6. BIOLOGICAL RESOURCES

This chapter evaluates biological resources occurring in the Middle Green Valley Specific Plan area, describes the potential impacts of the proposed Specific Plan on those resources, and identifies related mitigation measures, including additional survey and permitting requirements, that would be incorporated into the Specific Plan to minimize potentially significant impacts.

As described in chapter 1 (Introduction), this EIR is a program EIR. Biological resources are evaluated to the level of detail appropriate for a program-level document. Because specific designs for buildout in the plan area would be developed at a later date by individual project proponents, potential impacts on biological resources are discussed in a broader sense related to the zoning and development standards described in the Specific Plan. Corresponding mitigation measures include descriptions of more detailed survey actions, best management practices (BMPs), permitting requirements that would need to be met, and examples of design measures that can be incorporated into future project-level designs as mitigation.

Section 4.4 of the Draft Middle Green Valley Specific Plan describes administrative and jurisdictional procedures related to biological resources that would apply in implementing the Specific Plan.

The descriptions in this chapter are based on an independent research, field reconnaissance and evaluation conducted by WRA, Inc., consulting biologists. Appendix 23.3 of this EIR contains supplemental biological resources information prepared by WRA, including summary lists of plan and wildlife species considered in the evaluation, and a list of references.

6.1 SETTING

6.1.1 Countywide Context

(a) County Biological Resources Overview. Solano County contains a variety of habitat types, including extensive areas of marshland and wetlands along the Bay and Delta, woodlands of the Coast Range, oak savannah, and freshwater marshes, vernal pool complexes, and streamside riparian woodlands. Pasture and agricultural lands are widespread and also provide natural habitat. These habitat types support numerous plants and animals, including species classified as rare or threatened such as the California red-legged frog, Callippe silverspot butterfly, giant garter snake, Swainson's hawk, fairy shrimp, California tiger salamander, and a large number of plant species.

(b) Solano County General Plan. The Solano County General Plan establishes policies and standards related to a wide variety of anticipated actions within the unincorporated areas of Solano County. The General Plan identifies the Middle Green Valley area as a "Special Study Area" for development of a specific plan or master plan, with the goal to "Protect and maintain the rural character of Middle Green Valley while allowing opportunities for compatible residential

development to occur."[1] Pertinent Solano County General Plan policies specifically related to the protection of biological resources are described in subsection 6.2.1(a) below.

(c) Solano Multispecies Habitat Conservation Plan. The Solano Multispecies Habitat Conservation Plan (HCP)[2] is being developed by the Solano County Water Agency, the U.S. Fish and Wildlife Service (USFWS), and partner agencies to permit many activities within Solano County that have the potential to affect federally listed endangered species. At the time of preparation of this EIR (August 2009), the Final Administrative Draft HCP (ADHCP) was available for reference. The ADHCP proposes a variety of Best Management Practices (BMPs) to avoid and minimize impacts to special-status species in Solano County. For unavoidable impacts, the ADHCP proposes the establishment of a system of preserves as a means of compensating for biological resource impacts that result from activities that are covered by the ADHCP. The HCP is discussed in more detail in subsections 6.2.1(b) and 6.3.3 below. HCP BMPs for species with the potential to occur in the Middle Green Valley Specific Plan area are recommended as mitigation measures in this EIR.

6.1.2 Middle Green Valley Specific Plan Area

The Middle Green Valley Specific Plan area consists of cultivated agricultural fields, rural residences, vineyards, grazed grasslands, and oak woodlands. The plan area is a broad valley surrounded by hills to the east and west. The western hills are largely undeveloped and contain grazed annual grassland with some oak woodlands. The hills to the east are partially developed with estate lots, and contain oak woodland and grassland habitats. The valley floor contains cultivated agricultural fields, vineyards, riparian areas, and rural development. Green Valley Creek and Hennessey Creek cross the valley floor, flowing south to Suisun Bay and supporting riparian trees that run the length of the plan area. The elevation of the plan area ranges from approximately 54 to 750 feet NGVD.

The following description of biological resources present, or with the potential to be present, in the plan area is based on a review of background information and field visits conducted by WRA, Inc. on March 2 and April 23 and 24, 2009. Background information reviewed prior to the field study includes:

- Soil Survey of Solano County, California (Natural Resources Conservation Service [NRCS], U.S. Department of Agriculture [USDA] 1977),
- U.S. Geological Survey (USGS) Cordelia 7.5' quadrangle map,
- National Wetland Inventory (NWI) mapping (USFWS, 2009),
- California Department of Fish and Game (CDFG) California Natural Diversity Database (CDFG 2009),
- California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Plants (2009),

[1]Solano County, Solano County General Plan, December 2008, page LU-54.

[2]Solano County Water Agency (SCWA), *Final Administrative Draft Solano County Multispecies Habitat Conservation Plan* (HCP), prepared by LSA, 2009

- U.S. Fish and Wildlife Service (USFWS species list for Solano County and Cordelia 7.5' quadrangle (USFWS 2009),

- Final Administrative Draft Solano County Multispecies HCP (Solano County Water Agency 2009), and

- Available aerial photography of the plan area.

Plan area plant communities were mapped based on descriptions contained in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).[1] In some cases it was also necessary to identify variants of community types or to describe non-vegetated areas that are not described in the Holland report.

WRA biologists also developed lists of plant and wildlife species, including special-status species, that were observed during the field visits in the plan area (see Appendix 23.2). In addition, the potential for special-status species that were not observed was evaluated based on background information listed above and available species-specific literature. The following sections present the results of the field surveys, vegetation community mapping, and evaluation of special-status species known to occur and with potential to occur within the plan area.

The field surveys and biological resource evaluation results are intended to provide detailed information for the evaluation of biological resources within the plan area and associated potential project impacts at the program level. In addition, further protocol-level surveys necessary to establish the presence or absence of special-status species and/or extent of regulated vegetation communities for individual project-level applicants are detailed in the mitigation discussion in this chapter.

(a) Vegetation and Aquatic Communities. Vegetation and aquatic communities within the plan area are described below in order of largest to smallest. Figure 6.1 shows the location and extent of each vegetation community. Table 6.1 summarizes the approximate acreage of each vegetation and aquatic community mapped during the plan area field surveys. The description below also includes discussions of applicable federal, state or local laws and regulations pertaining to each community.

(1) Non-Native Grassland. Non-native grassland is a dense to sparse cover of annual grasses, often associated with numerous species of showy-flowered, native annual forbs. The plan area contains approximately 573.6 acres of non-native grassland (see Figure 6.1). Non-native grassland communities are located throughout the plan area, but primarily in the western hills. Non-native grassland occurs intermixed with oak woodland communities, agricultural areas, and ruderal fields, and is dominated by medusahead (*Taeniatherum caput-medusae*), Italian ryegrass (*Lolium multiflorum*), foxtail barley (*Hordeum murinum*), soft chess (*Bromus hordeaceus*), bindweed (*Convolvulus arvensis*), and rose clover (*Trifolium hirtum*).

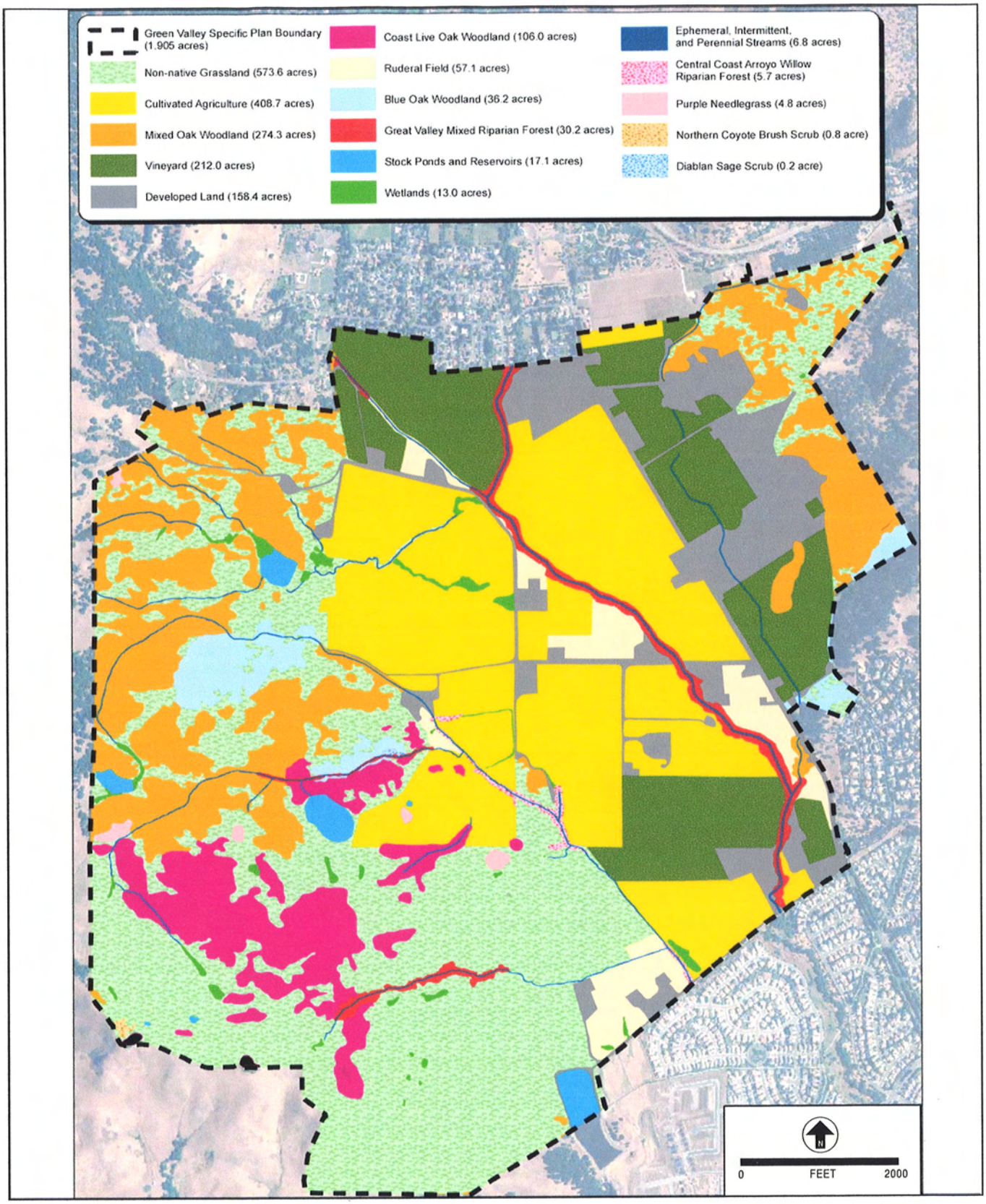
(2) Cultivated Agriculture. Cultivated agricultural fields are areas that are irrigated, tilled, and cultivated for agricultural row crops such as vegetables or wheat. The plan area contains approximately 408.7 acres of cultivated agriculture. Agricultural crops are planted early in the season and often rotated with other crops on a yearly or seasonal basis. Cultivated agriculture

[1]Hollan, Dan C., *Preliminary Descriptions of the Terrestrial Natural Communities of California*, 1986.

Table 6.1
VEGETATION AND AQUATIC COMMUNITIES MAPPED IN THE PLAN AREA

Community		Mapped Acreage
(1)	Non-Native Grassland	573.6 acres
(2)	Cultivated Agriculture	408.7 acres
(3)	Mixed Oak Woodland	274.3 acres
(4)	Vineyard	212.0 acres
(5)	Developed Land	158.4 acres
(6)	Coast Live Oak Woodland	106.0 acres
(7)	Ruderal Field	57.1 acres
(8)	Blue Oak Woodland	36.2 acres
(9)	Great Valley Mixed Riparian Forest	30.2 acres
(10)	Stock Ponds and Reservoirs	17.1 acres
(11)	Wetlands	13.0 acres
(12)	Ephemeral, Intermittent, and Perennial Streams	6.8 acres
(13)	Central Coast Arroyo Willow Riparian Forest	5.7 acres
(14)	Purple Needlegrass Grassland	4.8 acres
(15)	Northern Coyote Brush Scrub	0.8 acre
(16)	Diablan Sage Scrub	0.2 acre
Total		**1,904.9 acres**

SOURCE: WRA, Inc., 2009



SOURCE: WRA

Figure 6.1

EXISTING VEGETATION AND AQUATIC COMMUNITIES IN THE PLAN AREA

areas within the plan area occur mostly on the valley floor and are dominated by wheat (*Triticum* sp.) and oats (*Avena* sp.), primarily for hay production, with some fields planted with alfalfa or vegetable crops. These areas typically occur adjacent to active vineyards, developed areas, and riparian corridors.

(3) Mixed Oak Woodland. Mixed oak woodland occurs as a mix of hardwood species, dominated by valley oak (*Quercus lobata*), coast live oak, and California bay (*Umbellularia californica*) at nearly equal relative cover. Approximately 274.3 acres of mixed oak woodland are located primarily within the eastern and western hills in the plan area. Species composition within varies somewhat within this community, with one or more of the above listed species dominant in a particular area. Additional tree species that are common in this community type include blue oak and California buckeye (*Aesculus californica*). Within the plan area, mixed oak woodland is the predominant woodland community. The understory varies from moderate to sparse cover by shrubs such as poison oak (*Toxicodendron diversilobum*) and snowberry (*Symphoricarpos albus*), along with species typical of non-native grassland communities.

Oak woodland is a sensitive plant community identified by CDFG on its *List of California Natural Communities Recognized by the CNDDB*, and therefore must be considered and evaluated under CEQA.[1] In addition, California Senate Bill (SB) 1334 requires analysis of potential impacts on oak woodland communities under CEQA and requires counties to develop ordinances designed to protect and mitigate for potential impacts on oak woodland communities.

(4) Vineyard. Vineyard areas within the plan area occur on the valley floor and are characterized by the cultivation of grapes (*Vitis* sp.) for viticulture purposes. Small populations of mustard and rose (*Rosa* sp.) border the vineyard areas and are planted in intermediary rows with the grapes. Approximately 212.0 acres of vineyard are present in the plan area. Vineyards are classified separately from cultivated agriculture here because the agricultural practices involved in viticulture differ from those in cultivated agriculture.

(5) Developed Land. Developed land comprises approximately 158.4 acres within the plan area and includes rural residences, agricultural outbuildings, and single-family residential developments. Rural residential areas are characterized by large lots (typically 1 to 5 acres) and may contain remnants of native or naturalized plant communities, typically non-native grasslands. However, human activities, development, and ornamental vegetation typically dominate these areas. Ornamental vegetation observed in developed areas includes eucalyptus (*Eucalyptus globulus*), oleander (*Nerium oleander*), and Monterey pine (*Pinus radiata*). Single family residential developments in the plan area are located along the base of the eastern hills, east of Green Valley Road.

(6) Coast Live Oak Woodland. The coast live oak community is dominated by coast live oak (*Quercus agrifolia*), with few, if any, co-dominants. The shrub layer of this community is poorly developed, but may include toyon (*Heteromeles arbutifolia*), laurel sumac (*Rhus laurina*), and blue elderberry (*Sambucus mexicana*). The herb under story of coast live oak woodlands is continuous and dominated by non-natives, including ripgut brome (*Bromus diandrus*) and bull thistle (*Cirsium vulgare*). Within the plan area, coast live oak woodland occurs along the slopes and ravines in the western hills, comprising approximately 106.0 acres.

[1]California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

As noted in the description of Mixed Oak Woodland, oak woodland is a sensitive plant community identified by CDFG on its *List of California Natural Communities Recognized by the CNDDB* and therefore must be considered and evaluated under CEQA.[1] In addition, SB 1334 requires analysis of potential impacts on oak woodland communities under CEQA and requires counties to develop ordinances designed to protect and mitigate for potential impacts on oak woodland communities.

(7) Ruderal Field. Ruderal habitat includes areas that have been used or disturbed in some manner and may contain ruderal herbaceous weeds no longer in a natural state. Within the plan area, approximately 57.1 acres of ruderal habitat occurs in former agricultural fields and pasture lands, in highly disturbed areas, and along roads. Plant species observed in ruderal portions of the plan area include mustard (*Brassica* spp.), Italian thistle (*Carduus pycnocephalus*), periwinkle (*Anagalis arvensis*), spring vetch (*Vicia sativa*), and redstem filaree (*Erodium cicutarium*). These ruderal field areas were primarily observed along the edges of the western hills.

(8) Blue Oak Woodland. Blue oak woodland communities are dominated by blue oak (*Quercus douglasii*). Coast live oak and California bay are also found in the canopy of these areas, but at lower density than in areas classified as mixed oak and coast live oak woodland. Blue oak woodland is common throughout central and northern California from 100 to 5000 feet in elevation and consists of an open to closed tree canopy with or without shrubs and an understory of grasses and herbs. The plan area blue oak woodland understory contains sparse to moderate cover by shrubs such as poison oak and snowberry, along with vegetation associated with non-native grassland. Approximately 36.2 acres of blue oak woodland are present in two areas in the western and eastern hills within the plan area.

Blue oak woodland is a sensitive plant community identified by CDFG on its *List of California Natural Communities Recognized by the CNDDB* and therefore impacts on this community must be considered and evaluated under CEQA.[2] California senate bill (SB) 1334 also requires analysis of potential impacts on oak woodland communities under CEQA and requires counties to develop ordinances designed to protect and mitigate for potential impacts on oak woodland communities.

(9) Great Valley Mixed Riparian Forest. Great valley mixed riparian forest is a comparatively tall, dense, winter-deciduous, broadleafed riparian forest type (Holland 1968). The tree canopy is fairly well closed and populated by species including black walnut (*Juglans hindsii*), cottonwood (*Populus fremontii*), and willow (*Salix laevigata*). This community is usually found on floodplains of low-gradient, depositional streams of the Great Valley below an elevation of 500 feet. Within the plan area, approximately 30.2 acres of this community are found along the Green Valley Creek corridor.

Such riparian habitat within the plan area is protected under sections 1600 through 1608 of California Fish and Game Code. Removal of riparian vegetation could require a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

[1]California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

[2]California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

(10) Stock Ponds and Reservoirs. Stock ponds are human-made water-bodies used to support livestock. Reservoirs are generally larger bodies of water that are subject to more routine maintenance activities, and contain water that is pumped, diverted, or impounded. Approximately 17.1 acres of areas classified as stock ponds and reservoirs are present in the plan area. These areas are minimally vegetated and hold water seasonally or throughout the year. Within the plan area, stock ponds occur in the western hills. One reservoir, the USBR Solano Project Terminal Reservoir (see section 16.1.1[c] herein), is located at the southern boundary of the plan area at the end of Reservoir Lane and maintained by the Solano Irrigation District (pumped water).

Stock ponds within the plan area are potentially regulated by the Corps under Section 404 of the Clean Water Act and by the San Francisco Regional Water Quality Control Board (Water Board) under section 401 of the Clean Water Act and the Porter-Cologne Act. Projects involving impacts on stock ponds and reservoirs may require permits from the Corps and Water Board.

(11) Wetlands. Wetland communities occurring within the plan area are dominated by hydrophytic vegetation and contain indicators of wetland hydrology and/or soils. Wetland area types observed in the plan area include seasonal wetlands, freshwater seeps, and emergent marsh. Vegetation communities in wetlands varied depending on the hydrology regime of a particular area. The areas were typically dominated by hydrophytic vegetation such as spreading rush (*Juncus effusus*), irish-leaved rush (*Juncus xiphiodies*), water knotweed (*Polygonum amphibium*), and tall nutsedge (*Cyperus eragrostis*).

Based on the assessment level site visits, there are approximately 13.0 acres of potentially jurisdictional wetland areas within the plan area. Such wetland areas are potentially regulated by the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act, and by the Water Board under section 401 of the Clean Water Act and the Porter-Cologne Act. Projects involving impacts on delineated wetlands require permits from the Corps and Water Board.

(12) Ephemeral, Intermittent, and Perennial Streams. Green Valley Creek is the only perennial or semi-perennial stream within the plan area--i.e., the stream contains water throughout the year in most years. Intermittent and ephemeral streams within the plan area occur in the hills, interspersed within oak woodlands and grassland communities. These intermittent and ephemeral streams support seasonal water flows and short-term water flow after storm events. Areas that were mapped as perennial, intermittent, and ephemeral streams were identified as contained within an ordinary high water mark as defined by regulations of the Corps 2005 Regulatory Guidance Letters. The plan area contains a total of approximately 6.8 acres of ephemeral, intermittent, or perennial stream area.

Streams within the plan area are potentially regulated by the Corps under Section 404 of the Clean Water Act, by the Water Board under section 401 of the Clean Water Act and the Porter-Cologne Act, and by CDFG under sections 1600 through 1616 of California Fish and Game Code. Projects involving impacts on streams may require permits from all three of these resource agencies. Corps regulatory jurisdiction in streams extends to the "Ordinary High Water Mark" as defined by Section 404 regulations. CDFG jurisdiction extends to the top of bank of the stream, or to the edge of surrounding riparian vegetation, whichever is farthest.

(13) Central Coast Arroyo Willow Riparian Forest. Central Coast Arroyo Willow Riparian Forest consists of a dense, low, closed canopy, broadleaf and winter deciduous forest. This

community is dominated by arroyo willow *(Salix lasiolepis)*, which often grows as a large, tree-like shrub. Additional characteristic species include white alder (*Alnus rhombifolia*), California wax-myrtle (*Myrica californica*), and other willow species. Within the plan area, approximately 5.7 acres of this community occur along a portion of Hennessey Creek.

Such riparian habitat within the plan area may be subject to CDFG regulations. Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

(14) Purple (Valley) Needlegrass Grassland. Purple needlegrass grassland occurs on fine-textured soils, often near oak woodland communities, and typically contains approximately 20- to 50-percent cover by purple needlegrass (*Nassella pulchra*) (Holland 1986). Native and introduced annuals occur between the perennial, tussock forming purple needlegrass; characteristic species observed include yarrow (*Achillea millefolium*), blow wives (*Achyrachaena mollis*), and blue-eyed grass *(Sisyrinchium bellum)*. Within the plan area, small patches of this community comprising approximately 4.8 acres are present in the western hills, interspersed with non-native grassland and oak woodland habitats.

Purple needlegrass grassland is a sensitive plant community identified by CDFG on its *List of California Natural Communities Recognized by the CNDDB*. Impacts on sensitive natural communities identified in local or regional plans, policies, or regulations or by CDFG or USFWS must be considered and evaluated under CEQA.[1]

(15) Northern Coyote Brush Scrub. Northern Coyote Brush Scrub consists of low shrub, usually dense but with scattered grassy openings. This community is dominated by coyote brush (*Baccharis pilularis*), along with sticky monkeyflower and poison oak. Within the plan area, a small area (approximately 0.8 acres) of this vegetation community occurs in the western hills, near the southwestern boundary of the plan area.

(16) Diablan Sage Scrub. Diablan sage scrub typically occurs in shallow rocky soils on hot southern exposures of inner coast mountain ranges from Mount Diablo south to the Cholame Hills. Typical Diablan sage scrub species within the plan area include California sage, sticky monkeyflower, poison oak (*Toxicodendron diversilobum*), and toyon (*Heteromeles arbutifolia*). A small patch (approximately 0.2 acre) of Diablan sage scrub occurs in the western hills within the plan area.

(b) Special-Status Plant Species in the Plan Area. Special-status species are those plants and animals that, because of their recognized rarity or vulnerability, are recognized by federal, state, or other agencies as deserving special consideration. Some of these species receive specific legal protection pursuant to federal or state endangered species legislation. Others lack such legal protection, but have been characterized as "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local governmental agencies (counties, cities, and special districts) to meet local conservation objectives. These species are referred to collectively as "special-status species."

Listed below are special-status plant species that were observed during the site visits, or have the potential to occur within the plan area based on the species habitat requirements and

[1]California Code of Regulations: Title 14, Div. 6, Chap. 3, Appendix G.

evaluation of habitats present in the plan area. Table 23.3.1 in Appendix 23.3 of this EIR contains a complete list of plant species that were observed during the site visits. Table 6.2 in this chapter contains a complete list of special-status plant species reviewed as part of this evaluation, including habitat requirements and the evaluation of habitat suitability in the plan area. Table 6.2 was created based on available information from the CDFG California Natural Diversity Database (2009), California Native Plant Society (CNPS) Online Database (2009), ADHCP, U.S. Fish and Wildlife Service (USFWS) list for Solano County and the Cordelia USGS 7.5' quadrangle (2009), and a review of species habitat requirements noted in available literature. Figure 6.2 shows recorded special-status plant species occurrences within the vicinity of the plan area.

(1) *Special-Status Plant Species Observed or with Known Occurrences within the Plan Area.* The following special-status plant species were observed in the riparian area along Hennessey Creek:

- Northern California black walnut (*Juglans hindsii*) (CNPS List 1B). Northern California black walnut is a tree in the walnut family (Juglandaceae) that occurs in riparian forest and riparian woodland from 0 to 440 meters in elevation. The species is historically known from Alameda, Butte, Contra Costa, Lake, Napa, Sacramento, Solano, Sonoma, and Yolo counties; however, it can be difficult to determine which stands are native. The species blooms from April to May.

(2) Special-Status Plant Species with Potential Habitat in the Plan Area. The plan area also contains potential habitat for the following special-status plant species.

- Alkali milk-vetch (*Astragalus tener var. tener*) (CNPS List 1B). Alkali milk-vetch is an annual herb in the pea family (Fabaceae). It occurs within alkali playa, valley and foothill grassland, and vernal pool habitats, and is most often seen in association with low ground, alkali flats and flooded lands. This species is known from Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Joaquin, Solano, Sonoma, Stanislaus, and Yolo counties and grows at elevations ranging from 1 to 170 meters. Blooming occurs from March to June. Though no alkali or vernal pool habitat has been observed in the plan area, there are a few known occurrences of alkali milk vetch in areas that are not specified as alkaline. Wetlands, streams, and surrounding low-lying areas in the plan area valley may support this species.

- Big-scale balsamroot (*Balsamorhiza macrolepis var. macrolepis*) (CNPS List 1B). Big-scale balsamroot is a perennial herb in the sunflower family (Asteraceae) that typically occurs in cismontane woodland, valley and foothill grassland, and chaparral habitats, sometimes with serpentinite soils, from 90 to 1,400 meters in elevation. This species typically occurs in areas of thin soil coverage, such as rocky areas on hillsides in sandy, clay, and serpentine soils. It is known from many counties in the greater San Francisco Bay Area and Central Valley and blooms March to June. Grazed grassland, woodland, and shrub/scrub communities in the plan area eastern and western hills may support this species. Uncultivated areas with shallow soils in the plan area valley may also support this species.

