3.3 Biological Resources

This section describes existing biological resources within the study area and vicinity and addresses potential impacts to biological resources associated with implementation of the Proposed Project (the Preferred Alternative of the 2012 Nut Tree Airport Master Plan update). The assessment of existing conditions and analysis of potential effects is based upon field surveys, a review of applicable databases, species literature, and technical reports.

A discussion of federal, state, and local laws, policies, and regulations that are applicable to biological resources is also presented. Impacts on biological resources that may result from project implementation are discussed, in conjunction with recommended mitigation measures. These mitigation measures have been developed through coordination with resources agencies and focus on avoiding, reducing, or compensating for potentially significant impacts to biological resources.

Methodology of Biological Survey

This evaluation of biological resources includes a review of potentially occurring "special-status" species (including those officially designated as "endangered" or "threatened"), wildlife habitats, vegetation communities, and jurisdictional waters of the U.S. The results of this assessment are based upon field reconnaissance, literature searches, database queries, and technical reports. The reference data reviewed for this report include the following:

- *Allendale and Elmira, California*, 7.5-minute topographic quadrangles (U.S. Department of the Interior, Geological Survey [USGS], 2012a and 2012b);
- California Natural Diversity Database (CNDDB), *Rarefind 4* computer program (California Department of Fish and Game [CDFG[1]], 2012a);
- *Inventory of Rare and Endangered Plants* for the following 7 ½ minute quadrangles: Elmira, Birds Landing, Denverton, Fairfield North, Mount Vaca, Fairfield South, Dozier, Dixon, and Allandale, Winters, Merritt, Monticello Dam, California (California Native Plant Society [CNPS], 2012);
- *CNDDB Special Vascular Plants, Bryophytes, and Lichens List* (CDFG, July 2012b);
- *CNDDB Special Animals List* (CDFG, January 2011);
- *List of Federal Endangered and Threatened Species that may be Affected by Projects in the Elmira and Allandale 7 ½ Minute Quadrangles* (U.S. Fish and Wildlife Service [USFWS], 2012);
- *Birds of Conservation Concern* (USFWS, 2008); and
- *Delineation of Waters of the United States for the Nut Tree Airport*, Solano County, California (LSA, 2007).

Biological database reports, including special-status plant and wildlife species lists obtained from the CNDDB RareFind Program (CDFG, 2012a), USFWS list of federal endangered or threatened

[1] The California Department of Fish and Game (CDFG) changed its name on January 1, 2013 to The California Department of Fish and Wildlife (CDFW). In this document, references to literature published by CDFW prior to Jan. 1, 2013 are cited as 'CDFG'. The agency is otherwise referred to by its new name, CDFW.

species (USFWS, 2012b), and CNPS Inventory of Rare and Endangered Plants (CNPS, 2012) are compiled in **Appendix C**. Conclusions regarding habitat suitability and species occurrence are based on reconnaissance-level surveys and habitat assessments conducted by an ESA biologist on September 7 and 10, 2012.

Prior to field surveys, species characteristics and habitat requirements were reviewed to aid in field recognition of suitable habitats and visual identification. Existing literature and databases for the region were also reviewed prior to field surveys to identify which biological resources would likely be encountered. The reconnaissance-level surveys and habitat assessments consisted of walking meandering transects of the study area to determine whether sensitive biological resources (including special-status plant and animal species or their habitats) exist on site. All vegetation communities, wildlife habitats, and sensitive biological resources were recorded using a geo-referenced aerial photo of the site and via a Global Positioning System (GPS) unit. These resources are discussed below under Section 3.3.1, Environmental Setting. All areas within the study area were evaluated for the potential to support regionally occurring special-status species (those species identified during the database searches and listed in **Table 3.3-1** below) and the presence of any other biologically sensitive resources. Based on the information collected during these surveys, ESA identified which sensitive biological resources (including special-status species) could potentially be affected by implementation of the Proposed Project.

3.3.1 Environmental Setting

Existing Environment

Regional Setting

The Master Plan study area is located primarily in the Great Valley ecological section (Sodic Claypan Terraces and Yolo Alluvial Fans subsections) with a small southern portion located within the Central California Coast ecological section (Suisun Hills and Valleys subsection) (**Figure 2-1, Regional Location**). The study area lies within the alluvial plains of the Sacramento Valley, which encompasses a variety of habitats such as annual and perennial grasslands that occur in the floodplains and as the understory of oak savannas; oak woodlands that occur on the rolling foothills of the Sierra Nevada and Coast Ranges; and strips of riparian vegetation that occur along creeks, drainages, canals, and rivers (Miles and Goudey, 1997). Prominent features in the landscape include the Sacramento and American Rivers, along with their numerous tributaries, sloughs, and agricultural canals that meander and transect the valley floor. This region experiences typical Mediterranean climate – hot dry summers and cool moist winters – which combined with its rich alluvial soils and long growing season makes the Great Valley ecological section one of the most productive agricultural areas in California (Miles and Goudey, 1997). Annual rainfall averages approximately 5–25 inches, and average temperatures range from 56–62 degrees Fahrenheit (°F).

West of the Great Valley ecological section is the Central California Coast ecological section, which supports a variety of natural communities, including blue oak and Valley oak woodlands,

Chamise and sagebrush, and annual and perennial grasslands. The Suisun Hills and Valleys subsection is characterized by low hills north and south of the Carquinez Straight, with valleys in between the hills and plains at the west end of the Sacrament-San Joaquin River delta. The climate is hot and subhumid, with high winds on the hills adjacent to and north of the Carquinez Straight. The mean annual precipitation is about 15-20 inches and temperatures range between 56 and 60 degrees Fahrenheit (°F).

Local Setting

The study area consists of 286 acres of land owned and occupied by Solano County and comprises the Nut Tree Airport (Airport) (approximately 262 acres), County Airport Road, and an undeveloped parcel located southwest of the Putah South Canal (**Figure 3.3-1, Study Area**). This area lies within un-sectioned lands of the Los Putos Rancho, Township 6 North, Range 1 West, on the Allendale and Elmira 7.5-minute USGS quadrangles (USGS, 2012). The study area is located in the northwestern part of the City of Vacaville in Solano County, California; it is approximately 32 miles southwest of Sacramento and approximately 56 miles northeast of San Francisco, California. The study area is bound by Interstate Highway 80 to the south, Interstate Highway 505 to the east, the Putah South Canal to the west, and Vaca Valley Parkway to the north. Surrounding land uses include public park, open space, industrial park, business park, commercial development, and residential (**Figure 3.3-1, Study Area**).

The majority of the Airport is developed and consists of a single northeast-to-southwest oriented runway, aircraft parking apron, hangars, administration building, parking lots, fuel storage and maintenance facilities, and associated operations facilities. Elevation of the study area ranges between 100 and 120 feet above mean sea level (MSL). The Vaca Mountain Range located to the west and northwest of the Airport exhibits rapidly rising terrain, while the topography of the Airport and areas south and east of the Airport are primarily flat. A slight dip in elevation occurs north of the Airport within a large flood detention basin.

Significant waterways within the study area include two stream channels (Horse Creek and Pine Tree Creek) and an unnamed channel located in the flood detention basin north of the Airport's primary runway (Runway 02/20). Other waterways in proximity to the study area include the concrete-lined Putah South Canal, which runs west and south of the Airport. Horse Creek and Pine Tree Creek meander through annual grassland and ruderal habitats and are culverted underneath developed areas, such as the runway and taxiway and the Putah South Canal.

Vegetative Communities and Wildlife Habitats

Vegetative communities are assemblages of plant species that occur together in the same area, and are defined by the composition and relative abundance of plant species. The plant community descriptions and nomenclature used in this section generally follow the classification system of *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) and the classification provided in *A Manual of California Vegetation* (Sawyer et al., 2009). The California Wildlife Habitat Relationships (CWHR) habitat classification scheme has been developed to support the CWHR System, a wildlife information system and predictive model for California's regularly occurring birds, mammals, reptiles, and amphibians.

Upland habitats in the study area consist of urban/developed (airport facilities, runway, parking lots, and landscaping), barren (gravel pads, gravel and dirt roads), annual grassland, annual grassland/ruderal, ruderal, Valley Foothill riparian, and eucalyptus woodland. Aquatic habitats in the study area consists of seasonal wetlands, vernal pools, riverine (including freshwater emergent wetland within the riverine habitat), and drainage ditches.

Figure 3.3-1 depicts vegetative communities and wildlife habitats, along with significant biological features that occur in the study area. **Table 3.3-1** summarizes the amount of each habitat type and provided below are descriptions of vegetative communities and wildlife use in the study area.

TABLE 3.3-1
HABITAT TYPES WITHIN STUDY AREA

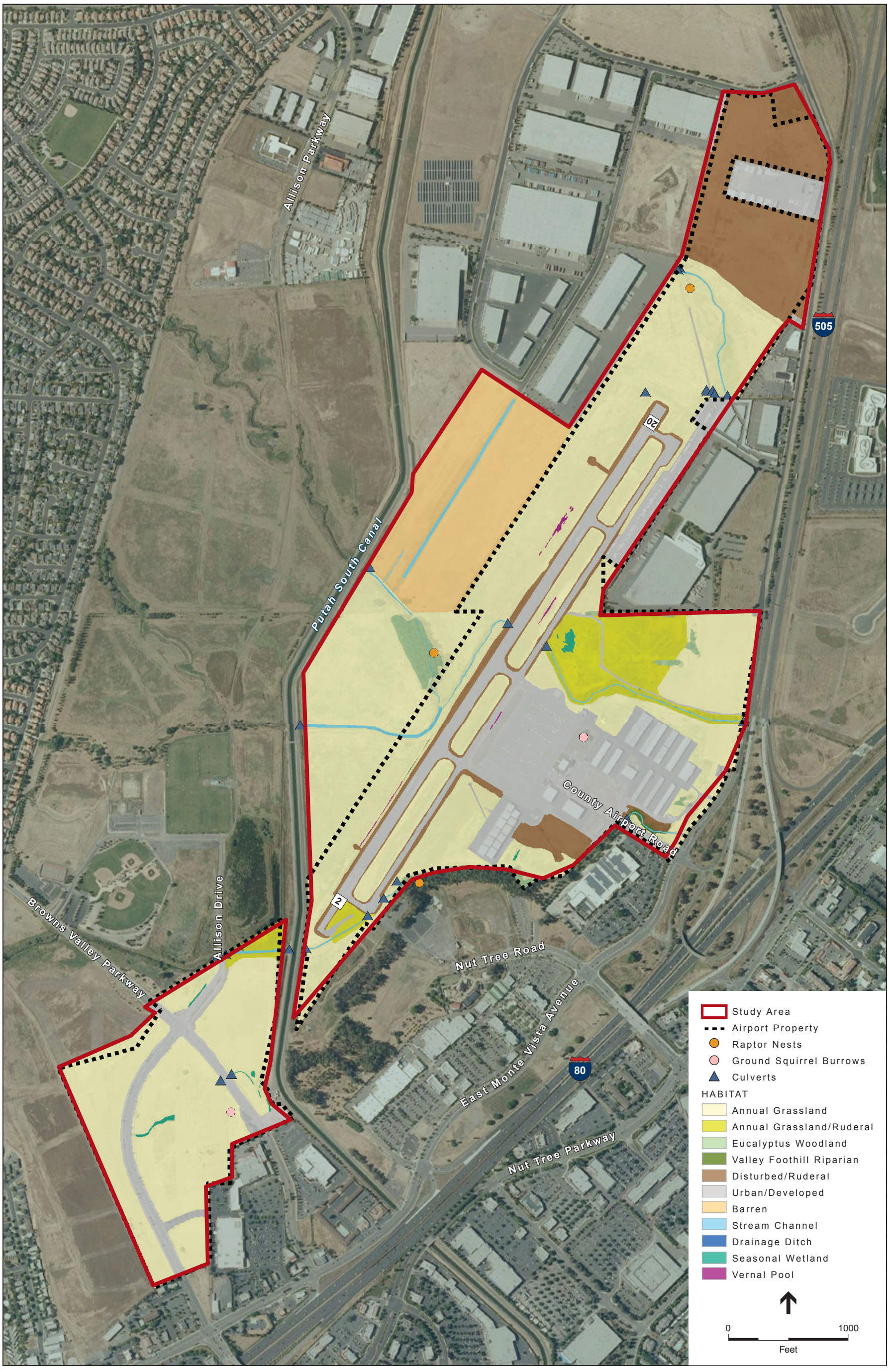
Habitat Type	Acres[1]	Percent Composition[2]
Annual Grassland	209.19	51.40
Annual Grassland/Ruderal Mixture	19.32	4.74
Eucalyptus Woodland	4.72	1.15
Valley Foothill Riparian	0.36	0.09
Disturbed/Ruderal	47.01	11.55
Urban/Developed	83.15	20.43
Barren	38.24	9.39
Stream Channel (Riverine)	3.69	0.90
Drainage Ditch (Riverine)	0.07	0.02
Seasonal Wetland	0.78	0.19
Vernal Pool	0.38	0.09
Total	**406.91**	**~100%**

1. All acres approximate.
2. Total does not add to 100 percent due to rounding.

SOURCE: ESA, 2012

Annual Grassland

Annual grassland habitats are open grasslands composed primarily of annual plant species. Annual grasslands (approximately 209.19 acres) occur adjacent to Airport buildings and facilities, as well as north, west, and south of the Airport (**Figure 3.3-1**). These areas are routinely mowed or disked. Dominant plant species include Italian wild rye (*Festuca perennis*), soft chess (*Bromus hordeaceus*), foxtail barley (*Hordeum marinum* ssp. *gussoneanum*), ripgut brome (*Bromus diandrus*), common tarweed (*Centromadia pungens*), and wild oat (*Avena fatua*). Some areas within the study area support a mixture of annual grassland and ruderal vegetation; these areas are composed of a mixture of non-native grasses and non-native forbs including shortpod mustard (*Hirschfeldia incana*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), hayfield tarweed (*Hemizonia congesta*), and prickly lettuce (*Lactuca serriola*). The grassland area north of the Airport runway (within the study area boundary) currently serves as a flood detention basin and is disked annually during the summer. This floodplain supports a few Goodding's willow trees (*Salix gooddingii*) and a channel lined with dense narrowleaf cattail (*Typha angustifolia*). The cattail likely persists outside of the channel in low-lying areas of the floodplain during the winter as



SOURCE: USDA, 2010; ESRI, 2012; and ESA, 2012

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Figure 3.3-1
Existing Habitats in the Project Area

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evidenced by disked cattail fragments observed beyond the stream channel at the time of the reconnaissance surveys.

A variety of birds such as red-tailed hawk (*Buteo jamaicensis*), western meadowlark (*Sturnella neglecta*), ring-necked pheasant (*Phasianus colchicus*), and mourning dove (*Zenaida macroura*) were noted using the annual grassland habitat. Other wildlife such as western fence lizard (*Sceloporus occidentalis*), field mice (*Peromyscus maniculatus*), California vole (*Microtus californicus*), and black-tailed jackrabbit (*Lepus californicus*) are also commonly observed in annual grassland habitat.

Eucalyptus Woodland

Eucalyptus woodlands are seminatural woodland stands or groves characterized by open to relatively dense stands of eucalyptus trees (*Eucalyptus* sp.). Although eucalyptus woodlands are dominated by nonnative tree species, they often provide suitable nesting habitat for birds, including raptors such as red-tailed hawk and Swainson's hawk (*Buteo swainsoni*). Approximately 4.72 acres of eucalyptus woodland habitat occurs in three locations within the study area: along Horse Creek west of the runway, north of Horse Creek and the former dairy, and along Pine Tree Creek southeast of the Airport (**Figure 3.3-1**). Bird species such as northern mockingbird (*Mimus polyglottos*), mourning dove, and American crow (*Corvus brachyrhynchos*) were observed using eucalyptus woodland habitat. Additionally, several medium-sized inactive stick nests and one large-sized stick nest were observed within the eucalyptus woodland grove located along Pine Tree Creek; one large stick nest was observed in the eucalyptus woodland located along Horse Creek, west of the runway.

Valley Foothill Riparian

Approximately 0.36 acres of Valley foothill riparian occurs along Pine Tree Creek and consists of a thin strip of broadleafed, winter-deciduous shrubby streamside thicket. It is a native vegetation community that is dominated by native species such as Fremont cottonwood (*Populus fremontii*), Northern California black walnut (*Juglans hindsii*), sandbar willow (*Salix exigua*), Goodding's willow; however, non-native species such as Chinese pistache (*Pistacia chinensis*) and sweet almond (*Prunus dulcis*) also occur (**Figure 3.3-1**). Valley Foothill riparian woodlands provide suitable habitat for a variety of wildlife, including mammals, amphibians, reptiles, songbirds and raptors.

Disturbed/Ruderal

Ruderal vegetation grows in disturbed areas where the natural vegetative community has been removed. A weedy mixture of non-native grasses and native and non-native forbs characterizes ruderal habitat, including turkey mullein (*Eremocarpus setigerus*), broadleaved pepperweed (*lepidium latifolium*), yellow star-thistle (*Centaurea solstitialis*), common tarweed, field bindweed (*Convolvulus arvensis*), and crabgrass (*Digitaria ischaemum*). In the study area, disturbed or ruderal vegetation (approximately 47.01 acres) occurs adjacent to annual grassland habitat surrounding the runway and taxiways, at the former dairy in interspersed with annual grassland (north of Horse Creek and east of the runway), and adjacent to roadways and airport

facilities (**Figure 3.3-1**). Ruderal areas generally provide minimal habitat value for wildlife, but may provide some foraging and cover for wildlife species such as California vole, killdeer, house sparrow, and mourning dove.

Urban/Developed Areas

Urban or developed habitats in the study area (approximately 83.15 acres) are characterized by airport runway and taxiways, buildings and structures, associated roadways and parking spaces, and utilities. The existing buildings and structures in the study area include airside facilities (a primary runway and a parallel taxiway system), landside facilities (administration building, aprons, hangars and aircraft storage facilities, fuel storage and maintenance facilities, automated surface observing system, aircraft rescue and firefighting facility), ground access and parking facilities, and airport utilities and services (**Figure 3.3-1**). Urban vegetation associated with developed areas consists of lawns, ornamental shrubs, shade trees (walnut [*Juglans regia*] and Eucalyptus [*Eucalyptus* sp.]), and oleander (*Nerium oleander*) hedges. Generally, wildlife use of landscaped areas increases with the distance from urban areas, plant species diversity and varied structure, and proximity to natural habitats. In the study area, landscaped vegetation may provide habitat for common species such as house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), and western scrub jay (*Aphelocoma californica*).

