4.4 Biological Resources

This section describes the existing biological resources within the region and evaluates the significance of the changes in biological resources that would result from development of the proposed 2018 RTP/SCS, and feasible mitigation measures to reduce these potential impacts. Sources utilized in this discussion include data provided by the US Fish and Wildlife Service (USFWS), the California Native Plant Society (CNPS), and the California Department of Fish and Wildlife (CDFW).

4.4.1 Setting

a. Terrestrial Vegetation Communities

San Joaquin County contains a wide diversity of tree, scrub, estuarine, and herbaceous (grasslands, pastures, certain wetlands) habitat types. Thirty habitats are mapped using the CDFW - California Wildlife Habitat Relationships (CWHR) habitat classification system within San Joaquin County (CDFW, 2008). Of the thirty habitats, nine are tree dominated habitats, four are shrub dominated habitats, two are herbaceous habitats, ten are either developed, sparsely/non-vegetated or cropland habitats, and five are drainages or wetlands (see Figure 9). Because of the programmatic nature of this EIR, the habitat categories presented in Figure 9 depict a broad illustration of the CWHR types found within San Joaquin County. A description of each of these habitats adapted from *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) is presented below. Two aquatic habitat types are also designated and are discussed in 4.4.1.b below. Note that these habitat types are generalized and site-specific variation is present throughout the county. Also note that the CWHR classification system maps habitats from a broad perspective, and in many areas it is expected that two or more habitats may intergrade with one another. Habitats that occur within populated areas also show variation owing to greater anthropogenic influences, such as the introduction of non-native plant species and non-native and feral animals.

Tree-Dominated Habitats

San Joaquin County is home to a variety of hardwood, coniferous, and mixed woodlands and forests (see Figure 9). These tree-dominated habitats can support diverse wildlife populations. Riparian habitats are generally the terrestrial areas adjacent to fresh water bodies forming a vegetated corridor from stream edge to floodplain edge. Riparian habitats occur in and along the major rivers (e.g. San Joaquin, Mokelumne, Calaveras, and Stanislaus Rivers), as well as along the many creeks, streams, and sloughs found in the county. Riparian areas are rich in wildlife species, providing foraging, migration, roosting, and nesting/breeding habitat. The following are descriptions of types of tree-dominated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.

Blue Oak-foothill Pine

This habitat is typically diverse in structure both vertically and horizontally and is composed primarily of a mix of hardwoods, conifers, and shrubs. Shrub distributions tend to be clumped, with interspersed patches of annual grassland. Woodlands of this type generally tend to only have small accumulations of dead and downed woody material, compared with other tree habitats in California. Blue oak (*Quercus douglasii*) and foothill pine (*Pinus sabiniana*) typically comprise the overstory of this habitat, with blue oak usually most abundant. In the Coast Range, associated tree
Figure 9  California Wildlife Habitat Relationships: San Joaquin County
species include coast live oak (*Quercus agrifolia*), valley oak (*Quercus lobata*), and California buckeye (*Aesculus californica*). In rocky areas, interior live oak sometimes dominates the overstory especially on north-facing slopes at higher elevations. At lower elevations, where blue oaks make up most of the canopy, the understory tends to be primarily annual grasses and forbs. At higher elevations, where foothill pines and even interior live oaks sometimes comprise the canopy, the understory usually includes patches of shrubs in addition to the annual grasses and forbs. Shrub species that can be associated with this habitat type include various buckbrush (*Ceanothus* spp.) species and manzanita (*Arctostaphylos* spp.). Other species found in this habitat type can include California coffeeberry (*Frangula californica*), poison-oak (*Toxicodendron diversilobum*) and silver lupine (*Lupinus albifrons*). This habitat is generally located in the foothills of the Central Valley, between 500 and 3,000 feet in elevation. Blue oak-foothill pine habitat typically corresponds to the *Quercus douglasii* Woodland Alliance or *Pinus sabiniana* Woodland Alliance as described by Sawyer et al. (2009).

**Blue Oak Woodland**

Generally these woodlands have an over story of scattered trees, although the canopy can be nearly closed. The canopy is dominated by broad-leaved trees 16 feet to 50 feet tall, commonly forming open savanna-like stands on dry ridges and gentle slopes. Blue oak is typically the dominant tree species. Shrubs such as poison oak, California coffeeberry, buckbrush (*Ceanothus cuneatus*), and redberry (*Rhamnus crocea*) are often present but rarely extensive and often occur on rock outcrops. Typical understory is composed of an extension of Annual Grassland vegetation described below.

**Coastal Oak Woodland**

Coastal oak woodlands are common to mesic coastal foothills of California. The woodlands do not form a continuous belt, but occur in a mosaic closely associated with mixed chaparral, coastal scrub and annual grasslands. In San Joaquin County, these woodlands are commonly dominated by coast live oak. At drier sites, other species such as blue oak and foothill pine may also be interspersed. The understory of dense stands tends to be composed of shade tolerant shrubs and herbaceous plant species such as California blackberry (*Rubus ursinus*), poison oak, miner’s lettuce (*Claytonia perfoliata*) and toyon. In areas with more open canopies the understory may be more dominated by grassland species such as bromes and oats. Coastal oak woodland typically corresponds to the *Quercus agrifolia* alliance as described by Sawyer et al. (2009).

**Eucalyptus Forest**

This habitat type ranges from single-species thickets with little or no shrubby understory to scattered trees over a well-developed herbaceous and shrubby understory. In most cases, eucalyptus groves form a dense stand with a closed canopy. Blue gum eucalyptus (*Eucalyptus globulus*) and red gum eucalyptus (*Eucalyptus camaldulensis*) are the most common eucalyptus species found in these stands. The understory of these areas tends to have extensive patches of leaf litter with limited vegetation, but may include species such as poison oak and toyon. Trees within this habitat type are typically planted in rows for use as a wind break.

**Juniper**

This habit is characterized as woodlands of open to dense groupings of juniper (*Juniperus spp.*) trees in the form of treelike shrubs or small trees. Denser stands are commonly associated with a grassy understory. In California, this habitat has both cismontane and transmontane associations and
usually forms a band between lower desert scrub habitat and higher sagebrush and pinyon-juniper woodlands (Sawyer et al. 2009).

Montane Hardwood

A typical montane hardwood habitat is composed of a pronounced hardwood tree layer, with an infrequent and poorly developed shrub stratum, and a sparse herbaceous layer. In the Coast Range, canyon live oak (*Quercus chrysolepis*) often forms pure stands on steep canyon slopes and rocky ridge tops. It is replaced at higher elevations by scattered huckleberry oak (*Quercus vacciniifolia*) amongst an overstory of various conifers including ponderosa pine (*Pinus ponderosa*), Coulter pine (*Pinus coulteri*), California white fir (*Abies concolor*), and Jeffrey pine (*Pinus jeffreyi*). At mid-elevations, typical associates include Douglas-fir (*Pseudotsuga menziesii*), tanoak (*Notholithocarpus densiflorus*), California black oak (*Quercus kelloggii*), and bristlecone fir (*Abies bracteata*). At lower elevations, knobcone pine (*Pinus attenuata*), foothill pine, Oregon white oak (*Quercus garryana*), and coast live oak are abundant. Understory vegetation is mostly scattered woody shrubs and a few forbs. Elevations range from 300 feet near the Pacific Ocean up to 9,000 feet. Montane hardwood typically corresponds to the *Quercus chrysolepis* Forest Alliance, as described by Sawyer et al. (2009).

Sierran Mixed Conifer

Dominant trees in Sierran Mixed Conifer habitat include white fir, Douglas-fir, ponderosa pine, sugar pine, incense-cedar, and California black oak. White fir tends to be the most ubiquitous species (though most often a minor overstory component) because it tolerates shade. It occurs primarily at middle elevations in El Dorado County. Ponderosa pine dominates at lower elevations and on south slopes. Jeffrey pine commonly replaces ponderosa pine at high elevations, on cold sites, or on ultramafic soils. Red fir is a minor associate at the highest elevations. Deerbrush (*Ceanothus integerrimus*), chinquapin (*Chrysolepis chrysophylla*), squawcarpet (*Ceanothus prostratus*), mountain misery (*Chamaebatia foliolosa*), tanoak, manzanita, currants, and wood rose, are common shrub species in the shrub understory. Grasses and forbs associated with this habitat include over 100 species, including bromes, rushes (*Juncus* spp.), and purple needlegrass (*Nassella pulchra*).

Valley Oak Woodland

This habitat can range in structure from savanna-like to forest-like stands. The canopies tend to be partially closed and comprised mostly of winter-deciduous, broad-leaved species such as valley oak. Dense stands typically grow in valley soils along natural drainages and decrease with the transition from lowlands to uplands. Shrubs are also associated with this habitat in lowland areas, especially along drainages. Valley oak stands with little or no grazing tend to develop a partial shrub layer of bird disseminated species, such as poison oak, toyon (*Heteromeles arbutifolia*), and California coffeeberry. Ground cover consists of a well-developed carpet of annual grasses and forbs such as wild oat (*Avena* spp.), bromes (*Bromus* spp.), and ryegrass (*Festuca perennis*). Valley oak woodland typically corresponds to the *Quercus lobata* Woodland Alliance as described by Sawyer et al. (2009).

Valley-Foothill Riparian

This habitat type is associated with drainages, particularly those with low velocity flows, flood plains, and gentle topography. This habitat type is generally comprised of a canopy and sub-canopy tree layers dominated by valley oak, cottonwoods (*Populus* sp.), Oregon ash (*Fraxinus latifolia*), white alder (*Alnus rhombifolia*), and boxelder (*Acer negundo*). The understory shrub layer comprises
species such as willows (Salix spp.) wild grape (Vitis californica), wild rose (Rosa californica), blackberry (Rubus spp.), blue elderberry (Sambucus cerulean) and poison-oak.