  Figure 6.2 shows a portion of the big-scale balsamroot occurrence within the plan area. As noted in the CNDDB, this occurrence was mapped from a collection from the year 1933. The collection did not contain specific information regarding the exact location of this

Table 6.2
SPECIAL-STATUS PLANT SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Astragalus tener var. tener alkali milk vetch	RP, List 1B	Playas, valley and foothill grassland (adobe clay), vernal pools/ alkaline. 1-60 meters. Blooms March-June.	**Moderate Potential.** No vernal pools or alkaline wetlands were observed during the site visits. However, a few species occurrences are known from seasonally wet meadows.
Atriplex joaquiniana San Joaquin spearscale	List 1B	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland/ alkaline. 1-835 meters. Blooms April-October.	**No Potential.** Species is strongly associated with alkaline conditions. Alkaline habitat does not occur within the plan area. Suitable habitat is not present.
Balsamorhiza macrolepis var. *macrolepis* big-scale balsamroot	List 1B	Chaparral, cismontane woodland, valley and foothill grassland/ sometimes serpentinite. 90-1,400 meters. Blooms March-June.	**Moderate Potential.** Rockier portions of the hillside grassland areas have the potential to support this species.
Blepharizonia plumosa big tarplant	List 1B	Valley and foothill grassland. 30-505 meters. Blooms July -October.	**Moderate Potential.** Suitable habitat present within the plan area.
Brodiaea californica var. *leptandra* narrow-anthered California brodiaea	List 1B	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/volcanic. 110-915 meters. Blooms May-July.	**Moderate Potential.** Suitable habitat present within the plan area. A documented observation of this species occurs within three miles of the plan area.
Calochortus pulchellus Mt. Diablo fairy lantern	List 1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. 30-840 meters. Blooms April-June.	**Moderate Potential.** Suitable habitat present within the plan area.
Castilleja affinis ssp. *neglecta* Tiburon Indian paintbrush	FE, ST, List 1B	Valley and foothill grassland. 60-400 meters. Blooms April-June.	**Moderate Potential.** Suitable habitat present within the plan area.
Ceanothus purpureus holly-leaved ceanothus	List 1B	Chaparral, cismontane woodland. Rocky, volcanic sites. 120-640 meters. Blooms February-June.	**Moderate Potential.** Though this species is strongly associated with thin, volcanic soils, which were not observed in the plan area, a nearby occurrence is present on a mapped soil unit similar to some mapped soil units within the plan area.
Centromadia parryi ssp. *parryi* pappose tarplant	List 1B	Chaparral, coastal prairie, meadows and seeps, coastal salt marsh, valley and foothill grassland (vernally mesic); often	**Moderate Potential.** Although no alkaline areas are known to occur in the plan area, this species has been known to occur in non-alkaline habitats as well. Some areas of valley

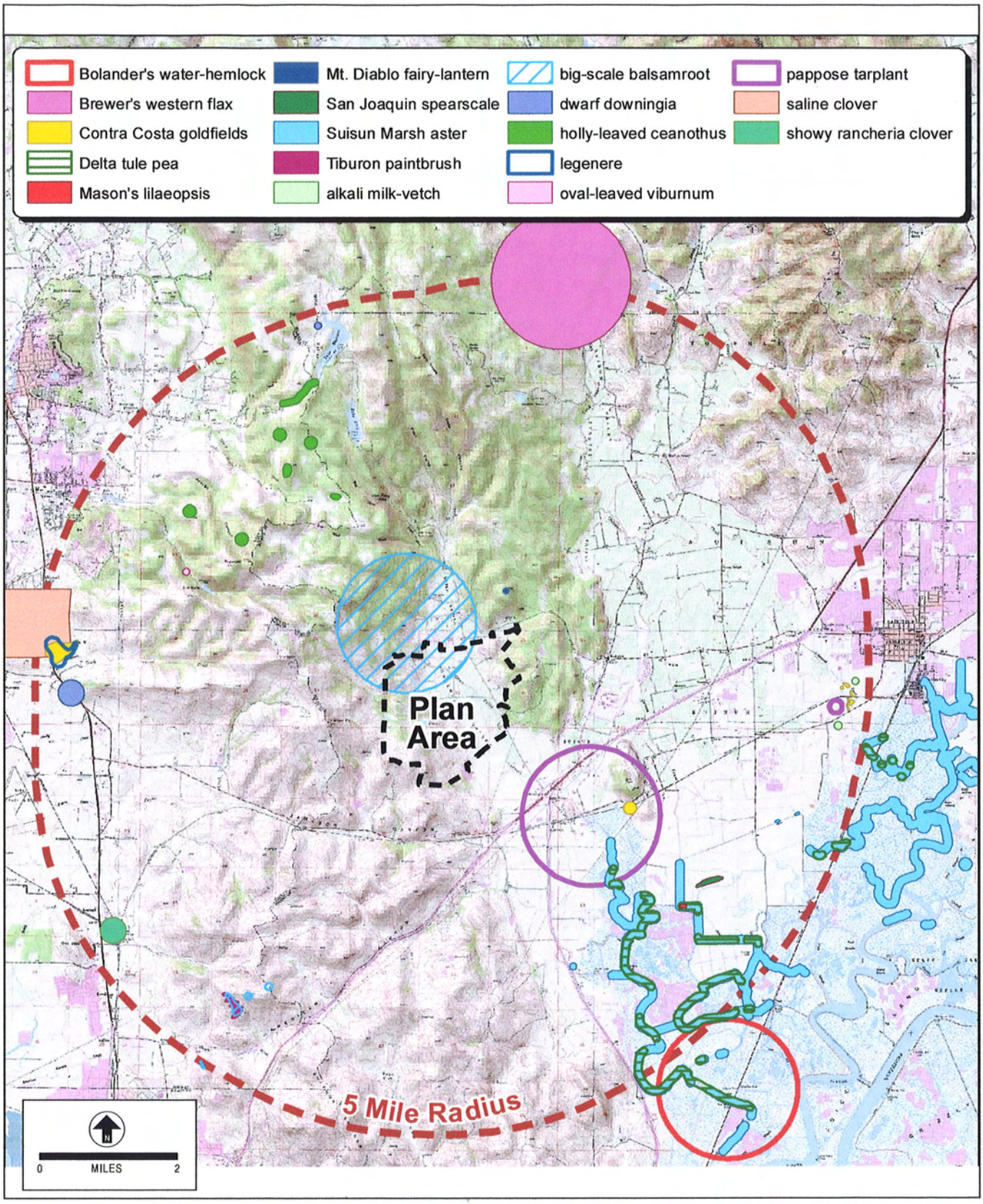
Species	Status*	Habitat	Potential for Occurrence
		alkaline. 2-420 meters. Blooms May-November.	and foothill grassland, particularly surrounding wetland margins, within the plan area may be suitable habitat for this species.
Cicuta maculata var. bolanderi spotted hemlock	List 2	Marshes and swamps, coastal, fresh, or brackish marsh. 0-200 meters. Blooms July- September.	**No Potential.** Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Cirsium hydrophilum var. hydrophilum Suisun thistle	FE, List 1B	Marshes and swamps. 0-1 meters. Blooms June-September.	**No Potential.** Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Cordylanthus mollis ssp. mollis soft bird's beak	FE, SR, List 1B	Marshes and swamps. 0-3 meters. Blooms July-November.	**No Potential.** Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Dirca occidentalis western leatherwood	List 1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland. 50-395 meters. Blooms January-March.	**Moderate Potential.** Suitable habitat is present within the plan area.
Downingia pusilla dwarf downingia	List 2	Valley and foothill grassland (mesic sites), vernal pools. 1-445 meters. Blooms March-May.	**Moderate Potential.** Although vernal pool habitat is not present within the plan area, the species is also known to occur along the edges of marsh habitats, such as those present along the margins of larger stock ponds in the plan area.
Erigeron greenei narrow-leaved daisy	List 1B	Chaparral (serpentinite or volcanic). 75-1,060 meters. Blooms May-September.	**No Potential.** Marsh and swamp habitat do not occur within the plan area; suitable habitat for this species is not present.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	List 1B	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland in serpentinite areas, sandy to gravelly soils. 0-700 meters. Blooms May-September.	**No Potential.** Serpentine, gravelly, and/or sandy soils do not occur within the plan area; suitable habitat for this species is not present.
Eriogonum truncatum Mt. Diablo buckwheat	List 1B	Chaparral, coastal scrub, valley and foothill grasslands on sandy soil. 3-350 meters. Blooms April-September.	**No Potential.** Serpentine, gravelly, and/or sandy soils do not occur within the plan area. Suitable habitat for this species is not present.
Fritillaria pluriflora adobe lily	List 1B	Chaparral, cismontane woodland, valley and foothill grassland/ often adobe. 60-705 meters. Blooms February-April.	**Moderate Potential.** Suitable habitat is present within the plan area.
Gilia capitata ssp. *tomentosa* wolly-headed gilia	List 1B	Coastal bluff scrub (rocky, outcrops). 15-155 meters. Blooms May-July.	**No Potential.** Coastal scrub habitat does not occur within the plan area; suitable habitat for this species is not present.

Species	Status*	Habitat	Potential for Occurrence
Helianthella castanea Diablo helianthella	List 1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. 60-1,300 meters. Blooms March-June.	**Moderate Potential.** Suitable habitat is present within the plan area.
Hesperolinon breweri Brewer's western flax	List 1B	Chaparral, cismontane woodland, valley and foothill grassland/ usually serpentinite. 30-900 meters. Blooms May-July.	**Moderate Potential.** Suitable habitat is present within the plan area.
Hesperolinon serpentinum Napa western flax	List 1B	Chaparral (serpentinite). 50-800 meters. Blooms May-July.	**No Potential.** Chaparral habitat does not occur within the plan area; suitable habitat for this species is not present.
Juglans hindsii Northern California black walnut	List 1B	Riparian forest, riparian woodland. 0-440 meters. Blooms April-May.	**Present.** Black walnut individuals were observed in riparian area along Hennessey Creek.
Lasthenia conjugens Contra Costa goldfields	FE, RP List 1B	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools/mesic. 0-470 meters. Blooms March-June.	**Unlikely.** This species is strongly associated with vernal pools, which are not known to be present in the plan area.
Lathyrus jepsonii var. *jepsonii* Delta tule pea	List 1B	Marshes and swamps (freshwater and brackish). 0-4 meters. Blooms May-July.	**No Potential.** Brackish marsh habitat does not occur within the plan area; suitable habitat for this species is not present.
Layia septentrionalis Colusa layia	List 1B	Chaparral, cismontane woodland, valley and foothill grassland/ sandy, serpentinite. 100-1,095 meters. Blooms April-May.	**No Potential.** Serpentine, gravelly, and/or sandy soils do not occur within the plan area. Suitable habitat for this species is not present.
Legenere limosa legenere	RP, List 1B	Vernal pools. 1-880 meters. Blooms April-June.	**No Potential.** Vernal pool habitat does not occur within the plan area; suitable habitat for this species is not present.
Leptosiphon jepsonii Jepson's leptosiphon	List 1B	Chaparral, cismontane woodland. Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates. 100-500 meters. Blooms April-May.	**No Potential.** Serpentine and volcanic soils do not occur within the plan area. Suitable habitat for this species is not present.
Liliaeopsis masonii Mason's lilaeopsis	SR, List 1B	Marshes and swamps (brackish or freshwater), riparian scrub. 0-10 meters. Blooms April-November.	**No Potential.** Species occurs at the margins of brackish water habitats in the Sacramento-San Joaquin delta. No suitable habitat is present in the plan area.
Monardella villosa ssp. *globosa* robust monardella	List 1B	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, coastal scrub, valley and foothill grassland. 100-915 meters. Blooms June-July.	**Moderate Potential.** Suitable habitat is present within the plan area.

Species	Status*	Habitat	Potential for Occurrence
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	List 1B	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools. 5-1,740 meters. Blooms April-July.	**Moderate Potential.** Suitable habitat is present within the plan area.
Rynchospora californica California beaked rush	List 1B	Bogs and fens, lower montane coniferous forest, meadows and seeps (seeps), marshes and swamps (freshwater). 45-1,010 meters. Blooms May-July.	**No Potential.** Bogs, fens, or coniferous forest do not occur within the plan area; suitable habitat for this species is not present.
Senecio aphanactis rayless ragwort	List 2	Chaparral, cismontane woodland, coastal scrub, sometimes in alkaline areas. 15-800 meters. Blooms January - April.	**Moderate Potential.** Suitable habitat is present within the plan area.
Sidalcea hickmanii ssp. *viridis* Marin checkerbloom	List 1B	Chaparral (serpentinite). 50-430 meters. Blooms May-June.	**No Potential.** Serpentine soil does not occur within the plan area; suitable habitat for this species is not present.
Symphyotrichum lentum Suisun Marsh aster (formerly *Aster lentus*)	List 1B	Marshes and swamps (brackish and freshwater). 0-3 meters. Blooms May-November.	**No Potential.** Marshes and swamps do not occur within the plan area; suitable habitat for this species is not present.
Trifolium amoenum showy Indian clover	FE, List 1B	Valley and foothill grassland, coastal bluff scrub (sometimes serpentinite); open sunny sites, swales. 5-560 meters. Blooms April-June.	**Moderate Potential.** Suitable habitat is present within the plan area.
Trifolium depauperatum var. *hydrophilum* saline clover	List 1B	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. 0-300 meters. Blooms April-June.	**Moderate Potential.** Suitable habitat is present within the plan area.
Viburnum ellipticum oval-leaved viburnum	List 2	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1,400 meters. Blooms May-June.	**Moderate.** Suitable habitat present within the plan area.

SOURCE: Species list compiled from a January 2009 search of California Department of Fish and Game Natural Diversity Database (CNDDB), U.S. Fish and Wildlife Service (USFWS) Quadrangle Species Lists, and the California Native Plant Society (CNPS) Electronic Inventory for the Monticello Dam, Lake Berryessa, Chiles Valley, Yountville, Mt. Vaca, Napa, Mt. George, Fairfield North, and Capell Valley USGS 7.5' quadrangles.

*** Key to status codes:**	
FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
FD	Federal De-listed
FPD	Federal Proposed for De-listing
NMFS	Species under the Jurisdiction of the National Marine Fisheries Service
BCC	USFWS Birds of Conservation Concern
RP	Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
SE	State Endangered
ST	State Threatened
SR	State Rare
CSC	CDFG Species of Special Concern
CFP	CDFG Fully Protected Animal
CDF	CDF Sensitive Species
SSI	CDFG Special-Status Invertebrates
WBWG	Western Bat Working Group High Priority species
List 1B	CNPS List 1B: Plants rare, threatened or endangered in California and elsewhere
List 2	CNPS List 2: Plants rare, threatened, or endangered in California, but more common elsewhere



SOURCE: WRA

Figure 6.2

RECORDED (CNDDB) OCCURRENCES OF SPECIAL-STATUS PLANT SPECIES IN THE PLAN AREA VICINITY

species occurrence, and so the location was mapped as a "best guess" in the CNDDB (CNDDB 2009). Therefore, this species has the potential to be present in the plan area but is not included in the list of species with known occurrences in the plan area because the exact location of this occurrence is not known.

- Big tarplant (*Blepharizonia plumosa*) (CNPS List 1B). Big tarplant is an annual herb in the composite family (Asteraceae) that typically inhabits valley and foothill grasslands. Recent occurrences are primarily in non-native grasslands. It is known from Alameda, Contra Costa, San Benito, San Joaquin, San Luis Obispo, Solano, and Stanislaus counties. This species typically occurs at elevations from 30 to 505 meters, with a blooming period of July though October. Non-native grasslands in the plan area hills and valley may support this species.

- Narrow-anthered California brodiaea *(Brodiaea californica var. leptandra)* (CNPS List 1B). Narrow-anthered brodiaea (also called “Sonoma brodiaea”) is a perennial bulbiferous herb in the lily family (Liliaceae). This species typically inhabits areas with volcanic soils, and habitats including broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and grasslands. It is found in Sonoma, Lake, and Napa counties at elevations from 110 to 915 meters. Narrow-anthered brodiaea blooms from May to July. This species is typically associated with thin volcanic soils, which are not present in the plan area. However, some occurrences are known from oak woodland and chaparral scrub communities that may not be consistent with these typical soil types. Thin soiled areas, such as scrub communities, as well as oak woodland communities in the plan area hills, may support this species.

- Mt. Diablo fairy lantern (*Calochortus pulchellus*) (CNPS List 1B). Mt. Diablo fairy lantern is a perennial bulbiferous herb in the lily family (Liliaceae) that inhabits cismontane woodland, valley and foothill grassland, chaparral, and riparian woodland from 30 to 840 meters in elevation. The species is known from Alameda, Contra Costa, and Solano counties and blooms from April to June. Oak woodlands, riparian forest, scrub, and grassland areas surrounding these communities in the plan area hills and valley may support this species.

- Tiburon paintbrush *(Castilleja affinis* ssp. *neglecta)*--State Threatened, Federal Endangered, (CNPS List 1B). Tiburon paintbrush is a hemiparasitic perennial herb in the figwort family (Scrophulariaceae) that is found in serpentinite valley and foothill grasslands from 60 to400 meters in elevation. This species is known from Marin, Napa, and Santa Clara Counties and blooms from April through June. Presently, this species is threatened by development, gravel mining, and grazing activities. This species is strongly associated with serpentine soils, which are not present in the plan area. However, there is a nearby occurrence within five miles of the plan area. Therefore, there is the potential that it may exist in the plan area, although unlikely.

- Holly-leaved ceanothus (*Ceanothus purpureus*) (CNPS List 1B). Holly-leaved ceanothus is a perennial shrub in the buckthorn family (Rhamnaceae) that typically inhabits rocky volcanic sites supporting chaparral and cismontane woodland from 120 to 640 meters in elevation. The species is known from Napa, Shasta, Solano, Sonoma, and Trinity counties and blooms from February to June. There is a nearby occurrence within five miles of the plan area on soils similar to those present in the plan area.

- Pappose tarplant (*Centromadia parryi* ssp. *parryi*) (CNPS List 1B). Pappose tarplant is an annual herb in the Asteraceae family that typically inhabits alkaline areas of chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernally mesic grassland from 2 to 420 meters in elevation. This species has also been observed in flat grassland areas surrounding wetlands. The species is known from Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, and Sonoma counties and blooms from May to November. Grasslands and ruderal areas, particularly those surrounding wetlands in the plan area hills and valley, have the potential to support this species.

- Western leatherwood (*Dirca occidentalis*) (CNPS List 1B). Western leatherwood is a deciduous shrub in the Thymelaeaceae family that typically occurs in mesic sites in broadleaf upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland. This species is usually found at elevations from 50 to 395 meters and is known from Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma Counties. It has a blooming period of January to March. Oak woodland and riparian communities in the plan area may support this species.

- Dwarf downingia (*Downingia pusilla*) (CNPS List 2). Dwarf downingia is an annual herb in the bellflower family (Campanulaceae). It is typically found in vernal pools and seasonal wetlands in grasslands at elevations from 1 to 445 meters. The species, which blooms between March and May, occurs primarily in vernal pools, but can also occur in seasonal wetlands with higher plant cover. Known populations exist in Napa, Sonoma, and Solano counties in addition to many counties in California's Central Valley. Although vernal pool habitat is not present within the plan area, the species is also known to occur along the edges of marsh habitats, such as those present along the margins of larger stock ponds in the plan area hills. Therefore, there is the potential that it may exist in the plan area, although unlikely.

- Adobe lily (*Fritillaria pluriflora*) (CNPS List 1B). Adobe lily is a perennial bulbiferous herb in the Liliaceae family that typically inhabits chaparral, cismontane woodland, and valley and foothill grassland that frequently support adobe clays from 60 to 705 meters in elevation. The species is known from Butte, Colusa, Glenn, Lake, Napa, Solano, Tehama, and Yolo counties and blooms from February to April. Grassland communities present in the plan area hills and valley may support this species.

- Diablo helianthella (*Helianthella castanea*) (CNPS List 1B). Diablo helianthella is a perennial herb in the sunflower family (Asteraceae) that blooms from March to June. It is found in a variety of plant communities: broadleaf upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland. It is known from 60 to 1,300 meters in elevation in Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and San Francisco counties. It tends to occur in rocky, azonal soils and in partial shade at interfaces between chaparral, woodland, and grassland communities. Suitable shallow soils and rock outcrops in the plan area hills may support this species.

- Brewer's western flax (*Hesperolinon breweri*) (CNPS List 1B). Brewer's western flax is an annual herb in the Asteraceae family that typically inhabits cismontane woodland, valley and foothill grassland, and chaparral, sometimes on serpentine soils, from 30 to 900 meters in elevation. The species is known from Contra Costa, Napa, and Solano counties and blooms from May to July. Oak woodlands and grassland communities in the plan area hills and valley may support this species.

- Robust monardella (*Monardella villosa* ssp. *globosa*) (CNPS List 1B.2). Robust monardella is a California endemic perennial rhizomatous herb in the mint family (Lamiaceae) that typically inhabits broad-leafed upland forest, chaparral (openings), cismontane woodland, coastal scrub, and valley and foothill grassland. It is known from Alameda, Contra Costa, Humboldt, Lake, Mendocino, Napa, Santa Clara, Santa Cruz, San Mateo, and Sonoma counties. The species typically occurs at elevations from 100 to 915 meters, with a blooming period of June to July. Oak woodland and scrub communities in the plan area hills may support this species.

- Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) (CNPS List 1B.1). Baker's navarretia is a California endemic annual herb in the phlox family (Polemoniaceae) that typically inhabits cismontane woodlands, lower montane coniferous forests, meadows, seeps, valley and foothill woodlands, and mesic vernal pools. It is known from Colusa, Glenn, Lake, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties. The species typically occurs at elevations from 5 to 1,740 meters, with a blooming period of April to June. Oak woodland and wetland communities in the plan area hills and valley may support this species.

- Rayless ragwort (*Senecio aphanactis)* (CNPS List 2). Rayless ragwort is an annual herb from the aster family (Asteraceae) that typically inhabits chaparral, cismontane woodland, and coastal scrub habitats at elevations from 15 to 800 meters. This species is known from many counties, including Alameda, Contra Costa, Los Angeles, Santa Clara, Santa Rosa, and Solano, and blooms from January through April. Oak woodland and scrub communities in the plan area may support this species.

- Showy Indian clover (*Trifolium amoenum*)--Federal Endangered (CNPS List 1B). Showy Indian clover is an annual herb in the pea family (Fabaceae) that typically inhabits valley and foothill grassland and coastal bluff scrub (sometimes on serpentine soil) from 5 to 560 meters in elevation. The species is known from Alameda, Marin, Napa, Santa Clara, Solano, and Sonoma counties and blooms from April to June. Most known occurrences of this species are 50 to 100 years old, but recent observations have been made in Marin and Sonoma counties in grasslands with clay soils. Grassland habitats in the plan area may support this species.

- Saline clover (*Trifolium depauperatum* var. *hydrophilum*) (CNPS List 1B). Saline clover is an annual herb in the Fabaceae family that typically inhabits marshes and swamps, mesic and alkaline valley and foothill grassland, and vernal pools from 0 to 300 meters in elevation. The species is known from Alameda, Colusa, Monterey, Napa, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Solano, and Sonoma counties and blooms from April to June. This species tends to occur in alkaline soils, but can also be present in non-alkaline areas. Wetlands and the margins of larger stock ponds in the plan area may support this species.

- Oval-leaved viburnum (*Viburnum ellipticum*) (CNPS List 2.3). Oval-leaved viburnum is a deciduous shrub in the honeysuckle family (Caprifoliaceae) that typically inhabits chaparral, cismontane woodland, and lower montane coniferous forest habitats. It is known from Contra Costa, El Dorado, Fresno, Glenn, Humboldt, Mendocino, Napa, Placer, Sonoma and Shasta counties as well as in Oregon and Washington. The species typically occurs from

215 to 1,400 meters with a blooming period of May to June. Oak woodland and scrub communities in the plan area hills may support this species.

(c) Special-Status Wildlife Species. Special-status wildlife species that were observed during field visits, are known to occur, or have the potential to occur in the plan area are listed below. Table 23.3.2 in Appendix 23.3 contains a complete list of wildlife species observed during the assessment site visits. Table 6.3 in this chapter contains a complete list of special-status wildlife species that were reviewed as part of this evaluation, including habitat requirements and an evaluation of habitat suitability in the plan area. The table was created based on available information from the CNDDB, ADHCP, USFWS list for Solano County and the Cordelia USGS 7.5' quad, and species habitat requirements as noted in available literature. Figure 6.3 shows recorded (CNDDB) occurrences within 5 miles of the plan area. Figure 6.4 shows specialized habitats within the plan area that may support special-status species, was discussed below.

(1) *Special-Status Wildlife Species Observed or with Known Occurrences in the Plan Area.* The following wildlife species have been observed or documented in the plan area.

- Loggerhead Shrike (*Lanius ludovicianus*), CDFG Species of Special Concern (SSC). Loggerhead Shrike is resident in lowlands and foothills throughout much of California. This species prefers open, habitats with short vegetation, areas of bare ground, and appropriate perches for foraging (i.e., trees, taller shrubs, fences), and dense, often relatively isolated bushes and small trees in which to place nests (Yosef 1996, Humple 2008). Shrikes are predatory songbirds, preying upon a variety of insects and small vertebrates. One Loggerhead Shrike was observed during the site visit in the southwestern corner of the plan area valley. The plan area valley and relatively open oak woodland habitats in the hills provide suitable habitat for this species, including grassland and agricultural land for foraging, and small, relatively isolated trees and bushes for nesting. Loggerhead Shrike is also a Special Management Species as outlined in the HCP.

- Lewis' Woodpecker (Melanerpes lewis)—USFWS Bird of Conservation Concern (BCC). Lewis's Woodpecker is an uncommon resident and winter visitor in northern California. Preferred habitats are open and dry, and include pine-oak woodlands, ponderosa pine woodland, and oak woodlands. This species is often found in association with recently burned, logged, or otherwise disturbed areas. Nesting occurs in tree cavities, often in loose colonies.

  At least two Lewis' Woodpeckers were observed foraging near the large stock pond in the northwest portion of the plan area during the initial site visit. The inner Coast ranges of northern California support some resident breeding populations of this species.