Barren

Barren habitat is defined by the absence of vegetation or by less than two percent total vegetation cover by herbaceous species and less than 10 percent cover by tree or shrub species. Existing barren habitats in the study area (approximately 38.24 acres) include dirt and gravel roads, gravel pads, a dirt mound located south of the Airport and west of Browns Valley Parkway and land parcels west of the Airport previously treated with herbicides (**Figure 3.3-1**). Where there is little or no vegetation, the structure of the non-vegetated substrate becomes a critical component of the habitat. Mounds with friable soils suitable for ground mammal burrows may provide suitable habitat for burrowing owls (*Athene cunicularia*) while sandy substrates and gravel pads and roadways sometimes provide suitable nesting habitat for killdeer (*Charadrius vociferus*). Barren settings also provide suitable habitat for lizards and ground-dwelling mammals such as ground squirrels (*Otospermophilus beecheyi*).

Riverine

Approximately 3.69 acres of riverine habitats occur in the study area. Riverine habitats include streams with intermittent to perennially flowing water originating from some elevated source, such as a spring or lake. Stream channels provide suitable habitat for a variety of wildlife, including water fowl and wading birds, amphibians and reptiles, insectivorous birds, mammals, and fish. Species observed in riverine habitat during the biological surveys include great egret and green heron.

Riverine habitats in the study area include Horse Creek, South Branch Horse Creek, and Pine Tree Creek (**Figure 3.3-1**). These channels have a well-defined bed and bank and support wetland

and riparian vegetation along some segments. All three channels were dry or slightly saturated at the time of the reconnaissance surveys; a few areas contain very low levels of water.

Horse Creek enters the Airport from the western side of the study area and travels through annual grassland and Eucalyptus woodland habitat before reaching a large culvert beneath the runway. The width of this segment of Horse Creek varies between four feet and 30 feet. The South Branch Horse Creek joins the main branch Horse Creek just west of the runway; the width of this segment varies between eight feet and 20 feet. Horse Creek emerges from the culvert beneath the runway on the eastern side and flows through a culvert at Monte Vista Avenue at the eastern border of the study area. The width of this segment of Horse creek varies between six feet to 15 feet. Horse Creek and South Branch Horse Creek support patches of riparian and seasonal wetland vegetation. East of the runway, Horse Creek supports sandbar willow, Goodding's willow, cocklebur, narrowleaf cattail, rushes (*Juncus* sp.), and curly dock. West of the runway, Horsecreek supports dense patches of narrowleaf cattail as the channel emerges from the dense eucalyptus woodland. The South Branch Horse Creek also supports dense patches of narrowleaf cattail.

Pine Tree Creek enters the study area at the southern end of the Airport and is culverted beneath an airport access road near the south end of the runway. The creek flows along the south and southeast edges of the study area through eucalyptus woodland and riparian woodland. The creek eventually crosses under County Airport Way and continues through riparian woodland to the culvert at Monte Vista Avenue. The width of Pine Tree Creek varies between six feet and 12 feet. Tree and shrub species growing adjacent to the creek include eucalyptus, Fremont cottonwood (*Populus fremontii*), Chinese pistache (*Pistacia chinensis*), Northern California black walnut (*Juglans hindsii*), sandbar willow, Goodding's willow, and sweet almond (*Prunus dulcis*). Other plant species supported by Pine Tree Creek include narrowleaf cattail, Harding grass (*Phalaris aquatica*), curly dock, wild oat, and shortpod mustard.

Drainage Ditches

Storm drainage for the Airport is provided by a network of artificial swales and ditches that carry water directly into Horse Creek, Pine Tree Creek, or into storm sewers (**Figure 3.3-1**). Certain portions of ditches and swales have wetland characteristics (e.g., biotic crust, cracked soil, and wetland plant species) and were mapped as seasonal wetland or potential vernal pools depending on the characteristic plant species observed within the feature. However, most ditches and swales are dominated by upland/annual grassland species and do not support hydrophytic plant species. There are approximately 0.07 acres of drainage ditches in the study area.

Seasonal Wetland

Seasonal wetlands are emergent wetlands that are characterized by a seasonally fluctuating water level, often drying out completely for some part of the year. Approximately 0.78 acres of seasonal wetlands occur in the study area in association with annual grassland habitat (north of Horse Creek and east of the runway, north of Pine Tree Creek and east of the Box Hangars, and in parcels south of the Airport runway) (**Figure 3.3-1**). Plant species supported by seasonal wetlands

in the study area include yellow nutgrass, curly dock (*Rumex crispus*), cocklebur (*Xanthium strumarium*), and narrowleaf cattail.

Other seasonal wetlands in the study area include vernal pools (0.38 acres), which are ephemeral wetlands that form in shallow depressions underlain by an impervious or restrictive soil layer near the surface that impedes the percolation of water. The impervious layer is typically formed from claypan, cement-like hardpan, or bedrock. Vernal pools pond during the wet season and become dry in late spring or early summer. Germination and growth begin with winter rains, often continuing even when inundated. Evaporation of the pools often leaves concentric bands of vegetation. This type of unique wetland provides habitat for numerous rare plants and animals that are adapted to cycles of wet and dry conditions.

LSA conducted a wetland delineation of the study area in 2007. The wetland delineation map and report identified areas as "pools" that were ponded and exhibited wetland characteristics and did not specifically classify them as vernal pools. ESA revisited these pools in September 2012 and identified several of these "pools" as potential Northern Hardpan vernal pools based on characteristic vernal pool plant species observed and using the Holland Vernal Pool Classification as a guide to classification (Appendix D of the *California Vernal Pool Assessment Preliminary Report* by Keeler-Wolf et al. [1998]); these vernal pools occur in annual grassland habitat adjacent to the Runway 02/20 (**Figure 3.3-1**). Plant species observed in vernal pools include short wooly-heads (*Psilocarphus brevissimus* var. *brevissimus*), coyote thistle (*Eryngium vaseyi*), and dense flowered willowherb (*Epilobium densiflorum*).

Freshwater Emergent Wetland

Freshwater emergent wetlands are dominated by erect, rooted herbaceous hydrophytic plants growing to two meters tall. This habitat is frequently flooded so that the roots of the plants are adapted to an anaerobic environment. Typical plant species occurring in freshwater ermergent wetland habitats include baltic rush (*Juncus balticus*), yellow nutgrass (*cyperus esculentus*), common cattail (*Typha latifolia*), narrowleaf cattail (*Typha angustifolia*), and tule/bulrush (*Schoenoplectus acutus* var. *occidentalis*), among others. In the study area, freshwater emergent wetland occurs as part of stream channel habitat in three locations: within an unnamed channel north of the Airport runway in the flood detention basin, within Horse Creek, and within South Branch Horse Creek (**Figure 3.3-1**). Dense narrowleaf cattail occurs within the entire channel in the flood detention basin, while patches of narrowleaf cattail, rushes, and yellow nutsedge occur along Horse Creek and the South Branch Horse Creek.

Wildlife using the fresh emergent wetland habitat largely includes wading birds and waterfowl species such as great blue heron, great egret, and mallard (*Anas platyrhynchos*). Red-winged blackbirds (*Agelaius phoeniceus*), garter snake (*Thamnophis* sp.), pond turtle (*Clemmys marmorata*), and frogs (*Rana* sp.) are also known to use this habitat. Great egret and green heron (*Butorides virescens*) were observed using freshwater emergent wetland habitat within the South Branch Horse Creek during the biological surveys.

Wetlands

An assessment of potential wetlands and other waters of the U.S. (other waters) was conducted for a large area within the study area boundary by LSA Associates, Inc. (LSA, 2007) (**Appendix D**). The assessment consisted of evaluating and mapping any features that could be considered jurisdictional under state and federal regulations using standardized wetland delineation techniques. The delineated area covered approximately 320 acres and included the Airport, the flood detention basin to the north of the Airport, and the entire Pine Tree Creek located south and southeast of the Airport. Areas that were not delineated by LSA include parcels located west and south of the Airport (**Appendix D**). The assessment concluded that the delineated area contained 2.63 acres of stream segments and ditches, 6.04 acres of seasonal wetlands and flood detention basin, and 1.05 acres of pools (LSA did not specifically define these pools as vernal pools), for a total of 9.72 acres of potential waters of the U.S.

Potential waters of the U.S. regulated by the USACE in the study area include Horse Creek (and South Branch Horse Creek) Pine Tree Creek, drainage ditches, seasonal wetlands, and vernal pools (**Figure 3.3-1**). The reconnaissance-level biological survey conducted by ESA in September 2012 concurred with most features mapped by LSA in 2007; however, ESA was not able to confirm all jurisdictional features or the extent of some features mapped in 2007 as ESA's survey was conducted late in the season and management activities such as mowing and disking occurred earlier in the year.

Special-Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, 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 such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special-status species" in this report because of their federal or state designation or other regulatory status as follows:

- Federally listed or proposed under the Federal Endangered Species Act (FESA) (50 CFR 17.11-17.12)
- Candidates for listing under the FESA (61 FR 7596-7613)
- State listed or proposed under the California Endangered Species Act (CESA) (14 CCR 670.5)
- Species listed by the USFWS or the CDFW as a species of concern (USFWS), rare (CDFW), or of special concern (CDFW)
- Fully protected animals, as defined by the State of California (California Fish and Game Code Section 3511 (birds), 4700 (mammals), and 5050 (reptiles and amphibians)

- Species protected under the Federal Migratory Bird Treaty Act, which includes nesting migratory birds protected by the (16 USC 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989)
- Species protected under California Fish and Game Code Sections 3503 and 3503.5, which includes nesting raptors and their nests and eggs
- Species protected under the Bald and Golden Eagle Protection Act, which protects from the taking, possession, transportation, export or import, barter, or offers to sell, a bald or golden eagle, alive or dead, or any part, nest, or eagle egg, except under certain specified conditions
- Species meeting the definition of threatened, endangered, or rare under CEQA (Guidelines Section 15380), i.e., plants listed by the CNPS as rare, threatened, or endangered (List 1A, List 1B, and List 2 status plants; CNPS, 2008); and plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code Section 1900 *et seq.*)

Table 3.3-2 lists the special-status wildlife and plant species with the potential to occur in the vicinity of the study area or may be affected by project implementation. Information on the listing status, habitat requirements, and potential for occurrence in the study area is also provided. The list was compiled based on a review of pertinent literature and sources (**Appendix E, Biological Database Reports**). **Figure 3.3-2** identifies the locations of regional CNDDB occurrences within five miles of the study area boundary. Note that the different sizes of circles and polygons in **Figure 3.3-2** indicate the level of location detail provided by source document(s) in the CNDDB. The CNDDB currently uses 10 geographic accuracy classes; generally, as circular features increase in size, the locations of special status species become increasingly less accurate. Based on a review of pertinent literature and database species reports, 17 special-status wildlife species, seven special-status plant species, and two sensitive habitats have a medium to high potential to occur in the study area and may be impacted by the Proposed Project. These species and sensitive habitats are listed in **Table 3.3-2** and discussed in more detail following the table.

The "Potential for Project to Impact" category in **Table 3.3-2** is defined as follows:

- Unlikely: The study area and/or immediate area do not support suitable habitat for a particular species. The study area is outside of the species known range.
- Low Potential: The study area and/or immediate area only provide limited habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate study area.
- Medium Potential: The study area and/or immediate area provide suitable habitat for a particular species, and habitat for the species may be impacted.
- High Potential: The study area and/or immediate area provide ideal habitat conditions for a particular species and/or known populations occur in immediate area or within the potential area of impact.

TABLE 3.3-2
REGIONALLY OCCURRING SPECIAL STATUS SPECIES

Scientific Name **Common Name**	**Federal Status/ State Status/ CNPS Status**	**Habitat**	**Potential for Project to Impact**
Invertebrates			
Branchinecta conservatio Conservancy fairy shrimp	FE/--/--	Lifecycle restricted to large, deep, cool-water vernal pools with moderately turbid water.	**Medium Potential.** Suitable habitat is present in the study area.
Branchinecta lynchi vernal pool fairy shrimp	FT/--/--	Found in a wide variety of shallow aquatic habitat, most commonly found in vernal pools and sandstone rock outcrop pools.	**High Potential.** Known CNDDB occurrences are present within one mile of the study area boundary (CDFG, 2012a) and suitable habitat is present within the study area.
Branchinecta mesovallensis midvalley fairy shrimp	--/--/--	Lifecycle restricted to vernal pools in the Central Valley.	**Medium Potential.** Suitable habitat is present within the study area.
Hydrochara rickseckeri Ricksecker's water scavenger beetle	--/--/--	Associated with various types of weedy, shallow, open water habitat; fresh water seeps, springs, farm ponds, vernal pools, and slow moving stream habitat.	**Medium Potential.** Suitable habitat is present in the study area; however, the nearest CNDDB occurrence is approximately 6.5 miles from the study area (CDFG, 2012a).
Lepidurus packardi vernal pool tadpole shrimp	FE/--/--	Lifecycle restricted to vernal pools.	**Medium Potential.** Suitable habitat is present in the study area.
Linderiella occidentalis California linderiella	--/--/--	Lifecycle restricted to vernal pools.	**Medium Potential.** Suitable habitat is present in the study area.
Reptiles			
Emys (=Clemmys) marmorata western pond turtle	--/CSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks.	**Medium Potential.** Suitable habitat is present in the study area, and the nearest CNDDB occurrence is approximately 3.6 miles from the study area (CDFG, 2012a).
Birds			
Aquila chrysaetos golden eagle	--/CFP/--	Nests on cliffs of all heights and in large trees near open areas. Occurs in rolling foothills, mountain terrain, sage-juniper flats, and rugged open habitats with canyons and escarpments. Preys mostly on small mammals. Breeds late January through August.	**Medium Potential.** Likely to forage in the study area. However suitable nesting habitat is limited to two eucalyptus groves in the study area. There are no known occurrences in the study area vicinity.
Ardea alba great egret	--/--/--	Fresh and salt marshes, marshy ponds and tidal flats, nests in trees or shrubs.	**Medium Potential.** Limited potential nesting habitat but ample foraging habitat throughout study area. No known rookery sites within in the study area; the closest CNDDB occurrence is approximately 9.5 miles from the site (CDFG, 2012a).

TABLE 3.3-2
REGIONALLY OCCURRING SPECIAL STATUS SPECIES

Scientific Name **Common Name**	**Federal Status/ State Status/ CNPS Status**	**Habitat**	**Potential for Project to Impact**
Athene cunicularia burrowing owl	--/CSC/--	Forages in open plains, grasslands, and prairies; typically nests in abandoned small mammal burrows.	**High Potential.** Suitable foraging and nesting habitat exists in the study area and known CNDDB occurrences are within 0.3 miles of the site (CDFG, 2012a).
Buteo regalis ferruginous hawk	--/CWL/--	Wintering grounds consist of open grasslands.	**Medium Potential.** Suitable wintering habitat is present in the study area in the form of annual grasslands (for foraging); small groves of eucalyptus and riparian trees may be used as roosting habitat.
Buteo swainsoni Swainson's hawk	--/ST/--	Forages in open plains, grasslands, and prairies; typically nests in trees or large shrubs.	**High Potential.** Habitat for this species is present in the study area and an active nest is currently present in a eucalyptus grove on the southeastern side of the study area.
Circus cyaneus northern harrier	--/CSC/--	Nests in wet meadows and tall grasslands, forages in grasslands and marshes.	**Medium Potential.** Common nester in grasslands, agricultural fields, and wet meadows in Solano County. Habitat for this species is present within the study area.
Elanus leucurus white-tailed kite	--/CFP/--	Forages in open plains, grasslands, and prairies; typically nests in trees.	**Medium Potential.** Common nester in Solano County. Foraging habitat for this species is present throughout the study area, and the closest known occurrence is approximately 1.5 mile from the study area boundary (CDFG, 2012a). Nesting habitat is present in two eucalyptus groves in the study area.
Mammals			
Lasiurus blossevillii western red bat	--CSC/--	Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	**Medium Potential.** Suitable habitat is present in the study area in eucalyptus groves and riparian woodland; however the nearest CNDDB occurrence is approximately 15 miles south of the study area in the Suisun Marsh (CDFG, 2012a).
Lasiurus cinereus hoary bat	--/--/--	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths; requires water.	**Medium Potential.** Suitable habitat is present in the study area in eucalyptus grove sand riparian woodland. Three CNDDB occurrences have been reported within 15 miles of the study area; one in the City of Davis, one in the City of West Sacramento, and one south of Fairfield (CDFG, 2012a).
Taxidea taxus American badger	--/CSC/--	Occurs in a wide variety of open forest, shrub, and grassland habitats that have friable soils for digging.	**Medium Potential.** Occurs in open grasslands with friable soils in Solano counties. The closest CNDDB location is approximately 16 miles from the study area along the South Putah Creek (CDFG, 2012a).
Plants			
Downingia pusilla Dwarf downingia	--/--/2.2	Prefers lake margins, vernal pools and wet places sometimes playas and grasslands at elevations of 3-1,460 feet. Blooms March-May.	**High Potential.** Suitable habitat is present in the study area in vernal pools and mesic areas within annual grassland habitat; the nearest CNDDB occurrence is 0.5 miles from the study area.

