4.11 Endangered and Threatened Species of Flora and Fauna

4.11.1 Introduction

This analysis addresses the potential for the Master Plan alternatives to affect endangered and threatened species of flora[514, 515] and fauna,[516, 517] as defined by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). These species are protected under the state and federal Endangered Species Acts. In addition to direct effects, an analysis of potential indirect impacts from airport operations to endangered and threatened species from light emissions, air emissions, and noise, as applicable, is also included in this section.

As required by Section 7 of the Federal Endangered Species Act and Federal Aviation Administration (FAA) Order 5050.4A,[518] the FAA, early in the EIS/EIR process, prepared a Biological Assessment addressing the Riverside fairy shrimp and the El Segundo blue butterfly. This assessment appears as Appendix J1, *Biological Assessment.* Subsequently, to account for ongoing consultation among LAWA, FAA, and USFWS pertinent to endangered species, and to address Alternative D, an amendment to the Biological Assessment was prepared, and is provided in Appendix S-H, *Updated Biological Assessment,* in support of formal Section 7 consultation. As a result of extensive coordination and consultation undertaken between the USFWS, FAA, and LAWA, the USFWS has issued a Biological Opinion which is included in Appendix F-E. Detailed information regarding the results of directed surveys for other endangered and threatened flora and fauna is found in Technical Report 7, *Biological Resources--Memoranda for the Record on Floral and Faunal Surveys.* Other sensitive species of flora and fauna not listed as endangered or threatened are addressed in Section 4.10, *Biotic Communities.* The characterization of ephemerally wetted area within the Airport Operations Area (AOA) is addressed in Section 4.12, *Wetlands*. The analysis of the effects of light and glare on the El Segundo blue butterfly is based on the data presented in Section 4.18, *Light Emissions.*

4.11.2 General Approach and Methodology

This analysis compares the populations and habitat conditions for endangered and threatened species of flora and fauna associated with the No Action/No Project Alternative and the four build Master Plan alternatives with environmental baseline conditions. For the purpose of this analysis, the study area is the area within the Master Plan boundaries. The Los Angeles/El Segundo Dunes were surveyed for endangered and threatened species (in addition to the previously identified El Segundo blue butterfly) in response to scoping comments from the USFWS, CDFG, and the California Coastal Commission (CCC). The baseline condition was determined through directed surveys[519] for endangered or threatened species of flora and fauna and their associated habitats conducted in 1997 and 1998. These directed surveys were undertaken in accordance with survey protocols established by the USFWS and the CDFG. The results of the 1997 and 1998 directed surveys have been augmented by a second replicate of data completed in 2000. Directed surveys were supplemented by a review of the California Natural Diversity Database (CNDDB)[520] early in the EIS/EIR analysis process for the topographic quadrangle in which the project occurs (Venice), as well as adjacent quadrangles (Torrance, Inglewood, San Pedro, Redondo Beach, Beverly Hills, and Hollywood). Further review of the CNDDB was undertaken in 2002, but did not

514 Flora is defined as "all of the plant species that make up the vegetation of a given area." Michael Allaby, ed., The Concise Oxford Dictionary of Botany, 161, 1992.

515 For the purpose of this section, the definition of flora has been limited to those species designated as endangered, threatened, or candidate or rare by CDFG or USFWS.

516 Fauna is defined as "animals as a group, especially of a given time or region," including crustaceans, insects, amphibians and reptiles, birds, and mammals. Howard Webber, ed., Webster's II New Revised Dictionary, 254, 1984.

517 For the purpose of this section, the definition of fauna has been limited to those species designated as endangered or threatened by CDFG or USFWS.

518 Federal Aviation Administration, "Airport Environmental Handbook," FAA Order 5050.4A.

519 A directed survey is a survey which is designed to determine the presence or absence of a particular species of plant or animal (or a small group of species with similar habitat requirements) and takes place at the optimum time to observe that species.

520 California Department of Fish and Game, California Natural Diversity Database - Rarefind 2, Sacramento, 1999.

identify any additional endangered or threatened species. Additional documentation reviewed includes published and unpublished literature, historic and recent aerial photographs, and consultation with persons knowledgeable about the biology of the area.

Federal, state, and local statutes and regulations that govern endangered and threatened floral and faunal species provide the framework for this analysis**.** Floral and faunal species that are listed as federally-endangered or threatened are protected under the Federal Endangered Species Act. Section 9 of the Federal Endangered Species Act prohibits the taking of species listed by the USFWS as endangered or threatened. As defined by the Federal Endangered Species Act, "taking" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or to attempt to engage in such conduct. In recognition that a "take" cannot always be avoided, the Federal Endangered Species Act includes a provision for incidental take of endangered and threatened species that occurs within the parameters of otherwise lawful activities.

In accordance with FAA guidelines for conducting environmental impact analyses, this analysis addresses the likelihood of the alternatives to jeopardize the continued existence of any federally-listed endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. As required under Section 7 of the Federal Endangered Species Act, the FAA initiated consultation with the USFWS in June 1999 for operations and maintenance issues regarding soil samples taken from areas on the western part of the airfield that were found to contain embedded cysts of the Riverside fairy shrimp, a federally-endangered species. Formal Section 7 consultation for the Master Plan was initiated on September 5, 2000.

Section 2080 of the California Endangered Species Act (CESA) prohibits the taking, importation, or sale of state-listed endangered or threatened species except in compliance with permits or conditions specified in CESA. Section 2081 of CESA authorizes CDFG to issue permits for incidental take of endangered or threatened species by general development activities, provided that the proposed project will not jeopardize the continued existence of such species, and that any of the project's negative effects on those species will be minimized and fully mitigated. Finally, whenever a project takes a considerable amount of open space that provides habitat for plants and animals, whether or not any of them are endangered or threatened, CDFG must be consulted through the CEQA process as a trustee agency. Sections 2081 and 2053 authorize CDFG to enter into a memorandum of understanding with individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess species for scientific, educational or management purposes. LAWA, as the lead agency under CEQA, is required to consult with CDFG regarding the potential for the proposed project to result in significant impacts on state-listed endangered, threatened, or candidate[521] species.

Other regulations pertaining to endangered, threatened, or rare species include The Native Plant Protection Act and the California Coastal Act. These acts are discussed in Section 4.10, *Biotic Communities*.

Directed surveys for listed endangered and threatened plant species with the potential to occur within the Master Plan boundaries were conducted in 1998. Directed surveys were undertaken in accordance with the protocols established by the California Native Plant Society and adopted by the CDFG. Directed surveys were performed by qualified Sapphos Environmental, Inc. biologists familiar with the natural history of these plant species. The results of these directed surveys were further augmented by qualitative surveys[522] for sensitive plants undertaken at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, and 1999. The results of these directed surveys were documented in 1999 by Sapphos Environmental, Inc. Details of these surveys are available in Technical Report 7, *Biological Resources--Memoranda for the Record on Floral and Faunal Surveys.*

Directed dry and wet season surveys for the federally-listed San Diego fairy shrimp and the Riverside fairy shrimp were performed according to USFWS protocol from winter 1997 through spring 1998.

---

521 The California Endangered Species Act (CESA) protects endangered, threatened, and candidate species. As stated in Fish and Game Code 2067, " … [a]ny animal determined by the Commission as 'rare' on or before January 1, 1985 is a 'threatened' species." Under CESA, plants are designated as 'rare' although afforded no protection. Plants designated as rare pursuant to Section 1904 of the Native Plant Protection Act and Sections 2074.2 and 2075.5 of the CESA are afforded protection under the Native Plant Protection Act.

522 Qualitative surveys are performed by walking meandering transects through a predetermined area.

Directed surveys were performed by a qualified biologist who held a protocol fairy shrimp survey permit issued by the USFWS pursuant to Section 10(a) of the Federal Endangered Species Act. Details are available in Technical Report 7, *Biological Resources--Memoranda for the Record on Floral and Faunal Surveys*. Results of directed surveys for San Diego fairy shrimp and Riverside fairy shrimp were transmitted to USFWS in 1998.

Directed surveys for the federally-listed El Segundo blue butterfly have been conducted annually by LAWA or its designee since 1984 (with the exception of 1985) at the Los Angeles/El Segundo Dunes. The results of these surveys through 2003 are reported in this section. The surveys have employed a transect count method established in 1984 and modified in 1986. Transect surveys and block counts undertaken in 1995 through 1999 were performed by qualified biologists under a federal permit issued to Sapphos Environmental, Inc. pursuant to Section 10(a) of the Federal Endangered Species Act. Survey areas are detailed in **Figure F4.11-1**, 1998 Survey Locations for El Segundo Blue Butterfly. Survey results from 1995 through 1999 are detailed in *Technical Report 7, Biological Resources--Memoranda for the Record on Floral and Faunal Surveys*. Results of directed surveys for the El Segundo blue butterfly were transmitted to the USFWS upon completion in 1997 through 2003.

In addition to direct impacts, this EIS/EIR includes an analysis of the indirect effects of jet exhaust emissions, fugitive dust, and light and glare on the El Segundo blue butterfly (Indirect impacts from noise were not evaluated as the El Segundo blue butterfly has no auditory organ and therefore no sense of hearing). The analysis of the potential adverse impacts of increased jet fly-overs and jet exhaust emissions on the El Segundo blue butterfly is based on a one-year field investigation of air emissions and deposition undertaken at the Los Angeles/El Segundo Dunes. The analysis included a collection and evaluation of particulate aircraft emission data. The following data were collected and analyzed: measurements of ambient concentrations of airborne particulate matter, polycyclic aromatic hydrocarbons (PAHs) and trace metal content in PM_{10} fractions, passive deposition monitoring using coast buckwheat (*Eriogonum parvifolium*), PAH and trace metal content in soil samples and ambient deposition of PAHs and saturated hydrocarbons. As a result of the study, it was determined that jet aircraft emissions do not contribute substantially to the concentrations found in atmospheric particles, soils, plant surfaces,[523] and water samples.[524] Similar studies in other areas have resulted in similar conclusions. Two studies by the Massachusetts Port Authority, MASSPORT (1997), Logan International Airport (1997) that evaluated the effects of soot deposition on Logan Airport and surrounding communities, came to the same conclusions: the soot deposition analyzed in the summer of 1996 was comparable to the deposition one would find in the urban environment, and was not the result of airport-related activity.[525]

The analysis of existing lighting conditions within the southern half of the El Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area) and Pershing Drive measured illuminance values (the light energy incident at a given point in foot-candles) that ranged from 0.004 to 0.26 foot-candles. The new light sources associated with the West Terminal/Concourses and parking facilities would increase ambient light levels to an estimated 0.60 foot-candles on the Habitat Restoration Area, as described in Section 4.18, *Light Emissions,* and in Technical Report 9, *Light Emissions Technical Report*. An assessment of the impact of outdoor lighting on moths, based on published literature, was undertaken by Kenneth Frank.[526] His assessment revealed that outdoor lighting disturbs the behavior (flight, navigation, vision, migration, dispersal, egg-laying, mating, feeding, and crypsis) of some nocturnal moths (moths that are active at night) due to elicitation of flight-to-light behavior. In addition, outdoor lighting exposes moths to increased predation by birds, bats, spiders, and other predators. Approximately half of all the orders of insects, including moths, exhibit a nocturnal habit. By contrast, butterflies are diurnal

---

523 Of 16 trace metals analyzed, vanadium was found to be present at substantially higher levels in buckwheat tissue exposed at the runway and to a lesser extent in buckwheat exposed within the Habitat Restoration Area when compared to the reference site. Vanadium is not known to adversely impact the El Segundo blue butterfly.

524 Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

525 Massport, Logan Airport Soot Deposition Study, prepared by KM Chng, 1996. Massport, Soot Deposition Study: Logan Airport and Surrounding Communities, prepared by TRC Environmental, 1997. Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

526 Frank, K. D., "Impact of Outdoor Lighting on Moths: An Assessment," Journal of the Lepidopterists' Society, Vol. 42, Number 2, pp. 63-93, 1988.

specialists;[527] that is, they are active during the day. In fact, a distinctive characteristic between butterflies and moths is that moths are primarily active at night, while butterflies are active during the day. Due to their diurnal habit, butterflies, in general, do not exhibit flight-to-light behavior (i.e., the propensity to fly towards light).

Directed surveys for the California brown pelican, California least tern, southwestern willow flycatcher, and least Bell's vireo were conducted in 1998 and 2000. Directed surveys for southwestern willow flycatcher and least Bell's vireo were undertaken in accordance with protocols established by the USFWS, and were performed by a qualified biologist with a permit to perform such surveys issued by the USFWS pursuant to Section 10(a) of the Federal Endangered Species Act. Directed surveys for the California brown pelican and California least tern were conducted by qualified biologists knowledgeable about the natural history and behavior of these species. No federal or state permit is required to conduct directed surveys for the California brown pelican or California least tern. Details of these surveys are available in Technical Report 7, *Biological Resources--Memoranda for the Record on Floral and Faunal Surveys*. Results of directed surveys for California brown pelican, California least tern, southwestern willow flycatcher, and least Bell's vireo were transmitted to the USFWS in 1998 and 2000.

Directed surveys for the American peregrine falcon were undertaken in the spring of 1998 and summer of 2000 by a qualified biologist knowledgeable about the natural history and behavior of this species, and updated surveys were conducted in late 2002 and early 2003. No federal or state permit is required to conduct directed surveys for the American peregrine falcon. Survey areas are detailed in **Figure F4.11-2**, Directed Survey Area for American Peregrine Falcon. Results of the directed surveys are available in Technical Report 7*, Biological Resources--Memoranda for the Record on Floral and Faunal Surveys,* and were transmitted to the USFWS in 1998 and 2000. In addition to direct impacts, this EIS/EIR includes an analysis of potential indirect impacts to the American peregrine falcon from light emissions, air emissions, and noise associated with airport operations. (Further details regarding the methodology used in this analysis are provided in Section 4.10, *Biotic Communities*.)

Directed surveys for the Pacific pocket mouse were undertaken in September 1997 and during the summer of 2000 by qualified biologists holding a permit to conduct such surveys issued by the USFWS pursuant to Section 10(a) of the Federal Endangered Species Act. Survey areas are detailed in **Figure F4.11-3**, Directed Survey Areas for Pacific Pocket Mouse. Results of the directed surveys for the Pacific pocket mouse were transmitted to the USFWS in January 1998 and fall of 2000.

The potential for implementation of the Master Plan alternatives to result in impacts to listed floral and faunal species was evaluated through a comparison of areas proposed for development under the No Action/No Project Alternative and the four build alternatives with the known distribution of potential habitat for each species within the Master Plan boundaries.

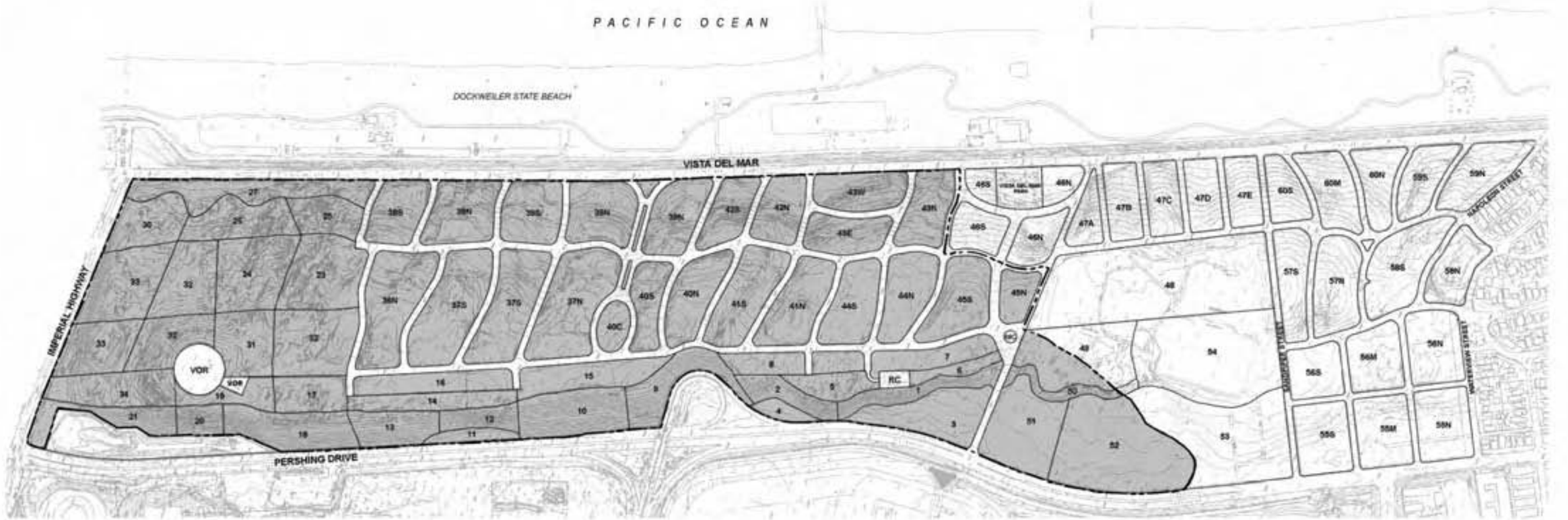
4.11.3 Affected Environment/Environmental Baseline

There are ten federally- or state-listed species of flora that potentially occur within the Master Plan boundaries. Endangered, threatened, and candidate plant species potentially occurring within the Master Plan boundaries are listed in **Table F4.11-1**, Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries, along with their federal and state status, survey protocols and status, and associated habitat requirements and distribution. As indicated in **Table F4.11-1**, no federally- or state-listed plant species with the potential to occur within the Master Plan boundaries were determined to be present as a result of directed surveys. In the *Vernal Pools of Southern California Recovery Plan,*[528] the USFWS identified the historical distribution of one federally-listed endangered plant species within the Master Plan boundaries, California orcutt grass, and one federally-listed endangered plant species outside of the Master Plan boundaries, the San Diego button-celery. These two vernal pool-associated plant species were determined to be absent within the Master Plan boundaries as a result of directed surveys conducted by Sapphos Environmental, Inc. in 1998 and 2000.

---

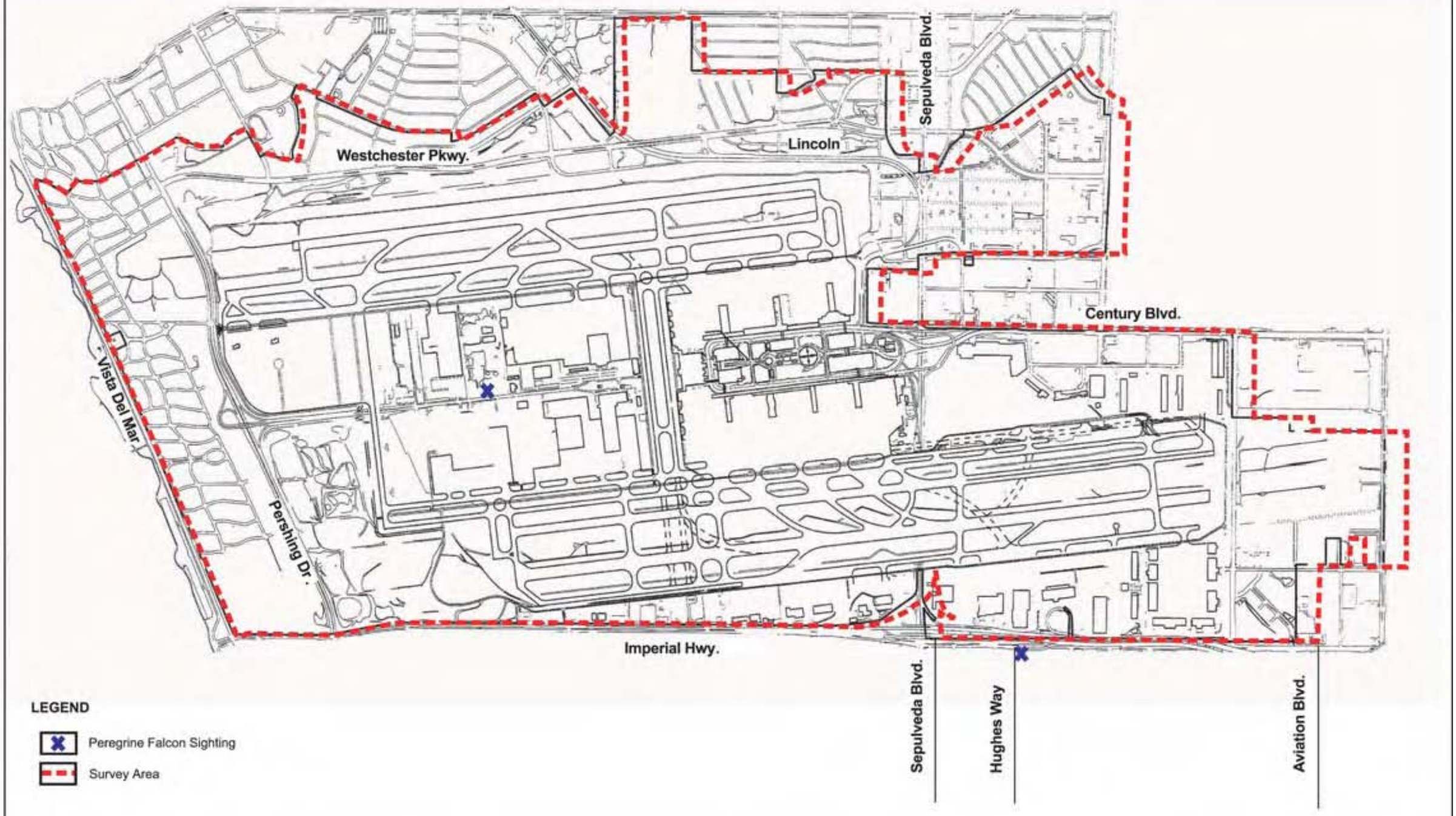
527 Hogue, C. L., Insects of the Los Angeles Basin, Natural History Museum Foundation, pp. 151-152, 1974.