- Grasshopper Sparrow (*Ammodramus savannarum*), CDFG Species of Special Concern (SSC). Grasshopper Sparrow is a summer resident in California, wintering principally in Mexico and Central America. This species breeds in grassland habitats with short- to moderate-height vegetation, and often scattered shrubs. Nests are on the ground, well-concealed, and often adjacent to grass clumps. Grasshopper Sparrow is secretive and generally detected by voice. Two Grasshopper Sparrows were observed singing in the hills in the southwest portion of the plan area during the site visit, and each was presumed to represent a respective nesting pair.

Table 6.3
SPECIAL-STATUS WILDLIFE SPECIES THAT MAY OCCUR OR ARE KNOWN TO OCCUR IN HABITATS SIMILAR TO THOSE FOUND IN THE PLAN AREA

Species	Status*	Habitat	Potential for Occurrence
Mammals			
Suisun Shrew *Sorex ornatus sinuosus*	SSC	Occurs in tidal marshes of the northern shores of San Pablo and Suisun Bays. Requires dense low-lying cover, driftweed and other litter above the mean hightide line for nesting and foraging.	**No Potential.** The Plan Area provides no tidal marsh habitat, and is also outside of the known range of this species. The nearest documented occurrence is 1.9 miles southeast of the Plan Area (CDFG 2009).
Pallid Bat *Antrozous pallidus*	SSC, WBWG	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Sensitive to disturbance of roosting sites.	**Moderate Potential.** The Plan Area Hills provide woodland and some rocky habitats for roosting, and this species may also forage there. There are several documented occurrences within 10.0 miles to the west of the Plan Area (CDFG 2009).
Townsend's Big-eared Bat *Corynorhinus townsendii*	SSC, WBWG	Habitat variable, but most common in mesic sites. Day roosts highly associated with caves and mines. Need appropriate roosting, maternity, and hibernacula sites free from human disturbance.	**Unlikely.** The Plan Area does not provide caves or mines for roosting. May occasionally forage over the Plan Area.
Spotted Bat *Euderma maculatum*	SSC, WBWG	Little known; rare throughout much of range. Habitat is variable; roosts in crevices and caves, generally on tall cliffs in remote areas. Foraging range can be large.	**Unlikely.** The Plan Area does not provide mines or suitable rocky habitats for roosting. May occasionally forage over the Plan Area.
Western Red Bat *Lasiurus blossevillii*	SSC, WBWG	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges & mosaics with trees that are protected from above & open below with open areas for foraging.	**Moderate Potential.** The Project Area's mixed woodland habitat provides potentially suitable roost sites. May also forage over the Plan Area.
Fringed Myotis *Myotis thysanodes*	WBWG	Associated with a wide variety of habitats, including mixed coniferous-deciduous forest and redwood/sequoia groves. Buildings, mines and large snags are important day and night roosts.	**Moderate Potential.** The woodland habitats of the Project Area provide potentially suitable roost sites. May also forage over the Plan Area.
Long-legged Myotis *Myotis volans*	WBWG	Generally associated with woodlands and forested habitats. Large hollow trees, rock crevices and buildings are important day	**Moderate Potential.** The woodland habitats of the Plan Area provide potentially suitable roost sites. May also forage over the Plan Area.

Species	Status*	Habitat	Potential for Occurrence
		roosts. Other roosts include caves, mines and buildings.	
Greater Western Mastiff Bat *Eumops perotis californicus*	SSC, WBWG	Habitat variable. Distribution appears to be tied to large rock structures which provide suitable roosting sites, including cliff crevices and cracks in boulders.	**Unlikely.** The Plan Area does not provide suitable boulders or boulder piles roosting. May occasionally forage over the Plan Area.
Big Free-tailed Bat *Nyctinomops macrotis*	SSC, WBWG	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	**Unlikely.** Rock outcrops within the Plan Area are likely too limited in area and height to provide roosting habitat for this species. The nearest documented occurrence is approximately 14.4 miles south of the Plan Area (CDFG 2009).
Salt-marsh Harvest Mouse *Reithrodontomys raviventris*	FE, SE, CFP	Found only in saline emergent wetlands of San Francisco Bay and its tributaries. Primary habitat is dominated by pickleweed (*Salicornia*). Requires adjacent, upland areas as refuge during high tides. Does not burrow.	**No Potential.** The Plan Area provides no tidal marsh habitat, and is also outside of the known range of this species. The nearest documented occurrence is approximately 3.3 miles south of the Plan Area (CDFG 2009).
American Badger *Taxidea taxus*	SSC	Most abundant in drier open stages of shrub, woodland and herbaceous habitats, with friable soils. Requires open, uncultivated ground in which to dig burrows. Preys on burrowing rodents.	**Moderate Potential.** The Study provides some suitable habitat, particularly in western portion (grasslands and open woodland). The nearest documented occurrence is approximately 7.4 miles west of the Plan Area (CDFG 2009).
Birds			
American White Pelican *Pelecanus erythrorhynchos*	SSC	Winter visitor to the region, favoring lakes, larger rivers, and coastal estuaries. Not a marine species. Nests on large lakes, providing safe roosting and breeding places in the form of well-sequestered islets.	**Unlikely.** The Plan Area does not provide typical aquatic wintering habitat for this species, or a suitable forage base.
California Brown Pelican *Pelecanus occidentalis californicus*	FE, SE	Non-breeding visitor to the region, found in estuarine and coastal waters. Nests on rocky or low brushy slopes of undisturbed coastal islands; no nesting colonies north of the Channel Islands. Roosts on coastal rocks, anthropogenic structures (e.g., piers, etc.).	**No Potential.** The Study provides no marine or estuarine aquatic habitat and thus provides no foraging or roosting habitat for this species.
Golden Eagle *Aquila chrysaetos*	CFP, BCC	Resident in rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in	**Moderate Potential.** The Plan Area and vicinity provides some suitable foraging and nesting habitat. The nearest documented nesting occurrence is approximately 7.2 miles

Species	Status*	Habitat	Potential for Occurrence
		most parts of range; also nests in large trees in open areas.	west of the Plan Area (CDFG 2009).
Swainson's Hawk *Buteo swainsoni*	ST, BCC	Summer resident in the region. Forages in grasslands and nests in the immediate vicinity, often in relatively isolated, trees or tree groves. Most of the California population breeds in the Central Valley. Forages on insects and rodents, also other vertebrates.	**Moderate Potential.** The agricultural lands and associated groves of trees in the eastern portion of the Plan Area provide moderate quality nesting and foraging habitat for this species. The nearest documented nesting location is approximately 2.0 miles southeast of the Plan Area (CDFG 2009).
Northern Harrier *Circus cyaneus*	SSC	Resident and winter visitor. Forages in open meadows, savannah and grassland habitats, often in association with wetlands. Nests on ground in shrubby vegetation; nest built of a large mound of sticks in wet areas. Generally avoids forested and mountainous areas.	**Moderate Potential.** Much of the Plan Area provides suitable foraging habitat. Potential nesting habitat exists in portions of the Plan Area Valley and in the vicinity of at least one pond in the Plan Area Hills. The nearest documented nesting occurrence is approximately 7.1 miles east of the Plan Area (CDFG 2009).
White-tailed Kite *Elanus leucurus*	CFP	Resident of coastal and valley lowlands; often associated with agricultural areas. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	**High Potential.** The Plan Area provides open habitats typically associated with this species (including agricultural fields), and suitable nesting substrates (e.g., large shrubs and smaller trees). The nearest documented nesting occurrence is 2.5 miles southeast of the Plan Area (CNDDB 2009).
Ferruginous Hawk *Buteo regalis*	SSC, BCC	Winter visitor. Frequents open habitats including grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Preys on rodents and other vertebrates.	**Moderate Potential.** The Plan Area provides suitable open habitats for this species, including grasslands and agricultural fields. However, it does not breed in the region. The nearest documented occurrence is approximately 7.7 miles west of the Plan Area (CNDDB 2009).
Bald Eagle *Haliaeetus leucocephalus*	FD, SE, CFP	Largely a winter visitor to the region. Requires large bodies of water, or free-flowing rivers with abundant fish, and adjacent snags or other prominent perches. Nests in large, old-growth, or dominant live tree with open branch-work.	**Unlikely.** The Plan Area does not provide suitable nesting habitat or the open, aquatic habitats typically used by wintering birds. The nearest documented nesting attempt is approximately 12.6 miles north of the Project Area (CDFG 2009).
Prairie Falcon *Falco mexicanus*	BCC	Resident and winter visitor in the region. Inhabits dry, open terrain. Breeding sites located on cliffs. Preys on a variety of smaller vertebrates.	**Unlikely.** The Plan Area and vicinity provides foraging habitat but lacks cliffs or similar substrates that are typically used for nesting by this species. May visit the Plan Area during the non-breeding season.
American Peregrine Falcon *Falco peregrinus anatum*	FD, SE, CFP,	Resident and winter visitor near wetlands, lakes, rivers, or other water bodies; on	**Unlikely.** Suitable aquatic habitats are limited in area within the Plan Area, and it does not contain typical breeding

Species	Status*	Habitat	Potential for Occurrence
	BCC	cliffs, banks, dunes, mounds. Also utilizes manmade structures for foraging and nesting. Nest consists of a scrape on a depression or ledge in an open site. Preys on birds.	habitat. May occur occasionally in the vicinity, but nesting is unlikely.
California Black Rail *Laterallus jamaicensis coturniculus*	ST, CFP	Extremely secretive resident of emergent marshes in the San Francisco Bay Estuary and portions of the Central Valley. Occurs in salt, brackish and freshwater habitats. Nests in dense stands of emergent vegetation.	**No Potential.** The Plan Area does not provide the densely-vegetated, emergent brackish marsh habitat occupied by this species in the region. The nearest documented location is approximately 6.0 miles east of the Plan Area (CDFG 2009).
California Clapper Rail *Rallus longirostris obsoletus*	FE, SE, CFP	Resident in salt marshes of the San Francisco Bay Estuary, with largest populations in south San Francisco Bay. Requires mud flats for foraging and dense vegetation on higher ground for nesting.	**No Potential.** The Plan Area does not contain tidal marsh and thus provides no habitat for this species. The nearest documented location is approximately 6.3 miles east of the Plan Area (CDFG 2009).
Western Snowy Plover *Charadrius alexandrinus nivosus*	FT, SSC, BCC, RP	Federal listing applies only to the Pacific coastal population. Resident on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	**No Potential.** The Plan Area does not contain beaches, levees or shores and thus provides no habitat for this species. The nearest documented nesting location is approximately 8.4 miles west of the Plan Area (CDFG 2009).
Mountain Plover *Charadrius montanus*	SSC	Winter visitor primarily to the Central Valley, found on short-grasslands and plowed fields below 1000m.	**Unlikely.** The flat, sparsely-vegetated wintering habitat typical of this species was not found within the Plan Area, and it is also just outside of this species' wintering range as recently described (Hunting and Edson 2008). Does not breed in the region.
Long-Billed Curlew *Numenius americanus*	BCC	Winter visitor to large coastal estuaries, upland herbaceous areas, and croplands. Within California, breeds only in the northeastern section of the state, in wet meadow habitat.	**Unlikely.** The Plan Area does provide potentially suitable wintering and migratory habitat for this species, including grassland and agricultural fields. However, this species does not breed in the region.
California Least Tern *Sternula* (formerly *Sterna*) *antillarum browni*	FE, SE, CFP	Summer resident, nesting colonially along the coast from San Francisco Bay south. Breeding colonies in the San Francisco Bay Estuary found on abandoned salt ponds and estuarine shores. Prefers barren or sparsely vegetated, flat substrates near water. Forages for small surface fish along shores, coasts, etc.	**No Potential.** The Plan Area does not contain salt ponds or suitable beaches/shores for nesting. There are no documented occurrences within 10.0 miles of the Plan Area (CDFG 2009).

Species	Status*	Habitat	Potential for Occurrence
Western Yellow-billed Cuckoo *Coccyzus americanus occidentalis*	FC, SE, BCC	Summer resident, breeding in riparian forests and jungles. Utilizes densely foliaged deciduous trees and shrubs for nesting and foraging. Eats mostly caterpillars.	**Unlikely.** Riparian habitats within the Plan Area are too limited in area and density to support this species. The Plan Area is also outside of this species' restricted breeding range.
Short-eared Owl *Asio flammeus*	SSC	Resident and winter visitor in open lowlands, including salt and freshwater marshes, meadows, and irrigated fields. Tall grass and/or tule patches needed for nesting and roosting. Nests on dry ground in depression concealed in vegetation.	**Unlikely.** The agricultural fields and foothill meadows of the Plan Area provide some foraging habitat for this species, but potential nesting habitat is of poor quality; the woodland habitats are not suitable. The nearest documented nesting occurrence is approximately 12.0 miles southeast of the Plan Area (CNDDB 2009).
Long-eared Owl *Asio otus*	SSC	Resident and visitor in the region. Nests in a variety of woodland habitats, including oak and riparian. Requires adjacent open land with rodents for foraging, and the presence of old nests of crows, hawks, magpies etc. for breeding.	**Moderate Potential.** The Plan Area provides mixed woodland with relatively open habitat, including agricultural fields, in close proximity. Western Solano County is within this species' breeding range as recently described (Hunting 2008).
Western Burrowing Owl *Athene cunicularia hypugaea*	SSC, BCC	Resident and winter visitor in open, dry annual or perennial grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects, small mammals, reptiles, birds, and carrion. Nests and roosts in old mammal burrows, generally those of ground squirrels.	**Moderate Potential.** The Plan Area provides suitable grassland habitat for this species, particularly the southwest portion. Ground squirrels were observed in this area during the site visit, though the number of burrows appeared limited. There are numerous documented occurrences within 10.0 miles of the Plan Area (CDFG 2009).
Northern Spotted Owl *Strix occidentalis caurina*	FT, SSC	Resident in old-growth forests or mixed stands of old-growth and mature trees. Occasionally occurs in younger forests with patches of big trees. Prefers high, dense, multistory canopy dominated by trees with cavities or broken tops, woody debris and space under canopy. Often forages along ravines or canyons where flying corridors exist. Young generally disperse though contiguous mature forest habitat.	**Unlikely.** The Plan Area does not provide old-growth forest or any analogous habitat suitable for this species. There are no documented CNDDB occurrences within 15.0 miles of the Project Area (CDFG 2009).
Vaux's Swift *Chaetura vauxi*	SSC	Summer resident and migrant in the region. Nests in cavities, principally within large conifers. Forages high in the air over most terrain and habitats but prefers rivers/lakes.	**Unlikely.** The Plan Area has few conifers, and Solano County is outside of this species' breeding range as recently described (Hunter 2008). Probably occurs within the Plan Area during migration.

Species	Status*	Habitat	Potential for Occurrence
Black Swift *Cypseloides niger*	SSC, BCC	Summer resident. Breeds in small colonies on cliffs behind or adjacent to waterfalls, in deep canyons and sea-bluffs above surf. Forages widely.	**Unlikely.** The Plan Area does not provide waterfalls or canyon habitats. May pass over the Project Area during migration.
Rufous Hummingbird *Selasphorus rufus*	BCC	Migrant in the region, generally not nesting south of northernmost California. Winters in Mexico and Central America.	**Unlikely.** The Plan Area is outside of this species known breeding range. Probably occurs within the Plan Area during migration.
Lewis's Woodpecker *Melanerpes lewis*	BCC	Uncommon migrant and winter visitor to open coniferous and woodland habitats in the region. Often associated with dead or dying trees.	**Present.** Although at least two individuals were observed within the Plan Area during the site visit, this species does not typically nest west of the Sierra Nevada.
Olive-sided Flycatcher *Contopus cooperi*	SSC	Summer resident. Typical breeding habitat is montane coniferous forests. At lower elevations, also occurs in wooded canyons and mixed woods.	**Moderate Potential.** The Project Area provides potentially suitable mixed woodland habitat with edges, and it at the margin of this species' breeding range as recently described (Widdowson 2008).
Little Willow Flycatcher *Empidonax traillii brewsteri*	SE	Summer resident, with breeding currently restricted to the Sierra Nevada and adjacent foothills. Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters.	**Unlikely.** This subspecies is not currently known to breed outside of the Sierra Nevada, and the Plan Area does not provide suitably dense willow thickets. Probably occurs within the Plan Area during migration.
Loggerhead Shrike *Lanius ludovicianus*	SSC, BCC	Resident in open woodland, grassland, savannah and scrub. Prefers open areas with sparse shrubs, trees, posts, and other suitable perches which to forage for large insects and small vertebrates. Nests are well-concealed above ground in densely-foliaged shrub or tree.	**Present.** This species was observed during the site visit in the southwestern portion of the Plan Area Valley. The Valley and southernmost portion of the Plan Area Hills provide suitable nesting and foraging habitat.
Purple Martin *Progne subis*	SSC	Summer resident, breeding in woodland and low-elevation coniferous forests. Nests in cavities, of trees and also anthropogenic structures. Woodland and forest nest sites typically in located in tall, isolated trees or snags.	**Unlikely.** The Plan Area is just outside of this species' breeding range as recently described (Airola and Williams 2008), and suitable nesting trees (i.e., tall, isolated) were not observed during the site visit. This species has disappeared as a breeder from most oak and riparian dominated foothills in the region (Airola and Williams 2008).
Bank Swallow *Riparia riparia*	ST	Summer resident, nesting colonially in riparian areas with vertical cliffs and bands of fine-textured or sandy soils in which to create nest holes. Also nests on sandy, coastal cliffs. Migrant in riparian and other lowland habitats in western California.	**Unlikely.** No riparian areas with vertical cliffs were noted within the Plan Area and thus suitable nesting habitat is not present. May occur in the vicinity of the Plan Area during migration.

Species	Status*	Habitat	Potential for Occurrence
Yellow Warbler *Dendroica petechia*	SSC	Summer resident. Nests in riparian stands of willows, cottonwoods, aspens, sycamores, and alders. Also nests in montane shrubbery in open coniferous forests. Breeding range has been reduced throughout much of the state.	**Unlikely.** Suitable riparian habitat (for nesting) within the Plan Area is likely limited to Green Valley Creek, and Solano County is not within the recently described breeding range for this species (Heath 2008). Probably regularly occurs during migration.
San Francisco (Saltmarsh) Common Yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Endemic to the San Francisco Bay Area. Frequents low, dense vegetation near water, including salt and freshwater marshes. Requires thick, continuous cover down to water surface for foraging, and tall grasses, tule patches, or willows for nesting.	**Unlikely.** The Plan Area provides some potentially suitable emergent marsh habitat, but is outside of this subspecies' recently described year-round range (Gardali and Evens 2008). Hence, Common Yellowthroats nesting within the Plan Area are unlikely to be of this subspecies. The nearest documented occurrence is approximately 5.5 miles southeast of the Plan Area (CDFG 2009).
Yellow-breasted Chat *Icteria virens*	SSC	Summer resident, utilizing riparian areas with an open canopy, dense understory, and trees for song perches. Nests in thickets of willow, blackberry, and wild grape.	**Unlikely.** The dense understory and open canopy habitat favored for as nesting by this species was not observed in the Plan Area, and it is outside of this species' breeding range as recently described (Comrack 2008). May occur occasionally during migration.
Bell's Sage Sparrow *Amphispiza belli belli*	BCC	Uncommon resident of semi-open, dry chaparral and coastal scrub.	**Unlikely.** The Plan Area provides only very limited chaparral habitat for this species, and there are no recent Solano County breeding records.
Bryant's Savannah Sparrow *Passerculus sandwichensis alaudinus*	SSC	Resident of coastal and estuarine marshes and adjacent pastures and grasslands.	**Unlikely.** The Plan Area provides potentially suitable grassland and pastures, but is outside of this subspecies' range as recently described (Fitton 2008).
Grasshopper Sparrow *Ammodramus savannarum*	SSC	Summer resident in the region. Breeds in open grassland habitats, generally with low- to moderate-height grasses and scattered shrubs.	**Present.** Open grasslands within the Plan Area provide suitable habitat. At least two territorial males were observed singing in the southwestern portion of the Plan Area during the site visit, and were presumed to be nesting.
Samuels (San Pablo) Song Sparrow *Melospiza melodia samuelis*	SSC, BCC	Endemic to the north sides of San Francisco and San Pablo Bays, restricted to salt marshes and immediately adjacent vegetated habitats. Nests in low marsh vegetation, high enough to avoid flooding during high tides.	**No Potential.** The Plan Area does not provide tidal marsh habitat, and it outside of the subspecies' range as recently described (Spautz and Nur 2008a). The nearest documented location is approximately 7.1 miles west of the Plan Area (CDFG 2009).
Suisun Song Sparrow *Melospiza melodia maxillaris*	SSC, BCC	Endemic to Suisun Bay and associated marshland to the north, restricted to salt marshes and immediately adjacent vegetated habitats. Nests in low marsh vegetation, high enough to avoid flooding during high tides.	**No Potential.** The Plan Area does not provide tidal marsh habitat, and it outside of the subspecies' range as recently described (Spautz and Nur 2008b). The nearest documented occurrence is 1.8 miles southeast of the Project Area.

Species	Status*	Habitat	Potential for Occurrence
Tricolored Blackbird *Agelaius tricolor*	SSC, BCC	A highly colonial species, most numerous in the Central Valley and vicinity. Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Requires breeding habitat sufficient to support 30 nesting pairs. Colonies can be highly ephemeral.	**Moderate Potential.** Dense emergent marsh habitats within the Plan Area are relatively limited in area, and hence sub-optimal for this species. However, there are several documented nesting occurrences within 10.0 miles west and south of the Plan Area (CDFG 2009). This species also likely occurs with other blackbird species during the non-breeding season.
Yellow-headed Blackbird *Xanthocephalus xanthocephalus*	SSC	Migrant and local summer resident. Nests colonially in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or larger ponds. Forages primarily on large aquatic insects during the breeding period.	**Unlikely.** The Plan Area lacks dense emergent marsh habitat over relatively deep water, and is marginally outside of this species' breeding range as recently described (Jaramillo 2008). May occur uncommonly with other blackbird species during the non-breeding season.
Lawrence's Goldfinch *Carduelis lawrencei*	BCC	Uncommon summer resident and sporadic visitor in northern California, typically found in oak savannah and open woodlands.	**Unlikely.** The Plan Area is out of this species' typical breeding range. May occasionally occur in the vicinity of the Plan Area during the non-breeding season.
Reptiles and Amphibians			
Western Pond Turtle *Actinemys (=Emys/Clemmys) marmorata*	SSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs), submerged shelter and terrestrial nest sites. Requires friable soil for breeding. Documented to disperse and wander over upland habitats.	**Present.** Numerous individuals (including one juvenile) were observed in the higher-elevation ponds of the Plan Area Hills. Suitable breeding habitat was also noted there. May also occur in Happy Valley Creek, and disperse through upland portions of the Plan Area.
California Horned Lizard *Phrynosoma coronatum frontale*	SSC	Variable; occurs in woodland clearings, as well as chaparral and annual grasslands. Preferred microhabitat consists of sandy areas, washes, alluvial fans and wind-blown deposits.	**Unlikely.** The Plan Area does not provide the preferred microhabitat of loose, sandy soils within relatively open habitats.
Alameda Whipsnake (Alameda Striped Racer) *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings, where shrubs form a vegetative mosaic with oak trees, and grasses and small mammal burrows provide refuge.	**Unlikely.** Solano County is outside of this subspecies' known range, and the Plan Area provides only very limited potential habitat.
Giant Garter Snake *Thamnophis gigas*	FT, ST, RP	Endemic to the Central Valley. Inhabits wetlands, and cultivated land and	**Unlikely.** Potentially suitable habitat is limited to small areas in the eastern portion of the Plan Area (i.e. agricultural land), and it is outside of this species' known range.

Species	Status*	Habitat	Potential for Occurrence
		associated ditches and irrigation channels. Highly aquatic and very wary.	
California Tiger Salamander *Ambystoma californiense*	FT, SSC	Inhabits annual grassland habitats with mammal burrows to provide refugia. Vernal pools and other ephemeral water features are critical for breeding. Survival of juveniles to maturity in upland refugia is the most important factor for population persistence.	**Unlikely.** Although it provides suitable aquatic breeding and terrestrial grassland habitat, the plan area is outside this species' recognized range. The nearest documented occurrence is at Travis Air Force Base, southeast of the plan area (CNDDB 2009). This species is not anticipated to be present in the plan area. However, it is recommended that the status of this species be reviewed as part of project specific development proposed under the Specific Plan.
California Red-legged Frog *Rana draytonii*	FT, SSC	Associated with quiet, perennial to intermittent ponds, stream pools and wetlands. Generally prefers relatively deep water for breeding, and shorelines with extensive marsh and/or riparian vegetation. Aquatic, but documented to disperse through upland habitats after rains.	**High Potential.** Both the higher-elevation ponds in the Plan Area Hills and Green Valley Creek and surrounding irrigation channels in the Plan Area Valley provide moderate to high quality habitat (varying between specific sites). There are two recent documented occurrences (including breeding) approximately 0.7 and 0.8 miles south of the Plan Area, respectively.
Foothill Yellow-legged Frog *Rana boylii*	SSC	Found in or near high-gradient, rocky streams in a variety of habitats. Feeds on both aquatic and terrestrial invertebrates. Prefers open canopy, river or creek habitats with shallow riffles, emergent vegetation and rocks or cobble substrate. Strongly associated with water.	**Unlikely.** Creeks within the Plan Area Hills lack riffle habitats (with cobble substrate) and appeared to be of poor quality for this species. Green Valley Creek provides the most suitable habitat but also apparently lacks riffle habitat within the Plan Area. The nearest documented occurrence is approximately 5.6 miles northeast of the Plan Area (CDFG 2009).
Fishes			
Green Sturgeon *Acipenser medirostris*	FT, SSC, NMFS	Anadromous, spending most of life cycle in the ocean. Spawns in the Sacramento and Klamath River systems. Immatures can be lingering transients in San Francisco Bay.	**No Potential.** The Green Valley Creek watershed provides anadromous habitat but is outside of this species' range.
Steelhead - central CA coast ESU *Oncorhynchus mykiss*	FT, NMFS	Anadromous, spending most of life cycle in the ocean. Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Present.** Green Valley Creek in the Plan Area Valley provides anadromous habitat and supports a run of this population per Leidy et al. (2005a).