TABLE 3.3-2
REGIONALLY OCCURRING SPECIAL STATUS SPECIES

Scientific Name **Common Name**	**Federal Status/ State Status/ CNPS Status**	**Habitat**	**Potential for Project to Impact**
Gratiola heterosepala Boggs Lake hedge-hyssop	--/SE/1B.2	Marshes and swamps, lake margins, and in clay substrate in vernal pools at elevation ranges of 33-7,792 feet. Blooms Apr-Aug.	**Medium Potential.** Suitable habitat is present in the study area in vernal pools and freshwater emergent wetlands.
Lasthenia conjugens Contra Costa goldfields	FE/--/1B.1	Annual herb occurring in cismontane woodland, alkaline playas, valley and foothill grassland, and in mesic areas such as vernal pools. Occurs between 0-1,542 feet in elevation. Blooms March-June.	**Medium Potential.** Suitable habitat is present in the study area in annual grassland and vernal pools.
Lepidium latipes var. *heckardii* Heckard's pepper-grass	--/--/1B.2	Generally found in valley and foothill grasslands. Prefers wet places including vernal pools between 0-656 feet in elevation. Blooms March-May.	**Medium Potential.** Suitable habitat is present in the study area in annual grassland and vernal pools.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	--/--/1B.1	Annual herb occurring in cismontane woodland, lower montane coniferous forest, meadows and seeps, Valley and foothill grassland, and vernal pools. Elevation ranges from 16-5,709 feet. Blooms April-July.	**High Potential.** Suitable habitat is present in the study area in vernal pools and annual grassland and several CNDDB occurrences were recorded within 3-5 miles of the study area.
Plagiobothrys hystriculus bearded popcorn-flower	--/--/1B.1	Annual herb occurring in mesic valley and foothill grassland and in vernal pools from 0-899 feet elevation. Blooms April-May.	**Medium Potential.** Suitable habitat is present in the study area in annual grassland and vernal pool habitats. However, no CNDDB occurrences were recorded in the vicinity of the study area.
Sidalcea keckii Keck's checkerbloom	FE/--/1B.1	Grassy slopes in blue oak woodland at 246-2,133 feet in elevation. Blooms April-May (June).	Unlikely. Suitable habitat not present in the study area.
Trifolium hydrophilum saline clover	--/--/1B.2	Marshes and swamps, Valley and foothill grassland (mesic and alkaline sites), vernal pools at elevation range of 0-1,000 feet. Blooms April-June.	**Medium Potential.** Suitable habitat is present in the study area in freshwater emergent wetlands, vernal pools, and mesic areas of annual grassland. Known occurrences within 3 miles of the study area (CDFG, 2012a).
Sensitive Habitats			
Coastal and Valley freshwater marsh	--/--/--	Coastal and Valley freshwater marsh are permanently flooded by fresh water and lack significant current. This habitat is distributed along the coast and in coastal valleys near river mouths and around the margins of lakes and springs, most extensively in the Sacramento and San Joaquin Valleys in river oxbows and other areas on the flood plain.	**Medium Potential**. There is a limited area of this habitat within the study area, primarily located in a channel located within the flood detention basin north of the Airport.

TABLE 3.3-2
REGIONALLY OCCURRING SPECIAL STATUS SPECIES

Scientific Name **Common Name**	**Federal Status/ State Status/ CNPS Status**	**Habitat**	**Potential for Project to Impact**
Northern claypan vernal pool	--/--/--	Northern claypan vernal pool is distributed on lower terraces and basin rims, toward the valley trough. This habitat is similar to Northern Hardpan Vernal Pools, but has lower microrelief and usually lower overall cover.	**Medium Potential.** This habitat type may be present within the study area; however, a survey for vernal pools should be conducted during the appropriate blooming season to determine the type of vernal pool present in the study area.

STATE

California Department of Fish and Game:

SE = Listed as Endangered by the State of California
ST = Listed as Threatened by the State of California
SR = Listed as Rare by the State of California (plants only)
CSC = California species of special concern
CFP = California fully protected bird species
WL = INSERT DESCRIPTION HERE

California Native Plant Society (CNPS):

List 1A = Plants believed extinct
List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants about which more information is needed
List 4 = Plants of limited distribution

CNPS Code Extensions

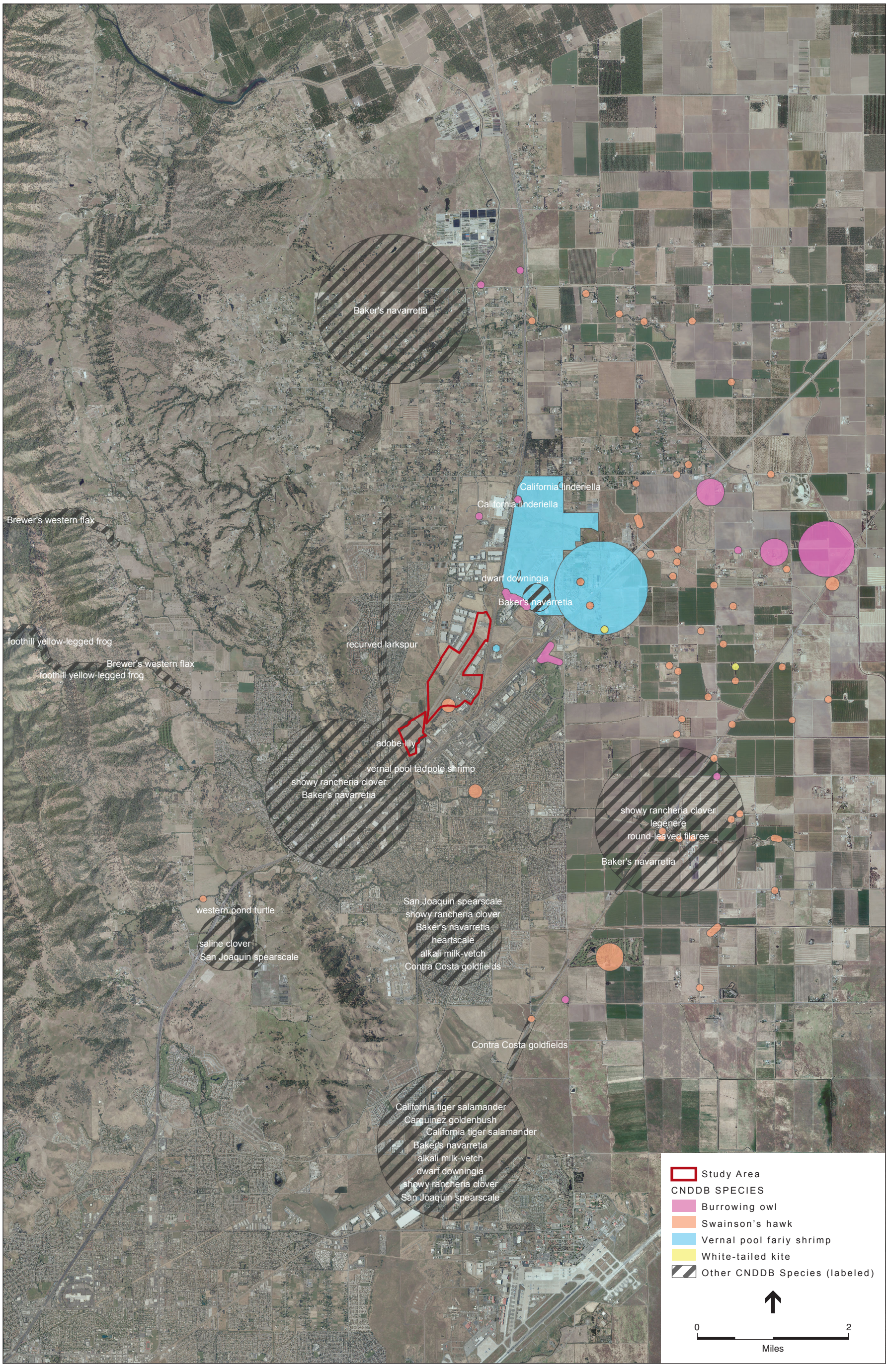
.1 = Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 = Fairly endangered in California (20-80% occurrences threatened)
.3 = Not very endangered in California (less than 20% of occurrences threatened or no current threats known)

FEDERAL

U.S. Fish and Wildlife Service:

BEPA = Bald Eagle Protection Act
FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
FPD = Proposed for De-listing
FPE = Proposed for Listing as Endangered
FPT = Proposed for Listing as Threatened
FC = Candidate for Federal listing

SOURCE: CNPS, 2012; CDFG, 2012; USFWS, 2012b



SOURCE: USDA, 2010; CNDDB, 2012; and ESA, 2012

Figure 3.3-2

CNDDB Occurrences in the Vicinity of the Project Study Area

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Conservancy Fairy Shrimp

Conservancy fairy shrimp are small, aquatic crustaceans. They feed on algae, bacteria, protozoa, rotifers, and bits of detritus. Conservancy fairy shrimp usually live in large, moderately turbid, cool-water vernal pools (USFWS, 2012a). While Conservancy fairy shrimp have been collected from the same vernal pool complexes as other listed fairy shrimp, they rarely occur in the same pools at the same time. When more than one species of fairy shrimp is present, Conservancy fairy shrimp usually are the most abundant (USFWS, 2005).

The historic distribution of the Conservancy fairy shrimp is not known. It is assumed however, that they were present in suitable vernal pool habitats throughout the Central Valley and southern coastal regions. They are currently known from eight disjunct locations: Vina Plains area, Tehama and Butte Counties; the area surrounding Jepson Prairie, Solano County; Tule Ranch area, Yolo County; Sacramento National Wildlife Refuge, Glenn County; west of Modesto, Stanislaus County; Grassland Ecological Area, Merced County; eastern Merced County; and Los Padres National Forest, Ventura County (USFWS, 2005).

Although there are no known occurrences of this species in the vicinity of the study area, vernal pool habitat is present in the study area and may provide suitable habitat for the Conservancy fairy shrimp. The nearest recorded occurrence is eight miles southeast of the study area (CDFG, 2012a).

Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp are small, aquatic crustaceans. They feed on algae, bacteria, protozoa, rotifers, and bits of detritus (USFWS, 2012a). Vernal pool fairy shrimp are found in a variety of vernal pool habitats, ranging from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools. Although the species has been collected from large vernal pools, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.5 acre. These types of pools are most commonly in grass or mud bottomed swales or basalt flow depression pools in unplowed grasslands (USFWS, 2012a).

The species is known to occupy a wide range of vernal pool types, thus its historic distribution likely coincided with the historic distribution of Central Valley, southern California, and southern Oregon vernal pools. In California, current known populations extend from Shasta County through most of the Central Valley to Tulare County, and in coastal valleys from Solano County to San Luis Obispo County. A few additional isolated populations exist in southern California. Although vernal pool fairy shrimp are distributed more widely than other listed vernal pool species, they are generally uncommon throughout their range and are rarely abundant where they are found (USFWS, 2005). Vernal pool habitat is present in the study area and vernal pool fairy shrimp are known to occur within one mile of the study area (CDFG, 2012a).

Vernal Pool Tadpole Shrimp

Vernal pool tadpole shrimp are small, aquatic crustaceans, and can be identified by the large, shield-like carapace that covers the anterior half of their bodies. They feed on living organisms such as fairy shrimp and organic detritus (USFWS, 2012a). Compared to other vernal pool

crustaceans the vernal pool tadpole shrimp has a long life span, maturing at a minimum of 25 days and taking an average of 54 days to reproduce. Vernal pool tadpole shrimp are found in a variety of vernal pool types, ranging from clear to highly turbid water, temperatures from 50 to 84 degrees Fahrenheit, and sizes from small to very large (USFWS, 2012a). They have been found in a variety of geologic formations and soil types; however, the majority have been found on High Terrace landforms and in Redding and Corning soils (USFWS, 2005).

This species probably historically occurred wherever appropriate vernal pool habitat existed throughout the Central Valley and Central Coast regions (USFWS, 2005). Currently, this species is known to occur within the Central Valley from east of Redding in Shasta County to Merced County, with isolated occurrences in Fresno, Kings, and Tulare Counties. In the Central Coast region they are known from Alameda County and San Francisco National Wildlife Refuge (USFWS, 2005). There are several occurrences recorded in the CNDDB scattered through the Central Valley from Shasta to northwestern Tulare County (CDFG, 2012a).

Vernal pool habitat is present in the study area and may provide suitable habitat for vernal pool tadpole shrimp. Numerous occurrences of vernal pool tadpole shrimp records in the CNDDB occur approximately eight miles southeast of the study area (CDFG, 2012a).

Midvalley Fairy Shrimp

The midvalley fairy shrimp was only recently formally described as a species by Belk and Fugate (2000). It is a small (0.28 to 0.79 inch (in), (7 to 20 millimeter (mm)) freshwater crustacean found in shallow ephemeral pools (pools that seasonally fill and dry up) near the middle of California's Central Valley (Belk and Fugate 2000). Midvalley fairy shrimp live primarily in vernal pools but occasionally may also be found in vernal swales and other ephemeral wetlands such as roadside puddles (Helm 1998; Belk and Fugate 2000). Known midvalley fairy shrimp occurrences most commonly occur on ''Riverbank'' geologic formations and on low terrace, basin rim, and volcanic mudflow landforms (Vollmar 2002). Generally, all the midvalley fairy shrimp habitat requirements and correlations appear to fall within the range of habitat used by vernal pool fairy shrimp (USFWS, 2004).

Midvalley fairy shrimp have been found in the following California counties: Sacramento, Solano, Contra Costa, San Joaquin, Madera, Merced, Fresno and Yolo (Belk and Fugate 2000). Midvalley fairy shrimp are distributed within the same vernal pool complexes as other listed vernal pool crustaceans (vernal pool fairy shrimp, vernal pool tadpole shrimp, and conservancy fairy shrimp) and known habitat preferences for midvalley fairy shrimp can be reasonably presumed to fall within the parameters of these listed vernal pool crustaceans. Since the USFWS published the 90-day finding on a petition to list the species in April, 2003 (68 FR 22724), the CNDDB has documented new sites, lending additional support to the idea that the range and distribution of midvalley fairy shrimp is greater than the distribution of known occurrences.

Suitable habitat for the midvalley fairy shrimp is present in the study area and the nearest CNDDB record of this species is seven miles east of the study area (CDFG, 2012a).

Ricksecker's Water Scavenger Beetle

Ricksecker's water scavenger beetle is an aquatic beetle found in vernal pool habitat. It is historically known from only 13 specimens from locations scattered around San Francisco Bay area, including Marin, Sonoma, Solano, Alameda, and Contra Costa Counties. There were no documented occurrences of this species for 26 years, until four occurrences were discovered at the Jepson Prairie Preserve in Solano County in 1993. Historical collecting records indicate that populations of the Ricksecker's water scavenger beetle probably have long existed at low densities (UC Berkeley 2001). Very little is known of the life history of the Ricksecker's water scavenger beetle.

Vernal pools in the study area may provide suitable habitat for the Ricksecker's water scavenger beetle. The nearest occurrences are located approximately eight miles southeast of the study area (CDFG, 2012a).

California linderiella

California linderiella are small, aquatic crustaceans. Unlike other species in the genus *Branchinecta*, they are smaller and have red eyes (USFWS, 2012a). Mature California linderiella vary in length from 3 to 38 mm (Rogers, 2002). This species occurs within the range of the conservancy fairy shrimp but usually in different pools since it has different microhabitat requirements (Eriksen and Belk, 1999). California linderialla are usually found in large, clear vernal pools with temperatures from 41 to 85 degrees Fahrenheit (°F), though have been found in small, tea-colored pools (USFWS, 2012a). They typically use wetland habitats that persist longer in duration than those used by fairy shrimp species in the genus *Branchinecta* (Eriksen and Belk, 1999).

This species is the most common fairy shrimp in California and are found in almost any grassland supporting vernal pools. They range from Shasta County south to Fresno County across the Central Valley to the CA Coast and Traverse Ranges from Willits in Menocino County south to near Sulfur Mountain in Ventrua County. Vernal pools in the study area may provide suitable habitat for this species and numerous CNDDB occurrences are recorded within two to 10 miles of the study area.

Reptiles

Western Pond Turtle

Pond turtles are aquatic turtles of permanent or nearly permanent ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation generally below 6,000 feet in elevation. They need basking sites such as partially submerged logs, vegetation mats, or open mud banks, and suitable upland habitat with well-drained soils for egg-laying, such as sandy banks or grassy, open fields. Pond turtles are known to occur in the study area (Zeiner et al., 1988-1990).

Streams in the study area contain suitable basking habitat for western pond turtle in the form of rip-rap and concrete fragments in certain segments; however, very limited suitable nesting habitat is present (e.g., sandy areas, areas with short, sparse grass or weeds on south facing slopes). The nearest CNDDB occurrence of this species is approximately three miles southwest of the study area.

Birds

Golden Eagle

The golden eagle is an uncommon, permanent resident and migrant throughout California (except in the center of the Central Valley where it is a winter visitor). Golden eagles nest in open areas on cliffs and in large trees, often constructing multiple nests in one breeding territory (Zeiner et al., 1988–1990). They forage in open terrain such as grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats (Zeiner et al., 1988–1990).

The grassland habitat within the study area could provide potential winter foraging habitat; however, potential suitable nesting habitat is limited to two eucalyptus groves. There are no nesting records of golden eagles within 10 miles of the study area (CDFG, 2012b).

Great egret

The great egret is a large egret that preys on fish, aquatic invertebrates, amphibians, reptiles, birds and small mammals. They hunt by wading in shallow water and stabbing prey with their long, pointed bill. Great egrets nest in colonies called rookeries in trees or shrubs over water or on islands (Cornell Lab of Ornithology, 2012). Nests consist of sticks covered with green vegetation. Great egrets utilize a variety of wetlands including marshes, swamps, streams, rivers, ponds, lakes, canals, tide flats and flooded fields for feeding.

The great egret's winter (non-breeding) range exists along the California coast from Baja to the Oregon border excluding the San Francisco Bay. It is a year round resident in the Central Valley of California where rookeries can be found.

Streams and, open fields, and the flood detention basin in the study area provide suitable foraging habitat for great egret and suitable nesting habitat occurs in eucalyptus groves on the study area; however, there are no known rookeries in the study area. Great egret was observed foraging in the South Branch Horse Creek during biological surveys conducted in 2012.

Burrowing owl

The burrowing owl is a small diurnal owl that nests underground in the burrows of small mammals, especially those of ground squirrels. Culverts and other human-made structures may also be suitable habitat for the burrowing owl. Often a burrowing owl will occupy several burrows in an area. In the Central Valley, the burrowing owl is a year-round resident of open spaces such as grasslands, agricultural fields, air fields, and levees. Vegetation must be very short or very sparse to be suitable habitat for burrowing owl. Breeding peaks from April to May, but can occur from March to August. The burrowing owl forages on insects and small mammals and will also consume reptiles, birds, and carrion (Zeiner et al., 1988-1990).

The annual grassland located throughout the study area provide suitable foraging habitat for burrowing owl. A barren dirt mound with mammal burrows located south of the Airport and west of Browns Valley Parkway may provide suitable nesting habitat for burrowing owls. Additionally, ground squirrel activity was observed near the administration building; however,

the high levels of human activity in this area may preclude burrowing owl presence. The nearest known CNDDB occurrence is approximately 0.3 mile north of the study area (CDFG, 2012a).

Ferruginous hawk

Ferruginous hawks search for prey in low flights over open, treeless habitats with low vegetation and are also known to hover and hunt from perches. They feed mostly on hares and rabbits, ground squirrels, and mice but also take birds, reptiles, and amphibians. Ferruginous hawks usually arrive in California for the winter in September and depart to breeding grounds by mid-April (Zeiner et al., 1988-1990). Ferruginous hawks are known to frequent open grasslands, sagebrush flats, desert scrub, low foothills, and the fringes of pinyon-juniper habitat. Roosts in open areas, usually on a lone tree or utility pole, nests are often unshaded (Zeiner et al., 1988-1990).

