan and provisions for a setback levee to provide 100-year flood protection of Woodland and Yolo; and (3) a multi-objective plan incorporating the first two alternatives and including long-term restoration measures to control noxious weeds and acquire sufficient water to establish a perennial stream. Several conclusions reached in the study are relevant to the creek corridor in the CCRMP planning area, including the following:

- Rehabilitation of abandoned gravel pits along the CCRMP planning area subreaches would increase riparian and wildlife habitat values.

- Revegetation along the CCRMP planning area subreaches would stabilize bank slopes, reduce bank erosion and sediment loads, and increase wildlife habitat values.

- Constructing a low-flow meandering channel in the CCRMP planning area subreaches would restore fish and riparian habitat during the low-flow period.

- Control of nonnative plant species would increase the water supply to riparian habitat, increase riparian vegetation and wildlife diversity, and reduce channel flow constrictions.

- Water acquisition and development in the CCRMP planning area would restore fish and wildlife habitat, although more detailed analysis would be necessary.

Draft CCRMP

Together, the CCRMP and OCMP represent an attempt to provide a balanced approach to management of the economic opportunities, hydrologic constraints, and biological resources in the planning area. Most of the policies in the Biological Resources Element of the CCRMP are directed toward defining goals, objectives, and performance standards for riparian habitat enhancement along the creek corridor. These include policies addressing restoration standards, control and eradication of noxious weeds, recognition of groundwater fluctuations in designing improvements, and need to coordinate the restoration effort with jurisdictional agencies and interested groups. Policies pertaining to coordination of restoration efforts are listed below, with other relevant restoration policies listed under the discussions in Impacts 4.6-1 and 4.6-2. These policies are generally consistent with the conclusions and recommendations regarding restoration reached in the *Draft Reconnaissance Study* for Cache Creek prepared by the Corps.

3.2-2 Promote the conjunctive use of surface and groundwater to maximize the availability of water for a range of uses, including habitat, recreation, agriculture, water storage, flood control, and urban development.

4.2-4 Manage riparian habitat so that it contributes to channel stability.

4.3-3 Adopt standards for planning and developing habitat revegetation areas, in order to assure consistency and reasonable success, as well as provide information for public service groups seeking to undertake restoration projects.

4.3-4 Ensure that the establishment of habitat does not significantly divert streamflow, or cause excessive erosion or damage to nearby structures and/or property.

4.3-5 Encourage the use of alternative methods and practices for stream and erosion control that incorporate riparian vegetation in the design.

4.3-6 Coordinate restoration programs with relevant planning efforts of both the County and other private and public agencies.

4.4-3 Promote the eradication of invasive species, such as the giant reed and tamarisk, in areas where they inhibit the growth and development of native riparian vegetation, especially in Zone 5 of the Recommended Management Activity Zones described in the Technical Studies.

4.4-4 Coordinate with the Cache Creek Conservancy, the H.A.W.K program, the Yolo County Flood Control and Water Conservation District, and the U.S. Army Corps of Engineers to ensure that habitat restoration projects proposed by other entities are consistent with the Cache Creek Resources Management Plan. Ensure that revegetation plans are consistent with the efforts of the Yolo County Habitat Management Program.

4.4-7 Solicit the assistance of community groups in carrying out ongoing monitoring programs. Examples may include enlisting the local Audubon Society to perform annual bird counts at specific points along Cache Creek; coordinating with UC Davis to create a program whereby students could obtain class credits for performing surveying, vegetation mapping, or bed material counts; and collecting well levels from landowners in the plan area.

Although not included as a policy of the draft CCRMP, the TAC could serve as a coordinating mechanism for restoration efforts in the in-channel area. Through their review and advisory capacity, one of the functions of the TAC could be to ensure that individual restoration plans are consistent with policies of the CCRMP and that the various plans are compatible. This capacity of the TAC should be identified as an additional action policy in the CCRMP to ensure thorough review and coordination of the restoration efforts.

As discussed under Impact 4.6-4, coordination of habitat restoration efforts recommended in Action policy 4.4-4 of the CCRMP excluded the USFWS and the CDFG, the two primary agencies responsible for approving mitigation plans for special-status species and managing habitat on a Federal and State level. These agencies should also be involved in the coordination effort to improve its effectiveness.

With the exception of Action policy 4.4-3, which addresses eradication of invasive species in the Capay subreach, none of the other policies in the CCRMP refer to specific management zones or restoration sites. Recommendations in Chapter 6 of the *Technical Studies* and the subsequent *Lower Cache Creek Riparian Corridor Restoration Recommendations* both concur that control of noxious weeds should be a focus of restoration in the Capay subreach.

Alternative 1a - No Project (Existing Conditions)

Restoration components of the CCRMP would not occur under this alternative, and commercial in-channel mining would continue to suppress riparian vegetation along segments of the Cache Creek corridor.

Alternative 1b - No Project (Existing Permits and Regulatory Condition)

As with Alternative 1a, restoration components of the CCRMP would not be implemented and commercial in-channel mining and disturbance to riparian vegetation would continue.

Alternative 2 - No Mining (Alternative Site)

Restoration and enhancement opportunities for Cache Creek addressed as part of the CCRMP would not occur under this alternative due to cessation of mining activities in the planning area.

Alternative 3 - Channel Bank Widening (Implement Streamway Influence Boundary)

The wide channel boundary under this alternative would greatly increase opportunities for extensive restoration along the Cache Creek corridor.

Mitigation Measure 4.6-6a (CCRMP, A-3)

The following shall be included as an additional Action policy in Chapter 4 of the CCRMP to ensure coordination of proposed restoration efforts.

> *4.4-16 Modifications to the in-channel areas shall be reviewed and approved by the Technical Advisory Committee to ensure that sensitive biological resources are protected and enhanced, that restoration plans are consistent with the policies of the CCRMP, and that the various habitat restoration projects are compatible.*

Action policy 4.4-4 shall be revised as recommended in Mitigation Measure 4.4-6a.

Mitigation Measure 4.6-6b (A-1a, A-1b, A-2)

None required.

Implementation of Mitigation Measure 4.6-6a would reduce the impact of the CCRMP and Alternative 3 on restoration provisions to a less-than-significant level.