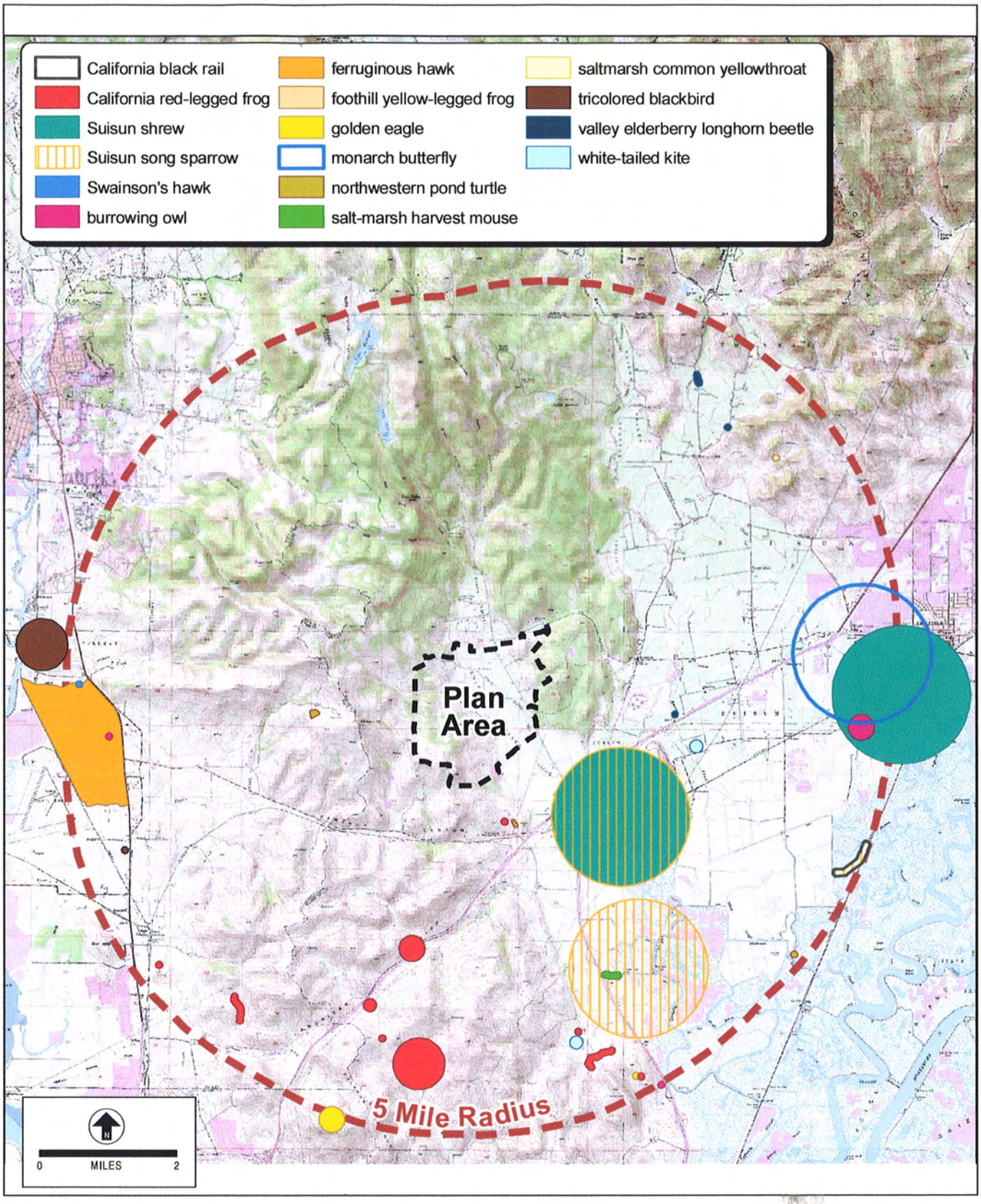
Species	Status*	Habitat	Potential for Occurrence
Steelhead - Central Valley ESU *Oncorhynchus mykiss*	FT, NMFS	Anadromous, spending most of life cycle in the ocean. Occurs in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**No Potential.** The Plan Area is outside of the recognized range of this population.
Chinook Salmon - Central Valley spring-run *Oncorhynchus tshawytscha*	FT, ST, NMFS	Anadromous, spending most of life cycle in the ocean. Federal listing includes populations spawning in the Sacramento River & its tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Unlikely.** The Happy Valley Creek Watershed provides anadromous habitat but does not support any runs of this species per Leidy et al. (1996).
Chinook Salmon - Central Valley fall/late fall-run ESU *Oncorhynchus tshawytscha*	FC, SSC, RP, NMFS	Anadromous, spending most of life cycle in the ocean. Populations of this ESU spawn in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean	**Unlikely.** The Happy Valley Creek Watershed provides anadromous habitat but does not support any runs of this species per Leidy et al. (1996).
Delta Smelt *Hypomesus transpacificus*	FT, ST	Endemic to the Sacramento-San Joaquin estuary and adjacent Suisun Bay marshes, in areas where salt and freshwater systems meet. Spawn in late winter and early spring. Weakly anadromous.	**No Potential.** The Plan Area does not provide the required salt/freshwater habitat and is outside of this species' restricted range.
Sacramento Splittail *Pogonichthys macrolepidotus*	SSC	Typically found in estuarine environments. Spawning occurs in flooded, tidal, freshwater vegetation; peak reproduction occurs in March and April.	**No Potential.** The Plan Area does not provide estuarine aquatic habitat, and is outside of this species' known range. The nearest documented occurrence is approximately 6.9 miles east of the Plan Area in Suisun Bay (CDFG 2009).
Hardhead *Mylopharodon conocephalus*	SSC	Found in the Sacramento-San Joaquin and Russian River systems, typically inhabiting undisturbed areas of larger low- to mid-elevation streams. Prefers clear, deep pools and runs with sand-gravel-boulder substrates and slow velocities.	**No Potential.** This species is absent from San Francisco Bay streams save the Napa River (Moyle 2002).

Species	Status*	Habitat	Potential for Occurrence
Tidewater Goby *Eucyclogobius newberryi*	FE, SSC	Found in brackish water habitats along the California coast from Agua Hedionda Lagoon (San Diego County) to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, requiring fairly still but not stagnant water and high oxygen levels.	**No Potential.** The Plan Area and its immediate vicinity do not contain shallow lagoon or lower stream reach habitat. This species is likely extirpated from the San Francisco Bay Estuary (Moyle 2002).
Invertebrates			
California freshwater shrimp *Syncaris pacifica*	FE, SE	Endemic to Marin, Napa, and Sonoma Counties. Found in shallow pools in low gradient streams where riparian cover is moderate to heavy.	**Unlikely.** Green Valley Creek provides potentially suitable habitat for this species, but the Plan Area is outside of this species' known range. The nearest documented occurrence is approximately 10.5 miles west of the Plan Area (CDFG 2009).
vernal pool fairy shrimp *Branchinecta lynchi*	FT, RP	Endemic to the grasslands of the Central Valley, and central to south coast mountains. Found in small, clear-water sandstone-depression astatic pools and grassed swale, earth slump, or basalt-flow depression pools.	**Unlikely.** Although the Plan Area is within the general range of this species (Erikson and Belk 1999), it does not provide vernal/astatic pool habitat. Furthermore, the nearest CNDDB occurrence is 6.1 miles west of the Plan Area, suggesting that no source population for the Plan Area exists.
Conservancy fairy shrimp *Branchinecta conservatio*	FE, RP	Endemic to the grasslands of the northern two-thirds of the Central Valley. Found in large, turbid astatic pools located in swales formed by old, braided alluvium.	**No Potential.** The Plan Area does not provide vernal/astatic pool habitat, and western Solano County is not within this species' currently recognized range (Erikson and Belk 1999). There are no documented occurrences within 10.0 miles of the Plan Area (CDFG 2009).
vernal pool tadpole shrimp *Lepidurus packardi*	FE, RP	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands; some pools are mud-bottomed and highly turbid.	**No Potential.** The Plan Area does not provide vernal/astatic pool habitat, and western Solano County is not within this species' currently recognized range. There are no documented occurrences within 10.0 miles of the Plan Area (CDFG 2009).
Delta green ground beetle *Elaphrus viridis*	FT, RP	Restricted to the margins of vernal pools in the grassland area between Jepson Prairie and Travis Air Force Base. Prefers the sandy mud substrate where it slopes gently into the water, with low-growing vegetation, 25 to100% cover.	**No Potential.** The Plan Area is outside the very restricted known range of this species.
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT, RP	Endemic to the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberry plants that are 2 to 8 inches	**Moderate Potential.** Blue elderberry was observed in several locations within the Plan Area during the site visit. The nearest CNDDB occurrence is approximately 2.1 miles east of the Plan Area (CDFG 2009).

Species	Status*	Habitat	Potential for Occurrence
		in diameter; some preference shown for "stressed" elderberry.	
callippe silverspot butterfly *Speyeria callippe callippe*	FE	Occurs in grasslands. As generally recognized, currently restricted to two populations in San Mateo and Alameda Counties respectively; however, the taxonomy of *S. callippe* in Solano Co. is unsettled. Adults fly in late spring to early summer. Larval host plant is Johnny jump-up (*Viola pedunculata*).	**Moderate Potential.** USFWS (1997, as cited in SCWA 2007) currently treats *S. callippe* occurring in Solano County as *S. c. callippe*. Grassland and oak woodland savannah in the Plan Area Hills are suitable for this butterfly, and the host plant was observed there during the site visit.
monarch butterfly *Danaus plexippus*	None; roost sites protected by CDFG	Winter roost sites extend along the coast from northern Mendocino County to Baja California, Mexico. Roosts located in wind-protected tree groves (usually of eucalyptus, Monterey pine or Monterey cypress), with nectar and water sources nearby.	**Present.** Individual monarchs were observed within the Plan Area Hills during the site visit. However, the Plan Area does not provide the dense coastal groves of non-native trees that provide typical winter roosting habitat for this species. The nearest documented roost site is approximately 4.9 miles east of the Plan Area.

SOURCE: Species list compiled from a January 2009 search of California Department of Fish and Game Natural Diversity Database (CNDDB), U.S. Fish and Wildlife Service (USFWS) Quadrangle Species Lists, and the California Native Plant Society (CNPS) Electronic Inventory for the, Monticello Dam, Lake Berryessa, Chiles Valley, Yountville, Mt. Vaca, Napa, Mt. George, Fairfield North, and Capell Valley USGS 7.5' quadrangles, a review of the Napa County Breeding Bird Atlas (Napa-Solano Audubon Society, 2003), and other CDFG lists and publications (Northern Spotted Owl Database, Jennings and Hayes 1994, Zeiner et al. 1990).

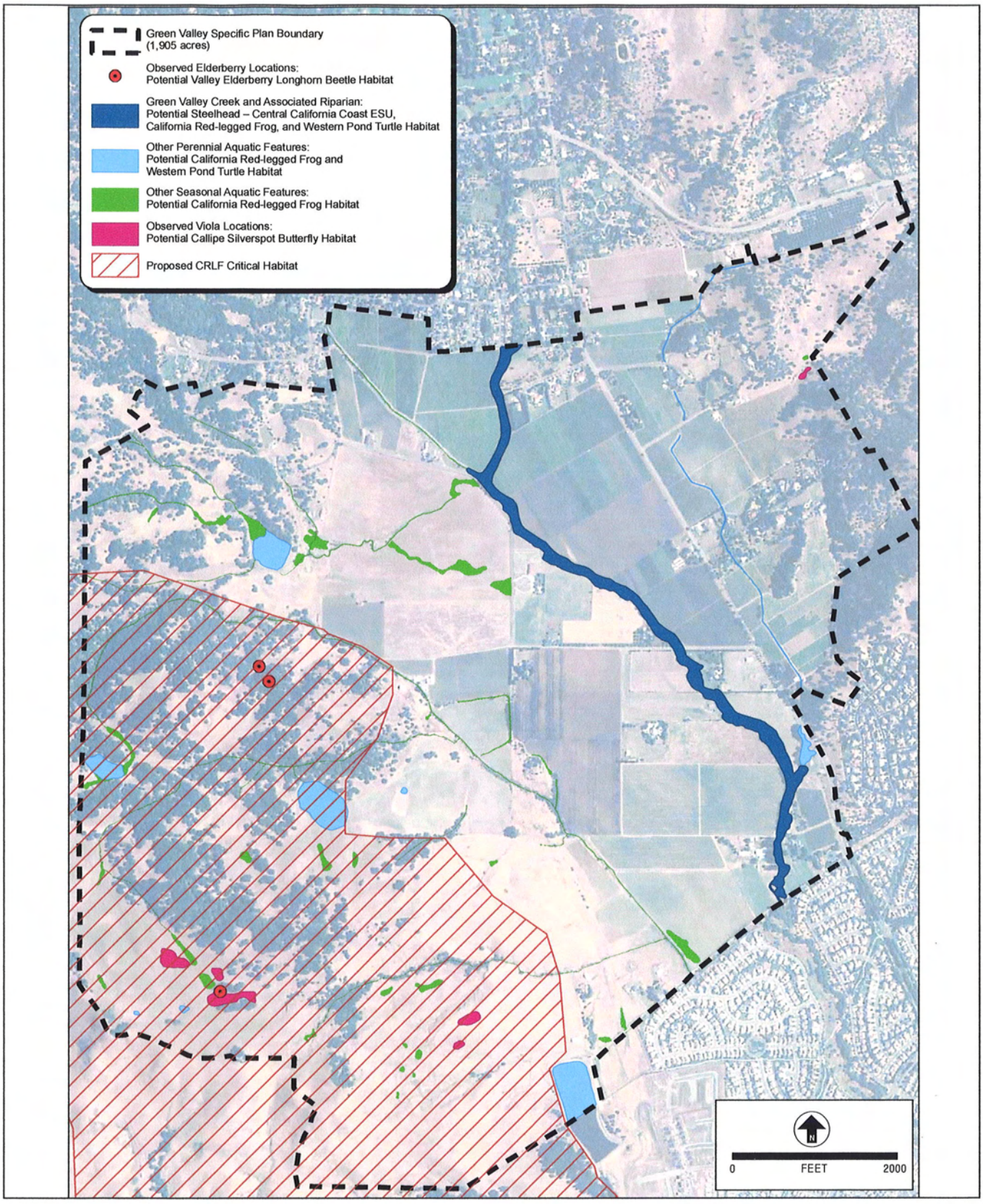
*** Key to status codes:**	
FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
FD	Federal De-listed
FPD	Federal Proposed for De-listing
NMFS	Species under the Jurisdiction of the National Marine Fisheries Service
BCC	USFWS Birds of Conservation Concern
RP	Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
SE	State Endangered
ST	State Threatened
SR	State Rare
SSC	CDFG Species of Special Concern
CFP	CDFG Fully Protected Animal
CDF	CDF Sensitive Species
SSI	CDFG Special-Status Invertebrates
WBWG	Western Bat Working Group High Priority species
List 1B	CNPS List 1B: Plants rare, threatened or endangered in California and elsewhere
List 2	CNPS List 2: Plants rare, threatened, or endangered in California, but more common elsewhere



SOURCE: WRA

Figure 6.3

RECORDED (CNDDB) OCCURRENCES OF SPECIAL-STATUS WILDLIFE SPECIES IN THE PLAN AREA VICINITY



SOURCE: WRA

Figure 6.4

SPECIALIZED WILDLIFE HABITATS IN THE PLAN AREA

Areas of grassland in the hills of the plan area, including both non-native annual grassland and areas identified as purple needlegrass grassland, may support this species. The plan area valley and oak woodlands do not provide suitable breeding habitat for this species and it has little potential to occur in those areas except when briefly passing through during migration.

- Western Pond Turtle (*Actinemys marmorata*), CDFG Species of Special Concern (SSC). Western Pond Turtle (WPT) is the only freshwater turtle native to northern California, and is associated with rivers, streams, lakes, and ponds throughout much of the state. Typical aquatic habitat features include stagnant or low-gradient water containing aquatic vegetation, and aerial basking sites such as logs, rocks, and mud banks. Adult females excavate nests in riparian and upland areas in the spring or early summer. Nest sites are generally located on unshaded slopes, and require friable soil that is sufficiently dry to promote successful egg development. The young generally hatch and overwinter in the nest. At least under some ecological conditions, WPT may regularly use terrestrial habitats. While some populations are active principally in the spring and aestivate during the rest of the year, turtles along the central California coast may be active year-round. WPT is a dietary generalist, subsisting principally on invertebrates as well as plant material and carrion.

  WPT (including one immature turtle less than two years old) was observed within the two large, perennial ponds in the middle portion of the plan area's hills during the site visit. The plan area provides high-quality aquatic habitat for WPT, including several ponds with aquatic vegetation and aerial basking sites (Figure 6.4). Nesting habitat is provided by vegetated areas with friable soil in the vicinity of the occupied ponds. Aquatic habitats in the plan area valley may also support WPT, though no turtles were noted there during the site visits. Green Valley Creek (and associated drainages) as well as irrigation canals in the plan area valley may support this species.

- Steelhead (*Oncorhynchus mykiss irideus*)--Central California Coast ESU, Federal Threatened (FT), National Marine Fisheries Service (NMFS), Essential Fish Habitat (EFH). The central California coast Evolutionary Significant Unit (ESU) includes all naturally spawned populations of Steelhead (and their progeny) in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin.

  Steelhead is an anadromous salmonid, typically migrating to marine waters after spending two years in fresh water. Following out-migration to the ocean, individual Steelhead remain there for two to three years (though some individuals may remain in the ocean for up to seven years) before returning to their natal stream to spawn. Adults typically spawn between December and June; females typically spawn two times before they die. Preferred spawning is found in perennial streams with cooler-temperature water, high dissolved oxygen levels, and substantial flow. Abundant riffles (shallow areas with gravel or cobble substrate) for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful reproduction.

Steelhead has been documented in Green Valley Creek and its tributaries.[1] Suitable spawning habitat is assumed to exist in the mid- to upper reaches of the Green Valley Creek watershed outside of the plan area. Within the plan area, Green Valley Creek provides migration habitat and may provide spawning and/or rearing habitat. Ephemeral and intermittent tributaries in the plan area hills did not contain sufficient water during the site visits to be suitable for Steelhead rearing, migration, or breeding.

- Monarch Butterfly (*Danaus plexippus*)--No special status; roost sites protected by CDFG. The monarch butterfly is a relatively common species in the region known for the long-range migration of adults and subsequent wintering along the California coast. Over-wintering roost habitat for monarchs is defined as that which supports long term (i.e., November to early March) hibernal clusters of butterflies. Such habitat typically consists of sheltered groves of tall trees near the coast that provide 1) vertical density and 2) a multi-tiered canopy to provide protection from the elements. Winter roost habitat is typically composed of stands of native or non-native conifers, or non-native bluegum eucalyptus.

  Although individual monarchs were observed within the plan area during the initial site visit, suitable winter roost habitat as typically defined above was not observed during the site visits. Nevertheless, there is the potential for suitable roost habitat within the plan area.

(2) Special-Status Wildlife Species with Potential Habitat in the Plan Area. The plan area also contains potential habitat for the following species although none were observed during the site surveys.

- Pallid Bat (*Antrozous pallidus*)--CDFG Species of Special Concern (SSC), Western Bat Working Group High Priority (WBWG). Pallid Bat is found in a variety of low-elevation habitats throughout California. It selects a variety of day roosts including rock outcrops, mines, caves, hollow trees, buildings, and bridges. Night roosts are usually found under bridges, but also in caves, mines, and buildings. This species is sensitive to roost disturbance. Unlike most bats, pallid bats primarily feed on large ground-dwelling arthropods, and prey is often taken on the ground (Zeiner *et al.* 1990). Both rock outcrops and woodland tree cavities in the plan area hills provide potential roost habitat for this species, and there are there are several documented occurrences within 10.0 miles to the west (CDFG 2009).[2] Bridges and buildings in the plan area valley may also provide suitable roosting habitat for this species.

- Western Red Bat (*Lasiurus blossevillii*)--CDFG Species of Special Concern (SSC), Western Bat Working Group High Priority (WBWG). Western Red Bat is considered highly migratory and broadly distributed, reaching from southern Canada through much of the western United States. It is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats (including riparian areas), often adjacent to streams or open fields, or in orchards. Woodlands of the plan area hills provide potential roost habitat. Though perhaps lower in quality, riparian habitats of Green Valley Creek and associated features in the plan area valley also provide potential roost habitat. Most of the plan area provides suitable foraging habitat.

[1] Leidy, R.A., G.S. Becker, and B.N. Harvey. 2005. See list of references in Appendix 23.3.

[2] See CDFG 2009 on list of references in Appendix 23.3.

- Fringed Myotis (*Myotis thysanodes*), Western Bat Working Group High Priority (WBWG). This bat is associated with a wide variety of habitats including coniferous/coniferous-deciduous forest, woodlands, and shrublands. Buildings, mines, and tree cavities are important day and night roosts. This species forages over aquatic habitats, scrub, and woodland habitats. Woodlands of the plan area hills and older buildings in both the plan area hills and valley provide potential roost habitat. Most of the plan area provides suitable foraging habitat.

- Long-Legged Myotis (*Myotis volans*), Western Bat Working Group High Priority (WBWG). The long-legged myotis is generally associated with woodlands and forested habitats. Large hollow trees, rock crevices, and buildings are important day roosts. Other roosts include caves and mines. Foraging habitat is variable and includes both aquatic features and terrestrial habitats such as scrublands and woodland. Woodlands of the plan area hills and older buildings in both the hills and valley provide potential roost habitat. Most of the plan area provides suitable foraging habitat.

- American Badger (*Taxidea taxus*), CDFG Species of Special Concern (SSC). American Badger is a large, semi-fossorial member of the Mustelidae (weasel family). It is found uncommonly within the region in drier open stages of most scrub, forest, and herbaceous habitats where friable soils and prey populations are present. Badgers are typically solitary and nocturnal, digging burrows to provide refuge during daylight hours. Burrow entrances are usually elliptical (rather than round); each burrow generally has only one entrance. Young are born in the spring and are independent by the end of summer. Badgers are carnivores, preying on a variety of mammals (especially ground squirrels) and occasionally other vertebrates and eggs.

  Grassland and woodland habitats of the plan area hills provide at least moderate-quality denning habitat for this species, and prey (e.g., ground squirrels) were also observed within the southern portion of the plan area hills. Although no burrows observed within the plan area during the site showed obvious badger characteristics, this species has the potential to occur in the hills of the plan area. The plan area valley is generally too disturbed to support this species. Therefore, there is the potential that it may exist in the plan area, although unlikely.

- Golden Eagle (*Aquila chrysaetos*)--CDFG Fully Protected Species (CFP), USFWS Bird of Conservation Concern (BCC). Golden Eagle is resident to semi-resident in open and semi-open areas from sea level to high altitude. Occupied habitats include tundra, shrublands, grasslands, mixed woodlands, and coniferous forests. Golden Eagle usually occurs in mountainous areas but also nests at lower elevations. Nests are typically located on cliffs or in large, isolated trees. This species forages over large areas. Its diet consists primarily of small mammals but includes a variety of other vertebrates, along with carrion.

  The plan area hills provide moderate-quality breeding habitat for this species and a forage base including ground squirrels and rabbits. There is also some potential for this species to breed in larger trees in the plan area valley, though the habitat there is of lower quality than the hills. The nearest documented nesting occurrence is approximately 7.2 miles west of the plan area (CDFG 2009).

- Northern Harrier (*Circus cyaneus*)--CDFG Species of Special Concern (SSC). Northern Harrier is found in open habitats throughout most of California, including freshwater and

brackish marshes, fields, grasslands, agricultural areas, and desert habitats. Harriers typically nest on the ground in open (i.e., treeless) habitats in dense, relatively tall vegetation, the composition of which is highly variable. Harriers subsist on a variety of small mammals and other vertebrates.

Open grassland and shrub habitats within the plan area provide suitable foraging habitat for harriers. Agricultural land and wetland marsh habitats close to agricultural areas within the plan area valley as well as the vicinities of the larger ponds in the plan area hills provide potential breeding habitat.

Northern Harrier is also a Special Management Species as outlined in the HCP.

- White-Tailed Kite (*Elanus leucurus*)--CDFG Fully Protected (CFP). White-Tailed Kite is resident in agricultural areas, grasslands, scrub habitats, wet meadows, and emergent wetlands throughout the lower elevations of California. Nests are constructed mostly of twigs and placed in small to large trees, often at habitat edges. This species preys upon a variety of small mammals and other vertebrates.

  The plan area valley provides high-quality habitat for this species, including grassland and agricultural land for foraging and suitable nest trees. The nearest documented nesting occurrence is approximately 2.5 miles southeast of the plan area (CDFG 2009). This species is unlikely to nest in the plan area hills due to its preference for low elevations and flat lands, but it may forage at the margins of the hill areas.

- Swainson's Hawk (*Buteo swainsonii*)--State Threatened (ST), USFWS Bird of Conservation Concern (BCC). Swainson's Hawk is a summer resident in the region, wintering principally in South America. Nearly the entire California population breeds in or adjacent to the Central Valley. Swainson's Hawk nests in medium to large trees, typically located within narrow bands of riparian vegetation or isolated oak woodlands, or in association with windbreaks and isolated trees. This species forages in open habitats such as grasslands, sparse shrub-lands and agricultural areas (especially with row, grain and/or hay crops). Its diet consists mostly of insects but also includes a variety of small vertebrates.

  The grassland and agricultural areas of the plan area valley provide suitable breeding and foraging habitat for Swainson's Hawk. The nearest documented nesting occurrence is approximately 2.0 miles southeast of the plan area (CDFG 2009). Breeding within the plan area hills by this species is unlikely given more dense vegetation and less edge habitat. Suitable foraging habitat is present throughout the plan area, but foraging is more likely in the valley.

- Ferruginous Hawk (*Buteo regalis*)--CDFG Species of Special Concern (SSC), USFWS Bird of Conservation Concern (BCC). Ferruginous Hawk is a winter visitor to northern California, favoring open terrain, from grasslands to deserts, with abundant prey, particularly mammals. The plan area valley as well as the grasslands and more open woodlands of the plan area hills provide suitable foraging habitat for wintering Ferruginous Hawks. However, this species does not breed in the area.

- Long-Eared Owl (*Asio otus*)--CDFG Species of Special Concern (SSC). Long-eared Owl is resident throughout much of California outside of the Central Valley, breeding in a variety of woodland habitats, including oak and riparian. This species requires adjacent open land

with rodents for foraging, and the presence of old nests of crows, hawks, magpies and similar species for breeding. This species often roosts communally in the winter. Western Solano County is within this species' breeding range as recently described. The plan area hills and valley collectively provide mixed oak woodland and riparian habitat for breeding, and open areas such as grasslands and agricultural land for foraging.