**Shrub Dominated Habitats**

Shrub-dominated habitats, such as chaparral and desert scrub, are comprised primarily of woody, evergreen shrubs and occurs in San Joaquin County on the inner Coast Range, south of I-580. within San Joaquin County (see Figure 9). The following are descriptions of shrub-dominated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.

**Chamise-Redshank Chaparral**

Regionally this chaparral habitat type is dominated by pure or nearly pure stands of chamise (Adenostoma fasciculatum). Mature chamise-redshank chaparral is single layered, generally lacking well-developed herbaceous ground cover and over story trees. Shrub canopies frequently overlap, producing a nearly impenetrable canopy of interwoven branches. Fire occurs regularly in chamise-redshank chaparral and influences habitat structure. Within the SJCOG region, chamise-redshank chaparral typically corresponds to the Adenostoma fasciculatum Shrubland Alliance as described by Sawyer et al. (2009).

**Desert Scrub**

This habitat type generally has low species diversity and is typically composed of scattered groupings of broad-leaved evergreen or deciduous shrubs. Canopy cover in this habitat is usually less than 50 percent and bare ground is often observed between plants. Creosotebush (Larrea tridentata) is often the dominant plant in this habitat because of its large size compared to other desert scrub plants. This habitat type is generally found below 4,000 feet.

**Mixed Chaparral**

Mixed chaparral is a structurally homogeneous brushland type dominated by shrubs with thick, stiff, heavily cutinized evergreen leaves. Shrub height and crown cover vary with age since last burn, precipitation, aspect, and soil type. At maturity, cismontane mixed chaparral typically is a dense, nearly impenetrable thicket. On poor sites, serpentine soils or transmontane slopes, shrub cover may be considerably reduced and shrubs may be shorter. Leaf litter and standing dead material may accumulate in stands that have not burned for several decades. Mixed chaparral can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances can include, but are not limited to, Ceanothus cuneatus Shrubland Alliance and the Arctostaphylos sp. Shrubland Alliances.

**Herbaceous Habitats**

These habitats are generally comprised of areas dominated by grasses and other non-woody species. The majority of this habitat in San Joaquin County is comprised of non-native grasslands (see). Native perennial grasslands, which are dominated by perennial bunch grasses, such as purple needlegrass (Nassella pulchra), were historically abundant within San Joaquin County but are now currently patchy in distribution statewide. The following are descriptions of the grass and herb-dominated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.
Annual Grasslands

This habitat type is composed primarily of non-native annual herbs and forbs and typically lacks shrub or tree cover. The physiognomy and species composition of annual grasslands is highly variable and also varies considerably on a temporal scale. Grazing is a common land use within this habitat type. Common grass species include wild oats, soft chess brome (Bromus hordeaceus), ripgut brome (Bromus diandrus), and red brome (Bromus madritensis). Common forb species can include species of filaree (Erodium spp.), and bur clover (Medicago polymorpha). California poppy can also be quite common in this habitat type. Annual grassland can correspond to multiple alliances as described by Sawyer et al. (2009) depending upon the species composition. These alliances can include, but are not limited to, Avena (barbata, fatua) semi-natural stands and Bromus (diandrus, hordeaceus) – Brachypodium distachyon semi-natural stands.

Perennial Grasslands

This habitat type in California is found in coastal prairies under maritime influence and relics in habitats dominated by annual grasses and forbs. This habitat is dominated by perennial grass species such as California oatgrass (Danthonia californica), Pacific hairgrass (Deschampsia holciformis), and sweet vernalgrass (Anthoxanthum odoratum). Grazing by domestic livestock or wild herbivores such as Roosevelt elk can substantially alter habitat structure through reduction of plant height and removal of biomass.

Developed, Sparsely/Non-Vegetated, and Cropland Habitats

Developed and sparsely to non-vegetated habitats and croplands are abundant in the county (Figure 9). Developed habitats are usually sparsely or non-vegetated and are associated with urban and agricultural areas and are highly disturbed. Species that occur in these areas are typically adapted to anthropogenic disturbance and/or comprised of ornamental species. Sparsely vegetated habitats also tend to be associated with rock outcrops and cliffs. The following are descriptions of developed and sparsely/non-vegetated habitats that occur within three miles of construction projects outlined in the 2018 RTP/SCS.

Cropland

This habitat type is characterized by areas in active agriculture used to grow annual or perennial herbaceous crops, and is an entirely man-made habitat. The structure of vegetation can vary in size, shape, and growing pattern. The dominant cropland use is row crops, and can also include hay and grain. Subcategories of cropland habitat classifications include, but are not limited to, dryland grain crop, irrigated hayfield crop and irrigated row and field crop, irrigated hayfield, rice, and pasture. Orchards and vineyards are classified separately.

Orchard/Vineyard

This habitat type is characterized by typically open, single-species tree- or woody vine-dominated habitats. Depending on the tree or vine type and pruning methods, they are usually low, bushy plants with an open understory to facilitate harvest. Trees such as citrus, avocados, and olives are evergreen, and other common tree crops such as walnuts and stonefruits are deciduous. The understory is usually composed of low growing grasses and other herbaceous plants, but may be managed to prevent understory growth totally or partially, such as along tree rows. Vineyards, comprised of grape vines, also share similar characteristics. Subcategories of orchard/vineyard habitat classifications include, but are not limited to, deciduous orchard and evergreen orchard.
Urban
This habitat type is also a completely man-made habitat comprising residential, commercial, and industrial developed areas. Plant species within urban habitats are typically comprised of ornamental plants and non-native invasive plant species, with large developed areas lacking vegetation.

Barren
This habitat type is defined by the absence of vegetation. Any habitat with less than two percent total herbaceous vegetation cover and less than 10 percent relative cover by tree or shrub species is defined as barren (Mayer and Laudenslayer, 1988). Structure and composition of the substrate is largely determined by the region of the state as well as surrounding environment. Examples of barren habitats include areas of exposed parent rock or talus.

b. Drainages and Wetlands

Drainages
Several large rivers end in San Joaquin County where they flow into the Delta. The largest of these, the San Joaquin River, divides into three channels as it enters the Delta: “Old River,” “Middle River,” and the “mainstem” of the San Joaquin River. The Mokelumne, Calaveras, and Stanislaus rivers are the other major rivers in the County. Two additional major waterways, the Delta-Mendota Canal and the California Aqueduct, occur within the county.

Several creeks and tributaries are associated with the riverine watersheds including Mormon Slough, Dry Creek, Corral Hollow, Hospital Creek, Lone Tree Creek, Little Johns Creek, Duck Creek, Mosher Slough, Bear Creek, Paddy Creek, and Potter Creek. The drainages within these watersheds are of biological importance as they provide valuable foraging habitat, breeding habitat, and movement habitat for a wide variety of animal species, including sensitive species such as delta smelt (Hypomesus transpacificus), riparian brush rabbit (Sylvilagus bachmani riparius), riparian woodrat (Neotoma fuscipes riparia), and California red-legged frog (Rana draytonii). Many of these rivers and their tributaries are also federally designated critical habitat for the delta smelt.

Wetlands
Wetlands are regarded as important biological resources both because of their rarity and because they provide a variety of ecosystem services. Several types of wetlands exist in the county, including freshwater marshes, vernal pools, and riparian habitats. A map illustrating wetlands in the San Joaquin County Planning Area is shown in Figure 10.

In addition to vernal pools, several areas within three miles of 2018 RTP/SCS construction projects contain wetlands mapped by the USFWS National Wetlands Inventory (NWI)(USFWS, 2017c). A general description of each of the classifications used in the NWI is provided below. Of those wetland types mapped by the NWI, estuarine, fresh emergent wetland, lacustrine, riverine, and saline emergent wetland habitats are also mapped by the CWHR.

Vernal Pools
These seasonal wetlands are small depressions that fill with water during the winter, gradually drying during the spring and becoming completely dry in the summer. These pools are found in only a few places in the world outside of California. Vernal pool vegetation is adapted to the cycle of
Figure 10 National Wetlands Inventory: San Joaquin County
brief inundation followed by seasonal drying. Vernal pools are characterized by herbaceous plants that may begin their growth as aquatic or semi-aquatic plants and transition to a dry land environment as the pool dries, while other species germinate in the mud as the pool begins to dry. Most vernal pool plants are annual herbs, many of which are endemic to vernal pools. Wildlife species supported by vernal pools include California tiger salamander (*Ambystoma californiense*) and vernal pool fairy shrimp (*Branchinecta lynchi*).

**Freshwater Emergent Wetlands**

Freshwater emergent wetlands include all non-tidal waters dominated by emergent herbaceous plant species, mosses, and/or lichens. Wetlands of this type are also low in salinity. The NWI also includes in this category wetlands that lack vegetation if they are less than 20 acres in size, do not have an active wave-formed or bedrock shoreline feature, have a low water depth less than 6.6 feet. Freshwater emergent wetlands are characterized by erect, rooted herbaceous hydrophytes. Dominant vegetation is generally perennial monocots. All emergent wetlands are inundated or saturated frequently enough that the roots of the vegetation prosper in an anaerobic environment. The wetlands may vary in size from small clumps to vast areas covering several kilometers. The acreage of Freshwater Emergent Wetlands in California has decreased dramatically since the turn of the century due to drainage and conversion to other uses, primarily agriculture.