528 U.S. Fish and Wildlife Service, Vernal Pools of Southern California Recovery Plan, pp. 5 and 10, 1998.



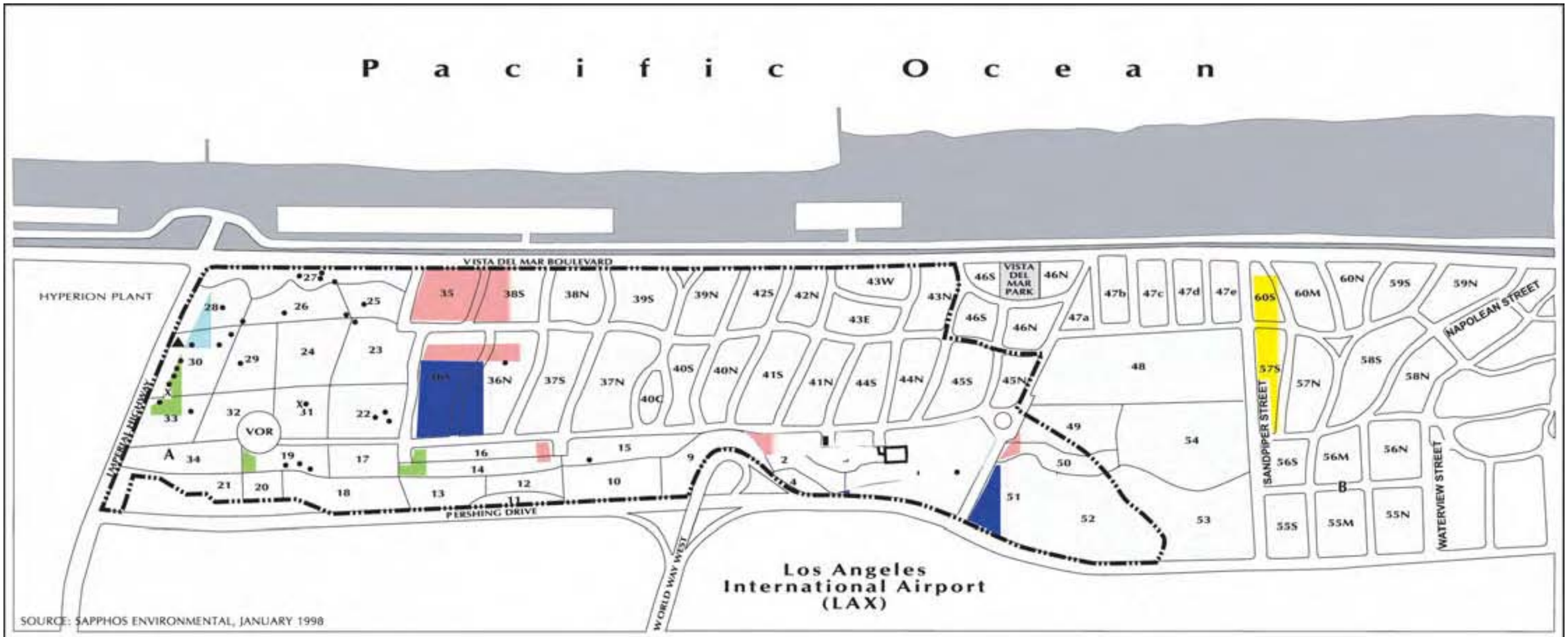
LAX Master Plan Final EIS/EIR	**1998 Survey Locations for El Segundo Blue Butterfly**	Figure **F4.11-1**

figure4.11-1.ai



LAX Master Plan Final EIS/EIR	**Directed Survey Area For American Peregrine Falcon**	Figure **F4.11-2**

fig 4.11-2.ai



LEGEND

- Habitat Restoration Area Boundary
- Remote Communications Site
- Very High Omni Range Navigations Beacon
- Trailer
- Session 1
- Session 2
- Session 3
- Session 4
- Session 5
- A — Previously Surveyed
- B — Not Surveyed, Unsuitable Habitat for Pacific Pocket Mouse

RESULTS

- X — Black Rat *(Rattus rattus)*
- ● — House Mouse *(Mus musculus)*
- ▲ — Western Harvest Mouse *(Reithrodontomys megalotis)*

Note: No Pacific Pocket Mouse was observed during surveys

Scale: 1" = 750'
0' 375' 750' 1500'

LAX Master Plan Final EIS/EIR	**Directed Survey Areas for Pacific Pocket Mouse**	Figure **F4.11-3**

fig 4.11-3.ai

Table F4.11-1

Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries

Flora	Status			Habitat Requirements and Distribution
	Federal	State	Local	
San Diego button-celery (*Eryngium aristulatum* var. *parishii*)	FE	SE	Determined absent as a result of directed surveys undertaken within all ephemerally wetted areas of the AOA in late spring/early summer 1998 and 2000.	Vernal pools, marshes, and chaparral from 1-150 meters above mean sea level.[1, 2] Once occurred from Riverside County, California south to northern Baja California, Mexico.[3] Historic topographic maps indicate that potentially suitable habitat was present between the backdune of what is now the Los Angeles/El Segundo Dunes and the approximate location of the Theme Restaurant. Potentially suitable habitat has been developed or substantially altered as a result of the construction and realignment of Pershing Drive and development of operations and maintenance activities of LAX. Extant locations include vernal pools found at the Santa Rosa Plateau in Riverside County, Otay Mesa, Kearny Mesa, del Mar Mesa, Miramar Naval Station, and Camp Pendleton in San Diego County;[3] and south to the mesas of Ensenada, Mesa de Colonet, and San Quintin, Baja California, Mexico.[4]
Beach spectacle-pod (*Dithyrea maritima*)	C	ST	Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, and 1999 and directed surveys in 1998 and 2000.	Coastal strand,[1] coastal dunes and scrub, and sandy soils below 50 meters above mean sea level.[2] Historically, this species ranged from the central coast of California south into Baja California. Known in California from less than 20 occurrences; extirpated from half of its historical range.[5] Historically known from the Los Angeles/El Segundo Dunes. Historic topographic maps and aerial photographs indicate that potentially suitable habitat for this species within the Los Angeles/El Segundo Dunes was largely converted due to residential development between 1940 and 1974. This species has not been successfully reintroduced as a result of revegetation efforts undertaken between 1990 and 1994. Nearest known location is in the vicinity of the Ballona Marshes near Marina del Rey.[6]
Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*)	FT		No suitable habitat present within the Master Plan boundaries. Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, and 1999. Determined absent as a result of directed surveys conducted in 1998 and 2000.	Shaded, rocky slopes from 150-500 meters above mean sea level;[2] on volcanic cliff faces and rocky outcrops in chaparral and coastal sage scrub.[6] Found in the Santa Monica Mountains from near Westlake Village to Agoura, and in deep canyon bottoms along lower Malibu Creek and Topanga Creek. Populations in Malibu and Topanga Canyons, largely on lands owned and managed by the County of Los Angeles Department of Parks and Recreation, two populations on land designated as open space by Conejo Open Space Conservation Agency, and several on private land along the northern slope of Ladyface Mountain.[7] In 1980, locally abundant in Topanga State Park, Santa Monica Mountains.[6]
Braunton's milkvetch (*Astragalus brauntonii*)	FE		Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, and 1999, and directed surveys conducted in 1998 and 2000. This species is limestone-endemic. No limestone is present within the Los Angeles/El Segundo Dunes.	Brushy places, firebreaks, and disturbed areas in chaparral below 450 meters above mean sea level.[1, 2] Recent burns or disturbed areas in closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland.[6] Strong substrate preference, considered a limestone endemic. Currently known from four general areas in Ventura, Los Angeles, and Orange Counties. One population in Simi Hills, one in Santa Ynez Canyon, one in Coal Canyon, and one in Gypsum Canyon. Remaining population estimated at less than 100 individuals.[7] Documented at five sites in the Santa Monica Mountains. Four out of five populations are presumed extant.[6] There are no limestone outcrops or limestone-derived soils within the Master Plan boundaries.

Table F4.11-1

Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries

	Status			
	Federal	State	Local	Habitat Requirements and Distribution
Ventura Marsh milkvetch (*Astragalus pycnostachyus* var. *lanosissimus*)	FPE	SE	Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, and 1999 and directed surveys in 1998 and 2000.	Coastal marshes or seeps below 30 meters above mean sea level.[1, 2] Within reach of high tide or protected barrier beaches in coastal salt marsh or sandy bluffs.[6] Believed extinct until its rediscovery in 1997. Only known extant population on McGrath State Beach in Ventura County.[8] Historically known from the Ballona marshes and a meadow near the seashore in Santa Monica; presumed extirpated at both sites. Potentially suitable habitat to the species is limited to the foredune, west of the Los Angeles/El Segundo Dunes immediately adjacent to Vista del Mar Boulevard. The Master Plan would not affect foredune habitat in this location immediately adjacent to Vista del Mar Boulevard.
Coastal dunes milkvetch (*Astragalus tener* var. *titi*)	FE	SE	Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, 1999, and directed surveys in 1998 and 2000.	Moist sandy depressions near the coast, typically coastal bluffs and dunes below 15 meters above mean sea level.[2, 6] Historically, range was known to include Monterey, Los Angeles, and San Diego Counties. It is presumed extant at three locations, one in Monterey County and two in San Diego County.
Salt marsh bird's-beak (*Cordylanthus maritimus* ssp. *maritimus*)	FE	SE	Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, and 1999 and directed surveys in 1998 and 2000.	Generally found in coastal salt marsh and in higher zones of salt marsh habitat between 0 and 30m. Once distributed along the coast from lower California to Oregon.[1] Historically known from Terminal Island in San Pedro Harbor and in the vicinity of Santa Monica; presumed extirpated at both sites.[6] Known to be extant at Point Mugu Air Station, Ventura County. No suitable habitat exists for this species of the Los Angeles/El Segundo Dunes; therefore, this species is not further addressed in this document.
Mexican flannelbush *(Fremontodendron mexicanum)*	FE	RA	No suitable habitat present within the Master Plan boundaries. Determined absent as a result of directed spring surveys conducted in 2000.	Occurs primarily in closed-cone coniferous forest and southern mixed chaparral, often associated with meta-volcanic soils between 300 - 1,000 meters above mean sea level.[9] Also known from the southern oak woodland.[1] Associated with southern California cypress groves.[10] Historically, less than ten native locations reported in the United States. Current distribution includes Cedar Canyon in southern San Diego County and Arroyo Seco, Baja California, Mexico. Reported occurrences in Los Angeles County likely based on garden escapees.[9] Known from Palos Verdes, but considered an erroneous occurrence.[6] The Master Plan boundaries are not within the historic range of this species. No suitable habitat for this species exists within the Master Plan boundaries; therefore, this species is not further addressed in this document.
California orcutt grass (*Orcuttia californica*)	FE	SE	Determined absent as a result of directed surveys of all ephemerally wetted areas within the AOA in late spring/early summer 1998 and 2000.	Vernal pools below 625 meters above mean sea level.[2] Drying mud flats and valley grassland.[1] Once occurred in vernal pools from San Quentin, Baja California, Mexico northward to Riverside, Los Angeles, and San Diego Counties in Southern California. Currently known from the Santa Rosa Plateau and a site near Hemet, Skunk Hollow pool in Riverside County; two pools at Marine Corps Air Station Miramar and four pool complexes at the Cruzan Mesa near Santa Clarita; Carlsberg vernal pool in the City of Moorpark, Ventura County; Otay Mesa in San Diego County; and Woodland Hills in Los Angeles County. In Baja California, Mexico, the species is found on Mesa de Colonet and in pools in San Quentin. The nearest record for this species is six miles east southeast of LAX in the City of Gardena, near the junction of Rosecrans and Western Avenues. Last seen in 1946. Known from less than 20 occurrences.[5] Populations face high degree of threat, and have low potential for recovery.[4]

Table F4.11-1

Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries

	Status			
	Federal	State	Local	Habitat Requirements and Distribution
San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)	C	SE	Surveys were conducted based on the results of a CNDDB query[28,29] which identified this species as having the potential to occur within the Master Plan boundaries. Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes for 1995, 1996, 1997, 1998, 1999 and directed surveys in 1998.	This annual herb blooms from April to June.[30] It is associated with sandy soils in coastal scrub. This taxa is historically known from Los Angeles, Orange, and San Diego Counties.[30] The nearest known historical occurrence is from the mouth of Ballona Creek and Marina del Rey.[28]
Fauna				
Crustaceans				
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE		Surveys were conducted based on the USFWS's letter of comment[25] recommending protocol surveys be conducted within the Los Angeles International Airport. This species was determined absent within the Master Plan boundaries as a result of directed wet and dry season surveys performed in winter 1997 and spring 1998.	Vernal pool specialist found in shallow depressions containing a clay hard pan soil layer. Historically known to occur within San Diego County.[14] Currently, discontinuously distributed along coastal Southern California and northern Baja California. They are most frequently found in San Diego County.[4] The largest number of vernal pools inhabited by the San Diego fairy shrimp is found from Marine Corps Base Camp Pendleton inland to Ramona, and south through Del Mar Mesa, Kearney Mesa, Proctor Valley, and Otay Mesa, and into northwestern Baja California, Mexico. In Baja California, it has been recorded at two localities (Valle de las Palmas, south of Tecate, and Baja Mar, north of Ensenada).[16] Small populations occur in Orange County, and a single isolated female was reported from a vernal pool in Isla Vista, Santa Barbara County, California.[17] The San Diego fairy shrimp occurs in San Diego County from San Marcos and Ramona south to Otay Mesa, and at Valle de Palmas in northwestern Baja California, Mexico. All known localities are below 700 meters (2,300 feet) and within 50 kilometers (30 miles) of the Pacific coast.[14] The fairy shrimp presently occurs in fewer than 70 vernal pools within 11 vernal pool complexes in coastal San Diego County.[14] The San Diego fairy shrimp has also been reported from Isla Vista in Santa Barbara County, California, but the identification of the single female individual is unconfirmed (Michael Fugate, University of Oregon, personal communication, 1993).[14] As a result of jurisdictional delineation and directed surveys, it has been determined that the AOA does not provide suitable habitat for the San Diego fairy shrimp.

Table F4.11-1

Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries

	Status			
	Federal	State	Local	Habitat Requirements and Distribution
Riverside fairy shrimp (*Streptocephalus woottoni*)	FE		Surveys were conducted based on the USFWS's letter of comment[25] recommending protocol surveys to be conducted within the Los Angeles International Airport. Embedded cysts determined present on the western LAX airfield as a result of directed dry season surveys performed in winter 1997. Adult shrimp determined absent on the western LAX airfield as a result of directed dry season surveys performed in winter 1997 and directed wet season surveys in spring 1998.	Vernal pool specialist; adults found in deep vernal pools that retain water through the warm weather of late April and May, road cuts, and depressions that support suitable habitat.[4] The embedded cysts were discovered in disturbed non-native grassland areas that do not retain the habitat characteristics of extant vernal pools. Therefore, no suitable habitat exists within the Master Plan boundaries or the Los Angeles/El Segundo Dunes. Distribution is limited to discrete localities from Los Angeles County (LAX), Orange County, Riverside and San Diego Counties south to Baja California. San Diego County contains the most known localities.[4] The northern range of the Riverside fairy shrimp is defined by Skunk Hollow and the Santa Rosa Plateau in Riverside County and coastal sites in San Diego and Orange Counties. It is documented from one complex on Marine Corps Air Station Miramar, throughout Marine Corps Base Camp Pendleton, and eight complexes on Otay Mesa. In Baja California, Mexico, it has been found in Valle de las Palmas and at Bajamar north of Ensenada.[16] Embedded cysts are present within the Master Plan boundaries. The nearest known locations of extant populations occur at Cruzan Mesa[27] in Los Angeles County, approximately 36 miles north of LAX, and one coastal site at Dana Point in Orange County, approximately 54 miles southeast of LAX.
Insects				
El Segundo blue butterfly (*Euphilotes battoides allyni*)	FE		Surveys were conducted based on the USFWS's letter of comment[26] recommending directed surveys be conducted within the Master Plan boundaries. This species was determined present within the Los Angeles/El Segundo Dunes as a result of directed surveys performed in 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, and 2003.	Coastal sand dunes that support populations of its foodplant, coast buckwheat. Historically ranged over the entire Los Angeles/El Segundo Dunes and the northwestern Palos Verdes Peninsula in southwestern Los Angeles County. Currently distributed on three remnant habitats within its former range; Los Angeles/El Segundo Dunes, the 1.5-acre site at the oil refinery located south of the airport, and a half-acre site at Malaga Cove, all in Los Angeles County.[11] There are currently 150.2 acres of occupied habitat for the El Segundo blue butterfly within the Los Angeles/El Segundo Dunes. Directed surveys of the El Segundo blue butterfly at the Los Angeles/El Segundo Dunes indicated continued decline in numbers between 1977 and 1979, with an estimated total of less than 2,000 adults. The City of Los Angeles initiated active habitat management measures for the El Segundo blue butterfly in 1987, and continues those work efforts as part of its annual operations and maintenance activities. Population estimates for 2003 range from 35,000 - 110,000 butterflies.
Birds				
California brown pelican *(Pelecanus occidentalis californicus*)	FE	SE	Surveys were conducted based on the USFWS's letter of comment[26] recommending directed surveys be conducted within the Master Plan boundaries. This species was determined absent within the Master Plan boundaries as a result of directed surveys performed in spring 1998 and 2000.	Open ocean, near-shore coastal waters, and coastal estuaries.[18] Historic nesting range extended from Central Mexico north to Monterey.[18] Currently breeds on Channel Islands off Southern California coast.[13] This species is a year-round resident in Southern California.[12] The nearest roosting site is located at the San Pedro Harbor in Los Angeles County.[13] The nearest known seasonal visitor sighting is located at Dockweiler State Beach.[21]

Table F4.11-1

Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries

	Status			
	Federal	State	Local	Habitat Requirements and Distribution
American peregrine falcon (*Falco peregrinus anatum*)		SE	Surveys were conducted based on the USFWS's letter of comment[26] recommending directed surveys be conducted within the Master Plan boundaries. This species was determined absent within the Master Plan boundaries as a result of directed surveys performed in summer 1998, 2000, and winter 2002/2003.	Breeds primarily in woodland, forest, and coastal habitats.[6] Non-breeding habitat occurs in riparian, coastal, and inland wetlands. De-listed as federally endangered on August 25, 1999.[19] The peregrine falcon has reoccupied most of its historic breeding range in California, including the Channel Islands, the coast and Cascade ranges, and Sierra Nevada. It can inhabit all counties in California throughout the year except during breeding season.[23] This species flies over and forages within the Master Plan boundaries; however, no breeding habitat occurs within the Master Plan boundaries.[15]
California least tern (*Sterna antillarum browni*)	FE	SE	Surveys were conducted based on the USFWS' letter of comment[26] recommending directed surveys be conducted within the Master Plan boundaries. This species was determined absent within the Master Plan boundaries as a result of directed surveys performed in spring 1998 and 2000.	Open ocean and a colonial breeder on bare or sparsely vegetated flat substrate located along marine shores, estuarine shores, alkali flats, land fills, or paved areas throughout the year.[6] This federally-listed endangered species[20] comes to shore only to breed. Historically nested along the central and Southern California coast to the coast of Mexico.[13] Currently nests sporadically along the coast from San Francisco to Baja California.[12] Nearest known breeding colony is located three miles north of the Master Plan boundaries.[6] Observed as a seasonal visitor to waters offshore of Dockweiler State Beach.[17] This species is not known to breed within the Master Plan boundaries. Therefore, it is not further addressed in this document.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE		Surveys were conducted based on the USFWS' letter of comment[26] recommending directed surveys be conducted within the Master Plan boundaries. This species was determined absent within the Master Plan boundaries as a result of directed surveys performed in summer 1998 and 2000.	Riparian areas with thick willow forests.[6] Historically nested throughout California, wherever willow thickets or other riparian habitat was found.[22] Regular nesting is currently known only from a few mountain meadows in the Sierra Nevada and several rivers in Trinity, Inyo, Kern, Santa Barbara, Los Angeles, and San Diego Counties.[13] Species becomes more widely distributed in the spring and fall migration period.[13] This species is not known to occur within the Master Plan boundaries. Therefore, it is not further addressed in this document.
Least Bell's vireo (*Vireo belli pusillus*)	FE	SE	Surveys were conducted based on the USFWS' letter of comment[26] recommending directed surveys be conducted within the Master Plan boundaries. This species was determined absent within the Master Plan Boundaries as a result of directed surveys performed in summer 1998 and 2000.	Inhabits rivers with riparian vegetation associated with willows and other low, dense valley foothill riparian habitat, lower portions of canyons, and desert and coastal slopes.[12] Historically ranged from the northern tip of the Sierra Nevada along valleys and rivers south to Baja California, Mexico.[23] Currently breeds only in a few scattered areas of riparian habitat along the coast and western edges of the Mohave Desert in the following counties: Santa Barbara, Ventura, Riverside, Orange, San Bernardino, and San Diego.[13] This species is not known to occur within the Master Plan boundaries. Therefore it is not further addressed in this document.