- Burrowing Owl (*Athene cunicularia*)--CDFG Species of Special Concern (SSC). Burrowing Owl is year-round resident in grasslands, desert floors and other dry, open habitats with sparse to nonexistent tree or shrub canopies. In California, this species is generally found in close association with California Ground Squirrels (*Spermophilus beecheyi*). Burrowing Owls use vacant ground squirrel burrows for shelter and nesting, and exhibit high site fidelity. They also may colonize disturbed, human-modified habitats, using debris, old pipes, or other anthropogenic structures. Prey for this species includes invertebrates and small vertebrates.

  While no Burrowing Owls or owl signs (e.g., feces stains, regurgitated pellets) were observed during the site visit, open grasslands in the plan area hills and uncultivated areas as well as the margins of agricultural fields in the plan area valley provide suitable open habitat, with ground squirrels present. There are also numerous CNDDB occurrences within 10.0 miles of the plan area (CDFG 2009). Hence, Burrowing Owl has a moderate potential to occur within the plan area.

- Olive-Sided Flycatcher (*Contopus cooperi*)--CDFG Species of Special Concern (SSC). Olive-Sided Flycatcher is a summer resident in the region, found in a variety forested habitats. This species typically nests in coniferous forest at higher elevations, but also nests in mixed forest and woodlands at lower elevations. The species winters in Central and South America. Breeding habitat is often associated with forest openings and edges, both natural (e.g., meadows, canyons, rivers) and human-made (e.g., logged areas). The plan area hills provide potentially suitable mixed woodland habitat with edges, and the plan area is at the margin of this species' breeding range as recently described. The plan area valley does not provide any typical breeding habitat for this species because trees within the valley occur principally in isolated groves or narrow, riparian bands.

- Tricolored Blackbird (*Agelaius tricolor*)--CDFG Species of Special Concern (SSC), USFWS Bird of Conservation Concern (BCC). Tricolored Blackbird is nearly endemic to California, occurring principally in the Central Valley and also within coastal portions of the state. This species breeds colonially near or over fresh water, preferably in tall, dense emergent vegetation (e.g., cattails and tules) but also in thickets of willow and blackberry as well as grain fields. Nesting habitat must be large enough to support a minimum of 30 pairs; breeding colonies of this species are tied to food abundance and can be highly ephemeral. Tricolored Blackbird joins large, mixed-species blackbird flocks during the non-breeding season.

  Cultivated agricultural fields involved in grain production, as well as emergent marsh along watercourses in the plan area valley, and within stock ponds in the hills, provide suitable habitat for this species. However, the smaller size of these areas limits the quality of breeding habitat for this species. Given there are several CNDDB nesting occurrences within 10.0 miles west and south of the plan area (CDFG 2009), there is a moderate potential for this species to breed within the plan area. This species also may be present with other blackbirds during the non-breeding season.

Tricolored Blackbird is a Special Management Species as outlined in the HCP.

- California Red-Legged Frog (*Rana draytonii*)--USFWS Threatened (FT), CDFG Species of Special Concern (SSC). California Red-Legged Frog (CRLF), formerly considered a subspecies of the Red-Legged Frog (*R. aurora*), is the only native "pond frog" found throughout much of California. It was listed as Threatened by USFWS in 1996.

  Typical CRLF breeding habitat is characterized by deep and still or slow-moving water associated with emergent marsh and/or riparian vegetation. Suitable aquatic habitats include ponds (ephemeral and permanent), streams/creeks (ephemeral and permanent), seasonal wetlands, springs, seeps, human-made features (e.g. stock ponds, roadside ditches), marshes, dune ponds, and lagoons. Depending on local conditions, CRLF may complete its entire life cycle in a particular patch of habitat (i.e., a pond suitable for all life stages), or use multiple habitat types. CRLF often undergoes estivation (i.e., a period of inactivity) during the dry months, over-summering in small mammal burrows, moist leaf litter, incised stream channels, or large cracks in the bottom of dried ponds. Adult and sub-adult (i.e., newly metamorphosed) CRLF may disperse from breeding habitats to nearby riparian and/or estivation habitats in the summer. Conversely, during the rainy season CRLF may disperse from estivation sites to suitable breeding habitat. During such dispersals, frogs can travel up to one mile over a variety of topographic and habitat types. Upland dispersal habitats include riparian corridors, non-native annual grasslands, and oak savannas.

  Although CRLF was not observed during the site visit, both the ponds (with associated wetlands) in the plan area hills and the aquatic features of the plan area valley (Green Valley Creek and associated drainages, irrigation ditches, and wetlands) provide suitable aquatic habitat for CRLF (see Figure 6.4). Upland portions of the plan area may also provide suitable dispersal habitat. Given the two recent CNDDB occurrences (including breeding) approximately 0.7 and 0.8 mile south of the plan area respectively (CDFG 2009), there is a high potential for CRLF to occur within the plan area.

  As outlined by the HCP, most of the plan area hills lies within the Jameson Canyon–Lower Napa River CRLF Frog Recovery Area (Recovery Area). Additionally, much of the plan area hills are within a proposed CRLF Critical Habitat Unit Sol-2 (Federal Register 2009).

- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)--Federal Threatened (FT). Valley elderberry longhorn beetle (VELB) is endemic to California's Central Valley. This beetle is completely dependent on elderberry (*Sambucus* spp.), particularly blue elderberry (*S. mexicana*) for larval development, and to a lesser degree, adult feeding. Typical habitat is characterized as large stands of mature elderberry shrubs in riparian or floodplain areas. Elderberrry plants with stems that are greater than one inch in diameter at ground level are generally considered to be suitable habitat for VELB (USFWS 1999).

  Blue elderberry appeared to be relatively widespread in the plan area during the site visit, observed in the hills and valley. Although no VELB or bore holes in elderberry plants were noted during the site visit, there is potential for VELB to use these shrubs. The nearest CNDDB occurrence is approximately 2.1 miles east of the plan area (CDFG 2009), and this species has a moderate potential to occur within the plan area.

- Callippe silverspot butterfly (*Speyeria callippe callippe*)--Federal Endangered (FE). Callippe silverspot butterfly (CSB), a subspecies of the callippe fritillary (*S. callippe*), is endemic to the San Francisco Bay Area with the largest remaining population found on San Bruno Mountain south of San Francisco. This butterfly occurs in grassland habitats, including oak woodland savannah. The larval food plant is Johnny jump-up (*Viola pedunculata*), and adults fly from late spring to early summer. Only one brood is produced annually.

  The local taxonomy and biogeography of *S. calllippe* is unsettled, with differing opinions from authorities regarding to which subspecies certain populations belong, including those of Solano County (SWCA 2007). For the purposes of the plan area, any *S. callippe* found within the plan area is assumed to be as CSB (i.e., *S. c. callippe*). *V. pedunculata* was observed within the plan area hills during the site visit (Figure 6.4), and thus this butterfly has a moderate potential to occur there. There is no potential for occurrence in the plan area valley, as suitable habitat for this species is not present there.

  Most of the plan area lies within the CSB Conservation Area as outlined in the HCP.

- California Tiger Salamander (*Ambystoma californiense*)--Federal Threatened Species, CDFG Species of Special Concern, CDFG Candidate Endangered. The California Tiger Salamander (CTS) is restricted to grasslands and low-elevation foothill regions in California (generally under 1,500 feet) where it uses seasonal aquatic habitats for breeding. The salamander breeds in natural ephemeral pools, or ponds that mimic ephemeral pools (stock ponds that go dry), and occupy substantial areas surrounding the breeding pool as adults. CTS spend most of their time in the grasslands surrounding breeding pools. They survive hot, dry summers by estivating (going through a dormant period) in refugia (such as burrows created by ground squirrels and other mammals and deep cracks or holes in the ground) where the soil atmosphere remains near the water saturation point. During wet periods, the salamanders may emerge from refugia and feed in the surrounding grasslands. CTS may move up to 1.2 miles (1.9 kilometers) away from breeding ponds, but most salamanders (95 percent) remain within 0.4 mile (2,200 feet; 670 meters) of breeding ponds (USFWS 2004).

  CTS is considered unlikely to be present in the plan area based on current known information.

  The nearest CTS record to the plan area is located approximately 10 miles to the southeast. Interstate 80 is a major barrier to dispersal for this population. Previous surveys conducted in the vicinity of the plan area have failed to discover California Tiger Salamander in the area. According to the Solano Multispecies Habitat Conservation Plan, no records for CTS occur north of I-80 on the west side of the Central Valley except for one area in the Dunnigan Hills in Yolo County (approximately 35 miles to the north of the plan area). While Figure 4-8 of the ADHCP shows “Potential Range” for CTS as extending to just south of the plan area boundary, the CDFG California Wildlife Habitat Relationships System range map for CTS (last revised in 2005) indicates the plan area is to the west of the known range of the species. In addition, perennial water features in the plan area generally do not provide good habitat for CTS as they usually harbor potential predators such as crayfish, fish, bullfrog and newts. Potential CTS predators were observed in two of the three perennial ponds during site visits by WRA biologists.

(d) Habitat Corridors and Linkages. Wildlife movement between suitable habitat areas can occur via landscape linkages and wildlife movement corridors. The primary function of both

wildlife corridors and landscape linkages is to connect two larger habitat blocks, also referred to as core habitat areas.

For the purpose of this EIR analysis, the term “landscape linkage” is used in a regional planning context, as a broad-scale mapping of natural habitat that functions to join two larger habitat blocks. Delineation of landscape linkages is a useful tool for regional planning, but often does not reflect pertinent site-specific information such as existing land use, presence of barriers, etc.

The term “wildlife corridor” is used herein in the context of smaller, local area planning, where wildlife movement may be facilitated by specific local biological habitats or passages and/or may be restricted by barriers to movement.

A landscape linkage may be comprised of several wildlife corridors, and locations of wildlife corridors may help refine the locations of regional landscape linkages. Landscape linkages and wildlife corridors can reduce the effects of habitat fragmentation by allowing animals to move between core habitats, replenishing depleted populations, maintaining diversity in the gene pool, and contributing to plant diversity by transporting seeds and pollen. This is important in maintaining species diversity and preventing species extinctions.

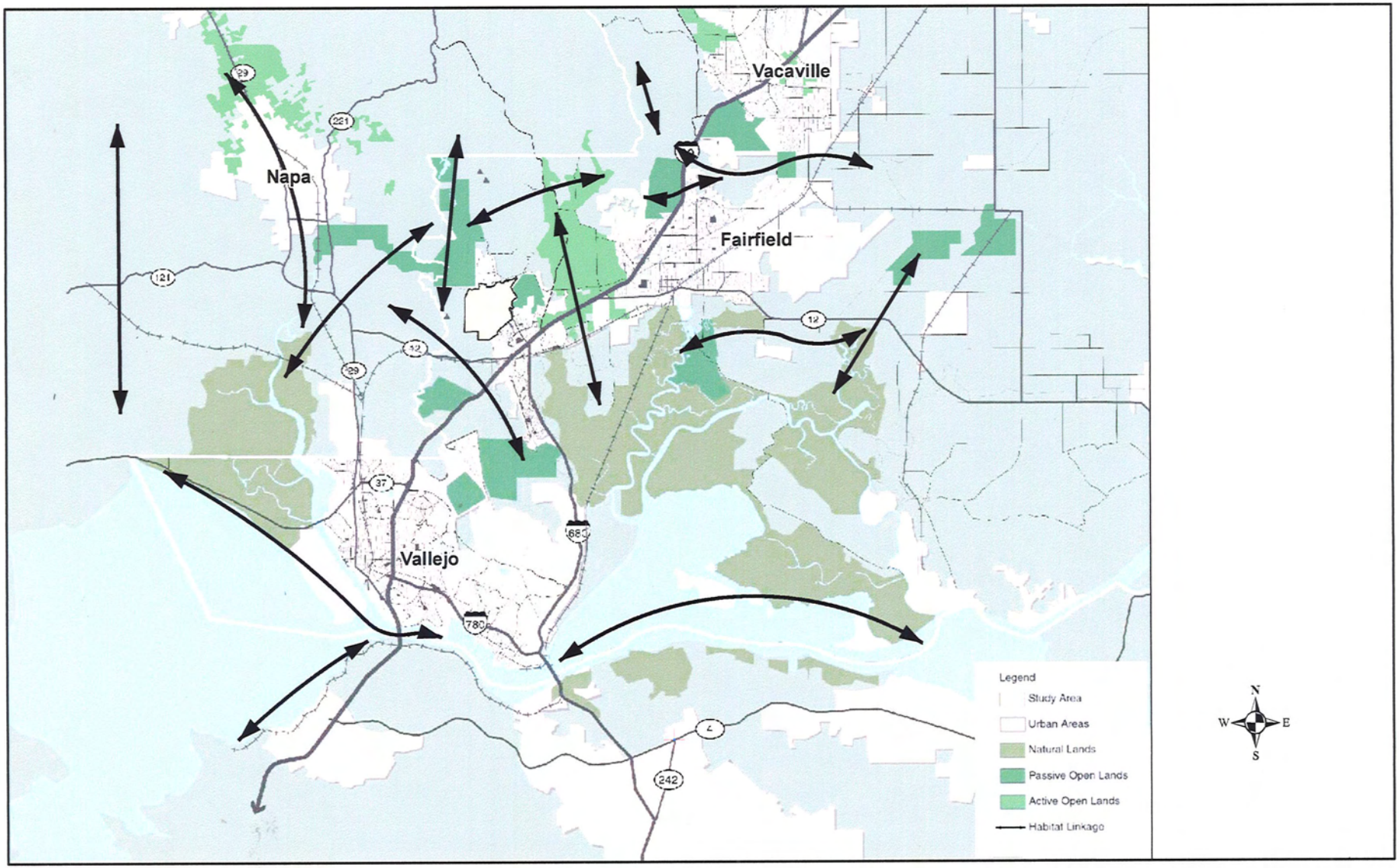
The presence of barriers to wildlife movement, whether natural or human-made, can result in the isolation of wildlife populations and the fragmentation of core habitat areas, resulting in a loss of genetic exchange that could affect the long term sustainability of a population.

Corridors and linkages vary between species due to habitat requirements, life histories, size, and movement patterns. Some species, referred to as “corridor dwellers” or “live-in” species, live their entire life cycles within corridors or linkages. Because the ideal corridors can vary by species, wildlife movement is typically analyzed based on suitability for several focal species. Above all, wildlife corridors must link two areas of core habitat and should not direct wildlife to developed areas or areas that are otherwise void of core habitat.

For this analysis, focal species have been chosen to represent large ranging mammals (Mountain Lion and Mule Deer); smaller ranging mammals (American Badger, Coyote, and Bobcat); herpetofauna (California Red Legged Frog), and fish species (Steelhead). Not all focal species are known to be present in the plan area; however, all are known to be present in the vicinity.

(1) Regional Landscape Linkages. Figure 6.5 shows regional landscape linkages that have been identified in the plan area based on the ADHCP and the California Missing Linkages Project. They are conceptual based on review of the two reports and the best professional judgment of the authors. As shown in Figure 6.5, the areas surrounding the Middle Green Valley plan area contain abundant open space that provides for the regional movement of wildlife and plant species. These areas are relatively free of barriers in comparison to other nearby regions such as the immediate San Francisco Bay area to the west and Sacramento metropolitan area to the east.

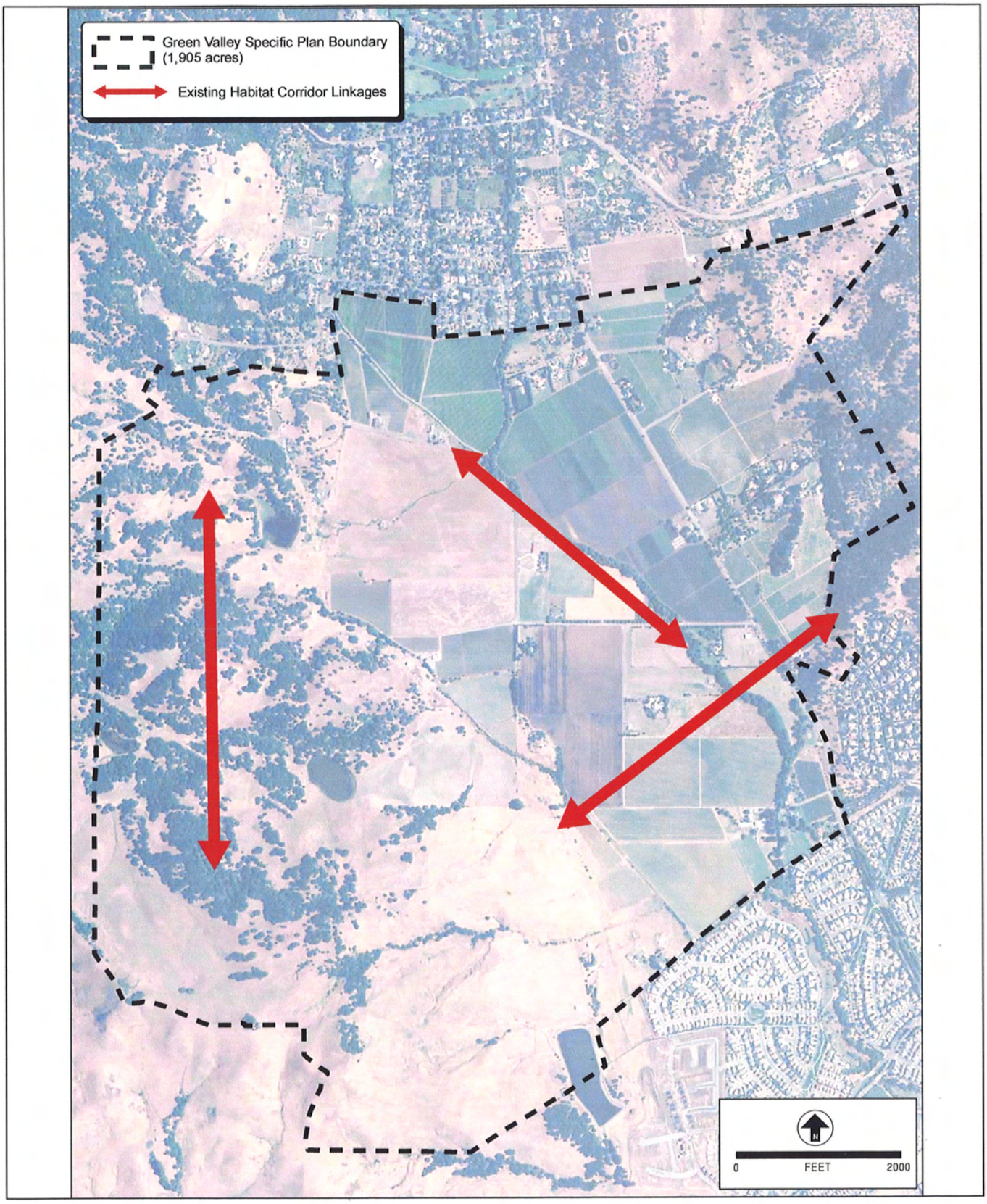
(2) Local Wildlife Corridors. Figure 6.6 shows local habitat corridors that have been identified in and immediately surrounding the plan area based on the ADHCP, California Missing Linkages Project, and biological investigations conducted in the plan area as part of preparation of this Draft EIR. The ADHCP has identified the corridor shown on Figure 6.6 in the hills on the west side of an d outside the plan area, referred to as the Vallejo Lakes Linage, and the linkage



SOURCE: WRA

Figure 6.5

EXISTING REGIONAL LANDSCAPE LINKAGES



SOURCE: WRA

Figure 6.6

EXISTING LOCAL LANDSCAPE LINKAGES

shown across the valley referred to as the Rockville Hills Linkage. An additional linkage, the Green Valley Creek Linkage, is shown along the Green Valley Creek riparian corridor, based on the site-specific investigation. These local linkages connect core habitat areas in several Napa County open space areas with open space habitat in southern Solano County, including the Suisun Marsh.

The Vallejo Lakes Linkage connects open space areas to the north with the Suisun Marsh, with a major barrier present at Interstate 80 south of the plan area. The Rockville Hills Linkage connects the hills to the west of the plan area with the Rockville Hills Regional Park, and perhaps more importantly, connects the western hills and Rockville Hills to the Green Valley Creek Linkage. The Green Valley Creek Linkage connects Middle Green Valley to Suisun Marsh, through a preserved wildlife corridor within the residential development to the south of Middle Green Valley. Although this linkage does pass through development to the north and south, it also provides shelter within the intact riparian habitat passage between the open space hills to the north and Suisun Marsh to the south.

The Green Valley Creek and Vallejo Lakes linkages are of particular value to long-ranging terrestrial mammals including the mountain lion (*Puma concolor*) and western mule deer (*Odocoileus hemionus*), and to corridor dwellers such as California red legged frog. These types of species often travel very far distances (mountain lion and mule deer), require large expanses of core habitat (mountain lion), and prefer to travel along natural habitat areas that contain enough structure to provide shelter, cover, and/or breeding habitat (mountain lion, California red legged frog).[1] The Rockville Hills Linkage is more valuable for smaller mammals, such as coyote (*Canis latrans*), bobcat (*Felis rufus*), and American badger; for species that can survive in relatively small home ranges, such as mule deer; and for herpetofauna such as California red legged frog. These species tend to be corridor dwellers, or do not range over distances that are as large as the mountain lion range.[2] In addition, large expanses of open space are present north of the plan area, beyond the Green Valley subdivision, and provide ample opportunity for large-ranging mammals to move to the Rockville Hills without the need to traverse through developed areas. For flying species, the Lomerias Muertas Linkage provides "stepping stone" and "live-in" habitat similar to the Soap Lake Floodplain and Pajaro River, although the species that use Lomerias Muertas Mountain may differ from those in these other areas.

Very few wildlife barriers exist under current conditions in the plan area. Green Valley Road presents a minor barrier to movement along the Rockville Hills Linkage. The Green Valley Creek Linkage is restricted by residential development to the north and south, but as described above, Green Valley Creek is a relatively intact riparian corridor, with a wide preserved buffer to the south and more bridges than culverts, making for less restrictive movement. The corridors between Green Valley Creek and the western hills, and between Green Valley Creek and the

[1]See Beier (1992, 1993, 1995) and Dickenson, et al. (2005) for references on mountain lion home range and preferred movement habitat. Mule deer have been known to travel distances of up to 100 miles, but home ranges are typically much smaller (Robinette 1966). California red legged frog is typical of "live-in" species in that a single generation does not typically travel the distances covered by most landscape linkages (see Bulger et al. 2003, Fellers and Kleeman 2007, for typical dispersal distances).

[2]See Taigas et al. (2002) for bobcat and coyote home range and dispersal distance, Proceedings of the Sierra Azul Wildlife Connectivity Workshop (Coastal Training Program 2007) for information on American badger home range and dispersal, Robinette (1966) for common mule deer home range size, and references cited in Section 6.1.2(c) for CRLF habitat requirements and dispersal distance.

Rockville Hills to the east, are likely the most important corridors in the plan area. Green Valley Creek provides a linkage from east and west, as well as north and south. Bridges over Green Valley Creek south of the plan area appeared to be smaller than those typically used by larger mammals. However, the road crossings above these bridges are primarily rural and residential, and would therefore not present major barriers to the movement of larger wildlife species. Characteristics of the Interstate 80 bridge across Green Valley Creek south of the plan area were outside the scope of this analysis.

6.2 PERTINENT PLANS AND POLICIES

Many plans and programs have been enacted by federal, state, and local legislation to protect biological resource values. CEQA requires an EIR to identify the plan and policy setting within which the project is proposed and discuss any inconsistencies between the proposed project and these applicable plans and policies (CEQA Guidelines section 15125(d)). CEQA also indicates that this plan and policy consistency discussion should be limited to the context of evaluation and review of environmental impacts (CEQA Guidelines section 15124(b)).

6.2.1 Pertinent Solano County Plans

(a) Solano County General Plan. Chapter 4, Resources, of the 2008 Solano County General Plan describes goals, policies, and implementation programs specific to biological resources. Goals and policies that are pertinent to consideration of the proposed Specific Plan and its potential impacts on biological resources include:

- *Repair environmental degradation that has occurred, and seek an optimum balance between the economic and social benefits of the county's natural resources.* (Goal RS.G-3)

- *Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety.* (Goal RS.G-4)

- *Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections.* (Policy RS.P-1)

- *Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna.* (Policy RS.P-2)

- *Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources.* (Policy RS.P-4)

- *Protect and enhance wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. Preserve contiguous habitat areas to increase habitat value and to lower land management costs.* (Policy RS.P-5)

- *Protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way.* (Policy RS.P-6)

The General Plan also contains implementation programs, such as a defined program for oak woodland mitigation, mapping of critical wildlife movement corridors, and development of conservation programs, such as through transfer of development rights. These programs are considered in section 6.3, Impacts and Mitigations, of this EIR chapter in the context of habitat and species-specific impacts and appropriate mitigation measures.

(b) Solano Multispecies Habitat Conservation Plan. The Bureau of Reclamation, Solano County Water Agency (SCWA), and its eight member agency contractors, including the City of Vacaville, the City of Fairfield, Suisun City, the City of Vallejo, the Solano Irrigation District, and the Maine Prairie Water District, have agreed to implement conservation measures to ensure the protection of threatened and endangered species and habitat within the SCWA service area. The SCWA and member agencies are developing the Solano Multispecies Habitat Conservation Plan (HCP) for use within the SCWA contract service area and other participating areas of the county. As already noted in subsection 6.1.1(c) above, at the time of preparation of this EIR (August 2009), the Final Administrative Draft HCP (ADHCP) was available for reference.

The ADHCP, once approved, will establish a framework for complying with federal and state regulations for endangered species while accommodating ongoing urban activities and future urban growth. The data used in the General Plan to delineate priority habitat areas for conservation and preservation are derived from the ADHCP.

The Specific Plan area is included within ADHCP-designated “Zone 2 – SCWA and Irrigation and Reclamation District Zone” and “Zone 3 - Remainder of County.” Activities covered by the ADHCP in these zones include maintenance and new construction of water district facilities, and conservation activities.

The County is not included as a participant in the ADHCP. However, it may be possible for projects located in unincorporated County areas to participate in the ADHCP if they receive water supply from the City of Fairfield, SCWA or SID.