**Freshwater Forested/Shrub Wetlands**

These wetlands include non-tidal waters that are dominated by trees and shrubs, with emergent herbaceous plants, mosses and/or lichens. The NWI also includes within this category wetlands that lack vegetation can be included in this class if they also exhibit the same criteria as described for freshwater emergent wetlands. Freshwater forested/shrub wetlands are generally dominated by woody vegetation such as shrubs and trees. This wetland category also can include riparian habitats.

**Freshwater Ponds**

Freshwater ponds include non-tidal waters, typically less than 20 acres in size and typically with vegetative cover along its edges such as trees, shrubs, emergent herbaceous plants, mosses, and/or lichens. Freshwater ponds can be man-made or natural and typically consist of an area of standing water with variable amounts of shoreline. These wetlands and deep water habitats are dominated by plants that grow on or below the surface of the water. This wetland type is also mapped by the CWHR and categorized as lacustrine habitat which includes vernal pools; however, we have recognized vernal pools as unique features and thus provided a separate description that was previously presented.

**Lakes**

Lakes are a lacustrine system which includes wetlands and deep water habitats that are located in a topographic depression or dammed river channel. These areas tend to be greater than 20 acres. Vegetation cover within this habitat is generally less than 30 percent and often occurs in the form of emergent or surface vegetation. Substrates are composed of at least 25 percent cover of particles smaller than stones.

**Riverine**

Riverine habitats are stream systems that include all wetlands and deep water habitats contained in natural or artificial channels that contain periodically or continuously flowing water. This system
may also form a connecting link between two bodies of standing water. Substrates generally consist of rock, cobbles, gravel or sand. Features mapped as riverine wetlands in the NWI include drainages as previously described.

c. **Sensitive Natural Communities**

The California Natural Diversity Database (CNDDDB) lists eight natural communities that occur within the San Joaquin County (CDFW 2017b). These sensitive communities are also listed in Table 13 below. The Sensitive Natural Communities List in the CNDDDB is not currently maintained and no new information has been added in several years. As such, the CDFW maintains a List of Vegetation Alliances and Associations (CDFW 2010). According to the CDFW’s Vegetation Program, Alliances with State ranks of S1-S3 are considered to be imperiled, and thus, potentially of special concern. Because this analysis is at the county level and programmatic, vegetation mapping and analysis at the alliance and association level is not available at this time, and would need to be conducted at the project level.

<table>
<thead>
<tr>
<th>Communities Considered Sensitive by the CDFW</th>
</tr>
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<tbody>
<tr>
<td>Coastal and Valley Freshwater Marsh</td>
</tr>
<tr>
<td>Elderberry Savanna</td>
</tr>
<tr>
<td>Great Valley Cottonwood Riparian Forest</td>
</tr>
<tr>
<td>Great Valley Mixed Riparian Forest</td>
</tr>
<tr>
<td>Great Valley Oak Riparian Forest</td>
</tr>
<tr>
<td>Northern Claypan Vernal Pool</td>
</tr>
<tr>
<td>Northern Hardpan Vernal Pool</td>
</tr>
<tr>
<td>Valley Oak Woodland</td>
</tr>
</tbody>
</table>

Source: CNDDDB (CDFW, 2017b)

d. **Special Status Plants and Animals**

For the purpose of this EIR, special-status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the federal Endangered Species Act; those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the California Endangered Species Act (CESA); animals designated as “Species of Special Concern,” “Fully Protected,” or “Watch List” by the CDFW. The CNDDDB also provides records of other special animals that CDFW is tracking, but are not currently designated a special-status. Because of the programmatic nature of the analysis and the duration in which the 2018 RTP/SCS will be implemented, these species were also included as “special-status” considering the CDFW is currently collecting data and tracking these species and therefore there is potential for their status to be elevated in the future. Additionally, special-status plants with California Rare Plant Rank (CRPR) of 1 through 4 were included. CDFW standards state that plants with a CRPR 1A, 1B, 2A, and 2B may meet definitions of rare or endangered under CEQA Sections 15380 (b) and (d) (CDFW 2017c). By CNPS standards, the plants of CRPR Ranks 1A, 1B, 2A and 2B meet the definitions of Sections 2062 and 2067 (CESA) of the California Fish and Game Code, and are eligible for state listing, thus should be considered under CEQA §15380. According to CDFW, “In general, CNPS Rank 3 plants (plants about which more information is needed) and Rank 4 plants
(plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special-status plant lists such as those developed by counties where they would be addressed under CEQA §15380. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a Rank 4 plant are significant even if individual project impacts are not.” Due to the programmatic nature of this analysis and the duration in which the 2018 RTP/SCS will be implemented, the evaluation of Rank 3 and 4 species in context of type localities, unique vegetation types, and local designation of special-status would need to be completed on a case by case basis and requires site-specific knowledge of the vegetation type in which the plant occurs on a given site. Thus, for this analysis, all plants with a CRPR rank are included.

Plants with a CRPR of 1, 2, 3, and 4, which are defined as:

- CRPR 1A = Plants presumed extinct in California;
- CRPR 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat);
- CRPR 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80 percent occurrences threatened);
- CRPR 1B.3 = Rare or endangered in California and elsewhere, not very endangered in California (<20 percent of occurrences threatened or no current threats known);
- CRPR 2 = Rare, threatened or endangered in California, but more common elsewhere;
- CRPR 3 = Plants needing more information (most are species that are taxonomically unresolved; some species on this list meet the definitions of rarity under CNPS and CESA);
- CRPR 4.1 = Plants of limited distribution (watch list), seriously endangered in California;
- CRPR 4.2 = Plants of limited distribution (watch list), fairly endangered in California (20-80 percent occurrences threatened); and
- CRPR 4.3 = Plants of limited distribution (watch list), not very endangered in California.

Species of Special Concern (SSC) is a category used by the CDFW for those species which are considered indicators of regional habitat changes or are considered to be potential future protected species. Species of Special Concern do not have any special legal status except that which may be afforded by the Fish and Game Code. The SSC category is intended by the CDFW for use as a management tool to include these species into special consideration when decisions are made concerning the development of natural lands, and these species are consider sensitive as described under the CEQA Appendix G questions.

Queries of the USFWS Information, Planning, and Conservation website (IPaC) (USFWS, 2017b), CNDDB (CDFW, 2017b), and California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants of California (CNPS, 2017) were conducted to obtain comprehensive information regarding state and federally listed species considered to have potential to occur within San Joaquin County. Federally designated critical habitat for seven species also occurs in San Joaquin County (Figure 11).

San Joaquin County is home to several species protected by federal and state agencies. Special-status animal species can be found in a variety of habitats within the county. The CNDDB (CDFW, 2017b), CNPS (2017), and USFWS IPaC (USFWS, 2017b) together list 89 special-status plant and animal species (34 plant species [including CRPR 3 and 4] and 55 animal species [inclusive of special
Figure 11 Federally Designated Critical Habitat: San Joaquin County
animals) that occur within San Joaquin County. The status and habitat requirements of those species are presented in Appendix D.

e. **Wildlife Movement Corridors**

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats within the link do not necessarily need to be the same as the habitats that are being linked. Rather, the link merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (such as rock outcroppings, vernal pools, or oak trees) may need to be located within the habitat link at certain intervals to allow slower-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time.

Wildlife movement corridors can be both large and small scale. Essential Connectivity Areas (ECA) as mapped in the report *California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California* (2010) represents connectivity at the state level. ECAs are regions in which land conservation and management actions should be prioritized to maintain and enhance connectivity between areas of high ecological importance. ECAs are mapped based on coarse ecological condition indicators, rather than the needs of particular species and thus serve the majority of species in each region. It is important to recognize that even areas outside of Natural Landscape Blocks and ECAs support important ecological values and should not be immediately discounted as lacking conservation value without further review.

Four ECAs are mapped within San Joaquin County (see Figure 12). The Mandeville Island-Staten Island ECA is located in the northwestern portion of the County near the Delta. The Bear Slough-Browns Creek ECA is also located in the northwestern portion of the County near the Consumes River Preserve. The remaining two ECAs, Bear Mountains-Duck Creek ECA and Duck Creek North Fork-Coyote Creek ECA overlap each other in the northeastern portion of the County near Comanche Reservoir.

Small scale corridors important to wildlife movement are also present within the county, many of which are not mapped as ECAs. These include the various rivers, creeks, drainages and other topographic features that facilitate movement, such as the San Joaquin, Mokelumne, and Calaveras Rivers and other drainages as depicted in Figure 12. These corridors provide a means to facilitate regional connectivity for a number of wildlife species as a wildlife corridor.

f. **Regulatory Framework**

Federal, state, and local authorities under a variety of statutes and guidelines share regulatory authority over biological resources. The primary authority for general biological resources lies within the land use control and planning authority of local jurisdictions, which in this instance is San
Figure 12 Essential Connectivity Areas within San Joaquin County
Joaquin County. The CDFW is a trustee agency for biological resources throughout the state under CEQA and also has direct jurisdiction under the California Fish and Game Code (CFGC), which includes, but is not limited to, resources protected by the State of California under CESA.

Federal

United States Fish and Wildlife Service

The USFWS implements the Migratory Bird Treaty Act (16 United States Code [USC] Section 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668). The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the Federal Endangered Species Act (FESA) (16 USC § 153 et seq.). The USFWS generally implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadromous species. Projects that would result in “take” of any federally listed threatened or endangered species are required to obtain permits from the USFWS and/or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation Plan) of FESA, depending on the involvement by the federal government in permitting and/or funding of the project. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. “Take” under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Proposed or candidate species do not have the full protection of FESA; however, the USFWS and NMFS advise project applicants that they could be elevated to listed status at any time.