Table F4.11-1

Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries

	Status			
	Federal	**State**	**Local**	**Habitat Requirements and Distribution**
Mammals				
Pacific pocket mouse (*Perognathus longimembris pacificus)*	FE		Surveys were conducted based on the USFWS's letter of comment[26] recommending directed surveys be conducted within the Master Plan boundaries. This species was determined absent within the Master Plan boundaries as a result of directed surveys performed in 1995, 1998, and 2000.	Occurs on fine-grained, sand substrates in open coastal sage scrub, coastal dunes, coastal strand, and river alluvium habitats.[13] Species occurred historically along Southern California coast from Los Angeles County south to Baja, California.[24] Now restricted to less than five populations, one in Orange County, and others in San Diego County.[13] This species was last seen in 1938 at Marina del Rey in the El Segundo Area.[6] It is not known to occur within the Master Plan boundaries and therefore, is not further addressed in this document.

FE = Listed as endangered under the Federal Endangered Species Act
SC = State Candidate
FPE = Proposed for listing as endangered under the Federal Endangered Species Act
FT = Listed as threatened under the Federal Endangered Species Act
SE = Listed as endangered by the State of California
ST = Listed as threatened by the State of California
C = Candidate for federal listing. Formerly classified as "Category 1"; these are species for which the USFWS has information on file to support issuance of proposed rule to list as endangered or threatened.
RA = State rare. Afforded protection under the Native Plant Protection Act.

1 Munz, Philip A, A Flora of Southern California, 1974.
2 Hickman, James C, ed., The Jepson Manual: Higher Plants of California, 1993.
3 50 CFR Part 17.
4 U.S. Fish and Wildlife Service, Vernal Pools of Southern California Recovery Plan, U.S. Fish and Wildlife Service, Portland, Oregon, 1998.
5 Skinner, Mark W. and Bruce M. Pavlik, California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California, Special Publication No. 1, 5th Edition, California Native Plant Society, February 1994.
6 California Department of Fish and Game, California Natural Diversity Database-Rarefind 2, Sacramento, 1999.
7 50 CFR Part 17.
8 50 CFR Part 17.
9 50 CFR Part 17.
10 Barbour, M. G. and J. Major, ed., Terrestrial Vegetation of California, New Expanded Edition, California Native Plant Society, Special Publication Number 9, 1990.
11 U.S. Fish and Wildlife Service, Recovery Plan for the El Segundo Blue Butterfly (*Euphilotes battoides allyni*), Portland, Oregon, 1998.
12 Zeiner, David C., et al, ed., California's Wildlife, Volume II, Birds, California Department of Fish and Game, Sacramento, November 1990.
13 Thelander, Carl G., et al., ed., Life on the Edge, 1994.
14 50 CFR Part 17.
15 Sapphos Environmental, Inc. Memorandum for the Record (1043-008.M06), Results of Directed Surveys for American Peregrine Falcon, California Least Tern, Southwestern Willow Flycatcher, Least Bell's Vireo and Loggerhead Shrike at LAX/El Segundo Dunes. September 8, 1998.
16 Brown, J. W., M. A. Wier, and D. Belk, "New records of fairy shrimp (Crustacea: Anostraca) from Baja California, Mexico," The Southwestern Naturalist, 38 (4): 389-390, 1993.
17 Fugate, Michael, 1993. "*Branchinecta sandiegonensis*, A New Species of Fairy Shrimp (Crustacea: Anostraca) from Western North America," *Proceedings of the Biological Society of Washington*, 106 (2): 296-304.
18 50 CFR Part 17.
19 50 CFR Part 17.
20 50 CFR Part 17.
21 Sapphos Environmental, Inc., Memorandum for the Record (1067-007.M15), Results of Directed Summer Surveys for Sensitive Amphibians, Reptiles, California Brown Pelican, California Least Tern, and the Endangered El Segundo Blue Butterfly at LAX/El Segundo Dunes, December 21, 1998.
22 California Department of Fish and Game, California Statewide Wildlife Habitat Relationship System, California Wildlife, Volume II, Birds, State of California Resource Agency, 1990.

Table F4.11-1

Federally- and State-Listed Plant and Wildlife Species Potentially Occurring within the Master Plan Boundaries

	Status			
	Federal	State	Local	Habitat Requirements and Distribution

[23] 50 CFR Part 17.
[24] 50 CFR Part 17.
[25] U.S. Fish and Wildlife Service, Letter to Mr. David B. Kessler, Federal Aviation Administration, U.S. Department of Transportation, August 29,1997.
[26] U.S. Fish and Wildlife Service, Letter to Mr. David B. Kessler, Federal Aviation Administration, U.S. Department of Transportation, July 31, 1997.
[27] Krofta, Doug, U.S. Fish and Wildlife Service, Personal Communications with Michelle Dohrn, Sapphos Environmental, Inc., September 5, 2000.
[28] California Department of Fish and Game, California Natural Diversity Database.
[29] California Department of Fish and Game, California Natural Diversity Database - Rarefind 2, Sacramento, 2000.
[30] Skinner, Mark W. and Bruce M. Pavlik, California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California, Special Publication No. 1, 5th Edition, California Native Plant Society, 1994.

Source: Sapphos Environmental, Inc. 2000, 2004.

There are nine federally- or state-listed species of fauna that could potentially occur within the Master Plan boundaries; these species are listed in **Table F4.11-1**, along with their federal and state status, local status, and associated habitat requirements and distribution. All but three of these species (discussed below) were determined to be absent from the area within the Master Plan boundaries. Both USFWS and CDFG are aware of this conclusion.

Riverside Fairy Shrimp

The adult Riverside fairy shrimp, a federally-listed endangered wildlife species, was determined to be absent within the Master Plan boundaries.[529] The Riverside fairy shrimp was listed by the USFWS in 1993.[530] No adult Riverside fairy shrimp were observed during wet season sampling conducted in the winter 1997/1998 surveys within the AOA.[531, 532, 533] The range of the adult Riverside fairy shrimp includes limited areas of extant habitat in the coastal areas of Ventura, Orange, and San Diego Counties, and Baja California, as well as isolated inland populations in Orange, Riverside, and San Diego Counties and Baja California. The Riverside fairy shrimp is a small freshwater crustacean. Mature males are normally less than an inch long, and mature females are slightly smaller.

The Riverside fairy shrimp normally inhabits vernal pools, which are seasonal aquatic habitats formed when winter rains fill shallow topographic depressions. Adult Riverside fairy shrimp are normally found in deeper vernal pools that retain water through the warm weather of late April and May. The pools normally form over impervious clay layers and persist for several months. In addition to these deep, warm water pools, the Riverside fairy shrimp is occasionally found in road ruts and ditches. The Riverside fairy shrimp is intolerant of salty, muddy, or alkaline water.[534, 535]

Riverside fairy shrimp are able to hatch, attain maturity, and reproduce within the short time that ephemeral pools are inundated. The female Riverside fairy shrimp deposits eggs in the sediments of the vernal pool, which then lie dormant in the soil as the vernal pool dries up during the summer months. The cysts normally emerge in the spring, when water that has filled the pools as a result of winter rains reaches temperatures of 15-17°C (59-63°F).[536] The cysts are able to survive in the soil for several decades when inadequate water is available for hatching. Due to the ephemeral nature of their habitat, the Riverside fairy shrimp has a relatively short lifespan as an adult, reaching sexual maturity in three to four weeks.[537]

As indicated in **Table F4.11-1**, Riverside fairy shrimp cysts were determined to be present in soil samples taken during dry season sampling at nine discrete locations within the AOA. The results of this sampling are summarized in **Table F4.11-2**, Ephemerally Wetted Areas, Site Characterization, and Riverside Fairy Shrimp Densities.

529 U.S. Fish and Wildlife Service, Vernal Pools of Southern California Recovery Plan, pp. 5 and 10, 1998.

530 50 CFR Part 17.

531 Sapphos Environmental, Inc. and Landrum and Brown, Vernal Pools Evaluation in Support of the Los Angeles International Airport 2015 Master Plan Expansion Project, September 8, 1998.

532 RECON (Patterson and Ayers), Fairy Shrimp Surveys at Los Angeles International Airport, July 1, 1998.

533 Jones & Stokes Associates, Inc., Letter Report, Subject: Analysis of Vernal Pools Soils from LAX to Determine the Potential Presence of Special-Status Shrimp Species, Addressed to RECON (Mr. Cameron Patterson), June 11, 1998.

534 U.S. Fish and Wildlife Service, Vernal Pools of Southern California Recovery Plan, pp. 5 and 10, 1998.

535 50 CFR Part 17.

536 Thelander, Carl G., et al, ed., Life on the Edge, 1994.

537 Thelander, Carl G., et al, ed., Life on the Edge, 1994.

Table F4.11-2

Ephemerally Wetted Areas, Site Characterization, and Riverside Fairy Shrimp Densities

Site No.	Square Feet[1]	No. of Cysts per liter	Site Characterization
EW001	123	14-112	Site currently is located on top of fill material; no native soils are present. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1970, 1979, 1986,1990, and 1995. Additionally, site has been documented as agricultural in 1950 historic aerial photograph. Neither hydric soils nor hydric vegetation are present on this site.
EW002	292	0-23	Site currently is located on top of fill material; no native soils are present. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1970, 1979, 1986, 1990, and 1995. Additionally, site has been documented as agricultural in 1950 historic aerial photograph. Neither hydric soils nor hydric vegetation are present on this site.
EW006	1,438	0.3	Site currently is located on top of fill material. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1979, 1986, 1990, and 1995. Additionally, site has been documented as agricultural in 1950 historic aerial photograph. Neither hydric soils nor hydric vegetation are present on this site.
EW009	577	32	Site is located on top of fill material. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1952, 1970, 1979, 1986, and 1990.
EW012	548	32	Site is located on top of fill material. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1952, 1970, 1979, 1986, and 1990.
EW013	4,808	32-64	Site is located on top of fill material. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1952, 1970, 1979, 1986, and 1990.
EW014	39,199	0-4	Site is located on top of fill material. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1970, 1979, and 1986. Site was constructed to accept storm water drainage off western airfield.
EW015	2,086	1-4	Site is located on top of fill material. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1952, 1970, 1986, and 1990.
EW016	3,936	0-32	Site is located on top of fill material. Site has been subject to repeated cut/fill activities. Construction activities are documented by historic aerial photographs from 1952, 1970, 1979, 1986, and 1990.

[1] Square feet based on 1997/1998 El Niño year survey.

Source: Sapphos Environmental, Inc. 2000.

The number of embedded Riverside fairy shrimp cysts ranged from 0 to 112 per liter of soil between the nine occupied locations. In addition to the cysts of Riverside fairy shrimp, cysts of the common fairy shrimp (*Branchinecta lindalli*) ranging from 1 to 3,293 per liter of soil were also found.[538] Of the 52 possible sites identified, nine sites constituting 1.3 acres were determined to contain embedded cysts of the Riverside fairy shrimp (**Figure F4.11-4**, Sites Containing Embedded Cysts of the Riverside Fairy Shrimp).[539] The nine sampling sites are located within areas that have been subject to repeated grading (cut and fill) between the 1950s and the present time (see Figure F4.12-5, Historically Disturbed Areas, in Section 4.12, *Wetlands*). The areas are also subject to routine operations and maintenance activities for wildlife hazards management (including mowing, discing, and grading) as required by the FAA. The nine sites are located in areas characterized by non-native plant communities: Non-Native Grassland/Ruderal and Disturbed/Bare Ground, as described in Section 4.10, *Biotic Communities.*

Wet season sampling for the Riverside fairy shrimp was undertaken during optimal conditions for this species. Ephemerally wetted areas of the airfield retained water as a result of unusually high levels of winter rains that occurred. Despite these optimal conditions, no adult Riverside fairy shrimp were observed. The FAA Wildlife Hazards Management guidelines require LAWA to maintain the AOA free of

538 Jones & Stokes Associates, Inc., Letter Report, Subject: Analysis of Vernal Pools Soils from LAX to Determine the Potential Presence of Special-Status Shrimp Species, Addressed to RECON (Mr. Cameron Patterson), June 11, 1998.

539 RECON (Patterson and Ayers), Fairy Shrimp Surveys at Los Angeles International Airport, July 1, 1998.

standing water and tall vegetation,[540] therefore rendering the habitat unlikely to support the adult phase of the Riverside fairy shrimp life cycle. The USFWS has informed LAWA and the FAA of its intent to treat areas containing embedded cysts of the Riverside fairy shrimp as occupied habitat pursuant to the Federal Endangered Species Act.[541]

The *Recovery Plan for Vernal Pools of Southern California* (*VP Recovery Plan*) does not designate critical habitat for the Riverside fairy shrimp.[542, 543] However, as a result of a settlement agreement,[544] the USFWS proposed designation of critical habitat for the Riverside fairy shrimp on September 21, 2000 (**Table F4.11-3,** Critical Habitat for Riverside Fairy Shrimp Proposed by USFWS in 2000), and issued a final rule designating critical habitat in May 2001.[545] The final rule indicates critical habitat located at LAX (see **Figure F4.11-5,** Designation of Critical Habitat for the Riverside Fairy Shrimp Issued in 2001), however, the United States District Court for the District of Columbia vacated the critical habitat designation in October 2002. Consequently, the Los Angeles/El Segundo Dunes do not currently contain designated critical habitat for the Riverside fairy shrimp. The court-ordered date for issuing the final rule designating critical habitat for the Riverside fairy shrimp is July 20, 2004.

Table F4.11-3

Critical Habitat for Riverside Fairy Shrimp Proposed by USFWS in 2000

County	Geographic Location[1]
Ventura	Former Carlsberg Ranch
Los Angeles	Cruzan Mesa; Los Angeles coastal prairie unit, includes 30 acres within and adjacent to the El Segundo Blue Butterfly Preserve (Habitat Restoration Area), west of Pershing Drive
Orange	Marine Corps Air Station El Toro; Chiquita Ridge; Tijeras Creek; Rancho Viejo; Saddleback Meadows; along the southern Orange County foothills
Western Riverside	Santa Rosa Plateau; Murrieta; Skunk Hollow
North San Diego	Marine Corps Base Camp Pendleton; City of Carlsbad at the Poinsettia Lane Train Station
Central San Diego	Marine Corps Air Station, Miramar
South San Diego	Ephemeral basin along the United States/Mexico border

[1] 50 CFR Part 17.

Source: U.S. Fish and Wildlife Service, 2000.

The FAA believes that the creation of artificial pools that will have standing water longer than a few hours does and will continue to attract hazardous movements of birds which create an unacceptable hazard to air navigation. This position is supported by the U.S. Department of Agriculture, Wildlife Services Office that is currently working on a bird hazard reduction program at Los Angeles International Airport. This office is responsible for managing wildlife that is injurious to human health and safety pursuant to the Animal Damage Control Act of 1931, as amended. FAA believes that the introduction of new attractants to birds is contrary to the FAA's mission. 14 CFR Part 139, Section 139.337(f), Wildlife Hazard Management, requires a certificate holder to "take immediate measures to alleviate wildlife hazards when they are detected." The creation of standing bodies of water that must remain for sufficient time to permit the cysts to hatch and complete their life cycle will attract various species of animals and birds that can become a food source for raptors in the area. Raptors flying in the immediate vicinity of aircraft are at risk of being struck or ingested into an engine causing significant damage to the aircraft.

540 FAA, Title 14, Code of Federal Regulations (CFR), Part 139, Section 139.337: Wildlife Hazard Management.

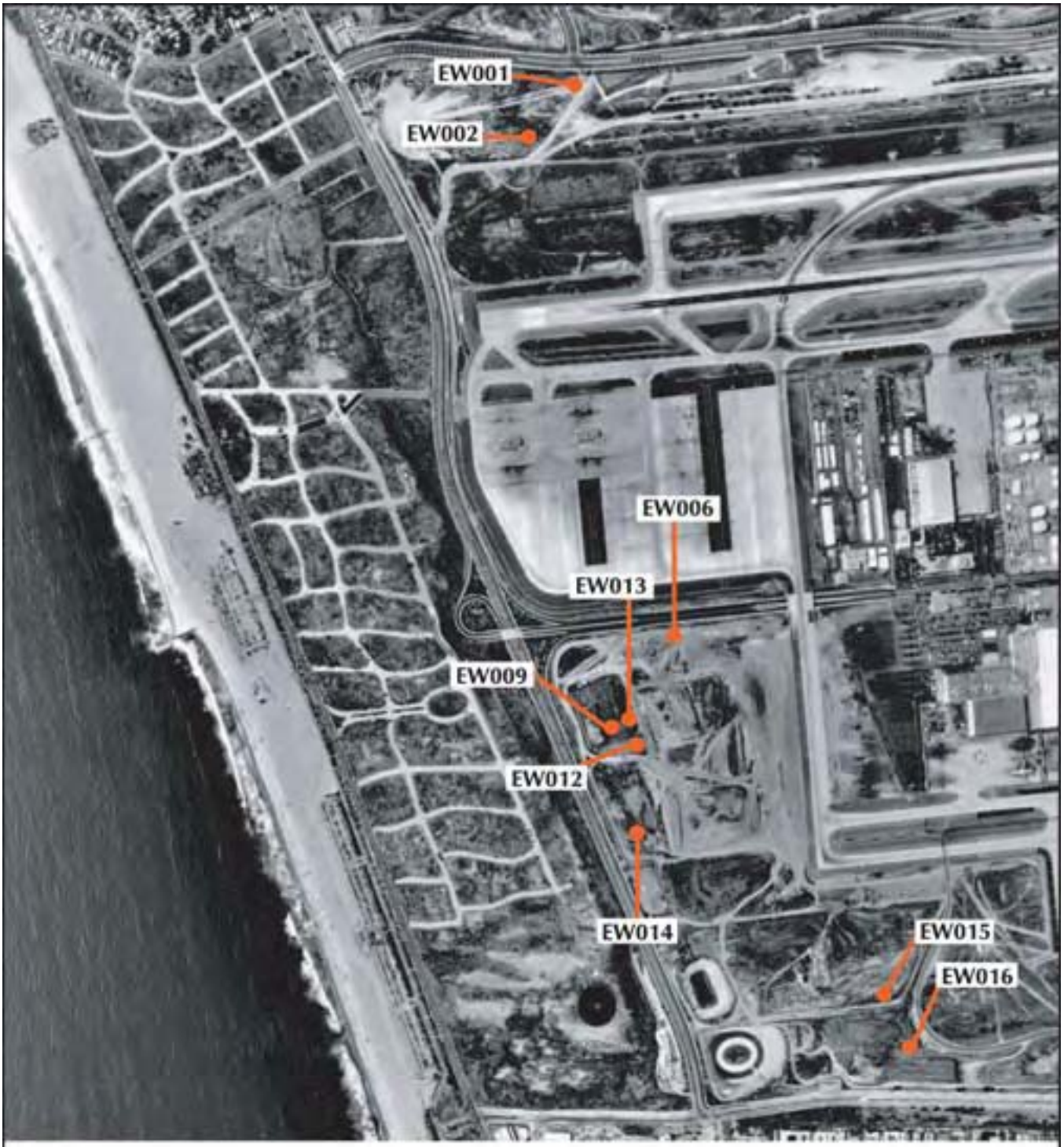
541 U.S. Fish and Wildlife Service, Vernal Pools and Associated Listed Species of the Los Angeles International Airport, Los Angeles, California, Letter, August 29, 1997.