6.2.2 Pertinent Federal Regulations

(a) Federal Endangered Species Act. The federal Endangered Species Act (FESA) protects certain animal and plant species. Under the FESA, species are put on lists and categorized as endangered, threatened, proposed, or candidate species. "Endangered species" are defined as those that are in imminent danger of extinction, while threatened species are those likely to be in danger of extinction. The FESA lists are maintained by, and protection of the listed species is enforced by, the United States Fish and Wildlife Service (USFWS). Actions that may result in a “take” of a FESA-listed species are subject to USFWS permit issuance and monitoring. A "take" is broadly defined as an action that would “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" a federally listed species or "attempt to engage in such conduct.” Listed species are often called “special-status species.” Federally listed plant species are protected when a take occurs on federal land or by federal action.

(b) Migratory Bird Treaty Act of 1918 (MBTA). The Migratory Bird Treaty Act (MBTA) protects nesting migratory bird species, including common species. Under the MBTA, destroying active nests, eggs, and young of migratory bird species is prohibited (16 U.S.C. § 703-712). The MBTA is enforced by regulations of USFWS (50 CFR 10) and through California Fish and

Game Code section 3513. Introduced bird species are not protected by the MBTA, as described in 50 CFR 10.

(c) Bald and Golden Eagle Protection Act. The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) protects bald and golden eagles by prohibiting disturbance of these birds. The most recent regulatory revision (June 2007) defines "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

(d) Section 404 of the Clean Water Act. The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. "Waters of the U.S." are defined broadly as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands stated in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated for sufficient duration and depth to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into "Waters of the U.S." (including wetlands) generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

6.2.3 Pertinent State of California Regulations

(a) California Endangered Species Act. The California Endangered Species Act (CESA) prohibits a "take" of any species that the California Fish and Game Commission determines to be an endangered or threatened species. Federal and state lists of threatened and endangered species are generally similar; however, a species present on one list may be absent from the other. CESA regulations are also somewhat different from the FESA in that the state regulations include threatened and endangered plants on non-federal lands within the definition of a "take."

(b) Porter-Cologne Water Quality Control Act. The term "Waters of the State" is defined by the State's Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." Under the Act, the San Francisco Regional Water Quality Control Board protects all waters in its regulatory scope but has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have been identified as of high resource value and vulnerable to filling, and are not systematically protected by other programs. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan has been adopted and approved by the State Water Resources Control Board and U.S. EPA.

Water Board jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. "Waters of the State" are regulated by the Water Board under the

State Water Quality Certification Program, which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to affect "Waters of the State," are required to comply with the terms of the Water Board's Water Quality Certification determination. If a proposed project does not require a federal permit but does involve dredge or fill activities that may result in a discharge to "Waters of the State," the Water Board has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

(c) Sections 1600-1616 of California Fish and Game Code. Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFG under sections 1600-1616 of California Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term "stream," which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."[1] "Riparian" is defined as "on, or pertaining to, the banks of a stream"; therefore, riparian vegetation is defined as "vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself."[2] Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFG.

(d) California Environmental Quality Act (CEQA). CEQA requires environmental review of projects within the State of California undertaken or permitted by any State or local agency, and regulates the review of projects with the potential to cause adverse environmental effects. CEQA requires review of species and communities regulated by the above-listed statutes. In addition, species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS, may also meet the CEQA definition of "rare." Impacts on plant species listed on the California Native Plant Society (CNPS) List 1 or List 2 in the Inventory of Rare and Endangered Plants of California (CNPS 2007) must also be evaluated. CEQA evaluation of CNPS List 3 and List 4 plant species is recommended by CNPS, but not all species on these lists are required to be evaluated under CEQA.

(e) Oak Woodlands Conservation Act. California's Oak Woodlands Conservation Act acknowledges the importance of private land stewardship to the conservation of the state's valued oak woodlands. The act, which established the California Oak Woodlands Conservation Program, aims to conserve oak woodlands existing in the state's working landscapes by providing education and incentives to private landowners. The program provides technical and financial incentives to private landowners to protect and promote biologically functional oak woodlands.

[1] 14 CCR 1.72

[2] CDFG ESD 1994

6.3 IMPACTS AND MITIGATION MEASURES

6.3.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines,[1] the proposed Specific Plan (the "project") would be considered in this EIR to have a significant adverse impact on biological resources if it would:

(a) 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;

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

(c) 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;

(d) 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;

(e) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

(f) conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved, local, regional, or state habitat conservation plan; or

(g) have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community or reduce the number or restrict the range of a rare or endangered plant or animal.

6.3.2 Relevant Project Characteristics

The proposed Specific Plan includes the following provisions relevant to biological resources (see chapter 2, Project Description, of this EIR for details):

(a) Transfer of Development Rights Program. The Specific Plan proposes use of a transfer of development rights (TDR) program that would help to preserve approximately 78 percent of land in the plan area as permanent open land with agricultural and habitat value. The proposed TDR program would allow property owners to sell development rights in exchange for placing grazing and other agricultural lands under a conservation easement. Additional lands that would be protected and managed under conservation easements include wetlands, streams, riparian woodland, and other habitats used by special-status species. Conservation easements required

[1] CEQA Guidelines, Appendix G, Items IV(a) through (f) and XVII(a).

to meet federal and/or state permit requirements would need to conform to the requirements for mitigation conservation easements established by CDFG and USFWS.

(b) Establishment of the Green Valley Conservancy. The Specific Plan proposes establishment of the Green Valley Conservancy, a non-profit, tax-exempt, legally independent conservation trust that would oversee (1) the preservation, monitoring, and management of natural resources; (2) the ongoing viability and sustainability of agricultural and grazing operations; (3) the promotion of educational, interpretive, and research opportunities; and (4) the establishment of a comprehensive community design review process.

The Specific Plan proposes that the Green Valley Conservancy be established prior to recordation of the first final subdivision map in the plan area. Funding for the Green Valley Conservancy would be generated through transfer tax from the sale and resale of property within the plan area, and through grant and other funding as outlined in the Specific Plan.

6.3.3 Impacts and Mitigation Measures

General and resource-specific biological resources impacts and mitigation measures are described below for identified or potential plan area vegetation and aquatic communities, special-status plant species, and special-status wildlife species. Impacts and mitigation measures are described at the program level of detail, as explained in chapter 1, Introduction, of this EIR. More specific impacts on biological resources can only be determined based on site-specific project-level plans that would be evaluated as part of the Solano County site-specific development review and approval process (see Appendix 23.2, Program EIR, for more explanation).

Impact 6-1: General Areawide Impacts on Biological Resources. The Draft Specific Plan (DSP) neighborhood and open lands framework (DSP sections 3.2.1 and 3.3.2), street network (DSP section 3.4.3) and associated environmental stewardship provisions and habitat protection objectives (DSP sections 3.3.4 and 5.5.6) have been formulated with the intent to avoid and protect mixed oak woodland forest, grassland pockets, and Hennessey Creek and Green Valley Creek riparian corridors, and to minimize biological resource impacts in general. The Draft Specific Plan also specifically acknowledges the framework that would be established by the Bureau of Reclamation and Solano County Water Agency's proposed Solano Multi-Species Habitat Conservation Plan (HCP) (DSP section 2.4.3) for complying with federal and state regulations for special-status species while accommodating future urban growth. In addition, the tree and habitat protection objectives identified in the DSP (section 5.5.6) specifically call for the protection of existing mature hardwood and oak trees; preservation, conservation and enhancement of open lands that provide wildlife habitat; minimization of tree and shrub removal in foothill areas; and repair of environmental degradation that has previously occurred. Nevertheless, based on the evaluation of biological resources occurring or potentially occurring within or in the vicinity of the DSP-designated development areas by the EIR consulting biologist, it has been determined that future individual development projects undertaken in accordance with the DSP may result in potential site-specific impacts on biological resources including sensitive vegetation and aquatic communities, special-status plant species, and special-status wildlife species, due to future individual project-level residential, commercial and mixed- use development, landscaped parkland construction, active open space land uses, and associated road and utility/infrastructure construction activities. This possibility represents a ***potentially significant impact*** (see criteria [a] through [e] under subsection 6.3.1, "Significance Criteria," above).

Development in accordance with the Draft Specific Plan has the potential to affect (a) vegetation and aquatic communities that are designated sensitive and/or are otherwise protected by local, state, and/or federal laws and regulations; (b) special-status plant species; and (c) special-status wildlife species. These potential impacts could occur as a result of future site-specific development activities under the land use designations and infrastructure provisions proposed by the Draft Specific Plan. Future site-specific development activities that could result in impacts on biological resources include:

- Development of residential lots and commercial and mixed-use space in each of the four Draft Specific Plan-designated neighborhoods;
- Construction of landscaped parkland and active use open space infrastructure;
- Road construction and other transportation-related improvements;
- Construction of new utility infrastructure and improvements to existing utility infrastructure, such as sewer and water supply facilities;
- Temporary disturbance in otherwise undeveloped land during construction; and

- Changes in habitat function as a result of indirect impacts from changes in land use. Common examples of indirect impacts include changes in hydrology as a result of topographical changes and increases in impervious surface, introduction of non-native invasive species, nighttime lighting, and pet presence/predation for wildlife species.

Mitigation 6-1. The County shall encourage avoidance, minimization and compensatory mitigation of identified biological resources, including careful consideration by prospective individual project applicants of the biological resource constraint information provided in this EIR during the pre-application project design phase. In addition, prior to County approval of any future plan area subdivision or other discretionary development application, the project proponent shall submit a *biological resources assessment report* prepared by a qualified biologist for County review and approval. The *biological resources assessment report* shall contain a focused evaluation of project-specific impacts on biological resources, including temporary and indirect impacts, as well as all related biological impact avoidance, minimization, and compensatory mitigation measures included in the project. If the assessment results in a determination that: (a) no oak woodland area, potentially jurisdictional wetland area, or riparian habitat or other stream features would be affected; and (b) no special-status plant or animal species habitat known to occur or potentially occur on or in the vicinity of the project would be affected; no further mitigation would be necessary. If the assessment results in a determination that one or more of these features would be affected, the assessment shall identify associated avoidance, minimization, and/or compensatory mitigation measures shall be consistent with the requirements of corresponding Mitigation 6-2 through 6-13 which follow in this EIR chapter, as well as all other applicable state and federal laws and regulations.

Prior to project approval, the County shall also confirm that project-level development has received the necessary permits, approvals, and determinations from applicable biological resource agencies as identified under Mitigations 6-2 through 6-13 which follow.

Implementation of these measures would reduce the potential impact to a ***less-than-significant level***.

Project-level permits, approvals, and determinations related to biological resources that may be required for individual projects within the plan area include:

(1) Permit approval, as necessary,[1] from federal and state biological resource regulatory agencies including:

[1]Permit approval from these regulatory agencies may not be necessary in all cases. If project-level plans avoid habitats within agency jurisdiction as determined by protocol level surveys, a permit may not be necessary. See impacts and mitigation measures that follow for further descriptions of species and habitats that may require protocol-level surveys. Decisions regarding final permitting requirements can only be made by the respective agency with jurisdiction over a particular resource.

(a) U.S. Army Corps of Engineers (Clean Water Act Section 404 Permit),

(b) San Francisco Bay Regional Water Quality Control Board (Water Quality Certification/Certification of Waste Discharge Requirements),

(c) California Department of Fish and Game (Lake and Streambed Alteration Agreement; Section 2081 Incidental Take Permit), and

(d) U.S. Fish and Wildlife Service (FESA Incidental Take Permit);

(2) Solano County determination of consistency with Middle Green Valley Specific Plan design requirements, including avoidance, minimization, and mitigation requirements for biological resources; and

(3) Implementation of the Middle Green Valley TDR program and the corresponding Conservation Easements on subject properties as required by the proposed Specific Plan and Development Agreement.

Applications for biological resource permits would be the responsibility of project-level applicants.

Impact 6-2: Potential Conflict with Solano County Multispecies Habitat Conservation Plan. The Draft Specific Plan includes substantial measures intended to minimize potential conflicts between future individual developments undertaken under the Specific Plan with the policies of the Bureau of Reclamation and Solano County Water Agency's Administrative Draft Solano County Multispecies Habitat Conservation Plan (HCP). Nevertheless, if future individual project-level development undertaken under the Specific Plan includes aspects, or proposes special-status species impact avoidance, minimization and/or compensatory mitigation measures, that are not consistent with the HCP as ultimately adopted, the individual project would conflict with the provisions of an adopted Habitat Conservation Plan. This possibility represents a ***potentially significant impact*** (see criterion [f] under subsection 6.3.1, "Significance Criteria," above).

The Specific Plan area is located in an area covered by the Final Administrative Draft HCP (ADHCP). Participation in an HCP by individual projects is voluntary. However, individual projects and plans could be found to have a significant adverse impact on biological resources under CEQA if they conflict with an adopted HCP or other regional planning document (see section 6.3.1, subsections [b] and [f] herein). Although the ADHCP has not yet been adopted, it is in the final stages of development and may be implemented prior to development in the plan area.

The locations of development areas proposed by the Specific Plan are split between ADHCP "Zone 2--SCWA and Irrigation and Reclamation District Zone" and "Zone 3--Remainder of County." For Zone 2, the ADHCP covers activities related to maintenance and new construction of water district facilities. For Zone 3, the ADHCP covers "primarily" activities related to conservation and restoration. Third-party entities in Zone 3 can gain special

coverage if they are under "direct regulatory control" of a participating agency, such as the water supply regulations of the Solano County Water Agency.

The ADHCP has classified habitat in the valley floor of the Specific Plan area as "Valley Floor Grassland and Vernal Pool Natural Community," while the hills on both sides of the valley have been classified as "Inner Coast Range" habitat. While the mapping of the hills as Inner Coast Range habitat is accurate, field investigations undertaken for this EIR indicate that the valley floor habitat mapping in the ADHCP is not accurate. The more accurate habitat classification for the valley floor is "Agriculture." As described above in subsection 6.1.2(a), the majority of the valley floor is comprised of agricultural land, including vineyards, hay fields, and agricultural row crops. A very small portion of the plan area contained recently fallow agricultural fields (classified as ruderal field in subsection 6.1.2(a)), and a few small areas of pasture containing non-native annual grassland are present, but natural grassland containing vernal pools was not observed during the site visits. On the basis of these site visits, the County has suggested that the mapped vegetation community designation in the ADHCP should be changed to Agriculture in the plan area valley. In addition, ADHCP vegetation mapping for the hills to the west of the plan area mapped the majority of oak woodlands as blue oak woodland. However, the site assessment indicates that the majority of these oak woodlands are mixed oak woodland containing a mix of coast live oak, valley oak, and California bay. Though some blue oak woodland is present in the plan area, the majority of the oak woodland habitat in these hills is mixed oak woodland (see Figure 6.1 and subsection 6.1.2(a)).

Portions of the Draft Specific Plan-proposed development areas are ADHCP-designated conservation areas for Priority Drainages and Watersheds (Green Valley Creek), Callippe Silverspot, California Red-legged Frog, Steelhead and Chinook Salmon, Swainson's Hawk, and California Burrowing Owl. The plan area also contains two ACHCP-designated "Key Corridors," referred to as the Vallejo Lakes and Rockville Hills corridors. These corridors are discussed above in subsection 6.1.2(d) herein.

Applicable species and habitat specific avoidance, minimization, and compensatory mitigation measures required as part of the ADHCP have been reviewed as part of the preparation of this EIR, and many are provided as examples for implementation by project-level applicants. Implementation of these avoidance, minimization, and compensatory mitigation measures would ensure consistency with the ADHCP.

The Draft Specific Plan includes substantial measures intended to minimize potential conflicts between future individual developments undertaken under the plan with policies in the ADHCP. As noted earlier, the Specific Plan proposes to retain approximately 78 percent of the plan area as farmland or open lands through implementation of a Transfer of Development Rights (TDR) program. These lands would be managed by the proposed Green Valley Conservancy. This level of conservation, together with implementation of avoidance and minimization measures contained in the ADHCP, would help to ensure future individual development projects undertaken under the Specific Plan would not conflict with the HCP, once adopted.

Mitigation 6-2. The County shall ensure that, prior to construction, project-level applicants implement (a) multispecies impact avoidance, minimization and compensatory mitigation measures consistent with the Solano HCP (even if the individual project-level application does not require a jurisdictional approval from an HCP implementing agency such as the SCWA, City of Fairfield Municipal Water, or SID); or (b) comparable measures approved by applicable resource agencies. This measure would reduce the potential impact to a ***less-than-significant level***. *[Note: This mitigation measure is intended to incorporate the final HCP, once adopted.]*

Final project-level multispecies impact avoidance, minimization and compensatory mitigation measures should be developed in consultation with applicable resource agencies. If avoidance, minimization and compensatory mitigation measures are developed in consultation with, and approved by, applicable resource agencies, no conflict with the future adopted HCP would be anticipated. As noted above, the preservation of the majority of the plan area is consistent with the goals of the ADHCP. Thus, while project-level applicants can in the future choose to participate in the adopted HCP (provided participation requirements are satisfied), preservation of land through the Specific Plan-proposed Transfer of Development Rights program is generally consistent with the establishment of conservation areas as described in the ADHCP.

Impacts on Non-Sensitive Vegetation and Aquatic Communities. Vegetation communities in the plan area that are not identified as sensitive or otherwise protected by local, state, and/or federal laws and regulations include non-native grassland, cultivated agriculture, vineyard, developed land, ruderal field, northern coyote brush scrub, and Diablan sage scrub. Because these communities are not identified as sensitive and are not otherwise protected, plan-related potential effects on these communities are not considered significant under CEQA, and therefore development in accordance with the Specific Plan would have a ***less-than significant impact*** on these communities. Potential impacts on sensitive species that may use these communities are identified in the impact statements that follow.

Figure 6.7 shows vegetation and aquatic communities within the development areas proposed by the Draft Specific Plan. Table 6.4 presents a summary of vegetation and aquatic communities present within the land use designations proposed by the Draft Specific Plan.

Actual impacts on biological communities can only be determined based on final project-level design plans. Potential impacts on vegetation and aquatic communities that are designated as sensitive or are otherwise regulated by local, state, and federal laws and regulations are considered significant under CEQA. Impacts and mitigation for these communities are discussed in detail below.

Mitigation. No significant impact on non-sensitive vegetation and aquatic communities has been identified; no mitigation is required.

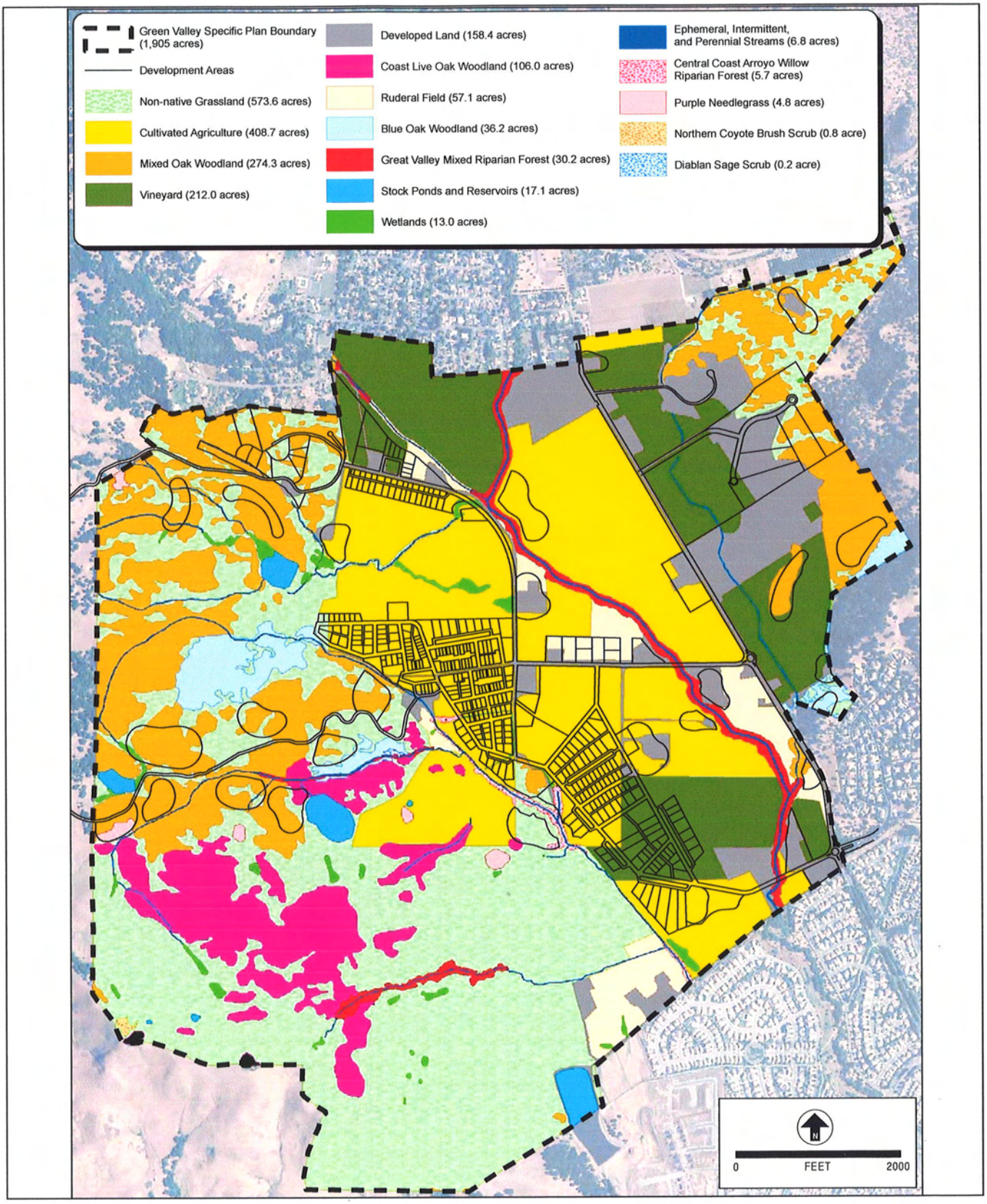
Table 6.4
EXISTING VEGETATION AND AQUATIC COMMUNITIES WITHIN PROPOSED SPECIFIC PLAN LAND USE DESIGNATIONS (see Figure 6.7)

	Proposed Specific Plan Land Use Designation (Acres of Community Present)										
Vegetation/Aquatic Community	Non-Urban Designations[1]	OL-R	AG-R	RF	RM and RN	RC	CS	PS	NCO	Transportation/ Roads	Total
Non-Native Grassland	548.7	3.8	3.1	0.8	11.8	0	1.9	0	0	3.5	573.6
Cultivated Agriculture	277.9	15.5	15.8	4.7	45.9	13.4	5.4	1.7	1.3	27.1	408.7
Mixed Oak Woodland	225.0	<0.1	12.9	3.4	29.1	0.1	1.6	0	0	2.2	274.3
Vineyard	182.5	2.1	3.9	1.7	12.9	0	1.6	0	1.0	6.3	212.0
Developed Land	120.6	0.9	13.9	7.9	0.5	0.3	4.2	<0.1	0.1	10.0	158.4
Coast Live Oak Woodland	105.2	<0.1	0	0	0.8	0	0	0	0	<0.1	106.0
Ruderal Field	48.6	0	2.1	5.5	0	0	0	0	0.9	<0.1	57.1
Blue Oak Woodland	34.5	0	0	1.4	0.3	0	0	0	0	<0.1	36.2
Great Valley Mixed Riparian Forest	29.9	0	<0.1	0	0	0	0	0	0	0.3	30.2
Stock Ponds and Reservoirs	17.1	0	0	0	0	0	0	0	0	0	17.1
Wetlands	11.8	0.2	0	<0.1	0.5	0	0.1	0	0	0.4	13.0
Ephemeral, Intermittent, and Perennial Streams	6.6	0	0	0	0.1	0	0.1	0	0	<0.1	6.8
Central Coast Arroyo Willow Riparian Forest	4.6	0.5	0	0	<0.1	0	0.6	0	0	<0.1	5.7
Purple Needlegrass Grassland	3.4	0	0	0	1.4	0	0	0	0	0	4.8
Northern Coyote Brush Scrub	0.8	0	0	0	0	0	0	0	0	0	0.8
Diablan Sage Scrub	0.2	0	0	0	0	0	0	0	0	0	0.2
TOTAL											1,904.9

SOURCE: WRA, Inc., 2009

[1] "Non-Urban Designations" include OL-N, AG-WS, and AG-P.

RF = Rural Farm
RM = Rural Meadow
RN = Rural Neighborhood
RC = Rural Mixed-Use Center
CS = Community Services
PS = Public Services
OL-N = Open Lands-Nature
OL-R = Open Lands-Recreation
AG-WS = Agriculture-Watershed
AG-P = Agriculture-Preserve
AG-R = Agriculture-Residential
NCO = Neighborhood Commercial Overlay



SOURCE: WRA

Figure 6.7

VEGETATION AND AQUATIC COMMUNITIES IN SPECIFIC PLAN-PROPOSED DEVELOPMENT

Impact 6-3: Impact on Oak Woodlands. The Draft Specific Plan includes land use and circulation configurations and associated measures intended to avoid or minimize potential impacts on existing oak woodlands. Nevertheless, future individual project-level development undertaken in accordance with the Specific Plan may result in direct, temporary and/or indirect impacts on oak woodland communities, representing a ***potentially significant impact*** (see criteria [b] and [e] under subsection 6.3.1, "Significance Criteria," above).

Development in accordance with the Specific Plan may directly affect oak woodlands (Mixed Oak Woodland, Coast Live Oak Woodland, Blue Oak Woodland) through future construction within one or more of the Specific Plan-proposed development areas. Based on the currently proposed land use diagram, the Draft Specific Plan includes approximately 51 acres of oak woodlands within designated potential development areas (see Table 6.4). This preliminary estimate would need to be confirmed through review of project-level development plans. Potential temporary construction impacts may also occur, depending on project-level construction plans. Indirect impacts on oak woodland may include disturbance of root zones during construction, and pruning or trimming oaks as part of routine maintenance.

Mitigation 6-3. Prior to approval of future individual, site-specific development projects within the plan area, the project proponent shall submit an *oak woodland management plan*, consistent with the requirements of the Specific Plan and this EIR (see below). The *oak woodland management plan* may be integrated into the *biological resources assessment report* (see *Mitigation 6-1*).

Direct impacts on oak woodland shall be mitigated by (a) conservation of oak woodland through the proposed Transfer of Development Rights program (or other method if necessary) at a minimum of a 1:1 ratio by acreage, and (b) replanting of removed heritage oaks at a 1:1 ratio. Transplantation of existing oaks would not require compensatory mitigation.

Implementation of this measure, combined with the detailed mitigation provisions included in the Specific Plan (see below), would reduce the potential impact to a ***less-than-significant level***.