National Marine Fisheries Service

The NMFS is a component of the National Oceanic and Atmospheric Administration (NOAA) and has jurisdiction over projects in which federally-listed marine or anadromous fish may be affected, including steelhead, Coho salmon, and tidewater goby.

United States Army Corps of Engineers

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) has authority to regulate activities that result in discharge of dredged or fill material into wetlands or other “waters of the United States.” Perennial and intermittent creeks are considered waters of the United States if they are hydrologically connected to other jurisdictional waters. The USACE also implements the federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetlands. In achieving the goals of the Clean Water Act, the USACE seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any discharge into wetlands or other “waters of the United States” that are hydrologically connected and/or demonstrate a significant nexus to jurisdictional waters would require a permit from the USACE prior to the start of work. Typically, when a project involves impacts to waters of the United States, the goal of no net loss of wetlands is met through compensatory mitigation involving creation or enhancement of similar habitats.
California Department of Fish and Wildlife

The CDFW derives its authority from the Fish and Game Code of California. The CESA (Fish and Game Code Section 2050 et. seq.) prohibits take of State-listed threatened and endangered species. Take under CESA is restricted to direct harm of a listed species and does not prohibit indirect harm by way of habitat modification. The CDFW additionally prohibits take for species designated as Fully Protected under the CFGC under various sections.

California Fish and Game Code sections 3503, 3503.5, and 3511 describe unlawful take, possession, or destruction of birds, nests, and eggs. Fully protected birds (CFGC Section 3511) may not be taken or possessed except under specific permit. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs. The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (CFGC Section 1900 et seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Under Section 1913(c) of the NPPA, the owner of land where a rare or endangered native plant is growing is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of the plant(s).

Lakes, ponds, perennial and intermittent streams and associated riparian vegetation, when present, also fall under the jurisdiction of the CDFW. Section 1600 et seq. of the Fish and Game Code (Lake and Streambed Alteration Agreements) gives the CDFW regulatory authority over work within the bed or bank of a lake or stream consisting of, but not limited to, the diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream or lake.

State and Regional Water Board

The State Water Resources Control Board (SWRCB) and each of nine local Regional Water Quality Control Boards (RWQCB) has jurisdiction over “waters of the State” pursuant to the Porter-Cologne Water Quality Control Act which are defined as any surface water or groundwater, including saline waters, within the boundaries of the State. The SWRCB has issued general Waste Discharge Requirements (WDRs) regarding discharges to “isolated” waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction). The local RWQCB enforces actions under this general order for isolated waters not subject to federal jurisdiction, and is also responsible for the issuance of water quality certifications pursuant to Section 401 of the CWA for waters subject to federal jurisdiction.

California Department of Transportation - California Streets and Highways Code Section 156.3

Assessments and remediation of potential barriers to fish passage for transportation projects using State or federal transportation funds are required. Such assessments must be conducted for any projects that involve stream crossings or other alterations and must be submitted to the CDFW. New projects shall be constructed so that they do not present a barrier to fish passage.

Regional and Local

General Plans are created by cities and counties to guide the growth and land development of their communities. As such, General Plans typically contain elements which address protection of
biological resources. Typically, these elements consist of goals, policies and actions that protect natural resources, such as environmentally sensitive habitats, special-status species, native trees, creeks, wetland, and riparian habitats. Local jurisdictions approve development as long as it is consistent with those elements of the General Plan.

Some resources are afforded protection via local ordinances such as those that protect trees, riparian corridors, and environmentally sensitive habitats. The County and cities within the SJCOG region have municipal codes which protect natural resources and addresses compliance with environmental regulations.

San Joaquin County General Plan

The Natural and Cultural Resources Element of the San Joaquin County General Plan includes goals to protect the biological resources found within the county. The goals and policies of the San Joaquin County General Plan are aimed at protecting and conserving listed species and their habitat, critical habitat, the Delta, and river environments. In addition, the San Joaquin County General Plan includes a policy requiring the County to protect, preserve, and enhance important natural resource habitat, biological diversity, and the ecological integrity of natural systems in the County.

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan

The San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP 2000) was adopted by the San Joaquin Transportation Authority on November 14, 2000. The key purpose of the SJMSCP is to provide a strategy for balancing the need to conserve Open Space and the need to Convert Open Space to non-Open Space uses while protecting the region’s agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish, and wildlife species, especially those that are currently listed, or may be listed in the future, under the Federal Endangered Species Act (ESA) or the California (CESA); providing and maintaining multiple open-spaces which contribute to the quality of life of the residents of San Joaquin County; and accommodating a growing population while minimizing costs to Project Proponents and society at large. The SJMSCP is a 50 year plan, and the Plan is based on a 50 year planning horizon.

A Habitat Conservation Plan (HCP) is a federal and/or state planning document that is prepared pursuant to Section 10 of the Federal Endangered Species Act (FESA) and Section 2081 of the California Endangered Species Act (CESA). An approved HCP within a defined plan area allows for the incidental take of species and habitat that are otherwise protected under FESA and CESA during development activities.

A Natural Community Conservation Plan (NCCP) is another state planning document administered by CDFW. An approved NCCP within a defined plan area allows for the incidental take of species and habitat that are otherwise protected under CESA during growth and development activities.

BACKGROUND

The key purpose of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP), is to provide a strategy for balancing the need to conserve Open Space and the need to Convert Open Space to non-Open Space uses while protecting the region’s agricultural economy; preserving landowner property rights; providing for the long-term management of plant, fish and wildlife species, especially those that are currently listed, or may be listed in the future, under the Federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); providing and maintaining multiple-use Open Spaces which contribute to the quality of life of the residents of
San Joaquin County; and accommodating a growing population while minimizing costs to Project Proponents and society at large.

San Joaquin County’s past and future (2001–2051) growth has affected and will continue to affect 97 special status plant, fish and wildlife species in 52 vegetative communities scattered throughout San Joaquin County’s 1,400+ square miles and 900,000+ acres, which include 43 percent of the Sacramento-San Joaquin Delta’s Primary Zone. The SJMSCP, in accordance with ESA Section 10(a)(1)(B) and CESA Section 2081(b) Incidental Take Permits, provides compensation for the conversion of open space to non-open space uses which affect the plant, fish and wildlife species covered by the Plan, hereinafter referred to as “SJMSCP Covered Species.” In addition, the SJMSCP provides compensation to offset the impacts of Open Space land Conversions on non-wildlife related resources such as recreation, agriculture, scenic values and other beneficial Open Space uses.

The SJMSCP compensates for Conversions of Open Space for the following activities: urban development, mining, expansion of existing urban boundaries, non-agricultural activities occurring outside of urban boundaries, levee maintenance undertaken by the San Joaquin Area Flood Control Agency, transportation projects, school expansions, non-federal flood control projects, new parks and trails, maintenance of existing facilities for non-federal irrigation district projects, utility installation, maintenance activities, managing Preserves, and similar public agency projects. These activities will be undertaken by both public and private individuals and agencies throughout San Joaquin County and within the County’s incorporated cities of Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy. Public agencies including Caltrans (for transportation projects), and the San Joaquin Council of Governments (for transportation projects) also will undertake activities which will be covered by the SJMSCP.

Species coverage will be variable under the SJMSCP and will range from full coverage under federal and state law to CEQA coverage only. The 97 SJMSCP Covered Species include 25 state and/or federally listed species. The SJMSCP Covered Species includes 27 plants (six listed), four fish (two listed), four amphibians (one listed), four reptiles (one listed), 33 birds (seven listed), 15 mammals (three listed), and 10 invertebrates (five listed).

**IMPLEMENTATION**

SJCOG Inc. administers the SJMSCP, a voluntary mitigation plan, and holds the mitigation land. Project applicants are given the option of participating in the SJMSCP as a way to streamline compliance with required local, state, and federal laws regarding biological resources, and typically avoid having to approach each agency independently. According to the SJMSCP, adoption and implementation by local planning jurisdictions provides adequate compensation and mitigation for impacts to plants, fish, and wildlife. SJMSCP-permitted activities within the boundaries of San Joaquin County fulfill conservation and open space obligations and policies of local general plans, resolution, ordinances, and other regulations as they pertain to plants, fish, and wildlife. Adoption and implementation of the SJMSCP also secures compliance pursuant to the state and federal laws such as CEQA, the National Environmental Policy Act (NEPA), the Planning and Zoning Law, the State Subdivision Map Act, the Porter-Cologne Act, and the Cortese-Knox Act in regards to species covered under the SJMSCP. If an implementing agency chooses not to participate in the SJMSCP, it will be required to provide alternative mitigation in an amount and kind equal to that provided in the SJMSCP.

Applicants pay mitigation fees or provide land *in-lieu* of fees on a per-acre basis, as established by the SJCOG Inc. according to the measures needed to mitigate impacts to the various habitat and
biological resources. Different types of land require different levels of mitigation; i.e., one category requires that one-acre of a similar land type be preserved for each acre developed, while another type requires that three-acres be preserved for each acre developed. Most of the County is mapped according to these categories so that landowners, project proponents, and project reviewers are easily aware of the applicable SJMSCP fees for the proposed project.

The appropriate fees are collected or land in lieu is detained and remitted to SJCOG Inc. for administration. SJCOG Inc. uses the funds to preserve open space land of comparable types throughout the County, often coordinating with other private or public land trusts to purchase conservation easements or buy land outright for preservation. Development occurring on land that has been classified under the SJMSCP as “no-pay” would not be required to pay a fee but fulfill the biological requirements of the plan to minimize impacts to species. This category usually refers to already urbanized land and infill development areas. The fees are adjusted on an annual basis, based on qualified agricultural land sales in San Joaquin County which would meet mitigation requirements under the SJMSCP.