542 U.S. Fish and Wildlife Service, Vernal Pools of Southern California Recovery Plan, 1998.

543 The *VP Recovery Plan* recommends that existing vernal pools and their associated watersheds within the Los Angeles Basin-Orange Management Areas (which includes LAX) be secured from further loss and degradation. No extant vernal pools exist within the AOA.

544 United States District Court for the Northern District of California, San Francisco Division, Stipulated Settlement Agreement: Center for Biological Diversity vs. Bruce Babbit, Civil No. C99-3202 SC (N.D. Ca. Feb. 15, 2000).

545 50 CFR Part 17.



LEGEND

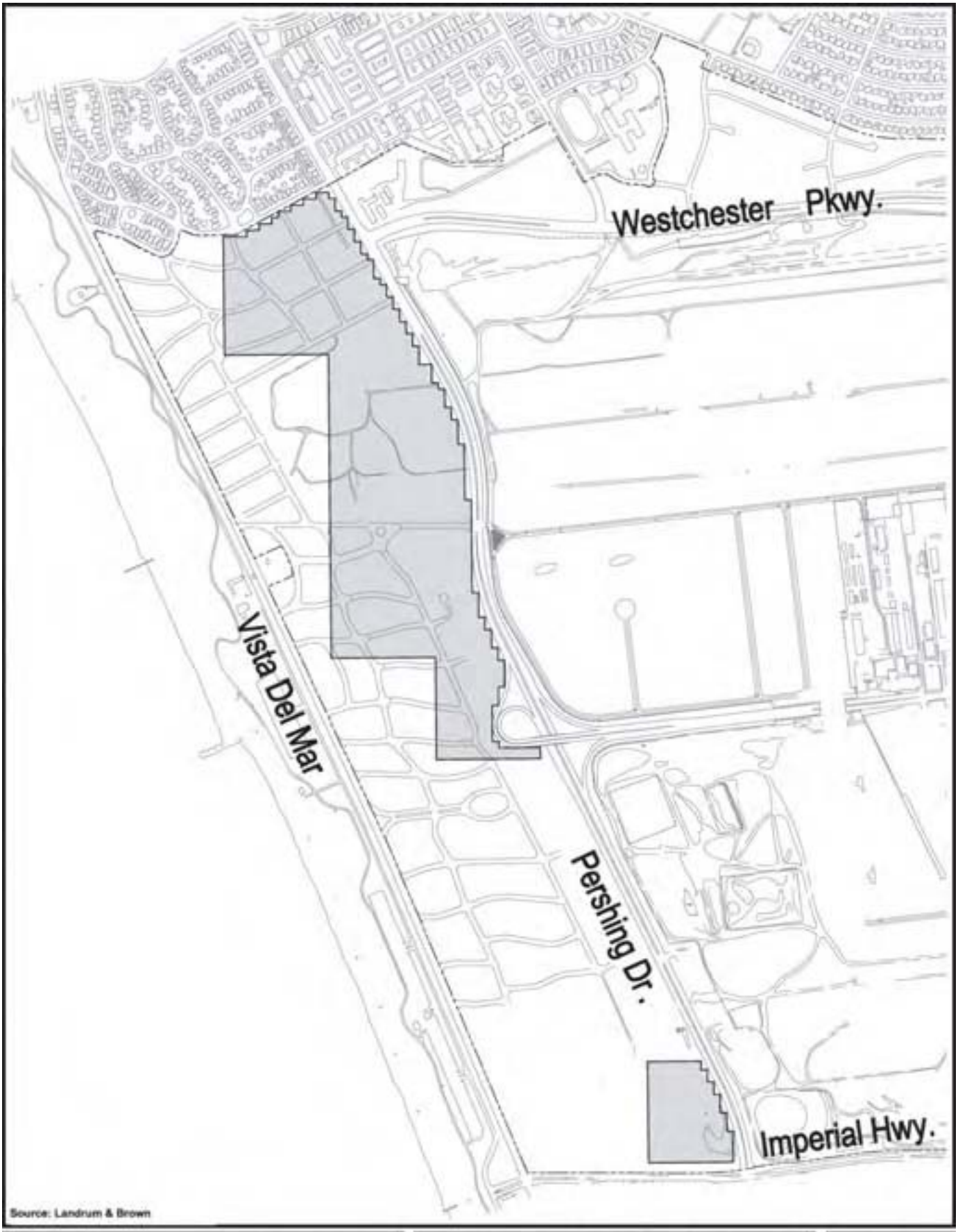
EW Ephemerally Wetted Areas

SOURCE: Commercial Aerial Photo, Inc. 10571 Calle Lee Suite 143, Los Alamitos, CA 90720

0 300' 600' 1200' 2400'

LAX Master Plan Final EIS/EIR	Sites Containing Embedded Cysts of the Riverside Fairy Shrimp	Figure F4.11-4

figure4.11-4.ai



Source: Landrum & Brown

LAX Master Plan Final EIS/EIR	Designation of Critical Habitat for the Riverside Fairy Shrimp Issued in 2001	Figure F4.11-5

figure4.11-5.ai

El Segundo Blue Butterfly

As indicated in **Table F4.11-1**, the El Segundo blue butterfly, a federally-listed endangered wildlife species, is not present within the area of the Master Plan boundaries outside of the Los Angeles/El Segundo Dunes, but is present within extant and restored Southern Foredune and Southern Dune Scrub habitats within the Los Angeles/El Segundo Dunes.[546] The El Segundo blue butterfly is endemic to coastal sand dunes that contain its host foodplant, coast buckwheat (*Eriogonum parvifolium*). The El Segundo blue butterfly is limited in distribution to four disjunct locations in southwestern coastal Los Angeles County.[547] The lifespan of this species is normally one year. Adult El Segundo blue butterflies normally become active for five to seven days between late June and early September, and their flight period is closely synchronized with the flowering period for its host foodplant. Adult females produce up to 20 eggs per day; their life expectancy as adults is an average of four days. Eggs hatch within five days. The larvae[548] undergo four instars[549] and pupate[550] within 18-25 days. By late September, the flowerheads of the host foodplant begin to dry up, and the larvae have pupated in the leaf litter at the base of the plant or underground where they remain until the following season.

The Los Angeles/El Segundo Dunes occupy a 307-acre site immediately west of LAX, and constitute one of the last remaining vestiges of the once-extensive southern California coastal sand dunes.[551] The Los Angeles/El Segundo Dunes, managed by LAWA, support the largest of the four remaining occupied habitats for the El Segundo blue butterfly. Within the 307-acre area known as the Los Angeles/El Segundo Dunes, the City has designated an approximately 200-acre Habitat Restoration Area pursuant to City Ordinance 167940 for the long-term conservation of the El Segundo blue butterfly. There are currently 150.2 acres of occupied habitat for the El Segundo blue butterfly within the Los Angeles/El Segundo Dunes. Numbers of El Segundo blue butterfly were substantially reduced within the Los Angeles/El Segundo Dunes as a result of residential development that occurred from 1928 through the early 1960s. Between 1966 and 1972, the city purchased residences within the Los Angeles/El Segundo Dunes as part of a noise and safety buffer zone. By 1970, the Very high Omni Range navigation beacon, commonly referred to as the VOR, was completed within the southern portion of the site. By 1979, the purchased residences were removed and navigational aids and supporting structures were completed within the northern portion of the site. In 1992, Ordinance 167940 establishing the "Los Angeles Airport Dune/El Segundo Dunes Specific Plan" was approved by the Council of the City of Los Angeles. The Specific Plan recognized the ecological significance of the Los Angeles/El Segundo Dunes by designating a 200-acre Dunes Habitat Preserve while at the same time stating that "no use, development or activity regarding the Specific Plan Area may compromise the safety of airport flight operations in any way." In addition, the ordinance stated that final authority regarding airport safety resides with the FAA. By way of the ordinance's geographic delineation of the preserve, the VOR is located within the 200-acre Habitat Restoration Area of the 307-acre Los Angeles/El Segundo Dunes and is presently adjacent to habitat occupied by the El Segundo blue butterfly. The majority of navigational aids located in the northern portion of the site are found outside of the Habitat Restoration Area (and habitat occupied by the El Segundo blue butterfly) but within the Los Angeles/El Segundo Dunes. Directed surveys of the El Segundo blue butterfly at the Los Angeles/El Segundo Dunes indicated continued decline in numbers between 1977 and 1979, with an estimated total of less than 2,000 adults.[552] Prior to 1977, little information was collected on the estimated numbers of the El Segundo blue butterfly at LAX. Transect counts performed by Mattoni and Murphy in 1984 estimated the population at about 800 individuals;[553]

---

546 50 CFR Part 17.

547 U.S. Fish and Wildlife Service, Recovery Plan for the El Segundo Blue Butterfly (*Euphilotes battoides allyni*), 1998.

548 Plural of larva, defined as "the immature stage, between egg and pupa, of an insect with complete metamorphosis," in Borror and White, A Field Guide to Insects: America North of Mexico, p. 367, 1970.

549 Instar is defined as "the stage of an insect between successive molts." Molting is the process of shedding the exoskeleton to allow growth of the insect. Borror and White, A Field Guide to Insects: America North of Mexico, pp 38 and 367, 1970.

550 An insect pupates when it matures into a pupa, defined as "the stage between larva and adult." Borror and White, A Field Guide to Insects: America North of Mexico, p. 369, 1970.

551 Environmental Science Associates, Long-term Habitat Management Plan for Los Angeles Airport/El Segundo Dunes, June 23, 1994.

552 Arnold, R.A., "Ecological Studies of Six Endangered Butterflies", University of California Publications in Entomology, Volume 99, p. 153, 1983.

553 Mattoni, Rudolf H. T., "The Endangered El Segundo Blue Butterfly," Journal of Research on the Lepidoptera, Conservation Issue, Volume 29, Number 4, p. 294, Winter 1990 (1992).

studies undertaken by Arnold, also in 1984, resulted in a population estimate of 750 individuals at the LAX site.[554] The City of Los Angeles initiated active habitat management measures for the El Segundo blue butterfly in 1987, and continues those work efforts as part of its annual operations and maintenance activities.[555] Numbers of El Segundo blue butterfly have been closely monitored since the city initiated active management of the Habitat Restoration Area, and have increased since 1995 as shown in **Table F4.11-4,** El Segundo Blue Butterfly Population Figures.

Table F4.11-4

El Segundo Blue Butterfly Population Figures

Year	Acreage	Block[1]	Historic Transect[2]	Estimated Population
1995	200	Not Performed	1,240	Not Performed
1996[3]	200	2,063	1,455	7,092 to 31,000
1997	200	723	126	Not Performed
1998	200	4,069	2,129	16,978 to 87,000
1999	200	2,125	1741	9,867 to 39,000
2000	200	2,933	2,104	18,000 to 69,500
2001	200	4,736	2,652	24,134 to 79,109
2002	200	2,750	1,236	17,789 to 54,002
2003	200	5,803	2,688	34,863 to 109,814

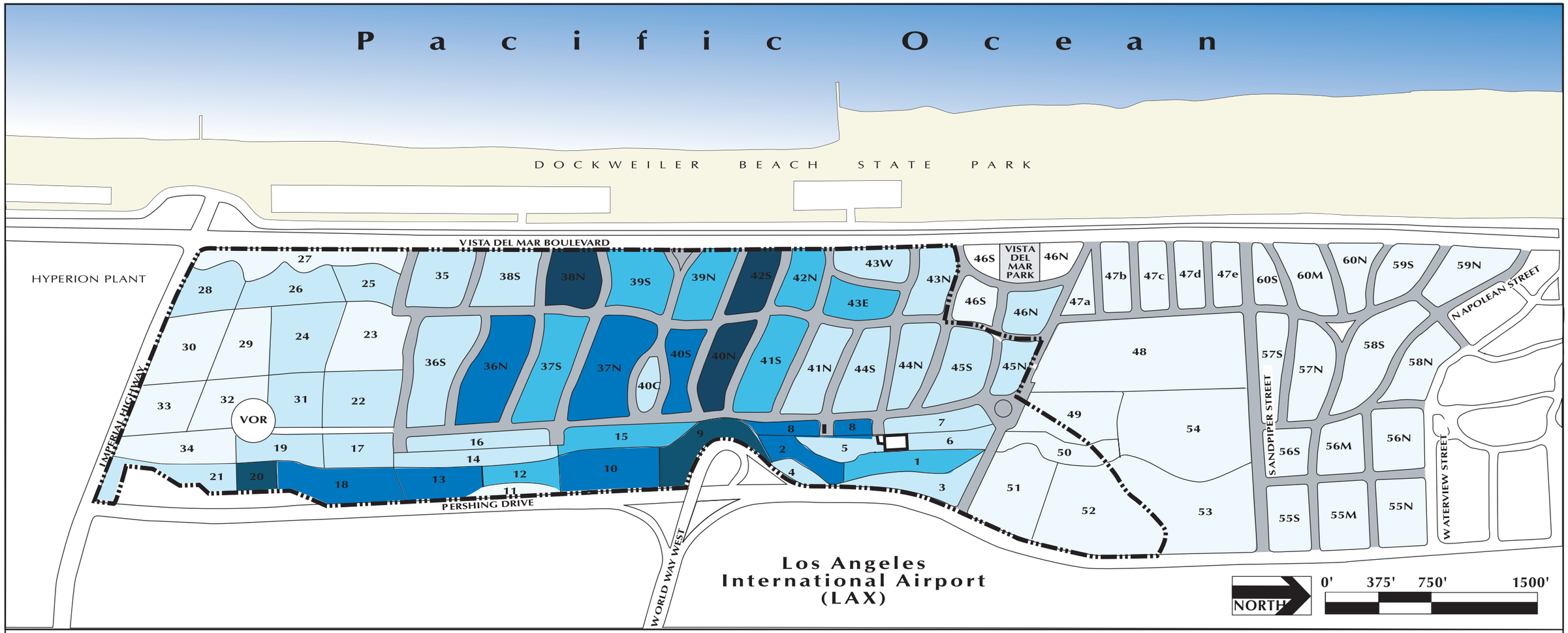
1 Block counts are peak numbers taken during one week of the butterfly's flight season (June 1 through September 30).
2 Historic transects represent numbers of butterflies observed along specific transect lines crossing the El Segundo Blue Butterfly Habitat Restoration Area during the entire flight season.
3 Prior to 1996, only historic transect counts were performed. Block counts were begun during the 1996 flight season.

Source: Sapphos Environmental, Inc., 2000, 2003, 2004.

Peak numbers of 4,069 individuals were recorded as a result of block counts conducted in 1998. The total population estimate, which was extrapolated from the 1998 block counts, ranged from 16,978 to 87,000 El Segundo blue butterfly.[556, 557] The Los Angeles/El Segundo Dunes is divided into 87 subsites for the purpose of maintenance and monitoring activities. During 1998, El Segundo blue butterfly were observed within 50 of the 87 subsites.[558] Occupied subsites contained densities of the El Segundo blue butterfly that ranged from 0.35 to 211.8 per acre, as illustrated in **Figure F4.11-6**, 1998 El Segundo Blue Butterfly Densities. Subsequent counts in 1999 rendered estimates of total population ranging from 9,867 to 39,000.[559] Counts for the Year 2000 show that butterfly population increased substantially when compared to 1999.

Counts of El Segundo blue butterflies in 2001 rendered estimates of the total population ranging from 24,134 to 79,109 individuals, as shown in **Table F4.11-4**. Counts in 2002 rendered estimates of the total population ranging from 17,789 to 54,002, with a peak number of 2,750 individuals recorded as a result of block counts conducted in that year.[560] Counts in 2003 have rendered the highest estimates of the total population ranging from 34,863 to 109,814, with a peak number of 5,803 individuals recorded as a result

554 Arnold, Richard A., "Studies of the El Segundo Blue Butterfly - 1984," Inland Fisheries Administrative Report No. 86-4, p. 21, June 1986.
555 Environmental Science Associates, Long-term Habitat Management Plan, 1994.
556 Sapphos Environmental, Inc., Memorandum for the Record (1043-010.M01); El Segundo Blue Monitoring Activities for the 1998 Flight Season at Los Angeles International Airport, December 17, 1998.
557 Los Angeles World Airports, Memo to Maurice Laham from Andrew Huang; Estimate of the 1998 LAX El Segundo Blue Butterfly population, November 25, 1998.
558 Los Angeles World Airports, Memo to Maurice Laham from Andrew Huang; Estimate of the 1998 LAX El Segundo Blue Butterfly population, November 25, 1998.
559 Arnold, R.A., "Ecological Studies of Six Endangered Butterflies", University of California Publications in Entomology, Volume 99, 153 p 1983.
560 Arnold, R.A., Prepared for: Alfred W. Tong and Andrew Huang, Report of El Segundo Blue Monitoring Activities in 2002 at the Los Angeles International Airport, November 2002.



LEGEND

- Road System (Many Subsites Are Delineated by Road System)
- Habitat Restoration Area Boundary
- 21 — Subsite Number
- Remote Communications Site
- VOR — Very High Omni Range Navigation Beacon
- Trailer

- 0
- 1-50
- 51-100
- 101-150
- 151-200
- 201-250

- Street

LAX Master Plan Final EIS/EIR	**1998 El Segundo Blue Butterfly Densities**	Figure **F4.11-6**

figure3.2-5.ai

of block counts conducted in that year.[561] These fluctuations in population numbers per year are consistent with observations of other sensitive species of butterfly in California. Fluctuations of this magnitude are not unusual among insects, especially those that have but a single generation per year, such as the El Segundo blue butterfly. Indeed, several moths that are routinely monitored because they are forest pests can exhibit a 10-fold increase in population numbers within a few generations or may decline just as rapidly.[562] Factors such as seasonal weather conditions, increased parasitism and predation, a higher incidence of disease, or a decline in food plant numbers (or flowerhead numbers in the case of the El Segundo blue butterfly), may individually or collectively affect population numbers.

The *Recovery Plan for the El Segundo Blue Butterfly (Euphilotes battoides allyni) (ESB Recovery Plan)* does not designate critical habitat for the El Segundo blue butterfly.[563] The *ESB Recovery Plan* identifies four recovery units that contain restorable habitat for the El Segundo blue butterfly. The Airport Dunes Recovery Unit includes the Los Angeles/El Segundo Dunes and the western portion of the AOA. The *ESB Recovery Plan* excludes all existing commercial development and areas that have been permanently altered by humans. The El Segundo blue butterfly requires a sand substrate; therefore, the only areas within the Master Plan boundaries suitable for habitat restoration are within the Los Angeles/El Segundo Dunes. A review of historical aerial photographs and topographic maps indicates that the western portion of what is now the AOA historically supported a complex of vernal pools and native grassland not known to have supported the El Segundo blue butterfly.[564, 565, 566] These native habitats have been completely extirpated as a result of grading (cut and fill) activities between 1950 and 2000.