Ferruginous hawks are uncommon winter residents in the Modoc Plateau, Central Valley, and Coast Ranges. Although there are no CNDDB occurrences in the vicinity of the study area (CDFG, 2012a), suitable foraging habitat for the ferruginous hawk exists in the study area.

Swainson's hawk

The Swainson's hawk is a long-distance migrant species. The Central Valley population winters primarily in Mexico and arrives on their breeding grounds in the Central Valley in mid-March to early April. Nests are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures, but the species will also nest in tall shrubs and trees in proximity to developments near foraging habitat. Foraging habitats that provide the greatest opportunity for capturing prey include alfalfa fields, disked fields, fallow fields, dry-land pastures, irrigated cropland (beets and tomatoes), irrigated pasture, grain crops, and other row crops (Estep 1989). Crops such as corn, sunflower, and safflower do not provide suitable foraging habitat for Swainson's hawks because the crops mature and grow to heights above 2 feet, which create an impenetrable barrier for foraging (Estep 1989). Prey species mainly include small mammals, reptiles, and insects. Egg-laying generally occurs in April and young hatch in May and June. Most young have fledged the nest by the end of July and are relatively independent of parental protection. However, fledged young remain with their parents until they migrate in the fall. Migration to the wintering grounds generally occurs around September. Some individuals or small groups may winter in California (Zeiner et al., 1988–1990).

Eucalyptus woodland in the study area may provide suitable nesting habitat for Swainson's hawk and foraging habitat within the study area is abundant in the form of annual grasslands. One active nest is currently present in a eucalyptus grove at the southeastern side of the study area. Numerous CNDDB occurrences are recorded within five miles east and northeast of the study area (CDFG, 2012a).

Northern Harrier

The northern harrier (also known as the marsh hawk) is long-winged and long-tailed raptor that frequents open grassland, meadows, rangelands, desert sinks, and fresh and saltwater emergent wetlands. It occurs from sea level up to 300 m (10,000 ft) and breeds up to 1700 m (5,700 ft) in the Central Valley and Sierra Nevada, as well as northeastern California. The northern harrier

forages by flying slowly above the ground and searching for small rodents such as voles, but will also take birds, frogs, small reptiles, crustaceans, insects, and fish (Zeiner et al., 1988-1990).

The northern harrier uses grasses and forbs in wetland (or at habitat edges between wetland and open fields) for cover. Nesting and roosting activities occur on the ground; nests are typically placed in shrubby vegetation, usually at a marsh edge. The nest is composed of a large mound of sticks on wet sites, and a smaller cup of grasses on dry sites. The northern harrier may also nest in grasslands, grain fields, or on sagebrush flats several miles from water (Zeiner et al., 1988-1990).

The northern harrier is a winter resident of California; some individuals migrate into California, while others migrate through to Central America or northern South America. This species is very defensive of territory and may attack other species and humans during the breeding season. Northern harrier breeds from April to September, with peak activity June through July. One pair produces a single brood of 5 eggs on average (range 3-12); nestling period lasts about 53 days (Zeiner et al., 1988-1990).

Northern harrier population may increase with certain agricultural practices (such as grain crops) and availability of nesting habitat (Zeiner et al., 1988-1990).

Northern harrier foraging and potential nesting habitat is present in the study area in annual grasslands and in the flood detention basin north of the Airport runway. This species is a common nester in annual grassland, agricultural fields, and wet meadows in Solano County.

White-tailed kite

The white tailed kite is a year-round resident in central California. It typically nests in oak woodlands or individual trees (in the upper third of a tree measuring 10-160 feet tall), especially along marshes or river margins. Its nesting season may begin as early as February and extends into August. This raptor forages during the day for rodents—especially voles—in wet or dry grasslands and fields (Zeiner et al., 1988–1990). White-tailed kites forage characteristically by hovering over the location of a potential prey item.

Eucalyptus woodland in the study area may provide suitable nesting habitat for white-tailed kite, and foraging habitat is abundant within the site. The nearest known CNDDB nesting occurrence is approximately 1.5 mile from the study area (CDFG, 2012a).

Mammals

Western Red Bat

The western red bat has been found around North America, ranging from southern Canada down to Central America and to the northern part of South America. These bats are similar to birds and will migrate to the southern parts of the world when it gets cold and head north when the weather starts to warm up in northern hemispheres of the world.

Habitat requirements may include open, free water for drinking and foraging, undisturbed foliage roost sites that provide protection from predators, and structurally diverse vegetation that support

a diversity of insect prey for foraging habitat. Water features are a vital habitat component because bats often drink immediately after emergence and water is an important source and concentration site for insects.

This species roosts in the foliage of large shrubs and trees, usually sheltering on the underside of overhanging leaves. Roosting habitat is found in woodland borders, rivers, agricultural areas, and urban areas with mature trees (Harvey *et al.* 1999). Roost sites have been found in edge habitats adjacent to riparian habitat or open fields, and in orchards (Western Bat Working Group [WBWG] 1998). Roost trees are typically large cottonwoods, sycamores, walnuts, and willows associated with riparian habitats (Adams 2003).

Foraging occurs in and amongst vegetation and this species forages regularly over the same territory (Allen 1939). Foraging has been noted in habitats such as mature orchards, oak woodland, low elevation conifer forest, along riparian corridors, among non-native trees in urban and rural residential areas, and also near strong lights that attract flying insects. In addition, this species may forage in habitats and agricultural areas adjacent to streams and rivers that do not provide roosting habitat. No dietary information is available for western red bats in California however eastern red bats prey on moths, flies, beetles, and tiny wasps (WBWG 1998). This species may forage all night or often there is an initial foraging period after sunset and a minor secondary activity period before sunrise that corresponds to insect activity (WBWG 1998).

Suitable roosting habitat for the western red bat is present in eucalyptus woodland and riparian woodland within the study area. The nearest perennial water source is the Putah South Canal, while stream channels within the study area provide a water source during a portion of the year. The nearest CNDDB occurrence of western red bat is 15 miles south of the study area (CDFG, 2012a).

Hoary bat

The hoary bat is found throughout California. Maternity sites are found in inland areas, in woodland and forest areas that contain medium to large-sized trees and are densely foliated. Roosting sites are also found in densely foliated areas with medium to large trees, but species prefers areas with habitat mosaics. The hoary bat is typically found in areas with access to trees for cover, but forages in open areas or habitat edges. Hoary bats feed primarily on moths, but will take any flying insect. Foraging flight is typically fast and straight (Zeiner et al., 1988–1990).

Suitable habitat for the hoary bat exists in the study area within eucalyptus woodland and Valley foothill riparian woodland and three CNDDB occurrences were recorded within 15 miles of the study area (CDFG, 2012a).

American badger

American badgers are carnivorous, eating fossorial rodents, reptiles, insects, earthworms, eggs, birds, and carrion. Their diet shifts in response to prey abundance. Badgers are active year-round, although they do experience periods of torpor during the winter (Zeiner et al., 1988-1990). American badgers are present in most shrub, forest, and herbaceous habitats where friable soils are present. They are most abundant in drier, open areas including grasslands, savannahs, and

mountain meadows near the timberline. Badgers dig burrows for cover; they frequently use old burrows, but some badgers will dig a new burrow each night during the summer (Williams, 1986; Zeiner et al., 1988-1990).

American badgers were historically residents of California, except in the humid coastal areas of Del Norte and northern Humboldt Counties (Williams, 1986; Zeiner et al., 1988-1990). Currently, they survive in low numbers in the periphery of the Central Valley, adjacent lowlands of eastern Monterey, San Benito, and San Luis Obispo Counties, and coastal areas south of Mendocino County. They have been extirpated from much of southern California (Williams, 1986).

Suitable habitat for the American badger is present in the study area within the annual grasslands. However, the nearest CNDDB occurrence is approximately 16 miles from the study area along South Putah Creek (CDFG, 2012a).

Plants

Dwarf downingia

Dwarf downingia is an annual herb that is fairly endangered in California (CNPS, 2012). This plant species can be found in mesic valley and foothill grasslands, and vernal pools. It blooms from March to May and has a small, white flower. This species occurs in elevations ranging from sea level to 445 meters. Dwarf downingia is threatened by urbanization, development, agriculture, grazing, non-native plants, vehicles, and industrial forestry. This species is currently know to occur in Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama, and Yuba Counties and in South America.

Suitable habitat for this species is present in the study area and the nearest CNDDB occurrence is 0.5 miles from the study area. However, dwarf downingia was not observed during the 2007 wetland delineation conducted by LSA or during the biological surveys conducted by ESA in 2012. A botanical survey conducted during the appropriate blooming season is necessary to determine its presence in the study area.

Bogg's Lake hedge hyssop

This species can be found in vernal pools, marshes, and on lake margins in the Sacramento Valley, Sierra Foothills, and ranges to the Modoc Plateau. It is an annual herb that flowers from April through August in elevations ranging from ten to 2,375 meters. The flower is small, white and bell-shaped (CNPS, 2012).

Suitable habitat exists within the study area in vernal pools and freshwater emergent wetlands, however no Bogg's Lake hedge hyssop were encountered during the wetland delineation conducted by LSA in 2007 or the biological surveys conducted by ESA in 2012. The nearest CNDDB occurrence was recorded in 1999 and is approximately six miles east of the study area (CDFG, 2012a).

Contra Costa Goldfields

Contra Costa goldfields is a California-endemic annual herb in the sunflower family. It is found in cismontane woodland, playas (alkaline conditions), Valley and foothill grasslands, and vernal

pools. It is considered a seriously endangered species in California by the CNPS and is a federally endangered species. Contra Costa goldfields occur between 0 and 470 meters in elevation and blooms between March and June. Many historical occurrences of this species have since been extirpated by development and agriculture. Currently, it is threatened by development, habitat alteration, hydrological alterations, overgrazing, and non-native plants (CNPS, 2012).

Suitable habitat for Contra Costa goldfields is present in the study area in vernal pools and annual grassland habitats and the nearest CNDDB occurrence is approximately three miles from the study area (CDFG, 2012a). This species was not identified during the wetland delineation (LSA, 2007) or during the biological surveys conducted for this report.

Heckard's Peppergrass

Heckard's peppergrass is a California-endemic annual herb in the mustard family. It is found in Valley and foothill grasslands and prefers moist habitats, including vernal pools and alkaline flats. It is considered fairly endangered in California by the CNPS and only occurs in Glenn, Merced, Sacramento, Solano, and Yolo Counties. Heckard's peppergrass occurs between 2 and 200 meters in elevation and blooms between March and May (CNPS, 2012).

Suitable habitat for Heckard's peppergrass is present in the study area in annual grassland and vernal pool habitats; however, there are no CNDDB occurrences in the vicinity of the study area (CDFG, 2012a). This species was not identified during the wetland delineation (LSA, 2007) or during the biological surveys conducted for this report.

Baker's Navarretia

Baker's navarretia is a California-endemic annual herb in the phlox family. It is found in Valley and foothill grasslands, cismontane woodland, lower montane coniferous forest, meadows and seeps, and vernal pools. It is considered seriously endangered in California due to development, habitat alteration, road construction, agriculture, and potentially non-native plants. It occurs between 5 and 1740 meters in elevation and blooms between April and July (CNPS, 2012).

Suitable habitat for Baker's navarretia is present in the study area in annual grassland and vernal pool habitats; however, the nearest CNDDB occurrence is approximately three to five miles from the study area (CDFG, 2012a). This species was not identified during the wetland delineation (LSA, 2007) or during the biological surveys conducted for this report.

Bearded Popcorn-flower

Bearded popcorn-flower is a California-endemic annual herb in the borage family. It is often found in vernal swales, but also occurs in Valley and foothill grasslands in mesic locations and vernal pool margins. It is considered seriously endangered in California by the CNPS and only occurs in Napa, Solano and Yolo Counties. Bearded popcorn-flower occurs between 0 and 274 meters in elevation and blooms between April and May (CNPS, 2012).

Suitable habitat for bearded popcorn-flower is present in the study area in annual grassland and vernal pool habitats; however, no CNDDB occurrences were recorded in the vicinity of the study

area (CDFG, 2012a). This species was not identified during the wetland delineation (LSA, 2007) or during the biological surveys conducted for this report.

Saline Clover

Saline clover is a California-endemic annual herb in the pea family. It is found in marshes and swamps, Valley and foothill grasslands in mesic and alkaline areas, and vernal pools. It is considered fairly endangered in California by the CNPS. Saline clover occurs between 0 and 300 meters in elevation and blooms between April and June (CNPS, 2012).

Suitable habitat for saline clover is present in the study area; however, the nearest CNDDB occurrence is approximately three miles from the study area (CDFG, 2012a). This species was not identified during the wetland delineation (LSA, 2007) or during the biological surveys conducted for this report.

Sensitive Natural Community

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. CEQA identifies the elimination of such communities as a significant impact. The CDFW tracks sensitive natural communities in the CNDDB. Most sensitive plant communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. Regionally occurring sensitive plant communities identified by the CNDDB (2012) include:

- Coastal and Valley Freshwater Marsh
- Coastal Brackish Marsh
- Northern Claypan Vernal Pool
- Valley Needlegrass Grassland

The study area potentially supports one sensitive natural community: the Northern Claypan Vernal Pools. As vernal pools are characterized by a specialized suite of animal and plant species that are adapted to the highly variable conditions of the vernal pool ecosystem, along with unique physical features and substrates (Keeler-Wolf et al., 1998), a survey conducted during the appropriate time of the year would be necessary to identify and classify vernal pools that may be present in the study area.

Northern Claypan Vernal Pool

Northern claypan vernal pool is the predominant vernal pool type in the Solano-Colusa vernal pool region. These pools are characterized by a low microrelief, amphibious, herbaceous community dominated by annual herbs and grasses. The substrate is fairly old, circum-neutral to alkaline, and consists of si-cemented hardpan soils. These pools are typically alkaline (more or

less saline) and may display whitish salt deposits in non-vegetated centers of dry pools. Claypan vernal pools may be small (a few square meters) or quite large (covering several hectares) and may resemble small alkali playas (Keeler-Wolf et al., 1998).

A similar vernal pool type includes hardpan vernal pool, which occupies hogwallow topography in such areas as between Interstate 505 and 5 just north of Vacaville. Inundation periods and moisture periods of northern claypan vernal pools are longer duration compared to the hardpan pools. Both pool types occur on deep alluvial soils. However, alkaline northern claypan vernal pools typically support species such as *Atriplex persistens, Frankenia, Cressa,* and other salt-tolerant plant species associated with them (Keeler-Wolf et al., 1998).

Critical Habitat

Critical habitats are areas considered essential for the conservation of a special-status species listed as endangered or threatened under the Endangered Species Act. Critical habitats are specific geographic areas that contain features essential for conservation of special-status species and may require special management and protection. Critical habitat may include an area not currently used by an endangered or threatened species, but that will be needed for species recovery. Projects involving a federal agency or federal funding are required to consult with the USFWS to ensure that project actions will not destroy or adversely modify critical habitat.

A review of GIS information of the USFWS Critical Habitat for Threatened and Endangered Species shows that the study area is currently not located within any designated critical habitat.

3.3.2 Regulatory Setting

Federal

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) grants protection over species that are formally listed as threatened endangered, or proposed for listing. The primary protective requirement in the case of projects requiring federal permits, authorizations, or funding, is Section 7 of FESA, which requires federal lead agencies to consult (or "confer" in the case of proposed species or proposed critical habitat) with the USFWS (and National Oceanic Atmospheric Administration [NOAA] Fisheries where marine species may be affected) to ensure that their actions do not jeopardize the continued existence of federally listed species. In addition to Section 7 requirements, Section 9 of the FESA protects listed wildlife species from "take". Take is broadly defined as those activities that "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect [a protected species], or attempt to engage in any such conduct." An activity can be in violation of take prohibitions even if the activity is unintentional or accidental. Significant modification or degradation of occupied habitat for listed species, or activities that prevent or significantly impair essential behavioral patterns, including breeding, feeding, or sheltering, are also considered "take" under the FESA. Federal agencies may receive authorization for the incidental take of listed species under Section 7 through the issuance of a Biological Opinion from the USFWS and/or NOAA Fisheries. State, local, and private entities

may receive incidental take authorization under an approved Habitat Conservation Plan (HCP). For the Applicant's Preferred Alternative, the FAA is the lead federal agency responsible for consultation with the USFWS under Section 7 of FESA.

Clean Water Act

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The following discussion gives background information as relevant to biological resources.

Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the United States. Waters of the United States refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands. Applicants must obtain a permit from the U.S. Army Corps of Engineers (Corps) for all discharges of dredged or fill material into waters of the United States, including wetlands, before proceeding with a proposed activity. Waters of the United States are under the jurisdiction of the Corps.

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The Corps cannot issue an individual permit or verify the use of a general nationwide permit until the requirements of NEPA, ESA, and the National Historic Preservation Act (NHPA) have been met. In addition, the Corps cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities which may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

Section 402

Under the CWA Section 402, the State Water Resources Control Board (SWRCB) has adopted a *General Construction Activity Storm Water Permit* (General Permit) for storm water discharges associated with any construction activity including clearing, grading, excavation reconstruction, and dredge and fill activities that results in the disturbance of at least one acre of total land area. The general permit requires the site owner to notify the state, to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), and to monitor the effectiveness of the plan.

De minimis discharge activities that are regulated by an individual or general NPDES permit, such as discharges resulting in construction dewatering, also require the General Order for

Dewatering and Other Low Threat Discharge to Surface Waters Permit (Section 402). This permit should be applied for concurrently with the NPDES permit application.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 makes it unlawful to take or attempt to take any migratory bird, any part, nest, or egg of any such bird except under the terms of a permit issued by the U. S. Department of the Interior. In total, 836 bird species are protected by the MBTA, 58 of which are currently legally hunted as game birds. A migratory bird is any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle.

The Bald Eagle Protection Act

The Bald Eagle Protection Act (16 U.S.C. 668-668c) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald and golden eagles, including their parts, nests, or eggs. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

State

Regional Water Quality Control Board

The SWRCB and the Regional Water Quality Control Boards (RWQCBs) (together "Boards") are the principal state agencies with primary responsibility for the coordination and control of water quality. In the Porter-Cologne Water Quality Control Act (Porter-Cologne), the Legislature declared that the "state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation..." (California Water Code section 13000). Porter-Cologne grants the Boards the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the state. Waters of the State determined to be jurisdictional would require, if impacted, waste discharge permitting and/or a Clean Water Act Section 401 certification (in the case of the required USACE permit). The enforcement of the State's water quality requirements is not solely the purview of the Boards and their staff. Other agencies (e.g., the California Department of Fish and Game) have the ability to enforce certain water quality provisions in state law.