4.4.2 Impact Analysis

a. Methodology and Significance Thresholds

Data used for this analysis include aerial photographs, topographic maps, the CNDDB, the CNPS online inventory of rare and endangered plants, and accepted scientific texts to identify species. Federal special-status species inventories maintained by the USFWS were reviewed in conjunction with the CNDDB and CNPS online inventory. Potential areas of disturbance associated with the 2018 RTP/SCS were compared to the identified biological resource occurrences to determine whether an impact may occur. Other data on biological resources were collected from numerous sources, including relevant literature, maps of natural resources, and data on special-status species and sensitive habitat information obtained from the CDFW BIOS (2017a), CDFW CNDDDB (2017b), CNPS Online Inventory of Rare and Endangered Plants of California (2017), and the USFWS IPaC (2017a). The USFWS Critical Habitat Mapper (2017b) and USFWS National Wetlands Inventory (NWI; 2017c) were also queried.

Evaluation Criteria

The following thresholds from Appendix G of the State CEQA Guidelines identifies the following criteria for determining whether a project’s impacts would have a significant impact on biological resources:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;

3. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

b. Project Impacts and Mitigation Measures

The following section presents a programmatic-level discussion of the potential for impacts to sensitive biological resources from implementation of the 2018 RTP/SCS. Section 4.4.2.c summarizes the impacts associated with capital improvement projects proposed in the 2018 RTP/SCS. Due to the programmatic nature of the 2018 RTP/SCS, a precise, project-level analysis of the specific impacts associated with individual transportation and land use projects is not possible at this time. In general, however, implementation of proposed transportation improvements and future projects under the land use scenario envisioned by the 2018 RTP/SCS could result in the impacts as described in the following section. Implementing agencies have the option to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) to reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

**Threshold 1:** Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service

**IMPACT BIO-1 IMPLEMENTATION OF TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS MAY RESULT IN IMPACTS TO SPECIAL-STATUS PLANT AND ANIMAL SPECIES.**

**BECAUSE MITIGATION MAY NOT FULLY REDUCE IMPACTS THEY WOULD REMAIN SIGNIFICANT AND UNAVOIDABLE.**

For the purposes of this analysis, special-status plant and animal species include those designations described under Section 4.4.1.d above. Most of the transportation improvements proposed under the 2018 RTP/SCS consist of expansions of existing facilities. However, these projects could impact areas occupied by special-status plant and animal species. As mentioned above, there are 89 special-status species known to occur or with potential to occur within San Joaquin County. Twenty-five of these species are given high levels of protection by the federal government through listing under FESA or by the State government through listing under CESA or designation of Fully Protected status (animals only). The remaining species shown in Appendix D are protected through CEQA and/or through local ordinances. Most special-status species have very limited ranges within the subject counties and have specific habitat requirements. Many special-status species may also tend to be associated with sensitive habitats, such as riparian habitats and drainages.

Because of the programmatic nature of the 2018 RTP/SCS, a precise, project-level analysis of the specific impacts of individual transportation projects on special-status species is not possible at this time. As future transportation system improvement projects identified in the 2018 RTP/SCS are planned and designed, site-specific environmental review will be conducted by the agencies responsible for implementing such projects. Nevertheless, some special-status species are expected
to be encountered at the locations where projects administered under the 2018 RTP/SCS would occur. Thus, it is assumed that some resources would not be avoided and that potentially significant impacts would occur.

Projects such as those that occur over or in the vicinity of rivers and creeks are within suitable habitat for species such as California red-legged frog (Federally Threatened and State SSC), delta smelt (Federally Threatened and State Endangered), riparian brush rabbit (Federally Endangered and State Endangered), and riparian woodrat (Federally Endangered and State SSC). Many of the creeks and rivers found within coastal watersheds, such as those in San Joaquin County, are considered accessible by delta smelt and currently support or have historically supported delta smelt populations (Santa Cruz County 2015b).

In addition to the rivers and creeks that may be impacted, future transportation projects under the 2018 RTP/SCS could impact upland habitats and the sensitive species that may occupy them. For example, San Joaquin kit fox (*Vulpes macrotis mutica*), a federally Endangered and State Threatened species, may be present in grassland habitats near roads where projects could occur. The federally threatened and state threatened California tiger salamander can also occupy annual grassland habitats containing small mammal burrows if such habitat is within 1.24 miles (the dispersal distance of the species) of known or potentially suitable breeding habitat. Three special-status bat species may be affected by proposed projects where they occur under bridges or similar structures, or in native habitat adjacent to construction areas. Furthermore, the wide variety of habitats within the 2018 RTP/SCS area can support many species of nesting birds, including sensitive species such as the State Threatened Swainson’s hawk (*Buteo swainsoni*) and the state SSC burrowing owl (*Athene cunicularia*). Disturbance of special-status plants could result in reductions in local population size, habitat fragmentation, or lower reproductive success.

Direct impacts to special-status species include injury or mortality occurring during implementation and/or operation of projects under the 2018 RTP/SCS. Direct impacts also include habitat modification and loss such that it results in mortality or otherwise alters foraging and breeding behaviors substantially enough to cause injury. Indirect impacts could be caused by the spread of invasive non-native species that out-compete native species and/or alter habitat towards a state that is unsuitable for special-status species. For example, the spread of certain weed species can reduce the biodiversity of native habitats, potentially eliminating special-status plant species and reducing the availability of suitable forage and breeding sites for special-status animal species. Indirect impacts could also result from increased access by humans and domestic animals, particularly in areas where trails may be planned. Increased human and domestic animal (especially dog and cat) presence disrupt the normal behaviors of native animal species and foster the spread of non-native invasive plant species. Because impacts to protected species could still occur, even with implementation of the mitigation measures listed below, these impacts would remain potentially significant.

**Mitigation Measures**

Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

SJCOG shall, and transportation project sponsor agencies can and should, implement the following mitigation measures for applicable transportation projects identified in Appendix B. Municipalities in the San Joaquin County can and should implement these measures, where relevant to land use.
projects implementing the 2018 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

**BIO-1(a) Biological Resources Screening and Assessment**

On a project-by-project basis, a preliminary biological resource screening shall be performed as part of the environmental review process to determine whether the project has any potential to impact biological resources. If it is determined that the project has no potential to impact biological resources, no further action is required. If the project would have the potential to impact biological resources, prior to construction, a qualified biologist shall conduct a biological resources assessment to document the existing biological resources within the project footprint plus a buffer and to determine the potential impacts to those resources. The biological resources assessment shall evaluate the potential for impacts to all biological resources including, but not limited to: special-status species, nesting birds, wildlife movement, sensitive plant communities, critical habitat, Essential Fish Habitat, and other resources judged to be sensitive by local, state, and/or federal agencies. Pending the results of the biological resources assessment, design alterations, further technical studies (i.e. protocol surveys) and/or consultations with the USFWS, CDFW and/or other local, state, and federal agencies may be required. If the project cannot be designed without complete avoidance, the sponsor agency shall coordinate with the appropriate regulatory agency (i.e. USFWS, NMFS, CDFW, USACE) to obtain regulatory permits and implement project-specific mitigation prior to any construction activities. The following mitigation measures [BIO-1(b) through BIO-1(j)] shall be incorporated only as applicable into the biological resources assessment for projects where specific resources are present or may be present and impacted by the project. Note that specific surveys described in the mitigation measures below may be completed as part of the biological resources assessment where suitable habitat is present. The results of the biological resources screening and assessment shall be provided to the implementing agency for review and approval.

**BIO-1(b) Special-status Plant Species Surveys**

If completion of the project-specific biological resources assessment determines that special-status plant species have potential to occur on-site, surveys for special-status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each project (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally-timed to coincide with the target species identified in the project-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist approved by the implementing agency no more than two years prior to project implementation. All special-status plant species identified on-site shall be mapped onto a site-specific aerial photograph or topographic map. Surveys shall be conducted in accordance with the most current protocols established by the CDFW, USFWS. A report of the survey results shall be submitted to the implementing agency for review. If special-status plant species are identified, mitigation measure BIO-1(c) shall apply.

**BIO-1(c) Special-status Plant Species Avoidance, Minimization, and Mitigation**

If state or federally listed and/or CRPR 1 and 2 species are found during special-status plant surveys [pursuant to mitigation measure BIO-1(b)], then the project shall be re-designed to avoid impacting these plant species to the maximum extent feasible. Occurrences of these species that are not within the immediate disturbance footprint, but are located within 50 feet of disturbance limits shall have bright orange protective fencing installed at least 30 feet beyond their extent, or other distance as approved by a qualified biologist, to protect them from harm. If CRPR 3 and 4 species
are found, the biologist shall evaluate to determine if they meet criteria to be considered special-status, and if so, the same process as identified for CRPR 1 and 2 species shall apply.