American Peregrine Falcon

The American peregrine falcon was de-listed as a federally endangered species on August 25, 1999, but remains a California state-listed endangered species. The peregrine falcon has re-occupied most of its historic breeding range in California, including the Channel Islands, the Coast and Cascade Ranges, and Sierra Nevada.

LAX supports foraging roost sites for the American peregrine falcon, which has been observed roosting in the tall buildings and structures adjacent to LAX. The American peregrine falcon was not observed to be present within the Master Plan study area as a result of additional directed surveys undertaken in 2002/2003.[567] The American peregrine falcon is not a nesting bird at LAX. Large rock dove (pigeon) populations at LAX may provide a food source for the American peregrine falcon. However, FAA Guidelines for Wildlife Hazards Management include measures to control rock dove populations at LAX. For the purpose of this analysis it is assumed that implementation of Wildlife Hazards Management according to FAA guidelines will continue. The nearest nesting American peregrine falcon to LAX are at Long Beach Harbor and along Wilshire Boulevard.[568]

Considerations Related to Indirect Effects

Air

The American peregrine falcon is one of several raptor species that has successfully adapted to living within urban environments. The American peregrine falcon has been recorded nesting on human-built structures in cities and towns since the Middle Ages, and in the 20th century, reintroduced peregrines

561 Los Angeles World Airports, Report for the Los Angeles International Airport El Segundo Blue Butterfly 2003, prepared by: Entomological Consulting Services Ltd., R.A. Arnold, 2003.

562 Varley, G.C.; G.R. Gradwell, and M.P. Hassell, Insect Population Ecology, University of California Press, Berkeley, CA, 212, 1974.

563 U.S. Fish and Wildlife Service, Recovery Plan for the El Segundo Blue Butterfly (*Euphilotes battoides allyni*), 1998.

564 Los Angeles World Airports and El Segundo Dunes, Historic Aerial Photographs, Continental Aerial Photo, Inc., 10571 Calle Lee, Suite 163, Los Alamitos, CA., June 1995, June 1990, January 1986, May 1979, February 1970, and November 1952.

565 U.S. Army Corps of Engineers, War Department, Redondo Quadrangle 15 Minute Series Map - 1:62,500, 1944.

566 U.S. Geological Survey, Venice, California 7.5 Minute Series Topographic Map - 1:24,000, 1934.

567 Sapphos Environmental, Inc., Memorandum for the Record 1049-002.M30, Results of 2002/2003 Directed Surveys for American Peregrine Falcon at LAX/El Segundo Dunes, February 13, 2003.

568 Sapphos Environmental, Inc., Memorandum for the Record 1043-008-M06, Results of Directed Surveys for American Peregrine Falcon, California Least Tern, Southwest Willow Flycatcher, Least Bell's Vireo, and Loggerhead Shrike at LAX/El Segundo Dunes, September 8, 1998.

have adapted to tall buildings in urban areas of North America and Europe.[569] Urban nesting by peregrine falcons in the United States has been a significant factor in the recovery of mid-western and eastern regional populations.[570] Although peregrine falcons have adapted to living in urban environments, the supporting scientific research and documentation of the effects of air pollutants on peregrine falcons is lacking. In fact, there is very little research on the effects of air pollutants on raptors and birds in general.[571] Studies conducted on laboratory animals show that ozone (O_3), sulfur dioxide (SO_2), and nitrogen dioxide (NO_2) may irritate the lining of the lungs and cause respiratory stress, although little is known about the direct effects of these gaseous pollutants on animals living in the wild.[572] Peregrine falcons are present as a migrant bird at Owens Lake, in Inyo County California, the largest single source of fugitive dust (PM_{10}) emissions in the United States with annual emission estimates ranging up to hundreds of thousands of tons annually and 24-hour concentrations as high as 130 times the federal air quality standard.[573] Within the LAX Master Plan boundaries, there is no evidence that current air emissions result in adverse effects to the American peregrine falcon.

Light Emissions

Measurements of existing lighting conditions within the southern half of the Habitat Restoration Area found illuminance values (the light energy incident at a given point, measured in foot candles) that ranged from 0.004 to 0.26 foot candles. Details regarding environmental baseline conditions for illuminance are provided in Section 4.10, *Biotic Communities* (subsection 4.10.3). The American peregrine falcon hunts in the daytime; therefore, existing nighttime lighting conditions do not appear to affect its roosting or foraging behaviors.

Noise

Details regarding environmental baseline conditions for noise are provided in Section 4.10, *Biotic Communities* (subsection 4.10.3). Based on existing noise levels within the Los Angeles/El Segundo Dunes and the western AOA, and the presence of American peregrine falcon within these areas, it appears that current noise conditions may not affect this species. According to a literature synthesis produced by the USFWS on the effects of aircraft noise and sonic booms on domestic animals and wildlife, the American peregrine falcon responses to extremely frequent and nearby jet aircraft were often minimal and never associated with reproductive failure; although there were alarm responses to the stimuli, the negative responses were brief and not productivity limiting.[574]

4.11.4 Thresholds of Significance

4.11.4.1 CEQA Thresholds of Significance

A significant impact to endangered and threatened species would occur if the direct or indirect changes in the environment that may be caused by a particular build alternative would eventually result in one or more of the following future conditions listed below.

- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance with the use of native wildlife nursery sites.
- A conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans.

---

569 Cade, T.J., M. Martell, P. Redig, G. Septon and H. Tordoff, "Peregrine Falcons in Urban North America," Raptors in Human Landscape, Edited by D. Bird, D. Varland and J. Negro, Academic Press Inc., San Diego, California, 1996.

570 Cade, T.J., M. Martell, P. Redig, G. Septon and H. Tordoff, "Peregrine Falcons in Urban North America," Raptors in Human Landscapes, Edited by D. Bird, D. Varland and J. Negro, Academic Press Inc., San Diego, California, 1996.

571 Bloom, Peter, Peter Bloom Consulting Services, Personal Communication, April 15, 2003.

572 Maniero, T.G., The Effects of Air Pollutants on Wildlife and Implications in Class I Areas, National Park Service Air Resources Division, Contact: PO Box 25287 Denver, CO 80225.

573 Great Basin Unified Air Pollution Control District, Owens Valley PM_{10} Planning Area Demonstration of Attainment State Implementation Plan Final Environmental Impact Report, SCH No. 96122077, Contact: 157 Short Street, Suite 6, Bishop, CA 93514-3537, 1997.

574 U.S. Fish and Wildlife Service, Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis, U.S. Department of the Interior, Engineering and Services Center, U.S. Air Force, June 1988.

- A violation of federal, state, or local statutes or regulations imposed for the protection of federally- or state-listed, threatened, endangered, or candidate species of flora or fauna, specifically the Federal Endangered Species Act of 1973 and the State Endangered Species Act.[575]
- A substantial adverse effect, either directly or through habitat modifications of existing habitat of a federally- or state-listed endangered, threatened, or candidate species of flora and fauna that would result in a net reduction in occupied habitat.[576]
- A net loss of federally- or state-listed endangered, threatened, or candidate species of flora or fauna.

These thresholds were utilized because they address the potential concerns associated with the Master Plan alternatives relative to endangered, threatened, and candidate species.

4.11.4.2 Federal Standards

- The FAA is required to consult with USFWS or the National Marine Fishery Service (NMFS) on any and all actions that have the potential to affect any federally listed species or its designated critical habitat. Informal consultation may initially be undertaken for a project, and will satisfy consultation requirements if the proposed action is not likely to adversely affect species or designated critical habitat, and the USFWS or NMFS concur in writing. Formal consultation under Section 7(a) (2) of the ESA is required when: (1) the FAA determines that the proposed action "may affect" federally listed species or designated critical habitat, unless USFWS or NMFS concurs in writing that the proposed action is not likely to adversely affect any listed species or designated critical habitat; or (2) if the agency determines that the proposed action is not likely to affect federally listed species or designated critical habitat and the USFWS or NMFS does not concur. If the USFWS or NMFS determine that the proposed action will jeopardize the continued existence of a federally listed species or adversely modify designated critical habitat, the project would be deemed to have a significant impact.

4.11.5 Master Plan Commitments

No Master Plan commitments for endangered or threatened species of flora or fauna are proposed.

4.11.6 Environmental Consequences

This section describes the potential environmental impacts of the No Action/No Project Alternative and the four build alternatives on the three endangered wildlife species known to be present within the Master Plan boundaries: Riverside fairy shrimp, El Segundo blue butterfly, and American peregrine falcon. For each alternative, the potential effects are discussed in terms of the likelihood that the alternative would jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of federally-designated critical habitat in the affected area.

The environmental effects to endangered wildlife species are largely related to the timing of conversion of existing degraded wetland habitat to developed uses within the Master Plan boundaries. The 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp lie within the western portion of the Master Plan boundaries, which would be required for construction staging and airfield improvements under the four build alternatives. In addition, lights that are integral to new facilities under consideration for the four build alternatives have the potential to change ambient levels of light and glare within the southeastern portion of the Los Angeles/El Segundo Dunes.

As described in the Analytical Framework discussion in the introduction to Chapter 4, the basis for determining impacts under CEQA is different from that of NEPA. Under CEQA, the impacts of a proposed project and alternatives are measured against the "environmental baseline," which is normally the physical conditions that existed at the time the Notice of Preparation was published (i.e., June 1997, or 1996 when a full year of data is appropriate, for the LAX Master Plan Draft EIS/EIR). As such, the

---

575 The California Endangered Species Act (CESA) protects endangered, threatened, and candidate species. As stated in Fish and Game Code 2067, " … [a]ny animal determined by the Commission as 'rare' on or before January 1, 1985 is a 'threatened' species." Under CESA, plants are designated as 'rare' although afforded no protection. Plants designated as rare pursuant to Section 1904 of the Native Plant Protection Act and Sections 2074.2 and 2075.5 of the CESA are afforded protection under the Native Plant Protection Act.

576 Bass, Ronald E., Albert I. Herson, and Kenneth M. Bogdan, CEQA Deskbook, Second Edition, Point Arena, California: Solano Press Books, 1999.

CEQA analysis in this Final EIS/EIR uses the environmental baseline, or in some cases an "adjusted environmental baseline," as the basis by which to measure and evaluate the impacts of each alternative. Under NEPA, the impacts of each action alternative (i.e., build alternative) are measured against the conditions that would otherwise occur in the future if no action were to occur (i.e., the "No Action" alternative). As such, the NEPA analysis in this Final EIS/EIR uses the No Action/No Project Alternative as the basis by which to measure and evaluate the impacts of each build alternative (i.e., Alternatives A, B, C, and D) in the future (i.e., at buildout in 2015 or, for construction-related impacts, selected future interim year). Based on this fundamental difference in the approach to evaluating impacts, the nature and significance of impacts determined under CEQA are not necessarily representative of, or applicable to, impacts determined under NEPA. The following presentation of environmental consequences should, therefore, be reviewed and considered accordingly.

4.11.6.1 No Action/No Project Alternative

The No Action/No Project Alternative contains various features that are especially pertinent to the analysis of impacts on endangered and threatened species of flora and fauna. Continued growth in airport activity is assumed, therefore, facility improvements would occur that are under construction, fully entitled, and/or anticipated to require no environmental clearance. Under this alternative, the existing 1.3 acres of degraded wetland habitat within the Master Plan boundaries would be retained. Routine operations and maintenance activities within the AOA are necessary to maintain public safety, and would continue under this alternative. The No Action/No Project Alternative would not result in the "take" of embedded fairy shrimp cysts, but also would not provide for improved habitat that would allow the fairy shrimp to complete their life cycle. The No Action/No Project Alternative does not include relocation of the runways in the northern airfield; therefore, there would be no relocation of navigational aids in the Los Angeles/El Segundo Dunes.

Current levels of maintenance and preservation of the Habitat Restoration Area would continue under this alternative, preserving all existing plant communities and occupied habitat of the El Segundo blue butterfly and its host plant, coast buckwheat.

Riverside Fairy Shrimp

The 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp would remain within the AOA. These areas would be subject to continued operations and maintenance activities (removal of standing water and discing or mowing to manage vegetation). Enhancement to the Riverside fairy shrimp habitat in these areas is not feasible due to FAA Wildlife Hazards Management guidelines to ensure public safety of certificated airports. Due to continuous implementation of these guidelines, no habitat currently exists on the airfield that retains standing water for a sufficient duration to allow the Riverside fairy shrimp to complete its life cycle (six to eight weeks). Implementation of FAA Wildlife Hazard Management guidelines continues under this alternative, thus, it is anticipated that Riverside fairy shrimp would continue to be present within the Master Plan boundaries only in the form of embedded cysts. Thus, long-term operations and maintenance activities would continue to result in the loss of habitat values by preventing the development of habitat conditions necessary for Riverside fairy shrimp cysts to mature into adults.

In summary, the No Action/No Project Alternative would not affect the continued existence of embedded cysts of the Riverside fairy shrimp, nor would it further the recovery of the species.

El Segundo Blue Butterfly

The No Action/No Project Alternative would not result in alteration to or degradation of occupied or potentially suitable habitat of the El Segundo blue butterfly. The 150.2 acres of habitat occupied by the El Segundo blue butterfly would remain unaltered under this alternative. Analysis of the potential effects of jet exhaust emissions has determined that, under this alternative, there would be no impacts to the El Segundo blue butterfly.[577] Analysis of light emissions and glare has concluded that the level of light and glare at the Habitat Restoration Area would remain at existing levels, and no impacts would occur. The

[577] As noted above, elevated levels of vanadium were found in buckwheat within the Habitat Restoration Area. However, there is no evidence that the El Segundo blue butterfly is adversely affected by vanadium. Monitoring results indicate that current levels of vanadium are not adversely affecting the El Segundo blue butterfly population at the Habitat Restoration Area since population counts for the Years 2000 through 2003 showed a significant increase in the population when compared to 1999.

butterflies do not fly at night when the temperature is low, and remain perched around the coast buckwheat foodplant. Construction activities under the No Action/No Project Alternative are not anticipated to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly.

American Peregrine Falcon

The No Action/No Project Alternative would not affect the continued existence of the American peregrine falcon due to the absence of breeding sites in or adjacent to LAX.

4.11.6.2 Alternative A - Added Runway North

Alternative A contains various features that are especially pertinent to the analysis of impacts on endangered and threatened species of flora and fauna. The most prominent of these features concerns improvements to the north airfield. North airfield improvements would require realignment of navigational aids within the habitat occupied by the El Segundo blue butterfly prior to relocation of north runways. This alternative would result in alteration to occupied habitat of the El Segundo blue butterfly. Additionally, under Alternative A, 1.3 acres occupied by embedded cysts of the Riverside fairy shrimp would be developed. These impacts are described below.

Riverside Fairy Shrimp

Alternative A would result in the permanent conversion of 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp to developed facilities and construction staging and associated support activities, which constitutes a significant impact. Implementation of Alternative A would result in the permanent conversion of occupied habitat that would not occur under the No Action/No Project Alternative. However, the long-term operations and maintenance activities that would continue under the No Action/No Project Alternative would result in the loss of habitat values by preventing the development of habitat conditions necessary for Riverside fairy shrimp cysts to mature into adults.

El Segundo Blue Butterfly

Alternative A would result in the conversion of 8,514 square feet (0.20 acre) of occupied habitat of the El Segundo blue butterfly within the Habitat Restoration Area from installation of navigational aids and associated service roads for Runway 24L/6R. These are considered to be significant impacts based on the CEQA significance thresholds presented above, and the FAA has determined that this conversion would trigger the need for formal Section 7 consultation with USFWS to determine whether the impacts would jeopardize the continued existence of the species or adversely modify designated critical habitat. As described in greater detail below in subsection 4.11.6.5, the FAA has determined that this conversion would not result in an adverse impact to the federally listed El Segundo blue butterfly because the recommended mitigation measure, which calls for creation of new replacement habitat, would be completed three years prior to the installation of the new navigational aids and associated service roads. Because the mitigation measure would be fully implemented prior to the conversion of the habitat, no net loss of habitat would result.

Implementation of Alternative A would result in the conversion of occupied habitat that would not occur under the No Action/No Project Alternative. As such, the potential for impacts to the El Segundo blue butterfly under Alternative A, absent mitigation, have the potential to be greater than under the No Action/No Project Alternative.

The analysis of the potential effects and adverse impacts of increased jet fly-overs on the El Segundo blue butterfly due to increases in jet exhaust emissions is based on a one-year field investigation of air emissions and deposition undertaken at the Los Angeles/El Segundo Dunes. The analysis included a collection and evaluation of particulate aircraft emission data. As indicated in subsection 4.11.2, *General Approach and Methodology*, the analysis indicated that existing levels of aircraft activities have not resulted in producing airborne particulates, PAHs, or concentrations of trace elements that exceed ambient levels.[578] In addition, aerial deposition of trace metals[579] and boron is occurring at the Los

[578] Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

[579] As noted above, vanadium was found to be present at higher levels in buckwheat tissue exposed within the Habitat

Angeles/El Segundo Dunes at levels that are generally consistent with studies for other urban areas.[580] Analysis of concentrations of trace elements in ambient PM_{10} were within expected values for urban locations.[581] Analysis of the potential effects of jet exhaust emissions has therefore determined that there would be no effects on the El Segundo blue butterfly.[582, 583] An analysis of light and glare evaluated the current facility site plans and the results of observations of current airport lighting sources in order to assess future lighting effects based on the proposed site plans and design features of this alternative. The analysis of existing lighting conditions within the southern half of the Habitat Restoration Area and Pershing Drive measured illuminance values (the light energy incident at a given point in foot-candles) that ranged from 0.004 to 0.26 foot-candles. Under this alternative, the net change in lighting associated with installation of navigational aids within the Habitat Restoration Area shows a minimal increase in lighting within occupied habitat. The new light sources associated with the West Terminal and parking facilities would increase ambient light levels to an estimated 0.60 foot-candles on the Habitat Restoration Area, as described in Section 4.18, *Light Emissions,* and in Technical Report 9, *Light Emissions Technical Report*. Kenneth Frank undertook an assessment of the impact of outdoor lighting on moths, based on published literature.[584] His assessment revealed that outdoor lighting disturbs the behavior (flight, navigation, vision, migration, dispersal, egg-laying, mating, feeding, and crypsis) of some nocturnal moths due to elicitation of flight-to-light behavior. In addition, outdoor lighting exposes moths to increased predation by birds, bats, spiders, and other predators. Approximately half of all the orders of insects, including moths, exhibit a nocturnal habit. By contrast, butterflies are diurnal specialists; that is, they are active during the day. In fact, a distinctive characteristic between butterflies and moths is that moths are primarily active at night, and butterflies are active during the day. Due to their diurnal habit, butterflies in general do not exhibit flight-to-light behavior. The El Segundo blue butterfly is a diurnal species, remaining perched around the coast buckwheat foodplant during the night. Therefore, the additional lighting associated with the proposed improvements under this alternative would not be expected to impact the El Segundo blue butterfly.

Construction activities, including staging and stockpiling of materials proximal to the Habitat Restoration Area, have the potential to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly, specifically during implementation of the ring road, parking facilities, West Terminal Area, and people mover components of the proposed project. Under this alternative, Mitigation Measures MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D) and MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), would reduce impacts to a level less than significant.

Unlike the No Action/No Project Alternative, in which construction activities are not anticipated to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly, Alternative A has the potential to result in the deposition of fugitive dust as described above. Thus, in that respect, impacts under Alternative A have the potential, absent mitigation, to be greater than those under the No Action/No Project Alternative.

American Peregrine Falcon

Alternative A would require realignment of navigational aids within the Habitat Restoration Area. The American peregrine falcon has not been observed within the Habitat Restoration Area, and rarely hunts

---

Restoration Area when compared to the reference site. Vanadium is not known to adversely impact the El Segundo blue butterfly.

580 Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

581 Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

582 Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

583 As noted above, vanadium was the only element associated with jet aircraft exhaust found at elevated levels within the Habitat Restoration Area. There is no evidence that the El Segundo blue butterfly is adversely affected by vanadium, and monitoring results indicate that current levels of vanadium are not adversely affecting the El Segundo blue butterfly population at the Habitat Restoration Area since population counts for the Years 2000 through 2003 showed a significant increase in the population when compared to 1999.

