

***Final Environmental Impact Report
(Final EIR)***

[State Clearinghouse No. 1997061047]

for

***Los Angeles International Airport (LAX)
Proposed Master Plan Improvements***

Second Addendum

City of Los Angeles

December 2004

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1. INTRODUCTION

1.1 Background and Purpose of This Second Addendum to the Final Environmental Impact Report

This document represents the Second Addendum to the Final Environmental Impact Report (EIR) for the proposed Los Angeles International Airport (LAX) Master Plan Improvements Project (Project). In April 2004, the City of Los Angeles (City) published the Final EIR for the proposed Project, in accordance with the requirements of the California Environmental Quality Act (CEQA). In September 2004, the City published an Addendum to the Final EIR to clarify and amplify upon the contents of the Final EIR. The information and analysis presented in the September Addendum addressed the following:

1. Additional discussion of environmental consequences related to the relocation plan/property acquisition, environmental justice, and air quality associated with the proposed Project;
2. Refinements to Alternative D;
3. A feasibility analysis of three "Alternative E" proposals; and
4. Refinements to the Environmental Action Plan.

The September Addendum also provided, through appendices: (1) additional comments on the Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) completed for the Project and responses to those comments, which were inadvertently not included with the Final EIR; and (2) a compilation of errata to the Final EIR. The September Addendum determined that, pursuant to Section 15088.5 of the State CEQA Guidelines, the information and analysis presented therein did not constitute "significant new information" that would meet the criteria for recirculation.

This Second Addendum presents additional information and analysis related to the proposed Project, based on information made available, and events occurring, subsequent to the publication of the Final EIR and the September Addendum. Similar to the September Addendum, this Second Addendum examines how the new information and analysis regarding the proposed Project relates to the Final EIR, and whether they constitute "significant new information" as defined in the State CEQA Guidelines. Specifically, Section 15088.5 of the State CEQA Guidelines states the following:

A lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification. As used in this section, the term 'information' can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement. 'Significant new information' requiring recirculation include, for example, a disclosure showing that:

- (1) A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
- (2) A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
- (3) A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project's proponents decline to adopt it.
- (4) The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. (*Mountain Lion Coalition v. Fish and Game Com.* (1989) 214 Cal.App.3d 1043).

1. Introduction

Recirculation is not required where the new information added to the EIR merely clarifies or amplifies or makes insignificant modifications in an adequate EIR.

1.2 Organization of the Second Addendum to the Final EIR

The information and analysis presented in this Second Addendum is organized as follows:

Chapter 1 - Introduction

This chapter provides a discussion of the background, purpose, and structure of the Second Addendum to the Final EIR.

Chapter 2 - Regulatory Agency Actions

As part of the formal review and decision-making process that commenced following publication of the Final EIR, a regulatory agency with authority over specific aspects of the Project, the California Coastal Commission, considered and acted upon the Project. Such agency is in addition to the City and the Federal Aviation Administration (FAA), which are the lead agencies with primary approval authority for the overall Project. Also, one federal regulatory agency, the United States Fish and Wildlife Service, issued a proposed rule that, if finalized and implemented, would affect how certain areas of LAX are managed. This chapter of the Second Addendum describes the actions, and information related thereto, of two regulatory agencies that recently considered the proposed Project. The actions associated with these two agencies include the following:

1. California Coastal Commission - Concurrence on November 17, 2004 with the Consistency Determination for Alternative D that was issued by the FAA in August 2004 and with the Consistency Certification for Alternative D that was issued by the City of Los Angeles - Los Angeles World Airports (LAWA) in August 2004.
2. United States Fish and Wildlife Service (USFWS) - Proposed rule on April 27, 2004 for the proposed designation of critical habitat for the Riverside fairy shrimp.

Chapter 2 of this Second Addendum describes the implications of the information and analysis associated with the above actions relative to the Final EIR.

Chapter 3 - Refinement to the Proposed Mitigation Program

Subsequent to the publication of the Final EIR in April 2004, certain refinements to the mitigation program proposed for the Project have been formulated by LAWA and FAA. Refinements are proposed for the following:

1. Soundproofing Program for Environmental Justice Communities. Based on FAA's review of aircraft noise impacts on low-income and minority communities (i.e., environmental justice communities), it is proposed that soundproofing for environmental justice communities anticipated to be impacted by the proposed relocation of any runway be made available prior to the commissioning of the relocated runway.

Chapter 3 of this Second Addendum describes the proposed mitigation program refinements, and the potential implications of such refinements relative to the Final EIR.

Appendices

Several appendices that support or relate to the information and analysis presented in Chapter 2 are provided at the back of the document. Such appendices include the following:

AD(2)-A1	Coastal Zone Management Act (CZMA) Consistency Determination by FAA
AD(2)-A2	Coastal Zone Management Act (CZMA) Consistency Certification by LAWA
AD(2)-A3	California Coastal Commission Staff Report
AD(2)-A4	Los Angeles/El Segundo Dunes Habitat Restoration Plan
AD(2)-B	Errata to the Final EIR

2. REGULATORY AGENCY ACTIONS

Following publication of the Final EIR, certain actions were taken by two regulatory agencies that, in one case, directly pertained to the proposed Project, and, in the other case, indirectly related to the proposed Project. This chapter describes the actions, and information related thereto, of two regulatory agencies that recently considered the proposed Project. Those agencies and actions include the following:

1. California Coastal Commission - Concurrence on November 17, 2004 with the Consistency Determination for Alternative D that was issued by the FAA in August 2004 and with the Consistency Certification for Alternative D that was issued by the City of Los Angeles - Los Angeles World Airports (LAWA) in August 2004.
2. United States Fish and Wildlife Service (USFWS) - Proposed rule on April 27, 2004 for the proposed designation of critical habitat for the Riverside fairy shrimp.

The following sections describe the implications of the information and analysis associated with the above actions relative to the Final EIR.

2.1 California Coastal Commission

2.1.1 Background

Section 4.14, *Coastal Zone Management and Coastal Barriers*, of the Final EIR (subsection 4.14.4.2, *Federal Standards*), indicates that a coastal zone consistency finding, addressing project-related improvements occurring within the coastal zone, is required before the FAA can issue its Record of Decision. The FAA has since fulfilled that requirement through the issuance of a Coastal Consistency Determination in August 2004 that addressed impacts associated with the proposed relocation and improvement of existing navigational aids associated with Alternative D that would be located within the coastal zone. The content of the Consistency Determination is derived primarily from, and is consistent with, the information, analyses, and conclusions of the Final EIR relative to Alternative D. The Consistency Determination concluded that Alternative D is consistent to the maximum extent practicable with the California Coastal Management Program and the California Coastal Act. A copy of FAA's Consistency Determination is contained in Appendix AD(2)-A1.

In conjunction with the FAA's issuance of the Consistency Determination, a Coastal Consistency Certification was completed by LAWA in August 2004 to address the potential impacts to coastal resources that may occur from Alternative D project-related improvements other than those associated with the navigational aids, including improvements situated outside of the coastal zone. Similar to the Consistency Determination, the content of the Consistency Certification is derived primarily from, and is consistent with, the information, analyses, and conclusions of the Final EIR relative to Alternative D. The Consistency Certification concluded that Alternative D complies with the enforceable policies of the California Coastal Management Program and the California Coastal Act and will be conducted in a manner consistent therewith. A copy of LAWA's Consistency Certification is contained in Appendix AD(2)-A2.

In accordance with the requirements of the federal Coastal Zone Management Act of 1972, as amended, the Consistency Determination and the Consistency Certification were submitted to the California Coastal Commission for review and action relative to whether the Commission concurs with the Consistency Determination and the Consistency Certification. On November 17, 2004, the California Coastal Commission voted in concurrence with the Consistency Determination. The California Coastal Commission also voted in concurrence with the Consistency Certification, subject to a requirement that LAWA return to the Commission in the future to provide details regarding the hydrology and water quality management plan proposed to be developed in conjunction with implementation of the LAX Master Plan. A copy of the staff report providing the basis for the Commission's actions is contained in Appendix AD(2)-A3.

In conjunction with the California Coastal Commission's review of the Consistency Determination, further evaluation was given to the assessment of, and mitigation for, potential impacts occurring in the coastal zone, specifically as related to the proposed improvement and relocation of existing navigation aids. The following describes the nature and conclusions of that further evaluation.

2.1.2 Additional Information and Analysis Associated with Agency Action

2.1.2.1 Biological Resources

Section 4.14, *Coastal Zone Management and Coastal Resources*, of the Final EIR addresses direct impacts occurring within the coastal zone, which, for Alternative D, are limited to only those associated with the proposed improvement and relocation of existing navigational aids. Figure F4.14-8, Location of Proposed Navigational Aids - Alternative D, of the Final EIR shows the locations of the existing navigational aids that are proposed to be relocated southward in conjunction with the proposed relocation of Runway 6R/24L, and the locations of the new navigational aids that would be installed in conjunction with the proposed runway improvements. The impacts analysis completed for the proposed improvement and relocation of navigational aids accounted for the grading associated with installation of the new navigational aids. Such grading would impact a total of 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Los Angeles/El Segundo Dunes, including 33,334 square feet (0.77 acre) within the El Segundo Blue Butterfly Habitat Restoration Area. Mitigation Measure MM-BC-13 in Section 4.10, *Biotic Communities*, of the Final EIR provides for the mitigation of the impact to state-designated sensitive habitat through the restoration of 1.53 acres of replacement habitat (i.e., a 1:1 mitigation ratio), and Mitigation Measure MM-ET-4 in Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, provides for the mitigation of impacts occurring within the Habitat Restoration Area.

The impacts analysis completed for the Final EIR, which provided the basis for the Consistency Determination, assumed that the proposed relocation of existing navigational aids would involve the removal of the above-ground improvements (i.e., the towers, lights, antennae, etc.), but that the existing concrete foundations and footings would remain in-place. This assumption reflected the fact that the cost and level of construction activity, and the associated grading and surface disturbance, required for the removal of the existing foundations and footings would potentially exceed the benefits of simply leaving those improvements "as-is" (i.e., impacts to existing habitat surrounding each foundations would potentially exceed the small amount of existing concrete surface area that is removed). During the California Coastal Commission's review of the FAA Consistency Determination, the FAA, LAWA, and Commission staff subsequently agreed to an approach whereby existing foundations and footings would be removed if determined to be feasible using relatively small/lightweight construction equipment, and that the associated disturbed areas would be restored to the appropriate coastal dune plant community reflective of state-designated sensitive habitat. A total of approximately 1.4 acres is estimated to be impacted by grading associated with the removal of the subject foundations and footings, and would be subsequently revegetated. For those foundations and footings determined as being infeasible for removal (i.e., would require the use of large heavy construction equipment potentially resulting in substantial excavation disturbance), it is proposed that they would be covered in place with soils suitable for the revegetation described above.

The FAA, LAWA, and Commission staff also agreed to increase the mitigation ratio from 1:1 to 2:1 for impacts to the state-designated sensitive habitat. The additional amount of revegetation associated with increasing the mitigation ratio to 2:1 would occur within the boundary of the El Segundo Blue Butterfly Habitat Restoration Area. Additionally, it was agreed that the FAA will have lead responsibility for ensuring the implementation of the proposed habitat restoration, as well as for all other measures associated with mitigation of impacts associated with the proposed improvement and relocations of the navigational aids.

2.1.2.2 Cultural Resources

Section 4.9, *Historic/Architectural and Archaeological/Cultural and Paleontological Resources*, of the Final EIR addresses potential impacts to cultural resources, including potential impacts in the coastal zone. The cultural resources investigation completed in conjunction with the Final EIR did not identify any cultural resources at, or near, the locations of the proposed navigational aids improvements and relocations. The cultural resources investigation completed for the LAX Master Plan included a Section 106 Consultation, conducted in accordance with federal law. The mitigation program in the Final EIR includes measures for the assessment and appropriate treatment of cultural resources should they be encountered during implementation of the LAX Master Plan. Based on concerns expressed by a local Native American representative just prior to the California Coastal Commission meeting on November 17,

2004 regarding potential impacts to cultural resources, including the possibility of impacts to Native American remains, the FAA, LAWA, and Commission staff agreed to enhance the mitigation program proposed in the Final EIR regarding potential impacts to cultural resources that could be unexpectedly encountered during project implementation. A new mitigation measure was agreed to be added, which incorporates the provisions of several of the existing mitigation measures related to cultural resources, and tailors those provisions to specifically apply to the proposed improvement and relocation of navigational aids occurring within the coastal zone.

2.1.3 Relationship to Final EIR

2.1.3.1 Biological Resources

The information, analysis, and actions associated with the California Coastal Commission's concurrence with the Alternative D Consistency Determination and Consistency Certification are supportive of the analysis and conclusions of the Final EIR for the LAX Master Plan Improvements. While the refinements in the assumptions for, and approach to, treatment of the existing navigational aids' foundations and footings resulted in the grading of an additional 1.4 acres not specifically addressed in the Final EIR, the resultant impacts are of a nature comparable to those described in the Final EIR. The additional impacts would not result in any new significant impacts or substantially increase the severity of previously disclosed impacts. Moreover, the proposed revegetation of the 1.4 acres would render the affected area better than its existing condition (i.e., the existing concrete pad areas would be replaced with native plant species). Additionally, the proposed increase in the mitigation ratio from 1:1 to 2:1 would more than sufficiently offset the impacts associated with the proposed improvement and relocation of existing navigational aids.

The only notable change to the Final EIR arising out of the California Coastal Commission's actions is the modification of certain mitigation measures, clarifying that the FAA has the lead responsibility for the implementation of those mitigation measures that address the impacts associated with the navigational aids. The following presents the changes made to the subject mitigation measures, with deletions shown in strike-through text (i.e., ~~deletions~~) and additions shown in *italicized* text (i.e., *italicized*). Such changes are also further discussed in the Los Angeles/EI Segundo Dunes Habitat Restoration Plan provided in Appendix AD(2)-A4.

♦ **MM-BC-1. Conservation of State-Designated Sensitive Habitat Within and Adjacent to the EI Segundo Blue Butterfly Habitat Restoration Area (Alternatives A, B, C, and D).**

FAA is responsible for conservation measures related to the relocation of navigational aids, while LAWA is responsible for all other conservation measures. ~~LAWA or its designee shall take~~ All necessary steps ~~shall be taken~~ to ensure that the state-designated sensitive habitats within and adjacent to the Habitat Restoration Area are conserved and protected during construction, operation, and maintenance. These steps shall, at a minimum, include the following:

Implementation of construction avoidance measures in areas where construction or staging are adjacent to the Habitat Restoration Area. Prior to the initiation of construction of LAX Master Plan components to be located adjacent to the Habitat Restoration Area, ~~LAWA or its designee shall conduct~~ a pre-construction evaluation *shall be conducted* to identify and flag specific areas of state-designated sensitive habitats located within 100 feet of construction areas. Subsequent to the pre-construction evaluation, ~~LAWA or its designee shall conduct~~ a pre-construction meeting *shall be conducted* and ~~provide~~ written construction avoidance measures *provided* to be implemented in areas adjacent to state-designated sensitive habitats. Construction avoidance measures include erecting a 10-foot-high tarped chain-link fence where the construction or staging area is adjacent to state-designated sensitive habitats 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 to reduce fugitive dust emissions during construction activities within 2,000 feet of the EI Segundo Blue Butterfly Habitat Restoration Area, with a goal to reduce fugitive dust emissions by 90 to 95 percent. In addition, to the extent feasible, no grading or stockpiling for construction activities should take place within 100 feet of a state-designated sensitive habitat. LAWA or its designee shall incorporate provisions for the identification of additional construction avoidance measures to be implemented adjacent to state-designated sensitive areas. All construction avoidance measures that address Best Management Practices shall be clearly stated

2.1 California Coastal Commission

within construction bid documents. In addition, ~~LAWA shall include a provisions~~ *shall be included* in all construction bid documents requiring the presence of a qualified environmental monitor. Construction drawings shall indicate vegetated areas within the Habitat Restoration Area as "Off-Limits Zone."

Ongoing maintenance and management efforts for the El Segundo Blue Butterfly Habitat Restoration Area. LAWA or its designee shall ensure that maintenance and management efforts prescribed in the Habitat Management Plan (HMP) for the Habitat Restoration Area shall continue to be carried out as prescribed.

Pre-Construction Surveys to determine presence/absence of California spineflower. Under Alternative A, only, pre-construction surveys will be undertaken during the optimum time of year to determine the presence/absence of individuals of California spineflower within the proposed area of impact within the Habitat Restoration Area. The California spineflower is known to be sparsely distributed in subsite 3 within the Habitat Restoration Area. Should the species be determined present, individuals will be salvaged and relocated to a suitable location within the Habitat Restoration Area. Prior to construction, ~~LAWA or its designee shall develop and implement a relocation plan~~ *shall be developed and implemented* to avoid the potential loss of individuals from the installation of navigational aids and associated service roads. Relocation efforts shall be undertaken by a qualified biologist, in coordination with CDFG.

◆ **MM-BC-2. Conservation of Floral Resources: Lewis' Evening Primrose (Alternatives A, B, C, and D).**

FAA is responsible for conservation measures related to the relocation of navigational aids, while LAWA is responsible for all other conservation measures. ~~LAWA or its designee shall prepare and implement a plan~~ *shall be prepared and implemented* to compensate for the loss of individuals of the sensitive Lewis' evening primrose, currently located at the westerly end of the north runway and within the Habitat Restoration Area. ~~LAWA or its designee shall collect seed~~ *shall be collected* from those plants to be removed, and properly clean and store the collected seed until used. If possible, seeds shall be collected in multiple years to ensure an adequate seed supply for planting. A mitigation site of suitable habitat equal to the area of impact shall be delineated within areas of the Los Angeles/El Segundo Dunes as described in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan." ~~MM-BC-10.~~ Collected seed shall be broadcast (distributed) after the first wetting rain. ~~LAWA or its designee shall implement a monitoring plan~~ *shall be implemented* to monitor the establishment of individuals of Lewis' evening primrose for a period of not more than five years. Performance criteria shall include the establishment of an equal number of plants as that impacted in the first year following the distribution of seed within the mitigation site. Performance criteria shall also include confirmation of recruitment for two years following the first year flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year flowering is observed. Monitoring shall be undertaken in the manner set forth in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan" ~~MM-BC-5.~~

◆ **MM-BC-9. Conservation of Faunal Resources (Alternative D).**

FAA is responsible for conservation measures related to the relocation of navigational aids, while LAWA is responsible for all other conservation measures. LAWA or its designee shall develop and implement a relocation and monitoring plan to compensate for the loss of 1.34 habitat units (0.3 habitat units + 1.04 habitat units) of occupied western spadefoot toad habitat and for the loss of western spadefoot toad individuals currently in the southwestern portion of the AOA. LAWA or its designee shall identify possible relocation sites in consultation with the CDFG and USFWS and shall develop and implement a monitoring plan to monitor the success of the relocated tadpoles for a period of not more than five years. LAWA or its designee shall relocate the western spadefoot toad population currently inhabiting three locations on the AOA. One potential site is the Madrona Marsh Nature Center in Torrance, 20 miles south of LAX, which supports several vernal pools and one large pond capable of supporting western spadefoot toads.² Spadefoot toad experts suggest the best approach to accomplish relocation is to transport tadpoles and metamorphs only, as adults return to

² Wright, Walt, Madrona Marsh Nature Center, Personal Communication, April 28, 1998.

their birth site.³ Site preparation shall include confirmation by a permitted biologist that no predators, such as mosquitofish or bullfrogs, are present within the proposed relocation site or in waterways surrounding the relocation site. The CDFG has suggested that if the first relocation effort is not successful, another attempt should be made the following year.⁴ Therefore, western spadefoot toads shall be collected two consecutive years prior to construction activities taking place in existing occupied spadefoot toad habitat. In addition, since the western spadefoot toad is known to become reproductively mature within three years, an additional performance criterion shall be the identification of tadpoles at the relocation site between years three and four. The success criteria should be 50 percent survival of all tadpoles and metamorphs for the first, second, and third years following the last relocation. This shall be accomplished through a five-year monitoring plan, with bi-monthly monitoring between January 31 and June 1, to document the success of this relocation effort.

LAWA or its designee shall develop and implement a relocation and monitoring plan to compensate for the loss of 2.38 habitat units of occupied San Diego black-tailed jackrabbit habitat located within the AOA. LAWA or its designee shall relocate the San Diego black-tailed jackrabbit population currently inhabiting the AOA. Relocation efforts shall be coordinated with CDFG. The San Diego black-tailed jackrabbit shall be captured on the AOA using live traps and shall be released into the Habitat Restoration Area. Compensation for the loss of 2.38 habitat units shall be the utilization of at least 2.38 habitat units within the Los Angeles/El Segundo Dunes by the San Diego black-tailed jackrabbit individuals relocated to the site. Black-tailed jackrabbit is currently absent for the Los Angeles/El Segundo Dunes. Opportunities for compensation for the loss of 2.38 habitat units include 13.52 habitat units from restoration of Non-Native Grassland/Ruderal habitat to a Valley Needlegrass Grassland; 14.4 habitat units from removal and restoration of 50 percent of the existing roadways to Southern Foredune; and 59.68 habitat units from restoration of Disturbed Dune Scrub/Foredune to Southern Foredune. LAWA or its designee shall implement a monitoring plan to monitor the success of the relocated individuals for a period of not more than five years. Performance criteria shall include confirmed success of survival for three years of the San Diego black-tailed jackrabbit within the Habitat Restoration Area. This shall be accomplished through a quarterly monitoring plan to document the success or failure of this relocation effort.

LAWA or its designee shall compensate for the loss of areas utilized by loggerhead shrike currently located on the western airfield and composed of 10.83 habitat units (equivalent to 83.25 acres). Compensation for the loss of 10.83 habitat units of habitat utilized by the loggerhead shrike shall be the utilization of at least 10.83 habitat units within the Los Angeles/El Segundo Dunes. Opportunities for compensation for the loss of 10.83 habitat units include 13.52 habitat units from restoration of Non-Native Grassland/Ruderal habitat to a Valley Needlegrass Grassland; 14.4 habitat units from removal and restoration of 50 percent of the existing roadways to Southern Foredune; and 59.68 habitat units from restoration of Disturbed Dune Scrub/Foredune to Southern Foredune. Compensation for the loss of at least 10.83 habitat units shall take place prior to construction. LAWA or its designee shall implement a monitoring program for a period of not more than five years. Performance criteria shall include the use of at least 10.83 habitat units of improved habitat by the loggerhead shrike for foraging and nesting. Monitoring shall take place quarterly for the first three years and biannually thereafter. Monitoring shall be timed appropriately to include monitoring during the breeding period, which is between February and June.

As a means of minimizing incidental take of active nests of loggerhead shrike, LAWA or its designee shall have all areas to be graded surveyed by a qualified biologist at least 14 days before construction activities begin to ensure maximum avoidance to active nests for loggerhead shrike. Construction avoidance measures shall include flagging of all active nests for loggerhead shrike and a 300 feet wide buffer area shall be designated around the active nests. A biological monitor shall be present to ensure that the buffer area is not infringed upon during the active nesting season, March 15 to August 15. In addition, LAWA or its designee shall require that vegetation clearing within the designated 300 feet buffer be undertaken after August 15 and before March 15.

³ Fisher, Dr. Robert, California State University San Diego, Frank Hovore, Hovore and Associates, Dr. Steve Moray, U.S. Fish and Wildlife Service, Personal Communication, April 28, 1998.

⁴ Maxwell, Dwayne, California Department of Fish and Game, Letter to Dr. Brad Blood, Sapphos Environmental, Inc., April 29, 1998.

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~~LAWA~~ The FAA or LAWA, as appropriate, or ~~its~~ the respective designee of each, shall conduct pre-construction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl within the proposed area of impact within the Los Angeles/El Segundo Dunes. Surveys will be conducted at the optimum time to observe these species as described in Section 6.1 of the "Los Angeles/El Segundo Dunes Habitat Restoration Plan." Should an individual be observed, they will be relocated to suitable habitat for that species within the Habitat Restoration Area. Prior to construction, ~~the FAA~~ LAWA or its designee shall develop and implement a relocation plan to avoid the potential loss of individuals from the installation of navigational aids and associated service roads. *This relocation plan is provided in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan".* Relocation efforts shall be undertaken by a qualified biologist, in coordination with CDFG.

♦ MM-BC-13. Replacement of State-Designated Sensitive Habitat (Alternative D).

FAA is responsible for conservation measures related to the relocation of navigational aids, while LAWA is responsible for all other conservation measures. ~~LAWA or its designee shall undertake a~~ Mitigation shall be undertaken for the loss of State-designated sensitive habitat within the Los Angeles/El Segundo Dunes, including the Habitat Restoration Area. Installation of navigational aids and associated service roads under Alternative D would result in impacts to 66,675 square feet (1.53 acres) of State-designated sensitive habitat within the Los Angeles/El Segundo Dunes, including 33,334 square feet (0.77 acre) within the Habitat Restoration Area (of which 10,597 square feet (0.24 acre) are within habitat occupied by the El Segundo blue butterfly. *Impacts to 1.53 acres of State-designated sensitive habitat within the Los Angeles/El Segundo Dunes shall be replaced at a ratio of 2:1 within the Los Angeles/El Segundo Dunes as described in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan".* Additionally the removal of existing navigational aids no longer required to assist aircraft approaching from the west has the potential to disturb an estimated 1.4 acres of State-designated habitat within the Los Angeles/El Segundo Dunes. These 1.4 acres will be replaced at a ratio of 2:1 as described in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan". ~~These square feet shall be replaced at a no net loss ratio of 1:1 ratio within the Los Angeles/El Segundo Dunes. The replacement of 66,675 square feet (1.53 acres) of State-designated sensitive habitat shall be undertaken through restoration of 2.8 acres as described in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan."~~⁵ ~~66,675 square feet (1.53 acres). Opportunities for restoration include: 16.9 acres of Non-Native Grassland/Ruderal habitat to a Valley Needlegrass Grassland; 36.11 acres from removal and restoration of 50 percent of the existing roadways to Southern Foredune; and 74.6 acres of Disturbed Dune Scrub/Foredune to Southern Foredune. The restoration and enhancement of biotic communities as related to the establishment or enhancement of wildlife habitat shall consider and comply with the provisions of the FAA Advisory Circular 150/5200-33 regarding hazardous wildlife attractants on or near airports. Additionally, such restoration and enhancement shall take into account, as appropriate, the Memorandum of Agreement between FAA and other federal agencies, including the USFWS, pertaining to environmental conditions that could contribute to aircraft-wildlife strikes.~~

Valley Needlegrass Grassland restoration efforts consist of site preparation, propagation and planting of Valley Needlegrass Grassland species, and maintenance and monitoring of the restoration site as described in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan." ~~MM-BC-5, Replacement of Habitat Units (Alternative A).~~

Southern Foredune restoration efforts consist of site preparation, propagation, and planting of the species characteristic of the Southern Foredune community at the Los Angeles/El Segundo Dunes, and maintenance and monitoring of the restoration site as described in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan." ~~MM-BC-5, Replacement of Habitat Units (Alternative A).~~

Replacement of the 10,597 square feet (0.24 acre) of habitat occupied by the El Segundo blue butterfly shall be undertaken as described in MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D).

⁵ Pursuant to MM-BC-13, a total of 2.8 acres will be restored, with 1.4 acres taking place "in situ" and 1.4 acres taking place in Subsite 23. Pursuant to MM-ET-4, an additional 3 acres will be restored within Subsite 23. A total of 5.8 acres will be restored when MM-BC-13 and MM-ET-4 are considered together (1.4 acres restored in "in situ" and 4.4 acres restored in Subsite 23).

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

FAA is responsible for conservation measures related to the relocation of navigational aids, while LAWA is responsible for all other conservation measures. ~~LAWA or its designee shall take a~~ All necessary steps shall be taken 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.⁶ 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 3 acres as described in the "Los Angeles/El Segundo Dunes Habitat Restoration Plan" (1.25 acres of which is 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 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.

The above modifications will be incorporated into the final Mitigation Monitoring and Reporting Program to be adopted in conjunction with approval of the proposed Project. ***The above mitigation measures, as modified, hereby supersede and replace the original measures presented in the Final EIR that was published in April 2004.***

2.1.3.2 Cultural Resources

The mitigation measure added in conjunction with the California Coastal Commission's review of the Consistency Determination incorporates provisions of existing mitigation measures presented in the Final EIR, including Mitigation Measures MM-HA-4 and MM-HA-5. While the cultural resources investigation completed in conjunction with the Final EIR did not identify any cultural resources at, or near, the locations of the proposed navigational aids improvements and relocation that would occur within the coastal zone, the subject mitigation measure would provide an additional means of avoiding significant

⁶ 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.

2.1 California Coastal Commission

impacts to cultural resources should they unexpectedly be encountered. The additional measure is as follows:

♦ **MM-HA-11. Navigational Aids Relocation and Improvements (Alternative D).**

Prior to initiation of any grading and/or excavation activities associated with the proposed improvement and relocation of navigational aids, the FAA shall prepare, or cause to be prepared, an archaeological treatment plan (ATP) that ensures the long-term protection and proper treatment of any previously unknown significant archaeological resources, including any Native American remains, encountered during such grading and/or excavation within the Coastal Zone. Pursuant to Title 36, Code of Federal Regulations (CFR) Part 800, the draft ATP shall be submitted by the FAA to the California State Historic Preservation Officer (SHPO), the California Coastal Commission staff archaeologist, the California Native American Heritage Commission and interested parties for 30-days for review and comment. The final ATP, which incorporates the review comments, shall be submitted by FAA to the SHPO, and the California Coastal Commission staff archaeologist for review and approval. The ATP shall include a monitoring plan, research design, and data recovery plan. The ATP shall be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation; California Office of Historic Preservation's (OHP) Archaeological Resources Management Report, Recommended Contents and Format (1989), and the Guidelines for Archaeological Research Design (1991); and shall also take into account the ACHP's publication Treatment of Archaeological Properties: A Handbook. The ATP shall also be consistent with the Department of the Interior's Guidelines for Federal Agency Responsibility under Section 110 of the National Historic Preservation Act (NHPA). The ATP shall include a requirement that a qualified archaeologist be retained by the FAA, or its designee, to monitor the subject grading and excavation activities. The qualified archaeologist shall meet the Secretary of the Interior's Professional Qualifications Standards. The project archaeologist shall be empowered to halt construction activities in the immediate area if potentially significant resources are identified. Test excavations may be necessary to reveal whether such findings are significant or insignificant. In the event of notification by the project archaeologist that a potentially significant or unique archaeological/cultural find has been unearthed, the FAA shall be notified and grading operations shall cease immediately in the affected area until the geographic extent and scientific value of the resource can be reasonably verified. The ATP shall also include a requirement that, should any significant archaeological resource or Native American remains be encountered, a Native American monitor shall be retained following consultation with the Native American Heritage Commission, in order to establish the Most Likely Descendent (MLD) associated with the resource/remains.

The above mitigation measure will be incorporated into the final Mitigation Monitoring and Reporting Program to be adopted in conjunction with approval of the proposed Project.

2.2 United States Fish and Wildlife Service (USFWS)

2.2.1 Introduction

Section 4.11, *Endangered and Threatened Species of Flora and Fauna*, of the Final EIR addresses potential impacts to several federally-listed species, including the Riverside fairy shrimp (*Streptocephalus woottoni*). The analysis includes discussion of critical habitat for the subject species that was designated as such by the United States Fish and Wildlife Service (USFWS) in 2001, and subsequently found invalid by the U.S. District Court for the District of Columbia in 2002, nullifying the designation. On April 27, 2004, the USFWS published a new proposed designation of critical habitat for Riverside fairy shrimp, which includes 108 acres proposed as critical habitat within the Airfield Operations Area (AOA) at LAX. Of the 108 acres proposed for designation as critical habitat, approximately 85 acres were determined to be non-essential to the survival of the species pursuant to the April 20, 2004 Biological Opinion issued by the USFWS because they contain neither ephemerally wetted areas occupied by Riverside fairy shrimp nor their contributory watersheds. Only 1.26 acres of the entire area proposed for designation as critical habitat are occupied by Riverside fairy shrimp, which exist in these areas in the cyst (i.e., egg) form.

The information and analysis presented below describe the USFWS proposed designation of critical habitat for Riverside fairy shrimp and the potential impacts of each LAX Master Plan alternative relative to the proposed critical habitat areas and the viability of the species. The information and analysis supplements the discussion presented previously in Section 4.11 of the Final EIR, but does not materially alter the basic conclusions presented therein.

2.2.2 General Approach and Methodology

In accordance with FAA Order 5050.4A, which contain guidelines for conducting environmental impact analyses, this analysis addresses the likelihood of the LAX Master Plan 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. In compliance with the Endangered Species Act of 1973, 16 U.S.C. §1531 et seq., FAA initiated formal Section 7 consultation for the LAX Master Plan on September 5, 2000. On April 20, 2004, USFWS issued a non-jeopardy Biological Opinion for Alternative D, the Enhanced Safety and Security Plan, of the LAX Master Plan (see Appendix F-E of the Final EIR). Under Alternative D, 0.04 acre (1,853 square feet) of the 1.3 acres of ephemerally wetted habitat containing embedded cysts (eggs) of Riverside fairy shrimp would be directly affected by construction staging, airfield operations and maintenance activities, and/or airfield improvements. As allowed under the April 20, 2004 Biological Opinion, cyst-bearing soils from the 0.04 acre of the 1.3 acres of ephemerally wetted habitat would be salvaged and relocated to a conservation site outside the LAX Master Plan boundary. Indirect effects to 1.26 acres of ephemerally wetted habitat and approximately 22 acres of contributing watershed would be avoided through implementation of construction avoidance measures. These areas are within proposed designation of critical habitat. These occupied areas and associated watersheds would be retained on the AOA and therefore subject to federally mandated operations and maintenance activities pursuant to Title 14, Code of Federal Regulations (CFR), Part 139, Section 139.337, Wildlife Hazards Management.⁷

⁷ Additionally, as required under Section 7 of the federal Endangered Species Act (ESA), 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. FAA reinitiated formal consultation with USFWS on March 29, 2004 regarding the need to resume routine operations and maintenance activities within and adjacent to ephemerally wetted areas within the AOA containing cysts of the federally endangered Riverside fairy shrimp. These activities are necessary under all alternatives analyzed in the Final EIR, including the No Action/No Project Alternative. (See Federal Aviation Administration. 29 March 2004. Letter to U.S. Department of the Interior, Fish and Wildlife Service, Biological Services, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92009. Subject: Los Angeles International Airport, Los Angeles, California Resumption of Formal Section 7 Consultation for Operations and Maintenance Activities. Prepared by: Federal Aviation Administration, P.O. Box 92007, Los Angeles, CA 90009-2007.) The Section 7 consultation that addresses routine ongoing operations and maintenance (i.e., removal of standing water and discing or mowing to manage vegetation) within the AOA is ongoing.

2.2.3 Affected Environment/Environmental Baseline

The potential presence of Riverside fairy shrimp at LAX has been a consideration throughout the FAA's and LAWA's management of the AOA and consideration of the proposed LAX Master Plan. As documented in Section 4.11, and related sections, appendices and technical reports, of the Final EIR, extensive survey work was undertaken to determine the presence/absence of the species. The results of this sampling are summarized in **Table AD(2)2.2-1**, Ephemeraally Wetted Areas, Site Characterization, and Riverside Fairy Shrimp Densities.