If special-status plants species cannot be avoided and would be impacted by a project implemented under the 2018 RTP/SCS, all impacts shall be mitigated at a minimum ratio of 1:1 (number of acres or individuals restored to number of acres or individuals impacted) for each species as a component of habitat restoration. A restoration plan shall be prepared and submitted to SJCOG, and/or the local jurisdiction overseeing the project for approval. The restoration plan shall include, at a minimum, the following components:

- Description of the project/impact site (i.e., location, responsible parties, areas to be impacted by habitat type);
- Goal(s) of the compensatory mitigation project [type(s) and area(s) of habitat to be established, restored, enhanced, and/or preserved; specific functions and values of habitat type(s) to be established, restored, enhanced, and/or preserved];
- Description of the proposed compensatory mitigation site (location and size, ownership status, existing functions and values);
- Implementation plan for the compensatory mitigation site (rationale for expecting implementation success, responsible parties, schedule, site preparation, planting plan);
- Maintenance activities during the monitoring period, including weed removal as appropriate (activities, responsible parties, schedule);
- Monitoring plan for the compensatory mitigation site, including no less than quarterly monitoring for the first year (performance standards, target functions and values, target acreages to be established, restored, enhanced, and/or preserved, annual monitoring reports);
- Success criteria based on the goals and measurable objectives; said criteria to include numeric criteria to be selected based on the scale of the restoration effort and the restoration technique used:
  - At least 80 percent survival of container plants, and/or
  - Successful establishment the required number of individuals planted from seed to meet required replacement ratios; and/or
  - Sampling-based recruitment/survival criteria to achieve vegetative cover or total number of surviving individuals equal to at least 70 percent of the equivalent metric in reference sites for the same habitat type; sampling-based criteria must use a scientifically valid vegetation sampling method;
- An adaptive management program and remedial measures to address any shortcomings in meeting success criteria;
- Notification of completion of compensatory mitigation and agency confirmation; and
- Contingency measures (initiating procedures, alternative locations for contingency compensatory mitigation, funding mechanism).

**BIO-1(d) Endangered/Threatened Species Habitat Assessment and Protocol Surveys**

Specific habitat assessment and survey protocol surveys are established for several federally and/or state endangered or threatened species. If the results of the biological resources assessment determine that suitable habitat may be present for any such species, protocol habitat
assessments/surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to issuance of any construction permits/project approvals.

Alternatively, in lieu of conducting protocol surveys, the implementing agency may choose to assume presence within the project footprint and proceed with development of appropriate avoidance measures, consultation, and permitting, as applicable.

If the target species is detected during protocol surveys, or protocol surveys are not conducted and presence assumed based on suitable habitat, mitigation measure BIO-1(e) shall apply.

**BIO-1(e) Endangered/Threatened Species Avoidance and Compensatory Mitigation**

If habitat is occupied or presumed occupied by federal and/or state listed species and would be impacted by the project, the implementing agency shall re-design the project in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. Disturbance limits shall have bright orange protective fencing installed at least 50 feet beyond their extent, or other distance as approved by a qualified biologist, to protect the habitat. If occupied or presumed occupied habitat cannot be avoided, the implementing agency shall provide the total acreages for habitat that would be impacted prior to the issuance of construction permits/approvals. The implementing agency shall purchase credits at a USFWS, and/or CDFW approved conservation bank and/or establish conservation easements or funds for acquisition of conservation easements as compensatory mitigation to offset impacts to federal and/or state listed species habitat.

Compensatory mitigation shall be provided at the following ratio’s for permanent impacts in accordance with the *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan* (SJMSCP 2000) of not less than 1:1 (area mitigated: area impacted) for agricultural habitat lands and 3:1 for natural lands (non-wetland). Compensatory mitigation may be combined/nested with special-status plant species and sensitive community restoration where applicable. Temporary impact areas shall be restored to pre-project conditions.

If the implementing agency establishes conservation easement(s) (on- and/or off-site) to serve as compensatory mitigation for federal and/or state listed species habitat impacts, compensatory mitigation areas shall have a restrictive covenant prohibiting future development/disturbance and shall be managed in perpetuity to encourage persistence and enhancement of the preserved target species. Compensatory mitigation lands cannot be located on land that is currently held publicly for resource protection. The compensatory mitigation areas shall be managed by a conservation lands management entity or other qualified easement holder. In addition, the implementing agency shall retain a qualified biologist to prepare a Habitat Mitigation and Monitoring Plan (HMMP) to ensure the success of compensatory mitigation sites that are to be conserved for compensation of permanent impacts to federal and/or state listed species. The HMMP shall identify long term site management needs, routine monitoring techniques, techniques, and success criteria, and shall determine if the conservation site has restoration needs to function as a suitable mitigation site. If restoration is required on the conservation site, the HMMP shall contain the restoration components outlined under the Restoration Plan listed in measure BIO-1(c). The HMMP shall be submitted to the implementing agency for approval.
BIO-1(f) Endangered/Threatened Species Avoidance and Minimization

The following measures shall be applied to aquatic and terrestrial species, where appropriate. Project sponsors shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the biological resources screening and assessment (measure BIO-1[a]).

- Preconstruction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 48 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a 100-foot buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or Habitat Conservation Plan (HCP)/Incidental Take Permit (ITP) issued by the USFWS/NMFS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the USFWS, NMFS and/or CDFW should be consulted to determine the appropriate course of action. The results of the pre-construction surveys shall be submitted to the implementing agency for review and approval prior to start of construction.

- Ground disturbance shall be limited to the minimum necessary to complete the project. The project limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have highly visible orange construction fencing installed between said area and the limits of disturbance.

- All projects occurring within/adjacent to aquatic habitats (including riparian habitats and wetlands) shall be completed between April 1 and October 31, to avoid impacts to sensitive aquatic species.

- All projects occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, said biologist shall conduct daily preactivity clearance surveys for endangered/threatened species. Alternatively, and upon approval of the CDFW and/or USFWS or as outlined in project permits, said biologist may conduct site inspections at a minimum of once per week to ensure all prescribed avoidance and minimization measures are begun fully implemented.

- No endangered/threatened species shall be captured and relocated without authorization from the CDFW and/or USFWS.

- If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system.

- If at any time during construction of the project an endangered/threatened species enters the construction site or otherwise may be impacted by the project, all project activities shall cease. At that point the USFWS, NMFS and/or CDFW shall be consulted to determine the appropriate course of action, or the appropriate measures implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies as appropriate.

- All vehicle maintenance/fueling/staging shall occur not less than 100 feet from any riparian habitat or water body. Suitable containment procedures shall be implemented to prevent spills.
A minimum of one spill kit shall be available at each work location near riparian habitat or water bodies.

- No equipment shall be permitted to enter wetted portions of any affected drainage channel.
- All equipment operating within streambeds (restricted to conditions in which water is not present) shall be in good conditions and free of leaks. Spill containment shall be installed under all equipment staged within stream areas and extra spill containment and clean up materials shall be located in close proximity for easy access.
- If project activities could degrade water quality, water quality sampling shall be implemented to identify the pre-project baseline, and to monitor during construction for comparison to the baseline.
- At the end of each work day, excavations shall be secured with cover or a ramp shall be provided to prevent wildlife entrapment.
- All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling.

**BIO-1(g) Non-Listed Special-status Animal Species Avoidance and Minimization**

Depending on the species identified in the BRA, measures shall be selected from among the following to reduce the potential for impacts to non-listed special-status animal species:

- Preconstruction clearance surveys shall be conducted within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer, and shall identify all special-status animal species that may occur on-site. All non-listed special-status species shall be relocated from the site either through direct capture or through passive exclusion. A report of the preconstruction survey shall be submitted to the implementing agency for their review and approval prior to the start of construction.
- A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special-status animal species unearthed by construction activities.
- Upon completion of the project, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the project, including the preconstruction survey results. The report shall be submitted within 30 days of completion of the project.
- If special-status bat species may be present and impacted by the project, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special-status bats, in consultation with the CDFW, where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices, and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step.
  - If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed or as recommended by CDFW through consultation. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.
  - If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the project site. The number and size of alternative roosts
installed will depend on the size of the hibernaculum and shall be determined through consultations with the CDFW.

- If other active roosts are located, exclusion devices such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts discourage bats from occupying the site.

BIO-1(h) Preconstruction Surveys for Nesting Birds

For construction activities occurring during the nesting season (generally February 1 to September 15), surveys for nesting birds covered by the CFGC, the Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act shall be conducted by a qualified biologist no more than 30 days prior to vegetation removal activities.

A qualified biologist shall conduct preconstruction surveys for raptors. The survey for the presence of bald and golden eagles, shall cover all areas within of the disturbance footprint plus a one-mile buffer where access can be secured. The survey area for all other nesting bird and raptor species shall include the disturbance footprint plus a 300-foot and 500-foot buffer, respectively.

If active nests (nests with eggs or chicks) are located, the qualified biologist shall establish an appropriate avoidance buffer ranging from 50 to 300 feet based on the species biology and the current and anticipated disturbance levels occurring in vicinity of the nest. The objective of the buffer shall be to reduce disturbance of nesting birds. All buffers shall be marked using high-visibility flagging or fencing, and, unless approved by the qualified biologist, no construction activities shall be allowed within the buffers until the young have fledged from the nest or the nest fails.

For bald or golden eagle nests identified during the preconstruction surveys, an avoidance buffer of up to one mile shall be established on a case-by-case basis in consultation with the USFWS and CDFW. The size of the buffer may be influenced by the existing conditions and disturbance regime, relevant landscape characteristics, and the nature, timing, and duration of the expected disturbance. The buffer shall be established between February 1 and August 31; however, buffers may be relaxed earlier than August 31 if a qualified ornithologist determines that a given nest has failed or that all surviving chicks have fledged and the nest is no longer in use.

A report of these preconstruction nesting bird surveys and nest monitoring (if applicable) shall be submitted to the implementing agency for review and approval prior to the start of construction.