(a) Oak Woodland Measures Included in Specific Plan. The currently proposed Draft Specific Plan includes the following measures to protect and mitigate for potential impacts on oak woodland communities:[1]

- Prior to siting any buildings, driveways, or other improvements, an *oak woodland management plan* is to be developed along with, or integrated into, an arborist's report. The plan should address tree health and structural stability for all Heritage Trees located within the building envelope. In addition, all trees within 30 feet of all built improvements,

[1]Solano County, Middle Green Valley Specific Plan, Preliminary Draft, October 28, 2009, pages 5-70 through 5-71.

within 10 feet of driveways and other site improvements, or where construction and grading would encroach within the tree's dripline are required to be included. The health and structural integrity of trees should be a key factor in determining the locations of buildings and driveways within the lot.

- The removal of any Heritage Trees as defined in the Solano County General Plan is to be mitigated with planting of a native tree. A Heritage Tree is defined by the County as (a) any tree that measures greater than 15 inches in diameter at a point 54 inches above natural grade; (b) any oak tree native to California, with a diameter of 10 inches at natural grade; or (c) any tree or group of trees specifically designated by the County for protection because of its historical significance, special character or community benefit.

- The removal of any tree, regardless of size, is to be approved.

- Where possible, existing trees within the building envelope may be spaded and transplanted to other locations within the lot.

- Unauthorized removal or cutting of trees is subject to fines imposed by the Green Valley Conservancy. If fines are assessed and not promptly paid, the Green Valley Conservancy has the right to replace trees, at the owner's expense, in accordance with a mitigation plan.

- Thinning and pruning of trees and other vegetation outside of designated building envelope areas are to be reviewed and approved.

- Linkages and corridors between stands of oak woodlands should be provided to minimize fragmentation.

In addition to the above requirements, the Specific Plan, through the proposed Transfer of Development Rights program, would provide for preservation of the vast majority of the oak woodland communities mapped in the plan area (see Table 6.4).

These measures are consistent with the California Oak Woodlands Conservation Act, which requires municipalities to adopt measures to mitigate for oak woodland impacts through conservation of existing habitat and planting of native oaks to mitigate project impacts. The Middle Green Valley Specific Plan requires both planting and conservation of native oak woodlands.

(b) Additional Requirements for Oak Woodland Management Plan. As mitigation for any impacts on oak woodland communities, project-level applicants would be required to comply with the requirements of the Specific Plan pertaining to oak woodlands, including preparation of an *oak woodland management plan* containing a mitigation plan for project-level impacts. As part of the *oak woodland management plan*, a mitigation plan shall be developed that is consistent with the following primary goals:

- Oak woodland habitat shall be conserved at a minimum 1:1 ratio. If necessary, other means identified by Solano County or applicable state or federal resource agencies may be used to accomplish adequate conservation to meet this goal.

- All affected heritage oaks (as defined by Solano County) shall be replaced at a minimum ratio of 1:1.
- No more than 20 percent of the proposed mitigation shall be implemented through the planting of seedlings.
- The remaining replacement oaks shall be planted from deepots or treepots using local stock.
- Monitoring of planted mitigation oaks shall be conducted by a qualified biologist, to be retained by the applicant and subject to County approval. Monitoring shall take place annually for a minimum of seven years.

Impact 6-4: Impact on Riparian Communities. The Draft Specific Plan includes land use and circulation configurations and associated measures intended to avoid or minimize potential impacts on Green Valley Creek and Hennessey Creek riparian communities. Nevertheless, future, individual project-level development undertaken in accordance with the Specific Plan may result in direct, temporary, indirect impacts on riparian communities in the plan area, representing a ***potentially significant impact*** (see criterion [b] under subsection 6.3.1, "Significance Criteria," above).

Development in accordance with the Specific Plan may directly affect riparian vegetation (Great Valley Mixed Riparian Forest, Central Coast Arroyo Willow Riparian Forest) due to future, individual project-level construction activities within Specific Plan-proposed development areas. Based on the currently proposed land use diagram, the Specific Plan would place roughly 1.4 acres of riparian vegetation within land use designations in which some form of development might occur (see Table 6.4). This preliminary estimate would need to be confirmed through review of project-level development plans. Potential temporary impacts on riparian communities may result from construction access and staging and infrastructure development, depending on project-specific construction plans. Potential indirect impacts may include trimming of riparian vegetation, such as during routine road and utility maintenance, potential introduction of invasive species, and potential streambank erosion due to increased stormwater runoff.

Mitigation 6-4. Proponents of projects that have been determined through *Mitigation 6-1* (biological resource assessment report) to involve potential impacts on riparian vegetation communities shall:

(a) contact the California Department of Fish and Game (CDFG) to determine whether a Lake and Streambed Alteration Agreement is necessary; and

(b) provide a detailed description of the potential riparian habitat impacts and proposed mitigation program to the Regional Water Quality Control Board (Water Board) as part of the project's Water Quality Certification application.

Final mitigation for direct and permanent impacts on riparian vegetation/habitat would be subject to *jurisdictional agency approval*--i.e., approval by the CDFG and Water Board. (The term "jurisdictional agency" as used throughout the mitigation program description in this EIR chapter refers to the federal and state resource agencies with authority pertaining to the subject impact--i.e., the applicable combination of USFWS, Corps, CDFG and/or Water Board, based on the jurisdictional authorities described in sections 6.2.2 and 6.2.3 herein.)

Mitigation shall include: (a) preservation of riparian habitat at the jurisdictional agency-established minimum ratio, measured by acreage, either onsite or at an approved mitigation bank; and (b) replanting riparian vegetation in preserved riparian areas at the jurisdictional agency-established minimum ratio as measured by acreage, either onsite or at an approved mitigation bank. Temporary impacts on riparian habitat may be mitigated by replanting of riparian vegetation at the jurisdictional agency-established minimum ratio. Preserved riparian habitat areas shall be protected in perpetuity by a conservation easement.

New development lot lines and the edges of cultivated agricultural fields in preserved lands shall be set back from preserved riparian corridors by a minimum of 50 feet for tributaries and a minimum of 100 feet from Green Valley Creek and lower Hennessey Creek.

The potential for introduction of invasive species into riparian communities shall be minimized through use of the planting palettes recommended in the Specific Plan, or a comparable palette approved by the authorized jurisdictional agencies. The use of native plants shall be encouraged.

To provide additional direct mitigation for project impacts on Hennessey Creek riparian vegetation, and potential indirect, in-kind mitigation for riparian impacts elsewhere in the plan area, a *Hennessey Creek conceptual restoration plan* shall be prepared. This conceptual restoration plan shall be prepared to jurisdictional agency

(continued)

Mitigation 6-4 (continued):

satisfaction prior to final approval of any future plan area subdivision map or other discretionary approval involving direct impacts on Hennessey Creek riparian communities, or impacts on riparian communities elsewhere in the plan area that may be subject to in-kind mitigation.

Implementation of these measures would reduce the potential impact to a ***less-than-significant level***.

Regulatory approval for project-level impacts on riparian vegetation communities must be obtained from CDFG and Water Board. CDFG approval is obtained through the Lake and Streambed Alteration Agreement process under sections 1600-1616 of California Fish and Game Code. Project-level applicants proposing projects with impacts on riparian vegetation would be required to contact CDFG to determine if a Lake and Streambed Alteration Agreement is required. Water Board approval is obtained through the Water Quality Certification process. Final project-level avoidance, minimization, and mitigation measures would be subject to the permitting processes of these agencies.

Mitigation for riparian vegetation impacts would include preservation of existing riparian vegetation as well as planting of native riparian vegetation in preserved riparian communities. The preservation component requires preservation of affected riparian vegetation at a minimum of a 1:1 ratio, as measured by acreage. Preserved riparian vegetation would be protected in perpetuity by a conservation easement and managed by the Green Valley Conservancy proposed by the Specific Plan. In addition, native riparian vegetation would be planted in preserved riparian areas at a jurisdictional agency-established minimum ratio, as measured by acreage. Mitigation for riparian habitat may be accomplished onsite or at an approved mitigation bank.

Project-level development shall maintain the recommended riparian corridor widths to avoid indirect impacts on riparian vegetation. In addition, the *Hennessey Creek conceptual restoration plan* shall provide additional area for riparian vegetation mitigation through planting and preservation.

Indirect stormwater impacts to riparian vegetation would be mitigated by the implementation of measures recommended for stormwater and water quality impacts, as described in chapter 11, Hydrology and Water Quality, of this EIR.

Impact 6-5: Impact on Wetlands, Streams, and Ponds. The Draft Specific Plan includes land use and circulation configurations and associated measures intended to avoid or minimize potential impacts on existing wetlands, streams and ponds. Nevertheless, future, individual project-level development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on wetlands, streams, and ponds in the plan area, representing a ***potentially significant impact*** (see criteria [b] and [c] under subsection 6.3.1, "Significance Criteria," above).

Development in accordance with the Specific Plan may directly affect wetlands, streams, and ponds due to construction activities within the Specific Plan-proposed development areas. Based on the currently proposed land use diagram, the Specific Plan would place roughly 1.4 acres of wetlands, streams, and ponds within land use designations in which some form of development might occur (see Table 6.4). This preliminary estimate would need to be confirmed through review of project-level development plans. Temporary impacts on wetlands, streams, and ponds may also occur, depending on project-specific construction plans. Potential indirect impacts on these communities include introduction of invasive species hydrology and water quality impacts as a result of changes in stormwater and runoff.

These habitats are regulated by the Corps under Section 404 of the Clean Water Act and by the Water Board under Section 401 of the Clean Water Act and the State of California Porter-Cologne Act. A precise determination of impacts is not possible until a jurisdictional wetland delineation has been performed and approved by the Corps and project-level plans have been developed.

Mitigation 6-5. Proponents of projects that have been determined through *Mitigation 6-1* (biological resources assessment report) to involve potential impacts on wetlands, streams and ponds shall:

(a) contact the California Department of Fish and Game (CDFG) to determine whether a Lake and Streambed Alteration Agreement is necessary; and

(b) submit a Section 404 permit application to the U.S. Army Corps of Engineers (Corps) and a Water Quality Certification application to the Regional Water Quality Control Board (Water Board). A jurisdictional Section 404 delineation must be approved by the Corps before permits can be issued by the above-listed agencies.

Final mitigation for direct and temporary impacts on wetlands, streams, and ponds shall be subject to the approval of the CDFG and Water Board. Mitigation for direct impacts shall include a minimum of (a) preservation of wetland, stream, and/or pond habitat at the jurisdiction agency-established minimum ratio, measured by acreage, either onsite or at an approved mitigation bank; and (b) creation of wetland, stream, and/or pond habitat in preserved areas at the jurisdiction agency-established minimum ratio, either onsite or at an approved mitigation bank. Onsite preserved habitat areas shall be protected in perpetuity by a conservation easement.

New development lot lines and the edges of cultivated agricultural fields in preserved lands shall be set back from preserved wetlands, streams, and ponds by a minimum of 50 feet from tributaries and a minimum of 100 feet from Green Valley Creek and lower Hennessey Creek.

(continued)

Mitigation 6-5 (continued):

New and expanded road crossings over streams shall be designed and constructed to minimize disturbance to the stream channel by the use of measures such as clear span bridges or arch span culverts when feasible, and minimizing the number and area of footings placed in and at the margins of stream channels.

The Hennessey Creek conceptual restoration area (see *Mitigation 6-4*) shall be made available to provide for mitigation of direct impacts on Hennessey Creek riparian communities, or potential in-kind mitigation for riparian impacts elsewhere in the plan area.

As indicated in *Mitigation 6-4*, the potential for introduction of invasive species shall be minimized through use of the planting palettes recommended in the Specific Plan, or a comparable palette approved by the authorized jurisdictional agencies. The use of native plants shall be encouraged.

These measures would reduce the potential impact to a ***less-than-significant level***.

Regulatory approval for project-level impacts on wetlands, streams, and ponds must be obtained from the Corps, CDFG, and Water Board. Corps approval for impacts on wetlands, streams, and ponds is obtained through application for a Section 404 permit. To obtain a Section 404 permit, applicants must first conduct a jurisdictional delineation using Corps methodology to identify and map the boundaries of Corps jurisdictional areas. The extent of Water Board and CDFG jurisdiction in wetlands, streams, and ponds is based on the results of the Section 404 jurisdictional delineation. For streams, however, the limit of CDFG and Water Board jurisdiction is the top of bank or edge of riparian vegetation, whichever is farther. CDFG regulatory approval is obtained through the Lake and Streambed Alteration Agreement process under sections 1600-1616 of California Fish and Game Code. Project-level applicants proposing projects with impacts on streams and ponds must contact CDFG to determine if a Lake and Streambed Alteration Agreement is required. Water Board approval for impacts on wetlands, streams and ponds is obtained through the Water Quality Certification process. Final project-level avoidance, minimization, and mitigation measures for wetlands, streams, and ponds are subject to the permitting approval of the above-listed agencies.

Mitigation for wetlands, streams, and ponds would include preservation of existing habitat as well as creation of wetland and/or pond habitat within preserved areas. Purchase of wetland mitigation credits at an approved mitigation bank can be used as an alternative to preservation and creation within the plan area. The preservation component requires preservation of affected wetlands, streams, and ponds at a jurisdiction agency-established minimum ratio, as measured by acreage. Wetlands, streams, and ponds preserved onsite would be protected in perpetuity by a conservation easement. In addition, wetland and/or pond habitat would be created in preserved areas at a minimum jurisdiction agency-established ratio, as measured by acreage. Alternatively, impacts on wetlands, streams, and ponds may be mitigated through the purchase of wetland preservation and wetland creation/mitigation credits at a minimum jurisdiction agency-established ratio as measured by acreage.

The *Hennessey Creek conceptual restoration plan* (see *Mitigation 6-4*) would provide additional area for riparian vegetation mitigation through planting and preservation.

Project-level development shall maintain the recommended riparian corridor widths (see *Mitigation 6-4*) as mitigation for indirect impacts on wetlands, streams, and ponds due to changes in water quality runoff. Development lots lines shall maintain a buffer of at least 50 feet from wetlands, ponds, and tributaries and 100 feet from Green Valley Creek and the lower reach of Hennessey Creek.[1]

Indirect stormwater impacts on wetlands, streams, and ponds would be mitigated by the implementation of mitigation measures identified in this Draft EIR for stormwater and water quality impacts, as described in chapter 11, Hydrology and Water Quality.

Impact 6-6: Impact on Special-Status Plant Species Observed or Known to Occur in the Plan Area. Development undertaken in accordance with the Specific Plan may result in direct, temporary, or indirect impacts on one special-status plant species observed or known to occur in the plan area, Northern California black walnut, which is a California Native Plant Society (CNPS) List 1B species. This possibility represents a ***potentially significant impact*** (see criteria [a], [b], [f] and [g] under subsection 6.3.1, "Significance Criteria," above).

Section 6.1.2(b) above describes special-status plant species that were determined to have the potential to occur within the plan area. Table 23.2.5 in Appendix 23.2 of this EIR provides an additional summary description of these species, including blooming period and habitat types. Future project-level construction within Specific Plan-proposed development areas may result in direct impacts on these species or habitat for these species. Temporary impacts may also occur during construction due to staging and access, depending on project-specific construction plans. Many of these species also have the potential to be affected by introduction of invasive species, a potential indirect impact of development undertaken pursuant to the Specific Plan.[2] Changes in hydrology may also indirectly affect special-status plant species populations.

[1]Buffer distances of between 50 and 100 feet have been shown to be effective at filtering sediment and runoff pollutants surrounding streams (Wegner 1999; Castelle et al, 1994; Erman et al, 1977; Neary et al, 1993; Arora et al, 1996).

[2]Much of the hills in the western portion of the plan area contain medusa head (*Taeniatherum caput-medusae*), an invasive species with a Cal-IPC Inventory (a consortium of invasive plant species management professionals) rating of High.

Mitigation 6-6. Prior to approval of future individual project-level development plans in the plan area, the potential for occurrence of special-status plant species in the proposed project area should be evaluated under *Mitigation 6-1* (biological resources assessment report requirements) by a qualified professional biologist and based on the information provided by this EIR and other appropriate literature resources. If suitable habitat for special-status plant species is present in the proposed project area, protocol-level special-status plant surveys shall be conducted during the appropriate blooming period by a qualified professional biologist. The results of the report shall be provided as part of a protocol-level *special-status plant survey report*, or integrated into other biological documentation.

If special-status plant species are found during protocol-level special-status plant species surveys, the special-status plant species survey report shall provide a discussion of avoidance, minimization, and mitigation measures as appropriate for each species population. Species observed to be present shall be avoided if feasible. If avoidance of these species is not feasible, the special-status plant species shall be transplanted to suitable habitat areas using techniques most suited for the species based on best available science. This may include seed collection, transplantation, or other appropriate methods depending on the observed plant species.

Potential indirect hydrology impacts shall be evaluated as part of the *special-status plant species survey report*. If special-status plant species populations could be affected by changes in hydrology as a result of the proposed project, measures such as establishment of appropriate buffers and/or changes to grading contours (if feasible) shall be recommended to maintain preserved and avoided plant species populations.

The potential for introduction of invasive species shall be minimized through use of planting palettes recommended in the Specific Plan or a comparable palette approved by the authorized jurisdictional agencies. The use of native plants is encouraged.

Construction activities shall disturb the minimum area necessary to complete construction work and disturbed areas seeded with a mix containing native species as soon as possible following disturbance. Construction equipment shall be kept clean of vegetative material, and construction traffic shall be restricted to those areas necessary to complete construction.

(continued)

Mitigation 6-6 (continued):

Implementation of these measures to the satisfaction of the listing jurisdictional agency would reduce the potential impact to a ***less-than-significant level***. The listing jurisdictional agency is the federal, state and/or local agency--i.e., the USFWS, or CDFG, CNPS, or County--that has recognized (i.e., listed) the species as a special status species deserving special consideration because of its rarity or vulnerability.

Protocol-level special-status plant surveys during the appropriate blooming time for these species will be necessary to determine if these species are present in the plan area. Not every species identified in this EIR has the potential to occur in every portion of the plan area. Therefore, a qualified professional biologist should be consulted to determine appropriate target species for protocol plant surveys. Protocol-level surveys should be completed based on the methods described in *Guidelines for Assessing the Effects of Proposed Development on Rare, Threatened and Endangered Plants and Plant Communities"* (CDFG 2000) and *CNPS Botanical Survey Guidelines* (CNPS 2001). Depending on the location of a particular project in the plan area, between one and three protocol-level surveys may be necessary. Based on typical blooming periods, appropriate months for conducting these surveys are April, May, and July. However, appropriate survey times may vary depending on seasonal rainfall, so survey periods may change based on evaluation by a qualified professional biologist.

If special-status plant species are found during protocol-level special-status plant species surveys, the species should be avoided if feasible. Avoidance is advised particularly for plant species that are federal or state threatened, endangered, or candidate species under the FESA and CESA. If avoidance of these species is not feasible, suitable habitat for these species shall be preserved and the special-status plant species should be transplanted using techniques most suited for the species based on best available science. This may include seed collection, root stock transplantation, or other appropriate methods depending on the observed plant species.

Potential temporary impacts on occupied habitat are to be mitigated in the same manner as permanent impacts. Rare plant species often have difficulty reestablishing in areas following construction disturbance. Project construction should disturb the least amount of land feasible and seed the disturbed area with a mix containing native species as soon as possible following disturbance to prevent the spread of medusa head and other non-native invasive species.

Introduction of invasive species can be minimized by using appropriate planting palettes containing native species and non-invasive horticultural varieties.

For many of these special-status plant species, hydrology is also an important factor for habitat suitability. The potential impacts on special-status plant species due to changes in hydrology from project-level construction should be evaluated by a qualified professional biologist, and appropriate buffers should be established and/or grading contours adjusted to maintain suitable hydrology for preservation of special-status plant species populations.

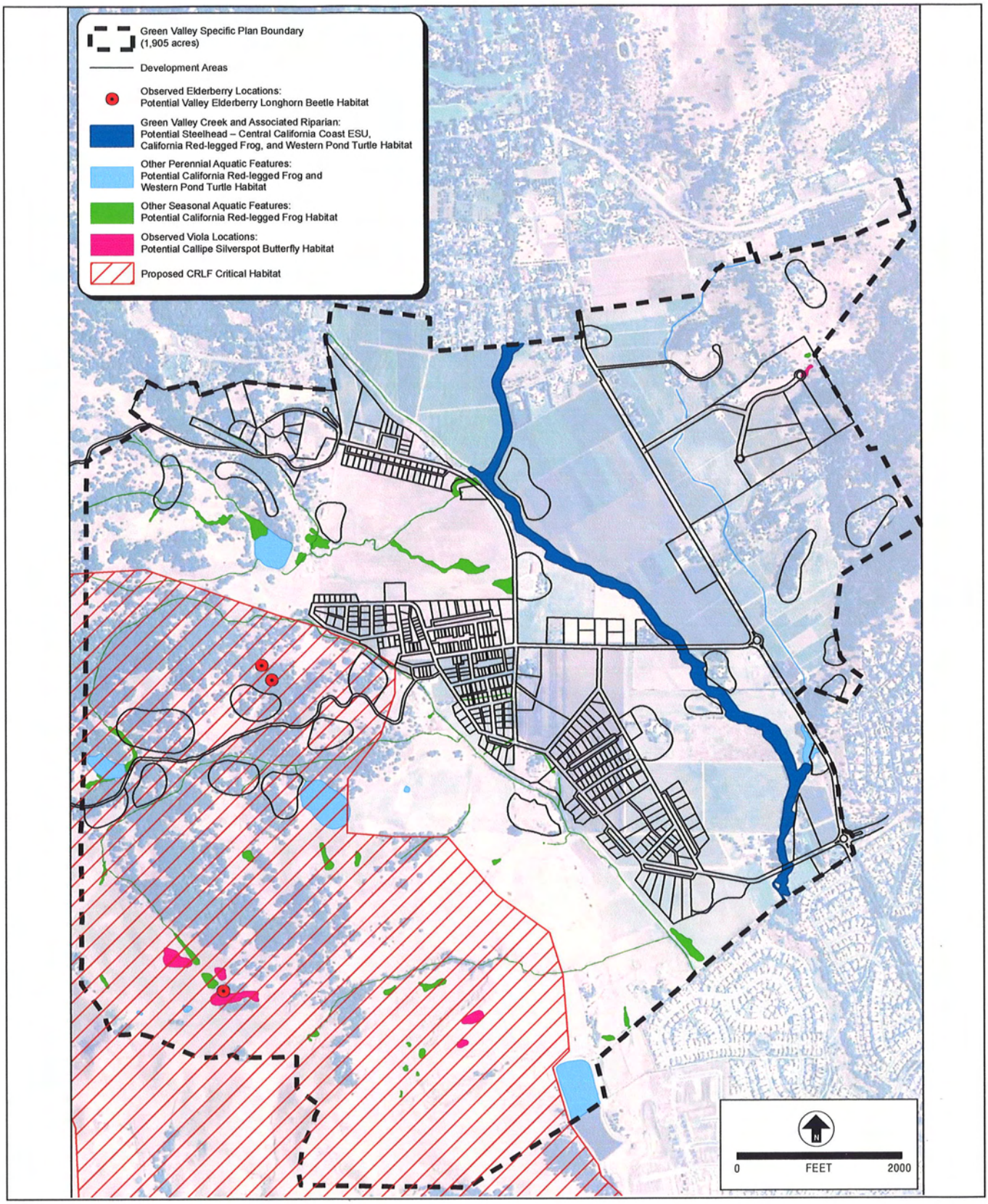
Impact 6-7: Impacts on Special-Status Plant Species with Potential Habitat in the Plan Area. Development undertaken in accordance with the Specific Plan may result in direct, temporary or indirect impacts on special-status plant species that have not yet been observed or are not yet known to occur, but could potentially occur, based on habitat conditions in the plan area, including CNPS List 1B species (Alkali milk-vetch, Big-scale balsamroot, Big tarplant, Narrow-anthered California brodiaea, Mt. Diablo fairy lantern, Tiburon paintbrush, Holly-leaved ceanothus, Pappose tarplant, Western leatherwood, Adobe lily, Diablo helianthella, Brewer's westernflax, Robust monardella, Baker's navarretia, Snowy Indian clover, and Saline clover) and CNPS List 2 species (Dwarf downingia, Rayless ragwort, and Oval-leaved viburnum). This possibility represents a ***potentially significant impact*** (see criteria [a], [b], [f], and [g] under subsection 6.3.1, "Significance Criteria," above).

Mitigation 6-7. Implement *Mitigation 6-7*. Implementation of this measure as a condition of future individual discretionary project approvals, to the satisfaction of the listing jurisdictional agency (CDFG), would reduce this potential impact to a ***less-than-significant level***.

Impact 6-8: Impacts on Special-Status Wildlife Species Observed or Known to Occur in the Plan Area. Development undertaken in accordance with the Specific Plan may result in direct, temporary or indirect impacts on special-status wildlife species observed or known to occur in the plan area, including CDFG Species of Special Concern (Loggerhead Shrike, Grasshopper Sparrow, and Western Pond Turtle), a USFWS Bird of Conservation Concern (Lewis's Woodpecker), a Federal Threatened Species (Steelhead) and a CDFG Protected Species (Monarch Butterfly). This possibility represents a ***potentially significant impact*** (see criteria [a], [b], [f], and [g] under subsection 6.3.1, "Significance Criteria," above).

Figure 6.8 shows specialized wildlife habitat areas within Specific Plan-proposed development areas.

Future biological assessments prepared for project-specific development should review the status of wildlife species to determine if consideration of impacts and mitigation is necessary based on best available science.



SOURCE: WRA

Figure 6.8

SPECIALIZED WILDLIFE HABITATS IN SPECIFIC PLAN-PROPOSED DEVELOPMENT AREAS

Mitigation 6-8. The *biological resources assessment reports* submitted by applicants for project-level developments in the plan area shall evaluate the potential for special-status wildlife species to occur in the proposed project areas and shall identify appropriate avoidance and minimization measures. In accordance with *Mitigation 6-2*, the *biological resources assessment reports* shall refer to the anticipated Solano HCP for appropriate avoidance, minimization and/or compensatory measures. Impacts on avian species protected by the Migratory Bird Treaty Act (MBTA) shall be avoided through preconstruction breeding bird surveys and avoidance of occupied nests. Implementation of this measure as a condition of individual discretionary project approval, to the satisfaction of the listing jurisdictional agency(ies), would reduce this potential impact to a ***less-than-significant level***.