Table AD(2)2.2-1

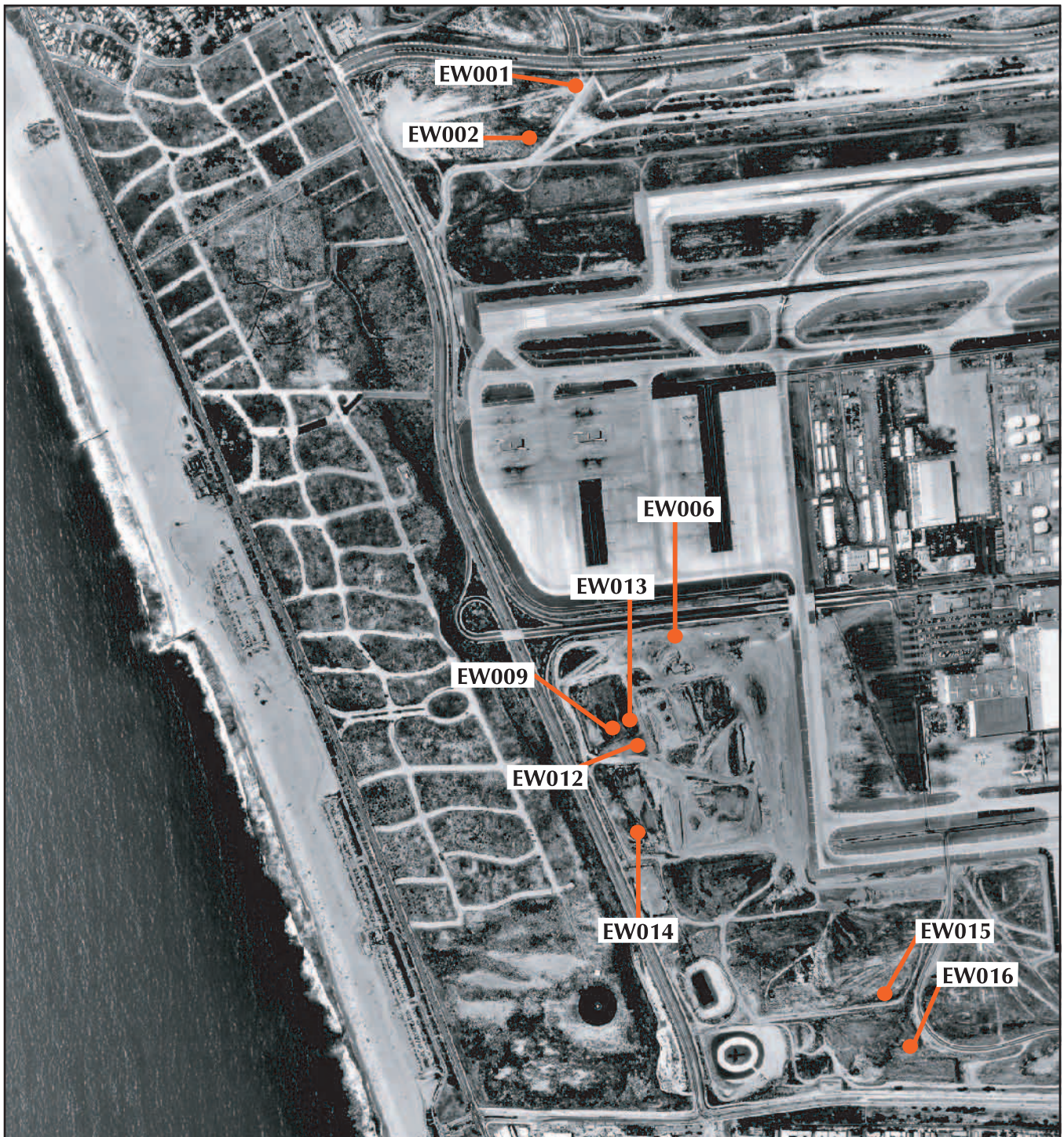
Ephemeraally Wetted Areas, Site Characterization, and Riverside Fairy Shrimp Densities

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.

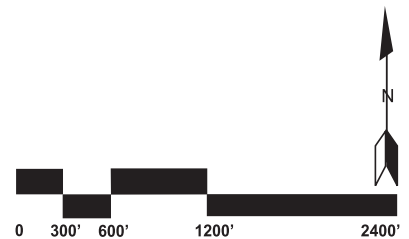
Although there is no evidence of the Riverside fairy shrimp completing its life cycle, embedded cysts were identified on 1.3 acres in nine locations on the AOA, six of which occupy 1.26 acres and are located within areas proposed for designation as critical habitat (see **Figure AD(2)2.2-1**, Sites Containing Embedded Cysts of the Riverside Fairy Shrimp). Inherent incompatibilities of maintaining safe operations



LEGEND

EW Ephemeraally Wetted Areas

SOURCE: Continental Aerial Photo, Inc. 10571 Calle Lee Suite 163, Los Alamitos, CA 90720



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**Sites Containing Embedded Cysts
of the Riverside Fairy Shrimp**

**Figure
AD(2)2.2-1**

within the AOA and managing habitat that requires the existence of standing water for up to two months, as is required by the Riverside fairy shrimp, has been the subject of ongoing dialogue between FAA and LAWA. FAA and LAWA recognize the importance of conserving habitat for Riverside fairy shrimp and, in light of conflicts between air navigation safety and habitat management, have consistently expressed their willingness to relocate soils containing embedded cysts of Riverside fairy shrimp for off-site conservation efforts. In addition to the incompatibilities between maintaining safe operations in the AOA in compliance with safety standards and managing for wildlife habitat that requires standing water, the habitat at LAX is of marginal, at best, quality. The marginal nature of the habitat at LAX is evident in the fact that the *Recovery Plan for Vernal Pools of Southern California (VP Recovery Plan)*⁸ does not prescribe conservation measures for Riverside fairy shrimp at LAX.

As a result of a settlement agreement,⁹ the USFWS proposed designation of critical habitat for the Riverside fairy shrimp on September 21, 2000, and issued a final rule designating critical habitat on May 31, 2001.¹⁰ However, in October 2002, the U.S. District Court for the District of Columbia vacated the final rule based on a flawed economic analysis and ordered the Carlsbad Fish and Wildlife Office (CFWO) to undertake a new analysis and designation.¹¹ On April 27, 2004, the USFWS published a new proposed designation of critical habitat for Riverside fairy shrimp (**Table AD(2)2.2-2, Critical Habitat for Riverside Fairy Shrimp Proposed by USFWS in 2004**).¹² The proposed rule designates critical habitat located at LAX (see **Figure AD(2)2.2-2, Designation of Critical Habitat for the Riverside Fairy Shrimp Issued in 2004**), which encompasses approximately 108 acres in two distinct parcels.¹³ These parcels are located within the southern portion of the AOA, which accommodates the movement of aircraft and a multitude of support vehicles, equipment, and personnel.

Table AD(2)2.2-2

Critical Habitat for Riverside Fairy Shrimp Proposed by USFWS in 2004

County	Geographic Location ¹
Ventura	Former Carlsberg Ranch
Los Angeles	Cruzan Mesa; Los Angeles International Airport
Orange	Marine Corps Air Station El Toro; Chiquita Ridge; Tijeras Creek; O'Neill Regional Park; Saddleback Meadows; Radio Tower Road
Western Riverside	March ARB
North San Diego	Marine Corps Base Camp Pendleton; City of Carlsbad at the Poinsettia Lane Train Station
South San Diego	Ephemeral basin along the United States/Mexico border

¹ 50 CFR Part 17.

Source: U.S. Fish and Wildlife Service, 2004.

Historically, the AOA has experienced a vast range of uses that initially included cattle and sheep grazing, cultivation of orchards, and dry farming followed by extensive earth movement to support runway and taxiway improvements, cargo storage, and staging areas, borrow and fill activities, and associated roadway construction to support aviation activities. Consequently, the AOA is a highly disturbed area. Currently, the AOA is managed to support airfield operations that include the elimination of standing water, and vegetation management through the use of mowing and discing pursuant to Title 14, CFR, Part 139 to address wildlife hazards management as a component of the safe operation of aircraft in and

⁸ U.S. Fish and Wildlife Service, *Vernal Pools of Southern California Recovery Plan*, 1998.

⁹ United States District Court for the Northern District of California, San Francisco Division, *Stipulated Settlement Agreement: Center for Biological Diversity vs. Bruce Babbitt*, Civil No. C99-3202 SC (N.D. Calif. Feb. 15, 2000).

¹⁰ U.S. Fish and Wildlife Service. 2001. "Endangered and Threatened Wildlife and Plants Final Designation of Critical Habitat for the Riverside Fairy Shrimp Final Rule." *Federal Register*, 66 (104): 29384–29414.

¹¹ Building Industry Legal Defense Foundation v. Gale Norton et.al. Case No. 01-CV-2311 JDB (D.D.C. 2002).

¹² Code of Federal Regulations. Title 50, CFR, Part 17: "Endangered and Threatened Wildlife and Plants."

¹³ U.S. Fish and Wildlife Service. 2004. "Endangered and Threatened Wildlife and Plants; Proposed Designation of Critical Habitat for the Riverside Fairy Shrimp." *Federal Register*, 69 (81): 23024–23049.

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around an airport.¹⁴ Although Riverside fairy shrimp cysts have been identified within the AOA, current conditions do not support the hydrological needs of water chemistry, temperature, and water depth necessary to support their complete life cycle. In fact, the presence of such conditions would be in direct conflict with federally mandated guidelines regarding the presence of wildlife attractants on or near airports.¹⁵

The creation of standing pools of water that must remain for up to 2 months to permit the Riverside fairy shrimp 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. Because of these risks, the U.S. Department of Agriculture, Wildlife Services Office, is currently working on a bird hazard reduction program at Los Angeles International Airport. U.S. Department of Agriculture, Wildlife Services Office is responsible for managing wildlife that could be injurious to human health and safety pursuant to the Animal Damage Control Act of 1931, as amended. The introduction of new attractants to birds, which would potentially create hazards to air navigation, is contrary to the FAA's mission. Title 14, CFR, Part 139, Section 139.337(f): "Wildlife Hazard Management," requires a certificate holder¹⁶ to "take immediate measures to alleviate wildlife hazards when they are detected." Ongoing operations and maintenance activities that are regularly undertaken in the AOA help to eliminate the conditions that constitute wildlife attractants. As indicated above, the FAA is currently undertaking Section 7 consultation with the USFWS for on-going operations and maintenance activities. The presence of wildlife hazards at LAX, specifically at EW14, is evidenced in the recent removal of a four pound mallard duck within hours of a significant storm event in October 2004¹⁷.

2.2.4 Thresholds of Significance

2.2.4.1 CEQA Thresholds of Significance

The additional analysis presented herein relates primarily to the following CEQA threshold of significance as presented in Section 4.11, *Endangered and Threatened Species of Flora and Fauna* (subsection 4.11.4.1), of the Final EIR:

- ◆ 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.¹⁸

2.2.5 Master Plan Commitments

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

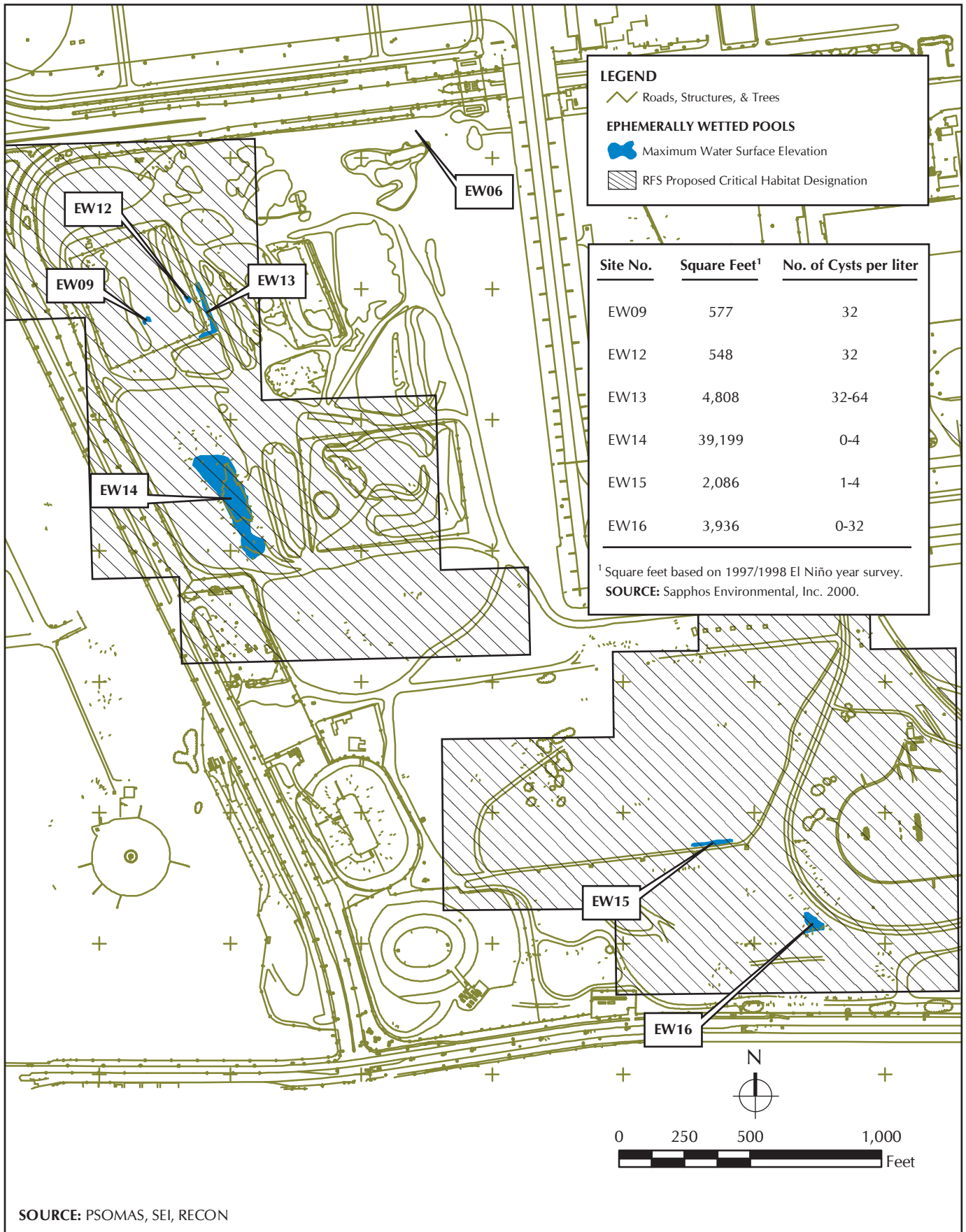
¹⁴ Code of Federal Regulations. Title 14, CFR, Part 139. "Certification and Operations: Land Airports Serving Certain Air Carriers," Section 139.337(e)(6)(ii).

¹⁵ Federal Aviation Administration. 27 July 2004. Advisory Circular 150/5200-33A: Hazardous Wildlife Attractants On or Near Airports.

¹⁶ LAWA holds a certificate issued by FAA pursuant to Title 14 CFR Section 139, allowing "passenger operation of an air carrier that is conducted with an aircraft having a seating capacity of more than 30 passengers." As a commercial airport certificate holder, LAWA must comply with all the safety standards established for the operation of a certified airport, including the standards for wildlife management appearing in Title 14, CFR Section 139.337. The wildlife hazards standards provide that each certificate holder "shall take immediate measures to alleviate wildlife hazards whenever they are detected." See: *Code of Federal Regulations*. Title 14, CFR, Part 139. "Certification and Operations: Land Airports Serving Certain Air Carriers," Section 139.337(f).

¹⁷ Todd Pittlik, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, Airfield Operations, 7333 World Way West, Los Angeles, CA 90045, Personal Communication, December 2, 2004.

¹⁸ 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.



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**Designation of Critical Habitat for the
Riverside Fairy Shrimp Issued in 2004**

**Figure
AD(2)2.2-2**

2.2.6 Environmental Consequences

This section describes the potential environmental impacts of the No Action/No Project Alternative and the four build alternatives (Alternatives A through D) relative to the designated critical habitat currently proposed by USFWS. To help understand the context in which impacts to proposed designated critical habitat would occur, the analysis below includes the previously published discussion of potential impacts to the degraded wetland habitat containing Riverside fairy shrimp cysts.

2.2.6.1 No Action/No Project Alternative

1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp and 108 acres of proposed critical habitat would remain within the AOA. These areas would be subject to continued operations and maintenance activities. However, of the 108 acres, approximately 85 acres were determined to be nonessential to the survival of the species pursuant to the April 20, 2004 Biological Opinion issued by the USFWS because they contain neither ephemerally wetted areas occupied by Riverside fairy shrimp cysts nor their contributory watersheds.

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. The FAA has initiated Section 7 consultation to address the need for routine ongoing operations and maintenance within the AOA. Section 7 consultation is currently on-going.

In summary, the No Action/No Project Alternative would neither affect the continued existence of embedded cysts of the Riverside fairy shrimp nor further the recovery of the species.

2.2.6.2 Alternative A - Added Runway North

Alternative A would result in the permanent conversion of 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp as a result of developed facilities and construction staging and associated support activities.

Additionally, there are approximately 108 acres (of which 1.26 acres contain embedded cysts of Riverside fairy shrimp) that have been proposed for designation as critical habitat within the AOA, and which would be affected under Alternative A. However, of the 108 acres, approximately 85 acres were determined to be nonessential to the survival of the species pursuant to the April 20, 2004 Biological Opinion issued by the USFWS because they neither contain ephemerally wetted areas occupied by Riverside fairy shrimp cysts nor their contributory watersheds. Thus, impacts to these 85 acres are not considered significant.

Under Alternative A, the permanent conversion of 1.3 acres of degraded wetland habitat that contain embedded cysts of the Riverside fairy shrimp, as well as the loss of areas that have been proposed for designation as critical habitat for the Riverside fairy shrimp by the USFWS, would trigger the need for a Section 7 consultation with the USFWS to determine whether the impact would jeopardize the continued existence of the species. Implementation of Alternative A would result in the permanent loss of occupied habitat which is also proposed for designation as critical habitat. These impacts 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.

2.2.6.3 Alternative B - Added Runway South

Alternative B would result in the permanent conversion of 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp as a result of developed facilities, and construction staging and associated support activities.

2.2 United States Fish and Wildlife Service

Additionally, there are approximately 108 acres (of which 1.26 acres contain embedded cysts of Riverside fairy shrimp) that have been proposed for designation as critical habitat within the AOA, and which would be affected under Alternative B. However, of the 108 acres, approximately 85 acres were determined to be nonessential to the survival of the species pursuant to the April 20, 2004 Biological Opinion issued by the USFWS because they neither contain ephemerally wetted areas occupied by Riverside fairy shrimp cysts nor their contributory watersheds. Thus, impacts to these 85 acres are not considered significant.

Under Alternative B, the permanent loss of 1.3 acres of degraded wetland habitat that contain embedded cysts of the Riverside fairy shrimp, as well as the loss of areas that have been proposed for designation as critical habitat for the Riverside fairy shrimp by the USFWS, would trigger the need for a Section 7 consultation with the USFWS to determine whether the impact would jeopardize the continued existence of the species. Implementation of Alternative B would result in the permanent loss of occupied habitat, which is also proposed for designation as critical habitat. These impacts 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.

2.2.6.4 Alternative C - No Additional Runway

Alternative C would result in the permanent conversion of 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp as a result of developed facilities and construction staging and associated support activities.

Additionally, there are approximately 108 acres (of which 1.26 acres contain embedded cysts of Riverside fairy shrimp) that have been proposed for designation as critical habitat within the AOA, and which would be affected under Alternative C. However, of the 108 acres, approximately 85 acres were determined to be nonessential to the survival of the species pursuant to the April 20, 2004 Biological Opinion issued by the USFWS because they neither contain ephemerally wetted areas occupied by Riverside fairy shrimp cysts nor their contributory watersheds. Thus, impacts to these 85 acres are not considered significant.

Under Alternative C, the permanent loss of 1.3 acres of degraded wetland habitat that contain embedded cysts of the Riverside fairy shrimp, as well as the loss of areas that have been proposed for designation as critical habitat for the Riverside fairy shrimp by the USFWS would trigger the need for a Section 7 consultation with the USFWS to determine whether the impact would jeopardize the continued existence of the species.. Implementation of Alternative C would result in the permanent loss of occupied habitat, which is also proposed for designation as critical habitat. These impacts 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.

2.2.6.5 Alternative D - Enhanced Safety and Security Plan

Under Alternative D, 0.04 acre (1,853 square feet) of the 1.3 acres 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.

The FAA and LAWA have engaged in Section 7 consultation with the USFWS and have identified a set of conservation measures that would result in avoidance of impacts to the Riverside fairy shrimp. The USFWS has accepted these conservation measures and issued a Biological Opinion for Alternative D. Pursuant to the April 20, 2004 Biological Opinion issued by the USFWS, the effects of implementing Alternative D are not likely to jeopardize the continued existence of Riverside fairy shrimp. This conclusion was reached taking into consideration the loss on-site of 0.04 acre occupied by Riverside fairy shrimp, representing a small portion of occupied habitat at LAX. This habitat will be conserved by the creation of vernal pool habitat at an off-site location providing the opportunity for the Riverside fairy shrimp cysts to complete their life cycle. The conclusion of Section 7 consultation with USFWS conducted for Alternative D, as LAWA's proposed project, determined that the impact would not jeopardize the continued existence of the species.

In addition, ephemerally wetted (EW) areas EW9, EW12, EW13, EW14, EW15, and EW16, (see **Figure AD(2)2.2-3**, Proposed Designated Critical Habitat and Watershed Buffer Areas) 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, EW9, EW12, and EW13, would potentially be affected by an alteration of upland hydrology resulting from the construction staging and development of the proposed employee parking garage. EW14, EW15, and EW16 would potentially be affected by construction staging in support of development of the Taxiway/Aircraft Apron and the proposed employee parking garage. These areas are within the proposed designation of critical habitat for the Riverside fairy shrimp. The potential indirect effects to EW9, EW12, EW13, EW14, EW15, and EW16 would be avoided through implementation of construction avoidance measures, including Best Management Practices (BMPs) required pursuant to the Standard Urban Stormwater Mitigation Plan and the LAX Stormwater Pollution Prevention Plan, and establishment of a 22 acre buffer area around the six occupied areas retained on the LAX airfield, as specified in the Biological Opinion issued by the USFWS on April 20, 2004 and included in Appendix F-E.

The April 20, 2004, Biological Opinion was issued for Alternative D of the LAX Master Plan EIR and its effects on Riverside fairy shrimp and El Segundo blue butterfly. The Biological Opinion contained 12 conservation measures that included enhancement of El Segundo blue butterfly habitat, relocation of soils containing embedded Riverside fairy shrimp cysts from ephemerally wetted areas EW1 and EW2, and storage of soils containing Riverside fairy shrimp cysts from ephemerally wetted area EW6. While the April 20, 2004 Biological Opinion determined only 23 acres of the AOA were critical to the remaining cysts, one week later, on April 27, 2004, the USFWS issued a proposed designation of critical habitat that included approximately 108 acres proposed for critical habitat for Riverside fairy shrimp. This included nearly 85 acres that were determined to be nonessential to the survival of Riverside fairy shrimp by the USFWS in the April 20, 2004 Biological Opinion because the 85 acres neither contain ephemerally wetted areas occupied by Riverside fairy shrimp cysts nor their contributory watersheds. Avoidance measures required by the April 20, 2004 Biological Opinion will be implemented for the approximately 23 acres of ephemerally wetted areas EW9, EW12, EW13, EW14, EW15 and EW16 and their associated watershed buffer areas until completion of Section 7 consultation for operations and maintenance activities conducted within these areas (**Figure AD(2)2.2-3**, Proposed Designated Critical Habitat and Watershed Buffer Areas).

On July 20, 2004, FAA, LAWA, and the USFWS held a conference, pursuant to 50 CFR, Part 402.10, at which the USFWS concluded that continued construction, operations and maintenance activities on the proposed critical habitat areas outside the approximately 23 acres included in the April 20 2004 Biological Opinion, would not result in adverse modification of the proposed critical habitat areas.¹⁹ Specific avoidance measures for the 23 acres are described in FAA's letter of no adverse modification.²⁰ The USFWS subsequently issued a letter of concurrence with the FAA's letter of no adverse modification.²¹

Implementation of Alternative D would result in direct impacts to 0.04 acre (1,853 square feet) of the 1.3 acres occupied by Riverside fairy shrimp, consisting of the permanent conversion 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 in this area 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. In addition, Alternative D has potential indirect impacts to the remaining 1.26 acres of occupied degraded wetland habitat. However, these indirect impacts would be avoidable under Alternative D through construction avoidance measures, as described above. The FAA is currently undertaking Section 7 consultation to address feasible alternatives that would result in no impact to 1.26 acres of occupied degraded wetland sites without the need for avoidance measures, including the salvage and relocation of soils containing embedded cysts of

¹⁹ Code of Federal Regulation. Title 50, CFR, Part 402.10. "Conference on Proposed Species or Proposed Critical Habitat."

²⁰ Federal Aviation Administration. 12 August 2004. Letter to U.S. Department of the Interior, Fish and Wildlife Service, Biological Services, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92009. Subject: Los Angeles International Airport, Proposed Designation of Critical Habitat. Prepared by: Federal Aviation Administration, P.O. Box 92007, Los Angeles, CA 90009-2007.

²¹ U.S. Fish and Wildlife Service. 13 September 2004. Letter to the U.S. Department of Transportation Federal Aviation Administration. Re: Informal Conference for Five Projects at Los Angeles International Airport, Los Angeles County, California.

2.2 United States Fish and Wildlife Service

Riverside fairy shrimp 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.

2.2.7 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. 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.

2.2.7.1 No Action/No Project Alternative

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 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.

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 for habitat restoration suitable to support the Riverside fairy shrimp.

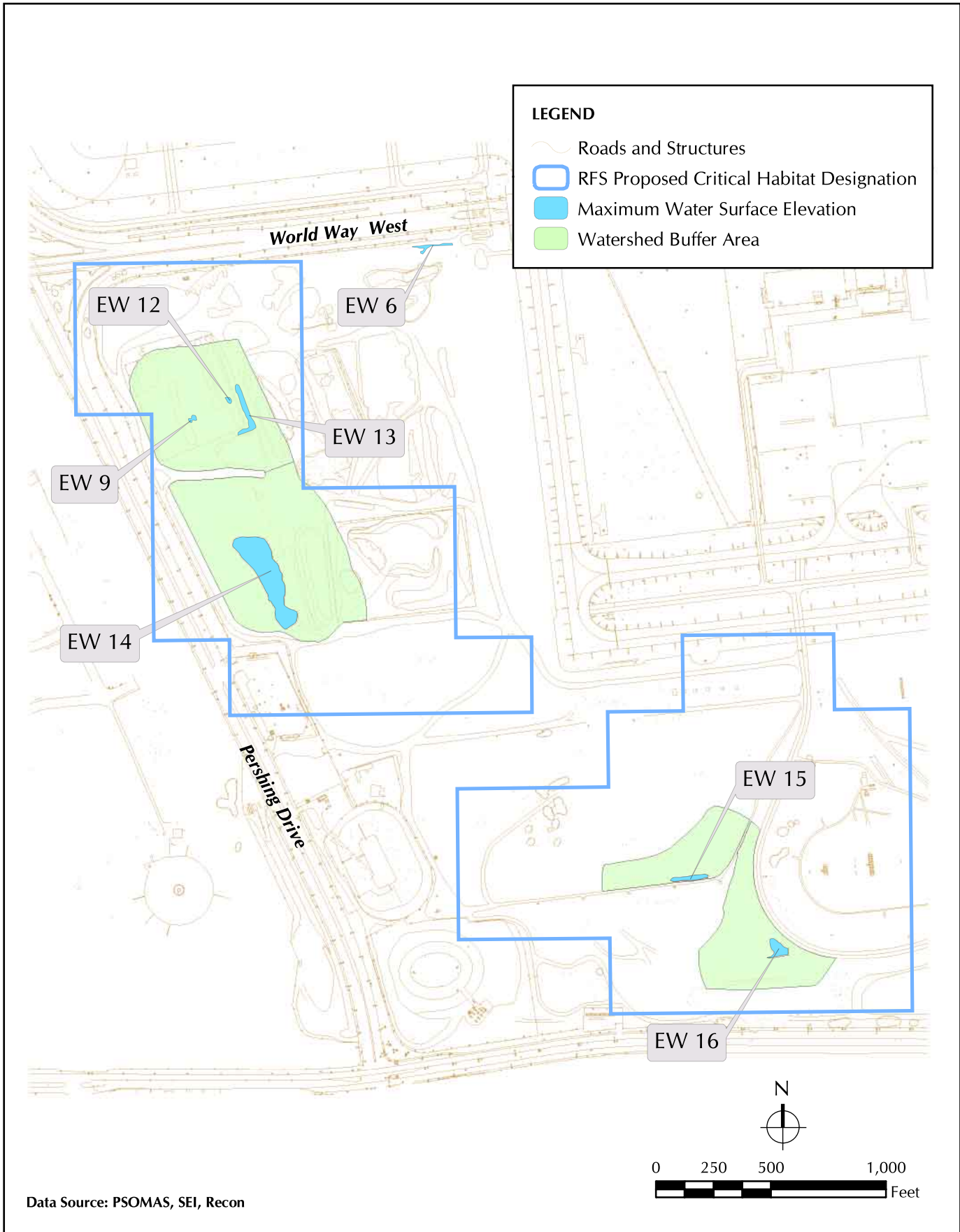
2.2.7.2 Alternatives A, B, and C

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 2004 Proposed Designation of Critical Habitat for the Riverside fairy shrimp²² has designated the portions of area east of Pershing Drive as critical habitat. The unmitigated loss of 1.3 acres of degraded habitat occupied by Riverside fairy shrimp cysts would contribute to cumulative impacts on the survival and recovery of this species if other populations elsewhere are extirpated. Impacts to 1.3 acres of degraded wetlands occupied by Riverside fairy shrimp cysts would trigger a Section 7 consultation between the FAA and the USFWS if these alternatives were chosen.

As described above, neither the Ballona Wetlands nor the Ballona Bluffs have been identified as sites which 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 for habitat restoration suitable to support the Riverside fairy shrimp.

Mitigation for project-related impacts to Riverside fairy shrimp cysts are provided in subsection 4.11.8, *Mitigation Measures*, of the Final EIR.

²² Code of Federal Regulation. Title 50, CFR, Part 17: "Endangered and Threatened Wildlife and Plants."



2.2.7.3 Alternative D - Enhanced Safety and Security Plan

Under Alternative D, impact to 0.04 acre of degraded wetland habitat containing embedded cysts of Riverside fairy shrimp located to the east of Pershing Drive is anticipated. The FAA and LAWA have engaged in Section 7 consultation with the USFWS and have identified a set of conservation measures that if implemented would result in avoidance of significant impacts to the Riverside fairy shrimp. The USFWS has approved these conservation measures and issued a Biological Opinion. These measures were developed to provide an opportunity for the Riverside fairy shrimp to complete their life cycle. Pursuant to the April 20, 2004 Biological Opinion issued by the USFWS, the effects of implementing Alternative D are not likely to jeopardize the continued existence of Riverside fairy shrimp since the loss of 0.04 acre occupied by Riverside fairy shrimp, representing a small portion of occupied habitat at LAX, will be conserved by the creation of vernal pool habitat at an off-site location providing the opportunity for the Riverside fairy shrimp cysts to complete their life cycle. Implementation of Alternative D would therefore not contribute to the cumulative loss of habitat for Riverside fairy shrimp.

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. Furthermore, the Playa Vista project was reduced in 2002 and, as currently proposed, no longer proposes any development or improvements in the Ballona Wetlands. Proposed development of the Ballona Bluffs could eliminate potential sites for habitat restoration suitable to support the Riverside fairy shrimp.

2.2.8 Mitigation Measures

Based on the information and analysis presented above regarding the USFWS proposed designation of critical habitat for Riverside fairy shrimp, implementation of the LAX Master Plan Improvements under Alternatives A, B, and C would require Section 7 consultation and the development of mitigation measures. Alternative D as considered, would not result in significant adverse impacts to Riverside fairy shrimp and proposed designated critical habitat that are not adequately addressed by the mitigation measures that are already proposed. If Alternative D is selected no additional mitigation measures are required.

2.2 United States Fish and Wildlife Service

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3. REFINEMENT TO THE PROPOSED MITIGATION PROGRAM

Subsequent to the publication of the Final EIR in April 2004, certain refinements to the mitigation program proposed for the Project have been formulated by LAWA and FAA. Refinements are proposed for the soundproofing program for low-income and minority communities (i.e., environmental justice communities). The following section describes the proposed mitigation program refinements, and the potential implications of such refinements relative to the Final EIR.

3.1 Refinement to Timing of Soundproofing Program for Affected Environmental Justice Communities

3.2.1 Background

Section 4.4.3, *Environmental Justice*, of the Final EIR and Section 2.2, *Environmental Justice*, of the Final EIR Addendum presented an environmental justice analysis for CEQA purposes and identified residential and other noise-sensitive uses that would be newly exposed to noise levels of 65 CNEL or greater under Alternatives A, B, C, and D in minority and/or low-income communities compared to 1996 baseline conditions. Based on the analysis presented in those sections, it was concluded that minority and/or low-income communities would experience disproportionately high and adverse effects from aircraft noise under the build alternatives due to constraints associated with implementation of the noise mitigation measures presented in Section 4.2, *Land Use*, of the Final EIR. Such constraints included interim impacts prior to the completion of noise insulation or acquisition; constraints preventing installation of soundproofing due to inconsistent zoning/land use; substandard housing units; housing units out of compliance with building code requirements; or exposure to 75 CNEL or greater noise levels in outdoor residential areas and schools (only under Alternatives A and B).

3.2.2 Additional Information and Analysis

A Final EIS is currently being prepared which includes an environmental justice analysis for NEPA purposes. That analysis will comport with NEPA requirements and applicable FAA Orders for analyzing environmental impacts, which require use of the No Action/No Project Alternative as the basis for comparison to identify the LAX Master Plan build alternatives' potential to result in disproportionately high and adverse effects on minority and/or low-income communities, rather than the environmental baseline used for CEQA purposes in the Final EIR. NEPA analysis of noise impacts for environmental justice purposes also differs from the analytic method employed by CEQA. FAA's environmental orders (using the No Action/No Project Alternative as the basis for comparison), identify significant aircraft noise effects as those instances where noise-sensitive uses within the 65 CNEL or greater contour would experience a 1.5 CNEL or greater increase, rather than the cumulative threshold used in the Final EIR where any new exposure to 65 CNEL was considered a significant effect. Whether considering noise effects within environmental justice communities using the CEQA or NEPA method of analysis, impacts arising from all alternatives would be addressed by the noise mitigation measures presented in Section 4.2, *Land Use*, of the Final EIR and as clarified in the Second Addendum to the Final EIR. In addition to these noise mitigation measures, two new environmental justice mitigation measures have been developed to address the potential for interim adverse noise impacts from new exposure to 65 CNEL or higher noise levels on residences within minority and/or low-income communities.

Even with the comprehensive mitigation measures addressing aircraft noise, certain constraints, such as code compliance issues, substandard housing, and inconsistent zoning or land use designations, may leave some property owners unwilling or unable to participate in the sound insulation program. Additionally, while funding and technical assistance to expedite soundproofing in other jurisdictions would be provided through the new mitigation measures, implementation and completion of these programs would ultimately be under the control of these jurisdictions.