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA) and Section 2081 of the California Fish and Game Code, a permit from the CDFW is required for a project that could result in the take of a state-listed threatened or endangered species (i.e., species listed under CESA). Under CESA, the definition of "take" includes an activity that would directly or indirectly kill an individual of a

species, but the state definition does not include "harm" or "harass," as the federal definition does. As a result, the threshold for take under the CESA is typically higher than that under the FESA. Under CESA, CDFW maintains a list of threatened species and endangered species (California Fish and Game Code 2070). The CDFW also maintains two additional lists: (1) a list of candidate species that are species CDFW has formally noticed as being under review for addition to either the list of endangered species or the list of threatened species; and (2) a list of "species of special concern;" these lists serve as "watch lists."

California Fish and Game Code

The California Fish and Game Code protects a variety of species from take. Certain species are considered *fully protected*, meaning that the code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. It also is possible for a species to be protected under the California Fish and Game Code, but not fully protected.

Fully Protected Species

Certain species are considered fully *protected*, meaning that the code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Section 5050 lists fully protected amphibians and reptiles, Section 5515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals.

It is possible for a species to be protected under the California Fish and Game Code, but not fully protected. For instance, mountain lion (*Puma concolor*) is protected under Section 4800 et seq., but is not a fully protected species.

Protection of Birds and Their Nests

Under Section 3503 of the California Fish and Game Code, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 of the code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Migratory non-game birds are protected under Section 3800, while other specified birds are protected under Section 3505.

Stream and Lake Protection

CDFW has jurisdictional authority over streams and lakes and the wetland resources associated with these aquatic systems under California Fish and Game Code Sections 1600 et seq. through administration of lake or streambed alteration agreements. Such agreements are not a permit, but rather a mutual accord between CDFW and the project proponent. California Fish and Game Code Section 1600 et seq. was repealed and replaced in October of 2003 with the new Section 1600–1616 that took effect on January 1, 2004 (Senate Bill No. 418 Sher). Under the new code, CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river lake or stream." CDFW enters into a

streambed alteration agreement with the project proponent and can impose conditions in the agreement to minimize and mitigate impacts to fish and wildlife resources. Because CDFW includes under its jurisdiction streamside habitats that may not qualify as wetlands under the federal CWA definition, CDFW jurisdiction may be broader than Corps jurisdiction.

A project proponent must submit a notification of streambed alteration to CDFW before construction. The notification requires an application fee for streambed alteration agreements, with a specific fee schedule to be determined by CDFW. CDFW can enter into programmatic agreements that cover recurring operation and maintenance activities and regional plans. These agreements are sometimes referred to as Master Streambed Alteration Agreements (MSAAs).

Under Fish and Game Code Section 1602 (Streambed Alteration Agreements), the CDFW takes jurisdiction over the stream zone which is defined top of bank or outside extent of riparian vegetation, whichever is the greatest. Within the stream zone, waters of the State of California are typically delineated to include the streambed to the top of the bank and adjacent areas that would meet any one of the three wetland parameters in the USACE definition (vegetation, hydrology, and/or soils). Whereas federal jurisdiction requires meeting all three parameters, in practice meeting one parameter, or even the presence (rather than dominance) of wetland plants in an area associated with a jurisdictional streambed would qualify an area as waters of the State of California. CDFW jurisdiction is not limited to navigable waters or tributaries to navigable waters, however, isolated wetlands and wetlands not associated with a streambed are not subject to CDFW jurisdiction.

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (Fish and Game Code Sections 1900–1913) is intended to preserve, protect, and enhance endangered or rare native plants in California and gives the CDFW authority to designate state endangered, threatened, and rare plants and provides specific protection measures for identified populations.

Vascular plants listed as rare or endangered by CNPS (2012), but which have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- **List 1A:** Plants Believed Extinct.
- **List 1B:** Plants Rare, Threatened, or Endangered in California and elsewhere.
- **List 2:** Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere.
- **List 3:** Plants About Which More Information is Needed - A Review List.
- **List 4:** Plants of Limited Distribution - A Watch List.

In general, plants appearing on CNPS List 1 or 2 are considered to be rare by local standards and therefore are addressed within the document.

Local

City of Vacaville General Plan

The City of Vacaville General Plan (Plan) was adopted in December of 2007 and serves as a comprehensive update of the 1980 General Plan. The Plan seeks to resolve apparent conflicts between stated community priorities, such as the desires to both provide sites for industry and housing and retain open space, or to provide for additional commercial development without creating unacceptable traffic impacts. The Conservation Element (Chapter 8) outlines guiding policies for protecting and managing wetlands, creeks, wildlife, vegetation, and air quality. Currently, the City of Vacaville is in the General Plan Update process and it is anticipated that formal adoption of the updated General Plan will occur in 2013.

City of Vacaville Tree Preservation Ordinance

The City of Vacaville Tree Preservation Ordinance (Land Use & Development Code Chapter 14.09.131) was originally adopted in 1979, which require a permit for the removal of any tree from any property within the City of Vacaville. The code required that an application be submitted to the City to request approval for tree removal. Approval of a development project by the decision-maker shall constitute a permit to remove any trees when removal of such trees is clearly designated as part of the project application. The preservation ordinance also outlines measures to preserve and maintain the health of trees during construction activities.

Solano County General Plan

The Solano County General plan was adopted on August 5, 2008. The Resources chapter (Chapter 4) of the General Plan identifies the goals, policies, and implementation measures to protect natural and open space resources. The chapter focuses on conserving, preserving, and enhancing natural and open space resources to ensure a high quality of life for current and future county residents. The chapter outlines specific policies and programs to protect or improve water quality, preserve wetlands, protect watersheds, conserve riparian vegetation, protect special-status species and their habitats, protect wildlife movement corridors, and conserve oak woodlands.

Solano Multispecies Habitat Conservation Plan

The study area is located within Zone 1 (Urban Zone) of the proposed Solano Multispecies Habitat Conservation Plan (SMHCP). The SMHCP establishes a framework for complying with state and federal endangered species regulations while accommodating future urban growth, infrastructure development, and ongoing activities related to flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting of the Plan Participants within Solano County over the next 30 years.

As of August 2009, the SMHCP is currently in the form of a final administrative draft. Once approved, the SMHCP would protect, at minimum, 17 federally listed species considered in the Solano Project Water Service Contract Renewal Biological Opinion. In total, the SMHCP would protect 37 species, including federally listed fish species, species listed as threatened or endangered under the CESA, and federally listed species that became listed after March 1999 or were recently

discovered in Solano County. The SMHCP would also address species of concern and would provide protection if these species become federally listed in the future. If they become State listed, inclusion in the habitat conservation plan (HCP) may facilitate the process of adding them to the State Incidental Take Permit. Species proposed for coverage under the SMHCP include Swainson's hawk, burrowing owl, conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, midvalley fairy shrimp, delta green ground beetle, Boggs Lake Hedge Hyssop, and Contra Costa goldfields, among others. Only a subset of the species covered under the federal Section 10(a)1(B) "incidental take permit" will be covered by the State Permit issued under Section 2081 of the California Fish and Game Code. Species covered under Section 2081 include Boggs Lake hedge hyssop and Swainson 's hawk, among others.

The Conservation Strategy of the SMHCP provides a comprehensive program involving avoidance and minimization of impacts, implementation of specific conservation measures designed to preserve, restore, and manage habitats for covered species, and provides long term monitoring and adaptive management to maximize conservation values on established reserves over time. The SMHCP requires applicants to obtain mitigation for Covered Activities in accordance with the applicable conservation requirements identified in the SMHCP. These fees address administrative costs associated with monitoring and reporting and implementation of broad, landscape-level conservation measures. The SMHCP is not yet scheduled for completion.

3.3.3 Analysis, Impacts, and Mitigation

Significance Criteria

Based on Section 15065 and Appendix G of the CEQA Guidelines, the project would result in a significant impact on the environment if it would:

- 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 Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service;
- 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;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future. As species of plants and animals become restricted in range and limited in population numbers, species may become listed or candidates for listing as endangered or threatened and become recognized under CEQA as a significant resource. Examples of such species are vernal pool fairy shrimp and burrowing owl; the former listed by the federal government and the latter a Species of Special Concern.

In conducting the following impact analysis, three principal components of the Guidelines outlined above were considered:

- Magnitude of the impact (e.g., substantial/not substantial);
- Uniqueness of the affected resource (i.e., rarity of the resource); and
- Susceptibility of the affected resource to perturbation (i.e., sensitivity of the resource).

The evaluation of the significance of the following impacts considered the interrelationship of these three components. For example, a relatively small magnitude impact to a state or federally listed species would be considered significant because the species is very rare and is believed to be very susceptible to disturbance. Conversely, a plant community such as California annual grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact.

Cumulative Effects

Cumulative effects, as defined by Section 15355 of the CEQA Guidelines refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

a. The individual effects may be changes resulting from a single project or a number of separate projects.
b. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Methodology and Assumptions

This section identifies potential impacts to local biological resources based on the type and location of Proposed Projects under the Preferred Alternative of the 2012 Master Plan. The impact analysis focuses on foreseeable changes to the baseline condition in the context of the significance criteria presented above.

A project-level analysis is conducted for Phase I of the Master Plan, which proposes development projects that would occur within the next five years. However, because future demand for facilities cannot be accurately predicted, particularly during the latter stages of the 20-year planning period,

Phases II and III of the Preferred Alternative will be analyzed programmatically as these projects would occur in the next six to twenty years. Impact analysis associated with the full build-out of the Proposed Project include impacts associated with Phase I projects, plus any potential impacts associated with Phases II and III.

The cumulative impact analysis evaluates the full build-out of the Proposed Project plus relevant past, present, and reasonable foreseeable future projects that have been identified within the vicinity of the Airport (Refer to the cumulative project list in Chapter 2, Project Description).

Impacts and Mitigation Measures

Phase I Projects

Phase I development would involve environmental, design, and construction projects during the first five years of the Master Plan. Major construction projects during Phase I include stabilizing the Runway Safety Area (RSA), shifting the runway and its associated utilities by 200 feet to the northeast, rehabilitating taxiways, construction of solarized shade hangars, construction of 100,000 square feet of corporate hangars, expanding the south apron, and refurbishing hangars (units 1-9). Other activities include refurbishment, replacement, or installation of lights, beacons, airfield perimeter fencing and gates, and signs and markings. A small taxiway measuring 40 feet wide by 500 feet long would be constructed between Runway 20 and adjacent existing industrial facilities to provide for future access. Non-aviation commercial development would also occur within the Airport property during Phase I. Phase I would impact approximately 41.99 acres of habitat (10.3% of the total habitat) in the study area. Habitat types with the largest amount of acres impacted by activities in Phase I include urban/developed areas (18.81 acres), annual grassland (16.64 acres), and disturbed/ruderal habitat (6.24 acres) (**Figure 3.3-3a**). **Table 3.3-3** summarizes habitat types and amounts of impacts that would result from the implementation of Phase I projects.

TABLE 3.3-3
HABITAT TYPES IMPACTED BY PHASE I

Habitat Type	Acres[1]	Acres Suitable for Special-Status Species	Relative Percent Composition[2]
Annual Grassland	16.64	15.52	7.95
Eucalyptus Woodland	0.20	0.20	4.22
Valley Foothill Riparian	0.06	0.06	15.75
Disturbed/Ruderal	6.24	0	13.27
Urban/Developed	18.81	0	22.62
Stream Channel (Riverine)	0.01	0.01	0.24
Seasonal Wetland	0.04	0.04	4.73
Total	**42.00**	**15.83**	**-**

1 All acres approximate.
2 Relative percent composition is the percentage of impacted habitats compared to existing habitat of the same type in the study area.
SOURCE: ESA, 2012

Project Build-out (Phases II and III)

Phases II and III of the Proposed Project would involve significant rehabilitation and development projects that were designed and planned during Phase I. Major projects during Phase II include expanding the multi-use arrival/departure facility, constructing the east corporate hangars, north T-hangar, and rehabilitating the airfield pavement. Phase III would rehabilitate the airfield pavement, expand the east hangar area, extend Runway 20 to 5,300 feet, and acquire land for RW 20 approach protection and land on the west side of the Airport. The following impact analysis associated with the full build-out of the Proposed Project includes impacts from the implementation of Phase I projects, plus any potential impacts associated with Phases II and III. **Table 3.3-4** and **3.3-5** summarize habitat types and amounts of impacts that would result from the implementation of Phases II and III projects. **Figures 3.3-3b and 3.3-3c** show habitats that would be impacted by Phases II and III projects, respectively. Although the total amount of impact for Phase III appear to be much greater than Phases I and II, the majority of the acreages are attributed to land acquisition on the west and north sides of the Airport property. Lands acquired on the north are specifically for the purpose of Runway 20 approach protection and do not include habitat impacts.

TABLE 3.3-4
HABITAT TYPES IMPACTED BY PHASE II

Habitat Type	Acres[1]	Acres Suitable for Special-Status Species	Relative Percent Composition[2]
Annual Grassland	5.45	5.30	2.59
Annual Grassland/Ruderal	8.36	0	43.24
Eucalyptus Woodland	0.52	0.52	11.09
Disturbed/Ruderal	0.09	0	0.20
Urban/Developed	3.28	0	3.89
Vernal Pool	0.01	0.01	3.81
Total	**17.71**	**5.83**	**-**

1. All acres approximate.
2 Relative percent composition is the percentage of impacted habitats compared to existing habitat of the same type in the study area.

SOURCE: ESA, 2012

TABLE 3.3-5
HABITAT TYPES IMPACTED BY PHASE III

Habitat Type	Acres[1]	Acres Suitable for Special-Status Species	Relative Percent Composition[2]
Annual Grassland (Land Acquisition)	35.62	35.62	19.75
Annual Grassland (Direct Impact)	5.69	5.69	2.72
Eucalyptus Woodland (Land Acquisition)	~~2.91~~ **2.87**	~~2.91~~ **2.87**	~~61.79~~ **60.81**
Eucalyptus Woodland (Direct Impact)	**0.04**	**0.04**	**0.8**
Disturbed/Ruderal	2.28	0	4.85
Barren (Land Acquisition)	37.66	0	98.47
Urban/Developed	6.28	0	7.55
Stream Channel (Riverine) (Land Acquisition)	1.78	1.78	47.34
Stream Channel (Riverine) (Direct Impact)	0.05	0.05	1.32
Total	**92.27**	~~**8.65**~~ **5.78**[3]	**-**

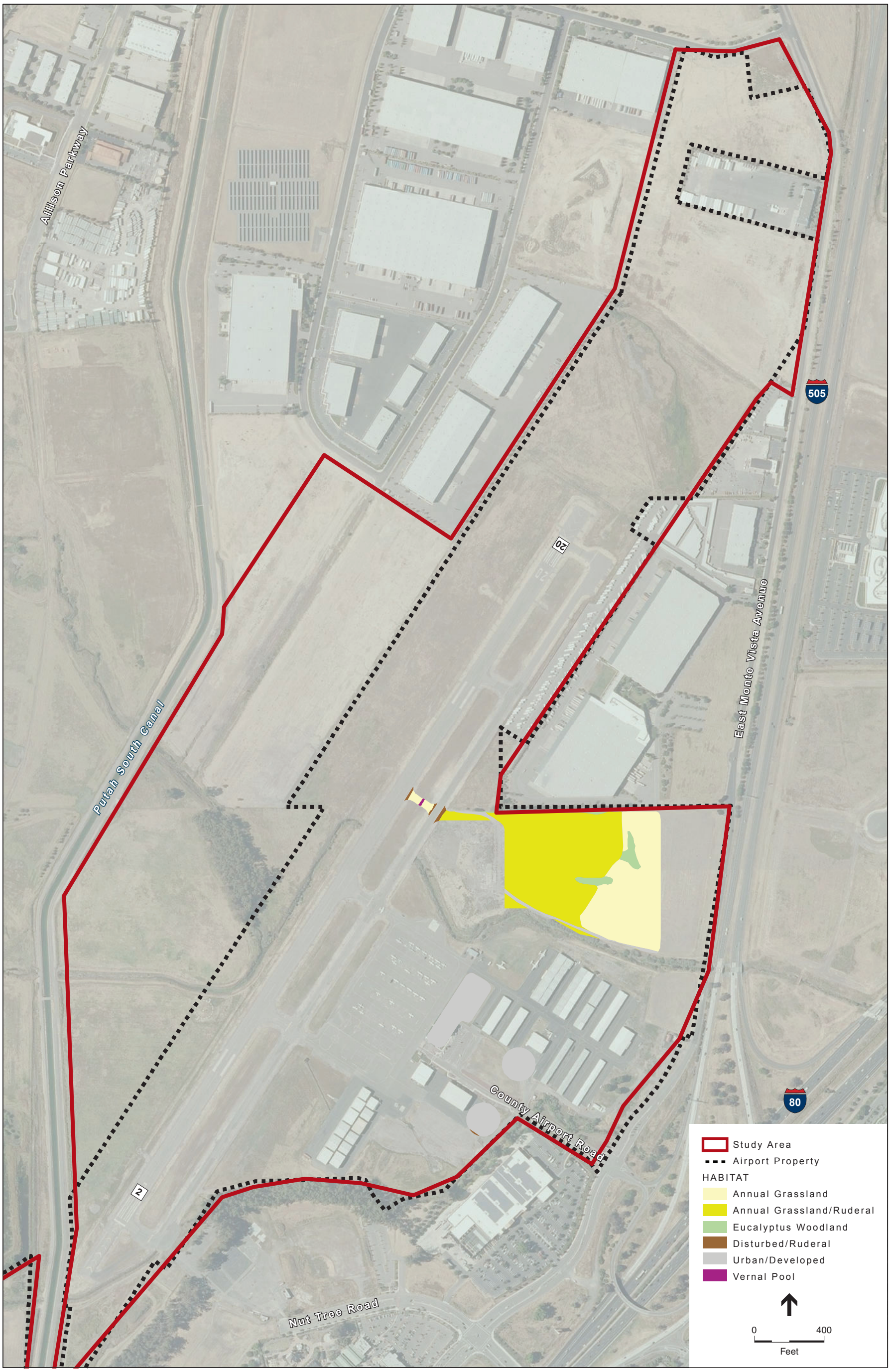
1 All acres approximate.
2 Relative percent composition is the percentage of impacted habitats compared to existing habitat of the same type in the study area.
3 Total does not include land acquisition areas.