584 Frank, K. D., "Impact of Outdoor Lighting on Moths: An Assessment," Journal of the Lepidopterists' Society, Vol. 42, Number 2, pages 63-93, 1988.

from a perch. It will usually swoop from flight onto flying prey,[585] therefore, installation of navigational aids within the Habitat Restoration Area will not affect the continued existence of this species. As described for the No Action/No Project Alternative, Alternative A would not affect the continued existence of the American peregrine falcon due to the absence of breeding sites in or adjacent to LAX.

There are no indirect impacts to this species as a result of changes in light, noise, and air emissions. The American peregrine falcon hunts in the daytime; therefore, the increase in nighttime light associated with Alternative A would not have a significant impact on its roosting and foraging behaviors. As indicated in subsection 4.11.3, *Affected Environment/Environmental Baseline,* the American peregrine falcon is not adversely affected by noise from extremely frequent and nearby jet aircraft.[586] As stated in Section 4.10, *Biotic Communities* (subsection 4.10.6), under Alternative A there would be an increase in carbon monoxide (CO), nitrogen oxides (NO_X), SO_2, and PM_{10}; however, there is no evidence that such increases would result in adverse effects to the American peregrine falcon. The American peregrine falcon was de-listed as a federally endangered species on August 25, 1999; therefore, consultation did not need to be undertaken for this species with the USFWS.

4.11.6.3 Alternative B - Added Runway South

Alternative B contains features that are especially pertinent to the analysis of impacts on endangered and threatened species of flora and fauna. As with Alternative A, but to a lesser areal extent, relocation of navigational aids within habitat occupied by the El Segundo blue butterfly is required for this alternative. This alternative would also result in substantial habitat modification to 1.3 acres of jurisdictional wetlands occupied by embedded cysts of the Riverside fairy shrimp. These impacts are described below.

Riverside Fairy Shrimp

Alternative B would result in the permanent conversion of 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp to developed facilities, and construction staging and associated support activities, which constitutes a significant impact. Implementation of Alternative B would result in the permanent conversion of occupied habitat that would not occur under the No Action/No Project Alternative. However, the long-term operations and maintenance activities that would continue under the No Action/No Project Alternative would result in the loss of habitat values by preventing the development of habitat conditions necessary for Riverside fairy shrimp cysts to mature into adults.

El Segundo Blue Butterfly

Alternative B would result in the conversion of 2,316 square feet (0.05 acre) of occupied habitat of the El Segundo blue butterfly within the Habitat Restoration Area from installation of navigational aids and associated service roads for Runway 24L/6R. This is considered to be a significant impact based on the CEQA significance thresholds presented above, and the FAA has determined that this conversion would trigger the need for formal Section 7 consultation with USFWS to determine whether the impacts would jeopardize the continued existence of the species or adversely modify designated critical habitat. As described in greater detail below in subsection 4.11.6.5, the FAA has determined that this conversion would not result in an adverse impact to the federally listed El Segundo blue butterfly because the recommended mitigation measure, which calls for creation of new replacement habitat, would be completed three years prior to the installation of the new navigational aids and associated service roads, Because the mitigation measure would be fully implemented prior to the conversion of the habitat, no net loss of habitat would occur.

Implementation of Alternative B would result in the conversion of occupied habitat that would not occur under the No Action/No Project Alternative. As such, impacts to the El Segundo blue butterfly under Alternative B, absent mitigation, have the potential to be greater than under the No Action/No Project Alternative.

---

585 California Department of Fish and Game, California Statewide Wildlife Habitat Relationships System, California Wildlife, Volume II, Birds, State of California Resource Agency, 1990.

586 U.S. Fish and Wildlife Service, Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis, U.S. Department of the Interior, Engineering and Services Center, U.S. Air Force, June 1988.

Analysis of the potential effects of jet exhaust emissions has determined that, under this alternative, there would be no impacts to the El Segundo blue butterfly.[587, 588] As described in Technical Report 9, *Light Emissions Technical Report,* analysis of the net change in navigational lighting associated with the Los Angeles/El Segundo Dunes shows that there would be a net decrease in navigational lighting within the Habitat Restoration Area under Alternative B. The new light sources associated with the West Terminal/Concourses and parking facilities would increase ambient light levels to an estimated 0.60 foot-candles adjacent to the Habitat Restoration Area, as described in Section 4.18, *Light Emissions,* and in Technical Report 9, *Light Emissions Technical Report*. However, as described under Alternative A, due to their diurnal habit, butterflies in general do not exhibit flight-to-light behavior. The El Segundo blue butterfly is a diurnal species, remaining perched around the coast buckwheat foodplant during the night. Therefore, the additional lighting associated with the West Terminal/Concourses under this alternative would not be expected to impact the El Segundo blue butterfly.

Construction activities, including staging and stockpiling of materials proximal to the Habitat Restoration Area, have the potential to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly, specifically during implementation of the ring road, parking facilities, West Terminal Area, and people mover components of the proposed project. Under this alternative, Mitigation Measures MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D) and MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), would reduce impacts to a level less than significant.

Unlike the No Action/No Project Alternative, in which construction activities are not anticipated to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly, Alternative B has the potential to result in the deposition of fugitive dust as described above. Thus, in that respect, impacts under Alternative B have the potential, absent mitigation, to be greater than those under the No Action/No Project Alternative.

American Peregrine Falcon

Alternative B would not affect the continued existence of the American peregrine falcon because this species does not occupy habitat in the proposed developed facilities, construction staging, or associated support activities areas. As described for the No Action/No Project Alternative, Alternative B would not affect the continued existence of the American peregrine falcon due to the absence of breeding sites in or adjacent to LAX. There are no indirect impacts to this species as a result of changes in light, noise, and air emissions. The American peregrine falcon hunts in the daytime; therefore, the increase in nighttime light associated with Alternative B would not have a significant impact on its roosting and foraging behaviors. As indicated in subsection 4.11.3, *Affected Environment/Environmental Baseline,* the American peregrine falcon is not adversely affected by noise from extremely frequent and nearby jet aircraft.[589] As stated in Section 4.10, *Biotic Communities* (subsection 4.10.6), under Alternative B there would be an increase in carbon monoxide (CO), nitrogen oxides (NO_X), SO_2, and PM_{10}; however, there is no evidence that such increases would result in adverse effects to the American peregrine falcon. The American peregrine falcon was de-listed as a federally endangered species on August 25, 1999; therefore, consultation did not need to be undertaken for this species with the USFWS.

4.11.6.4 Alternative C - No Additional Runway

Alternative C contains features that are especially pertinent to the analysis of impacts on endangered and threatened species of flora and fauna. Some of these features are construction of the proposed ring road, the West Terminal Area, proposed close-in public parking, and access/roadway improvements, which are expected to affect 1.3 acres of jurisdictional wetlands containing embedded cysts of the

---

587 Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

588 As noted above, vanadium was the only element associated with jet aircraft exhaust found at elevated levels within the Habit Restoration Area. There is no evidence that the El Segundo blue butterfly is adversely affected by vanadium, and monitoring results indicate that current levels of vanadium are not adversely affecting the El Segundo blue butterfly population at the Habitat Restoration Area since population counts for the Years 2000 through 2003 showed a significant increase in the population when compared to 1999.

589 U.S. Fish and Wildlife Service, Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis, U.S. Department of the Interior, Engineering and Services Center, U.S. Air Force, June 1988.

Riverside fairy shrimp in the north and south airfield. By 2015, the scope of improvements would expand through the addition of rental car facilities, employee parking, and light rail transportation systems. Unlike Alternatives A and B, Alternative C does not require the relocation of navigational aids within habitat occupied by the El Segundo blue butterfly within the Habitat Restoration Area of the Los Angeles/El Segundo Dunes for this alternative. The impacts associated with this alternative are described below.

Riverside Fairy Shrimp

Alternative C would result in the permanent conversion of 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp to developed facilities and construction staging and associated support activities, which constitutes a significant impact. Implementation of Alternative C would result in the permanent conversion of occupied habitat that would not occur under the No Action/No Project Alternative. However, the long-term operations and maintenance activities that would continue under the No Action/No Project Alternative would result in the loss of habitat values by preventing the development of habitat conditions necessary for Riverside fairy shrimp cysts to mature into adults.

El Segundo Blue Butterfly

This alternative would not result in alteration to or degradation of occupied or potentially suitable habitat of the El Segundo blue butterfly. Under this alternative, the 150.2 acres of habitat occupied by the El Segundo blue butterfly would remain. Analysis of the potential effects of jet exhaust emissions has determined that there would be no impacts to the El Segundo blue butterfly under this alternative.[590, 591] As described in Technical Report 9, Light Emissions Technical Report, analysis of the net change in navigational lighting associated with the Dunes shows that there would be a net decrease in navigational lighting within the Habitat Restoration Area under Alternative C. The new light sources associated with the West Terminal/Concourses and parking facilities would increase ambient light levels to an estimated 0.60 foot-candles on the Habitat Restoration Area, as described in Section 4.18, *Light Emissions,* and in Technical Report 9, *Light Emissions Technical Report*. However, as described under Alternative A, due to their diurnal habit, butterflies in general do not exhibit flight-to-light behavior. The El Segundo blue butterfly is a diurnal species, and remains perched around the coast buckwheat foodplant during the night. Therefore, the additional lighting associated with the West Terminal/Concourses under this alternative would not be expected to impact the El Segundo blue butterfly.

Additionally, under this alternative, there would not be impacts to the El Segundo blue butterfly or its habitat, since no construction activities, including staging and stockpiling of materials, would take place within the Habitat Restoration Area. However, construction activities including staging and stockpiling of materials proximal to the Habitat Restoration Area have the potential to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly, specifically during implementation of the ring road, parking facilities, West Terminal Area, and people mover components of the proposed project. Under this alternative, mitigation measures MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), and MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), would reduce impacts to less than significant.

Unlike the No Action/No Project Alternative, in which construction activities are not anticipated to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly, Alternative C has the potential to result in the deposition of fugitive dust as described above. Thus, in that respect, impacts under Alternative C have the potential, absent mitigation, to be greater than those under the No Action/No Project Alternative.

---

590 Venkatesan, M.I. and K.A. Boyle, Analyses of Hydrocarbons and Trace Metals in Environmental Samples in support of Los Angeles International Airport 2015 Master Plan Expansion Project EIS/EIR, June 28, 1999.

591 As noted above, vanadium was the only element associated with jet aircraft exhaust found at elevated levels within the Habitat Restoration Area. There is no evidence that the El Segundo blue butterfly is adversely affected by vanadium, and monitoring results indicate that current levels of vanadium are not adversely affecting the El Segundo blue butterfly population at the Habitat Restoration Area since population counts for the Years 2000 through 2003 showed a significant increase in the population when compared to 1999.

American Peregrine Falcon

Alternative C would not affect the continued existence of the American peregrine falcon because this species does not occupy habitat in the proposed developed facilities, construction staging, and associated support activities areas. As described for the No Action/No Project Alternative, Alternative C would not affect the continued existence of the American peregrine falcon due to the absence of breeding sites in or adjacent to LAX.

There are no indirect impacts to this species as a result of changes in light, noise, and air emissions. The American peregrine falcon hunts in the daytime; therefore, the increase in nighttime light associated with Alternative C would not have a significant impact on its roosting and foraging behaviors. As indicated in subsection 4.11.3, *Affected Environment/Environmental Baseline,* the American peregrine falcon is not adversely affected by noise from extremely frequent and nearby jet aircraft.[592] As stated in Section 4.10, *Biotic Communities* (subsection 4.10.6), under Alternative C there would be an increase in carbon monoxide (CO), nitrogen oxides (NO_X), SO_2, and PM_{10}; however, there is no evidence that such increases would result in adverse effects to the American peregrine falcon. The American peregrine falcon was de-listed as a federally endangered species on August 25, 1999; therefore, consultation did not need to be undertaken for this species with the USFWS.

4.11.6.5 Alternative D - Enhanced Safety and Security Plan

A complete description of the facilities associated with Alternative D is provided in Chapter 3, *Alternatives*. The features of Alternative D that are relevant to the analysis of endangered and threatened species are summarized herein. Most notable is the proposed construction of the west employee parking garage on the west side of LAX, and other project-related activities, which are expected to directly affect 0.04 acre (1,853 square feet) of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp. In addition, Alternative D would result in the installation of replacement navigational aids and associated service roads within the El Segundo Dunes, including areas of habitat occupied by the El Segundo blue butterfly. The impacts associated with this alternative are described below.

Riverside Fairy Shrimp

As discussed in Section 4.12, *Wetlands*, under Alternative D, 0.04 acre (1,853 square feet) of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp would be permanently converted as a result of construction staging, airfield operations and maintenance activities, and/or airfield improvements. This is considered to be a significant impact and triggered the need for Section 7 consultation with USFWS to determine whether the impact would jeopardize the continued existence of the species. In addition, EW009, EW012, EW013, EW014, EW015, and EW016, comprising the remaining 1.26 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp, have the potential to be indirectly affected as a result of construction staging, airfield operations and maintenance, and/or airfield improvements within or adjacent to these six areas. Specifically, EW009, EW012, EW013, and EW014 would potentially be affected by construction staging and development of the proposed employee parking garage. EW015 and EW016 would potentially be affected by construction staging in support of development of the Taxiway/Aircraft Apron and the proposed employee parking garage. The potential indirect effects to EW009, EW012, EW013, EW014, EW015, and EW016 would be avoided through implementation of construction avoidance measures, including BMPs required pursuant to the Standard Urban Stormwater Mitigation Plan and the LAX Stormwater Pollution Prevention Plan, and establishment of a buffer area around the six occupied areas retained on the LAX airfield, as specified in the Biological Opinion issued by the USFWS and included in Appendix F-E.

Implementation of Alternative D would result in the permanent conversion of 0.04 acre (1.853 square feet) of occupied, degraded habitat that would not occur under the No Action/No Project Alternative. However, the long-term operations and maintenance activities that would continue under the No Action/No Project Alternative would result in the loss of habitat values by preventing the development of habitat conditions necessary for Riverside fairy shrimp cysts to mature into adults. Although indirect impacts to 1.26 acres

[592] U.S. Fish and Wildlife Service, Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis, U.S. Department of the Interior, Engineering and Services Center, U.S. Air Force, June 1988.

of degraded wetland habitat are avoidable under Alternative D, there are no feasible alternatives that would result in no impact to all occupied, degraded wetland sites.

El Segundo Blue Butterfly

Alternative D would result in the conversion of 10,597 square feet (0.24 acre) of occupied habitat of the El Segundo blue butterfly in the Habitat Restoration Area from installation of replacement navigational aids and associated service roads for Runway 6R/24L. This conversion is considered to be a significant impact based on the CEQA significance thresholds presented above. The FAA has determined that this conversion may affect this federally listed species and required formal Section 7 consultation with USFWS to determine whether the impact would jeopardize the continued existence of the species. As a result of extensive coordination and consultation undertaken between the USFWS, FAA, and LAWA, the USFWS has issued a Biological Opinion which is included in Appendix F-E.

For Alternative D, FAA and LAWA would implement Mitigation Measure MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D), as described in subsection 4.11.8 below, that would result in a zero net loss of habitat for the butterfly. Mitigation Measure MM-ET-4 provides that coast buckwheat be planted a minimum of three years prior to the impact of the installation of the replacement navigational aids. This would be accomplished to allow for establishment of the plants and to ensure that the plants are mature enough to bloom. Further, creation of new replacement habitat prior to the impact would result in no temporal loss of habitat. The plantings of coast buckwheat would be located within the southwest corner of Subsite 23 of the Habitat Restoration Area. Subsite 23 is located just south of the southernmost east-west paved roadway in the Habitat Restoration Area. (Refer to subsection 4.11.8, *Mitigation Measures*, below.)

Since the mitigation measures would be implemented and in effect prior to the installation of the replacement navigational aids along with any salvaged plants and El Segundo blue butterfly larvae, FAA has determined that the conversion would not result in an adverse impact to the federally listed El Segundo blue butterfly. The conclusion of the formal Section 7 consultation with the USFWS is a Biological Opinion. FAA and LAWA have included the USFWS' Biological Opinion in the Final EIS/EIR as Appendix F-E.

Implementation of Alternative D would result in the conversion of occupied habitat that would not occur under the No Action/No Project Alternative. As such, the potential for impacts to the El Segundo blue butterfly under Alternative D would be greater than under the No Action/No Project Alternative. Under the No Action/No Project Alternative, there would be no changes to navigational aids; therefore, no impacts to El Segundo blue butterfly habitat would occur.

As discussed for Alternatives A, B, and C, analysis of the potential effects of jet exhaust emissions has determined that there would be no significant impact to the El Segundo blue butterfly. Impacts to the El Segundo blue butterfly from increases in light would be similar to those for the other build alternatives. As with those alternatives, because the El Segundo blue butterfly is a diurnal species, does not exhibit flight-to-light behavior, and remains perched around the coast buckwheat foodplant at night, the anticipated increase in light levels under Alternative D would not result in significant impacts to the El Segundo blue butterfly.

Compared to the No Action/No Project Alternative, under Alternative D, the El Segundo blue butterfly would be exposed to slightly greater air and light emissions. However, this increased exposure would not affect the continued existence of the species.

Construction activities, including staging and stockpiling of materials proximal to the Habitat Restoration Area, have the potential to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly. Under this alternative, Mitigation Measures MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D), and MM-BC-1, Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D), would reduce impacts to a level less than significant.

Unlike the No Action/No Project Alternative, in which construction activities are not anticipated to result in deposition of fugitive dust within occupied habitat of the El Segundo blue butterfly, Alternative D has the potential to result in the deposition of fugitive dust as described above. However, mitigation measures are anticipated to substantially reduce the threat of fugitive dust impacting the species.

American Peregrine Falcon

Alternative D would not affect the continued existence of the American peregrine falcon because this species does not occupy habitat in the proposed developed facilities, construction staging, or associated support activities areas. Moreover, there are no breeding sites within, or adjacent to, LAX.

Potential impacts to the American peregrine falcon from changes in light, air emissions, and noise are similar to those associated with Alternatives A, B, and C. As with those alternatives, the anticipated changes in light, air emissions, and noise levels under Alternative D would not result in significant impacts to the American peregrine falcon.

Compared to the No Action/No Project Alternative, under Alternative D, the American peregrine falcon would be exposed to slightly greater light, air emissions, and noise. However, this increased exposure would not jeopardize the continued existence of the species. The American peregrine falcon was de-listed as a federally endangered species on August 25, 1999; therefore, consultation did not need to be undertaken for this species with the USFWS.

4.11.7 Cumulative Impacts

Cumulative impacts to endangered and threatened species associated with the No Action/No Project Alternative and the four build alternatives, in combination with other past, present, and probable future projects, are discussed below. As discussed in subsection 4.11.3, *Affected Environment/Environmental Baseline*, there are ten federal- or state-listed species of flora and nine federal-or state-listed species of fauna that have the potential to occur within the Master Plan boundaries. Of these species, only three are present within the Master Plan boundaries; Riverside fairy shrimp, El Segundo blue butterfly, and American peregrine falcon. The Riverside fairy shrimp was determined present in 1.3 acres of jurisdictional wetlands in the AOA. The El Segundo blue butterfly occupies a 150.2-acre site within the 307 acres of Habitat Restoration Area immediately west of LAX that constitutes one of the last remaining vestiges of the extensive California coastal sand dunes. The American peregrine falcon uses areas within the Master Plan boundaries for foraging; however, no breeding/nesting sites were identified within the Master Plan boundaries.

Areas surrounding the study area consist largely of developed areas with little or no habitat value. Residential, commercial, and industrial development in the coastal zone has eliminated the majority of natural communities historically present. However, two biologically significant open areas, the Ballona Wetlands and the Ballona Bluffs, remain extant within the vicinity of the study area.