3.2.3 Relationship to the Final EIR

The addition of two mitigation measures to address interim noise impacts on minority and/or low-income communities are relevant to the analysis and conclusions of the Final EIR in helping further address the potential for disproportionately high and adverse interim noise impacts on residences located in minority and/or low-income communities. The new mitigation measures MM-EJ-1, Expedite Residential Soundproofing for Qualifying Property Owners (Alternatives A, C, and D) and MM-EJ-2, Expedite Residential Soundproofing for Qualifying Property Owners (Alternative B) were developed subsequent to release of the Final EIR and the First Addendum to the Final EIR. These measures address noise impacts identified in the Final EIR for CEQA purposes where they would provide soundproofing to affected residents in minority and/or low-income communities, to the extent feasible, prior to commencing operations on the new/relocated runway in the northern runway complex under Alternatives A, C, and D and prior to commencing operations on the new runway related to the southern runway complex under Alternative B. The implementation of these new mitigation measures as presented below, would reduce the severity of noise impacts on environmental justice communities identified in the Final EIR.

New Environmental Justice Mitigation Measures Added as Part of this Second Addendum to the Final EIR

♦ **MM-EJ-1. Expedite Residential Soundproofing for Qualifying Property Owners (Alternatives A, C, and D).**

Prior to commencing operations on the new runway (Alternative A) or relocated runway (Alternatives C and D) related to the northern runway complex, LAWA will increase funding and technical assistance in order to complete residential soundproofing related to LAX aircraft noise within the City of Inglewood and Los Angeles County to the extent feasible, and will seek federal funding assistance from the FAA. Soundproofing shall be offered and provided to all property owners who have not previously received soundproofing and who qualify and choose to participate in the ANMP program, including those who are within the current ANMP boundaries, and those who would be newly exposed to the 65 CNEL or greater noise contour due to commissioning of the northern runway complex. Following fulfillment of existing commitments within the current ANMP, those who would be newly exposed shall be identified based on modeled noise contours prepared at the time the northern runway improvements are designed in order to expedite completion of soundproofing to the extent feasible prior to the commissioning of the northern runway complex. Completion of soundproofing to the extent feasible accepts that: 1) LAWA and the FAA shall offer assistance and funding to the City of Inglewood and Los Angeles County but cannot control their efforts; 2) certain properties may not qualify or may not otherwise be feasible to mitigate; and 3) some property owners may choose not to participate in the ANMP.

♦ **MM-EJ-2. Expedite Residential Soundproofing for Qualifying Property Owners (Alternative B).**

Prior to commencing operations on the new runway related to the southern runway complex, LAWA will increase funding and technical assistance in order to complete residential soundproofing related to LAX aircraft noise within the City of Inglewood and Los Angeles County to the extent feasible, and will seek federal funding assistance from the FAA. Soundproofing shall be offered and provided to all property owners who have not previously received soundproofing and who qualify and choose to participate in the ANMP program, including those who are within the current ANMP boundaries, and those who would be newly exposed to the 65 CNEL or greater noise contour due to commissioning of the runways. Following fulfillment of existing commitments within the current ANMP, those who would be newly exposed shall be identified based on modeled noise contours prepared at the time the runway improvements are designed in order to expedite completion of soundproofing to the extent feasible prior to commissioning the runways. Completion of soundproofing to the extent feasible accepts that: 1) LAWA and the FAA shall offer assistance and funding to the City of Inglewood and Los Angeles County but cannot control their efforts; 2) certain properties may not qualify or may not otherwise be feasible to mitigate; and 3) some property owners may choose not to participate in the ANMP.

The above mitigating measures will be incorporated into the final Mitigation Monitoring and Reporting Program to be adopted in conjunction with approval of the proposed Project.

Appendix
LAX Master Plan Second Addendum to the Final EIR

**AD(2)-A1. Coastal Zone Management Act (CZMA)
Consistency Determination by FAA**

December 2004

**FEDERAL AVIATION ADMINISTRATION
LOS ANGELES INTERNATIONAL AIRPORT**

**CITY OF LOS ANGELES,
CALIFORNIA**

**COASTAL CONSISTENCY DETERMINATION
FOR
RELOCATION OF EXISTING NAVIGATIONAL AND SAFETY AIDS**

I. AUTHORITY

The Federal Aviation Administration (FAA) is submitting this Coastal Consistency Determination in compliance with Section 930.34 *et seq.* of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (Title 15 Code of Federal Regulations Part 930).

II. DETERMINATION

In accordance with the Federal Coastal Zone Management Act of 1972, as amended, the FAA has determined that the relocation of existing navigational aids and associated service roads at Los Angeles International Airport (LAX) is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP), pursuant to the requirements of the Coastal Zone Management Act of 1972, as amended, (CZMA) and the California Coastal Act of 1976, as amended (CCA).

III. PROJECT AREAS AND ACTIVITIES SUBJECT TO CONSISTENCY DETERMINATION

Overview

The planning for, and evaluation of, improvements proposed for Los Angeles International Airport (LAX) have been underway for approximately a decade. This work effort occurred within the context of formulating a Master Plan for the future of LAX, specifically at the year 2015. Three "build" alternatives - Alternatives A, B, and C - for the LAX Master Plan, and a "no build" alternative - the No Action/No Project Alternative - were addressed in a Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) that was published in January 2001. In response to the terrorist attacks that occurred on September 11, 2001, the newly elected Mayor of Los Angeles directed the Los Angeles Board of Airport Commissioners to develop a new fifth alternative for the LAX Master Plan that, consistent with public comment calling for a regional approach alternative, would accommodate passenger and cargo activity levels at LAX that would approximate those of the No Action/No Project Alternative, have fewer environmental impacts than the No Action/No Project Alternative and would be designed to enhance airport safety and security. That fifth alternative - Alternative D, the Enhanced Safety and Security Plan - was developed in consultation with LAWA staff and the FAA, and was addressed in the Supplement to the Draft EIS/EIR that was published in July 2003. Alternative D represents the Los Angeles World Airports' (LAWA's) preferred alternative, as presented in the Final EIR published in April 2004 for the proposed Master Plan Improvements. **Figure 1**, Existing Conditions

1997, shows the existing (1997) layout of LAX, and **Figure 2**, Alternative D - 2015 Enhanced Safety and Security Plan, presents the plan for LAX in the future (2015) under Alternative D.

A key aspect of the proposed Project is implementing various airfield improvements that would enhance the safety and operation of the airfield and meet the requirements of the FAA. As described in greater detail below, enhanced airfield safety would be achieved through airfield facility modifications that would mitigate the primary causes of runway incursions at LAX. In addition, airfield improvements would be made to enable the existing runway systems to better accommodate aircraft operations and meet FAA standards. The number of runways would remain the same at four. Two existing runways would be moved - one by approximately 50 feet and the other by approximately 340 feet, two runways would be lengthened - one by approximately 1,400 feet and the other by approximately 1,500 feet, and all runways would be further separated from one another to improve operational efficiency and safety. A more detailed description of the airfield improvements, as well as other aspects of the proposed Project is provided in Chapter 3, *Alternatives*, of the Final EIR.

Under the proposed Alternative D, all redesigned runways and taxiways would satisfy FAA airport design requirements and increase the operational efficiency of the airfield. The proposed improvements would increase runway and taxiway separations for larger aircraft by adding parallel taxiways between runways, and by increasing safety areas to meet current FAA standards. These changes would reduce controller workload and the associated risk of runway incursions, as well as reduce the risk of aircraft damage in the event of a runway overrun.

The vast majority of the improvements proposed for LAX under Alternative D would occur outside the coastal zone, as indicated on Figure 2. Currently, the only facilities within the portion of the coastal zone adjacent to LAX include Pershing Drive, existing navigational aids and associated service roads, and abandoned roadways that served residences formerly located within the Los Angeles/El Segundo Dunes. The FAA sets standards for airfield and terminal area lighting aids and navigational systems through its 150-series Advisory Circulars and through the review and approval of airport layout plans. Navigational aids are provided to facilitate aircraft identification, approach/landing, takeoff, and taxiing operations at night and in adverse weather.

Proposed Improvements to, and Reconfiguration of, Navigational Aids

In conjunction with the runway improvements proposed under Alternative D, modifications to the existing navigation aids would occur. **Figure 3**, Location of Proposed Navigational Aids - Alternative D, shows the locations of the existing, proposed, and relocated facilities, as presented in the Final EIR. The northernmost runway, Runway 24R/6L is proposed to be extended westerly by approximately 1,495 feet, which in turn would require that the existing navigational aids, specifically the instrument landing light system be shifted to the west as well. The type of landing light system to be utilized is referred to as the Approach Lighting System (Flashing)-2 (ALSF-2). **Figure 4**, Approach Lighting System (Flashing) Towers in the Los Angeles/El Segundo Dunes, provides photographs of this type of navigational aids. The proposed ALSF-2 lighting system would decrease the spacing between lights by

increasing the number of lights used to aid pilots in identifying the airport. The number of lights would increase from 15 to 23, and the existing spacing would decrease from 200 feet to 100 feet between each light. The lights would be directed up to approaching aircraft, and the extra lighting would be used during low visibility Santa Ana conditions (strong easterly winds) and at night when planes are approaching LAX from the west. During normal operations only one-half of the lights would be illuminated. To the extent possible, subject to FAA requirements and approval, the ALSF modifications associated with the extension of Runway 24R/6L would occur at, or adjacent to, the pad areas of the existing system to reduce disturbance impacts within the coastal zone. This would also be the case relative to using the access road adjacent to the existing land light system that currently serves Runway 24R/6L. In addition to the aforementioned land light system improvements, the existing Localizer Antenna (i.e., an antenna that emits an electronic signal used for precise instrument landings during inclement weather, such as periods of heavy fog common to coastal areas such as at LAX) for Runway 24R/6L would be relocated to position within the extension of land light system.

Under Alternative D, existing Runway 24L/6R would be relocated southward by approximately 340 feet and extended east by approximately 1,280 feet and west by approximately 135 feet. As a result of the southward relocation of Runway 24L/6R the alignment and locations of the existing runway light system serving the runway would also need to be shifted to the south. In addition, the existing Localizer Antenna for Runway 24L/6R would also need to be relocated to the south. Figure 3 indicates the locations of the existing and proposed/relocated navigational aids associated with Runway 24L/6R. As shown in Figure 3, much of the relocated navigational aid system would occur at, or near, existing roads, which would reduce potential disturbance impacts within the coastal zone.

As addressed at a planning level of analysis in the Final EIR, the proposed relocation of navigational aids associated with the improvements planned for Runways 24R/6L and 24L/6R would disturb a total of approximately 66,675 square feet (1.53 acres) of area within the coastal zone based on an assumed 9'x9' pad area for each landing light standard, a 15' service buffer around each pad area, and a 15'-wide service road along the alignment of landing light pads. As noted above, existing access roads would, by intention and design, be used to the feasible; however, such roads are approximately 10 feet wide, and would need to be widened to 15 feet. The impacts of such widening of existing roads, where necessary and appropriate, have been accounted for in calculating the areas of disturbance (the location of existing roads can be seen on the underlying existing conditions basemap in Figure 3, and are also shown on Figures 5 through 7 in the discussion below). The following provides a breakdown of surface disturbance associated with the navigational aids improvements and relocations, as addressed at a planning level of analysis in the Final EIR.

Impacts from Runway 6L (in Square Feet)			
Impact Area	Pad Area (including service area buffer)	Service Roads	Localizer Antennae
Los Angeles/EI Segundo Dunes	13,689 (9 pads)	12,151	5,980
Habitat Restoration Area (HRA)	3,042 (2 pads)	1,929	0
ESB ¹ Occupied Area within HRA	0	0	0
Total Impact	16,731	14,080	5,980

¹ EI Segundo blue butterfly

Impacts from Runway 6R (in Square Feet)			
Impact Area	Pad Area (including service area buffer)	Service Roads	Localizer Antennae
Los Angeles/EI Segundo Dunes *	1,521 (1 pad)	0	0
Habitat Restoration Area	12,168 sq. ft. (8 pads)	10,215	5,980
ESB Occupied Area within HRA	3,042 (2 pads)	1,575	5,980
Total Impact	13,689	10,215	5,980

* 3 of the 4 light standards are placed on existing paved areas in the Sand Dunes

Total Impacts from Navigational Aids (in Square Feet)			
	Total Impact to Los Angeles/EI Segundo Dunes	Habitat Restoration Area Impact	ESB Occupied Area within Habitat Restoration Area
Pad Areas	30,420	15,210	3,042
Service Roads	24,295	12,144	1,575
Localizer Antennae	11,960	5,980	5,980
Total Impact	66,675	33,334	10,597

Assumptions for Calculations:

- Pads areas for light standards (ALSF-2) are comprised of a 9 ft. X 9 ft. platform plus a 15 ft. buffer = 39 ft.² = 1,521 sq. ft.
- Localizer antennae measure 100 ft. X 16 ft. plus a 15 ft. buffer = 130 ft. X 46 ft. = 5,980 sq. ft.
- New service roads will have a width of 15 ft.
- Existing service roads have an average width of 10 ft. and will be widened by 5 ft.
- Pads proposed within existing roads are not considered to have an impact

Further design of the proposed improvement and relocation of the existing navigational aids was undertaken for the purpose of this Consistency Determination, providing preliminary engineering based on site conditions and typical designs for approach lighting systems and instrument landing systems such as those anticipated for the project. The results of this additional design effort are presented in **Figure 5**, Proposed Navigational Aids - NAVAID Site Plan, **Figure 6**, Proposed Navigational Aids - Runway 6L ALSF-2, **Figure 7**, Proposed Navigational Aids - Runway 6R ALSF-2, and **Figure 8**, Proposed Navigational Aids - Details. The most notable refinements that came out of the preliminary engineering include a reduction in the amount of surface area affected by the grading of, and buffer area for, the lighting system pad areas (i.e., original assumption of 39'x39' reduced to 32'x37'), reduction of the affected area associated with each localizer antennae (i.e., original assumption of 130'x46' reduced to 118'x33'), and the identification of ancillary facilities required to support the new system (i.e., ALSF equipment shelters and adjacent gravel parking area, and localizer duct banks [e.g., electrical wire conduits] between the localizer antennae/ALSF corridor and the ALSF equipment shelters). Based on the more detailed design, the impact areas were recalculated, and a comparison between the original planning estimates and the subsequent preliminary engineering estimates is provided in the table below. It should be noted that the improvement and relocation of the navigational aids are subject to further refinement in conjunction with final engineering, the selection/purchase of the new equipment, FAA plans and specifications check, implementation of the associated manufacturer's specification, and other requirements applicable at the time Runway 24L/6R is relocated, which is currently scheduled to occur in 2012-2013.

LAX Master Plan Alternative D Impacts Within Coastal Zone (in Square Feet)						
	Runway 6L		Runway 6R		TOTAL	
	Planning Estimate	Engineering Estimate	Planning Estimate	Engineering Estimate	Planning Estimate	Engineering Estimate
ALSF Landing Light Systems	16,731	13,024	13,689	14,208	30,420	27,232
Localizer Antennae	5,980	3,894	5,980	3,894	11,960	7,788
Access Roads	14,080	10,360	10,215	10,650	24,295	21,010
Ancillary Facilities*		2,136		2,136		4,272
TOTAL	36,791	29,414	29,884	30,888	66,675	60,302
* Ancillary Facilities were calculated separately for the preliminary engineering estimate, and include a gravel parking lot, equipment shelters, and duct banks.						

With respect to the treatment of areas where existing navigational aids are removed for relocation, all aboveground structural materials (i.e., lighting standards, supports, etc.) would be removed. Any gravel areas occurring adjacent to pad areas (i.e., for service vehicles) would be cleared of gravel and revegetated with native plant material. The

existing concrete pads/foundations are proposed to be left in-place, based primarily on the fact that the amount of disturbance associated with removing the sizeable foundations would be substantially greater than the net amount of area recovered for revegetation. Specifically, it is anticipated that, similar to the installation of new pads as described above, a work area of approximately 32'x37' would be required at each pad to be removed. The resultant amount of disturbance at each pad area, approximately 1,184 square feet, would far exceed the amount of former pad area, approximately 91 square feet, made available for revegetation. Based on the total number of existing pads that would need to be removed, which includes 23 pad areas, the total amount of surface disturbance would be approximately 27,232 square feet, while the total net amount of pad area made available for revegetation would only be approximately 1,863 square feet. Additionally, approximately 2.5 cubic yards of native soils would be required as backfill for each foundation removed, and approximately 110 cubic yards of such fill would be required for each localizer pad removed, plus another 30 cubic yards of such backfill associated with the removal of the MTI radar reflector. The total amount of backfill associated with removal of foundations for the existing improvements taken out of service is estimated to be approximately 292 cubic yards. The costs for, as well as the environmental implications (i.e., dust and air pollutant emissions, interim loss of existing native vegetation that would be impacted by excavation activities, etc.) associated with, the work required to remove the existing foundations would far exceed the environmental benefits associated with recovering 1,863 square feet (net) of revegetation area; hence, such removal of existing foundations is not considered to be practicable. This is especially true in light of the fact that over 54,000 square feet (i.e., 1.25 acres) is currently proposed for revegetation in the dunes area as mitigation for the impacts of the navigational aids improvements and relocation. As described in greater detail below, the revegetation plan proposed for the disturbance of habitat area within the dunes would adequately mitigate the project-related impacts. FAA would be responsible for ensuring the completion of the proposed revegetation program in accordance with the requirements of the Biological Opinion issued by the U.S. Fish and Wildlife Service for the proposed Project. LAWA would take the lead in implementing the detailed revegetation.

Basis and Requirements for Navigational Aids Improvements

Background

As described in Section 4.14, Coastal Zone Management and Coastal Barriers, of the LAX Master Plan Final EIR, navigational aids are provided to facilitate aircraft identification, approach/landing, takeoff, and taxiing operations at night and in adverse weather. Navigational aids (NAVAIDs) and Instrument Landing System (ILS) components are currently located in the coastal zone and the Los Angeles/El Segundo Dunes, which is considered an Environmentally Sensitive Habitat Area. Through FAA's Advisory Circular 150/5300-13, Airport Design, FAA Order 6820.2A, Visual Guidance Lighting Systems, and International Civil Aviation Organizations (ICAO) Annex 14, Volume 1, Aerodromes Design and Operations, placement of NAVAID and ILS components is governed by the FAA (additional discussion regarding these requirements is provided later in this section).

According to Chapter 3 of the Draft LAX Master Plan, the existing approach lighting systems for LAX's runways provide high lighting intensity for all four west and east flow runways. The approach lighting system on the principal west flow runways, 24R and 25L, is ALSF-2,

which is an advanced, high intensity lighting system. All runways, with the exception of 24L/6R, have runway centerline lights. Runways 24R and 25L, the primary arrival runways in west flow, and 7L, one of two primary arrival runways in east flow, also have touch down zone lighting. All runways at LAX also use a precision approach system called the Instrument Landing System (ILS). The ILS's electronic components consist of radio transmitters that guide the aircrafts' alignment with the runway (localizer), descent to the runway (glide slope), and distance from the runway (marker beacon).

Currently, Runway 6R, the runway where proposed NAVAID and ILS realignment would occur within the Los Angeles/El Segundo Dunes and the coastal zone, is equipped with a Category-I ILS and a Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALSR). The Category-I ILS provides electronic vertical and horizontal guidance with cloud ceiling and visibility approach minimums as low as 200 feet above Runway 6R's touchdown zone elevation and 1,800 feet visibility as reported by Runway Visual Range equipment (RVR). The MASLR ALS is an integral part of the Category-I ILS. When the MASLR is inoperative, the horizontal RVR visibility minimums increase to 4,000 feet. For safety considerations when these higher visibility minimums are in effect, the runway may not be available for landing during meteorological conditions having periods of reduced visibility. Periodic meteorological conditions at LAX during certain times of the year mandates a better.

Basis for Runway Improvements That Pertains to Need for Navigational Aids Improvements

Proposed improvements in the LAX Master Plan project are intended to achieve three primary objectives. These objectives are:

- To respond to local and regional demand for air transportation during the period of 2000 to 2015, taking into consideration the amount, type, location, and timing of such demand;
- To ensure that new investments in airport capacity are efficient and cost-effective, maximizing the return on existing infrastructure capital; and
- To sustain and advance the international trade component of the regional economy and the international commercial gateway role of the City of Los Angeles.

Current facilities at LAX make achieving the above objectives difficult. According to the LAX Master Plan EIS/EIR, the number and configuration of the existing four runways are inadequate to serve current and projected demand. Only one of the four runways (Runway 25R on the south airfield) is sufficiently long to serve the largest aircraft when fully loaded during adverse weather conditions (hot days with little wind). Aircraft departing from gates in the north airfield often need to use Runway 25R and endure long taxi distance with significant airfield congestion along the way. The difference in runway lengths between the north and south airfield complexes creates an imbalance in operations by preventing air traffic from being evenly distributed.

The north pair of runways (Runways 24L/6R and 24R/6L) has a separation distance of 700 feet between the two runways, and the south pair of runways (Runways 25L/7R and 25R/7L) has a runway separation distance of 750 feet. These runway separations do not meet current FAA design standards so, to operate safely, FAA requires that each pair be operated dependently, with greater aircraft separations and hold times to allow safety margins for weather and wake turbulence. This dependent operation reduces the number of planes that can use the runways at any given time and thus limits the airfield capacity. The runways are currently too closely spaced to allow center taxiways so aircraft can clear the runways sooner. Therefore, following aircraft are prohibited from landing at shorter intervals, and airfield congestion and risk of runway incursions increases. A runway incursion is defined by the FAA as any occurrence in the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land.

The FAA provides standards for runway, taxiway, and taxilane design, including length, width, separation, radius of turns, layout, and pavement material composition. These standards are published in FAA Advisory Circular 150/5300-13, Airport Design, and are intended to provide for a high degree of safety in any setting. For the most part, the current design and operation of LAX are responsive to FAA Airport Design Standards. However, the size of today's larger aircraft has resulted in the need to employ some special procedures for such aircraft to operate safely on the ground in areas that were originally designed for smaller aircraft.

Airplanes operating at LAX today are much larger than the airplanes in service at the time of its current design. The existing airfield at LAX was originally designed to serve the first commercial passenger jet aircraft, such as the Boeing 707 and Douglas DC-8. The wingspans of these aircraft are 131 feet and 143 feet, respectively. In its role as an international gateway, LAX became one of the first airports served by the original Boeing 747 and its current successor, the 747-400. The wingspans of these aircraft range from 195 to 231 feet. Larger aircraft, with wingspans ranging between 223 and 232 feet, also occasionally use LAX. Thus, the current runway separations do not allow the two pairs of parallel runways to operate independently from one another.

The taxiway system, another key component to airfield operations and a factor in determining airfield safety and efficiency, provides the link between runways and the terminal gates. At busy airports, the airport throughput capacity, to a large degree, is a function of how efficiently the taxiway system permits the flow of aircraft movement between the runways and the terminal gates. Two critical operational factors must be considered in determining taxiway system requirements: aircraft size and the level of aircraft demand throughout the day.

As discussed in Chapter 3 of the Draft LAX Master Plan, as airport activity increases, taxilane and taxiway congestion will worsen. Based on the design of the existing taxiway system, when departure queues occupy the outer taxiway in the terminal area, the flow to and from concourses on the north and south complexes is limited to a single taxiway. In addition, single cul-de-sac taxilanes between adjacent terminals limit flow to a single direction at all times. Aircraft that push-back to the inner taxiway block other aircraft

traveling along the taxiway. These design and operational conditions cause congestion, especially during peak periods on the south complex, when arrivals and departures are taxiing to and from their gates simultaneously.

The existing taxiway system at LAX can accommodate FAA Aircraft Design Group V, with some restrictions. Design Group V includes aircraft with a wingspan up to 213 feet and includes the Boeing 747-400, the largest aircraft currently operating at the airport. However, the following areas are specifically restricted from certain operations or certain simultaneous operations, as noted.

- Impaired wing clearance exists on Taxiway B between Taxiways C-6 and C-5 when Taxiway C is occupied (applies to all commercial jet aircraft). Taxiways C-1, A-2, A-4, Taxiways C-6, C-7, C-8, C-9 north of Taxiway C (between Terminals 4, 5, 6, 7 and 8) and Taxiway D between Taxiways D-7 and D-8 will not accommodate Boeing 747 or larger (Design Group V) aircraft.
- The inner taxiway above Terminal 1 has an additional restriction in that only Boeing 737 aircraft or smaller can be accommodated.
- There is insufficient clearance between Boeing 747-400 or larger aircraft on Taxiway C between Taxiways C-6 and C-5 and vehicles on the adjacent service roads.
- According to "Airport Design Advisory Circular 150/5300-13 (September 29, 1989) the standard runway centerline to parallel taxiway centerline separation distance is 400 feet for Design Group V. The separation from Taxiway B to Runway 25R is 350 feet and therefore does not meet Design Group V standards. However, with a modification of standards, 350 feet provides an acceptable level of safety for Design Group V aircraft except under certain weather conditions for Boeing 747 aircraft.
- Taxiway C has insufficient clearance to Taxiway B in dual taxi operations east of Terminal 8.
- The taxiways between Terminals 2 and 3, 4 and 5, 5 and 6, 6 and 7, and 7 and 8 do not meet Design Group III standards, although aircraft larger than Group III currently use some of these taxiways. In addition, the Terminal 1 taxiway after gate 9 is restricted to Boeing 737 aircraft or smaller, affecting gates 1, 3, 5 and 7.
- All Boeing 747 or larger aircraft eastbound on Taxiway C are prohibited from transiting to Taxiway B via Taxiway C-9.
- Taxiway D between Taxiways D-7 and D-8 is restricted to Boeing 767 or smaller aircraft.

As activity increases at LAX and a greater proportion of the fleet becomes Design Group V aircraft, the potential for taxiway congestion will increase due to these taxiway and taxiway restrictions. Heavy aircraft are expected to make up over 30 percent of operations in the

2015 design day schedule and over 40 percent of operations in the peak hour in 2015. Future design of the taxiway/taxilane system and terminal area can eliminate these restrictions. Based on analysis conducted during preparation of the LAX Master Plan, as outlined in Chapter 3, placing parallel taxiways between Runways 24R and 24L and Runways 25R and 25L is recommended to allow aircraft to stop and queue between runways.

Another consideration incorporated into the design of the taxiway system proposed under Alternative D is minimizing risks associated with runway incursions. In June 2002, FAA published a study entitled, "FAA Runway Safety Report: Runway Incursion Trends at Towered Airports in the United States – CY 1998-CY 2001." This report identified a total of 1,460 runway incursions out of 268 million airport operations in the U.S. that resulted in three collision and four fatalities over the four years studied. LAX experienced 38 total runway incursions during the period of the FAA study and had an average rate of occurrence of 1.24 incursions per 100,000 operations. Annual runway incursions at LAX totaled 12, 10, 8 and 8, respectively, for the years of 1998 through 2001. The annual rates of runway incursions for the same period marked 1.55, 1.28, 1.02 and 1.08 per 100,000 operations, respectively.

In July 2003, the FAA published the updated Runway Safety Report, which, unlike the pervious version, compiled the data on a fiscal-year basis. This FAA Runway Safety Report reflects the runway incursion trends for fiscal years 1999 through 2002. The report indicates that the annual runway incursions at LAX totaled 9, 10, 9 and 6, respectively, over the four years studied. The rate of runway incursions at LAX for the same period marked 1.17, 1.28, 1.15 and 0.94 per 100,000 operations, respectively. It is important to note that the discrepancies in the annual runway incursion figures between the 2003 report and the 2002 report resulted because two different measurements were used in compiling data (i.e., fiscal year vs. calendar year).

For comparison purposes, annual incursion rates (per 100,000 operations), over the same five-year period for the Atlanta Hartsfield, Dallas Fort Worth, and Phoenix Sky Harbor Airports are indicated below:

Annual Incursion Rates Per 100,000 Operations				
	Los Angeles International (LAX)	Atlanta Hartsfield (ATL)	Dallas Ft. Worth (DFW)	Phoenix Sky Harbor (PHX)
1998	1.55	0.24	0.54	1.32
1999	1.17-1.28 ⁽¹⁾	0.66	0.81	0.53
2000	1.02-1.28 ⁽¹⁾	0.33	0.35	0.94
2001	1.08-1.15 ⁽¹⁾	0	0.75	1.65
2002	0.94	0.45	0	1.04

Note: (1) Range includes both calendar-year and fiscal-year data from the three-year period common to both reports references above.

Of these three airports, ATL is the most similar to LAX in terms of operational characteristics, including runway layout and the volume of annual operations. During the same period of time, LAX had four times the average rate of occurrence of runway

incursions than ATL, although LAX had approximately 20 percent fewer operations than ATL. LAX ranked first throughout the United States as the airport that had the greatest number of runway incursions during the four-year period (CY1998-CY2001) a total of 38 incursions. LAX was followed by North Las Vegas Airport with 32 incursions, and St. Louis-Lambert International with 31 incursions.

FAA also classifies runway incursions by their relative severity. The highest severity is given to an incursion in which extreme action is needed to avoid a collision or if a collision occurs. Five of the 38 runway incursions at LAX during the period of the 2002 FAA report were in this category; none of the five resulted in a collision.

One of FAA's goals is to raise awareness of runway incursions, identify solutions, and implement strategies to reduce their severity, frequency, and the risk of a runway collision. Airport surface radar technology and airport infrastructure implementation at key airports like LAX are some of the strategies identified by FAA to help solve the problem. LAWA has already implemented improvements to airfield lighting, taxiway marking, runway signage, and has sponsored on-going seminars on airfield familiarization with airport users. However, more improvement is needed.

Because FAA airport design standards have changed over time, certain features of the existing airfield do not meet current standards. These conditions are documented under Federal Aviation Regulations Part 139, available through LAWA. While these conditions do not create an unsafe airfield environment, they do add to airfield congestion as operations increase by imposing slower taxi speeds, which result in an increase in air pollution and aircraft delay. Improvements to runways and terminals at LAX would increase taxiway separations to meet current FAA design standards, as explained in FAA Advisory Circular 150/5300-13, Airport Design. Without the improvements to LAX, airfield safety would not be enhanced, and efficiency of the airfield would not be increased.

Federal Regulations Governing Runway and Taxiway Separations

To protect human health and welfare from the risk of incursions and aircraft incidents and accidents, the FAA has established extensive safety regulations governing the operation of aircraft as well as the design of airports. Current design standards regarding the placement, alignment and configuration of Approach Lighting System (ALS) is prescribed in the FAA Advisory Circular 150/5300-13, Airport Design, Paragraph 605, FAA Order 6850.2A, Change 1, Visual Guidance Lighting Systems and International Civil Aviation Organization's (ICAO) Annex 14, Aerodromes, Volume 1, Aerodromes Design and Operations, paragraph 5.2.3.10. All FAA and ICAO references indicate that the ALS shall be aligned on and about the extended runway centerline.

Based on current FAA and ICAO design standards, the ALS shall be aligned with the extended runway centerline. There are no published guidelines or allowances for modifications to these design standards.

As discussed in Section 4.24.3, Safety in the Final EIS/EIR, the requirements included in the Airport Design Standards are based on the requirements for safe aircraft takeoff, landing, and ground movement. These requirements have evolved as experience and

research have increased FAA's understanding of what is necessary to enhance aviation safety. FAA Airport Design Standards include safety compatibility criteria to which airports must conform. The basic objective of safety compatibility criteria is to minimize the risk associated with potential aircraft accidents. In addition to designation of runway safety areas, FAA provides standards for runway, taxiway, and taxilane design, including length, width, separation, radius of turns, layout, and pavement material composition.

LAX was built prior to the establishment of the FAA's current design standards for airports serving large commercial jets. For this reason, not all of the safety areas and safety zones surrounding the four LAX runways universally meet today's recommended dimensions for new airport development.

FAA has established a mechanism for allowing existing airports to continue operating unimpeded through the declaration of safe aircraft operating parameters known as "declared distances." Guidance on the application of this methodology is contained in FAA Advisory Circular 150/5300-13, Airport Design. Appendix 14 of this Advisory Circular states, "The use of declared distances for airport design shall be limited to cases of existing constrained airports where it is impracticable to provide the runway safety area (RSA), the runway object free area (ROFA), or the runway protection zone (RPZ) in accordance with the design standards in Chapters 2 and 3 [of Advisory Circular 150/5300-13]."

LAX continues to safely operate using these declared distances. However, implementation of Alternative D would allow LAX to meet the current FAA design standards recommended for a safe and efficient airfield serving large commercial jets.

Proposed Alternative D Configuration

Under Alternative D, the existing runways would be upgraded and relocated; no new runways would be added. Alternative D would maintain the existing four-runway system with modifications to the two north and south airfield runways. Taxiways would be designed to accommodate the Boeing 747-400 as the design aircraft (Group V) with operational and modified Group VI solutions for the operation of anticipated limited numbers of the New Large Aircraft (NLA). In addition, all existing runway ends would be redesigned to have Runway Safety Areas (RSAs) that meet current FAA standards of 1,000 feet long by 500 feet wide.

As discussed in Section 4.24.3, Safety of the EIS/EIR, LAX was built prior to the establishment of the FAA's current design standards for airports serving large commercial jets. For this reason, not all of the safety areas and safety zones surrounding the four LAX runways universally meet today's recommended dimensions for new airport development.

Under Alternative D, in the north airfield, Runway 6L/24R would have a physical pavement length of 10,420 feet. The west end of the runway would have a 1,000-foot displaced threshold in order to provide the recommended 1,000-foot Runway Safety Area (RSA). A 500-foot clearway would extend off of the west end of the runway, increasing Take-Off Distance Available (TODA) for Runway 24R, while a 1,000-foot clearway would extend from the east end, increasing TODA for aircraft departing Runway 6L.

Also in the north airfield, Runway 6R/24L would have a physical pavement length of 11,700 feet. Both runway ends would have displaced thresholds of 1,000 feet to accommodate the recommended 1,000-foot RSA. A 300-foot clearway would extend from the west end of the runway increasing TODA for Runway 24L to 12,000 feet.

Under Alternative D, in the south airfield, Runway 7L/25R would have a physical pavement length of 12,091 feet. Runway 7L/25R is the only runway at LAX that would not be modified under Alternative D. The west end of the runway would have a displaced threshold of 957 feet. The Runway 25R arrival threshold displacement would allow the runway's approach path to clear an existing air freight building. A 1,000-foot clearway would be extended from the west end of the runway allowing for increased TODA for westbound departures from the runway.

Also in the south airfield, Runway 7R/25L would have a physical pavement length of 11,096 feet. Runway 7R/25L would not have displaced thresholds at either end. A 1,000-foot clearway would be identified at the west end of the runway allowing increased TODA for westbound departures from the runway.

As described in the LAX Master Plan Final EIR's Topical Response TR-SAF-1, Aviation Safety, under Alternative D, all modified runways would satisfy FAA airport design standards and increase the operational efficiency of the airfield. The proposed improvements described in Chapter 3, Alternatives, of the EIS/EIR would increase runway and taxiway separations for larger aircraft by adding parallel taxiways between runways, and by increasing safety areas to meet current FAA standards. These changes would reduce air traffic controller workload and the associated risk of runway incursions, as well as reduce the risk of aircraft damage in the event of a runway overrun.