SOURCE: ESA, 2012

SOURCE: USDA, 2010; ESRI, 2012; and ESA, 2012

Nut Tree Airport Master Plan EIR . 120526

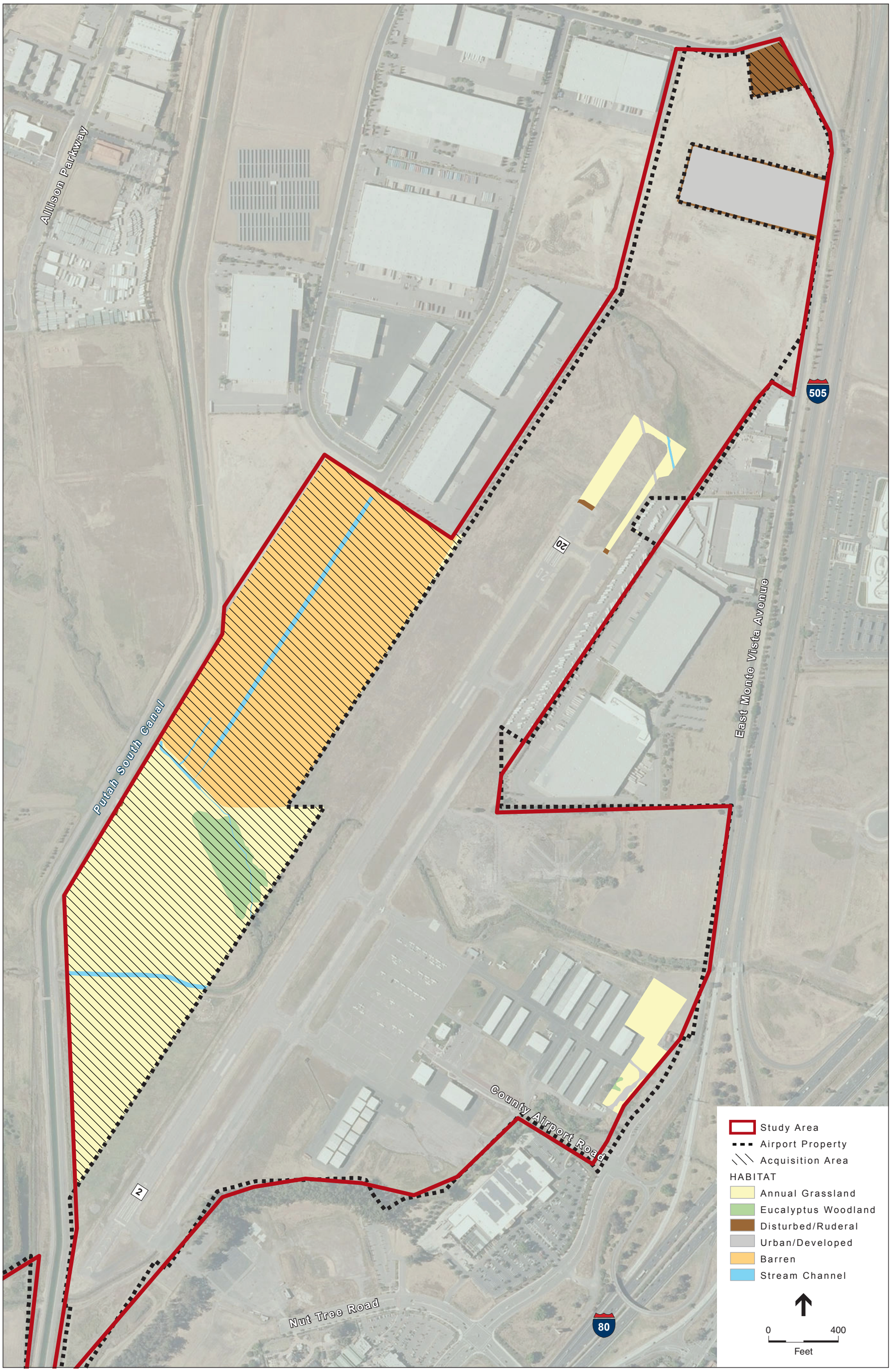
Figure 3.3-3a
Phase I Habitat Impacts



SOURCE: USDA, 2010; ESRI, 2012; and ESA, 2012

Nut Tree Airport Master Plan EIR . 120526

Figure 3.3-3b
Phase II Habitat Impacts



SOURCE: USDA, 2010; ESRI, 2012; and ESA, 2012

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Figure 3.3-3c
Phase III Habitat Impacts

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Impact 3.3-1: Could the Proposed Project 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 CDFW or USFWS? (*Potentially Significant*)

Phase I Projects

As described previously, the study area consists of annual grassland and eucalyptus woodland habitat, including potential nest trees, which may provide suitable nesting habitat for ground-nesting and tree-nesting raptors. These habitats also provide suitable nesting habitat for migratory songbirds, other sensitive bird species, and special-status mammal species. Stream channels, freshwater emergent wetlands, seasonal wetlands, and vernal pools provide suitable habitat for special-status invertebrates, reptiles, and plants. Implementation of the Phase I projects under the Preferred Alternative could have the following impacts on special-status species:

Impact 3.3-1-1: Vernal pool habitat for vernal pool invertebrates. The Proposed Project would not directly impact vernal pools during Phase I, but may indirectly impact vernal pool habitat for vernal pool special-status invertebrates, including conservancy fairy shrimp, vernal pool fairy shrimp, midvalley fairy shrimp, Ricksecker's water scavenger beetle, vernal pool tadpole shrimp, and California linderiella (Table 3.3-3). Because both vernal pool invertebrates and vernal pools are rare and sensitive resources, a smaller magnitude of impact (e.g., indirect impacts from construction-related activities) could result in a potentially significant impact on the special-status species. The proposed runway shift and relocation of associated lights, signs, and markings could result in indirect impacts to special-status species associated with vernal pool habitat through impacts to water quality of vernal pools. This is considered a potentially significant impact, but would be less-than-significant with mitigation (see Mitigation Measures 3.3.1-1a through 3.3.1-1e).

Impact 3.3-1-2: Nesting habitat for special-status raptors, other raptors and migratory songbirds. The Proposed Project could directly or indirectly impact nesting and foraging habitat for special status birds of prey, including Swainson's hawk, white tailed kite, burrowing owl, golden eagle, northern harrier, and other raptors protected under California Fish and Game Code. The proposed runway shift, construction of new facilities, and south apron expansion would remove 16.64 acres of annual grassland (Table 3.3-3), 15.52 acres of which are suitable habitat for raptor species. A portion of those construction activities would occur in proximity to eucalyptus woodland and Valley foothill riparian habitats and would directly impact 0.20 acres of eucalyptus woodland and 0.06 acres of valley foothill riparian habitat (Table 3.3-3). Implementation of the Proposed Project could directly affect ground-nesting raptors, including northern harrier nests (i.e., destroying active nests) or cause indirect impacts (e.g., nest abandonment) in approximately 15.52 acres of suitable annual grassland habitat. The Proposed Project could also indirectly impact nesting raptors in the eucalyptus woodland habitat, including a known active Swainson's hawk nest located in the southeast corner of the study area. These Proposed Projects could directly impact ground nesting raptors and indirectly impact tree nesting raptors through habitat removal, construction noise, and human presence and would potentially cause the failure of nests of these species. This is considered a potentially significant impact, but would be less-than-significant with mitigation (see Mitigation Measures 3.3.1-2a through 3.3.1-2b).

Impact 3.3-1-3: Foraging habitat for sensitive bird species. The project could directly or indirectly impact foraging habitat for sensitive bird species listed in impact 3.3.1-2, but also include great egret and ferruginous hawk. These species forage in wetland and annual grassland habitats. Implementation of the Proposed Project would remove substantial amounts of annual grassland (16.64 acres) habitat, 15.52 acres of which are considered suitable foraging habitat for raptor species during the expansion of the southern apron and construction of new facilities; additionally, the proposed activities would occur in close proximity to suitable foraging habitat for great egret (0.01 acres of stream channels would be impacted) (Table 3.3-3). This is considered a potentially significant impact but would be less than significant with mitigation (see Mitigation Measures 3.3.1-3 and 3.3.1-4).

Impact 3.3-1-4: Foraging habitat for Swainson's hawk. Swainson's hawks forage in grasslands and agricultural fields with short vegetation structure and forage within a 10-mile range of their nest. Annual grassland habitat is present in the study area and provides suitable foraging habitat to Swainson's hawks. This habitat would be impacted by Phase I activities, including runway shift, south apron expansion, south corporate hangar development, and relocation of supporting facilities. Although annual grassland habitat is not considered a rare habitat, annual grassland habitat found within the study area provides valuable foraging habitat for Swainson's hawks due to the habitat's proximity to suitable nesting habitat (eucalyptus woodland and Valley foothill riparian). Numerous Swainson's hawk CNDDB occurrences are recorded within five miles of the study area, in addition to one active nest recorded at the southeast corner of the study area. Thus, removal of suitable foraging habitat for Swainson's hawk (approximately 15.52 acres of annual grassland) in proximity to a known active nest is considered a potentially significant impact, but would be less-than-significant with mitigation (see Mitigation Measures 3.3.1-3 and 3.3.1-4).

Impact 3.3-1-5: Special-status bats. Disturbance to bat maternity or roost sites could occur as a result of the implementation of Phase I projects (runway shift, south apron expansion, and south corporate hangar development). Two special status bat species, western red bat and hoary bat, may roost in trees and forage in open grassland and stream habitats in the study area. Proximity of suitable roosting habitat to stream channels and open fields would provide ideal foraging opportunities for these species. No sign of bat use of the eucalyptus woodland and Valley riparian woodland was detected during the surveys for this report; however a focused survey was not conducted at that time. Removal of suitable roosting habitat (0.20 acres of eucalyptus woodland and 0.06 acres of Valley foothill riparian habitats) or implementation of construction activities near bat roost sites, especially those that also provide maternity roost sites, could cause the loss or reproductive effort or increased exposure to predation. This is considered a potentially significant impact, but would be less-than-significant with mitigation (see Mitigation Measure 3.3.1-5).

Impact 3.3-1-6: American badger. Direct or indirect impacts to American badger could occur as a result of the implementation of the Proposed Project. Facility expansion or development (runway shift, south apron expansion, and south corporate hangar development) within annual grassland habitat (15.52 acres) may directly or indirectly impact badger habitat. However, the nearest CNDDB record of badger occurrence is 16 miles from the study area and no signs of badger occurrence were observed during the biological survey for this report. Additionally, proposed

activities would occur in relatively flat annual grassland that are disked or mowed on an annual basis and would likely preclude the presence of badger dens. Thus, direct or indirect impacts to American badger are considered less than significant.

Impact 3.3.1-7: Western pond turtle. Direct or indirect impacts to western pond turtle individuals and their associated habitat could occur as a result of the implementation of the Proposed Project. Western pond turtle may occur in stream channels within the study area (Horse Creek, South Branch Horse Creek, and Pine Tree Creek). The runway shift and south corporate hangar development could result in direct or indirect impacts to western pond turtle through construction noise, water quality impacts, and human presence immediately adjacent to pond turtle habitat. Approximately 0.01 acres of stream channel would be directly impacted by Phase I, primarily during the runway shift activities. However, this amount of habitat loss is negligible compared to the total amount of stream habitat occurring in the study area (approximately 0.2% of total stream habitat). Potential direct and indirect impacts to western pond turtles from facility development activities directly adjacent to suitable western pond turtle habitat are considered potentially significant, but would be less-than-significant with mitigation (see Mitigation Measure 3.3.1-7).

Impact 3.3-1-8: Special-status plant species. Phase I of the Proposed Project could directly or indirectly impact special status plant species. Implementation of the project would include the runway shift and expansion of the south airport apron. These activities would potentially indirectly impact vernal pool habitat and directly remove annual grassland (16.64 acres) and seasonal wetland (0.04 acres) habitats. The removal of annual grassland and seasonal wetland habitats, and potential indirect impacts to vernal pools, would potentially impact several special-status plant species: dwarf downingia, Boggs Lake hedge-hyssop, Contra Costa goldfields, Heckard's peppergrass, Baker's navarretia, bearded popcorn-flower, and saline clover. These special-status plant species have the potential to occur within the study area due to habitat availability; however, they have not been observed in the study area during the biological survey conducted for this report. A focused botanical survey conducted during the appropriate blooming season is necessary to confirm their presence or absence. Direct or indirect impacts to these species is considered potentially significant, but would be less-than-significant with mitigation (see Mitigation Measure 3.3.1-8a through 3.3.1-8b).

Project Build-out

As described previously, the study area consists of annual grassland and eucalyptus woodland habitat, including potential nest trees, which may provide suitable nesting habitat for ground-nesting and tree-nesting raptors. These habitats also provide suitable nesting habitat for migratory songbirds, other sensitive bird species, and special-status mammal species. Stream channels, freshwater emergent wetlands, seasonal wetlands, and vernal pools provide suitable habitat for special-status invertebrates, reptiles, and plants. Implementation of the Phases II and III projects under the Preferred Alternative could have the following impacts on special-status species:

Impact 3.3-1-9: Vernal pool invertebrates. In addition to impacts described for Phase I (runway shift), potential impacts to vernal pool invertebrates would also result from the Runway 20 extension, airfield pavement rehabilitation, and North T-hangar development in Phases II and III.

All three phases of the Proposed Project may indirectly impact habitat for vernal pool special-status invertebrates through potential impacts to water quality of vernal pools. Phase II may directly remove approximately 0.01 acres of vernal pool habitat. This is considered a potentially significant impact, but would be less than significant with mitigation.

Impact 3.3-1-10: Nesting special-status raptors, other raptors and migratory songbirds. All three phases of the Proposed Project could directly or indirectly impact nesting and foraging habitat for special status birds of prey, including Swainson's hawk, white tailed kite, burrowing owl, golden eagle, northern harrier, and other raptors protected under California Fish and Game Code. The majority of the impacts would be associated with Phases I and II of the Proposed Project (runway shift, south corporate hangar development, south apron expansion, and north T-hangar development). Phase I projects could directly impact ground nesting raptors and directly or indirectly impact tree nesting raptors through habitat removal (15.52 acres of annual grassland, 0.20 acres of eucalyptus woodland, and 0.06 acres of Valley foothill riparian woodland), construction noise, and human presence and would potentially cause the failure of nests of these species. Phases II and III have the potential to remove additional suitable nesting habitat (0.52 acres in Phase II and 2.91 acres in Phase III of eucalyptus woodland) and foraging habitat (5.30 acres in Phase II and 5.69 acres in Phase III of annual grassland) for raptors during implementation of the T-hangar development, Runway 20 extension, and east hangar area expansion (Tables 3.3-4 and 3.3-5). This is considered a potentially significant impact, but would be less than significant with mitigation.

Impact 3.3-1-11: Foraging habitat for sensitive bird species. Phases I and II of the Proposed Project would result in the most direct or indirect impacts to foraging habitat for sensitive bird species, including great egret and ferruginous hawk. However, all phases of the Proposed Project would impact foraging habitat for sensitive bird species. Implementation of Phases I and II of the Proposed Project would remove 16.64 and 5.45 acres of annual grassland, respectively during the expansion of the southern apron, development of the south corporate hangar and north T-hangar, and the runway shift. Approximately 15.52 and 5.30 acres of annual grassland from Phases I and II, respectively, would provide suitable foraging habitat for ferruginous hawks and other raptor species (Tables 3.3-3 and 3.3-4). Annual grassland/ruderale habitat within the study area does not provide suitable foraging habitat for raptors as the vegetation in this area is dense and generally grow taller than 2 feet in height. The proposed activities in Phase II would occur in close proximity to suitable foraging habitat for great egret (stream channels). Phase III would remove approximately 0.05 acres of stream channel habitat to the north of the runway, which is considered suitable foraging habitat for great egret. This is a potentially significant impact, but would be less-than-significant with mitigation.

Impact 3.3-1-12: Loss of foraging habitat for Swainson's hawks. Similar to Impact 3.3.1-3, Phases II and III would remove substantial amounts of suitable foraging habitat for Swainson's hawk in proximity to a known active nest that is located in the southeast corner of the study area. A total of 5.45 acres of annual grassland habitat would be removed to facilitate the north T-hangar development during Phase II, 5.30 acres of which provide suitable foraging habitat for Swainson's hawk. Phase III would impact approximately 5.69 acres of annual grassland due to

the Runway 20 and east hangar area expansion activities (note that a total of 41.31 acres of annual grassland are located within the Phase III footprint; however, most of the annual grassland acreages shown in **Table 3.3-5** are attributed to land acquisitions which do not include plans for development and thus would not result in direct or indirect impacts to the majority of annual grassland habitats in the study area). This is considered a potentially significant impact, but would be less-than-significant with mitigation.

Impact 3.3-1-13: Special-status bats. Disturbance to bat maternity or roost sites could occur as a result of the implementation of Phases I and II of the Proposed Project (south apron expansion, runway shift, south corporate hangar development during Phase I; and east corporate hangar development in Phase II). Phase I and II would impact approximately 0.20 acres and 0.52 acres of eucalyptus woodland, respectively. Only Phase I would impact Valley riparian woodland (0.06 acres). Two special status bat species, western red bat and hoary bat, may roost in trees and forage in open grassland and stream habitats in the study area. Construction activities of Phases I and II of the project near potential bat roost sites (eucalyptus woodland and Valley foothill riparian woodland) could cause the loss or reproductive effort or increased exposure to predation. This is considered a potentially significant impact, but would be less-than-significant with mitigation.

Impact 3.3-1-14: American Badger. Direct or indirect impacts to American badger could occur as a result of the implementation of the Proposed Project. American badger occurs in a wide variety of habitats, including grassland habitats. Facility expansion and development (runway shift, south corporate hangar development, south apron expansion, T-hangar development, Runway 20 extension, and east hangar area expansion) during all phases of the project within annual grassland habitat may directly or indirectly impact badger habitat. Phases I, II, and III would impact 16.64, 5.45, and 5.69 acres of annual grassland habitat, respectively. Approximately 15.52, 5.30, and 5.69 acres of annual grassland habitat impacted in Phases I, II, and III (respectively) are considered suitable habitat for the American badger. However, there are no occurrences of American badger in the vicinity of the study area and no signs of badger occurrence were observed during the biological survey for this report. Additionally, Proposed Projects would occur in relatively flat annual grassland that are disked or mowed on an annual basis and would likely preclude the presence of badger dens. Thus, direct or indirect impacts to American badger are considered less than significant.