4.11.7.1 No Action/No Project Alternative

Riverside Fairy Shrimp

Under the No Action/No Project Alternative, 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp would remain within the AOA located to the east of Pershing Drive and would be subject to continued operations and maintenance activities (removal of standing water and discing or mowing to manage vegetation) that would result in the loss of wetland habitat values and functions. As under baseline conditions, it is unlikely that the Riverside fairy shrimp would be able to successfully complete the adult phase of its lifecycle in these locations. Therefore, this alternative would not contribute to any cumulative loss of habitat for this species. In 2000, the USFWS proposed the designation of critical habitat for Riverside fairy shrimp.[593] As described in **Table F4.11-3**, areas within Los Angeles County proposed as designated critical habitat include the Cruzan Mesa (approximately 39 miles from LAX) within the Transverse Range Critical Habitat Unit, and the Los Angeles coastal prairie unit (an approximately 12-acre area within and adjacent to the area referred to by the USFWS as the El Segundo Blue Butterfly Preserve (El Segundo Blue Butterfly Habitat Restoration Area) within the Los Angeles Basin-Orange Critical Habitat Unit). Notwithstanding that the critical habitat designation was subsequently eliminated based on a federal court ruling, the area east of Pershing Drive was not designated as critical habitat due to the extensive alteration of the habitat that has occurred.[594]

[593] 50 CFR Part 17.

[594] 50 CFR Part 17.

The Playa Vista project currently proposes to develop 111 acres of disturbed/developed area that was previously used in conjunction with Hughes Aircraft operation. The Playa Vista Project was reduced in November 2002 from its original size and intensity, which, as currently proposed, no longer includes any developments or improvements within the Ballona Wetlands. The Catellus Residential Group has proposed to develop 120 single-family homes on 44 acres on the Ballona Bluffs. Neither the Ballona Wetlands nor the Ballona Bluffs have been identified as sites which support Riverside fairy shrimp. However, proposed development of the Ballona Bluffs could eliminate potential sites suitable for habitat restoration.

El Segundo Blue Butterfly

Under the No Action/No Project Alternative, no impacts on the El Segundo blue butterfly would occur. Therefore, this alternative would not contribute to any cumulative impacts to the El Segundo blue butterfly.

The Playa Vista project currently proposes to develop 111 acres of disturbed/developed area that was previously used in conjunction with Hughes Aircraft. The Playa Vista Project was reduced in November 2002 from its original size and intensity, which, as currently proposed, no longer includes any developments or improvements within the Ballona Wetlands. The Catellus Residential Group has proposed to develop 120 single-family homes on 44 acres on the Ballona Bluffs. The Playa Vista project will not impact a 6-acre dune fragment along the southwestern perimeter of the Ballona Wetlands. The site has historically been known to support the El Segundo Blue (a single male was observed on the Ballona Wetlands dunes in 1985).[595] The site has been designated within the Ballona Recovery Unit in the El Segundo Blue Butterfly (*Euphilotes battoides allyni*) Recovery Plan. The Ballona Bluffs have not been identified as a site with habitat suitable to support the El Segundo blue butterfly.

Since the No Action/No Project Alternative would not have any impacts on the El Segundo blue butterfly, it would not contribute to any cumulative impacts to the species caused by these or other projects.

American Peregrine Falcon

Under the No Action/No Project Alternative, no impacts to the American peregrine falcon would occur. Therefore, this alternative would not contribute to any cumulative impacts to the American peregrine falcon.

The Playa Vista project currently proposes to develop 111 acres of disturbed/developed area that was previously used in conjunction with Hughes Aircraft operation. The Playa Vista Project was reduced in November 2002 from its original size and intensity, which, as currently proposed, no longer includes any developments or improvements within the Ballona Wetlands. The Catellus Residential Group has proposed to develop 120 single-family homes on 44 acres on the Ballona Bluffs. This species potentially flies over and forages within these areas; however, it is not expected to breed at either of these sites due to lack of tall buildings and sheer cliffs. Proposed development of these sites could contribute to cumulative loss of foraging sites for the American peregrine falcon.

Since the No Action/No Project Alternative would not have any impacts on the American peregrine falcon, it would not contribute to cumulative impacts to the species caused by these or other projects.

4.11.7.2 Alternatives A, B, and C

Riverside Fairy Shrimp

Under Alternatives A, B, and C, an impact to degraded wetland habitat containing embedded cysts of Riverside fairy shrimp located to the east of Pershing Drive is anticipated to occur. This impact would result from construction and realignment of runways, and construction of new airport facilities on the western airfield. The USFWS in its Proposed Designation of Critical Habitat for the Riverside Fairy Shrimp[596] did not designate the area east of Pershing Drive as critical habitat due to the extensive alteration of the habitat that has occurred. The loss of 1.3 acres of degraded habitat occupied by

595 U.S. Fish and Wildlife Service, Recovery Plan for the El Segundo Blue Butterfly (*Euphilotes battoides allyni)*. Portland, Oregon, 1998.

596 50 CFR Part 17.

Riverside fairy shrimp cysts would contribute to cumulative impacts on the survival and recovery of this species if other populations elsewhere are extirpated.

As described for Riverside fairy shrimp in subsection 4.11.7.1, *No Action/No Project Alternative*, neither the Ballona Wetlands nor the Ballona Bluffs have been identified as sites which support Riverside fairy shrimp. However, proposed development of these sites (the Ballona Bluffs) could eliminate potential sites suitable for habitat restoration.

Since 1.3 acres of LAX property occupied by Riverside fairy shrimp cysts does not currently support their full life cycle, loss of this site would not contribute to a cumulative loss of habitat for this species.

El Segundo Blue Butterfly

Under Alternative A, the potential loss of 8,514 square feet (0.20 acre) of occupied habitat due to the installation of navigational aids and associated service roads would contribute to a cumulative impact to the El Segundo blue butterfly.

Under Alternative B, the potential loss of 2,316 square feet (0.05 acre) of occupied habitat of the El Segundo blue butterfly due to the installation of navigational aids and associated service roads would contribute to a cumulative impact to the El Segundo blue butterfly.

In the immediate project area, the Playa Vista and Catellus Residential Group projects would not affect habitat of the El Segundo blue butterfly. Nevertheless, the impacts associated with Alternatives A and B, combined with past projects that have reduced occupied or potential habitat for this species, would contribute to a cumulative impact to the El Segundo blue butterfly. Mitigation for impacts associated with Alternatives A and B are provided in subsection 4.11.8, *Mitigation Measures*, below.

Under Alternative C, no impacts to El Segundo blue butterfly would occur; therefore, this alternative would not contribute to cumulative impacts to the El Segundo blue butterfly.

In summary, as described for the No Action/No Project Alternative in subsection 4.11.7.1, other major projects proposed in the area would not affect habitat of the El Segundo blue butterfly. Although other past, present, and probable future projects may reduce occupied or potential habitat for this species, Alternative C would not contribute to a cumulative loss of habitat or cumulative impacts to the species since they would not affect occupied or potential habitat. Under Alternatives A and B, the loss of 8,514 square feet and 2,316 square feet, respectively, of occupied habitat could contribute to cumulative impacts to this species.

American Peregrine Falcon

Under Alternatives A, B, and C, no impacts to the American peregrine falcon would occur. Therefore, these alternatives would not contribute to cumulative impacts to the American peregrine falcon.

As described under American peregrine falcon in subsection 4.11.7.1, *No Action/No Project Alternative,* the Playa Vista and Catellus Residential Group projects could contribute to cumulative loss of foraging sites for the American peregrine falcon. The American peregrine falcon potentially flies over and forages within these areas; however, it is not expected to breed at either of the sites due to lack of sheer cliffs. The American peregrine falcon was de-listed as a federally endangered species on August 25, 1999; therefore, consultation did not need to be undertaken for this species with the USFWS.

Since Alternatives A, B, and C would not have impacts on the American peregrine falcon, they would not contribute to cumulative impacts to the species caused by these or other projects.

4.11.7.3 Alternative D - Enhanced Safety and Security Plan

Riverside Fairy Shrimp

Under Alternative D, a significant impact to degraded wetland habitat containing embedded cysts of Riverside fairy shrimp located to the east of Pershing Drive is anticipated. This impact would result from habitat modification associated with construction staging activities, development of the employee parking garage on the west side of LAX, and continued AOA operations and maintenance activities. Since the 1.3 acres of LAX property occupied by Riverside fairy shrimp cysts does not currently support their full life cycle, loss of this site would not contribute to a cumulative loss of habitat for this species. Mitigation for

project-related impacts to Riverside fairy shrimp cysts are provided in subsection 4.11.8, *Mitigation Measures,* below.

The Playa Vista project and the Catellus Residential Group Project would not contribute to cumulative impacts to Riverside fairy shrimp as neither the Ballona Wetlands nor the Ballona Bluffs have been identified as sites that support Riverside fairy shrimp; notwithstanding the Playa Vista project was reduced in 2002 and, as currently proposed, no longer proposes any development or improvements in the Ballona Wetlands. However, proposed development of the Ballona Bluffs could eliminate potential sites suitable for habitat restoration.

El Segundo Blue Butterfly

Under Alternative D, the potential loss of 10,597 square feet (0.24 acre) of occupied habitat of the El Segundo blue butterfly would result from the installation of navigational aids and associated service roads. In the immediate project area, the Playa Vista and Catellus Residential Group projects would not affect habitat of the El Segundo blue butterfly. Nevertheless, the impact associated with Alternative D, combined with past projects that have reduced occupied or potential habitat for this species, would contribute to a cumulative impact to the El Segundo blue butterfly. Mitigation for impacts associated with Alternative D is provided in subsection 4.11.8, *Mitigation Measures*, below.

American Peregrine Falcon

Under Alternative D, no impacts to the American peregrine falcon would occur. Therefore, this alternative would not contribute to cumulative impacts to the American peregrine falcon.

4.11.8 Mitigation Measures

- **MM-ET-1. Riverside Fairy Shrimp Habitat Restoration (Alternatives A, B, C, and D).**

  LAWA or its designee shall undertake mitigation for impacts to 1.3 acres of degraded wetland habitat containing embedded cysts of Riverside fairy shrimp under Alternatives A, B, and C. Mitigation shall include the creation of vernal pool habitat at a mitigation ratio of not more than 3:1 at a suitable alternate location(s).

  Under Alternative D, LAWA or its designee shall undertake mitigation for direct impacts to 0.04 acre (1,853 square feet) of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp and potential indirect impacts to 1.26 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp. As specified in the Biological Opinion, soils containing embedded cysts of the Riverside fairy shrimp in 0.04 acres (1,853 square feet) shall be salvaged and relocated to property owned by the FAA and designated a habitat preserve at the former Marine Corps Air Station at El Toro, or comparable site(s) approved by the USFWS at a ratio of not more than 3:1. The 1.26 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp retained on the LAX airfield shall be avoided through the implementation of construction avoidance measures, including Best Management Practices (BMPs), and the creation of a buffer area around the occupied, degraded areas. The FAA shall oversee the development of a Vernal Pool Creation, Maintenance, and Monitoring Plan for the embedded cysts to ensure that Alternative D would be consistent with the recommendations provided in the *Recovery Plan for Vernal Pools of Southern California*[597] and with the conservation measures provided in the Biological Opinion. As specified in the Biological Opinion, LAWA shall be responsible for all costs identified in the Vernal Pool Creation, Maintenance, and Monitoring Plan related to off-site relocation of soils containing cysts of the Riverside fairy shrimp, including entitlement for use and designation for long-term conservation, site preparation, monitoring, and maintenance.

  Ongoing Section 7 consultation among LAWA, FAA, and USFWS has been necessary to identify suitable mitigation sites pursuant to Section 7 of the Endangered Species Act. As a result, extensive research has been conducted to identify sites that historically or currently support vernal pools or vernal pool- associated species in southern California. Information was gathered from the *Recovery Plan for Vernal Pools of Southern California*, the California Natural Diversity Database (CNDDB), and

[597] U.S. Fish and Wildlife Service, Vernal Pools of Southern California Recovery Plan, U.S. Department of the Interior, Fish and Wildlife Service, Region One, Portland, Oregon, 1998.

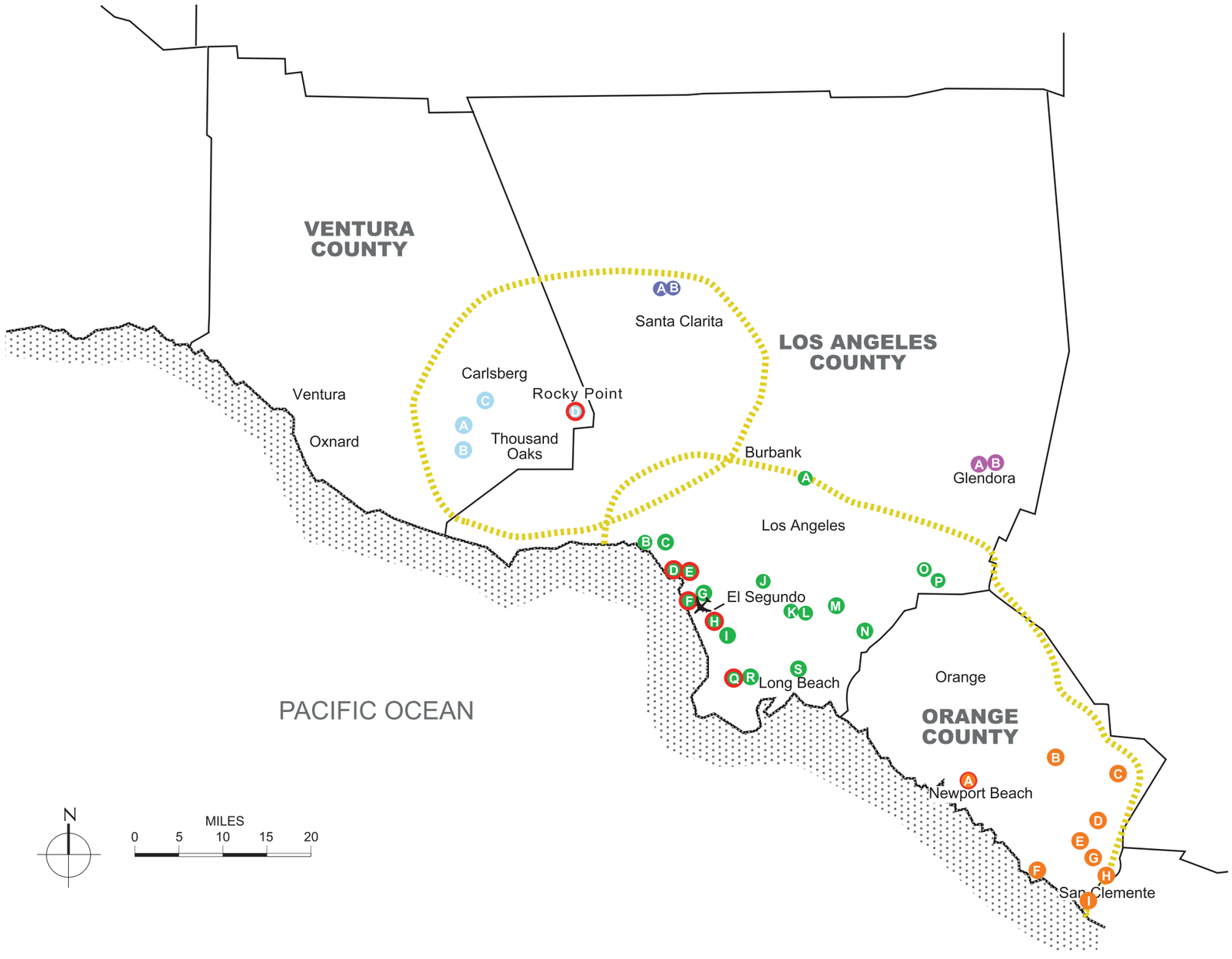
coordination with recognized experts in the field. This information was augmented through a review of geologic maps of the coastal portions of Los Angeles and topographic quadrangles for locations known to have historically supported vernal pools. A total of 35 potential relocation sites were identified for further site characterization (**Figure F4.11-7**, Vernal Pool Restoration Opportunities Considered).

Each of the 35 sites was visited and inspected by teams of biologists and environmental analysts. Analysis of site topography, historic or extant vernal pools, historic or extant vernal pool species, drainage features, climate, and parent material (from regional geologic maps) was conducted. Hazardous materials databases were consulted for information on known potential sources of contamination for those sites. In-field soil texture analysis was conducted, followed by laboratory analysis of collected soil samples. Land use at the site and surrounding the site was characterized, plant communities were characterized, and the presence or absence of suitable hydrology was determined.

Prioritization of the potential sites for the relocation of soils containing cysts of the Riverside fairy shrimp was based solely on the presence of physical and biological characteristics provided in the *Recovery Plan for Vernal Pools of Southern California* and did not reflect planning constraints indicated by current land uses. LAWA and FAA, in consultation with the USFWS, recommended the relocation of cysts to alternate locations within the Los Angeles County portion of the Los Angeles Basin-Orange Management Area for vernal pools (**Figure F4.11-7)**. The use of these sites within Los Angeles County was determined infeasible and LAWA undertook evaluation of the feasibility of vernal pools or vernal pool complexes located in the Orange County portion of the Los Angeles Basin-Orange Management Area and the Ventura County portion of the Transverse Management Area. As a result of consultation with the USFWS, property owned by the FAA and designated a habitat preserve at the former Marine Corps Air Station at El Toro was identified as a mitigation site for the receipt of soils containing embedded cysts of the Riverside fairy shrimp, or an alternate comparable site(s).

Once a suitable mitigation site(s) is secured, vernal pool creation shall be undertaken by LAWA or its designee, in consultation with the USFWS. Methods of vernal pool creation may vary depending on the physical and biological characteristics of the selected sites. LAWA or its designee, in conjunction with the USFWS and a qualified wildlife biologist, shall develop a program to monitor the progress of vernal pool creation. LAWA or its designee shall undertake the relocation of soils containing embedded cysts of Riverside fairy shrimp from the western portion of the airfield to the vernal pool mitigation sites. Soils containing embedded cysts of the Riverside fairy shrimp shall not be salvaged and translocated until the created vernal pool(s) is established and has met certain success criteria as described in detail below and included in the 12 conservation measures within the Biological Opinion.