BIO-1(i) Worker Environmental Awareness Program (WEAP)

Prior to initiation of construction activities (including staging and mobilization), all personnel associated with project construction shall attend WEAP training, conducted by a qualified biologist, to aid workers in recognizing special-status resources that may occur in the project area. The specifics of this program shall include identification of the sensitive species and habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. A fact sheet conveying this information shall also be prepared for distribution to all contractors, their employers, and other personnel involved with construction of the project. All employees shall sign a form documenting that they have attended the WEAP and understand the information presented to them.
Significance After Mitigation

Compliance with the above mitigation measures and all existing state, local and/or federal regulations would reduce impacts to a less than significant level.

| Threshold 2: | Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service |
|Threshold 3: | Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means |

IMPACT BIO-2 IMPLEMENTATION OF TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS MAY RESULT IN IMPACTS TO SENSITIVE HABITATS, INCLUDING FEDERALLY PROTECTED WETLANDS. THIS IMPACT WOULD BE SIGNIFICANT BUT MITIGABLE.

Transportation improvement projects and land use development that may be implemented under the 2018 RTP/SCS have the potential to impact sensitive habitats, including riparian areas and wetlands, as mapped on Figure 10. Due to the programmatic nature of this analysis, the extent and severity of the impacts is currently unknown. Some examples of potential impacts include, but are not limited to: construction and reconstruction/widening of bridges over rivers and creeks, including the San Joaquin River, Mormon Slough, Little Johns Creek, and Duck Creek. These types of projects would have potential to impact riparian areas, as well as water bodies. In addition, projects such as multiuse trails and bike paths may also involve development along riparian corridors or construction of bridges across rivers and creeks. Riparian areas provide wildlife habitat and movement corridors, enabling both terrestrial and aquatic organisms to move along river systems between areas of suitable habitat. Construction of the proposed facilities could have both direct impacts associated with the disturbance of riparian flora and fauna and indirect impacts caused by increased erosion and sedimentation, which can adversely affect downstream water quality.

Direct impacts to sensitive habitats include loss of habitat during construction of individual projects. Indirect impacts include habitat degradation caused by the introduction of invasive plant species incidentally from construction equipment and through selection of invasive landscape plants, as well as erosion of disturbed areas.

The future land use scenario envisioned by the 2018 RTP/SCS would concentrate development primarily within existing urbanized areas. As a result, future infill and TOD projects are likely to result in only limited impacts to riparian habitat or sensitive habitat, though areas that have been relatively free of ground disturbance may contain sensitive native habitats such as Elderberry Savanna, Northern Claypan Vernal Pool, Northern Hardpan Vernal Pool, Valley Oak Woodland, or other vegetation alliances and associations that are deemed sensitive by the CDFW. Furthermore, some areas mapped by CWHR as somewhat disturbed habitats, such as annual grasslands, may at the local scale include sensitive native vegetation with unique assemblages of native plants, such as areas dominated by native wildflowers, vernal pools, and native grasslands. Impacts would be potentially significant.
Mitigation Measures

Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

SJCOG and transportation project sponsor agencies can and should implement the following mitigation measures for applicable transportation projects identified in Appendix B. San Joaquin County and cities within the county can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

BIO-2(a) Jurisdictional Delineation

If the results of measure BIO-1(a) indicates projects implemented under the 2018 RTP/SCS occur within or adjacent to wetland, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies and shall be conducted in accordance with the requirement set forth by each agency. The result shall be a jurisdictional delineation report that shall be submitted to the implementing agency, USACE, RWQCB, and CDFW as appropriate, for review and approval, and the project shall be designed to minimize impacts to jurisdictional areas to the maximum extent feasible. The delineation shall serve as the basis to identify jurisdictional areas to be protected during construction, through implementation of the avoidance and minimization identified in measure BIO-2(f).

BIO-2(b) Wetlands, Drainages, and Riparian Habitat Restoration

Impacts to jurisdictional drainages, wetlands and riparian habitat shall be mitigated in accordance with the SJMSCP at a minimum ratio of 2:1 preservation plus 1:1 creation for natural lands (vernal pools) and 1:1 creation plus 2:1 preservation for natural lands (wetlands other than vernal pools) (acres of habitat restored to acres impacted), and shall occur on-site or as close to the impacted habitat as possible. A mitigation and monitoring plan shall be developed by a qualified biologist in accordance with the restoration plan component requirements in mitigation measure BIO-1(c) above and shall be implemented for no less than five years after construction of the segment, or until the implementing agency and/or the permitting authority (e.g., CDFW or USACE) has determined that restoration has been successful. Alternatively, mitigation shall be accomplished through purchase of credits from an approved wetlands mitigation bank.

BIO-2(c) Landscaping Plan

If landscaping is proposed for a specific project, a qualified biologist/landscape architect shall prepare a landscape plan for that project. This plan shall indicate the locations and species of plants to be installed. Drought tolerant, locally native plant species shall be used. Noxious, invasive, and/or non-native plant species that are recognized on the Federal Noxious Weed List, California Noxious Weeds List, and/or California Invasive Plant Council Inventory shall not be permitted. Species selected for planting shall be regionally appropriate native species that are known to occur in the adjacent native habitat types.
BIO-2(d) Sensitive Vegetation Community Avoidance and Mitigation

If the results of measure BIO-1(a) indicates projects implemented under the 2018 RTP/SCS would impact sensitive vegetation communities, impacts to sensitive communities shall be avoided through final project design modifications. Bright orange construction fencing shall be placed a minimum of 30 feet outside the edge of areas of sensitive communities that will be retained prior to any initiation of ground disturbance activities and shall remain in place until construction is complete. No vehicles, person, materials, or equipment shall be allowed in protected areas.

If the implementing agency determines that sensitive communities cannot be avoided, impacts shall be mitigated on-site or offsite at a ratio of 1:1 for permanently impacted sensitive communities (habitat restored for habitat lost). Temporarily impacted areas shall be restored to pre-project conditions. A Restoration Plan shall be developed by a qualified biologist. The restoration plan shall be implemented for a period of not less than five years. Off-site habitat acquisition and off-site restoration and/or enhancement may be considered if onsite restoration is determined as unachievable, as long as the off-site proposals result in equal compensatory value. Replacement ratios for off-site mitigation may be different than those required for onsite mitigation. The plan shall include, at a minimum, the same components in accordance with the restoration plan component requirements in mitigation measure BIO-1(c) above.

BIO-2(e) Invasive Weed Prevention and Management Program

Prior to start of construction for each project that occurs within or adjacent to native habitats, an Invasive Weed Prevention and Management Program shall be developed by a qualified biologist to prevent invasion of native habitat by non-native plant species. The plan shall be submitted to the implementing agency for review and approval. A list of target species shall be included, along with measures for early detection and eradication.

The plan, which shall be implemented by the project sponsor, shall also include, but not be limited to, the following measures to prevent the introduction of invasive weed species:

- During construction, the project shall make all reasonable efforts to limit the use of imported soils for fill. Soils currently existing on-site should be used for fill material. If the use of imported fill material is necessary, the imported material must be obtained from a source that is known to be free of invasive plant species.
- To minimize colonization of disturbed areas and the spread of invasive species, the contractor shall: stockpile topsoil and redeposit the stockpiled soil after construction, or transport the topsoil to a permitted landfill for disposal.
- The erosion control/ restoration plans for the project must emphasize the use of native species that are expected to occur in the area and that are considered suitable for use at the project site.
- All erosion control materials, including straw bales, straw wattles, or mulch used on-site must be free of invasive species seed.
- Exotic and invasive plant species shall be excluded from any erosion control seed mixes and/or landscaping plant palettes associated with the proposed project
- All disturbed areas shall be hydroteed with a mix of locally native species upon completion of work in those areas. In areas where construction is ongoing, hydroteeding shall occur where no construction activities have occurred within six (6) weeks since ground disturbing activities ceased. If exotic species invade these areas prior to hydroteeding, weed removal shall occur in consultation with a qualified biologist and in accordance with the restoration plan.
BIO-2(f) Wetlands, Drainages, and Riparian Habitat Best Management Practices During Construction

The following best management practices shall be required for development within or adjacent to wetlands, drainages, or riparian habitat:

- Access routes, staging, and construction areas shall be limited to the minimum area necessary to achieve the project goal and minimize impacts to other waters including locating access routes and ancillary construction areas outside of jurisdictional areas.
- To control sedimentation during and after project implementation, appropriate erosion control materials shall be deployed to minimize adverse effects on jurisdictional areas in the vicinity of the project.
- Project activities within the jurisdictional areas should occur during the dry season (typically between June 1 and November 1) in any given year, or as otherwise directed by the regulatory agencies.
- During construction, no litter or construction debris shall be placed within jurisdictional areas. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site.
- All project-generated debris, building materials, and rubbish shall be removed from jurisdictional areas and from areas where such materials could be washed into them.
- Raw cement, concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic species resulting from project-related activities, shall be prevented from contaminating the soil and/or entering wetlands, drainages or riparian habitat.
- All refueling, maintenance, and staging of equipment and vehicles shall occur at least 100 feet from bodies of water and in a location where a potential spill would not drain directly toward aquatic habitat (e.g., on a slope that drains away from the water source). Prior to the onset of work activities, a plan must be in place for prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measures to take should an accidental spill occur.

Significance After Mitigation

Compliance with the above mitigation measures and existing State, local and/or federal regulations would reduce impacts to a less than significant level.

| Threshold 4: | Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites |

IMPACT BIO-3 Implementation of transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS may impact wildlife movement, including fish migration, and/or impede the use of a native wildlife nursery. This impact would be significant and unavoidable.

Transportation infrastructure projects in the 2018 RTP/SCS primarily involve expansion of existing facilities in urbanized or already developed areas, rather than the construction of new or extension of existing infrastructure into undeveloped portions of each county. However, expansion of existing
roadways can decrease connectivity as widening of roads creates a larger barrier and make movement more difficult, especially if roadways prior to widening and expansion were narrow enough and traffic volumes low enough that movement was still possible. Construction of new roadways and crossings (across rivers and drainages) would introduce new potential barriers to movement. In addition to the roadways themselves, transportation improvement projects could include new segments of fencing or walls that that could hinder wildlife movement. Temporary disruption of wildlife movement could also occur during construction if temporary water diversions are required for projects located within creeks and rivers. In addition, construction activity and noise could also temporarily alter the behavior of wildlife in the area and therefore temporarily disrupt wildlife movement patterns.