The airfield modifications proposed under Alternative D present a physical solution that would reduce the risk of runway incursions through the elimination of the existing high-speed taxiway exits directly linking parallel runways at LAX. The existing airfield requires landing aircraft to exit the outboard runways onto high-speed taxiways that provide an unimpeded route to a neighboring parallel runway on which simultaneous aircraft departures are occurring. The existing airfield has four full-length taxiways providing east-west routes for aircraft to maneuver on the airfield, none of which are between either pair of runways. Two new parallel taxiways, one between each pair of parallel runways, would be constructed under Alternative D.

In addition to the proposed parallel taxiway between each pair of runways, the existing Taxiway D, which is located north of existing Terminals 1, 2 and 3, would be extended to the west boundary of the airfield increasing available east-west taxi routes to taxiing aircraft. The airfield improvements would increase the number of available east-west taxi routes at LAX from four to at least seven. Each improved or proposed taxiway would be constructed to meet current FAA airfield design standards for wide-body aircraft, thus enhancing access to contact gates designed specifically for wide-body aircraft and eliminating the need to bus passengers across the airfield to remote aircraft hardstands for boarding.

Instrumentation, lighting and other navigational aids assist pilots in maneuvering aircraft with high levels of safety and efficiency under various weather conditions. The most critical point

of the approach to landing comes when the aircraft breaks through the overcast and the pilot must change from instrument to visual conditions. Sometimes only a few seconds are available for the pilot to make the transition and complete the landing. During a landing operation, pilots must control and coordinate six degrees of freedom and interpret visual translation information regarding the aircraft's alignment, height, and distance; rotation information regarding pitch, yaw and roll and information concerning the rate of descent and the rate of closure with the approach end of the runway.

The ALS is a standard configuration of aeronautical ground lights in the approach area to the runway that provides the basic means to transition from instrument flight to visual flight for landing. Operational requirements dictate the sophistication and configuration of the approach light system for a particular runway. As part of a precision instrument runway such as Runway 6R, the ALS is a configuration of signal lights starting at the landing threshold and extending into the approach area along the extended runway centerline to a distance of 2,400 feet and includes sequenced flashing lights which appear to the pilot as a ball of light traveling towards the runway at high speed.

Navigational aid and instrument land system placement is governed by the FAA through Advisory Circular 150/5300-13, Airport Design, FAA Order 6820.2A, Visual Guidance Lighting Systems, and ICAO Annex 14, Volume 1, Aerodromes Design and Operations. Based on the proposed reconfiguration of runways and taxiways under Alternative D of the LAX Master Plan, to maintain airfield and aircraft safety, associated NAVAIDS and ILS components would need to be realigned pursuant to the mandates contained in FAA's Advisory Circular and Executive Orders.

As discussed above and in Chapter 3 of the LAX Master Plan and Section 4.14, Coastal Zone Management and Coastal Barriers of the LAX Master Plan EIS/EIR, FAA's Advisory Circular 150/5300-13, Airport Design, FAA Order 6820.2A, Visual Guidance Lighting Systems, and ICAO Annex 14, Volume 1, Aerodromes Design and Operations, govern the placement of NAVAID and ILS components relative to runway centerlines.

Alternative D would require changes to navigation aids for Runway 6R within the coastal zone and the Los Angeles/EI Segundo Dunes. As part of a planned upgrade of the Runway 6R ILS to Category-II capabilities, the existing MALSR will be upgraded to a High-Intensity ALS with Sequenced Flashers (ALSF-2). The primary differences between the MALSR and ALSF-2 are the number and separation of lights situated along the approach path to the runway end. Both systems extend 2,400 feet beyond the landing threshold and are centered symmetrically about the extended runway centerline.

The Category-II ILS provides electronic vertical and horizontal guidance with cloud ceiling and visibility approach minimums as low as 100 feet above the runway touchdown zone elevation and 1,200 feet RVR. The ALSF-2 is used exclusively for Category-II/III ILS Standard Instrument Approach procedure (SIAP) operations to align the aircraft with the centerline of the runway and to establish vertical orientation. When the ALSF-2 ALS is inoperative, ILS Category-II/III procedures are not permitted therefore making the runway unavailable.

IV. CONSISTENCY OF FAA PROPOSALS WITH PROVISIONS OF THE CALIFORNIA COASTAL ACT

This portion of the federal consistency determination analyzes consistency between policy sections of the California Coastal Act (Division 20, California Public Resources Code) and FAA proposals and actions at LAX included within the California Coastal Zone boundary. Policies not applicable to FAA's proposal to relocate existing navigational and safety aids are listed first. Policies determined to be more relevant to the proposed Project are listed next, and are accompanied by discussion and analysis related to the subject issue. Also provided is a summary of public comments received during the public review periods for the LAX Master Plan Improvements Draft EIS/EIR and the Supplement to the Draft EIS/EIR that relate to such policies, as well as a summary of the written responses provided to such comments.

A. POLICIES UNDER THE CALIFORNIA COASTAL ACT THAT ARE NOT APPLICABLE TO, OR AFFECTED BY, THE LAWA PROPOSAL

Article 2 (Public Access):

- §30210 Posting of access
- §30211 Development shall not interfere with access;
- §30212 Access from new projects
- §30212.5 Distribution of public facilities;
- §30213 Encouragement of lower cost visitor and recreational facilities;
- §30214 Implementation of public access policies; legislative intent;

Relocation of the existing navigational aids would occur within an area owned by LAX that lies within the coastal zone. This area is, and will continue to be, secured from public access due to airport safety and national security needs. Coastal access is, and would continue to be, allowed on the public roads outside of the secured area. Maximum public access to the coast would be maintained consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse. Development activities related to the relocation of existing navigational aids would not interfere with public access to the sea nor affect lower cost visitor and recreational facilities.

Article 3 (Recreation)

- §30220 Protection of unique water-oriented activities;
- §30221 Protection for recreational use and development of oceanfront land;
- §30222 Priority of development purposes of private lands;

- *§30222.5 Oceanfront lands; aquaculture facilities; priority of oceanfront lands suitable for aquaculture;*
- *§30223 Reservation of upland areas;*
- *§30224 Encouragement of recreational boating use;*

Based on the airport safety and national security requirements for the navigational aids, as mandated by FAA, activities associated with relocating existing navigational aids within the coastal zone do not pertain to coastal recreation uses and activities. LAX property situated within the coastal zone does not currently provide for public access and use, and relocation of the existing navigational aids would not change existing public access restrictions in any way.

Relocation of existing navigational aids would not affect coastal areas suited for water-oriented recreational activities; oceanfront land, and the recreational opportunities along the oceanfront adjacent to LAX; the priority afforded to recreational facilities designed to enhance public opportunities for coastal recreation, nor the ability to increase recreational boating use of the adjacent coastal waters; or upland areas and their relationship to coastal recreation uses.

Article 4 (Marine Environment):

- *§30230 Maintenance and restoration of marine resources;*
- *§30231 Maintenance and restoration of water quality;*
- *§30232 Protection against spills of oil and hazardous substances;*
- *§30233 Diking, filling or dredging of waterways; erosion control;*
- *§30234 Protection of commercial fishing and recreational boating industries*
- *§30234.5 Importance of fishing activities*
- *§30235 Revetments, breakwaters, etc.;*
- *§30236 Waterway modification; mitigation; restrictions;*
- *§30237 Habitat conservation plan; Bolsa Chica;*

The above CCA policies do not apply to the relocation of existing navigational aids based on the fact that the existing and proposed navigation aids are substantially removed from marine resources, would not result in the potential for oil and hazardous substance spills, would not involve revetments/breakwaters, would not involve diking, filling or dredging in coastal zone, would not involve boating or fishing, and would not be located near Bolsa Chica.

To prevent impacts to the coastal zone and coastal waters from erosion and runoff associated with relocating the existing navigational aids, FAA would incorporate BMPs into the construction process for the navigational aids and associated service roads. Measures including BMPs to address potential erosion impacts associated with Project construction are specified in Section 4.7, *Hydrology and Water Quality* of the Final EIR for the LAX Master Plan Improvements.

Article 5 (Land Resources):

- §30241 *Prime agricultural land; maintenance in agricultural production;*
- §30241.5 *Agricultural lands; determination of viability of uses; economic feasibility evaluation;*
- §30242 *Lands suitable for agricultural use; conversion;*
- §36243 *Productivity of soils and timberlands; conversions;*

The above CCA policies do not apply to the relocation of existing navigational aids based on the fact that the relocation of navigation aids would not be near, and would not involve, agricultural or timber lands.

- §30244 *Archaeological or paleontological resources.*

Relocation of the existing navigational aids would not directly or indirectly affect any known archaeological or paleontological resources. According to previous archaeological and paleontological surveys, as discussed in Section 4.9, *Historic/Architectural and Archaeological/Cultural and Paleontological Resources*, of the Final EIR for the LAX Master Plan Improvements, no known resources exist within the coastal zone area of the LAX property. One historic building, a WWII munitions storage bunker, is located within the coastal zone, but the proposed relocation of the existing navigational aids would not affect the building. In the event that previously unidentified archaeological and/or paleontological resources were to be discovered during the relocation and construction efforts, implementation of mitigation measures MM-PA-1 through MM-PA-7 in the Final EIR would reduce impacts to these resources. Therefore, no archaeological or paleontological resources within the coastal zone would be adversely affected.

Article 6 (Development):

- §30250 *Location, existing developed areas.*

The proposed relocation of existing navigation aids would occur within an area devoted to such airport related facilities and, due to the nature of the area and uses, no other coastal developments are nearby. Due to the nature of the project, there is not much, if any, discretion about where to best locate the facilities. The FAA regulations noted above in Section III mandate the placement of navigational aids at runway centerlines to ensure aviation safety; therefore, the facilities cannot be clustered with other such facilities in order promote compatibility within coastal zone.

- *§30251 Scenic and visual qualities.*

The navigational aids proposed to be relocated in conjunction with Alternative D would generally be similar in size and design to the existing facilities that have existing in the dunes for decades, and would continue to exist irrespective of Alternative D. Similar to the existing navigational aids, the relocated navigational aids would not be readily apparent from either Pershing Drive or Vista del Mar. The area of the Los Angeles/El Segundo Dunes in which the existing and proposed navigational aids are located is fenced off with green security fencing to prevent public access. The design of navigational aids is mandated by FAA standards, and due to the strict safety specifications, the aesthetic appearance of the navigational aids cannot be changed in any way.

- *§30252 Maintenance and enhancement of public access*

Relocation of existing navigational aids would not affect public access to the coast. Currently, the portion of LAX property within the coastal zone is not accessible to the public for aviation safety and national security reasons. However, coastal access is provided west of the Los Angeles/El Segundo Dunes, and via existing roads to the north and south of the subject area. The new location for the relocated navigational aids would maintain all existing coastal access routes adjacent to and surrounding LAX.

- *§30253 Development Mandates*

Relocation of existing navigational aids would not occur in areas of high geologic, flood, and fire hazard; would not contribute significantly to erosion, geologic instability, or destruction of the Los Angeles/El Segundo Dunes (as discussed under Article 4 above); and would not pertain to AQMD/ARB requirements or minimizing energy consumption and vehicle miles traveled. The relocated navigational aids would not adversely affect popular visitor destination points for recreational uses in the coastal zone.

- *§30254 Public works facilities.*

Relocation of existing navigational aids is proposed within close proximity, approximately 340 feet to the south of the existing navigational aids for Runway 24L/6R, and as a westerly extension of the existing navigational aids for Runway 24R/6L. The facilities would be designed and constructed to minimize the footprint on the Dunes, and relocation of the navigational aids would be done in compliance with FAA regulations for navigational aid and aviation safety. Relocation of the existing navigational aids would not expand the capacity nor increase the number of arrivals and departures at LAX.

- *§30254.5 Sewage treatment plant development; prohibition on terms and conditions*

Relocation of existing navigational aids would not involve the development of a sewage treatment plant.

- *§30255 Priority of coastal-dependent developments.*

Relocation of existing navigational aids is proposed in compliance with FAA's regulations related to airport design and aviation safety. Navigational aids are not coastal-dependent facilities and would not affect or hinder the priority of other coastal-dependent development in the area. Additionally, no wetlands within the coastal zone would be affected by the proposed navigational aid relocation.

Article 7 (Industrial Development):

- §30260 Expansion or location of industrial development;
- §30261 Use of tanker facilities; liquefied natural gas terminals;
- §30262 Oil and gas development;
- §30263 Refineries or petrochemical facilities;
- §30264 Thermal electric generating plants;
- §30265 Legislative findings and declarations; offshore oil transport and refining; and
- §30265.5 Governor or designee; coordination of activities concerning offshore oil transport and refining; duties.

Relocation of existing navigational aids is not considered industrial development and would not conflict with policies pertaining to the location or expansion of coastal-dependent industrial facilities within their existing sites. The relocation of existing navigational aids would not include the design of tanker facilities, oil and gas development, the construction of new, or expansion of existing refineries or petrochemical facilities, thermal electric generating plants in the coastal zone, offshore oil transportation, or coordination of activities and duties concerning offshore oil transport and refining by the Governor or designee.

B. RELEVANT POLICIES OF THE CALIFORNIA COASTAL ACT

Article 5, Land Resources

§30240 environmentally sensitive habitat areas; adjacent developments

(a) *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*

(b) *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Comment and Analysis:

Existing Los Angeles/El Segundo Dunes Habitat

Los Angeles World Airports (LAWA) owns and manages the 307-acre Los Angeles/El Segundo Dunes located immediately west of the airport operations area and actively maintains approximately 203 acres of the 307-acre site. Known as the El Segundo Blue Butterfly Habitat Restoration Area, the 203-acre site is home to the federally-listed El Segundo blue butterfly and several other sensitive habitat and species and is the largest remaining representation of coastal dune community within Los Angeles.

LAX has two generally designated open areas that make up the affected environment in the Los Angeles/El Segundo Dunes, and thus the coastal zone:

- (1) The El Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area) located to the west of the airfield, comprised of approximately 202.8 acres. Four biotic communities are represented: Southern Foredune (135.6 acres), Southern Dune Scrub (24.4 acres), Valley Needlegrass Grassland (17.1 acres), and Developed (25.7 acres).
- (2) Approximately 104.3 acres of non-restructured dunes adjacent to and north of the Habitat Restoration Area, comprised of three biotic communities: Disturbed Dune Scrub/Foredune (74.6 acres), Non-Native Grassland/Ruderal (16.9 acres), and Developed (12.8 acres).

The largest of the open-space areas within the coastal zone is the Los Angeles/El Segundo Dunes, the largest extant remnant of one of five major sand dune complexes that historically occurred in California south of San Francisco. Within the coastal zone, there are approximately 307 acres of dunes and related landforms, 202.8 acres of which are designated as the Habitat Restoration Area. An additional 104.3 acres of dunes and adjacent landforms lie to the north of the Habitat Restoration Area.

The Habitat Restoration Area is home to the federally listed El Segundo blue butterfly. LAWA's habitat conservation and restoration efforts were initiated in 1987 and have received national attention. LAWA, in coordination with U.S. Fish and Wildlife and the California Department of Fish and Game, has provided and continues to provide the resources necessary for the habitat conservation and restoration efforts. The Habitat Restoration Area is the largest remaining representation of coastal dune community within Los Angeles. Since its initiation, ecological restoration has extended the distribution of its constituent plant communities to approximately 202.8 acres.

There are 20 sensitive plant species designated by federal or state agencies that were determined to have the potential to be present within the coastal zone. Surveys conducted for sensitive plant species identified three of these species within the coastal zone. Surveys identified 9,051 individuals of Lewis' evening primrose within the Habitat Restoration Area and an additional 300 individuals within the airfield. The El Segundo duneflower was also present within the Habitat Restoration Area, with an extremely small population of only three individuals. The California spineflower was also located in eight areas within the Habitat Restoration Area; 572 individuals were found. Seventeen sensitive plant species were determined absent within the coastal zone.

There were 34 sensitive wildlife species designated by federal or state agencies that were determined to have the potential to occur within the coastal zone; 24 of these species were identified within the coastal zone. There are 18 sensitive arthropods, 14 sensitive insect species and four sensitive arachnids, all of which were located within the Los Angeles/El Segundo Dunes. The western spadefoot toad was determined present in ephemeral ponds in the south airfield. Two sensitive reptiles, the silvery legless lizard and the San Diego horned lizard, were determined present within the Los Angeles/El Segundo Dunes. Two sensitive bird species, the burrowing owl and the loggerhead shrike, were detected in the Los Angeles/El Segundo Dunes. The only sensitive mammal present in the coastal zone is the San Diego black-tailed jackrabbit, which utilizes the open space area located within the southwestern corner of the airfield.

As mentioned above, six biotic communities have been identified within the coastal zone. The biotic communities and vegetation types found within the coastal zone are discussed in detail below.

Southern Foredune: Southern Foredune plant communities are typically dominated by perennial species with a high proportion of suffrutescent (slightly woody at base) plants up to 30 cm tall. The Southern Foredune community is inhabited by a number of wildlife species, including the federally-listed El Segundo blue butterfly.

Within the study area, 135.6 acres of this community are found within the Habitat Restoration Area west of Pershing Drive. Relatively undisturbed areas (about 40 acres) surrounding the Very High Omni Range Navigation Beacon provide the most representative example of this community. Ecological restoration efforts undertaken between 1987 and 1994 have restored an additional 95.6 acres. The host plant and primary food source for the El Segundo blue butterfly, coast buckwheat, is found in this biotic community.

Southern Dune Scrub: Southern Dune Scrub is a dense coastal scrub community of scattered shrubs, subshrubs, and herbs, generally less than 1 meter in height, often developing considerable cover, and often succulent. Along the coast, Southern Dune Scrub intergrades with the Southern Foredune plant community.

The Los Angeles/El Segundo Dunes contain virtually the only remaining example of this plant community in mainland Southern California. The Southern Dune Scrub community is found only within the Habitat Restoration Area along the steep slope of the backdune and is comprised of 24.4 acres. The host plant and primary food source for the El Segundo blue butterfly, coast buckwheat, is found in this biotic community.

Valley Needlegrass Grassland: The deflation plain east of the backdune consists of loosely consolidated (incipient) sandstone covered to variable depths with aeolian (wind-transported) sand. Many common species of birds and two reptiles are known to utilize this biotic community.

This biotic community has been significantly altered and degraded by development activities. The floral components typically associated with it are now almost completely absent due to extensive grading and paving and the invasion of exotic annual grasses. No vernal pools exist today. The Valley Needlegrass Grassland community occupies 17.1

acres within the Habitat Restoration Area, and is limited to three distinct areas adjacent to and west of Pershing Drive.

Disturbed Dune Scrub/Foredune: This community is made up of 74.6 acres and is located north of the Habitat Restoration Area, south of Waterview Street, west of Pershing Drive, east of Vista del Mar Boulevard, and is bisected by Sandpiper Street. This biotic community is heavily disturbed and is dominated by invasive species that drive out native vegetation. The few coastal dune elements are patchy and include burbush, dunes evening primrose, bush lupine, pink sand verbena, and deerweed. Coast buckwheat is absent from this site.

Non-Native Grassland/Ruderal: Non-Native Grassland/Ruderal areas are those that have been subjected to past disturbance. This biotic community is comprised of 721.8 acres and is heavily fragmented throughout LAX. It includes a portion of the Los Angeles/El Segundo Dunes that was once a residential area, and areas along the northern perimeter of the airport that were also historically residential. This biotic community is also represented between the runways and taxiways on the airfield, which undergoes regular operations maintenance and is routinely mowed.

Developed: Developed areas within the study area occupy 2644.9 acres and include the airfield, terminals, parking, roads, and support facilities.

Direct Affects from Navigational Aids

Under Alternative D, construction of navigational aids and associated service roads would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Los Angeles/El Segundo Dunes. The new navigational aid system would include a new ALSF-2 lighting system and would permanently convert 0.25 acres of active El Segundo blue butterfly habitat in the Dunes to concrete to support the navigational lighting system. The proposed ALSF-2 lighting system would decrease the spacing of lights and increase the number of lights used to aid pilots in identifying the airport from 15 to 23. The spacing between each light would decrease from 200 feet to 100 feet. The lights from the ALSF-2 would be directed up at approaching aircraft. The extra lighting would be used during low visibility Santa Ana conditions (strong easterly winds) and at night when planes are approaching LAX from the west. During normal operations only one-half of the lights would be illuminated.

According to the Biological Opinion issued by the United States Fish and Wildlife Service (FWS-OR-1012.5 dated April 20, 2004), it is estimated that a total of two coast buckwheat plants would be directly affected by the installation of the navigational lighting system. The removal and relocation of the two coast buckwheat plants would likely result in the loss of any El Segundo blue butterfly larvae or pupae associated with that particular plant due to elimination of its food source. However, because of the poor quality of El Segundo blue butterfly habitat in the impact area, it is unlikely that these actions would directly impact more than a small number of El Segundo blue butterfly.

Implementation of mitigation measures MM-ET-3, El Segundo Blue Butterfly Conservation: Dust Control, and MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration, would include protection against dust during construction and the removal and relocation of

the buckwheat plants along with the loss of 0.25 acres of El Segundo blue butterfly habitat. The removal and relocation may have some small adverse effects to the El Segundo blue butterfly population's size and distribution, however these impacts will be minimal due to the poor habitat condition within the impacted area.

According to §4.11, Endangered and Threatened Species of Flora and Fauna in the Final EIR, restoration is planned for currently occupied areas where coast buckwheat densities are low. Sub-area 23 of the Habitat Restoration Area currently contains low densities of coast buckwheat and low numbers of El Segundo blue butterfly and is the proposed location for the restoration of 1.25 acres of sparsely populated El Segundo blue butterfly habitat, consistent with mitigation measure MM-ET-4 in the Final EIR. The improvements are expected to yield increases in butterfly numbers within three years. The restoration efforts would be completed approximately three years prior to the installation of the navigational lighting system. Therefore, the positive effects of the restoration effort are expected to be evident prior to the loss of the 0.25 acres of habitat from the installation of the lighting system. FAA and LAWA would submit a monitoring report after the navigational aid system is in place and during the first subsequent El Segundo blue butterfly flight period to document El Segundo blue butterfly behavior with respect to the lighting system.

The USFWS Biological Opinion finds that the proposed action is not likely to jeopardize the continued existence of El Segundo blue butterfly. The conclusion is based on the 0.25 acres of habitat lost in the El Segundo blue butterfly reserve is of poor quality and would be off set by the restoration of 1.25 acres of high quality habitat in sub-area 23 on the southern area of the Habitat Restoration Area.

In addition to habitat supporting the coast buckwheat and the El Segundo blue butterfly, one sensitive plant species, Lewis's evening primrose, is widely distributed throughout the Habitat Restoration Area of the Los Angeles/El Segundo Dunes. The Lewis' evening primrose is designated by the CDFG as a state sensitive species. Implementation of the proposed navigational aid relocation under Alternative D also would result in impacts to state-designated sensitive habitat that support sensitive arthropods, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl. However, implementation of mitigation measures MM-BC-1, MM-BC-2, MM-BC-3, MM-BC-8, MM-BC-9, and MM-BC-13, as discussed in Section 4.10, *Biotic Communities*, of the Final EIR for the LAX Master Plan Improvements would reduce all direct impacts to these biotic resources within the Los Angeles/El Segundo Dunes and the coastal zone to less than significant levels.

INDIRECT AFFECTS FROM NAVIGATIONAL AIDS

As discussed in the USFWS Biological Opinion, increased light and photo period has been shown to increase the growth and productivity of butterflies and moths; however, the production is typically off set by predation. The increased lighting in the Los Angeles/El Segundo Dunes and Habitat Restoration Area during evening hours may increase the activity period of adult El Segundo blue butterfly. However, the new lighting system is proposed for an area of the El Segundo dune complex that contains very low densities of El Segundo blue butterfly and coast buckwheat. Further, the lights are designed to illuminate the sky rather than the ground. Therefore, the expected increase in ambient light levels of 0.34 foot-candles (*fc*) and changes in navigational aid lighting, with implementation of

Master Plan Commitment LI-3 regarding lighting controls, are not expected to have significant impacts on biotic communities, including sensitive floral and faunal species in the coastal zone.

Given that all potential direct and indirect impacts associated with relocating existing navigational aids in the coastal zone would be mitigated to less than significant levels and completed in cooperation with CDFG and USFWS, the proposed project is consistent to the maximum extent practicable with the California Coastal Management Program.

Public Comment:

Numerous public comments were received regarding direct and indirect impacts to sensitive habitat and species within the Los Angeles/El Segundo Dunes and the coastal zone. Public comments regarding direct impacts to the coastal zone primarily raised concerns and clarifications about what development is planned in the Dunes area west of LAX. The only development planned in the Dunes is the relocation of existing navigational aids and associated service roads for Runway 24L/6R. No hotels or golf course developments in the Dunes are proposed by, or allowed under, the LAX Master Plan.

Associated with relocating the existing navigational aids, several comments were received regarding impacts to coast buckwheat and the El Segundo blue butterfly in the Los Angeles/El Segundo Dunes and Habitat Restoration Area. Comments regarding the adequacy of mitigation measure MM-ET-4 and the geographic distribution of the navigational aids and service roads questioned the ability to successfully minimize impacts to 1.53 acres in the Dunes. LAWA's ongoing and expanded restoration enhancement and maintenance efforts would successfully avoid and/or mitigate impacts to the coast buckwheat and El Segundo blue butterfly, as indicated in the Final EIR and in the USFWS Biological Opinion.

Comments also were received regarding indirect impacts to sensitive habitat and species. Indirect impacts of concern to commentors included impacts associated with light emissions, noise, air quality, and viability of mitigation measures. Issues of concern related to light emissions included the spatial distribution and intensity of light emission increases throughout the Dunes and the implications on increased predation and/or competition among species. No evidence has shown increased predation or competition, or detrimental effects associated with increased illumination, among the species in the Dunes adjacent to LAX.

Comments received regarding noise impacts on species such as the loggerhead shrike, western spadefoot toad, San Diego horned lizard, silvery legless lizard, burrowing owl, and black-tailed jackrabbit dealt with concerns about physical, nesting and breeding impacts resulting from excess noise levels from overhead aircraft. No evidence shows that species are suffering from noise impacts in the coastal zone surrounding LAX. Species that are affected by excessive noise levels are not located within areas where L_{\max} levels exceed the individual species' tolerance levels. The only bird species found to be located within the Dunes is the loggerhead shrike, and noise levels have not affected the nesting and breeding productivity of this bird.

Comments received regarding air quality impacts to habitat within the Dunes demonstrated concern over the deposition of soot and particles from cars and aircraft. As discussed in Section 4.10, *Biotic Communities* of the Final EIR, implementation of Alternative D would not result in potentially significant air quality impacts to biotic communities due to the prevailing wind conditions and the location of peak concentrations of air pollutants within the eastern portion of the airport.

Several comments were received regarding the adequacy of mitigation measures included in the Final EIR for sensitive habitat and species at LAX. Mitigation measures of concern dealt with western spadefoot toad habitat, loss of the geographic range for the western spadefoot toad species, enhancing the Dunes for loggerhead shrike and its affect on the Jerusalem cricket, enhancing habitat north of the Habitat Restoration Area for the black-tailed jackrabbit, mitigation for the Lewis' evening primrose, and the timing of mitigation for the El Segundo blue butterfly. Mitigation measures were developed in consultation with the CDFG and the USFWS. Implementation of these agreed-upon mitigation measures would reduce impacts to these sensitive habitat and species, located within the coastal zone, to less than significant levels.

Appendix
LAX Master Plan Second Addendum to the Final EIR

**AD(2)-A2. Coastal Zone Management Act (CZMA)
Consistency Certification by LAWA**

December 2004

**LOS ANGELES WORLD AIRPORTS
LOS ANGELES INTERNATIONAL AIRPORT**

**CITY OF LOS ANGELES,
CALIFORNIA**

**COASTAL CONSISTENCY CERTIFICATION
FOR
LOS ANGELES INTERNATIONAL AIRPORT MASTER PLAN**

I. AUTHORITY

The City of Los Angeles - Los Angeles World Airports (LAWA) is submitting this Coastal Consistency Certification in compliance with Section 930.50 *et seq.* of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (Title 15 Code of Federal Regulations Part 930).

II. CERTIFICATION

As required by 15 CFR §930.57(b), LAWA has concluded that the proposed LAX Master Plan Alternative D complies with the enforceable policies of California's approved management program and will be conducted in a manner consistent with such program. The Final Environmental Impact Report (EIR) included with the Final LAX Master Plan Improvements provides the basis for the finding and is incorporated by reference.

III. JOINT FEDERAL AND LOCAL PLANNING AND THE CALIFORNIA COASTAL ACT

The Federal Aviation Administration (FAA) and LAWA are jointly proposing to undertake the improvements associated with Alternative D, as outlined in the April 2004 Final LAX Master Plan. LAWA has selected Alternative D as the staff-preferred alternative, and FAA will specify a preferred alternative in the Final EIS completed for the proposed LAX Master Plan. FAA, as a federal agency, is submitting a separate Coastal Consistency Determination in compliance with Section 930.34 *et seq.* of the National Oceanic and Atmospheric Administration Federal Consistency Regulations. In its consistency determination, the FAA has determined that the relocation of existing navigational aids and associated service roads at Los Angeles International Airport (LAX) is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP), pursuant to the requirements of the Coastal Zone Management Act of 1972, as amended, (CZMA) and the California Coastal Act of 1976, as amended (CCA). Direct impacts to, and occurring within the coastal zone due to the relocation of existing navigational aids and associated service roads, whereby FAA is the lead agency for those improvements are addressed in the Coastal Consistency Determination, while impacts to the coastal zone due to activities originating outside of the coastal zone that are being initiated and requested by the City of Los Angeles (i.e., LAWA) are addressed within this Coastal Consistency Certification.

IV. PROJECT AREAS AND ACTIVITIES SUBJECT TO CONSISTENCY CERTIFICATION

The planning for, and evaluation of, improvements proposed for Los Angeles International Airport (LAX) have been underway for approximately a decade. This work effort occurred

within the context of formulating a Master Plan for the future of LAX, specifically at the year 2015. Three "build" alternatives - Alternatives A, B, and C - for the LAX Master Plan, and a "no build" alternative - the No Action/No Project Alternative - were addressed in a Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) published in January 2001. In response to the terrorist attacks that occurred on September 11, 2001, the newly elected Mayor of Los Angeles directed the Los Angeles Board of Airport Commissioners to develop a new fifth alternative for the LAX Master Plan that, consistent with public comment calling for a regional approach alternative, would accommodate passenger and cargo activity levels at LAX that would approximate those of the No Action/No Project Alternative, have fewer environmental impacts than the No Action/No Project Alternative and would be designed to enhance airport safety and security. That fifth alternative - Alternative D, the Enhanced Safety and Security Plan - was developed in consultation with LAWA staff and the FAA, and was addressed in the Supplement to the Draft EIS/EIR published in July 2003. Alternative D represents LAWA's staff-preferred alternative, as presented of the Final EIR published in April 2004. **Figure 1**, Existing Conditions 1997, shows the existing (1997) layout of LAX, and **Figure 2**, Alternative D - 2015 Enhanced Safety and Security Plan, presents the proposed future (2015) layout of LAX under Alternative D. The following summarizes some of the key aspects of Alternative D, with additional details regarding the proposed Project being provided in Chapter 3, *Alternatives*, of the Final EIR.

Alternative D emphasizes the maintenance of LAX's role as an international gateway and encourages a long-term regional approach to serving air traffic demand in the Los Angeles basin by designing facilities at LAX to accommodate passenger and cargo activity levels equivalent to the No Action/No Project Alternative activity level, but would be designed to allow air carriers to emphasize international routes at LAX.

Alternative D would enhance security by limiting access by private vehicles to the main airport infrastructure to reduce the risk to airport users. The public parking structures in the CTA would be relocated and would be replaced by new centralized passenger terminals. The existing Terminals 1 through 7 would be reconfigured. The Tom Bradley International Terminal (TBIT) would be reconfigured with the addition of a new North/South Linear Concourse. A West Satellite Concourse would be built west of the TBIT.

Enhanced airfield safety would be achieved through airfield facility modifications that would mitigate the primary causes of runway incursions at LAX. In addition, airfield improvements would be made to enable the existing runway systems to better accommodate aircraft operations and meet FAA standards. The number of runways would remain the same at four. Two existing runways would be moved - one by approximately 50 feet and the other by approximately 340 feet, two runways would be lengthened - one by approximately 1,400 feet and the other by approximately 1,500 feet, and all runways would be further separated from one another to improve operational efficiency and safety.

A new Ground Transportation Center (GTC) and an Intermodal Transportation Center (ITC) would be constructed east of Aviation Boulevard and would be the primary access points for all passenger drop-off and pick-up and vehicle parking. Passengers and employees would access the CTA via an APM system from new GTC, ITC and consolidated Rent-A-Car (RAC) facilities. Intersection improvements would be made to the off-airport transportation

network to accommodate the shift in traffic patterns from the CTA to the GTC and ITC areas. Some cargo facilities would be modified under Alternative D, with the overall square footage being equivalent to the No Action/No Project Alternative. A new 12,400-stall employee parking structure would be constructed in the western portion of LAX, on World Way West.

The 340-acre, LAX Northside area located directly north of the airport, but within the Master Plan boundary, is currently entitled (i.e., recognized within the City's current General Plan and Zoning) for 4.5 million square feet of development. Under Alternative D, the existing trip cap that exists for LAX Northside would be reduced to limit vehicle trips.

V. CONSISTENCY OF LAWA PROPOSAL WITH PROVISIONS OF THE CALIFORNIA COASTAL ACT

This portion of the local agency consistency certification analyzes consistency between policy sections of the California Coastal Act (Division 20, California Public Resources Code) and LAWA proposals and actions at LAX resulting in direct and indirect impacts on resources within the California Coastal Zone boundary. Policies that are generally not applicable to, and/or unaffected by, LAWA's proposal to develop Alternative D of the LAX Master Plan are listed first, along with a brief explanation supporting that conclusion for each such policy. Policies determined to be more relevant to the proposed Project are listed next, and are accompanied by discussion and analysis related to the subject issue. Also provided is a summary of public comments received during the public review periods for the LAX Master Plan Improvements Draft EIS/EIR and the Supplement to the Draft EIS/EIR that relate to such policies, as well as a summary of the written responses provided to such comments.

A. POLICIES UNDER THE CALIFORNIA COASTAL ACT THAT ARE NOT APPLICABLE TO, OR AFFECTED BY, THE LAWA PROPOSAL

Article 2 (Public Access):

- *§30210 Posting of access*
- *§30211 Development shall not interfere with access;*
- *§30212 Access from new projects*
- *§30212.5 Distribution of public facilities;*
- *§30213 Encouragement of lower cost visitor and recreational facilities;*
- *§30214 Implementation of public access policies; legislative intent;*

The majority of proposed Alternative D improvements at LAX are removed from the coastal area (see Figure 2) and do not affect coastal access or visitor/recreational facilities addressed in Article 2. Consistency of the proposed relocation of existing navigational aids that occur within the coastal zone is discussed in FAA's consistency determination. As discussed in Section 4.14, *Coastal Zone Management and Coastal Barriers*, of the Final

EIR, existing coastal access routes and postings to those routes would be maintained, development would not interfere with the public's access from Pershing Drive and Vista del Mar to the shoreline, no public facilities would be constructed within the coastal zone, no lower cost visitor and/or recreational facilities would be affected, and no public access policies would change as a result of implemented Alternative D.