Under Alternative D, soils containing embedded cysts of the Riverside fairy shrimp from EW001 and EW002 (**Figure F4.11-8**, North Area Ephemerally Wetted Pools and Buffer Areas) shall be salvaged and translocated to created vernal pool habitat on property owned by the FAA and designated as a habitat preserve at the former Marine Corps Air Station at El Toro (El Toro), or another site as approved by Carlsbad Fish and Wildlife Office (CFWO). The created vernal pool(s) shall contain a minimum of 5,559 square feet of vernal pool surface area (as determined by a 3:1 mitigation ratio). Soils containing embedded cysts of the Riverside fairy shrimp from EW001 and EW002 will not be salvaged and translocated from LAX until the created vernal pool(s) is established and has met certain success criteria specified in the Biological Opinion. As a contingency measure, if the specified success criteria for the created vernal pools have not been attained within six years of project authorization, in spite of a good faith effort on the part of LAWA, soils containing embedded cysts of the Riverside fairy shrimp will be salvaged from EW001 and EW002 and placed in appropriate storage at the San Diego Zoological Society's Center for the Reproduction of Endangered Species. Soils containing embedded cysts of the Riverside fairy shrimp from EW006 (**Figure F4.11-9**, South Area Ephemerally Wetted Pools and Buffer Areas) shall be salvaged and stored prior to



LEGEND

- County Boundary
- Vernal Pool Management Areas
- Los Angeles International Airport

Los Angeles Basin-Orange (within Los Angeles County)

- A Burbank
- B Santa Monica
- C Soliders House
- D Ballona Marsh
- E Ballona Bluff
- F El Segundo Dunes
- G Airfield Operations Area
- H El Segundo
- I Redondo Beach
- J Hyde Park
- K Gardena
- L Rosecrans
- M Downey
- N Lakewood
- O Whittier
- P La Habra
- Q Madrona Marsh
- R Henrietta Basin
- S Bixby Knolls

Los Angeles Basin-Orange (within Orange County)

- A Fairview Park
- B Irvine
- C Saddleback Meadows
- D Chiquita Ridge
- E Laguna Lakes
- F Dana Point
- G San Mateo
- H Lomas Ridge
- I San Clemente

Transverse (within Los Angeles County)

- A Cruzan Mesa
- B Southern Cruzan Mesa

Transverse (within Ventura County)

- A Thousand Oaks(a)
- B Thousand Oaks(b)
- C Carlsberg
- D Rocky Point

Other Los Angeles County Locations

- A Glendora
- B San Dimas

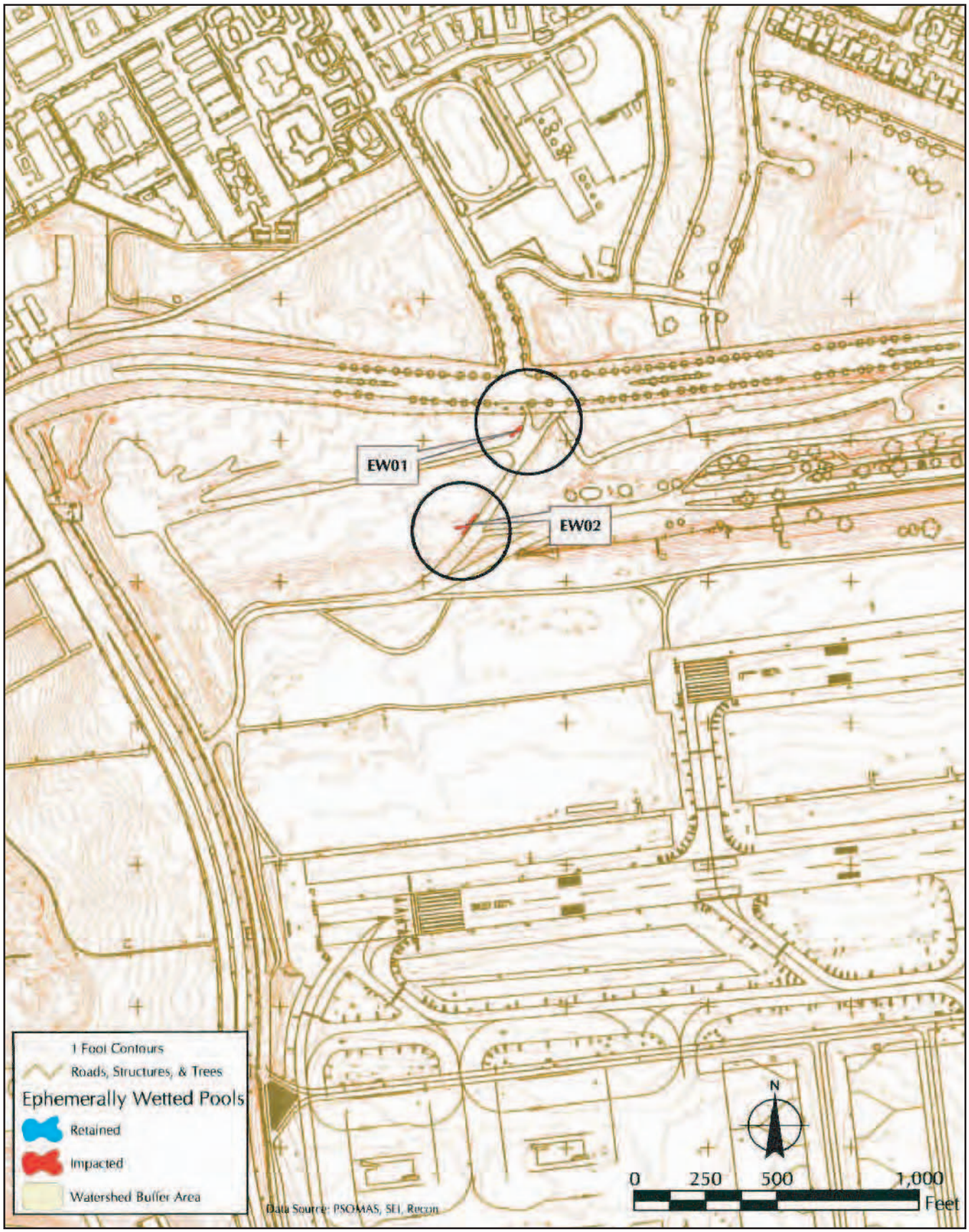
Sites Considered in Feasibility Assessment for Conservation of Riverside Fairy Shrimp

- D Ballona Marsh
- E Ballona Bluff
- F El Segundo Dunes
- H El Segundo
- Q Madrona Marsh
- D Rocky Point
- A Fairview Park

LAX Master Plan Final EIS/EIR

Vernal Pool Restoration Opportunities Considered

Figure
F4.11-7



LAX Master Plan Final EIS/EIR	North Area Ephemerally Wetted Pools and Buffer Areas	Figure F4.11-8

LAX Master Plan Final EIS/EIR	**South Area Ephemerally Wetted Pools and Buffer Areas**	Figure **F4.11-9**

implementation of Alternative D and shall be translocated to the created vernal pool(s) with EW001 and EW002 once the success criteria are met. Soils containing embedded cysts of the Riverside fairy shrimp from EW006 shall be placed in appropriate storage at the San Diego Zoological Society's Center for the Reproduction of Endangered Species. Until soils bearing embedded cysts of the Riverside fairy shrimp have been appropriately salvaged and stored, or vernal pool creation has been completed and embedded cysts have been appropriately salvaged and translocated to the created vernal pool(s), habitat-altering activities associated with Alternative D in these areas shall be avoided.

Under Alternative D, LAWA shall be responsible for implementing construction avoidance measures for the six areas (EW009, EW012, EW013, EW014, EW015, and EW016) that would not be directly affected, as indicated in the Biological Opinion. Construction avoidance measures shall include implementation of construction avoidance measures, including BMPs required pursuant to the Standard Urban Stormwater Mitigation Plan and the LAX Stormwater Pollution Prevention Plan, and establishment of a buffer area around the six occupied areas retained on the LAX airfield **(Figure 4.11-9)**. In addition, LAX operations personnel with vehicular access to the airfield operations area shall be apprised of these off-limit buffer areas annually. The construction avoidance measures shall be periodically inspected by LAWA, or its designee throughout construction to ensure the efficacy of the BMPs, and corrective action shall be undertaken as necessary to ensure that construction and operation of airport facilities do not result in adverse impacts to surface water quality.

Soils containing embedded cysts of the Riverside fairy shrimp will not be translocated to the created vernal pool(s) until the vernal pool(s) is established and has met certain success criteria specified in the Biological Opinion. Success criteria for the created vernal pool(s) includes holding water for a minimum of 60 days, having less than 10 percent absolute cover exotic herbaceous species in the pool(s), having less than 20 percent absolute cover of exotic herbaceous species within 300 feet of the area from limits of the pool, removal of all non-herbaceous plant species within the pool and 300 feet from the pool annually, and provide suitable water quality for Riverside fairy shrimp. Duration of inundation, exotic species removal, and water quality analyses may be undertaken within the first year after vernal pool creation. The performance criteria for percent absolute cover of exotic herbaceous species within 300 feet of the area from limits of the pool may be redesignated by mutual agreement of FAA, LAWA, and USFWS.

Upon meeting success criteria and approval from the USFWS, soils containing embedded cysts of the Riverside fairy shrimp may be brought to the pool(s). LAWA shall make every effort to collect all cyst-bearing soils from the entire surface area of EW001, EW002, and EW006, however it is expected that some small number of undetected individual cysts will remain in the soil. Soil containing the cysts shall be salvaged and translocated during the dry season to minimize damage to the cysts during transport. The soil shall be collected using a hand trowel, removed in chucks, and kept out of direct sunlight to ensure viability. Soil shall be stored in properly labeled boxes or bags with adequate ventilation. The soils shall then be deposited and spread out in small basins or pool-like areas of similar size without active mechanical compaction to minimize potential damage to the cysts. Any potential indirect environmental impacts resulting from vernal pool construction activities shall be compliant with BMPs and terms and conditions stipulated by the permitting agencies.

LAWA or its designee, in conjunction with the USFWS and a qualified wildlife biologist, shall also develop a program to monitor created habitat for the presence of Riverside fairy shrimp as described in the Vernal Pool Creation, Maintenance, and Monitoring Plan. As specified in the Biological Opinion, LAWA shall be responsible for implementing a monitoring and reporting program to demonstrate successful achievement of the performance standards for off-site relocation over a 25-year period:

- Monthly during the first year, following relocation of soils containing embedded cysts of the Riverside fairy shrimp
- Quarterly in the second, third, and fourth years, following relocation of soils containing embedded cysts of the Riverside fairy shrimp
- Biannually in the fifth, seventh, and ninth years, following relocation of soils containing embedded cysts of the Riverside fairy shrimp

- Annually in the tenth, fifteenth, twentieth, and twenty-fifth years, following relocation of soils containing embedded cysts of the Riverside fairy shrimp

LAWA shall provide the USFWS with annual monitoring reports as specified in the Vernal Pool Creation, Maintenance, and Monitoring Plan. The monitoring report, due on September 1 of each specified monitoring year, shall provide information regarding the implementation of the vernal pool creation, restoration, and maintenance activities. The yearly report shall also discuss the effectiveness of the project as it pertains to the existing condition of the created vernal pool(s) and Riverside fairy shrimp population. To measure the effectiveness of the created vernal pool(s), the FAA and LAWA shall work with the USFWS to develop long-term goals and objectives as part of their habitat creation plan.

Lastly, LAWA shall coordinate with the USFWS to create educational materials on the Riverside fairy shrimp for integration into LAWA's public outreach program. Educational opportunities regarding federally endangered Riverside fairy shrimp include public outreach in the form of an educational brochure made available through the LAWA Public Affairs Department, information provided on LAWA's Web site describing the ephemeral habitat required to support the species, and LAWA's outreach to local schools.

Implementation of Mitigation Measure MM-ET-1 would provide for replacement of 0.04 acres (1,853 square feet) of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp, with estimated habitat value of 0.15; with 0.12 acres (5,559 square feet) of created vernal pool habitat with an estimated habitat value of 0.75 (see **Table F4.11-5**, Mitigation Land Evaluation Procedure for the Mitigation Site). By relocating embedded cysts to habitat restoration sites that are managed for the existence of the species, the opportunity for embedded cysts to complete the adult phase of their life cycle would be enhanced.

Table F4.11-5

Mitigation Land Evaluation Procedure for the Mitigation Site

	Habitat Reference Sites	Riverside Fairy Shrimp Wetland Habitat Mitigation Site
Topography/Hydrology	**0.20**	**0.20**
Mound-Depression Microrelief	0.05	0.05
Native Soils w/Slope <10%	0.05	0.05
Areas w/Period of Inundation ≥30 days	0.05	0.05
Summer Desiccation	0.05	0.05
Flora	**0.20**	**0.20**
>10% Vegetative Cover	0.05	0.05
Native Grasses >10%	0.05	0.05
Vernal Pool Associated Species	0.05	0.05
Listed Vernal Pool Associated Species	0.05	0.05
Fauna	**0.20**	**0.15**
Dominated by Native Fauna (reproducing)	0.05	0.05
Grassland-Associated Species (reproducing)	0.05	0.05
Sensitive Vernal Pool-Associated Species (reproducing)	0.05	0.05
Listed Vernal Pool-Associated Species (reproducing)	0.05	0.00
Ecosystem Functional Integrity	**0.40**	**0.20**
Contiguous w/Wetland and State-designated Sensitive Terrestrial Habitat	0.10	0.00
Under Regulatory Conservation	0.10	0.10
Variety of Pollinator/Dispersal Mechanisms Present (Wind, Wildlife)	0.10	0.10
Contiguous Native Habitat >40 acres	0.10	0.00
Total Habitat Value (HV)	**1.00**	**0.75**

Source: Sapphos Environmental, Inc. 2003.

- **MM-ET-2. El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternatives A and B).**

LAWA or its designee shall take all necessary steps to avoid the flight season of the El Segundo blue butterfly (June 14 - September 30) when undertaking installation of navigational aids and associated service roads proposed under Master Plan Alternatives A and B within habitat occupied by the El

Segundo blue butterfly. Installation of navigational aids within the Habitat Restoration Area should be required to take place between October 1 and May 31. The number of coast buckwheat plants impacted shall be mitigated at a ratio of 1:1, or as otherwise determined through Section 7 consultation with the USFWS. Coast buckwheat shall be planted a minimum of three years prior to the impact, not only to allow for establishment of the plants, but also to ensure that the plants are mature enough to bloom.[598] The plantings of coast buckwheat shall be located within the southwest corner of subsite 23 of the Habitat Restoration Area, as depicted in **Figure F4.11-10**, Mitigation Site for El Segundo Blue Butterfly Relocation. Mitigation plantings for Alternative A shall encompass 8,514 square feet (0.20 acre). Mitigation plantings for Alternative B shall encompass 2,316 square feet (0.05 acre). This area shall be the designated mitigation site for planting coast buckwheat and the site to which El Segundo blue butterfly pupae shall be relocated. Prior to navigational aid installation, a permitted and qualified biologist shall salvage El Segundo blue butterfly larvae in coordination with the USFWS to minimize impacts to the butterfly. Based on LAWA's restoration experience within the Habitat Restoration Area, occupation of restored habitat can occur within two to three years of restoration efforts. Therefore, there would be no net loss in acres or value of occupied habitat.

- **MM-ET-3. El Segundo Blue Butterfly Conservation: Dust Control (Alternatives A, B, C, and D).**

  To reduce the transport of fugitive dust particles related to construction activities, soil stabilization, watering or other dust control measures, as feasible and appropriate, shall be implemented with a goal to reduce fugitive dust emissions by 90 to 95 percent during construction activities within 2,000 feet of the El Segundo Blue Butterfly Habitat Restoration Area. In addition, to the extent feasible, no grading or stockpiling for construction activities should take place within 100 feet of occupied habitat of the El Segundo blue butterfly.

- **MM-ET-4. El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D).**

  LAWA or its designee shall take all necessary steps to avoid the flight season of the El Segundo blue butterfly (June 14 - September 30) when undertaking installation of navigational aids and associated service roads proposed under Master Plan Alternative D within habitat occupied by the El Segundo blue butterfly. Installation of navigational aids within the Habitat Restoration Area should be required to take place between October 1st and May 31st. In conformance with the Biological Opinion, activities associated with navigational aid development shall be limited to the existing roads and proposed impacts areas as depicted in this Final EIS/EIR. Coast buckwheat shall be planted a minimum of three years prior to the impact, not only to allow for establishment of the plants, but also to ensure that the plants are mature enough to bloom.[599] The plantings of coast buckwheat shall be located within the southwest corner of subsite 23 of the Habitat Restoration Area, as depicted in **Figure F4.11-10,** and shall encompass 1.25 acres in conformance with the Biological Opinion. Coast buckwheat plants will be planted at an initial density of 200 plants per acre to ensure the long-term planting density target (130 plants per acre). Coast buckwheat plants will be placed in clusters or groupings based on microtopographic features present within subsite 23 to better support the ESB, which is known to prefer large clusters of plants for nectaring and shelter. As possible, depending on the location and condition of individual plants, FAA and LAWA shall salvage existing coast buckwheat plants and any larvae on the plant or pupae in the soil below the plant that would be removed to accommodate the replacement navigational aids to further conserve this species. These plants shall be salvaged immediately prior to the installation of the replacement navigational aids outside of the butterfly flight season. These salvaged plants shall be transported in a suitable container and replanted after the onset of winter rains in subsite 23 near the area restored as described in MM-BC-13. This area shall be the designated mitigation site for planting coast buckwheat and the site to which El Segundo blue butterfly pupae shall be relocated. Gathering of coast buckwheat seed shall take place from September 15 through June 1. Propagation and planting methodologies successfully employed by LAWA during 1984 through 1994 restoration efforts shall be employed for propagation of additional coast buckwheat plants. An existing irrigation system proximal to subsite 23 will be used

[598] The time period of three years was determined from coast buckwheat restoration efforts previously undertaken by LAWA within the Habitat Restoration Area of the Los Angeles/El Segundo Dunes.

[599] The time period of three years was determined from coast buckwheat restoration efforts previously undertaken by LAWA within the Habitat Restoration Area of the Los Angeles/El Segundo Dunes.

to increase the success of the restoration effort. Prior to navigational aid installation, a permitted and qualified biologist shall salvage El Segundo blue butterfly larvae in coordination with the USFWS in order to minimize impacts to the butterfly. Based on LAWA's restoration experience within the Habitat Restoration Area, occupation of restored habitat can occur within two to three years of restoration efforts. Therefore, there would be no net loss in acres or value of occupied habitat. Additionally, after the navigational aid system is in place and during the first subsequent flight season of the El Segundo blue butterfly, LAWA shall document El Segundo blue butterfly behavior with respect to the lighting system and submit a monitoring report to the USFWS.

Lastly, LAWA shall coordinate with the USFWS to create educational materials on the El Segundo blue butterfly for integration into LAWA's public outreach program.

4.11.9 Level of Significance After Mitigation

4.11.9.1 Alternatives A and B

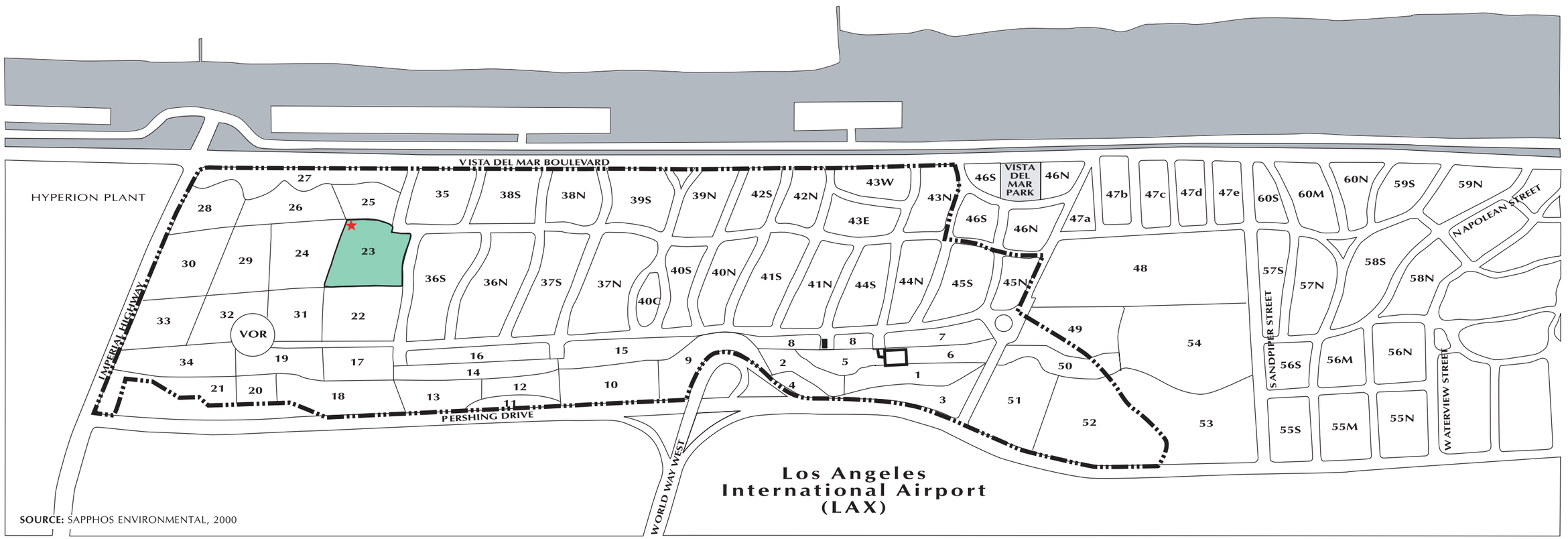
Implementation of Mitigation Measures MM-ET-1, MM-ET-2, and MM-ET-3 would reduce impacts to endangered and threatened species to a level that is less than significant.

4.11.9.2 Alternative C - No Additional Runway

Implementation of Mitigation Measures MM-ET-1 and MM-ET-3 would reduce impacts to endangered and threatened species to a level that is less than significant.

4.11.9.3 Alternative D - Enhanced Safety and Security Plan

Implementation of Mitigation Measures MM-ET-1, MM-ET-3, and MM-ET-4 would reduce impacts to endangered and threatened species to a level that is less than significant.



LEGEND

- Habitat Restoration Area Boundary
- Remote Communications Site
- Very High Omni Range Navigation Beacon
- Trailer
- Subsite 23
- Mitigation site

Scale: 1" = 750'

0' 375' 750' 1500'

LAX Master Plan Final EIS/EIR	**Mitigation Site for El Segundo Blue Butterfly Relocation**	Figure **F4.11-10**