New roadways, bike paths, and trails would also increase human activity in areas where sensitive biological resources could occur and have the potential to indirectly disrupt behavior of animals which could in turn disrupt wildlife movement patterns. In particular, proposed bridge, trail and bikeway, and new road construction projects could increase human activity (and domestic animals) in the vicinity of riparian areas, wildlife nurseries or corridors, and potentially sensitive habitats. Increased noise and human presence during construction, as well as increased trash which may attract predators to the project site and discourage wildlife use of surrounding natural habitat.

The future land use scenario envisioned by the 2018 RTP/SCS would encourage infill and TOD within existing urbanized areas. The majority of the future infill and TOD projects would likely be in areas that provide limited or no wildlife movement. However, even the elimination of limited wildlife movement opportunities could further isolate areas of native habitat occupied by both sensitive and common native wildlife species.

Based on the above analysis, impacts related to transportation projects and impacts related to the future land use scenario envisioned by the 2018 RTP/SCS would remain potentially significant even with mitigation.

**Mitigation Measures**

Implementing agencies that choose to participate in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) can reduce impacts to biological resources resulting from a proposed project to a level of less-than-significant if the proposed project is consistent with the SJMSCP.

SJCOG and transportation project sponsor agencies can and should implement the following mitigation measures for applicable transportation projects identified in Appendix B. San Joaquin County and cities within the county can and should implement these measures, where relevant to land use projects implementing the 2018 RTP/SCS. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions.

**BIO-3(a) Project Design for Wildlife Connectivity**

All projects including long segments of fencing and lighting shall be designed to minimize impacts to wildlife. Fencing or other project components shall not block wildlife movement through riparian or other natural habitat. Where fencing or other project components that may disrupt wildlife movement is required for public safety concerns, they shall be designed to permit wildlife movement by incorporating design features such as:

- A minimum 16 inches between the ground and the bottom of the fence to provide clearance for small animals;
- A minimum 12 inches between the top two wires, or top the fence with a wooden rail, mesh, or chain link instead of wire to prevent animals from becoming entangled; and
- If privacy fencing is required near open space areas, openings at the bottom of the fence measure at least 16 inches in diameter shall be installed at reasonable intervals to allow wildlife movement, or the fence may be installed with the bottom at least 16 inches above the ground level.
- If fencing or other project components must be designed in such a manner that wildlife passage would not be permitted, wildlife crossing structures shall be incorporated into the project design as appropriate.
- Lighting installed as part of any project shall be designed to be minimally disruptive to wildlife (see mitigation measure AES-3(a) Roadway Lighting for lighting requirements)

**BIO-3(b) Maintain Connectivity in Drainages**

No permanent structures shall be placed within any drainage or river that would impede wildlife movement (i.e., no hardened caps or other structures in the stream channel perpendicular to stream flow be left exposed or at depth with moderate to high risk for exposure as a result of natural bed scour during high flow events and thereby potentially create impediments to passage). In addition, upon completion of construction within any drainage, areas of stream channel and banks that are temporarily impacted shall be returned to pre-construction contours and in a condition that allows for unimpeded passage through the area once the work has been complete.

If water is to be diverted around work sites, a diversion plan shall be submitted to SJCOG and/or local jurisdiction for review and approval prior to issuance of project construction permits/approvals. The diversion shall be designed in a way as to not impede movement while the diversion is in place.

**BIO-3(c) Construction Best Management Practices to Minimize Disruption to Wildlife**

The following construction BMPs shall be incorporated into all grading and construction plans in order to minimize temporary disruption of wildlife, which could hinder wildlife movement:

- Designation of a 20 mile per hour speed limit in all construction areas.
- Daily construction work schedules shall be limited to daylight hours only.
- Mufflers shall be used on all construction equipment and vehicles shall be in good operating condition.
- All trash shall be placed in sealed containers and shall be removed from the project site a minimum of once per week.
- No pets are permitted on project site during construction.

**Significance After Mitigation**

Compliance with the above mitigation measures and existing State, local and/or federal regulations would reduce impacts to a less than significant level.
Threshold 5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

**IMPACT BIO-4 IMPLEMENTATION OF TRANSPORTATION IMPROVEMENTS AND THE LAND USE SCENARIO ENVISIONED BY THE 2018 RTP/SCS WOULD NOT CONFLICT WITH ANY LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES, SUCH AS A TREE PRESERVATION POLICY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.**

Most municipalities in San Joaquin County have local ordinances and policies in place that protect native habitat and/or native and nonnative trees in urban landscapes, as well as in unincorporated county lands. These ordinances and policies vary in their definitions of protected trees (e.g., certain species, percent within the public right-of-way, aesthetically suitable, deep rooted trees or a combination thereof) and in the requirements for ordinance or policy compliance. In addition, counties and cities may have local ordinances or policies that are intended to protect other biological resources such as wetlands and drainages, riparian habitat and other sensitive habitat areas.

Protected trees (i.e., heritage oaks) and other biological resources which are protected by city and/or county ordinances and/or policies are expected to be encountered at the locations where projects administered under the 2018 RTP/SCS would occur and therefore there is potential for conflict with local ordinances and/or policies. Most of the transportation projects in the 2018 RTP/SCS are expansions or maintenance of existing roads. Because ground disturbances would be fairly limited as a result, the potential removal of native trees and disturbances to other biological resources protected by local policies or ordinances are expected to be minimal for most projects.

All future development projects potentially occurring within local jurisdictions as well as the transportation projects proposed for implementation under the 2018 RTP/SCS would be required to follow city and county development requirements, including compliance with local policies, ordinances, and applicable permitting procedures related to protection biological resources. Project-level analysis would identify potentially significant conflicts with local policies and ordinances as well as minimize, mitigate or avoid those impacts through the design, siting, and permitting process; and provide mitigation for any significant impacts as a condition of project approval and permitting. Therefore, the potential for approved development projects under the future land use scenario as well as proposed transportation project to conflict with local policies or ordinances protecting biological resources is considered less than significant.

**Mitigation Measures**

No Mitigation Measures are required.

**Significance After Mitigation**

Impacts would be less than significant without mitigation.
**Threshold 6:** Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

**Impact BIO-5** Implementation of the transportation improvements and the land use scenario envisioned by the 2018 RTP/SCS would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Impacts would be significant but mitigable.

One adopted and one draft conservation plan occur within San Joaquin County. The *San Joaquin County Multi-Species Habitat Conservation and Open Space Plan* (SJMSCP 2000) was adopted by the San Joaquin Transportation Authority on November 14, 2000. The purpose of the SJMSCP is to comprehensively minimize and mitigate impacts to the County’s special-status plant and wildlife species. The SJMSCP estimates an overall habitat conversion of 109,302 acres of open space land to non-open space uses through the 50-year term of the SJMSCP. The Draft Bay Delta Conservation Plan (BDCP 2014) was completed in November 2014 and is currently under public review. The purpose of the BDCP is to assist restoration of key ecosystem functions in the highly altered environment of Suisun Bay/Marsh and the Delta while providing reliable water supplies to the residents and businesses of California. The BDCP covers activities primarily associated with activities related to the development and operation of water conveyance infrastructure associated with the State Water Project and activities that could affect the covered special-status species.

The 2018 RTP/SCS would not alter land use designations in any way that would adversely affect known wildlife linkages, migration corridors, etc. within areas covered by the SJMSCP or BDCP. The small quantity of low-quality habitat loss associated with implementation of the 2018 RTP/SCS would be considered a less than significant effect as a result of the amount of similar and higher value vegetation communities and land cover types within San Joaquin County that are already held in conservation or designated as open space. Implementation of Mitigation Measures BIO-1 through BIO-3 should be applied to each future project, as appropriate, that is tiering off from this Program EIR. Adherence to Mitigation Measure BIO-1 through BIO-3 would ensure that impacts related to compliance with the SJMSCP and BDCP remain less than significant.

**Mitigation Measures**

Implementation of Mitigation Measures BIO-1 through BIO-3 are required.

**Significance After Mitigation**

Implementation of Mitigation Measures BIO-1 through BIO-3 would reduce impacts to a less than significant level.

**c. Cumulative Impacts**

Biological resources impacts as described above are related to: direct and indirect impacts to sensitive/special-status species or their habitat; significant impacts to riparian, wetland, or other sensitive natural communities; or interference with wildlife movement. Implementation of the land use development pattern under the 2018 RTP/SCS could result in regional impacts on special-status species, riparian, wetland, or other sensitive natural communities, as well as wildlife movement. Similarly, development pursuant to other local and regional planning efforts within the greater cumulative impact area could also have impacts on these resources, and as a result, cumulative
impacts would be considered potentially significant. Due to the potential direct and indirect impacts that may occur as a result of the 2018 RTP/SCS, the proposed 2018 RTP/SCS would contribute considerably to this impact, and cumulatively is potentially significant.

The mitigation measures presented in Section 4.4.2.b set requirements for surveys and actions to be taken if biological resources have potential to be impacted by 2018 RTP/SCS projects as well as the future land use scenario. If the implementing agency and/or project sponsor adopts these mitigation measures as well as complies with existing State, local and/or federal regulations the contribution of the proposed 2018 RTP/SCS to cumulative impacts would reduce those impacts but would still be cumulatively considerable as biological impact could still occur.