Article 3 (Recreation)

- *§30220 Protection of unique water-oriented activities;*
- *§30221 Protection for recreational use and development of oceanfront land;*
- *§30222 Priority of development purposes of private lands;*
- *§30222.5 Oceanfront lands; aquaculture facilities; priority of oceanfront lands suitable for aquaculture;*
- *§30223 Reservation of upland areas;*
- *§30224 Encouragement of recreational boating use;*

The proposed Alternative D improvements at LAX do not relate to, or affect, coastal recreation. No coastal areas suitable for water-oriented activities would be affected, no oceanfront land would be developed, priorities afforded to visitor-serving commercial recreational facilities would not be affected, no oceanfront land suitable for aquaculture would be affected, and recreational boating use would not be affected by Alternative D improvements. As an upland area adjacent to three coastal recreational areas, Vista del Mar Park, the South Bay Bike Trail and Dockweiler State Beach, existing and future LAX operations do, and would continue to, generate elevated noise levels at these recreational sites when flights are overhead. Analysis included in Section 4.8, *Department of Transportation Act, Section 4(f)*, of the Final EIR shows that noise levels at Vista del Mar Park, the South Bay Bike Trail, and at Dockweiler State Beach would increase slightly as compared to 1996 and 2000 conditions. However, given the frequent use of Vista del Mar Park, the South Bay Bike Trail, and Dockweiler State Beach despite the current elevated noise levels, the modest increases associated with Alternative D are not anticipated to affect the usage of these recreational facilities.

Article 4 (Marine Environment):

- *§30230 Maintenance and restoration of marine resources;*
- *§30231 Maintenance and restoration of water quality;*
- *§30232 Protection against spills of oil and hazardous substances;*
- *§30234 Protection of commercial fishing and recreational boating industries*
- *§30234.5 Importance of fishing activities*

- §30235 *Revetments, breakwaters, etc.*;
- §30236 *Waterway modification; mitigation; restrictions*;
- §30237 *Habitat conservation plan; Bolsa Chica*;

The majority of proposed Alternative D improvements at LAX are removed from the coastal zone and from marine resources. Consistency of the proposed navigational aids relocation is discussed in FAA's consistency determination. The Alternative D project activities do not involve revetments/breakwaters, do not involve dredging, diking, filling in areas within the coastal zone, do not affect boating or fishing, and are not located near Bolsa Chica.

To prevent impacts to the coastal zone and coastal waters from erosion and runoff at LAX, LAWA would implement Master Plan Commitment HWQ-2, as discussed in Section 4.7, *Hydrology and Water Quality*, of the Final EIR, related to preparing a Conceptual Drainage Plan prior to initiating construction. This plan would include the preparation of an airport-wide Standard Urban Storm Water Mitigation Plan (SUSMP) with BMPs to be incorporated into the LAX Storm Water Pollution Prevention Plan (SWPPP). LAWA also would comply with mitigation measure MM-HWQ-1, outlined in Section 4.7 of the Final EIR, to upgrade regional drainage facilities.

Alternative D, as with current operations at LAX, would involve the use and transport of oil and hazardous substances on the premises. As discussed in Section 4.23, *Hazardous Materials*, and Section 4.24.3, *Safety*, of the Final EIR, hazardous materials at LAX are stored at the Central Utility Plant, the Fuel Farm, and the CNG/LNG facility; none of these facilities lies within the coastal zone. To prevent and mitigate any impacts to LAX and the coastal zone associated with these facilities, each facility has safety and emergency response elements incorporated into its design, operation, and emergency response procedures, as discussed in detail in Section 4.24.3 of the Final EIR.

Article 5 (Land Resources):

- §30241 *Prime agricultural land; maintenance in agricultural production*;
- §30241.5 *Agricultural lands; determination of viability of uses; economic feasibility evaluation*;
- §30242 *Lands suitable for agricultural use; conversion*;
- §36243 *Productivity of soils and timberlands; conversions*;

The majority of proposed Alternative D improvements at LAX are removed from the coast and none of the Project area involves or affects the use or conversion of agricultural and or timber lands. As discussed in Section 4.16, *Farmland* of the Final EIR, no prime or viable agricultural land is located at or in the coastal area surrounding LAX, no land at LAX is suitable for agricultural use, and no timberlands would be converted as a result of Alternative D.

- §30244 *Archaeological or paleontological resources*.

The proposed Alternative D improvements at LAX would not directly or indirectly affect any known archaeological or paleontological resources within the coastal zone. According to previous archaeological and paleontological surveys, as discussed in Section 4.9, *Historic/Architectural and Archaeological/Cultural and Paleontological Resources*, of the Final EIR, no known archaeological or paleontological resources exist within the coastal zone area of the LAX property. As discussed in Section 4.9.1 of the Final EIR, one historic building, a WWII munitions storage bunker, is located within the coastal zone. The proposed improvements would not affect, or be located near, the bunker. In the event that previously unidentified archaeological and/or paleontological resources were to be discovered during construction efforts, implementation of mitigation measures MM-PA-1 through MM-PA-7, included in Section 4.9.2 of the Final EIR, would reduce impacts to these resources. Therefore, no archaeological or paleontological resources within the coastal zone would be adversely affected.

Article 6 (Development):

- §30250 *Location, existing developed areas.*

With the exception of the proposed navigational aid relocation for runway 6R/24L, the proposed Alternative D improvements at LAX are outside of the coastal zone. For impacts and compatibility discussions associated with the proposed relocated navigational aids, refer to FAA's Coastal Consistency Determination.

- §30251 *Scenic and visual qualities.*

The majority of proposed Alternative D improvements at LAX are substantially outside of, and not visible from, the coastal zone surrounding LAX. As discussed in FAA's consistency determination, the relocated navigational aids would not be visible from surrounding streets. Under Alternative D, a four-level employee parking structure is proposed on property in the western portion of LAX (east of the coastal zone). As discussed in Section 4.21, *Design, Art and Architecture Application/Aesthetics*, of the Final EIR, views of the employee parking structure from the coastal zone would be limited and would not represent an aesthetic or view impact to the scenic and visual qualities of the coastal zone.

- §30253 *Development Mandates*

Based on the information and analysis provided in Section 4.22, *Earth/Geology* and Section 4.24, *Human Health and Safety*, the proposed Alternative D improvements at LAX would not occur within areas of high geological, flood and fire hazard, nor would they create or contribute significantly to erosion, geological instability, or destruction of the LAX site or surrounding area. The proposed Alternative D improvements would not conflict with any applicable SCAQMD and State Air Resources Board requirements (see Section 4.6, *Air Quality*), would provide for energy conservation measures (see Section 17.1, *Energy Supply*), would provide for improvements in local traffic conditions, particularly as compared to future traffic conditions under the No Action/No Project Alternative (see Section 4.3.2, *Off-Airport Surface Transportation*), and would not affect any popular visitor destination points or recreational uses (see Sections 4.2, *Land Use*, 4.8, *Department of Transportation Act*,

Section 4(f), Section 4.14, *Coastal Zone Management and Coastal Barriers*, and Section 4.26.3, *Parks and Recreation*).

- *§30254 Public works facilities design.*

The proposed Alternative D improvements at LAX are designed specifically to accommodate passenger and cargo activity levels comparable to those accommodated under the No Action/No Project Alternative. Alternative D would enhance safety and security at LAX while accommodating a future (2015) capacity of 78.9 million annual passengers (MAP), which is comparable to that of the No Action/No Project Alternative in 2015.

- *§30254.5 Sewage treatment plant development; prohibition on terms and conditions*

The proposed Alternative D improvements at LAX do not involve the construction of a sewage treatment plant.

- *§30255 Priority of coastal-dependent developments.*

LAX is not a coastal-dependent use, and implementation of the proposed Alternative D improvements at LAX would not hinder the development or priority for development of other coastal-dependent uses. On its western boundary, LAX would not be developing any previously undeveloped coastal land.

Article 7 (Industrial Development):

- *§30260 Expansion or location of industrial development;*
- *§30261 Use of tanker facilities; liquefied natural gas terminals;*
- *§30262 Oil and gas development;*
- *§30263 Refineries or petrochemical facilities;*
- *§30264 Thermal electric generating plants;*
- *§30265 Legislative findings and declarations; offshore oil transport and refining; and*
- *§30265.5 Governor or designee; coordination of activities concerning offshore oil transport and refining; duties.*

The majority of proposed Alternative D improvements at LAX are removed from the coastal zone and do not involve industrial development. LAX is not a coastal-dependent industrial facility and no new tanker, oil and gas development, refineries or petrochemical facilities, or thermal-electric generating plants are proposed. Improvements associated with Alternative D would not involve offshore oil transportation.

B. RELEVANT POLICIES OF THE CALIFORNIA COASTAL ACT

Article 4, Marine Environment

§30233 Diking, filling or dredging; continued movement of sediment and nutrients

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
- (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
- (3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a dredged wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.*
- (4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*
- (5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*
- (6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
- (7) Restoration purposes.*
- (8) Nature study, aquaculture, or similar resource dependent activities.*

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable longshore current systems.

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or

estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California," shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where such improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.

(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients which would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for such purposes are the method of placement, time of year of placement, and sensitivity of the placement area.

Comment and Analysis:

As discussed in Section 4.11, Endangered and Threatened Species of Flora and Fauna and Section 4.12, *Wetlands* of the Final EIR, approximately 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp is located in the western airport operations area of LAX property. This wetland area is not located within the coastal zone. The degraded wetland habitat does not have any hydrological or habitat links to the coastal zone resources (i.e., the subject wetlands are isolated depressions that, on occasion, receive water from runoff in the immediate area, and contain fairy shrimp cysts specific to that setting). The subject habitat area is subject to routine operations and maintenance activity in compliance with Title 14, CFR Part 139, which mandates that the airport operations area be maintained in such a condition so as to minimize or eliminate hazards to public safety resulting from wildlife utilization. The ponding of water would serve as an attractant to birds, and this poses a safety risk to aviation uses. In light of the existing provisions and measures to avoid the ponding of water within the subject degraded wetlands, with the specific intention of discouraging/avoiding the use of these degraded wetlands by wildlife, these wetlands do not provide a habitat link to coastal birds.

Alternative D would impact 0.4 acre (1,853 square feet) of the degraded wetland habitat. Ongoing operations and maintenance activities at LAX would impact the remaining 1.26 acres of degraded wetland habitat. It should be noted that the entire 1.3 acres of degraded wetland habitat would be impacted by such ongoing operations and maintenance activities, even if Alternative D were not approved. Onsite conservation of Riverside fairy shrimp within the airport operations area would be incompatible with FAA guidelines pursuant to 14 CFR, Section 139.337. Hazard management activities performed under these guidelines with respect to vegetation management include mowing, discing, and grading activities to ensure

safety, which is in direct conflict with habitat improvements for the Riverside fairy shrimp. These activities would result in the loss of habitat values for the Riverside fairy shrimp. However, with implementation of mitigation measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration, outlined in Section 4.11, *Endangered and Threatened Species of Flora and Fauna* of the Final EIR, soils containing cysts of Riverside fairy shrimp shall be moved to a suitable alternate location in coordination with the USFWS, thus providing an opportunity for the species' recovery.

Notwithstanding the fact that the subject degraded wetlands are located well outside of the coastal zone, the filling of those wetlands would not conflict with the three-part test under §30233(a)(5) for coastal zone projects involving wetland fill: (a) the allowable use test; (b) the alternatives test; and (c) the mitigation test. Under the first of these tests, a project must qualify as one of the eight stated uses allowed under §30233(a). Since the other allowable uses do not apply, the Commission must determine whether the proposed project can be permitted under §30233(a)(5), which authorizes fill for: *"Incidental public service purposes, including but not limited to, burying cables, pipes or inspection of piers and maintenance of existing intake and outfall lines."*

In order to be considered an "incidental public service purpose" a proposed fill project must satisfy two tests: (1) the project must have a "public service purpose," and (2) the purpose must be "incidental" within the meaning of that term as it is used in §30233(a)(5). Because the project would be constructed by a public agency for the purpose of providing transportation services to the public, the fill is for a public service purpose. Thus, the project satisfies the first test. With respect to the second test, given the types of previously-determined allowable uses by the Coastal Commission, the Commission supports interpretations of §30233(a)(5) to apply to forms of public transportation other than roads. The proposed LAX project would improve the safety, security, and efficiency of LAX without substantially increasing capacity beyond that which would otherwise occur even if no improvements were made at LAX (i.e., Alternative D is specifically designed to accommodate the same level of future (2105) airport activity as that of the No Action/No Project Alternative).

Under the second of the three-part test, based on the evaluations and analyses provided in the Final EIR for the LAX Master Plan, Alternative D is the environmentally preferred alternative (see Section 3.5, *The CEQA Environmentally Superior Alternative*, for a summary of the EIR conclusions supporting that determination). Additionally, as discussed in Section 4.12, *Wetlands* of the Final EIR, the existing degraded wetland habitat would continue to be subject to long-term operations and maintenance activities in compliance with Title 14, CFR Part 139, even if Alternative D were not implemented at LAX. This long-term maintenance would result in the permanent loss of habitat value and functions normally associated with wetlands.

Under the third of the three-part test, according to the USFWS Biological Opinion (FWS-OR-1012.5) for the Los Angeles International Airport Master Plan, implementation of mitigation measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration, in Section 4.11 of the Final EIR, would provide for the replacement of 0.04 acre (1,853 square feet) of degraded wetland habitat with estimated habitat value of 0.15 with 0.12 acres (5,559 square feet, as determined by a 3:1 mitigation ratio) of created vernal pool habitat with an anticipated

habitat value of 0.75. In addition, the potential indirect affects to 1.26 acres of jurisdictional wetlands would be avoided through implementation of construction avoidance measures described in MM-ET-1, in Section 4.11 of the Final EIR.

Mitigation measure MM-ET-1 has been recommended as part of the jurisdictional delineation submitted to the USACOE to fulfill the responsibilities of FAA and LAWA, pursuant to Section 404 of the Clean Water Act. As discussed in Section 4.11 of the Final EIR, with implementation of mitigation measure MM-ET-1, there would be no net loss of habitat functions or values.

Public Comment:

Several public comments were received relating to Alternative D's impacts to wetlands and the Riverside fairy shrimp cysts within the wetlands. Public comments focused on the need for long-term conservation programs for biological resources on airport lands, the need for appropriate Clean Water Act permits, mitigation ratios and exact locations, the feasibility of relocating Riverside fairy shrimp to the West Bluff of the Ballona Wetland ecosystem, and the coordination of mitigation for the western spadefoot toad, wetland habitat, and the Riverside fairy shrimp.

As discussed in Section 4.12 of the Final EIR, FAA will be responsible for complying with all regulatory requirements pertaining to wetland fill and will be responsible for preparing a Final Endangered Species Conservation Plan for submittal to the USFWS detailing off-site relocation efforts for the Riverside fairy shrimp as well as protocols for monitoring and maintaining the relocation site(s). LAWA and FAA intend to relocate the existing Riverside fairy shrimp and western spadefoot toad species, at a ratio of 3:1, to an existing vernal pool complex to Marine Corps Air Station at El Toro. This site has been selected over the West Bluff site because land at El Toro is already owned by FAA; the West Bluff site was eliminated because of high costs associated with acquiring the property.

Article 5, Land Resources

§30240 Environmentally sensitive habitat areas; adjacent developments

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Comment and Analysis:

Existing Coastal Sensitive Habitat

As discussed in Section 4.10, *Biotic Communities* of the Final EIR, the area that lies within the airport study area comprises approximately 4,260 acres, which supports six generally

designated open areas that make up the affected environment. These open areas feature the following biotic communities:

- (1) The El Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area) located to the west of the airfield, comprised of approximately 202.8 acres. Four biotic communities are represented: Southern Foredune (135.6 acres), Southern Dune Scrub (24.4 acres), Valley Needlegrass Grassland (17.1 acres), and Developed (25.7 acres).
- (2) Approximately 104.3 acres of non-restructured dunes adjacent to and north of the Habitat Restoration Area, comprised of three biotic communities: Disturbed Dune Scrub/Foredune (74.6 acres), Non-Native Grassland/Ruderal (16.9 acres), and Developed (12.8 acres).
- (3) Westchester Southside, comprised of three biotic communities: Landscaped (60.55 acres), Disturbed/Bare Ground (4.87 acres), and Non-Native Grassland/Ruderal (124.28 acres).
- (4) A 40.85-acre area on the east side of the airport, which is comprised of one biotic community, Non-Native Grassland/Ruderal.
- (5) Open space fragments, totaling approximately 676.37 acres, located within the airfield, comprised of three biotic communities: Non-Native Grassland/Ruderal (553.12 acres), Disturbed/Bare Ground (103.1 acres), and Landscaped (20.15 acres).
- (6) Open space located in the southeast corner, known as Continental City, of approximately 24.68 acres, which is comprised of one biotic community, Disturbed/Bare Ground.

The largest of the open-space parcels within the study area is the Los Angeles/El Segundo Dunes, the largest extant remnant of one of five major sand dune complexes that historically occurred in California south of San Francisco. Within the study area, there are approximately 307 acres of dunes and related landforms, 202.8 acres of which are designated as the Habitat Restoration Area. An additional 104.3 acres of dunes and adjacent landforms lie to the north of the Habitat Restoration Area.

As discussed in Section 4.10 and Section 4.11, *Endangered and Threatened Species of Flora and Fauna* of the Final EIR, the Habitat Restoration Area is home to the federally listed El Segundo blue butterfly. LAWA's habitat conservation and restoration efforts were initiated in 1987 and have received national attention. LAWA, in coordination with U.S. Fish and Wildlife and the California Department of Fish and Game, has provided and continues to provide the resources necessary for the habitat conservation and restoration efforts. The Habitat Restoration Area is the largest remaining representation of coastal dune community within Los Angeles. Since its initiation, ecological restoration has extended the distribution of its constituent plant communities to approximately 202.8 acres.

As discussed in Section 4.11 of the Final EIR, there are 20 sensitive plant species designated by federal or state agencies that were determined to have the potential to be present within the study area. Surveys conducted for sensitive plant species identified three of these species within the study area. Surveys identified 9,051 individuals of Lewis' evening primrose within the Habitat Restoration Area and an additional 300 individuals within the airfield. The El Segundo duneflower was also present within the Habitat

Restoration Area, with an extremely small population of only three individuals. The California spineflower was also located in eight areas within the Habitat Restoration Area; 572 individuals were found. Seventeen sensitive plant species were determined absent within the study area.

As discussed in Section 4.11 of the Final EIR, there were 34 sensitive wildlife species designated by federal or state agencies that were determined to have the potential to occur within the study area; 24 of these species were identified within the study area. There are 18 sensitive arthropods, 14 sensitive insect species and four sensitive arachnids, all of which were located within the Los Angeles/EI Segundo Dunes. The western spadefoot toad was determined present in ephemeral ponds in the south airfield. Two sensitive reptiles, the silvery legless lizard and the San Diego horned lizard, were determined present within the Los Angeles/EI Segundo Dunes. Two sensitive bird species, the burrowing owl and the loggerhead shrike, were detected in the Los Angeles/EI Segundo Dunes. The only sensitive mammal present in the study area is the San Diego black-tailed jackrabbit, which utilizes the open space area located within the southwestern corner of the airfield.

Eight biotic communities have been identified within the study area, as discussed in As discussed in Section 4.10 of the Final EIR. The biotic communities and vegetation types found within the study area are discussed in detail below.

Southern Foredune: Southern Foredune plant communities are typically dominated by perennial species with a high proportion of suffrutescent (slightly woody at base) plants up to 30 cm tall. The Southern Foredune community is inhabited by a number of wildlife species, including the federally-listed EI Segundo blue butterfly.

Within the study area, 135.6 acres of this community are found within the Habitat Restoration Area west of Pershing Drive. Relatively undisturbed areas (about 40 acres) surrounding the Very High Omni Range Navigation Beacon provide the most representative example of this community. Ecological restoration efforts undertaken between 1987 and 1994 have restored an additional 95.6 acres. The host plant and primary food source for the EI Segundo blue butterfly, coast buckwheat, is found in this biotic community.

Southern Dune Scrub: Southern Dune Scrub is a dense coastal scrub community of scattered shrubs, subshrubs, and herbs, generally less than 1 meter in height, often developing considerable cover, and often succulent. Along the coast, Southern Dune Scrub intergrades with the Southern Foredune plant community.

The Los Angeles/EI Segundo Dunes contain virtually the only remaining example of this plant community in mainland Southern California. Within the study area, the Southern Dune Scrub community is found only within the Habitat Restoration Area along the steep slope of the backdune and is comprised of 24.4 acres. The host plant and primary food source for the EI Segundo blue butterfly, coast buckwheat, is found in this biotic community.

Valley Needlegrass Grassland: The deflation plain east of the backdune consists of loosely consolidated (incipient) sandstone covered to variable depths with aeolian (wind-transported) sand. Many common species of birds and two reptiles are known to utilize this biotic community.

This biotic community has been significantly altered and degraded by development activities. The floral components typically associated with it are now almost completely absent due to extensive grading and paving and the invasion of exotic annual grasses. No vernal pools exist today. The Valley Needlegrass Grassland community occupies 17.1 acres within the Habitat Restoration Area, and is limited to three distinct areas adjacent to and west of Pershing Drive.

Disturbed Dune Scrub/Foredune: This community is made up of 74.6 acres and is located north of the Habitat Restoration Area, south of Waterview Street, west of Pershing Drive, east of Vista del Mar Boulevard, and is bisected by Sandpiper Street. This biotic community is heavily disturbed and is dominated by invasive species that drive out native vegetation. The few coastal dune elements are patchy and include burbush, dunes evening primrose, bush lupine, pink sand verbena, and deerweed. Coast buckwheat is absent from this site.

Non-Native Grassland: Non-Native Grassland/Ruderal areas are those that have been subjected to past disturbance. This biotic community is comprised of 721.8 acres and is heavily fragmented throughout the study area. It includes a portion of the Los Angeles/El Segundo Dunes that was once a residential area, and areas along the northern perimeter of the study area that were also historically residential. This biotic community is also represented between the runways and taxiways on the airfield, which undergoes regular operations maintenance and is routinely mowed.

Disturbed/Bare Ground: This biotic community is dominated by bare ground and is comprised of approximately 103.1 acres. It is represented in several areas: north of the airfield between Westchester Parkway and Argo Ditch; an area between the Habitat Restoration Area and the remote terminal area of the airport; the area known as Continental City; and two isolated areas along the southern perimeter of the study area adjacent to Imperial Highway.

Landscaped: Areas within the study area that support landscaped vegetation, totaling 79.2 acres, include a golf course located within the northern boundary, a small park located in the northeast sector, and most roadway medians.

Developed: Developed areas within the study area occupy 2644.9 acres and include the airfield, terminals, parking, roads, and support facilities.

Direct Affects from Alternative D

Under Alternative D, construction of navigational aids and associated service roads would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Los Angeles/El Segundo Dunes. Within this area, 10,597 square feet (0.24 acre) of habitat occupied by the El Segundo blue butterfly would be impacted.

As discussed in Section 4.11 of the Final EIR, one sensitive plant species, Lewis' evening primrose, is widely distributed within the Habitat Restoration Area of the Los Angeles/El Segundo Dunes. The Lewis' evening primrose is designated by the CDFG as a state sensitive species. Implementation of Alternative D would potentially result in the loss of individuals from installation of navigational aids and associated service roads within the Habitat Restoration Area.

As also discussed in Section 4.11 implementation of Alternative D also would result in impacts to:

- Approximately 66,675 square feet (1.53 acres) of state-designated sensitive habitat that support sensitive arthropods, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl would be affected.
- Loss of the existing western spadefoot toad population that currently inhabits 2.01 acres of Disturbed/Bare Ground and 6.96 acres of Non-Native Grassland/Ruderal within the southwestern portion of the Airport Operations Area (AOA) would occur. The western spadefoot toad is designated by CDFG as a Species of Special Concern.
- Loss of San Diego black-tailed jackrabbit individuals and their habitat within the southwest AOA consisting of 23.76 acres of Disturbed/Bare Ground would occur. The San Diego black-tailed jackrabbit is designated by CDFG as a Species of Special Concern. This species would be adversely affected through habitat modification, which is a CEQA threshold of significance.
- Displacement of loggerhead shrike and the loss of 49.97 acres of habitat consisting of Non-Native Grassland/Ruderal and 33.287 acres of Disturbed/Bare Ground communities would occur. The loggerhead shrike is designated by CDFG as a Species of Special Concern. This species would be adversely affected through habitat modification.
- The removal of approximately 300 mature utilized by raptors for nursery sites would occur.

Implementation of mitigation measures MM-BC-1, MM-BC-2, MM-BC-3, MM-BC-8, MM-BC-9, and MM-BC-13, included in Section 4.10, Biotic Communities of the Final EIR, would reduce all direct impacts to these biotic resources within the Los Angeles/El Segundo Dunes and the coastal zone to less than significant levels.

Indirect Affects from Alternative D

As discussed in As discussed in Section 4.11 of the Final EIR, there Section 4.10, Biotic Communities, of the Final EIR, implementation of Alternative D would not result in significant indirect air quality impacts to biotic communities due to the prevailing wind conditions and the location of peak concentrations of air pollutants within the eastern portion of the airport. However, according to both Section 4.10 and Section 4.11 construction activities, including staging and stockpiling of materials proximal to the Los Angeles/El Segundo Dunes and the Habitat Restoration Area have the potential to result in deposition of fugitive dust within state-designated sensitive habitats. Implementation of mitigation measures MM-BC-1 included in Section 4.10 and MM-ET-3 included in Section 4.11 of the Final EIR, and the construction avoidance measures discussed within these mitigation measures, would reduce impacts to this sensitive coastal zone habitat to less than significant levels.

As discussed in Section 4.18, Light Emissions of the Final EIR, levels of ambient lighting in the Habitat Restoration Area are expected to increase by approximately 0.34 foot-candles (*fc*) or less due to the development of the parking facility. The increase in ambient light levels of approximately 0.34 *fc*, and changes in navigational aid light are not anticipated to have significant impacts on biotic communities. As indicated in FAA's consistency

determination, Alternative D would also change navigational aid lighting in the Los Angeles/EI Segundo Dunes, including the Habitat Restoration Area. The increase in ambient light levels of 0.34 *fc* and changes in navigational aid lighting (with implementation of Master Plan Commitment LI-3 included in Section 4.18, Light Emissions of the Final EIR) are not expected to have significant impacts on biotic communities, including sensitive floral and faunal species, in the Dunes.

As discussed in Section 4.11 of the Final EIR there is no increase in L_{\max} , under Alternative D compared to 1996 baseline conditions. All three noise metrics decrease when compared to the 1996 environmental baseline; therefore, implementation of Alternative D would not result in significant impacts from noise to sensitive wildlife species in the coastal zone.

Public Comment:

Numerous public comments were received regarding direct and indirect impacts to sensitive habitat and species within the Los Angeles/EI Segundo Dunes and the coastal zone. Public comments regarding direct impacts to the coastal zone primarily raised concerns and clarifications about what development is planned in the Dunes area west of LAX. As discussed in Section 4.14, Coastal Zone Management and Coastal Barriers, the only development planned in the Dunes is the relocation of existing navigational aids and associated service roads for runway 6R/24L. No hotels or golf course developments in the Dunes are proposed by, or allowed under, the LAX Master Plan.

Several public comments were received regarding impacts to coast buckwheat and the EI Segundo blue butterfly in the Los Angeles/EI Segundo Dunes and Habitat Restoration Area from relocating the existing navigational aids. Comments regarding the adequacy of mitigation measure MM-ET-4, included in Section 4.11 of the Final EIR, and the geographic distribution of the navigational aids and service roads questioned the ability to successfully minimize impacts to 1.53 acres in the Dunes. As discussed in Section 4.11 of the Final EIR, and within the USFWS's Biological Opinion, LAWA's ongoing and expanded restoration enhancement and maintenance efforts would successfully avoid and/or mitigate impacts to the coast buckwheat and EI Segundo blue butterfly.

Comments also were received regarding indirect impacts to sensitive habitat and species. Indirect impacts of concern to commentors included impacts associated with light emissions, noise, air quality, and viability of mitigation measures. Issues of concern related to light emissions included the spatial distribution and intensity of light emission increases throughout the Dunes and the implications on increased predation and/or competition among species. According to Sections 4.10, Section 4.11, and Section 4.18 of the Final EIR, no evidence has shown increased predation or competition, or detrimental effects associated with increased illumination, among the species in the Dunes adjacent to LAX.

Comments received regarding noise impacts on species such as the loggerhead shrike, western spadefoot toad, San Diego horned lizard, silvery legless lizard, burrowing owl, and black-tailed jackrabbit dealt with concerns about physical, nesting and breeding impacts resulting from excess noise levels from overhead aircraft. As discussed in Section 4.11 of the Final EIR, no evidence shows that species are suffering from noise impacts in the coastal zone surrounding LAX. Species that are affected by excessive noise levels are not located within areas where L_{\max} levels exceed the individual species' tolerance levels. The

only bird species found to be located within the Dunes is the loggerhead shrike, and noise levels have not affected the nesting and breeding productivity of this bird.

Comments received regarding air quality impacts to habitat within the Dunes demonstrated concern over the deposition of soot and particles from cars and aircraft. As discussed in Section 4.10 of the Final EIR, implementation of Alternative D would not result in potentially significant air quality impacts to biotic communities due to the prevailing wind conditions and the location of peak concentrations of air pollutants within the eastern portion of the airport.

Several comments were received regarding the adequacy of mitigation measures included of the Final EIR for sensitive habitat and species at LAX. Mitigation measures of concern dealt with western spadefoot toad habitat, loss of the geographic range for the western spadefoot toad species, enhancing the Dunes for loggerhead shrike and its affect on the Jerusalem cricket, enhancing habitat north of the Habitat Restoration Area for the black-tailed jackrabbit, mitigation for the Lewis' evening primrose, and the timing of mitigation for the El Segundo blue butterfly. Mitigation measures included in Section 4.10 and Section 4.11 of the Final EIR, were developed in consultation with the CDFG and the USFWS. Implementation of these agreed-upon mitigation measures would reduce impacts to these sensitive habitat and species, located within the coastal zone, to less than significant levels.

Article 6, Development

§30252 Maintenance and enhancement of public access

The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

Comment and Analysis:

Existing Coastal Access

As discussed in Section 4.14, Coastal Zone Management and Coastal Barriers of the Final EIR, currently access to the coast near LAX, which is mainly provided at Dockweiler State Beach, can be accomplished via vehicle, bicycle, or on foot.

Vehicular access to the coast in the vicinity of LAX is provided via Westchester Parkway to Pershing Drive to various residential streets. Sandpiper Street (which connects Pershing Drive and Vista del Mar) no longer provides vehicular access to the coast as it has been closed for security purposes following the events of September 11, 2001. Vehicular access to the coast is also provided via Imperial Highway along the southern perimeter of LAX. Farther south, within the City of El Segundo, coastal access is provided by Grand Avenue.

Currently, residents of El Segundo can access Imperial Highway from two access points: Main Street and California Street. Vehicles can proceed westbound to the coast or eastbound on Imperial Highway from either of these streets. Parking is available at Dockweiler State Beach and along Vista del Mar.

Bicycle access is provided by a network of bicycle lanes and bicycle paths, which is shown in Figure F4.14-4, Existing and Proposed Bicycle Access in the LAX Vicinity, in the Final EIR. A Class I bicycle path, which provides exclusive bicycle rights-of-way separate from vehicular traffic, is located along the coast between Vista del Mar and the Pacific Ocean from north of LAX near Marina del Rey to Grand Avenue south of LAX. Although Vista del Mar is not a designated bicycle route, bicyclists can ride on the shoulder of the street parallel to the coast. Access to the coastal bicycle path is available via bicycle lanes on Grand Avenue and Imperial Highway. The bicycle lane on Imperial Highway extends from east of Aviation Boulevard to Vista del Mar. There are also bicycle lanes on Westchester Parkway along the northern boundary of LAX. Bicyclists can access the coast by traveling westbound along Westchester Parkway to Pershing Drive and, from Pershing, connecting with various residential streets near the terminus of Westchester Parkway.

Currently, pedestrian access to the coast in the immediate vicinity of LAX is limited. Within the City of El Segundo, pedestrian access is provided by a footpath connecting Imperial Avenue with Imperial Highway near Hillcrest Street. Sidewalks are available intermittently along the south side of Imperial Highway; pedestrians can walk along the shoulder of the roadway where there are no sidewalks. Within the northern portion of LAX, there are sidewalks along Westchester Parkway, but there are no connecting sidewalks along Pershing Drive.

Coastal Access Under Alternative D

As discussed in Section 4.14, Coastal Zone Management and Coastal Barriers of the Final EIR, because Alternative D would not shift the airport's primary passenger activity center closer to the coast, there would be limited impact to existing coastal access.

Under Alternative D, all of existing coastal access routes would remain in their baseline configurations. The only components of Alternative D that would be nearby or en route to the coast are the LAX Northside development and the west employee parking garage on World Way West. However, neither of these developments would alter the existing coastal access routes, although they would increase the number of vehicles on roadways that provide access to the coast.

Alternative D would not alter existing bicycle access to the coast. In addition, under Master Plan Commitment LU-5, included in Section 4.2, Land Use of the Final EIR, LAWA would comply with municipal bicycle policies and plans, including the City of Los Angeles Transportation Element Bicycle Plan, and would provide maximum feasible incorporation of bike paths and lanes into the Master Plan circulation systems. In addition, bicycle access and parking facilities would be provided at the GTC, ITC, and major parking lots. Related facilities, such as lockers and showers, would also be provided where feasible to promote employee bicycle use.

As discussed in Section 4.14 pedestrian access to the coast would continue to be limited under Alternative D. The existing footpath connecting Imperial Avenue and Imperial

Highway would not be affected under this alternative. However, the proposed changes in ground access to LAX do not include the provision of new sidewalks. Sidewalks are not currently available along the full length of Imperial Highway under baseline conditions. Pedestrians would continue to be able to walk along the shoulder of Imperial Highway to the coast.

Vehicle, bicycle, and pedestrian access to the coast is not expected to be significantly affected by construction activities associated with Alternative D. Any impact to coastal access along Westchester Parkway, Pershing Drive, and Imperial Highway is expected to be minimal. In addition, alternative coastal access would be available.

Employee Parking Structure Access

Employee parking would be provided in a new 12,400-stall garage on the west side of the airport, south of World Way West. As detailed in Table F4.3.2-30, Off-Airport Surface Transportation Phasing Plan, included in Section 4.3.2, Off-Airport Surface Transportation of the Final EIR, construction of the new west employee parking structure would be accompanied by number other off-site improvements. These are listed below:

- Complete off-site intersectional improvements at:
 - Grand Avenue and Vista del Mar
 - Highland Avenue/Vista del Mar and Rosecrans Boulevard
 - Imperial Highway and Main Street
 - Imperial Highway and Pershing Drive
 - Imperial Highway and Sepulveda Boulevard
 - Imperial Highway and Vista del Mar
 - Jefferson Boulevard and Lincoln Boulevard
 - Lincoln Boulevard and Manchester Avenue
 - Lincoln Boulevard and Teale Street
 - Rosecrans Avenue and Sepulveda Boulevard
 - 83rd Street and Lincoln Boulevard;

- Provide a fair-share contribution to LA County's "Marina Expressway to Admiralty Way" project OR complete alternative off-site intersectional improvements at the following intersections:
 - Bali Way and Lincoln Boulevard
 - Fiji Way and Lincoln Boulevard
 - Lincoln Boulevard and Marina Expressway
 - Lincoln Boulevard and Maxella Avenue
 - Lincoln Boulevard and Mindanao Way
 - Lincoln Boulevard and Washington Boulevard
- Provide a fair-share contribution toward the LAC-MTA's Metro Rapid Bus Line Expansion Program (possible concepts include but are not limited to paying for larger or additional buses from those planned by the LAC-MTA or paying the cost of retrofitting some buses to better accommodate airline passengers and their baggage to and from LAX) OR other enhancements to benefit transit to and from LAX (possible concepts include but are not limited to traffic signal priority improvements for bus flow, transit marketing, airport employee and/or air passenger fare subsidies) to mitigate the following intersections:
 - Imperial Highway and Sepulveda Boulevard
 - Jefferson Boulevard and Lincoln Boulevard
 - Lincoln Boulevard and Manchester Avenue
 - Lincoln Boulevard and Marina Expressway
 - Lincoln Boulevard and Teale Street
 - Lincoln Boulevard and Washington Boulevard

As discussed in Section 4.2, Land Use, Section 4.3.2 Off-Airport Surface Transportation and Section 4.14, Coastal Zone Management and Coastal Barriers of the Final EIR, implementation of Alternative D would not impose any public access burdens to coastal areas, and with the implementation of Master Plan Commitment LU-5, included in Section 4.2, and the west employee parking structure construction phasing plan outlined in Section 4.3.2, no mitigation is required to reduce impacts to the public's access to the coast.