Impact 3.3-1-15: Western pond turtle. Direct or indirect impacts to western pond turtle individuals and their associated habitat could occur as a result of the implementation of the Proposed Project. Western pond turtle may occur in stream channels within the study area (Horse Creek, South Branch Horse Creek, and Pine Tree Creek). Development of new facilities from Phases I and II (runway shift, south corporate hangar development, and T-hangar development) could result in direct or indirect impacts to western pond turtle through construction noise, water quality impacts, and human presence immediately adjacent to pond turtle habitat. Approximately 0.01 acres of stream channel habitat would be directly impacted during Phase I and 0.05 acres of stream channel habitat would be directly impacted during Phase III. However, the stream channel habitat that would be impacted during Phase III of the Proposed Project (located north of Runway 20) contains dense cattails and would not likely support western pond turtle due to lack of suitable aquatic habitat, basking sites and adjacent upland nesting habitat. Potential direct and indirect impacts to western

pond turtles from facility development activities directly adjacent to suitable western pond turtle habitat are considered potentially significant, but would be less than significant with mitigation.

Impact 3.3-1-16: Special-status plant species. All phases of the Proposed Project could directly or indirectly impact special-status plant species; however, Phases I and II would likely result in the highest potential to impact special-status plant species because the projects proposed under these phases would occur in annual grassland habitat that support vernal pools and seasonal wetlands. Projects in Phases I and II that could impact special status plant species include the runway shift, south corporate hangar development, south apron expansion, T-hangar development, and the Runway 20 extension. Phase I of the project would remove approximately 0.04 acres of seasonal wetland and 16.64 acres of annual grassland habitats; Phase II of the project would potentially remove approximately 0.01 acres of vernal pool habitat and 5.45 acres of annual grassland habitats; and Phase III of the project could indirectly impact vernal pool habitat during airfield pavement rehabilitation activities. The removal of annual grassland and seasonal wetland habitats, and potential direct and indirect impacts to vernal pools during all phases of the project would potentially impact several special-status plant species: dwarf downingia, Boggs Lake hedge-hyssop, Contra Costa goldfields, Heckard's peppergrass, Baker's navarretia, bearded popcorn-flower, and saline clover. Direct or indirect impacts to these species is considered potentially significant, but would be less-than-significant with mitigation.

Phase I Mitigation Measures

Measure 3.3.1-1: Use Best Management Practices (BMPs) to Provide Effective Erosion and Sediment Control. Use of BMPs for stormwater control as part of Project-specific and site-specific SWPPP implementation is expected to reduce the potential for preserved and avoided habitat for vernal pool species to be indirectly affected by sediment-laden discharges from construction sites. The performance and effectiveness of these BMPs would be determined either by visual means, where applicable (i.e., observation of above-normal sediment release), or by actual water sampling in cases where the verification of containment reduction or elimination is required to determine the adequacy of the measures. BMPs to be implemented would include, but are not limited to, the following:

- All disturbed surfaces or stockpile areas would be protected with erosion control measures in place during the period of October 1 through April 30.
- BMPs for temporary erosion control (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) would be employed per the product specifications for disturbed areas, stockpiled soil, and along culverts and drainage ditches on active construction sites and in downstream areas that may be affected by construction activities. Requirements for the placement and monitoring of the BMPs would be part of the contractor's project specifications. Performance and adequacy of the measures would be determined visually by site construction management and verified by the County Department of Water Resources and Central Valley Regional Water Quality Control Board as appropriate.
- Dirt and debris would be swept from paved areas in construction zones on a daily basis as necessary to remove excessive accumulations of silt, mud or other debris. Sweeping

and dust removal would be implemented by the contractor and oversight of these operations the responsibility of the construction site superintendent.

- All exposed/disturbed areas, left barren of vegetation due to project related activities, would be stabilized with mulch, tackifier, or other appropriate cover that is compatible with airport safety requirements; hydroseeding is not appropriate as seed may attract birds thereby increasing the risk of bird strikes
- If discharges of sediment or hazardous substances to drainage ways are observed, construction would be halted until the source of contamination is identified and remediated. Visual indications of such contamination include an oily sheen or coating on water, and noticeable turbidity (lack of clarity) in the water.

Measure 3.3.1-1b: Conduct Worker Awareness Training (WEAP). A Worker Environmental Awareness Program (WEAP) training for construction crews and construction forepersons would be conducted before any construction activities begin. The WEAP training would be conducted by a qualified wildlife biologist. The training would include a brief review of the special status species and other sensitive resources that could occur in the study area (including their life history and habitat requirements and where on the study area they may be found) and their legal status and protection. The program would also cover all relevant mitigation measures, permit conditions and BMP plans, such as the SWPPP and/or erosion control and sediment plan. During WEAP training, construction personnel would be informed of the importance of avoiding ground-disturbing activities outside of the designated work area. A designated environmental inspector would be responsible for ensuring that construction personnel adhere to the guidelines and restrictions and that all persons working on site have attended a WEAP training session. WEAP training sessions would be conducted as needed for new personnel brought onto the job throughout the duration of construction.

Measure 3.3.1-1c: Limit Project Access Routes/Staging Areas. The total number of access routes, number and size of staging areas, and the total area of construction activity would be limited to those areas identified in the approved construction drawings and/or plans or as otherwise approved per permit conditions. Access routes and project boundaries would be clearly marked at all times. Access routes for heavy equipment to and from the study area would be restricted to established roadways to minimize habitat disturbance. The storing of construction equipment, vehicles, and supplies would be restricted to the designated construction staging areas outside of designated avoided areas. All fueling, cleaning and maintenance activities of vehicles and other equipment would be performed only in designated areas and at least 250 feet away from avoided/preserved habitats. As part of WEAP training, all workers would be informed of the importance of preventing spills and appropriate measures to take in the event of a spill. All spills would be cleaned up immediately.

Measure 3.3.1-1d: Protect Preserved and Avoided Habitats. Avoided and preserved habitat, including habitat within designated Preserve and Riparian Buffer areas, would be protected at all times from construction activities. Habitat protection measures would include the following:

- A USFWS-approved biologist (monitor) would inspect all construction-related activities at the study area to ensure that no unauthorized take of listed species or destruction of their habitat occurs. The biologist would have the authority to stop any activities that may result in such take or destruction until appropriate corrective

measures have been completed. The biologist also would be required to report immediately any unauthorized impacts to the USFWS and the CDFW.

- Adequate fencing would be placed and maintained around all avoided (preserved) habitat for vernal pool species to prevent direct impacts from construction.

Measure 3.3.1-2: Special-Status Raptors and Migratory Birds.

Measure 3.3.1-2a: Conduct Pre-construction Nesting Surveys for Burrowing Owl. Pre-construction surveys for burrowing owls shall be conducted within 30 days prior to the start of any construction activities occurring in suitable habitat (i.e. annual grassland with burrows). The project proponent shall conduct preconstruction surveys in suitable nesting habitat for burrowing owls within 250 feet of project activities prior to construction that will occur between February 1 and August 31 (breeding season), and within 165 feet of project activities that will occur between September 1 and March 31 of any given year (non-breeding season). If construction activities are delayed for more than 30 days after the initial pre-construction surveys, then a new survey shall be required. Surveys shall conform to Appendix C and D of CDFW's *Staff Report on Burrowing Owl Mitigation* (**Appendix F**) (CDFG, 2012c) or as otherwise approved by CDFW.

If active burrows are recorded within 250 feet of project activities, the following measures will apply:

1. No disturbance should occur within a 250-foot buffer around each active owl burrow during the breeding season and a 165-foot buffer during the non-breeding season or as otherwise approved by CDFW. Occupied burrows shall not be disturbed during the breeding season (February 1 through August 31) unless a qualified biologist approved by CDFW verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival

2. If owls must be moved away from the disturbance area; passive relocation techniques in accordance with CDFW's Staff Report on Burrowing Owl Mitigation (CDFG, 2012c) shall be used. Passive relocation shall take place outside of the breeding season (February 1 to August 31).

Measure 3.3.1-2b: Conduct Pre-construction Nesting Raptor Surveys. Pre-construction surveys for tree-nesting raptors and migratory songbirds shall be conducted within 30 days prior to any construction that will occur between March 15 and September 15 of any given year. Pre-construction surveys shall be conducted by a qualified biologist. All suitable nesting habitat for tree nesting raptors and migratory songbirds shall be surveyed within 0.5-mile radius of the Proposed Project impact area.

1. If active nests are found during pre-construction surveys, a no-disturbance buffer (acceptable in size to CDFW) shall be created around active raptor nests and nests of other special-status birds during the breeding season, or until it is determined that all young have fledged. Typical buffers include 500 feet for raptors and 250 feet for other nesting birds. The size of these buffer zones and types of construction activities restricted in these areas could be further modified during construction in coordination with CDFW and shall be based on existing noise and human disturbance levels in the study area. Input shall also be sought from the Nut Tree Airport Operations Safety Officer concerning the hazards posed by wildlife nesting in proximity to an active airport.

2. If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation shall be required. Trees and shrubs within the construction footprint determined to be unoccupied by special-status birds, or that are outside the no-disturbance buffer for active nests, could be removed.

Measure 3.3.1-3 and 3.3.1-4: Mitigation for Loss of Foraging Habitat for Swainson's Hawk and other Sensitive or Special-Status Bird Species. Construction activities under the Proposed Project would result in the loss of annual grassland habitat suitable for foraging by sensitive or special-status bird species, including ferruginous hawk, burrowing owl, northern harrier, and Swainson's hawk. Although grassland habitats are regionally abundant in central California, CDFW has developed mitigation guidance in the *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks* (Buteo Swainsoni) *in the Central Valley of California* (CDFG, 1994) (**Appendix G, Survey Protocols and Mitigation Guidelines**), which recommends a foraging habitat mitigation ratio that is dependent upon the development's distance to the nearest known Swainson's hawk nest site. An appropriate mitigation ratio will be developed in coordination with CDFW prior to project implementation. A typical mitigation ratio may consist of a ratio ranging from 0.5:1 to 1:1.

Measure 3.3.1-5: Mitigation for Potential Disturbance to Special-status bats. The applicant shall conduct a survey for roosting bats and evidence of historic use of buildings and trees on the study area. The survey shall be conducted by a USFWS-qualified biologist. This survey shall include, at a minimum, a visual inspection of potential bat roosting sites, and may include an evening or night survey using electronic bat detectors. If occupied bat roosts are detected, the applicant shall consult with CDFW regarding suitable measures to avoid impacting roosts. Measures may include, but are not limited to:

1. Maintaining a 100-foot buffer around each roost; no construction activities shall be permitted within this buffer except as described in Mitigation Measure 3.3.1-5 (2). This buffer may be reduced in consultation with CDFW.

2. Exclusion of bats from roosts (ensuring that no bats are trapped in the roost). For maternity roosts, this measure may only be implemented once young have been reared and are able to freely leave the roost (typically before March and after August). Exclusion plans must be approved by CDFW prior to implementation.

Measure 3.3.1-6: No mitigation is necessary.

Measure 3.3.1-7: Perform Pre-construction Surveys for Western Pond Turtle. Prior to construction, a qualified biologist would conduct a survey for western pond turtles within 24 hours of the start of construction activities within 500 feet of streams, ditches, and other watercourses located within the proposed construction areas. If no individuals are identified then no additional measures are required. If a turtle is found in a proposed construction area, the biologist would move the turtle from the area to suitable habitat within the vicinity.

Measure 3.3.1-8: Special-status Plants.

Measure 3.3.1-8a: Perform Pre-construction Surveys for Special-Status Plants. Prior to construction, vegetated portions of the study area including wetland habitats would be surveyed by a qualified botanist for special-status plants following established CDFW Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities (CDFG, 2009) (**Appendix G, Survey Protocols and Mitigation**

Guidelines), which calls for protocol-level surveys during the appropriate flowering/identification period for each potentially affected species.

Measure 3.3.1-8b: Compensate for the Loss of Special-Status Plant Populations. If the Proposed Project would directly impact known populations of special-status plants, the project proponent shall compensate for the loss of special status species through the following measures:

- Avoid existing, known populations where possible;
- Minimize impacts by restricting removal of plants to a few individuals of a population where possible;
- Prepare a Mitigation and Monitoring Plan to relocate plants and/or seed banks or reintroduce new populations in suitable habitat and soil types at a CDFW or USFWS-approved off-site location;
- Monitor affected populations to document potential project-related impacts;
- Restore or enhance occupied habitat at another regional location; and
- Protect occupied habitat for the species at another regional location.

Impact Significance after Mitigation: Implementation of mitigation measures 3.3.1-1 through 3.3.1-8 would reduce impacts to special status species through mitigation for habitat loss, preconstruction surveys for special status wildlife and plants, implementation of BMPs and protection of sensitive habitats, and providing WEAP training to project employees. With implementation of mitigation measures 3.3.1-1 through 3.3.1-8 listed above, impacts to special-status species would be reduced to a less-than-significant level.

Project Build-Out Mitigation Measures

Measure 3.3.1-9: Compensate for the Loss of Habitat for Vernal Pool Invertebrates in Phase II. The project proponent would purchase habitat creation credits at an USFWS approved mitigation bank **and/or** restore/enhance habitat within the designated Preserve areas upon USFWS approval to fully compensate for direct and indirect effects to habitat for federally listed vernal pool species. Compensation would be at a 2:1 preservation ratio and 1:1 creation ratio for direct effects to habitat for vernal pool species. Options for habitat compensation are described below.

Option 1: Purchase Habitat for Vernal Pool Species Credits. Prior to the initiation of project construction, the project proponent would purchase the required acreage of vernal pool creation and preservation credits at a USACE and USFWS-approved mitigation bank at a 1:1 ratio. The project proponent would provide the USACE proof of the purchase prior to project construction.

Option 2: Restore or Enhance Habitat within a Designated Preserve Area. Direct effects to habitat for vernal pool species would be compensated through the restoration and/or enhancement of habitat for vernal pool species within off-site USFWS-approved Preserve areas at a 2:1 ratio. The restoration goal would be to restore and enhance habitat for vernal pool species such that their ultimate functions and services are equal to or greater than the wetland features affected by the implementation of the Preferred Alternative. This

effort could include restoring vernal pools and/or other suitable aquatic features that have been damaged by prior activities. The plan would include monitoring requirements to ensure the long term success of restored and enhanced habitats.

Impact Significance after Mitigation: With implementation of mitigation measure 3.3.1-9 for Phase II and implementation of mitigation measures 3.3.1-1 through 3.3.1-8 listed under Phase I for Phases II and III of the Proposed Project, special status wildlife and plant species would be protected through application of BMPs, avoidance and protection of preserved or sensitive habitats, preconstruction surveys, and worker environmental awareness training. Thus, impacts to special-status species on a plan-level would be reduced to a less-than-significant level.

Impact 3.3-2: Could the Proposed Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS? (*Potentially Significant*).

Phase I Projects

Implementation of the Phase I projects under the Preferred Alternative could indirectly impact a small segment of riparian habitat (in the vicinity of the proposed south hangar) and may indirectly impact vernal pool habitat (in the vicinity of the 200-foot runway shift to the north of Runway 20). A small amount of Valley foothill riparian habitat may be impacted (0.06 acres); however, most riparian habitats within the study area are anticipated to be preserved and protected during construction activities. Valley foothill riparian woodland and vernal pool wetland are considered sensitive natural communities due to their rarity and susceptibility to disturbance. Impacts to wildlife associated with these habitats could occur due to direct or indirect impacts from construction activities. Direct removal of riparian woodland is anticipated to be negligible (0.06 acres riparian) and would be avoided to the extent possible during the implementation of project. However, removal of Valley foothill riparian habitat is considered a potentially significant impact, but would be considered less-than-significant with mitigation.

Project Build-out

Impacts to riparian habitat and other sensitive natural communities would primarily occur in Phase I (runway shift, south corporate hangar development) with impacts less pronounced in Phases II (east corporate hangar development) and III (east hangar area expansion). Implementation of Phases I and II of the Proposed Project could directly and indirectly impact a small segment of riparian habitat (0.06 acres of direct impact in the vicinity of the proposed south hangar) and could directly impact vernal pool habitat (0.01 acres of direct impact during Phase II). Construction activities that would either indirectly impact riparian habitat (e.g., stormwater runoff and sedimentation) or directly remove riparian habitat would result in impacts to wildlife associated with these habitats. Direct removal of riparian woodland is anticipated to be negligible (0.06 acres) during Phase I of the project and potential loss of vernal pool wetland (0.01 acres) may result during Phase II of the project. This is considered a potentially significant impact, but would be less-than-significant with mitigation.

Phase I Mitigation Measures

Measure 3.3.2a: Implement Mitigation Measures 3.3.1-1a-d and 3.3.3.

Impact Significance after Mitigation: Implementation of mitigation measures 3.3.1-1a-d and 3.3.3 listed above would mitigate for habitat loss, implement BMPs to protect sensitive habitats, provide WEAP training to project employees, and avoid preserved areas; these mitigation measures would reduce potential impacts to riparian and vernal pool habitats to a less-than-significant level.

Project Build-Out Mitigation Measures

Measure 3.3.2b: Implement Mitigation Measures 3.3.1-1a-d and 3.3.3 as described under Phase I. Implementation of these measures would reduce impacts to sensitive natural communities to a less-than-significant level.

Impact Significance after Mitigation: Implementation of mitigation measures 3.3.1-1a-d and 3.3.3 listed under Phase I and 3.3.1-1 in this section for Phases I and II of the Proposed Project would mitigate for habitat loss, protect preserved habitat through implementation of BMPs, and provide project employees the WEAP training. These mitigation measures would reduce potential impacts to riparian and vernal pool habitats to a less-than-significant level.

Impact 3.3-3: Could the Proposed Project 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? (*Potentially Significant*)

Phase I Projects

Implementation of the Proposed Project would result in potential direct and indirect impacts to vernal pool, seasonal wetland, and other waters of the U.S. Phase I of the project could directly fill 0.04 acres of seasonal wetlands and 0.01 acres of stream channel, and indirectly impact the water quality of vernal pools and stream channels. Activities that could result in adverse impacts to federally protected wetlands and other waters of the U.S. include shifting the runway, expanding the apron in the south, and construction of new airport facilities (e.g., the south corporate hangar). These potential impacts are considered less-than-significant with mitigation.

Project Build-out

Implementation of the Proposed Project would result in potential direct and indirect impacts to vernal pool, seasonal wetland, and other waters of the U.S. These impacts would occur during the implementation of Phases I (runway shift and south corporate hangar development), II (north T-hangar development), and III (Runway 20 extension). The Project could directly fill seasonal wetlands (0.04 acres in Phase I), vernal pools (0.01 acres in Phase II), and stream channel habitat (0.01 acres in Phase I and 0.05 acres in Phase III) and indirectly impact the water quality of vernal pools and stream channels. Activities that could result in adverse impacts to federally

protected wetlands and other waters of the U.S. include shifting the runway, expanding the apron in the south, and construction of new airport facilities. This is considered a potentially significant impact, but would be less-than-significant with mitigation.