Examples of avoidance and minimization measures for special-status wildlife species are provided in *Mitigation 6-10* through *Mitigation 6-13* below. Specific avoidance and minimization measures would be project-specific and therefore which of these measures, and combinations of measures, would be applied to particular project-specific development proposals cannot be assigned in detail as part of this program-level evaluation.

For avian species, the impacts and mitigations listed below include species covered under the Federal Endangered Species Act (FESA) and California Endangered Species Act (CESA), and those designated as California Fully Protected Species (CFP), CDFG Species of Special Concern (SSC), and/or USFWS Birds of Conservation Concern (BCC). A wide variety of non-special-status native bird species not specifically addressed below are protected by the Migratory Bird Treaty Act (MBTA). Impacts on these species should be avoided through preconstruction breeding bird surveys and avoidance of occupied nests.

Impact 6-9: Impacts on Special-Status Wildlife Species with Potential Habitat in the Plan Area. Development undertaken in accordance with the Specific Plan may also result in direct, temporary or indirect impacts on special-status species that have not yet been observed or are not yet known to occur, but could potentially occur, based on habitat conditions in the plan area, including CDFG Species of Special Concern (Pallid Bat, various Western Bat species, American Badger, and Northern Harrier), CDFG Fully Protected Species (Golden Eagle and White-Tailed Kite) and a USFWS Bird of Conservation Concern (Golden Eagle). This possibility represents a ***potentially significant impact*** (see criteria [a], [b], [f], and [g] under subsection 6.3.1, “Significance Criteria,” above).

Mitigation 6-9. Implement *Mitigation 6-8*. Implementation of this measure as a condition of future individual discretionary project approvals, to the satisfaction of the listing jurisdictional agency (CDFG), would reduce this potential impact to a ***less-than-significant level***.

This review should include species addressed as well as species not specifically addressed under *Impact/Mitigation 6-10* through *Impact/Mitigation 6-13* below. For example, Figure 4-8

in the ADHCP shows "Potential Range" for the California Tiger Salamander (CTS) as extending to just south of the plan area boundary. It is recommended that project-level applicants consult with USFWS and CDFG to evaluate whether additional CTS surveys are warranted. Similarly, although only roost sites for the Monarch Butterfly are protected, and there are currently no known or potential roost sites in the plan area, future biological assessments should evaluate the status of this species and the need for additional assessment. While CTS habitat, Monarch Butterfly roost sites, and other SSP habitats are not likely to be present in the plan area under current conditions, those conditions may change in the future and it is advisable to consult with the applicable resource agencies in evaluating these species.

Impact 6-10: Impact on Loggerhead Shrike, Lewis's Woodpecker, Grasshopper Sparrow and Other Protected Bird Species. Future, individual project-level development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on nesting and foraging habitat for protected bird species known to occur in the plan area, including Loggerhead Shrike, Lewis's Woodpecker, and Grasshopper Sparrow, as well as other special-status and Migratory Bird Treaty Act-protected bird species with the potential to occur in the plan area, representing a ***potentially significant impact*** (see criterion [a] under subsection 6.3.1, “Significance Criteria,” above).

Loggerhead Shrike, Lewis's Woodpecker, and Grasshopper Sparrow species have been observed in the plan area. In addition, it has been determined that other protected species including Golden Eagle, Northern Harrier, White-Tailed Kite, Swainson's Hawk, Ferruginous Hawk, Long-Eared Owl, Olive-Sided Flycatcher, and Tricolored Blackbird, have the potential to occur in the plan area. The plan area provides suitable breeding and foraging habitat and is within the range of these species. For example, much of the plan area has been designated within the ADHCP "Swainson’s Hawk Irrigated Agriculture Conservation Area" or the "Swainson’s Hawk Inner Coast Conservation Area."

Development or other land conversion practices within potential habitat for Swainson’s Hawk and other bird species may result in impacts on breeding and foraging habitat for these species. If Swainson’s Hawk or other bird species are present during the nesting season, such alterations could also result in the incidental take of adults and/or young. Temporary impacts may be similar, depending on project-level construction plans. In addition, development undertaken pursuant to the Specific Plan could affect foraging habitat for these species.

The majority of the habitat for Swainson's Hawk is located in agricultural fields in the plan area valley. For other bird species, suitable habitat is located both in the plan area hills and the plan area valley, depending on species habitat requirements. While the Specific Plan would avoid development in and preserve the majority of the plan area, some habitat areas may be affected. The affected habitat for Swainson's Hawk may be greater than affected habitat for other bird species. The specific acreage of impacts and avoided and preserved habitat for Swainson's Hawk and other bird species can only be determined based on project-level planning.

Potential indirect impacts on these various bird species include increased noise and nighttime lighting, increased harassment by pets and urban wildlife, and the reduction of a suitable prey or forage base due to any combination of the above factors (including land conversion). Such impacts could result in decreased reproductive success and/or local population viability.

Mitigation 6-10. If construction or other disturbance to suitable nesting habitat for these and other potential special-status bird species is conducted between February 1 and August 31, pre-construction breeding bird surveys shall be conducted by a qualified biologist no later than 30 days prior to the anticipated start of construction. Construction and removal of suitable nesting vegetation may be initiated without pre-construction surveys if removal and disturbance of suitable nesting habitat is conducted between September 1 and January 31.

If breeding birds are observed during pre-construction surveys, disturbance to active nests shall be avoided by establishment of a buffer between the nest and construction activities. Appropriate buffer distances are species- and project-specific but shall follow the guidelines of the ADHCP: for example, a minimum of 500 feet would be required for Swainson's Hawk and a minimum of 250 feet for Special Management Species (Loggerhead Shrike, Grasshopper Sparrow, and Tricolored Blackbird). For all other special-status bird species, a minimum buffer distance of at least 50 feet shall be required.

The *biological resources assessment reports* required under *Mitigation 6-1* for all individual discretionary development projects in the plan area shall contain analysis of measures that would be used by a proposed development project to minimize and avoid potential indirect impacts on special-status bird species.

Implementation of these measures would reduce the potential impact to a ***less-than-significant level***.

Direct impacts on nesting special-status and MBTA-protected bird species are to be avoided by conducting pre-construction breeding bird surveys or initiating removal and/or disturbance to suitable nesting habitat outside of the breeding season. For Swainson's Hawk, the breeding season is considered to be between March 15 and August 31. For other bird species, the breeding season is considered to be between February 1 and August 31. If construction or other disturbance to suitable nesting habitat is conducted between February 1 and August 31, pre-construction breeding bird surveys shall be conducted by a qualified biologist no later than 30 days prior to the anticipated start of construction. Construction and removal of suitable nesting vegetation may be initiated without pre-construction surveys if removal and disturbance of suitable nesting habitat is conducted between September 1 and January 31.

If breeding birds are observed during pre-construction surveys, disturbance to active nests shall be avoided by establishment of a buffer between the nest and construction activities. Buffer distances can vary by species, and should be developed by a qualified biologist based on species-specific requirements. Buffer distances specified by the ADHCP are a minimum of 500 feet for Swainson's Hawk and a minimum of 250 feet for Special Management Species

(Loggerhead Shrike, Grasshopper Sparrow, and Tricolored Blackbird). For other special-status bird species, a minimum buffer distance of 50 feet shall be required. Buffers may be subject to modification based on project-specific design and consultation with CDFG and/or USFWS.

The Specific Plan provides for sufficient avoided and preserved habitat to mitigate for potential impacts on foraging habitat for breeding bird species. The final acreage of avoided and preserved land can only be determined based on project-level plans to be developed by land owners.

Avoidance and minimization measures for potential indirect impacts on special-status bird species would depend on project-specific design. Some examples of measures to reduce these impacts include:

- Appropriate night lighting design measures such as prismatic glass coverings, cutoff shields, embedded road lights, narrow spectrum bulbs, or other appropriate lighting technology.
- Adequate signage, fencing, and leash laws in areas of public access in bird nesting and foraging habitat to minimize potential harassment by people and pets.
- Public education initiatives informing the public of potential impacts of pets on bird species and means of minimizing those impacts (e.g., bells on cat collars).
- Planting of additional native tree and shrub cover as nesting habitat for bird species in preserved areas.

Impact 6-11: Impact on Western Pond Turtle. Future individual discretionary project-specific development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on Western Pond Turtle and suitable habitat for this species, representing a ***potentially significant impact*** (see criterion [a] under subsection 6.3.1, "Significance Criteria," above).

Western Pond Turtle (WPT) was observed in several ponds within the plan area hills during the site visit. Some of the aquatic features within the plan area valley (e.g., Green Valley Creek) provide suitable habitat and may also be occupied by WPT (see Figure 6.8).

Development or other land conversion practices in the plan area may affect potential WPT aquatic habitat (e.g., ponds and other aquatic features) and/or terrestrial breeding and dispersal habitat. Construction of roads in the plan area may also result in the creation of barriers to potential WPT movement between patches of aquatic habitat and/or between aquatic habitat and upland breeding habitat. If WPT is present, such alterations may also result in the incidental take of eggs, young, and/or adults (e.g., via use of construction equipment). Similar impacts may also occur in areas of potential WPT habitat that are temporarily affected, depending on project-specific construction plans.

Alteration of hydrology and water quality during construction and following development may indirectly affect WPT by influencing habitat characteristics. Other potential indirect impacts on

WPT include increased traffic, potential introduction of predatory non-native species, increased lighting from streets, and increased harassment by people and pets. Operation and maintenance of any open air stormwater and wastewater facilities may result in failed breeding attempts or incidental take of WPT individuals.

Mitigation 6-11. The presence of suitable aquatic and dispersal habitat for WPT shall be evaluated by a qualified biologist as part of the *biological resources assessment report* required under *Mitigation 6-1*. Projects containing suitable aquatic habitat for WPT shall provide an analysis of potential impacts, along with avoidance, minimization, and mitigation measures for potential impacts on WPT. It is recommended that final avoidance, minimization, and mitigation measures be developed in consultation with CDFG and/or be consistent with the measures outlined in the anticipated Solano HCP.

Direct impacts on WPT habitat shall be mitigated through implementation of the mitigation measures described above for wetlands, streams, and ponds (*Mitigation 6-5*). Indirect hydrology and water quality impacts on WPT shall be mitigated through implementation of mitigation measures recommended in chapter 11, Hydrology and Water Quality, of this EIR.

These measures would reduce the potential impact to a ***less-than-significant level***.

The presence of suitable aquatic and dispersal habitat for WPT shall be evaluated by a qualified biologist as part of the *biological resources assessment report* required under *Mitigation 6-1*. Projects containing suitable aquatic habitat for WPT shall provide an analysis of potential impacts, along with avoidance, minimization, and mitigation measures for potential impacts on WPT. It is recommended that final avoidance, minimization, and mitigation measures be developed in consultation with CDFG and/or be consistent with the measures outlined in the Solano HCP. Direct impacts on WPT habitat shall be mitigated through implementation of the mitigation measures described above for wetlands, streams, and ponds (*Mitigation 6-5*). Examples of avoidance, minimization, and mitigation measures that may be incorporated into the project-specific approval process and final design include:

- Pre-construction surveys and passive exclusion or relocation of WPT individuals present in suitable habitat conducted by a trained qualified biologist that has been approved by CDFG.

- Use of biological monitors and construction operator training sessions.

- For work conducted in aquatic habitat, scheduling as much work as possible between June 15 and October 15.

- Restoration of temporarily disturbed areas of aquatic habitat to pre-construction conditions as much as feasible.

- Adequate signage, fencing, and leash laws in areas of public access in WPT habitat to minimize potential harassment by people and pets.

- Educational initiatives on the potential effects of releasing fish, lizards, and other potentially predatory invasive species into the aquatic environment.

- Development of fishing restrictions, such as restrictions on use of live bait, to reduce potential for introduction of predatory species.

- Fencing of any open air stormwater and wastewater facilities, if feasible. Operation and maintenance of any open water stormwater and wastewater facilities to minimize ponding, scheduling of maintenance activities during the non-breeding season, and similar measures to prevent impacts on WPT.

In addition to these species-specific measures, proposed projects would also be required to implement stormwater and water quality mitigation measures outlined in chapter 11, Hydrology and Water Quality, of this EIR.

Impact 6-12: Impact on Steelhead. The Draft Specific Plan includes land use and circulation configurations and associated measures intended to avoid or minimize potential direct and indirect impacts on plan area streams and stream habitats. Nevertheless, future individual project-specific discretionary development undertaken in accordance with the Specific Plan may result in direct, temporary, and/or indirect impacts on Steelhead in Green Valley Creek, a Federal Threatened Species, representing a ***potentially significant impact*** (see criterion [a] under subsection 6.3.1, "Significance Criteria," above).

Steelhead (Central California Coast ESU) is known to occur within Green Valley Creek (see Figure 6.8). Green Valley Creek contains suitable rearing, spawning, and migration habitat for Steelhead. However, the tributaries within the plan area, including Hennessey Creek, are degraded and do not carry sufficient water to support runs of Steelhead.

Potential direct impacts on Steelhead within the plan area valley may result from direct alterations (such as from utility and road crossings) to Green Valley Creek, or potential creek restoration activities, that permanently affect the hydrology, water quality, substrate condition, prey community, and/or vegetative cover in a manner that is detrimental to Steelhead utilization of the creek. Such alterations may also result in the incidental take of individual Steelhead. The Specific Plan indicates that one new road crossing would be installed across Green Valley Creek, and one existing crossing may need to be widened to accommodate access and egress for developed areas. Potential utility crossings would use the footprint of this new road, as well as existing roads. No other direct impacts on Green Valley Creek are proposed by the Specific Plan.

Potential temporary impacts on Steelhead within the plan area would include removal of riparian vegetation and dewatering of Green Valley Creek for maintenance and/or construction activities. Potential indirect impacts on Steelhead may occur from changes in hydrology and water quality that could occur as a result of project-level development, both along Green Valley Creek and along tributaries to Green Valley Creek. These changes may affect the temperature and turbidity of the water column, as well as bottom substrate composition. In addition, artificial lighting placed near Green Valley Creek may affect Steelhead.

Mitigation 6-12. Utility crossings and new and expanded road crossings over streams shall be designed and constructed to minimize disturbance to the stream channel by using measures such as clear span bridges or arch span culverts when feasible, and by minimizing the number and area of footings placed in and at the margins of stream channels. Appropriate construction Best Management Practices (BMPs) such as those recommended in this EIR or in the anticipated Solano HCP to minimize impacts on Steelhead shall also be implemented. Design and minimization measures are subject to approval, and may change, based on consultation with the National Marine Fisheries Service (NMFS).

Riparian vegetation mitigation measures outlined in *Mitigation 6-4* shall also be implemented to reduce impacts on riparian vegetation that may affect Steelhead. Mitigation measures for stormwater quality and quantity identified recommended in chapter 11, Hydrology and Water Quality, of this EIR shall be implemented to minimize indirect impacts on Steelhead from stormwater and water quality changes due to construction.

Implementation of these measures would reduce the potential impact to a ***less-than-significant level***.

Regulatory approval for potential impacts on Steelhead and Steelhead habitat is obtained through consultation with the National Marine Fisheries Service (NMFS). This consultation is typically initiated as part of the Corps Section 404 permitting process described above for wetlands, streams, and ponds. However, project applicants are encouraged to contact NMFS personnel during the design phase to inquire about design recommendations and avoidance measures for a specific type of project. Potential impacts on Steelhead and other fish species are typically avoided and minimized through design measures and construction avoidance measures. Examples of such measures include:

- Restricting in-stream work to specified work windows during low-flow conditions (typically June 15 to October 15).
- Minimizing channel disturbance through project design, such as use of clear span bridges, arch span or non-embedded culverts, use of natural material and maintaining original channel elevation as much as feasible.
- Using non-toxic materials in design and construction, and preventing fill material such as concrete from coming into contact with waterways until it has been allowed to cure completely.
- Refueling and maintaining equipment in areas away from the creek channel.
- Completely removing old portions of bridge structure, to the extent that such removal does not result in extensive damage to the stream channel.

- Minimizing dewatering and allowing turbid water pumped out of coffer dams to settle before release back into the stream channel.

- Using a biological monitor to ensure that salmonids are not harmed by construction and dewatering.

- Using appropriate night lighting design measures such as prismatic glass coverings, cutoff shields, embedded road lights, narrow spectrum bulbs, or other appropriate lighting technology.

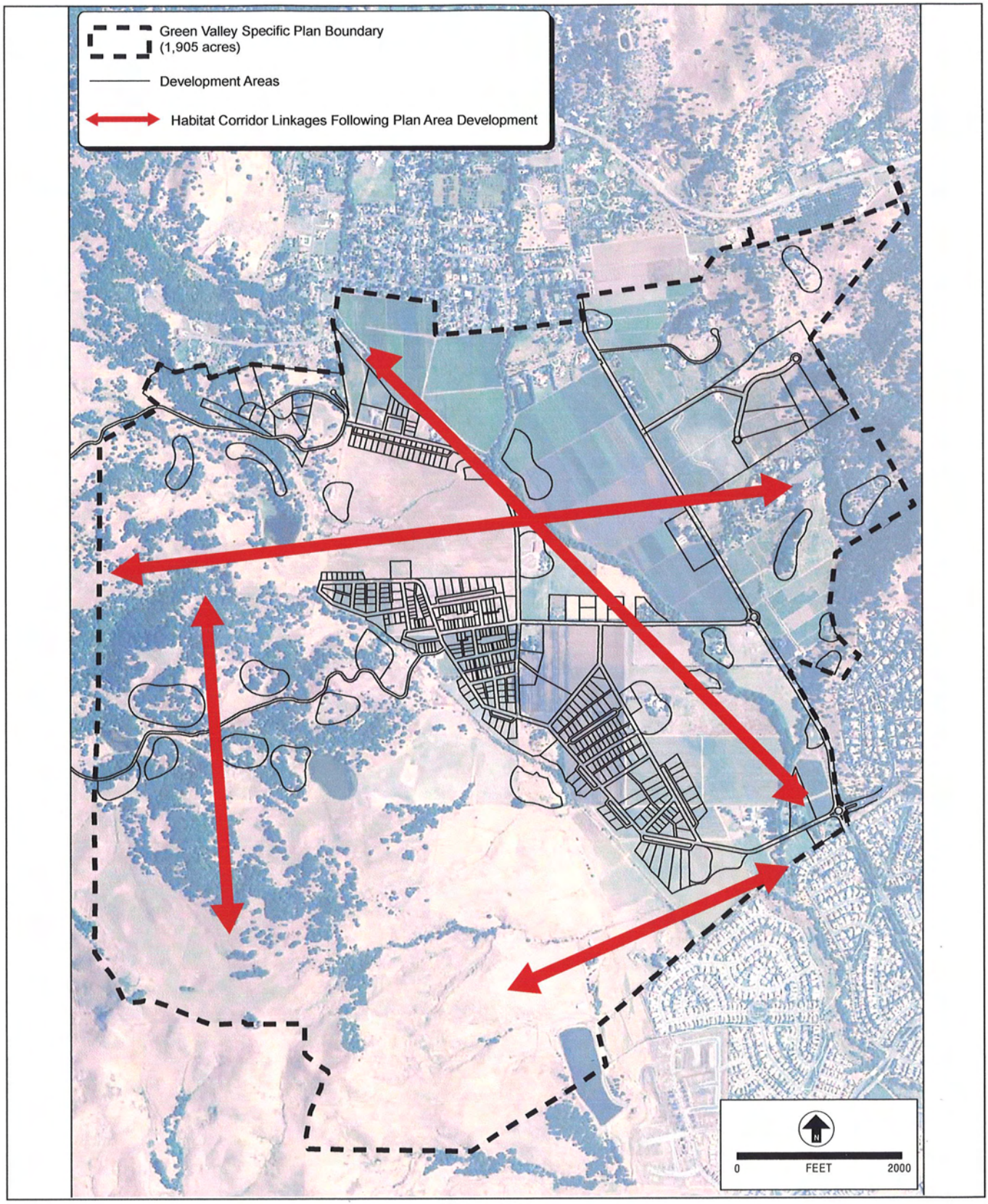
Final determination of BMPs and avoidance and minimization measures may be subject to change based on project-specific design and consultation with NMFS. If a project or infrastructure element would result in direct impacts on the creek channel that could affect Steelhead or Steelhead habitat, mitigation in the form of stream preservation and/or restoration may also be required, such as removal of any barriers to fish passage or existing artificial stream channel segments present within the plan area.

For riparian vegetation removed during construction, *Mitigation 6-4* shall be implemented. *Mitigation 6-4* includes the provision that new development lot lines and preserved cultivated agricultural fields maintain a setback of at least 50 feet from tributaries and 100 feet from lower Hennessey Creek and Green Valley Creek.

To mitigate and minimize potential indirect impacts due to changes in hydrology and water quality as a result of development, mitigation measures to control stormwater quality and quantity recommended in chapter 11, Hydrology and Water Quality, of this EIR shall be implemented.

Impact 6-13: Impact on Wildlife Habitat Corridors and Linkages. Compared to other forms of development, the cluster development patterns proposed by the Specific Plan would greatly reduce the potential impact on habitat corridors and linkages, and the proposed preservation of large open space areas would help preserve opportunities for wildlife habitat use and movement. Nevertheless, future individual discretionary project-level development undertaken pursuant to the Specific Plan has the potential to impact wildlife habitat corridors and linkages, through the introduction of barriers to wildlife movement in the form of wider roads with increased traffic and increased development and human presence, representing a ***potentially significant impact*** (see criterion [d] under subsection 6.3.1, "Significance Criteria," above).

Figure 6.9 shows habitat corridors and linkages that would be available for wildlife movement following implementation of the Specific Plan. The use of cluster development and preservation of open space would provide separation between the proposed development areas, minimizing potential impacts on habitat corridors and linkages. The Green Valley Creek Linkage would remain intact, with only a few small areas of development abutting the 200-foot-wide Green Valley Creek riparian corridor. Movement across the valley would also remain intact, with a viable corridor between the Elkhorn Neighborhood and the Three Creeks Neighborhood. This corridor width would vary between 500 and 1,500 feet and contain



SOURCE: WRA

Figure 6.9

AVAILABLE LANDSCAPE LINKAGES AFTER DEVELOPMENT ALLOWED BY THE SPECIFIC PLAN

canyons and sheltered oak woodland habitats in the hills and cultivated agricultural fields in the valley. The proposed development areas in the western hills in the plan area would provide more restricted corridor widths of between approximately 100 and 400 feet but are proposed for less intensive development than would be present in the valley and would be clustered to provide space between developed areas and preserved open space. The western hills also support oak woodland vegetation, which provides shelter and shielding from development, and can help facilitate wildlife movement. In addition, the hills to the west of the plan area provide large areas of open space for movement of species that may avoid the sparsely developed areas in the hills.

Appropriate corridor widths are species-specific and can be influenced by other factors, such as habitat type present, nighttime lighting in developed areas, land use at the margins of developed areas, and land use within the open space area. Therefore, regardless of corridor width, development in previously undeveloped land represents a potential impact on habitat corridors and linkages. However, the preservation of buffered open space, in combination with other measures, can minimize the potential impact of development on corridors and linkages. Wildlife species have been documented to have the ability to move through urbanized areas, including areas that are more heavily developed than the development areas proposed by the Specific Plan.

Mitigation 6-13. As part of the *biological resources assessment report* required under *Mitigation 6-1*, each project undertaken pursuant to the Specific Plan shall include minimization and mitigation measures for potential impacts on wildlife corridors. Measures may vary based on project location, project design, and habitat types present.

Project-level developments shall maintain the limits of development specified in the Specific Plan to provide adequate buffers for habitat corridors. Stream setbacks specified in *Mitigation 6-4* shall be implemented to maintain adequate corridor widths in riparian areas to allow for movement of wildlife.

Implementation of these measures would reduce the potential impact to a ***less-than-significant level***.

As discussed above, development in areas that were previously open space has the potential to affect habitat corridors and linkages. However, there are ways to minimize the impact on corridors through project design and through avoidance and minimization measures so that the level of impact is less than significant. The Specific Plan would maintain large areas of open space that would be available for wildlife movement following implementation of the plan. In areas that would be developed, project-level plans shall implement minimization measures along the margins of developed areas to maximize the value of the preserved open space areas as movement corridors. Examples of minimization and mitigation measures that can be implemented by project-level development include:

- Design of bridge and culvert crossings in areas of potential wildlife corridors to accommodate wildlife movement, as appropriate for the structure and location.

- Planting of native vegetation along the margins of new development areas to provide sheltering from light and disturbance from development.

- Use of structural designs for curbs in areas of wildlife movement to direct smaller herpetofauna to appropriate culverts and undercrossings.[1]

- Removal of barriers to fish movement along Green Valley Creek, if present within the plan area.

- Planting of riparian vegetation in the expanded preserved riparian corridors along Green Valley Creek and Hennessey Creek.

- Use of appropriate night lighting design measures such as prismatic glass coverings, cutoff shields, embedded road lights, narrow spectrum bulbs, or other appropriate lighting technology.

- Along margins of development areas, designation of land uses that minimize nighttime use as much as feasible (such as commercial and institutional uses).

Final minimization measures for habitat corridors and linkages would be site- and project-specific. Proposed minimization measures for specific projects shall be submitted to Solano County as part of the *biological resources assessment reports* or similar documentation.

Impact 6-14: Cumulative Impact on Biological Resources. Development in the Specific Plan area, in combination with other future development elsewhere in the county and subregion, could contribute to cumulative biological resources impacts, including cumulative losses of special-status species, Heritage Trees, and other vegetation and wildlife. These cumulative impacts have been considered in the preparation and adoption of the Solano County General Plan and County-certified General Plan EIR, as well as in similar documents prepared for and adopted in other jurisdictions. The Specific Plan's potential contribution to cumulative effects on biological resources would represent a ***potentially significant cumulative impact*** (see criteria [a] through [f] under subsection 6.3.1, "Significance Criteria," above).

In addition to Specific Plan-facilitated development in the plan area, other development unrelated to the Specific Plan would continue to occur elsewhere in the county and subregion. Some of this anticipated development would have effects on biological resources that would be similar to those of the Specific Plan, resulting in cumulative impacts on those resources.

[1]The U.S. Department of Transportation Federal Highway administration website at http://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewTopic&topicID=1 contains many examples of successful structures designed to facilitate movement of hepetofauna species through culverts and other passages across barriers.

Mitigation 6-14. The County shall ensure that *Mitigations 6-1* through *6-13* above are implemented. With successful implementation of these measures, the Specific Plan's contribution to the cumulative biological resources impact would be reduced to a ***less-than-significant level***.