Public Comment:

Public comments related to coastal access were received from representatives from Culver City, the California Coastal Commission, and the City of Los Angeles. These comments raised issues associated with increased traffic volumes on Vista del Mar, effects to coastal access and recreation due to increased traffic, roadway improvements to maintain and enhance coastal access, the continued presence of bicycle lanes along roads providing coastal access, and the timing of traffic counts to take summer peak traffic volumes into consideration.

Responses to these comments directed commentors to coastal access discussions included in Section 4.3.2, Off-Airport Surface Transportation, Section 4.4.4, Community Disruption, and Section 4.14, Coastal Access, in the EIS/EIR. Analysis in these sections shows that no significant impacts to coastal access would occur with implementation of Alternative D.

Appendix
LAX Master Plan Second Addendum to the Final EIR

**AD(2)-A3. California Coastal Commission
Staff Report**

December 2004

CALIFORNIA COASTAL COMMISSION

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W 7a and 7b

STAFF REPORT AND RECOMMENDATION

ON CONSISTENCY CERTIFICATION

AND CONSISTENCY DETERMINATION

Consistency Certification No.	CC-061-04
File Date:	8/10/2004
3 Months:	11/10/2004
6 Months:	2/10/2005

Consistency Determination No.	CD-062-04
File Date:	8/10/2004
60 th Day:	10/9/2004
75 th Day:	10/24/2004
Extended through:	11/20/2004

Staff	LJS-SF
Commission Meeting:	11/17/2004

APPLICANT (CC-061-04): Los Angeles World Airports

PROJECT

LOCATION:

Los Angeles International Airport, City of Los Angeles

PROJECT

DESCRIPTION:

Airfield improvements and modifications (Exhibits 1-3, and 7)

FEDERAL AGENCY (CD-062-04): Federal Aviation Administration

PROJECT

LOCATION:

El Segundo Dunes portion of Los Angeles International Airport

PROJECT

DESCRIPTION:

Installation of navigation aids and related infrastructure to support the proposed realignment and lengthening of the two north airfield runways (Exhibits 1-3, and 12)

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EXECUTIVE SUMMARY

Los Angeles World Airports (LAWA) has submitted a consistency certification for airfield improvements and modifications at Los Angeles International Airport (LAX) just inland of the coastal zone. The Federal Aviation Administration (FAA) has submitted a consistency determination for reconfiguration of navigation aids in the El Segundo Dunes area of LAX within the the coastal zone. Because the projects covered in the two submittals are interconnected, the Commission staff determined that a single staff report would more clearly describe the overall LAX redevelopment plan and the LAWA and FAA projects. The combined staff report evaluates the consistency of LAWA's proposed development projects at LAX with the California Coastal Management Program (CCMP), and evaluates whether the FAA's navigation aid project is consistent (to the maximum extent practicable) with the CCMP.

The planning for proposed improvements at LAX began ten years ago and culminated in the Los Angeles City Council approval of the preferred project – Alternative D – on October 20, 2004.

The proposed LAWA and FAA projects are designed to: (1) expand and modernize terminal and parking facilities to address passenger and cargo growth occurring at LAX since completion of its last major improvement project in 1984; and (2) improve safety and efficiency of aircraft operations at LAX by realigning runways and taxiways on the north and south airfields. The proposed LAWA and FAA projects are designed to bring LAX facilities into conformance with federal statutes and FAA regulations, advisories, and standards that govern the design of runways and taxiways, and the placement and configuration of navigation aids.

The proposed LAWA and FAA projects would be implemented in three phases extending from 2004 through 2014. The parking structure is currently scheduled for Phase 1 in the years 2004 through 2005. The proposed modifications to the north airfield runways and the reconfiguration of the associated navigation aids in the El Segundo Dunes are currently scheduled for Phase 3 in the years 2012 through 2014.

The Commission's review focuses primarily on potential coastal zone effects from the proposed modifications to the two north airfield runways (e.g., lengthening, realigning, and adding taxiways) and the reconfiguration of their associated navigation aids in the El Segundo Dunes. This review also focuses on the adequacy of mitigation measures proposed for unavoidable impacts to environmentally sensitive habitat (ESHA) in the El Segundo Dunes, and on the adequacy of water quality protection measures.

Proposed development in disturbed wetlands (at the western end of the north airfield inland of the coastal zone boundary) holds the potential to adversely affect coastal zone wildlife that could be dependent upon these wetlands. However, these disturbed wetlands are located outside the coastal zone, have no hydrological connection to the coastal zone, and do not provide habitat significantly beneficial to or required by fish or wildlife present in the coastal zone. In addition, to the extent the wetland allowable use test may be applicable, the proposed fill would be an allowable use (incidental public service), the least environmentally damaging alternative, and unavoidable project impacts would be adequately mitigated. Thus, the project is consistent with the wetland policy (Section 30233) of the Coastal Act.

The proposed reconfiguration of existing navigation aids in the El Segundo Dunes would adversely affect environmentally sensitive habitat and conflict with the allowable use test of Section 30240 of the Coastal Act. The 307-acre El Segundo Dunes is only a remnant of a once much larger dune ecosystem. However, it continues to support southern foredune, southern dune scrub, valley needlegrass grassland, disturbed dune scrub/foredune, and non-native grassland/ruderal plant communities. Also within the Dunes is a 203-acre Habitat Restoration Area (HRA) which includes approximately 150 acres of occupied coastal buckwheat habitat critical to the survival of the federally endangered El Segundo blue butterfly.

Approximately 1.5 acres of El Segundo Dunes ESHA will be affected by the construction of new navigation aids and their related support facilities. Of this area, 0.77 acres are located in the HRA, and within this area 0.24 acres of habitat occupied by the El Segundo blue butterfly would be affected. The FAA will provide mitigation for the 1.5-acre impact at a ratio of 2:1 and restore

3.0 acres of coastal dune habitat. Approximately 1.4 acres of El Segundo Dunes ESHA will be affected by the removal or burial of concrete pads that currently support navigation aids proposed for removal. The FAA will provide mitigation for the 1.4-acre impact on dune habitat from the removal or retention of these pads at a ratio of 2:1 and restore 2.8 acres of coastal dune habitat.

The FAA's submittal included the final *Los Angeles/El Segundo Dunes Habitat Restoration Plan*. Modifications and changes to the draft *Habitat Restoration Plan* made at the suggestion of the Commission staff satisfactorily resolved several coastal resource issues, and included expanding the amount of mitigation acreage, improving the methodology for determining success of restoration activities, and expanding the area to be planted with coast buckwheat. With the successful implementation of the *Habitat Restoration Plan*, significant disruption of habitat values in the El Segundo Dunes ESHA will not occur. Further, with the proposed restoration of 5.8 acres of coastal dune habitat at Subsites 22 and 23 and at sites along the linear tracks of the abandoned navigation aids, the biological health of the dunes, and in particular coast buckwheat plants that support the endangered El Segundo blue butterfly, will be enhanced over present conditions.

The allowable use policy of Section 30240(a) states that within ESHAs, "only uses dependent on those resources shall be allowed within those areas." The El Segundo Dunes is designated as an environmentally sensitive habitat and the proposed reconfiguration of the existing navigation aids is not a type of land use or development that is dependent on these coastal dune resources. The proposed installation of the new navigation aids and associated roads is therefore not consistent with the allowable use test of Section 30240(a) of the Coastal Act. As a result, the FAA is asserting that the proposed project is consistent to "the maximum extent practicable" with Section 30240(a). This determination hinges on whether "... compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations." In reviewing the FAA's references to federal statute, regulations, and FAA advisories, there is a basis in the federal statutes that compel LAWA to comply with the FAA advisories and standards for the design of runways and taxiways at LAX. The proposed realignment of the two runways in the north airfield at LAX would mandate the reconfiguration of the existing navigation aids in the El Segundo Dunes that support flight operations on those runways. The FAA has designed the reconfiguration project to minimize effects on environmentally sensitive habitat and will implement a habitat restoration plan that will restore and enhance coastal dune habitat prior to the start of project construction.

Thus, given the mandate for LAWA to comply with FAA standards for runway design, the FAA requirement to provide navigation aids for runway operations, a navigation aid reconfiguration plan that minimizes impacts to environmentally sensitive coastal dune habitat, and FAA's commitment to implement the *El Segundo Dunes Habitat Restoration Plan*, the FAA project is consistent to the maximum extent practicable with the environmentally sensitive habitat policy (Section 30240) of the Coastal Act.

The LAWA/FAA submittals summarize potential impacts to coastal zone water quality from proposed construction and operational developments at LAX. The proposed "Master Plan Commitment HWQ-1 – Conceptual Drainage Plan" is the primary vehicle for addressing, reducing, and mitigating potential water quality impacts from stormwater and dry-weather runoff into Santa Monica Bay or San Pedro Bay. While it is clear that LAWA intends to implement a wide-ranging suite of water quality protection measures in concert with its Alternative D projects, and that the FAA intends to implement BMPs for navigation aids construction in the El Segundo Dunes (which will be an element of the HWQ-1 plan), the foundation of the LAX water quality control program – the HWQ-1 drainage plan – has yet to be developed.

LAWA and the FAA have agreed as a part of this consistency certification and consistency determination to submit the draft and final versions of the HWQ-1 drainage plan to the Commission staff for its review and comment. With this commitment, and in conjunction with the water quality protection commitments contained in the consistency certification and consistency determination, the project is consistent with the water quality protection policies (Sections 30231 and 30232) of the Coastal Act.

Existing coastal access routes in the immediate project area would be maintained and proposed developments at LAX outside the coastal zone would not affect existing coastal access and recreational facilities at nearby Vista del Mar Park, Dockweiler State Beach, the South Bay Bike Trail, and along surface streets providing access to and along the shoreline. The current alignment of Pershing Drive would not be affected and vehicle, bicycle, and pedestrian access along Pershing Drive would remain unchanged. The proposed employee parking structure at the west end of the airport would increase the number of vehicles using Pershing Drive, which is a vehicle and bicycle route inland of and parallel to the shoreline and which provides access to the coastal zone. LAWA's submittal outlines the numerous street and intersection improvements and the public transportation enhancements that would be implemented to mitigate potential adverse traffic impacts generated by the parking facility.

A number of uncertainties complicate accurately predicting impacts to coastal access, including development inland of the coastal zone, and a facilities construction schedule that extends through the year 2014. The Commission has no control over future increases in traffic volumes on major surface arterials providing access to the coast in this area as a result of: (1) other traffic-generating projects in the LAX area that could be developed over the next ten years; (2) the growth in LAX-related traffic that would occur under a No Action/No Project alternative; or (3) the outcome of inexorable population and economic growth in the region with its concurrent increase in vehicle trips in the LAX area. Based on the available information and commitments made at this time, as it is implemented over the next ten years in conjunction with the aforementioned surface transportation measures, the project will not adversely impact coastal access routes in the areas adjacent to LAX significantly beyond that which can be reasonably expected to occur in this area absent the proposed project. In addition, the proposed reconfiguration of and improvements to the navigation aids system located in the El Segundo Dunes will not affect public access to and along this section of the coastal zone. The project is

therefore consistent with the public access policies (Sections 30210, 30211, 30212, 30214, and 30252) of the Coastal Act.

The only element of the Alternative D project that could be visible from the coastal zone is the proposed four-story employee parking garage southeast of the intersection of Pershing Drive and World Way West. However, this facility would only be visible from Pershing Drive and would not be visible from coastal recreational areas at Dockweiler State Beach, Vista del Mar Park, and the South Bay Bike Trail. The view eastward from Pershing Drive across the western end of the LAX complex would not be significantly altered by the parking garage, whose presence would be consistent with the existing aviation-related development in this area. The visibility of the reconfigured navigation aids from coastal zone vantage points is minimal, would be similar in nature to the existing aids, and would not adversely affect coastal views to or along the shoreline from points west of the El Segundo Dunes. Therefore, the proposed project is consistent with the visual resource policy (Section 30251) of the Coastal Act.

LAWA's and FAA's submittals include a commitment that in the event that previously unidentified cultural, archaeological, and/or paleontological resources are discovered during construction activities, implementation of mitigation measures described in their respective submittals and in the Final EIS/EIR for the projects would eliminate the potential for adverse impacts to these resources. Mitigation measures address cultural resource discovery, monitoring, excavation and recovery, administration, reporting, curation, and notification. Additional mitigation measures address paleontological resource discovery, monitoring, collection, and reporting. With these measures, the proposed project would not adversely affect cultural resources, and the projects are consistent with the cultural resource policy (Section 30244) of the Coastal Act.

STAFF NOTE/PROCEDURES:

In this combined staff report and recommendation, the Commission is reviewing both a consistency certification (CC-061-04) submitted by Los Angeles World Airports (LAWA) and a consistency determination (CD-062-04) submitted by the Federal Aviation Administration (FAA) for proposed development at Los Angeles International Airport (LAX)(**Exhibits 1-3**). The consistency certification was prepared by LAWA to evaluate the consistency of its proposed development projects at LAX inland of the coastal zone with the California Coastal Management Program (CCMP)(**Exhibits 4 and 5**). The consistency determination was prepared by the FAA to evaluate whether its proposed reconfiguration of navigation aids located in the coastal zone within the El Segundo Dunes is consistent (to the maximum extent practicable) with the CCMP (**Exhibits 4 and 5**). Because LAWA is not proposing – at this time – any development within the coastal zone, there are no coastal development permit applications currently before the Commission. However, LAWA expects to submit at a future date one or more coastal development permit applications to the Commission for projects within the El Segundo Dunes. These projects will serve as mitigation for development impacts to sensitive habitat located inland of the coastal zone within the western airfield area at LAX.

Because the projects covered in the two submittals are interconnected, the Commission staff determined that a single staff report would more clearly and efficiently describe the overall LAX redevelopment plan and the LAWA and FAA projects. This staff report contains a separate motion, recommendation, and resolution for the consistency certification and consistency determination, and the Commission will need to act separately on each submittal and in the order provided. Due to statutory time restrictions, the Commission must act on the FAA consistency determination at the November 2004 meeting, or the submittal will be "deemed concurred" as of November 20, 2004 (unless the FAA extends the time deadline). The Commission is not required to act on the LAWA consistency certification at this meeting, and could postpone action until the January 2005 meeting given that the six-month review period extends to February 10, 2005. However, the Commission staff is recommending that the Commission act on both items together (i.e., at the November 2004 meeting).

Even though the proposed reconfiguration of the existing navigation aids is not scheduled for construction until the year 2012, the FAA seeks Commission action now to enable the FAA to complete its Environmental Impact Statement and sign a Record of Decision for the overall LAX redevelopment project. Given this requirement, the FAA, LAWA, and Commission staff agreed that it was in the public interest to act on the LAWA consistency certification at the same time as the consistency determination. This decision was reached notwithstanding the fact that the north airfield runway realignment (which triggers the need for reconfiguration of the navigation aids) is also not scheduled for construction until the year 2012. The Commission staff notes that while it is rare for the Commission to act on a federal consistency determination and/or certification for an action eight years in the future, it is not unprecedented or out of the realm of airport planning time frames.

In this regard, the staff notes that should the proposed projects change in a significant manner in the time period up to the year 2012, a revised consistency determination and/or certification would need to be submitted to the Commission by the FAA and LAWA, respectively. Similarly, should there be a substantial modification to the environmentally sensitive habitats in the El Segundo Dunes in the time period leading up to 2012, the Commission has the ability, under the federal consistency regulations (15 CFR Section 930.46 (consistency determination) and Section 930.66 (consistency certification)), to re-open the subject consistency determination and/or certification in order to determine whether the projects remain consistent with the CCMP. Should there be changes in navigation aid technology during the time period up to the year 2012 that would eliminate the need to install navigation aids in the El Segundo Dunes, or that would provide for a modified navigation aid plan that creates fewer adverse effects to coastal dune habitat, the Commission would have the ability under the same federal consistency regulations cited above to re-open its concurrence in order to determine whether the project can feasibly be modified to use new technologies and/or systems in order to further reduce the adverse effects to coastal dune habitat. The Commission also has the ability under the federal consistency regulations (15 CFR Section 930.45 (consistency determination) and Section 930.65 (consistency certification)) to re-open a previous concurrence – after project construction commences –

should it determine that impacts to coastal resources from a project are substantially different from those expected at the time of concurrence.

STAFF SUMMARY AND RECOMMENDATION:

I. Project Background.

The vast majority of Los Angeles International Airport (LAX) is located inland of the coastal zone boundary, which parallels Pershing Drive; only the El Segundo Dunes portion of LAX, located west of Pershing Drive, is situated within the coastal zone (**Exhibits 4 and 5**). The only component of the LAX facilities improvements program that would be located within the coastal zone is the reconfiguration of navigation aids currently located in the El Segundo Dunes at the western end of the northern airfield runways. This component is a Federal Aviation Administration (FAA) project and the subject of CD-062-04. The larger LAX improvements program is sponsored by Los Angeles World Airports (LAWA), an agency of the City of Los Angeles, and is the subject of CC-061-04. (LAWA would also submit coastal development permit applications to the Commission at a future date for any mitigation projects that would occur within the coastal zone in the El Segundo Dunes. These projects would mitigate impacts from LAX redevelopment projects which would affect environmentally sensitive habitat at sites within the western LAX airfield area, but inland of the coastal zone boundary.)

LAWA's consistency certification provides a summary history of the currently proposed LAX redevelopment project, also known as Alternative D:

The planning for, and evaluation of, improvements proposed for Los Angeles International Airport (LAX) have been underway for approximately a decade. This work effort occurred within the context of formulating a Master Plan for the future of LAX, specifically at the year 2015. Three "build" alternatives - Alternatives A, B, and C - for the LAX Master Plan, and a "no build" alternative - the No Action/No Project Alternative - were addressed in a Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) published in January 2001. In response to the terrorist attacks that occurred on September 11, 2001, the newly elected Mayor of Los Angeles directed the Los Angeles Board of Airport Commissioners to develop a new fifth alternative for the LAX Master Plan that, consistent with public comment calling for a regional approach alternative, would accommodate passenger and cargo activity levels at LAX that would approximate those of the No Action/No Project Alternative, have fewer environmental impacts than the No Action/No Project Alternative and would be designed to enhance airport safety and security. That fifth alternative - Alternative D, the Enhanced Safety and Security Plan - was developed in consultation with LAWA staff and the FAA, and was addressed in the Supplement to the Draft EIS/EIR published in July 2003. Alternative D represents LAWA's staff-preferred alternative, as presented of the Final EIR published in April 2004.

Exhibit 6 shows the existing (1997) layout at LAX, and **Exhibit 7** illustrates the proposed "Alternative D - 2015 Enhanced Safety and Security Plan" layout for LAX.

On May 10, 2004, representatives from FAA, LAWA, and Commission staff discussed the proposed project and the applicable federal consistency review requirements; all parties agreed that the appropriate review mechanism would be a consistency certification from LAWA to examine potential effects on the coastal zone from Alternative D, and a consistency determination from the FAA to examine potential effects on the coastal zone from the navigation aids reconfiguration project. LAWA reported that the Final EIR for the project was published in April 2004, and both agencies expected that the City of Los Angeles Planning Commission, Airport Commission, and City Council would take action on the proposed Alternative D project by the end of September 2004. FAA stated at that time that should the City complete its reviews and the Coastal Commission take action on the FAA consistency determination, the FAA hoped to then publish a Record of Decision and the Final EIS for the project in November 2004.

In June 2004, the City Planning and Airport Commissions voted to approve Alternative D and at the same time voted to approve a "specific plan" proposal that splits the Alternative D project into two phases. The first phase includes relocating the south airfield runways, a consolidated rental car facility, an elevated tram, a transportation center to link the tram with the existing light-rail Green Line, an employee parking facility, and additional gates at the international terminal. The second phase includes a remote passenger check-in facility, demolition of three passenger terminals on the airport's north side and parking garages in the central terminal area, construction of a new north terminal, relocation of the north airfield runways, and reconfiguration of the western navigation aids serving those runways. An oversight panel, airport commissioners, and the City Council would review the second-phase projects after additional security, noise, traffic, and air pollution studies are completed. The June 2004 approvals by the City Planning and Airport Commissions allowed the Alternative D project to next go before the Los Angeles County Airport Land Use Commission and, subsequently, the Los Angeles City Council.

On August 25, 2004, the County Airport Land Use Commission ruled that the Alternative D plan was inconsistent with the County's 1991 land use plan, because it would expose nearby communities to more noise and safety risks than allowed under the land use plan. The immediate effects of that action were two-fold: (1) the proposed Alternative D project would need to receive a two-thirds vote of the Los Angeles City Council to be approved, rather than a simple majority of the 15-member Council; and (2) final City Council action on Alternative D would be delayed due to a requirement that the Council notify the County 45 days in advance that it planned to override the Land Use Commission's decision. The City of Los Angeles City Council Planning and Land Use Management Committee and the Commerce Committee approved the Alternative D plan on October 6 and October 7, 2004, respectively. The full Los Angeles City Council approved the Alternative D plan on October 20 by a 12 to 3 vote. The final vote by the City Council is scheduled for December 7, which complies with the aforementioned 45-day notice requirement to the County Airport Land Use Commission (Exhibit 8).

II. Project Description.

This section of the report will review the primary purpose of the proposed LAX project; examine the current conditions of runways, taxiways, and navigation aids at LAX; review applicable federal statutes and Federal Aviation Administration regulations regarding the design and function of runways, taxiways, and navigation aids; and describe the proposed improvements and modifications to runways, taxiways, and navigation aids at LAX. This review is necessary in order to understand: (1) the reasons for the proposed reconfiguration of navigation aids in the coastal zone (the subject of the consistency determination by the FAA); (2) how that project element is necessary due to the proposed modifications to the two runways in the north airfield at LAX; (3) how those modifications were developed from the goal of improving safety and efficiency of aircraft operations at LAX (the subject of the consistency certification by LAWA); and (4) the basis for the FAA's assertion as to how its proposed project is consistent "to the maximum extent practicable" with the California Coastal Management Program.

A. Purpose. The vast majority of the improvements proposed for LAX under the proposed Alternative D would occur outside the coastal zone, as noted above in Section I and as illustrated in **Exhibits 5 and 7**. The only existing development within the coastal zone on LAX property is Pershing Drive, existing navigational aids and associated service roads in the El Segundo Dunes, and abandoned roadways that served residential structures formerly located within the Dunes (**Exhibits 4 and 5**). The proposed LAX improvement and modification plan presented in Alternative D is designed to expand and modernize terminal and parking facilities to address the passenger and cargo growth which has occurred at LAX since completion of its last major improvement project in 1984, and to improve safety and efficiency of aircraft operations at LAX by realigning runways and taxiways on the north and south airfields.

The Final LAX Master Plan (April 2004) states that:

Alternative D would be designed to serve 78 million annual passengers (MAP), the level of passenger activity identified by Southern California Association of Governments (SCAG) for LAX in the 2001 Regional Transportation Plan (RTP). Alternative D would encourage the development and use of regional airports to serve local demand by constraining the facility capacity at LAX to approximately the same aviation activity levels identified in the No Action/No Project Alternative. In the short-term LAX would continue to serve as the region's predominant international airport for passenger and cargo operations due to the specialized facilities developed over time to serve these functions.

B. Existing Conditions at LAX.

1. Aircraft. The consistency determination first reviews the type of aircraft that currently operate at LAX:

Airplanes operating at LAX today are much larger than the airplanes in service at the time of its current design. The existing airfield at LAX was originally designed to serve the first

commercial passenger jet aircraft, such as the Boeing 707 and Douglas DC-8. The wingspans of these aircraft are 131 feet and 143 feet, respectively. In its role as an international gateway, LAX became one of the first airports served by the original Boeing 747 and its current successor, the 747-400. The wingspans of these aircraft range from 195 to 231 feet. Larger aircraft, with wingspans ranging between 223 and 232 feet, also occasionally use LAX. Thus, the current runway separations do not allow the two pairs of parallel runways to operate independently from one another [emphasis added].

2. Runways. Next, the consistency determination reports that the existing layout of runways at LAX contributes to safety hazards and operational inefficiencies:

The existing airfield requires landing aircraft to exit the outboard runways onto high-speed taxiways that provide an unimpeded route to a neighboring parallel runway on which simultaneous aircraft departures are occurring. The existing airfield has four full-length taxiways providing east-west routes for aircraft to maneuver on the airfield, none of which are between either pair of runways.

According to the LAX Master Plan EIS/EIR, the number and configuration of the existing four runways are inadequate to serve current and projected demand. Only one of the four runways (Runway 25R on the south airfield) is sufficiently long to serve the largest aircraft when fully loaded during adverse weather conditions (hot days with little wind). Aircraft departing from gates in the north airfield often need to use Runway 25R and endure long taxi distance with significant airfield congestion along the way. The difference in runway lengths between the north and south airfield complexes creates an imbalance in operations by preventing air traffic from being evenly distributed.

The north pair of runways (Runways 24L/6R and 24R/6L) has a separation distance of 700 feet between the two runways, and the south pair of runways (Runways 25L/7R and 25R/7L) has a runway separation distance of 750 feet. These runway separations do not meet current FAA design standards so, to operate safely, FAA requires that each pair be operated dependently, with greater aircraft separations and hold times to allow safety margins for weather and wake turbulence. This dependent operation reduces the number of planes that can use the runways at any given time and thus limits the airfield capacity. The runways are currently too closely spaced to allow center taxiways so aircraft can clear the runways sooner. Therefore, following aircraft are prohibited from landing at shorter intervals, and airfield congestion and risk of runway incursions increases. A runway incursion is defined by the FAA as any occurrence in the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land. [emphasis added]

3. Taxiways. The current system of taxiways at LAX is then reviewed:

The taxiway system, another key component to airfield operations and a factor in determining airfield safety and efficiency, provides the link between runways and the terminal gates. At busy airports, the airport throughput capacity, to a large degree, is a function of how efficiently the taxiway system permits the flow of aircraft movement between the runways and the terminal gates. Two critical operational factors must be considered in determining taxiway system requirements: aircraft size and the level of aircraft demand throughout the day.

As discussed in Chapter 3 of the Draft LAX Master Plan, as airport activity increases, taxilane and taxiway congestion will worsen. Based on the design of the existing taxiway system, when departure queues occupy the outer taxiway in the terminal area, the flow to and from concourses on the north and south complexes is limited to a single taxiway. In addition, single cul-de-sac taxilanes between adjacent terminals limit flow to a single direction at all times. Aircraft that push-back to the inner taxiway block other aircraft traveling along the taxiway. These design and operational conditions cause congestion, especially during peak periods on the south complex, when arrivals and departures are taxiing to and from their gates simultaneously.

The existing taxiway system at LAX can accommodate FAA Aircraft Design Group V, with some restrictions. Design Group V includes aircraft with a wingspan up to 213 feet and includes the Boeing 747-400, the largest aircraft currently operating at the airport.

As activity increases at LAX and a greater proportion of the fleet becomes Design Group V aircraft, the potential for taxiway congestion will increase due to . . . existing taxiway and taxilane restrictions (e.g., impaired wing clearance, aircraft size restrictions, insufficient clearance between aircraft and ground vehicles, insufficient distance between runway centerline and parallel taxiway centerline) . . . Heavy aircraft are expected to make up over 30 percent of operations in the 2015 design day schedule and over 40 percent of operations in the peak hour in 2015. Future design of the taxiway/taxilane system and terminal area can eliminate these restrictions.

4. Navigation Aids. The existing system of navigation aids at LAX is next examined in the consistency determination:

The ALS [Approach Lighting System] is a standard configuration of aeronautical ground lights in the approach area to the runway that provides the basic means to transition from instrument flight to visual flight for landing. Operational requirements dictate the sophistication and configuration of the approach light system for a particular runway. As part of a precision instrument runway such as Runway 6R, the ALS is a configuration of signal lights starting at the landing threshold and extending into the approach area along the extended runway centerline to a distance of 2,400 feet and includes sequenced flashing lights which appear to the pilot as a ball of light traveling towards the runway at high speed.

...

According to Chapter 3 of the Draft LAX Master Plan, the existing approach lighting systems for LAX's runways provide high lighting intensity for all four west and east flow runways. The approach lighting system on the principal west flow runways, 24R and 25L, is ALSF-2, which is an advanced, high intensity lighting system. All runways, with the exception of 24L/6R, have runway centerline lights. Runways 24R and 25L, the primary arrival runways in west flow, and 7L, one of two primary arrival runways in east flow, also have touch down zone lighting. All runways at LAX also use a precision approach system called the Instrument Landing System (ILS). The ILS's electronic components consist of radio transmitters that guide the aircrafts' alignment with the runway (localizer), descent to the runway (glide slope), and distance from the runway (marker beacon).

Currently, Runway 6R, the runway where proposed NAVAID and ILS realignment would occur within the Los Angeles/El Segundo Dunes and the coastal zone, is equipped with a Category-I ILS and a Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALSR). The Category-I ILS provides electronic vertical and horizontal guidance with cloud ceiling and visibility approach minimums as low as 200 feet above Runway 6R's touchdown zone elevation and 1,800 feet visibility as reported by Runway Visual Range equipment (RVR). The MASLR ALS is an integral part of the Category-I ILS. When the MASLR is inoperative, the horizontal RVR visibility minimums increase to 4,000 feet. For safety considerations when these higher visibility minimums are in effect, the runway may not be available for landing during meteorological conditions having periods of reduced visibility. Periodic meteorological conditions at LAX during certain times of the year mandates a better ALS [Approach Lighting System].

5. Runway Incursions. The problem of runway incursions is the final topic addressed regarding existing LAX conditions that support the need for airfield modifications and the resulting changes to the navigation aid system:

Another consideration incorporated into the design of the taxiway system proposed under Alternative D is minimizing risks associated with runway incursions. In June 2002, FAA published a study entitled, "FAA Runway Safety Report: Runway Incursion Trends at Towered Airports in the United States – CY 1998-CY 2001." This report identified a total of 1,460 runway incursions out of 268 million airport operations in the U.S. that resulted in three collision and four fatalities over the four years studied. LAX experienced 38 total runway incursions during the period of the FAA study and had an average rate of occurrence of 1.24 incursions per 100,000 operations. Annual runway incursions at LAX totaled 12, 10, 8 and 8, respectively, for the years of 1998 through 2001. The annual rates of runway incursions for the same period marked 1.55, 1.28, 1.02 and 1.08 per 100,000 operations, respectively.

In July 2003, the FAA published the updated Runway Safety Report, which, unlike the pervious version, compiled the data on a fiscal-year basis. This FAA Runway Safety Report

reflects the runway incursion trends for fiscal years 1999 through 2002. The report indicates that the annual runway incursions at LAX totaled 9, 10, 9 and 6, respectively, over the four years studied. The rate of runway incursions at LAX for the same period marked 1.17, 1.28, 1.15 and 0.94 per 100,000 operations, respectively. It is important to note that the discrepancies in the annual runway incursion figures between the 2003 report and the 2002 report resulted because two different measurements were used in compiling data (i.e., fiscal year vs. calendar year).

For comparison purposes, annual incursion rates (per 100,000 operations), over the same five-year period for the Atlanta Hartsfield, Dallas Fort Worth, and Phoenix Sky Harbor Airports are indicated below:

Annual Incursion Rates Per 100,000 Operations				
	Los Angeles International (LAX)	Atlanta Hartsfield (ATL)	Dallas Ft. Worth (DFW)	Phoenix Sky Harbor (PHX)
1998	1.55	0.24	0.54	1.32
1999	1.17-1.28 ⁽¹⁾	0.66	0.81	0.53
2000	1.02-1.28 ⁽¹⁾	0.33	0.35	0.94
2001	1.08-1.15 ⁽¹⁾	0	0.75	1.65
2002	0.94	0.45	0	1.04

Note: (1) Range includes both calendar-year and fiscal-year data from the three-year period common to both reports references above.

Of these three airports, ATL is the most similar to LAX in terms of operational characteristics, including runway layout and the volume of annual operations. During the same period of time, LAX had four times the average rate of occurrence of runway incursions than ATL, although LAX had approximately 20 percent fewer operations than ATL. LAX ranked first throughout the United States as the airport that had the greatest number of runway incursions during the four-year period (CY1998-CY2001), a total of 38 incursions. LAX was followed by North Las Vegas Airport with 32 incursions, and St. Louis-Lambert International with 31 incursions.

FAA also classifies runway incursions by their relative severity. The highest severity is given to an incursion in which extreme action is needed to avoid a collision or if a collision occurs. Five of the 38 runway incursions at LAX during the period of the 2002 FAA report were in this category; none of the five resulted in a collision.

One of FAA's goals is to raise awareness of runway incursions, identify solutions, and implement strategies to reduce their severity, frequency, and the risk of a runway collision. Airport surface radar technology and airport infrastructure implementation at key airports like LAX are some of the strategies identified by FAA to help solve the problem. LAWA has already implemented improvements to airfield lighting, taxiway marking, runway signage, and has sponsored on-going seminars on airfield familiarization with airport users. However, more improvement is needed.

Because FAA airport design standards have changed over time, certain features of the existing airfield do not meet current standards. These conditions are documented under Federal Aviation Regulations Part 139, available through LAWA. While these conditions do not create an unsafe airfield environment, they do add to airfield congestion as operations increase by imposing slower taxi speeds, which result in an increase in air pollution and aircraft delay. Improvements to runways and terminals at LAX would increase taxiway separations to meet current FAA design standards, as explained in FAA Advisory Circular 150/5300-13, Airport Design. Without the improvements to LAX, airfield safety would not be enhanced, and efficiency of the airfield would not be increased [emphasis added].

C. FAA Regulations and Advisories. The FAA has adopted numerous regulations, advisories, and standards for airport runway and taxiway design, and for the placement, alignment, and configuration of associated navigation aids. These FAA standards exist in the context of the following federal laws and regulations:

United States Code Title 49, Chapter 447, Section 44701 (General requirements) states in part that:

(c) Reducing and eliminating accidents. The Administrator shall carry out this chapter in a way that best tends to reduce or eliminate the possibility or recurrence of accidents in air transportation. However, the Administrator is not required to give preference either to air transportation or to other air commerce in carrying out this chapter.

United States Code Title 49, Chapter 447, Section 44706 (Airport operating certificates) states in part that:

(a) General. The Administrator of the Federal Aviation Administration shall issue an airport operating certificate to a person desiring to operate an airport . . .