Phase I Mitigation Measures

Measure 3.3.3a: Mitigation for Potential Adverse Impacts on federally protected wetlands as defined by Section 404 of the Clean Water Act. The Proposed Project will impact potential waters of the U.S., including 0.01 acres of stream channel (riverine) and 0.04 acres of seasonal wetland (**Table 3.3-3**). The project applicant would obtain all required permit approvals from the USACE, RWQCB, CDFW and any other agencies with permitting responsibilities for construction activities within jurisdictional features. Permit approvals and certifications would likely include the following:

- Clean Water Act Section 404. Permit approval from the USACE shall be obtained for the placement of dredge or fill material in waters of the U.S. pursuant to Section 404 of the federal Clean Water Act. The Section 404 permit application would require a delineation of wetlands and other waters of the U.S., a jurisdictional determination from the USACE, and preparation of a Pre-Construction Notification (PCN) and supporting documentation. A PCN outlines project activities, areas of impact, construction techniques, and methods for avoiding and reducing impacts to jurisdictional features. State and federal regulations require that the project applicant avoid or minimize impacts to wetlands and waters and develop appropriate protection for wetlands. Wetlands that cannot be avoided must be compensated to result in "no net loss" of wetlands to ensure that the project would maintain the current functions and values of onsite wetland habitats.

- Clean Water Act Section 401 Water Quality Certification/Porter-Cologne Act. Approval of Water Quality Certification (WQC) under the CWA and/or Waste Discharge Requirements (WDRs) under the Porter-Cologne Act shall be obtained from the RWQCB for work within jurisdictional waters. Application for a WQC requires an application and supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance. Application for a WDR requires an application and supporting materials, including a characterization of the discharge which includes but is not limited to: design and actual flows; a list of constituents and the discharge concentration of each constituent; a list of other appropriate waste discharge characteristics; a description and schematic drawing of all treatment process; a description of any BMPs used; and a description of disposal methods. Proof of CEQA compliance is also required.

- California Fish and Game Code Section 1602. CDFW requires a Streambed Alteration Agreement for activities that result in alteration of the bed or bank of a stream (typically the top of bank or edge of riparian habitat, whichever is greater), or that adversely impact fish or wildlife resources. The notification package must be submitted by the project proponent to CDFW and shall include supporting materials, including construction techniques, areas of impact, mitigation measures, project schedule, and proof of CEQA compliance. An application fee shall be submitted with the completed application. The project proponent shall comply with

all mitigation measures within the Streambed Alteration Agreement with CDFW, including mitigation for any loss of riparian habitat (typically 1:1 ratio).

Impact Significance after Mitigation: Implementation of mitigation measures under 3.3.3 listed above would ensure that indirect and direct impacts to waters of the U.S., including seasonal wetland and riverine habitats, would be mitigated for. Additionally, preserved waters of the U.S. within the study area would be protected by implementation of Mitigation measures 3.3.1-1a through 3.3.1-1d. Mitigation measure 3.3.3 and 3.3.1-1a through 3.3.1-1d would reduce potential impacts to federally and State protected wetlands to a less-than-significant level for the Proposed Project.

Project Build-Out Mitigation Measures

Measure 3.3.3b: Implement Mitigation Measures 3.3.3 as described under Phase I. Implementation of these measures would reduce impacts to sensitive natural communities to a less-than-significant level.

Impact Significance after Mitigation: Implementation of mitigation measure 3.3.3 (as described above under Phase I) during each Phase of the Proposed Project would mitigate for loss of waters of the U.S. and protect preserved habitat during construction activities; these measures would reduce potential impacts to federally protected wetlands to a less-than-significant level for the Proposed Project.

Impact 3.3-4: Could the Proposed Project 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? (*Less Than Significant*)

Phase I Projects

The study area is not located in a critical habitat or known wildlife corridor or wildlife nursery. The Proposed Project would not directly impact stream channels within the study area. These channels are not perennial streams and thus, would not support migratory fish species. Although vernal pools were observed within the study area, these pools are not located directly adjacent to any other known vernal pool complexes. Hence, the Proposed Project would not likely interfere substantially with the movement of any native wildlife or impact any migratory wildlife corridors or nursery sites. If wildlife nursery sites (e.g., rookeries, bat maternity colonies) are discovered during the implementation of Phase I, appropriate mitigation measures described in this report and specific to the wildlife species would be applied to reduce impacts to nursery sites. Mitigation measures for wildlife species not described in this report would be developed in consultation with the appropriate State or federal agency. Thus, this impact is considered less than significant.

Project Build-out

The study area is not located in a critical habitat or known wildlife corridor or wildlife nursery. Phases II and III of the Proposed Project would not directly impact stream channels within the

study area. These channels are not perennial streams and thus, would not support migratory fish species. Although a few vernal pools were observed within the study area, these pools are not located directly adjacent to any other known vernal pool complexes. Hence, the Proposed Project would not likely to interfere substantially with the movement of any native wildlife or impact any migratory wildlife corridors or nursery sites. If wildlife nursery sites (e.g., rookeries, bat maternity colonies) are discovered during the implementation of any phase of the project, appropriate mitigation measures specific to the wildlife species would be applied to reduce impacts to nursery sites. Thus, this impact is considered less than significant.

Mitigation Measures: None required.

Impact 3.3-5: Could the Proposed Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (*Potentially Significant*)

Phase I Projects

The City of Vacaville Tree Preservation Ordinance provides for the preservation and maintenance of established trees from arbitrary removal, while allowing for removal of certain trees when determined necessary. The approval of a development project by the decision-maker would constitute an approval of tree removal activities specifically associated with the Proposed Project. ~~Phase I of the~~ Proposed Project does not anticipate the removal of any native ~~or non-native trees~~**, though approximately 0.20 acres of eucalyptus trees would be removed as a result of Phase I development**. However, indirect impacts to tree resources may occur as a result of construction activities conducted adjacent to trees (e.g., development of new facilities adjacent to eucalyptus woodland and valley foothill riparian woodland habitats). Implementation of mitigation measures outlined by the City of Vacaville Tree Preservation Ordinance (14.09.131.050: "Preservation and Maintenance of Trees during Construction") would substantially reduce impacts to trees during the construction of Phase I. This would be considered less-than-significant with mitigation to local policies or ordinances protecting biological resources.

Project Build-out

The City of Vacaville Tree Preservation Ordinance provides for the preservation and maintenance of established trees from arbitrary removal, while allowing for removal of certain trees when determined necessary. The approval of a development project by the decision-maker would constitute an approval of tree removal activities specifically associated with the Proposed Project. Phase I of the Proposed Project may remove 0.20 acres of eucalyptus woodland and 0.06 acres of Valley foothill riparian habitat during the installation of the airfield perimeter fencing and gates. However, the majority of riparian habitat and trees in the study area are anticipated to be avoided during all phases of the Proposed Project. Indirect and direct impacts to tree resources may occur during Phase II as a result of the development of the north T-hangar and south corporate hangar adjacent to or within eucalyptus woodland and valley foothill riparian woodland habitats.

Approximately 0.52 acres of eucalyptus woodland would be removed during Phase II to facilitate the development of the north T-hangar. Some eucalyptus trees may be removed during Phase III east hangar expansion (2.**87**~~91~~ acres). Implementation of mitigation measures outlined by the City of Vacaville Tree Preservation Ordinance (14.09.131.050: "Preservation and Maintenance of Trees during Construction") would substantially reduce impacts to trees during the construction of Phase II. This would be considered less-than-significant with mitigation to local policies or ordinances protecting biological resources.

Phase I Mitigation Measures

Measure 3.3.5a: Preservation and Maintenance of Trees During Construction. Sensitive tree resources adjacent to construction activities may require protection during the implementation of the Proposed Project. The following measures shall protect trees to be retained onsite during project implementation:

- A Tree Protection Zone (TPZ) shall be established around any tree or group of trees to be retained. The formula typically used is defined as 1.5 times the radius of the dripline or 5 feet from the edge of any grading, whichever is greater. The TPZ may be adjusted on a case-by-case basis after consultation with a certified arborist.
- The TPZ of any protected trees shall be marked with permanent fencing (e.g., post and wire or equivalent), which shall remain in place for the duration of construction activities in the area. Post "keep out" signs on all sides of fencing.
- Construction-related activities, including grading, trenching, construction, demolition, or other work shall be prohibited within the TPZ. No heavy equipment or machinery shall be operated within the TPZ. No construction materials, equipment, machinery, or other supplies shall be stored within a TPZ. No wires or signs shall be attached to any tree. Any modifications must be approved and monitored by a certified arborist.
- Prune selected trees to provide necessary clearance during construction and to remove any defective limbs or other parts that may pose a failure risk. All pruning shall be completed by a certified arborist or tree worker and adhere to the *Tree Pruning Guidelines* of the International Society of Arboriculture.
- The TPZs of protected trees shall be monitored on a weekly basis.
- A certified arborist shall monitor the health and condition of the protected trees and, if necessary, recommend additional mitigations and appropriate actions. This shall include the monitoring of trees adjacent to project facilities in order to determine if construction activities (including the removal of nearby trees) would affect protected trees in the future.
- Provide supplemental irrigation and other care, such as mulch and fertilizer, as deemed necessary by a certified arborist. Any injuries shall be treated by a certified arborist.

Impact Significance after Mitigation: Implementation of mitigation measures 3.3.5 would protect retained trees within the study area during construction activities; this mitigation measure would reduce potential impacts to biological resources protected by local policies or ordinances to a less-than-significant level.

Project Build-Out Mitigation Measures

Measure 3.3.5b: Preservation and Maintenance of Trees During Construction, as described under Measure 3.3.5a ~~Phase I~~.

Impact Significance after Mitigation: Implementation of mitigation measures 3.3.5a (as described above under Phase I) during each phase of the Proposed Project would protect trees within the study area and reduce potential impacts to biological resources protected by local policies or ordinances to a less-than-significant level.

Impact 3.3-6: Could the Proposed Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan? (*No Impact*)

Phase I Projects

The Proposed Project is located in an area designated as public/quasi-public land by the Solano County General Plan and public/institutional by the City of Vacaville General Plan. The Nut Tree Airport is located within the City of Vacaville's 20-year Urban Service Area Boundary. The City of Vacaville General Plan and the Solano County General Plan outline specific guidelines, policies and programs to protect or improve water quality, preserve wetlands, protect watersheds, conserve riparian vegetation, protect special-status species and their habitats, protect wildlife movement corridors, and conserve oak woodlands. Potential impacts to special-status species and biological resources (vegetation communities and watersheds) would be mitigated for on a project level (refer to Mitigation Measures 3.3.1-1 to 3.3.1-8 and 3.3.3); therefore, the Proposed Project would be consistent with guidelines and policies in these General Plans.

As previously mentioned, the SMHCP establishes a framework for complying with state and federal endangered species regulations while covering activities associated with planned urban development, operation and maintenance of flood control and irrigation channels, pipelines, and associated facilities owned and operated by various water and irrigation agencies, and implementation of HCP conservation measures. The Proposed Project is located in Zone 1, the Urban Zone of the SMHCP Plan Area. Covered activities within this zone include the construction and maintenance of public and private facilities consistent with local general plans and local, state, and federal laws to accommodate urban growth. All covered activities affecting covered plant and animal species and habitats conducted in compliance with the goals, objectives, and conservation strategies described in the HCP and implemented under the authority/control of the Plan Participants would be authorized.

The SMHCP requires applicants to obtain mitigation for Covered Activities in accordance with the applicable conservation requirements identified in the SMHCP. These fees address administrative costs associated with monitoring and reporting and implementation of broad, landscape-level conservation measures.

Because the SMHCP is currently in its final administrative draft as of June 15, 2009, the HCP is not yet in implemented. Additionally, the project proponent is not a permittee and thus would be required to mitigate for potential impacts to special-status species covered under the SMHCP. Impacts to special-status species, including those covered under the SMHCP would be fully mitigated for at the project level (refer to Mitigation Measures 3.3.1-1 to 3.3.1-8); therefore, the Proposed Project would not be in conflict with the provisions of the SMHCP.

As the Proposed Project would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan, no impact is anticipated.

Project Build-out

City of Vacaville General Plan and Solano County General Plan: Potential impacts to special-status species and biological resources (vegetation communities and watersheds) during the implementation of Phase II and III would be mitigated for on a project level (refer to Mitigation Measures 3.3.1-1 to 3.3.1-8 and 3.3.3) during each phase of the Proposed Project; therefore, the Proposed Project would be consistent with guidelines and policies in these General Plans.

Solano MHCP: The project proponent is not a permittee of the SMHCP and thus would be required to mitigate for potential impacts to special-status species covered under the SMHCP. Impacts to special-status species, including those covered under the SMHCP would be fully mitigated for at the project level during each phase of the Proposed Project (refer to Mitigation Measures 3.3.1-1 to 3.3.1-8); therefore, the Proposed Project would not be in conflict with the provisions of the SMHCP.

As the Proposed Project would not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan, no impact is anticipated.

Mitigation Measures: None required.

Cumulative Impacts

Cumulative impacts on biological resources discussed herein are based on analysis of past, present, and reasonably foreseeable probable future projects under the jurisdiction of the City of Vacaville. Although the Nut Tree Airport is a regionally-serving general aviation airport, given the Airport's location within the City of Vacaville, it is appropriate to assess the Proposed Project's potential cumulative impacts within the context of past, present, and reasonably foreseeable projects under the jurisdiction of the City. As such, the Proposed Project's cumulative impacts are accounted for by examining and analyzing potential projects that are known within the City of Vacaville, as well as potential development that has been identified in regional plans.

Figure 2-5 in Chapter 2 (Project Description) identifies the location of the 34 known cumulative development projects. These projects are also listed in **Table 2-7** of Chapter 2. As discussed in

Chapter 2, cumulative impacts analyzed in this section would likely represent a "worst-case" scenario. The list of cumulative projects represents development that has been identified by the City of Vacaville as relevant past, present, and reasonably foreseeable projects. In addition to the list provided in **Table 2-7** potential development identified in both the *City of Vacaville General Plan* and the *Solano County General Plan* were taken into consideration.

Impact 3.3-7: Could implementation of the Proposed Project result in a cumulatively considerable impact to biological resources in the vicinity of the City of Vacaville? (*Potentially Significant*)

Past Projects

Past projects in the vicinity of the Proposed Project were developed within business park, industrial park, residential (estate), and general commercial land zones. These projects include the Novartis Solar Farm, Solano Irrigation District Corpyard, Kaiser Hospital, LTR plaza, restaurants, and the County Government Center. Generally, these projects were developed in areas that were previously zoned for these specific types of projects, in previously developed areas, or in areas that lack high-value biological resources.

Present Projects

Current projects (those in the process of development or have been approved) in the vicinity of the Proposed Project occur within industrial park, highway commercial, residential (estate), residential (medium to high density), and public or institutional land zones. These projects include development or expansion of churches, hospitals, commercial development, and residential development. Generally, these projects are being developed in areas previously zoned for these specific types of projects, in previously developed areas, or in areas that lack high-value biological resources.

Reasonably Foreseeable Future Projects and Plans

Future projects in the vicinity of the Proposed Project that may impact biological resources include residential development projects proposed in rural residential land zones (Amber Hills and Verona Projects) (**Figure 2-5, Cumulative Project Map**). These areas currently support 0.1-0.4 units of housing per acre and are located outside of the City of Vacaville's sphere of influence, on lands that are not surrounded by dense development. Rural residential land zones often serve as a buffer between dense development and open space or agricultural lands; thus, rural residential land zones may support a greater diversity of biological resources compared to other areas closer to the center of the city.

Future plans and policies that have positive impacts on biological resources within Solano County include the SMHCP, which establishes a framework for complying with federal and state regulations for endangered species while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure. All future projects would be required to comply with the HCP, which ensures a countywide approach to compliance with state and federal laws and regulations

protecting special status species and their associated habitat, including wildlife migration or movement corridors. As discussed under Impact 3.3.6, the Proposed Project would not conflict with the SMHCP because each phase would mitigate for impacts to special-status species covered under the SMHCP at a project-level.

The City of Vacaville lies outside of conservation, critical habitat, and core recovery areas within Solano County (refer to Figure RS-1 of the *Solano County General Plan*). However, the City of Vacaville is located within a wildlife movement or habitat corridor that connects "High Value Vernal Pool Conservation Areas" to other areas of the County (refer to Figure RS-1 of the *Solano County General Plan*). The Proposed Project is located on Public/Institutional land (refer to the *City of Vacaville General Plan* Land Use Map, Version 2008 0120) and the development of proposed projects would impact a very small amount of vernal pool habitat (0.01 acres) in the study area.

Thus, cumulative adverse impacts from past, present, and future projects, including the Proposed Project, would not result in a considerable impact to biological resources in the vicinity of the City of Vacaville. Any adverse impacts would be related to an increase in development primarily within the sphere of influence of the City of Vacaville. However, only a few of the aforementioned projects have the potential to have substantial site-specific adverse impacts, including residential development in rural areas. The majority of the projects do not contribute to substantial impacts on biological resources because they were, are, or would be developed in areas with existing development or surrounded by development. The increase in facilities and residential development in conjunction with population growth may put some pressure on existing biological resources in the vicinity of the City of Vacaville.

Because the City of Vacaville is located at the intersection of the San Francisco Bay and the Sacramento-San Joaquin Delta (Delta) and supports some habitat types and wildlife species, including some that are considered rare or threatened, urban development, agriculture, roadway construction, hydrological alterations, and introduction of invasive species have had profound effects on the structure, composition, and function of natural ecosystems within the Solano County in the past. The viability of biological resources within the County is dependent on policies and programs that direct sustainable approaches to conservation and use of natural resources which includes implementation of the SMHCP. Implementation of the Proposed Project would not substantially impact biological resources when combined with past, present, and future projects relative protected biological resources within the County. With implementation of mitigation measures, the project proponent would ensure any loss of biological resources such as wetlands and other waters of the U.S. and special status species and their habitats would be mitigated for to ensure a no net or regional significant loss.

Mitigation Measure

Measure 3.3.7: Implement all mitigation measures described under Phases I, II, and III of the Proposed Project for reducing potential impacts to biological resources.

Impact Significance after Mitigation: Implementation of mitigation measures described under Phases I, II, and III would reduce the Proposed Project's contribution to cumulative

impacts to biological resources in the vicinity of the City of Vacaville to a less-than-significant level.

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