(b) Terms. An airport operating certificate issued under this section shall contain terms necessary to ensure safety in air transportation . . .

The Code of Federal Regulations provides in Title 14 (Federal Aviation Administration), Part 139 (Certification and Operations: Land Airports Serving Certain Air Carriers) the following:

Subpart A – General. Section 139.5. Standards and procedures for compliance with the certification and operations requirements of this part.

Certain requirements prescribed by subparts C and D of this part must be complied with in a manner acceptable to the Administrator. FAA Advisory Circulars contain standards and procedures that are acceptable to the Administrator for compliance with subparts C and D. Some of these advisory circulars are referenced in specific sections of this part. The standards and procedures in them, or other standards

and procedures approved by the Administrator, may be used to comply with those sections.

Subpart D – Operations. Section 139.305(c). Paved areas.

FAA Advisory Circulars in the 150 series contain standards and procedures for the maintenance and configuration of paved areas [i.e., runway, taxiway, loading ramp, parking area] which are acceptable to the Administrator.

The FAA's consistency determination provides the following discussion:

The FAA provides standards for runway, taxiway, and taxilane design, including length, width, separation, radius of turns, layout, and pavement material composition. These standards are published in FAA Advisory Circular 150/5300-13, Airport Design, and are intended to provide for a high degree of safety in any setting. For the most part, the current design and operation of LAX are responsive to FAA Airport Design Standards. However, the size of today's larger aircraft has resulted in the need to employ some special procedures for such aircraft to operate safely on the ground in areas that were originally designed for smaller aircraft.

Current design standards regarding the placement, alignment and configuration of Approach Lighting System (ALS) is prescribed in the FAA Advisory Circular 150/5300-13, Airport Design, Paragraph 605, FAA Order 6850.2A, Change 1, Visual Guidance Lighting Systems and International Civil Aviation Organization's (ICAO) Annex 14, Aerodromes, Volume 1, Aerodromes Design and Operations, paragraph 5.2.3.10. All FAA and ICAO references indicate that the ALS shall be aligned on and about the extended runway centerline.

There are no published guidelines or allowances for modifications to these design standards.

As discussed in Section 4.24.3, Safety in the Final EIS/EIR, the requirements included in the Airport Design Standards are based on the requirements for safe aircraft takeoff, landing, and ground movement. These requirements have evolved as experience and research have increased FAA's understanding of what is necessary to enhance aviation safety. FAA Airport Design Standards include safety compatibility criteria to which airports must conform. The basic objective of safety compatibility criteria is to minimize the risk associated with potential aircraft accidents. In addition to designation of runway safety areas, FAA provides standards for runway, taxiway, and taxilane design, including length, width, separation, radius of turns, layout, and pavement material composition.

LAX was built prior to the establishment of the FAA's current design standards for airports serving large commercial jets. For this reason, not all of the safety areas and safety zones surrounding the four LAX runways universally meet today's recommended dimensions for new airport development.

FAA has established a mechanism for allowing existing airports to continue operating unimpeded through the declaration of safe aircraft operating parameters known as "declared distances." Guidance on the application of this methodology is contained in FAA Advisory Circular 150/5300-13, Airport Design. Appendix 14 of this Advisory Circular states, "The use of declared distances for airport design shall be limited to cases of existing constrained airports where it is impracticable to provide the runway safety area (RSA), the runway object free area (ROFA), or the runway protection zone (RPZ) in accordance with the design standards in Chapters 2 and 3 [of Advisory Circular 150/5300-13]."

...

Navigational aid and instrument land system placement is governed by the FAA through Advisory Circular 150/5300-13, Airport Design, FAA Order 6820.2A, Visual Guidance Lighting Systems, and ICAO Annex 14, Volume 1, Aerodromes Design and Operations. Based on the proposed reconfiguration of runways and taxiways under Alternative D of the LAX Master Plan, to maintain airfield and aircraft safety, associated NAVAIDS and ILS components would need to be realigned pursuant to the mandates contained in FAA's Advisory Circular and Executive Orders. [emphasis added]

As discussed above and in Chapter 3 of the LAX Master Plan and Section 4.14, Coastal Zone Management and Coastal Barriers of the LAX Master Plan EIS/EIR, FAA's Advisory Circular 150/5300-13, Airport Design, FAA Order 6820.2A, Visual Guidance Lighting Systems, and ICAO Annex 14, Volume 1, Aerodromes Design and Operations, govern the placement of NAVAID and ILS components relative to runway centerlines.

D. Proposed Airfield and Navigation Aids Development. The consistency certification, consistency determination, and related EIS and EIR documents provide detailed information on all aspects of the proposed Alternative D development at LAX. In terms of coastal zone impacts, the Commission is focused primarily on potential coastal zone effects from proposed modifications to the two north airfield runways: Runway 24R/6L (the northernmost, or outboard, runway) and Runway 24L/6R (the inboard runway), and the reconfiguration of their associated navigation aids located to the west in the El Segundo Dunes. In brief, Runway 24R/6L would be extended to the west by 1,495 feet, and Runway 24L/6R would be relocated to the south by 340 feet, extended to the east by 1,280 feet, and extended to the west by 135 feet (**Exhibits 6 and 7**).

The following information from the FAA's consistency determination further examines the proposed runway and taxiway improvements:

Enhanced airfield safety would be achieved through airfield facility modifications that would mitigate the primary causes of runway incursions at LAX. In addition, airfield improvements would be made to enable the existing runway systems to better accommodate aircraft operations and meet FAA standards. The number of runways would remain the same at four. Two existing runways would be moved - one by approximately 50 feet [Runway 25L/7R, the outboard runway on the south airfield] and the other by approximately 340 feet [Runway 24L/6R, the inboard runway on the north airfield], two runways would be

lengthened - one by approximately 1,400 feet [Runway 24L/6R] and the other by approximately 1,500 feet [Runway 24R/6L, the outboard runway on the north airfield], and all runways would be further separated from one another to improve operational efficiency and safety.

...

Under Alternative D, the existing runways would be upgraded and relocated; no new runways would be added. Alternative D would maintain the existing four-runway system with modifications to the two north and south airfield runways. Taxiways would be designed to accommodate the Boeing 747-400 as the design aircraft (Group V) with operational and modified Group VI solutions for the operation of anticipated limited numbers of the New Large Aircraft (NLA). In addition, all existing runway ends would be redesigned to have Runway Safety Areas (RSAs) that meet current FAA standards of 1,000 feet long by 500 feet wide.

As discussed in Section 4.24.3, Safety of the EIS/EIR, LAX was built prior to the establishment of the FAA's current design standards for airports serving large commercial jets. For this reason, not all of the safety areas and safety zones surrounding the four LAX runways universally meet today's recommended dimensions for new airport development.

Under Alternative D, in the north airfield, Runway 6L/24R would have a physical pavement length of 10,420 feet. The west end of the runway would have a 1,000-foot displaced threshold in order to provide the recommended 1,000-foot Runway Safety Area (RSA). A 500-foot clearway would extend off of the west end of the runway, increasing Take-Off Distance Available (TODA) for Runway 24R, while a 1,000-foot clearway would extend from the east end, increasing TODA for aircraft departing Runway 6L.

Also in the north airfield, Runway 6R/24L would have a physical pavement length of 11,700 feet. Both runway ends would have displaced thresholds of 1,000 feet to accommodate the recommended 1,000-foot RSA. A 300-foot clearway would extend from the west end of the runway increasing TODA for Runway 24L to 12,000 feet.

...

As described in the LAX Master Plan Final EIR's Topical Response TR-SAF-1, Aviation Safety, under Alternative D, all modified runways would satisfy FAA airport design standards and increase the operational efficiency of the airfield. The proposed improvements described in Chapter 3, Alternatives, of the EIS/EIR would increase runway and taxiway separations for larger aircraft by adding parallel taxiways between runways, and by increasing safety areas to meet current FAA standards. These changes would reduce air traffic controller workload and the associated risk of runway incursions, as well as reduce the risk of aircraft damage in the event of a runway overrun.

In addition to the proposed parallel taxiway between each pair of runways, the existing Taxiway D, which is located north of existing Terminals 1, 2 and 3, would be extended to the west boundary of the airfield increasing available east-west taxi routes to taxiing aircraft. The airfield improvements would increase the number of available east-west taxi routes at LAX from four to at least seven. Each improved or proposed taxiway would be constructed to meet current FAA airfield design standards for wide-body aircraft, thus enhancing access to contact gates designed specifically for wide-body aircraft and eliminating the need to bus passengers across the airfield to remote aircraft hardstands for boarding.

After describing the proposed runway and taxiway improvements, the FAA's consistency determination next examines the resulting need for reconfiguring the navigation aids at the western end of the two north airfield runways (**Exhibits 9-15**):

Alternative D would require changes to navigation aids for Runway 6R within the coastal zone and the Los Angeles/El Segundo Dunes. As part of a planned upgrade of the Runway 6R ILS to Category-II capabilities, the existing MALSR [Medium Intensity Approach Lighting System] will be upgraded to a High-Intensity ALS with Sequenced Flashers (ALSF-2). The primary differences between the MALSR and ALSF-2 are the number and separation of lights situated along the approach path to the runway end. Both systems extend 2,400 feet beyond the landing threshold and are centered symmetrically about the extended runway centerline.

...

The northernmost runway, Runway 24R/6L is proposed to be extended westerly by approximately 1,495 feet, which in turn would require that the existing navigational aids, specifically the instrument landing light system be shifted to the west as well. The type of landing light system to be utilized is referred to as the Approach Lighting System (Flashing)-2 (ALSF-2) . . . The proposed ALSF-2 lighting system would decrease the spacing between lights by increasing the number of lights used to aid pilots in identifying the airport. The number of lights would increase from 15 to 23, and the existing spacing would decrease from 200 feet to 100 feet between each light. The lights would be directed up to approaching aircraft, and the extra lighting would be used during low visibility Santa Ana conditions (strong easterly winds) and at night when planes are approaching LAX from the west. During normal operations only one-half of the lights would be illuminated. To the extent possible, subject to FAA requirements and approval, the ALSF modifications associated with the extension of Runway 24R/6L would occur at, or adjacent to, the pad areas of the existing system to reduce disturbance impacts within the coastal zone. This would also be the case relative to using the access road adjacent to the existing land light system that currently serves Runway 24R/6L. In addition to the aforementioned land light system improvements, the existing Localizer Antenna (i.e., an antenna that emits an electronic signal used for precise instrument landings during inclement weather, such as periods of heavy fog common to coastal areas such as at LAX) for Runway 24R/6L would be relocated to position within the extension of land light system.

Under Alternative D, existing Runway 24L/6R would be relocated southward by approximately 340 feet and extended east by approximately 1,280 feet and west by approximately 135 feet. As a result of the southward relocation of Runway 24L/6R the alignment and locations of the existing runway light system serving the runway would also need to be shifted to the south. In addition, the existing Localizer Antenna for Runway 24L/6R would also need to be relocated to the south . . . much of the relocated navigational aid system would occur at, or near, existing roads, which would reduce potential disturbance impacts within the coastal zone.

One additional element of the proposed Alternative D project that could potentially affect the coastal zone is a four-story, 12,400-stall employee parking structure located inland of the coastal zone at the western end of the airport, southeast of the intersection of Pershing Drive and World Way West.

The proposed Alternative D does **not** include any provisions for development in the northern 104 acres of the El Segundo Dunes, the area north of the 203-acre Habitat Restoration Area (other than the aforementioned reconfigured navigation aids). An ordinance adopted by the City of Los Angeles in 1992 (No. 167,940) provided for a public golf course and related facilities in this northern area. However, an ordinance adopted by the City in 1994 (No. 169,767) stated that development in the northern area:

. . . shall be limited to a nature preserve and accessory uses only. Accessory uses may include but are not limited to: a nature center, environmental education center or local history display center. Development, including buildings and parking areas shall not exceed 5,000 SF in size or 18 feet in height. Any use of the property, including guided tours shall require a Conditional Use Permit from the City Planning Commission before obtaining any approvals.

In addition, both the consistency certification from LAWA and the consistency determination from the FAA state that:

No hotels or golf course developments in the Dunes are proposed by, or allowed under, the LAX Master Plan.

Lastly, the LAX Master Plan (April 2004) states that Alternative D would be implemented in three phases, with construction extending from 2004 through 2014 (**Exhibit 16**). The proposed modifications to the north airfield runways and the reconfiguration of the associated navigation aids in the El Segundo Dunes is currently scheduled for Phase 3 in the years 2012 through 2014. The parking structure is currently scheduled for Phase 1 in the years 2004 through 2005.

III. Status of Local Coastal Program. The standard of review for federal consistency certifications and consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If the LCP has been certified by the Commission and incorporated into the California Coastal Management Program (CCMP), it can

provide guidance in applying Chapter 3 policies in light of local circumstances. If the LCP has not been incorporated into the CCMP, it cannot be used to guide the Commission's decision, but it can be used as background information. The Los Angeles International Airport/El Segundo Dunes segment of the City of Los Angeles LCP has **not** been certified by the Commission and, therefore, is not applicable in the Commission's review of either the consistency certification or the consistency determination.

IV. Applicant's Consistency Certification. Los Angeles World Airports has certified that the proposed activity complies with California's approved coastal management program and will be conducted in a manner consistent with such program.

V. Staff Recommendation on Consistency Certification:

The staff recommends that the Commission adopt the following motion:

Motion: I move that the Commission **concur** with Los Angeles World Airport's consistency certification CC-061-04 that the project described therein is consistent with the enforceable policies of the California Coastal Management Program.

Staff Recommendation:

The staff recommends a **YES** vote on this motion. Passage of this motion will result in a concurrence with the certification and adoption of the following resolution and findings. An affirmative vote of the a majority of the Commissioners present is required to pass the motion.

Resolution to Concur with Consistency Certification

The Commission hereby **concurs** with the consistency certification made by Los Angeles World Airports for the proposed project, finding that the project described therein is consistent with the enforceable policies of the California Coastal Management Program.

VI. Federal Agency's Consistency Determination. The Federal Aviation Administration has determined the project consistent to the maximum extent practicable with the California Coastal Management Program.

VII. Staff Recommendation on Consistency Determination.

The staff recommends that the Commission adopt the following motion:

Motion: I move that the Commission **concur** with consistency determination CD-062-04 that the project described therein is consistent to the maximum

extent practicable with the enforceable policies of the California Coastal Management Program.

Staff Recommendation:

The staff recommends a **YES** vote on the motion. Passage of this motion will result in a concurrence with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

Resolution to Concur with Consistency Determination:

The Commission hereby **concurs** with the consistency determination made by the Federal Aviation Administration, finding that the project is consistent to the maximum extent practicable with the enforceable policies of the California Coastal Management Program.

VIII. Practicability:

The federal consistency regulations provide:

Section 930.32 Consistent to the maximum extent practicable.

(a) The term "consistent to the maximum extent practicable" describes the requirements for Federal activities including development projects directly affecting the coastal zone of States with approved management programs to be fully consistent with such programs unless compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations. If a Federal agency asserts that compliance with the management program is prohibited, it must clearly describe to the State agency the statutory provisions, legislative history, or other legal authority which limits the Federal agency's discretion to comply with the provisions of the management program.

In conclusion and based on the above information in Section II, the Commission finds that there is a basis in the federal statutes that compels LAWA to comply with the FAA advisories and standards for the design of runways and taxiways at LAX, in particular, FAA Advisory Circular 150/5300-13, Airport Design. The Commission also finds that FAA is required to reconfigure the navigation aids which serve the two runways in the north airfield once they are separated and lengthened.

The FAA has submitted materials to the Commission which assert that full compliance with the California Coastal Management Program (CCMP), in particular, with the environmentally sensitive habitat allowable use policy of Section 30240, is prohibited by existing federal statute and FAA regulations and advisories. These materials and their relevance to the above-referenced practicability provision were analyzed previously in Section II.B and II.C of this report (pages

10-17). Based on that analysis, the Commission concludes that with regard to the environmentally sensitive habitat allowable use policy of Section 30240, the standard before it is whether the proposed project is consistent to the maximum extent practicable with that policy. (The Commission's analysis of that question is found below, on pages 39-40.) With regard to the other applicable CCMP policies, the Commission has concluded that the proposed project is fully consistent with those policies.

However, as discussed previously in the **Staff Note/Procedures** section of this report, the Commission has the ability under the federal consistency regulations to re-open this consistency determination and/or certification should there be: (1) substantial modifications to the environmentally sensitive habitats in the El Segundo Dunes in the time period leading up to the start of project construction in 2012; (2) changes in navigation aid technology during the time period leading up to 2012 that would eliminate the need to install navigation aids in the Dunes, or that would provide for a modified navigation aid plan that creates fewer adverse effects to coastal dune habitat; or (3) impacts to coastal resources substantially different from those expected at the time of concurrence. Should one or more of these scenarios occur, the Commission's finding that the project is "consistent to the maximum extent practicable" could be re-examined in light of new circumstances.

IX. Findings and Declarations:

The Commission finds and declares as follows:

A. Environmentally Sensitive Habitat and Wetlands. Section 30240 of the Coastal Act provides:

- (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
- (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Section 30233 of the Coastal Act provides in part:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (l) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*

(2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.

(3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.

(4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.

(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.

(6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.

(7) Restoration purposes.

(8) Nature study, aquaculture, or similar resource dependent activities. . . .

1. Wetlands Inland of the Coastal Zone at LAX. Proposed development in disturbed wetlands inland of the coastal zone boundary (at the western end of the north airfield) holds the potential to adversely affect coastal zone wildlife that could be dependent upon these wetlands (**Exhibit 17**). As a result, the consistency certification from LAWA examines wetland resources and potential impacts at this location:

As discussed in Section 4.11, Endangered and Threatened Species of Flora and Fauna and Section 4.12, Wetlands of the Final EIR, approximately 1.3 acres of degraded wetland habitat containing embedded cysts of the Riverside fairy shrimp is located in the western airport operations area of LAX property. This wetland area is not located within the coastal zone. The degraded wetland habitat does not have any hydrological or habitat links to the coastal zone resources (i.e., the subject wetlands are isolated depressions that, on occasion, receive water from runoff in the immediate area, and contain fairy shrimp cysts specific to that setting). The subject habitat area is subject to routine operations and maintenance activity in compliance with Title 14, CFR Part 139, which mandates that the airport operations area be maintained in such a condition so as to minimize or eliminate hazards to

public safety resulting from wildlife utilization. The ponding of water would serve as an attractant to birds, and this poses a safety risk to aviation uses. In light of the existing provisions and measures to avoid the ponding of water within the subject degraded wetlands, with the specific intention of discouraging/avoiding the use of these degraded wetlands by wildlife, these wetlands do not provide a habitat link to coastal birds.

The LAWA consistency certification next examines potential impacts to the disturbed wetlands outside the coastal zone, whether those wetland impacts could affect coastal zone resources, and, notwithstanding their location and potential effects on the coastal zone, whether the proposed fill would be consistent with the wetland policies of the Coastal Act:

Alternative D would impact 0.04 acre (1,853 square feet) of the degraded wetland habitat. Ongoing operations and maintenance activities at LAX would impact the remaining 1.26 acres of degraded wetland habitat. It should be noted that the entire 1.3 acres of degraded wetland habitat would be impacted by such ongoing operations and maintenance activities, even if Alternative D were not approved. Onsite conservation of Riverside fairy shrimp within the airport operations area would be incompatible with FAA guidelines pursuant to 14 CFR, Section 139.337. Hazard management activities performed under these guidelines with respect to vegetation management include mowing, discing, and grading activities to ensure safety, which is in direct conflict with habitat improvements for the Riverside fairy shrimp. These activities would result in the loss of habitat values for the Riverside fairy shrimp. However, with implementation of mitigation measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration, outlined in Section 4.11, Endangered and Threatened Species of Flora and Fauna of the Final EIR, soils containing cysts of Riverside fairy shrimp shall be moved to a suitable alternate location in coordination with the USFWS, thus providing an opportunity for the species' recovery.

Notwithstanding the fact that the subject degraded wetlands are located well outside of the coastal zone, the filling of those wetlands would not conflict with the three-part test under §30233(a)(5) for coastal zone projects involving wetland fill: (a) the allowable use test; (b) the alternatives test; and (c) the mitigation test. Under the first of these tests, a project must qualify as one of the eight stated uses allowed under §30233(a). Since the other allowable uses do not apply, the Commission must determine whether the proposed project can be permitted under §30233(a)(5), which authorizes fill for: "Incidental public service purposes, including but not limited to, burying cables, pipes or inspection of piers and maintenance of existing intake and outfall lines."

In order to be considered an "incidental public service purpose" a proposed fill project must satisfy two tests: (1) the project must have a "public service purpose," and (2) the purpose must be "incidental" within the meaning of that term as it is used in §30233(a)(5). Because the project would be constructed by a public agency for the purpose of providing transportation services to the public, the fill is for a public service purpose. Thus, the project satisfies the first test. With respect to the second test, given the types of previously-determined allowable uses by the Coastal Commission, the Commission supports

interpretations of §30233(a)(5) to apply to forms of public transportation other than roads.¹ The proposed LAX project would improve the safety, security, and efficiency of LAX without substantially increasing capacity beyond that which would otherwise occur even if no improvements were made at LAX (i.e., Alternative D is specifically designed to accommodate the same level of future (2105) airport activity as that of the No Action/No Project Alternative).

Under the second of the three-part test, based on the evaluations and analyses provided in the Final EIR for the LAX Master Plan, Alternative D is the environmentally preferred alternative (see Section 3.5, The CEQA Environmentally Superior Alternative, for a summary of the EIR conclusions supporting that determination). Additionally, as discussed in Section 4.12, Wetlands of the Final EIR, the existing degraded wetland habitat would continue to be subject to long-term operations and maintenance activities in compliance with Title 14, CFR Part 139, even if Alternative D were not implemented at LAX. This long-term maintenance would result in the permanent loss of habitat value and functions normally associated with wetlands.

Under the third of the three-part test, according to the USFWS Biological Opinion (FWS-OR-1012.5) for the Los Angeles International Airport Master Plan, implementation of mitigation measure MM-ET-1, Riverside Fairy Shrimp Habitat Restoration, in Section 4.11 of the Final EIR, would provide for the replacement of 0.04 acre (1,853 square feet) of degraded wetland habitat with estimated habitat value of 0.15 with 0.12 acres (5,559 square feet, as determined by a 3:1 mitigation ratio) of created vernal pool habitat with an anticipated habitat value of 0.75. In addition, the potential indirect effects to 1.26 acres of jurisdictional wetlands would be avoided through implementation of construction avoidance measures described in MM-ET-1, in Section 4.11 of the Final EIR.

Mitigation measure MM-ET-1 has been recommended as part of the jurisdictional delineation submitted to the USACE to fulfill the responsibilities of FAA and LAWA, pursuant to Section 404 of the Clean Water Act. As discussed in Section 4.11 of the Final EIR, with implementation of mitigation measure MM-ET-1, there would be no net loss of habitat functions or values.

The Commission finds that the disturbed wetlands within the north airfield are located outside the coastal zone, have no hydrological connection to the coastal zone, and do not provide habitat significantly beneficial to or required by fish or wildlife present in the coastal zone. In addition, the Commission concurs with LAWA's determination that, to the extent the allowable use test is applicable, the proposed fill would be an allowable use (incidental public service), the least environmentally damaging alternative, and that unavoidable project impacts would be adequately mitigated by LAWA.

¹ CCC staff note: see consistency certification CC-058-01 (Santa Barbara Municipal Airport)

2. Los Angeles/El Segundo Dunes in Coastal Zone.

(a) **Environmentally Sensitive Habitat.** The El Segundo Dunes, located west of Pershing Drive, are within the coastal zone. The 2004 Final EIR for the LAX Master Plan states that the Dunes are considered an environmentally sensitive habitat area (ESHA), based on their critical importance as habitat for the endangered El Segundo blue butterfly. The Dunes, a remnant of a once much larger dune ecosystem, are now considered an endangered landform and comprise approximately 307 acres. This area includes a 203-acre Habitat Restoration Area established by the City of Los Angeles in 1992. The City initiated active habitat management efforts for the El Segundo blue butterfly in 1987 and continues those work efforts today. The Dunes currently contain 150 acres of occupied habitat for the El Segundo blue butterfly. The Commission has previously approved coastal development permits for dune restoration activities in the Habitat Restoration Area. A majority of the existing LAX navigation aids located in the northern portion of the Dunes are located outside of the Habitat Restoration Area (the habitat area occupied by the El Segundo blue butterfly).

The April 2004 U.S. Fish and Wildlife Service's (Service) *Biological Opinion* for the LAX Master Plan provides additional background information on the Dunes and the El Segundo blue butterfly (ESB). The Service listed the butterfly as endangered throughout its entire range in June 1976 and published a recovery plan in September 1998. The El Segundo Dunes is the largest remaining undeveloped coastal sand dune system in southern California and contains what the Service believes to be the largest remaining population of ESB (**Exhibits 18 and 19**). Population estimates for ESB vary greatly from year to year and the Service notes in its *Biological Opinion* that there is disagreement (among biological consulting firms) regarding the survey methods employed to estimate the ESB population. A 2002 population survey prepared for LAWA estimated the population to be between 52,000 and 54,000 ESB. That survey also noted the coast buckwheat (the ESB host plant) population is declining and that the current rate of recruitment would not be sufficient to replace the growing number of senescent plants. The *Biological Opinion* notes that the ESB is at high risk of population collapse because of the isolation of habitats, relatively small number of individuals, limited ability to disperse, and dependence on a specific habitat and host plant.

The *Biological Opinion* also provides:

The ESB are currently in their highest concentrations on the lee side of the southern portion of the dunes. In recent years the ESB population has been relatively large. At the same time that the number of butterflies has increased, the total number of coast buckwheat plants has been declining (Arnold 2002a; 2003). It appears the age structure of the coast buckwheat population at LAX is shifting towards a more mature, decadent, and smaller population (Arnold 2003). The number of flower heads has been high in the past few years, but an increasing number of plants are becoming senescent and the number of juvenile recruits is not keeping up with the loss of reproductive plants. If this trend continues, a collapse of the buckwheat population on the LAX ESB preserve is likely. Arnold (2002a; 2003)

recommends that LAX resume its active management of the ESB preserve and reinstate the coast buckwheat propagation and planting program.

In the northern portion of the preserve, where the specific impacts to the El Segundo dune complex are proposed, the past restoration efforts and coast buckwheat plantings have been largely unsuccessful. There are very few coast buckwheat plants in the approach lighting impact area (existing navigational aid system) and it is unlikely that further restoration within the approach lighting impact area would be successful (I. Mendez, Sapphos Environmental, pers. comm. 2004). Based on previous surveys for ESB in the existing and proposed navigational aid system areas on the El Segundo dune complex, densities for ESB are expected to be very low.

The FAA's consistency determination examines ESHA found within the coastal zone in the El Segundo Dunes:

In 1992, the City of Los Angeles designated an approximately 200-acre Habitat Restoration Area for the long-term conservation of the El Segundo blue butterfly pursuant to City Ordinance 167940. Formal restoration activities within the El Segundo Blue Butterfly habitat Restoration Area were completed by Los Angeles World Airports (LAWA) in fall 1994. Over 150 acres of coastal dunes habitat were successfully vegetated with a suite of plant species native to the site. As an activity related to the protection and recovery of a federally listed endangered species, the subject habitat restoration activities were coordinated closely with the U.S. Fish and Wildlife Service. Subsequent to completing the habitat restoration activities in 1994, a formal habitat maintenance/management program was implemented between January 1995 through late 2000. Currently the overall maintenance/management of the dunes restoration area is supervised by the Environmental Management Division of LAWA. Also occurring since 1994 have been annual surveys and reporting of the status of the El Segundo blue butterfly (ESB) within the Habitat Restoration Area. As part of this program, the following annual assessments are made:

- *Plant communities*
- *Historic transect count for ESB*
- *Block count of ESB*
- *Buckwheat monitoring*
- *An annual estimate of ESB*

Los Angeles World Airports (LAWA) owns and manages the 307-acre Los Angeles/El Segundo Dunes located immediately west of the airport operations area and actively maintains approximately 203 acres of the 307-acre site. Known as the El Segundo Blue Butterfly Habitat Restoration Area, the 203-acre site is home to the federally-listed El Segundo blue butterfly and several other sensitive habitat and species and is the largest remaining representation of coastal dune community within Los Angeles.

The El Segundo Blue Butterfly Habitat Restoration Area (Habitat Restoration Area) located to the west of the airfield, is comprised of approximately 202.8 acres. Four biotic communities are represented: Southern Foredune (135.6 acres), Southern Dune Scrub (24.4 acres), Valley Needlegrass Grassland (17.1 acres), and Developed (25.7 acres).

Approximately 104.3 acres of non-restructured dunes adjacent to and north of the Habitat Restoration Area comprised three biotic communities: Disturbed Dune Scrub/Foredune (74.6 acres), Non-Native Grassland/Ruderal (16.9 acres), and Developed (12.8 acres). The biotic communities and vegetation types found within the coastal zone are discussed in detail below.

Southern Foredune: *Southern Foredune plant communities are typically dominated by perennial species with a high proportion of suffrutescent (slightly woody at base) plants up to 30 cm tall. The Southern Foredune community is inhabited by a number of wildlife species, including the federally-listed El Segundo blue butterfly. Within the study area, 135.6 acres of this community are found within the Habitat Restoration Area west of Pershing Drive. Relatively undisturbed areas (about 40 acres) surrounding the Very High Omni Range Navigation Beacon provide the most representative example of this community. Ecological restoration efforts undertaken between 1987 and 1994 have restored an additional 95.6 acres. The host plant and primary food source for the El Segundo blue butterfly, coast buckwheat, is found in this biotic community.*

Southern Dune Scrub: *Southern Dune Scrub is a dense coastal scrub community of scattered shrubs, subshrubs, and herbs, generally less than 1 meter in height, often developing considerable cover, and often succulent. Along the coast, Southern Dune Scrub intergrades with the Southern Foredune plant community. The Los Angeles/El Segundo Dunes contain virtually the only remaining example of this plant community in mainland Southern California. The Southern Dune Scrub community is found only within the Habitat Restoration Area along the steep slope of the backdune and is comprised of 24.4 acres. The host plant and primary food source for the El Segundo blue butterfly, coast buckwheat, is found in this biotic community.*

Valley Needlegrass Grassland: *The deflation plain east of the backdune consists of loosely consolidated (incipient) sandstone covered to variable depths with aeolian (wind-transported) sand. Many common species of birds and two reptiles are known to utilize this biotic community. This biotic community has been significantly altered and degraded by development activities. The floral components typically associated with it are now almost completely absent due to extensive grading and paving and the invasion of exotic annual grasses. No vernal pools exist today. The Valley Needlegrass Grassland community occupies 17.1 acres within the Habitat Restoration Area, and is limited to three distinct areas adjacent to and west of Pershing Drive.*

Disturbed Dune Scrub/Foredune: *This community is made up of 74.6 acres and is located north of the Habitat Restoration Area, south of Waterview Street, west of*

Pershing Drive, east of Vista del Mar Boulevard, and is bisected by Sandpiper Street. This biotic community is heavily disturbed and is dominated by invasive species that drive out native vegetation. The few coastal dune elements are patchy and include burbush, dunes evening primrose, bush lupine, pink sand verbena, and deerweed. Coast buckwheat is absent from this site.

Non-Native Grassland/Ruderal: *Non-Native Grassland/Ruderal areas are those that have been subjected to past disturbance. It includes a portion of the Los Angeles/El Segundo Dunes that was once a residential area,*

Developed: *Developed areas within the dunes occupy 13 acres, primarily remnant roads serving the now-removed residential structures once located in the dunes.*

The Habitat Restoration Area is home to the federally listed El Segundo blue butterfly. LAVA's habitat conservation and restoration efforts were initiated in 1987 and have received national attention. LAVA, in coordination with U.S. Fish and Wildlife and the California Department of Fish and Game, has provided and continues to provide the resources necessary for the habitat conservation and restoration efforts.

There are 20 sensitive plant species designated by federal or state agencies that were determined to have the potential to be present within the coastal zone. Surveys conducted for sensitive plant species identified three of these species within the coastal zone. Surveys identified 9,051 individuals of Lewis' evening primrose within the Habitat Restoration Area and an additional 300 individuals within the airfield. The El Segundo duneflower was also present within the Habitat Restoration Area, with an extremely small population of only three individuals. The California spineflower was also located in eight areas within the Habitat Restoration Area; 572 individuals were found. Seventeen sensitive plant species were determined absent within the coastal zone.

There were 34 sensitive wildlife species designated by federal or state agencies that were determined to have the potential to occur within the coastal zone; 24 of these species were identified within the coastal zone. There are 18 sensitive arthropods, 14 sensitive insect species and four sensitive arachnids, all of which were located within the Los Angeles/El Segundo Dunes. The western spadefoot toad was determined present in ephemeral ponds in the south airfield. Two sensitive reptiles, the silvery legless lizard and the San Diego horned lizard, were determined present within the Los Angeles/El Segundo Dunes. Two sensitive bird species, the burrowing owl and the loggerhead shrike, were detected in the Los Angeles/El Segundo Dunes. The only sensitive mammal present in the coastal zone is the San Diego black-tailed jackrabbit, which utilizes the open space area located within the southwestern corner of the airfield.

(b) Project Impacts. The consistency determination examines potential direct impacts from the proposed reconfiguration of the FAA navigation aides located in the El Segundo Dunes on environmentally sensitive habitats within the dunes (**Exhibits 11-15**):

Under Alternative D, construction of navigational aids and associated service roads would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Los Angeles/El Segundo Dunes. The new navigational aid system would include a new ALSF-2 lighting system and would permanently convert 0.25 acres of active El Segundo blue butterfly habitat in the Dunes to concrete to support the navigational lighting system. The proposed ALSF-2 lighting system would decrease the spacing of lights and increase the number of lights used to aid pilots in identifying the airport from 15 to 23. The spacing between each light would decrease from 200 feet to 100 feet. The lights from the ALSF-2 would be directed up at approaching aircraft. The extra lighting would be used during low visibility Santa Ana conditions (strong easterly winds) and at night when planes are approaching LAX from the west. During normal operations only one-half of the lights would be illuminated.

As addressed at a planning level of analysis in the Final EIR, the proposed relocation of navigational aids associated with the improvements planned for Runways 24R/6L and 24L/6R would disturb a total of approximately 66,675 square feet (1.53 acres) of area within the coastal zone based on an assumed 9'x9' pad area for each landing light standard, a 15' service buffer around each pad area, and a 15'-wide service road along the alignment of landing light pads. As noted above, existing access roads would, by intention and design, be used to the extent feasible; however, such roads are approximately 10 feet wide, and would need to be widened to 15 feet. The impacts of such widening of existing roads, where necessary and appropriate, have been accounted for in calculating the areas of disturbance (the location of existing roads can be seen on the underlying existing conditions basemap in Figure 3, and are also shown on Figures 5 through 7 in the discussion below). The following provides a breakdown of surface disturbance associated with the navigational aids improvements and relocations, as addressed at a planning level of analysis in the Final EIR.

Impacts from Runway 6L (in Square Feet)			
Impact Area	Pad Area (including service area buffer)	Service Roads	Localizer Antennae
Los Angeles/El Segundo Dunes	13,689 (9 pads)	12,151	5,980
Habitat Restoration Area (HRA)	3,042 (2 pads)	1,929	0
ESB ¹ Occupied Area within HRA	0	0	0
Total Impact	16,731	14,080	5,980

¹ El Segundo blue butterfly

Impacts from Runway 6R (in Square Feet)			
Impact Area	Pad Area (including service area buffer)	Service Roads	Localizer Antennae
Los Angeles/El Segundo Dunes *	1,521 (1 pad)	0	0
Habitat Restoration Area	12,168 sq. ft. (8 pads)	10,215	5,980
ESB Occupied Area within HRA	3,042 (2 pads)	1,575	5,980
Total Impact	13,689	10,215	5,980

* 3 of the 4 light standards are placed on existing paved areas in the Sand Dunes

Total Impacts from Navigational Aids (in Square Feet)			
	Total Impact to Los Angeles/El Segundo Dunes	Habitat Restoration Area Impact	ESB Occupied Area within Habitat Restoration Area
Pad Areas	30,420	15,210	3,042
Service Roads	24,295	12,144	1,575
Localizer Antennae	11,960	5,980	5,980
Total Impact	66,675	33,334	10,597

Assumptions for Calculations:

- Pads areas for light standards (ALSF-2) are comprised of a 9 ft. X 9 ft. platform plus a 15 ft. buffer = 39 ft.² = 1,521 sq. ft.
- Localizer antennae measure 100 ft. X 16 ft. plus a 15 ft. buffer = 130 ft. X 46 ft. = 5,980 sq. ft.
- New service roads will have a width of 15 ft.
- Existing service roads have an average width of 10 ft. and will be widened by 5 ft.
- Pads proposed within existing roads are not considered to have an impact

The Commission staff requested that the FAA provide additional details (beyond those contained in the consistency determination) on the impacts to ESHA from the reconfiguration of the navigation aids:

Further design of the proposed improvement and relocation of the existing navigational aids was undertaken for the purpose of this Consistency Determination, providing preliminary engineering based on site conditions and typical designs for approach lighting systems and instrument landing systems such as those anticipated for the project. The results of this additional design effort are presented in Figure 5, Proposed Navigational Aids - NAVAID Site Plan, Figure 6, Proposed Navigational Aids - Runway 6L ALSF-2, Figure 7, Proposed Navigational Aids - Runway 6R ALSF-2, and Figure 8, Proposed Navigational Aids - Details. [Exhibits 13-15] The most notable refinements that came out of the preliminary engineering include a reduction in the amount of surface area affected by the grading of,

and buffer area for, the lighting system pad areas (i.e., original assumption of 39'x39' reduced to 32'x37'), reduction of the affected area associated with each localizer antennae (i.e., original assumption of 130'x46' reduced to 118'x33'), and the identification of ancillary facilities required to support the new system (i.e., ALSF equipment shelters and adjacent gravel parking area, and localizer duct banks [e.g., electrical wire conduits] between the localizer antennae/ALSF corridor and the ALSF equipment shelters). Based on the more detailed design, the impact areas were recalculated, and a comparison between the original planning estimates and the subsequent preliminary engineering estimates is provided in the table below. It should be noted that the improvement and relocation of the navigational aids are subject to further refinement in conjunction with final engineering, the selection/purchase of the new equipment, FAA plans and specifications check, implementation of the associated manufacturer's specification, and other requirements applicable at the time Runway 24L/6R is relocated, which is currently scheduled to occur in 2012-2013.

LAX Master Plan Alternative D Impacts Within Coastal Zone (in Square Feet)						
	Runway 6L		Runway 6R		TOTAL	
	Planning Estimate	Engineering Estimate	Planning Estimate	Engineering Estimate	Planning Estimate	Engineering Estimate
ALSF Landing Light Systems	16,731	13,024	13,689	14,208	30,420	27,232
Localizer Antennae	5,980	3,894	5,980	3,894	11,960	7,788
Access Roads	14,080	10,360	10,215	10,650	24,295	21,010
Ancillary Facilities*		2,136		2,136		4,272
TOTAL	36,791	29,414	29,884	30,888	66,675	60,302
* Ancillary Facilities were calculated separately for the preliminary engineering estimate, and include a gravel parking lot, equipment shelters, and duct banks.						

For purposes of calculating the necessary mitigation for project impacts, the FAA continues to use the more conservative figure of 1.53 acres of El Segundo Dunes ESHA affected by the construction of new navigation aids and their related support facilities. Of this area, 0.77 acres are located in the Habitat Restoration Area, and within this area 0.24 acres of habitat occupied by the El Segundo blue butterfly would be affected. As discussed below in Section A.2.(c), the FAA will provide mitigation for the 1.5-acre impact at a ratio of 2:1.

The proposed project also requires the removal of existing navigation aids and in some cases the removal of the concrete pads that support those aids. In other instances, the concrete pads may be left in place. The FAA has estimated, for purposes of calculating their mitigation requirement, that the existing concrete pads that will no longer be needed to support the reconfigured navigation aid system cover an area of approximately 1.4 acres. The FAA has not yet completed its on-the-ground engineering analysis of the concrete pads to be abandoned. At this time, the FAA is unable to conclude which pads can be removed and which pads, due to their physical characteristics, cannot be feasibly be removed. The FAA has committed to providing the Commission with its final determination regarding the disposition of each of the concrete pads. However, and as discussed below in Section A.2.(c), the FAA will provide mitigation for the 1.4-acre impact on dune habitat from the removal or retention of these pads at a ratio of 2:1.

The consistency determination next examines potential indirect impacts on the El Segundo Dunes ESHA from lighting and noise and cites the LAX Master Plan Final EIR analysis of existing conditions in the dunes area:

Lighting in the dunes, which includes the Habitat Restoration Area, currently consists of navigation aids and security lighting for two small buildings . . . Some light spills into the HRA from streetlights on Vista del Mar; however, this is minimal. There is additional spillover from street lights along Pershing Drive, the majority of which is minimal except for where street lighting is adjacent to a portion of the backdune habitat. This particular area has consistently had observations of the highest numbers of El Segundo blue butterfly during a decade of monitoring efforts . . . Light emissions within the HRA range from 0.004 to 0.26 foot candles (fc). For a point of reference, illumination associated with natural conditions range from 0.004 fc for a moonless night, 25.0 fc for dawn, and 125.0 fc for a bright day . . . based on the levels of light that spill onto the Dunes at the present time, and the presence of sensitive species within this area, it appears that current lighting conditions do not adversely affect sensitive species at LAX.

. . . under 1996 baseline conditions, maximum noise levels at five of the six grid point locations within the Los Angeles/El Segundo Dunes and the western portion of the airport exceed the 95 decibel threshold . . . although the total time above this decibel level is very limited . . . Nevertheless, sensitive species currently reside at LAX, including locations subject to high noise levels . . . Based on the analysis of existing noise levels at locations occupied by sensitive species, and the presence of sensitive species within these areas, it appears that current noise conditions do not adversely affect sensitive species at LAX.

The consistency determination next examines potential light, construction dust, and noise impacts from the proposed reconfiguration of the navigation aids:

As discussed in the USFWS Biological Opinion, increased light and photo period has been shown to increase the growth and productivity of butterflies and moths; however, the production is typically offset by predation. The increased lighting in the Los Angeles/El

Segundo Dunes and Habitat Restoration Area during evening hours may increase the activity period of adult El Segundo blue butterfly. However, the new lighting system is proposed for an area of the El Segundo dune complex that contains very low densities of El Segundo blue butterfly and coast buckwheat. Further, the lights are designed to illuminate the sky rather than the ground. Therefore, the expected increase in ambient light levels of 0.34 foot-candles (fc) and changes in navigational aid lighting, with implementation of Master Plan Commitment LI-3 regarding lighting controls, are not expected to have significant impacts on biotic communities, including sensitive floral and faunal species in the coastal zone.

As discussed in the Final EIR, implementation of Alternative D would not result in significant indirect air quality impacts to biotic communities due to the prevailing wind conditions and the location of peak concentrations of air pollutants within the eastern portion of the airport. However, according to both Section 4.10 and Section 4.11 construction activities, including staging and stockpiling of materials proximal to the Los Angeles/El Segundo Dunes and the Habitat Restoration Area have the potential to result in deposition of fugitive dust within state-designated sensitive habitats. Implementation of mitigation measures MM-BC-1 included in Section 4.10 and MM-ET-3 included in Section 4.11 of the Final EIR, and the construction avoidance measures discussed within these mitigation measures, would reduce impacts to this sensitive coastal zone habitat to less than significant levels.

As discussed in Section 4.11 of the Final EIR there is no increase in L_{max} [maximum noise level] under Alternative D compared to 1996 baseline conditions. All three noise metrics decrease when compared to the 1996 environmental baseline; therefore, implementation of Alternative D would not result in significant impacts from noise to sensitive wildlife species in the coastal zone.

The April 2004 *Biological Opinion* prepared by the U.S. Fish and Wildlife Service also addressed the potential lighting impacts on the dunes :

Increased light and photo period has been shown to increase the growth and productivity of butterflies and moths, however, the production is typically offset by predation (Gotthard 2000). The increased lighting in the preserve, during evening hours, may increase the activity period of adult ESB. However, the new lighting system is proposed for an area of the El Segundo dune complex that contains very low densities of ESB and coast buckwheat. Further, the lights are designed to illuminate the sky rather than the ground.

Regarding potential lighting impacts, the FAA has agreed to comply with LAX Master Plan Commitment LI-3, which states as follows:

Prior to final approval of plans for new lighting, LAWA will conduct reviews of lighting type and placement to ensure that lighting will not interfere with aeronautical lights or otherwise impair Airport Traffic Control Tower or pilot operations. Plan reviews will also ensure,

where feasible, that lighting is shielded and focused to avoid glare or unnecessary light spillover. In addition, LAWA or its designee will undertake consultation in selection of appropriate lighting type and placement, where feasible, to ensure that new lights or changes in lighting will not have an adverse effect on the natural behavior of sensitive flora and fauna within the Habitat Restoration Area.

(c) Mitigation Measures for Coastal Zone Impacts. The FAA addressed the impacts resulting from the proposed reconfiguration of the navigation aids in the El Segundo Dunes in part by developing a Habitat Restoration Plan (HRP)(**Appendix A, Los Angeles/El Segundo Dunes Habitat Restoration Plan, October 29, 2004**). The HRP describes a process whereby the new disturbance of 1.5 acres of ESHA, and the removal and/or retention of 1.4 acres of abandoned concrete pads supporting navigation aids no longer needed by the FAA, are adequately mitigated (using an acreage ratio of 2:1) prior to the construction of the new navigation aids. The HRP is based on mitigation of acreage lost due to reconfiguration of the navigation aids system, and not on MLEP habitat units, which the Commission has not recognized as an appropriate methodology to evaluate habitat impacts and/or mitigation requirements arising from project impacts, in the El Segundo dunes or other coastal zone locations. The HRP submitted to the Commission was designed by the FAA in the context of mitigation measures previously developed by the FAA and LAWA during the project EIS/EIR process, the U.S. Fish and Wildlife Service's Biological Opinion for potential project impacts on federally endangered species, and comments received from Commission staff. One of the key features of the HRP is the commitment by the FAA to complete restoration work in the dunes prior to construction of the new navigation aid system so that there is no loss of ESHA habitat arising from the new navigation aid system.

The FAA developed the following mitigation measures during the EIS/EIR process for the LAX redevelopment project. These measures are designed to mitigate impacts on coastal resources arising from the FAA navigation aids project and are addressed in greater detail in the HRP:

MM-BC-1. Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area.

The FAA, or its designee, shall take all necessary steps to ensure that the state-designated sensitive habitats within and adjacent to the HRA are conserved and protected during construction, operation, and maintenance, by the implementation of construction avoidance measures, as described in this Habitat Restoration Plan.

MM-BC-2. Conservation of Floral Resources: Lewis' Evening Primrose.

The FAA, or its designee, shall implement a plan to compensate for the loss of individuals of the sensitive Lewis' evening primrose, currently located within the HRA, as described in this Habitat Restoration Plan.

MM-BC-9. Conservation of Faunal Resources.

The FAA, or its designee, shall conduct preconstruction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl within the proposed area of impact in the Dunes. Surveys will be conducted at the optimum time to observe these species. Should an individual be observed, they will be relocated to suitable habitat for that species within the HRA, as described in this Habitat Restoration Plan.

MM-BC-13. Replacement of State-Designated Sensitive Habitat.

The FAA, or its designee, will restore at a 2:1 ratio impacts to 1.4 acres of state-designated sensitive habitat to the appropriate state-designated sensitive plant community. An estimated 1.4 acres of state-designated sensitive habitat currently occupied by navigational aids that are scheduled for removal have the potential of being disturbed during removal activities. A total of 2.8 acres will be restored, with 1.4 acres taking place "in-situ" and 1.4 acres taking place within Subsite 23 of the HRA, as described in this Habitat Restoration Plan. Implementation of MM-ET-4 and MM-BC-13 will provide for a total of 4.4 acres of Southern Foredune habitat within Subsite 23.

MM-ET-4. El Segundo Blue Butterfly Conservation: Habitat Restoration.

The FAA, or its designee, shall restore 3.0 acres of coastal dune habitat designated as Southern Foredune within Subsite 23 of the HRA and relocate coast buckwheat individuals that have the potential to be impacted as a result of the installation of ALSF-2 navigational aids in support of Alternative D. In conformance with Biological Opinion issued by the U.S. Fish and Wildlife Service (USFWS) on April 20, 2004, for the Alternative D of the LAX Master Plan, activities associated with navigational aid development shall be limited to the existing roads and proposed impacts areas, as described in the Final EIR. Habitat restoration will take place at a minimum of three years prior to the impact (scheduled for 2012-2013), as described in this Habitat Restoration Plan. Implementation of MM-ET-4 and MM-BC-13 will provide for a total of 4.4 acres of Southern Foredune habitat within Subsite 23.

The full text of these mitigation measures is provided in **Exhibit 20**.

The *Biological Opinion* issued by the United States Fish and Wildlife Service (FWS-OR-1012.5, April 20, 2004) states that:

... it is estimated that a total of two coast buckwheat plants would be directly affected by the installation of the navigational lighting system. The removal and relocation of the two coast buckwheat plants would likely result in the loss of any El Segundo blue butterfly larvae or pupae associated with that particular plant due to elimination of its food source. However, because of the poor quality of El Segundo blue butterfly habitat in the impact

area, it is unlikely that these actions would directly impact more than a small number of El Segundo blue butterfly.

The USFWS Biological Opinion finds that the proposed action is not likely to jeopardize the continued existence of El Segundo blue butterfly. The conclusion is based on the 0.25 acres of habitat lost in the El Segundo blue butterfly reserve is of poor quality and would be off set by the restoration of 1.25 acres of high quality habitat in sub-area 23 on the southern area of the Habitat Restoration Area.

In addition, the *Biological Opinion* includes two conservation recommendations, which are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information:

- 1. We recommend FAA and LAWA resume active restoration and management within the El Segundo blue butterfly preserve. Activities should include weed removal, active planting of coast buckwheat plants to replace the decadent and senescent plants, and plan for further restoration activities.*
- 2. We recommend FAA and LAWA review and, if necessary, revise the quantitative methods used to estimate the populations of ESB at LAX and Chevron preserves.*

The Commission has reviewed the *Habitat Restoration Plan* and finds that it now includes adequate provisions for mitigating the unavoidable adverse impacts on coastal dune habitat from the FAA's proposed reconfiguration of navigation aids in the El Segundo Dunes. Modifications and changes to the draft *Habitat Restoration Plan* made at the suggestion of the Commission staff satisfactorily resolved several coastal resource issues, and included improving the amount of mitigation acreage, the methodology for determining success of restoration activities, and expanding the area to be planted with coast buckwheat. Regarding the latter issue, the final *Habitat Restoration Plan* states that:

As a result of coordination efforts undertaken between CCC, FAA, and LAWA, it has been mutually agreed to that in lieu of including coast buckwheat within the plant palette for in-situ restoration of the Southern Foredune plant community, enhancement of the 4.2-acre Subsite 22 within the HRA will be undertaken by planting the appropriate number of coast buckwheat plants sufficient to enhance existing clusters of buckwheat and to establish a new cluster. Subsite 22 has been identified as an appropriate site for the enhancement plantings due to the current low numbers of coast buckwheat individuals (approximately 56 coast buckwheat plants), thus providing opportunities to not only enhance the existing clusters of buckwheat but to establish a new cluster of plants. While Subsite 22 will be monitored concurrently with monitoring efforts at Subsite 23, no success criteria are established for plantings within Subsite 22.

Subsite 22 will be surveyed to identify appropriate areas for the enhancement of existing clusters of coast buckwheat and for the establishment of a new cluster.

The Commission concludes that with the successful implementation of the *Habitat Restoration Plan*, there will be no significant disruption of habitat values in the El Segundo Dunes ESHA. Further, the Commission finds that notwithstanding the impacts to 2.9 acres of dune habitat from the proposed project, with the proposed restoration of 5.8 acres of coastal dune habitat at Subsites 22 and 23 and at sites along the linear tracks of the abandoned navigation aids, the biological health of the dunes, and in particular coast buckwheat plants that support the endangered El Segundo blue butterfly, will be enhanced over present conditions.

(d) Allowable Use in Environmentally Sensitive Habitat Areas. The Commission has determined that the impacts to environmentally sensitive habitat in the El Segundo Dunes will be minimized and that unavoidable impacts will be satisfactorily mitigated through implementation of the Habitat Restoration Plan. However, the Commission must also apply the test of Section 30240(a) which states that within environmentally sensitive habitat areas, “only uses dependent on those resources shall be allowed within those areas.” The FAA constructed the existing navigation aids located in the El Segundo Dunes between 1975 and 1977, and the Commission did not begin conducting federal consistency reviews until November 1978. As a result, no analysis occurred for consistency with the Section 30240(a) allowable use policy for the installation of the original navigation aids. Currently, however, the El Segundo Dunes is designated as an environmentally sensitive habitat and the proposed reconfiguration of the existing navigation aids is not a type of land use or development that is dependent on these coastal dune resources. The proposed installation of the new navigation aids and associated roads is therefore not consistent with the allowable use test of Section 30240(a) of the Coastal Act. As a result, the FAA is asserting that the proposed project is consistent to “the maximum extent practicable” with Section 30240(a).

As noted previously in Section VIII of this report, federal activities must be fully consistent with state coastal management programs unless:

... compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations. If a Federal agency asserts that compliance with the management program is prohibited, it must clearly describe to the State agency the statutory provisions, legislative history, or other legal authority which limits the Federal agency's discretion to comply with the provisions of the management program.

Previously in Section II.C. of this report, the Commission reviewed the references to federal statute, regulations, and FAA advisories provided by the FAA to support the agency's assertion that full compliance with Section 30240(a) of the Coastal Act is prohibited by the requirements of existing law applicable to the FAA. The Commission concluded in that section that there is a basis in the federal statutes that compels LAWA to comply with the FAA advisories and standards for the design of runways and taxiways at LAX, in particular, FAA Advisory Circular 150/5300-13, Airport Design. The proposed realignment of the two runways in the north airfield at LAX would consequently mandate the reconfiguration of the existing navigation aids in the El Segundo Dunes that support flight operations on those runways. As described previously in this

report, the FAA has designed the reconfiguration project to minimize effects on environmentally sensitive habitat and will implement a habitat restoration plan that will restore and enhance coastal dune habitat prior to the start of project construction.

Therefore, given the mandate for LAWA to comply with FAA standards for runway design, the FAA requirement to provide navigation aids for runway operations, a navigation aid reconfiguration plan that minimizes impacts to environmentally sensitive coastal dune habitat, and FAA's preparation of the El Segundo Dunes Habitat Restoration Plan, the Commission concludes that the proposed project is consistent to the maximum extent practicable with the environmentally sensitive habitat and wetlands policies (Section 30240 and 30233) of the Coastal Act.

B. Water Quality. The Coastal Act provides the following:

Section 30231. The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30232. Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

Section 4.7 of the LAX Master Plan Final EIR/EIS includes background information on water quality issues pertaining to LAX:

- *At LAX, surface water is discharged to both County of Los Angeles and City of Los Angeles drainage and flood control structures [which drain into San Pedro Bay and Santa Monica Bay].*
- *The existing drainage system at LAX consists of catchbasins, subsurface storm drains and open channels, and outfalls. The principal storm water outfalls for surface water captured on the airport property are the Dominguez Channel, the Argo Drain, the Imperial Drain, and the Culver Drain . . . In addition, the Vista del Mar sub-basin provides drainage for the portion of the airport west of Pershing Drive (i.e., the Dunes).*
- *Surface water flow from the Argo, Imperial, Culver, and Vista del Mar sub-basins contributes to the total surface water flow in the Santa Monica Bay Watershed. The Imperial drainage sub-basin is unique among the airport sub-basins in that it contains*

both a storm water detention basin for reducing peak flow to the outfall and a water quality retention basin for collecting dry weather and "first flush" storm flows from the airport.

- *LAWA has prepared a SWPPP [Storm Water Pollution Prevention Plan] to address the permitting of storm water discharges associated with industrial activities at LAX. . . The LAX SWPPP contains general information, such as drainage system layout and tenant and site activities; describes past and present potential sources of pollutants in storm water; designates programs to identify and eliminate non-storm water discharges; and describes the storm water management controls being implemented at LAX and the ongoing storm water monitoring program.*
- *As required under the SWRCB General Permit for Construction Activities, LAWA has prepared a Storm Water Guidance Manual for Construction Activities. This document outlines the procedures for preparing and implementing a construction SWPPP before beginning construction operations so that the activities are in compliance with the general permit.*

The Final EIR/EIS also includes a water quality analysis for the proposed Alternative D project. Relevant excerpts from that analysis are presented below:

- *LAWA would implement Master Plan Commitment HWQ-1, which would require the development of a conceptual drainage plan and design of a storm water system to meet the requirements in the SUSMP [Standard Urban Storm Water Mitigation Plan] through incorporation of source control, structural, and treatment control BMPs. By implementing Master Plan Commitment HWQ-1, the impact associated with the increased pollutant loads would be reduced to a level that is less than significant.*
- *With implementation of Master Plan Commitment HWQ-1, the LAX SWPPP [Storm Water Pollution Prevention Plan] would be amended to incorporate additional source control BMPs, if warranted, as well as changes in the frequency at which source control BMPs will be performed. As a result, the potential impact associated with increased pollutant loads due to increased industrial activity would be reduced to a level that is less than significant.*
- *Sources of dry-weather flows within [LAX] are associated with activities that include outdoor maintenance of vehicles, building and grounds maintenance, aircraft and ground vehicle fueling, painting, stripping, and washing; limited deicing; and chemical and fuel transport and storage. The intensification of these airport-related activities under Alternative D could result in release of spills and leaks of hazardous materials to the Dominguez Channel and Santa Monica Bay watersheds.*
- *Incorporation of source control, structural and treatment BMPs under Master Plan Commitment HWQ-1 would further reduce the potential for pollutants to enter the storm*

drain system and affect receiving water bodies. With implementation of this commitment, the pollutant load generated from dry weather flows would not be expected to increase and the associated impact would be less than significant.

- *Construction of the proposed improvements under Alternative D would affect an area greater than one acre, thus requiring LAWA to develop project-specific construction SWPPPs in compliance with the state's construction permit. To minimize the effect construction activities would have on water quality, the SWPPPs would specify temporary construction BMPs.*

The consistency certification summarizes potential water quality impacts from the proposed Alternative D:

To prevent impacts to the coastal zone and coastal waters from erosion and runoff at LAX, LAWA would implement Master Plan Commitment HWQ-1, as discussed in Section 4.7, Hydrology and Water Quality, of the Final EIR, related to preparing a Conceptual Drainage Plan prior to initiating construction. This plan would include the preparation of an airport-wide Standard Urban Storm Water Mitigation Plan (SUSMP) with BMPs to be incorporated into the LAX Storm Water Pollution Prevention Plan (SWPPP). LAWA also would comply with mitigation measure MM-HWQ-1, outlined in Section 4.7 of the Final EIR, to upgrade regional drainage facilities.

Alternative D, as with current operations at LAX, would involve the use and transport of oil and hazardous substances on the premises. As discussed in Section 4.23, Hazardous Materials, and Section 4.24.3, Safety, of the Final EIR, hazardous materials at LAX are stored at the Central Utility Plant, the Fuel Farm, and the CNG/LNG facility; none of these facilities lies within the coastal zone. To prevent and mitigate any impacts to LAX and the coastal zone associated with these facilities, each facility has safety and emergency response elements incorporated into its design, operation, and emergency response procedures, as discussed in detail in Section 4.24.3 of the Final EIR.

The consistency determination addresses potential water quality impacts from the proposed reconfiguration of navigation aids in the El Segundo Dunes:

To prevent impacts to the coastal zone and coastal waters from erosion and runoff associated with relocating the existing navigational aids, FAA would incorporate BMPs into the construction process for the navigational aids and associated service roads. Measures including BMPs to address potential erosion impacts associated with Project construction are specified in Section 4.7, Hydrology and Water Quality of the Final EIR for the LAX Master Plan Improvements.

The aforementioned "Master Plan Commitment HWQ-1 – Conceptual Drainage Plan" is LAWA's primary vehicle for addressing, reducing, and mitigating potential water quality

impacts from Alternative D development projects. The complete text of this document is provided in **Exhibit 21**. The introduction to this commitment states that:

Once a Master Plan alternative is selected, and in conjunction with its design, LAWA will develop a conceptual drainage plan of the area within the boundaries of the Master Plan alternative (in accordance with FAA guidance and to the satisfaction of the City of Los Angeles Department of public Works, Bureau of Engineering) . . . Best Management Practices (BMPs) will be incorporated to minimize the effect of airport operations on surface water quality and to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative.

The Commission's water quality staff submitted detailed comments on the water quality component of the initial version of the LAX Master Plan Draft EIS/EIR in September 2001 (**Exhibit 22**). In those comments, Commission staff identified shortcomings in the water quality component and provided a number of recommendations to improve water quality protection during the construction and operation of the LAX improvements program. In brief, those recommendations focused on the details of the proposed HWQ-1 drainage plan, treatment of the 85th percentile/24-hour design storm, design of stormwater treatment facilities, determining baseline levels of pollutant loads, the range of pollutants to be monitored, flood control measures, dry weather runoff controls, and construction and operations BMPs. LAWA and FAA have agreed in concept to include these elements in the proposed HWQ-1 drainage plan.

The Commission notes that with the City of Los Angeles' recent approval of Alternative D as the preferred LAX development plan, the final design of the HWQ-1 drainage plan – upon which much of the water quality protection program will rest – can now proceed. The Commission acknowledges that while nearly all of the Alternative D development (excepting the reconfiguration of navigation aids in the El Segundo Dunes) will occur inland of the coastal zone, all of the stormwater and dry-weather runoff from a redeveloped LAX has the potential to enter Santa Monica Bay or San Pedro Bay. While it is clear that LAWA intends to implement a wide-ranging suite of water quality protection measures in concert with its Alternative D projects, and that the FAA intends to implement BMPs for navigation aids construction in the El Segundo Dunes (which will be an element of the HWQ-1 plan), the foundation of the LAX water quality control program – the HWQ-1 drainage plan – has yet to be developed. As a result, the Commission staff has requested that the FAA and LAWA submit that plan to the Commission staff for its review and concurrence prior to the start of any construction.

LAWA and the FAA have agreed as a part of this consistency certification and consistency determination to submit the draft and final versions of the HWQ-1 drainage plan to the Commission staff for review and comment. Upon receipt of the draft plan, the Commission staff will be able to determine: (1) if the plan adequately addresses the Commission staff's 2001 water quality comments and any subsequent concerns identified by Commission staff based on current information; and (2) if the plan is designed such that the proposed Alternative D developments would not adversely affect water quality in the coastal zone. If concerns are raised, the Commission retains the authority to "reopen" its federal consistency review and under the

provisions of Section 930.65 of the federal consistency regulations (15 CFR Part 930), and request appropriate remedial action in the event the Commission believes: (1) the previously-concurred with project could have an effect on coastal resources substantially different than originally described; and (2) the project is no longer consistent with the applicable CCMP policies.

With this commitment on the part of the LAWA and the FAA, and in conjunction with the water quality protection commitments contained in the consistency certification and consistency determination, the Commission concludes that the Alternative D LAX improvements project (CC-061-04) and the proposed reconfiguration of the navigation aids in the El Segundo Dunes (CD-062-04), are consistent with the water quality protection policies (Sections 30231 and 30232) of the Coastal Act.

C. Public Access. The Coastal Act provides the following:

Section 30210. In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30212(a). Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where:

(1) It is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,

(2) Adequate access exists nearby. . . .

Section 30214(a). The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:

(1) Topographic and geologic site characteristics.

(2) The capacity of the site to sustain use and at what level of intensity.

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the proximity of the access area to adjacent residential uses. . . .

Section 30252. The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

(1) CC-061-04. The consistency certification states that proposed Alternative D improvements at LAX are located outside the coastal zone, except for the FAA navigation aids project (see below). Existing coastal access routes in the immediate project area would be maintained and proposed developments at LAX would not affect existing coastal access and recreational facilities at nearby Vista del Mar Park, Dockweiler State Beach, the South Bay Bike Trail, and along surface streets providing access to and along the shoreline. The current alignment of Pershing Drive would not be affected and vehicle, bicycle, and pedestrian access along Pershing Drive would remain unchanged.

The consistency certification addresses potential coastal access impacts from vehicular traffic levels associated with the proposed Alternative D. Existing vehicular, bicycle, and pedestrian access conditions are examined first:

Vehicular access to the coast in the vicinity of LAX is provided via Westchester Parkway to Pershing Drive to various residential streets. Sandpiper Street (which connects Pershing Drive and Vista del Mar) no longer provides vehicular access to the coast as it has been closed for security purposes following the events of September 11, 2001. Vehicular access to the coast is also provided via Imperial Highway along the southern perimeter of LAX. Farther south, within the City of El Segundo, coastal access is provided by Grand Avenue. Currently, residents of El Segundo can access Imperial Highway from two access points: Main Street and California Street. Vehicles can proceed westbound to the coast or eastbound on Imperial Highway from either of these streets. Parking is available at Dockweiler State Beach and along Vista del Mar.

Bicycle access is provided by a network of bicycle lanes and bicycle paths, which is shown in Figure F4.14-4, Existing and Proposed Bicycle Access in the LAX Vicinity, in the Final EIR. A Class I bicycle path, which provides exclusive bicycle rights-of-way separate from vehicular traffic, is located along the coast between Vista del Mar and the Pacific Ocean from north of LAX near Marina del Rey to Grand Avenue south of LAX. Although Vista del

Mar is not a designated bicycle route, bicyclists can ride on the shoulder of the street parallel to the coast. Access to the coastal bicycle path is available via bicycle lanes on Grand Avenue and Imperial Highway. The bicycle lane on Imperial Highway extends from east of Aviation Boulevard to Vista del Mar. There are also bicycle lanes on Westchester Parkway along the northern boundary of LAX. Bicyclists can access the coast by traveling westbound along Westchester Parkway to Pershing Drive and, from Pershing, connecting with various residential streets near the terminus of Westchester Parkway.

Currently, pedestrian access to the coast in the immediate vicinity of LAX is limited. Within the City of El Segundo, pedestrian access is provided by a footpath connecting Imperial Avenue with Imperial Highway near Hillcrest Street. Sidewalks are available intermittently along the south side of Imperial Highway; pedestrians can walk along the shoulder of the roadway where there are no sidewalks. Within the northern portion of LAX, there are sidewalks along Westchester Parkway, but there are no connecting sidewalks along Pershing Drive.

Next, potential effects on vehicular, bicycle, and pedestrian access from proposed Alternative D developments are examined:

As discussed in Section 4.14, Coastal Zone Management and Coastal Barriers of the Final EIR, because Alternative D would not shift the airport's primary passenger activity center closer to the coast, there would be limited impact to existing coastal access.

Under Alternative D, all of existing coastal access routes would remain in their baseline configurations. The only components of Alternative D that would be nearby or en route to the coast are the LAX Northside development and the west employee parking garage on World Way West. However, neither of these developments would alter the existing coastal access routes, although they would increase the number of vehicles on roadways that provide access to the coast.

Alternative D would not alter existing bicycle access to the coast. In addition, under Master Plan Commitment LU-5, included in Section 4.2, Land Use of the Final EIR, LAWA would comply with municipal bicycle policies and plans, including the City of Los Angeles Transportation Element Bicycle Plan, and would provide maximum feasible incorporation of bike paths and lanes into the Master Plan circulation systems. In addition, bicycle access and parking facilities would be provided at the GTC, ITC, and major parking lots. Related facilities, such as lockers and showers, would also be provided where feasible to promote employee bicycle use.

As discussed in Section 4.14 pedestrian access to the coast would continue to be limited under Alternative D. The existing footpath connecting Imperial Avenue and Imperial Highway would not be affected under this alternative. However, the proposed changes in ground access to LAX do not include the provision of new sidewalks. Sidewalks are not currently available along the full length of Imperial Highway under baseline conditions. Pedestrians would continue to be able to walk along the shoulder of Imperial Highway to the coast.

As noted above, under Alternative D, a new four-story, 12,400-stall employee parking garage would be constructed on the west side of the airport, south of World Way West and east of Pershing Drive. This garage would replace and consolidate the various surface parking lot spaces located throughout the airport into one garage, and employees using this facility would be shuttled to their workplaces across the LAX complex. The consistency certification examines this proposed structure and associated projects intended to lessen potential impacts on traffic in the area:

As detailed in Table F4.3.2-30, Off-Airport Surface Transportation Phasing Plan, included in Section 4.3.2, Off-Airport Surface Transportation of the Final EIR, construction of the new west employee parking structure would be accompanied by number other off-site improvements. These are listed below:

1. Complete off-site intersectional improvements at:

- *Grand Avenue and Vista del Mar*
- *Highland Avenue/Vista del Mar and Rosecrans Boulevard*
- *Imperial Highway and Main Street*
- *Imperial Highway and Pershing Drive*
- *Imperial Highway and Sepulveda Boulevard*
- *Imperial Highway and Vista del Mar*
- *Jefferson Boulevard and Lincoln Boulevard*
- *Lincoln Boulevard and Manchester Avenue*
- *Lincoln Boulevard and Teale Street*
- *Rosecrans Avenue and Sepulveda Boulevard*
- *83rd Street and Lincoln Boulevard;*

2. Provide a fair-share contribution to LA County's "Marina Expressway to Admiralty Way" project OR complete alternative off-site intersectional improvements at the following intersections:

- *Bali Way and Lincoln Boulevard*
- *Fiji Way and Lincoln Boulevard*
- *Lincoln Boulevard and Marina Expressway*
- *Lincoln Boulevard and Maxella Avenue*
- *Lincoln Boulevard and Mindanao Way*
- *Lincoln Boulevard and Washington Boulevard*

3. Provide a fair-share contribution toward the LAC-MTA's Metro Rapid Bus Line Expansion Program (possible concepts include but are not limited to paying for larger or additional buses from those planned by the LAC-MTA or paying the cost of retrofitting

some buses to better accommodate airline passengers and their baggage to and from LAX) OR other enhancements to benefit transit to and from LAX (possible concepts include but are not limited to traffic signal priority improvements for bus flow, transit marketing, airport employee and/or air passenger fare subsidies) to mitigate the following intersections:

- *Imperial Highway and Sepulveda Boulevard*
- *Jefferson Boulevard and Lincoln Boulevard*
- *Lincoln Boulevard and Manchester Avenue*
- *Lincoln Boulevard and Marina Expressway*
- *Lincoln Boulevard and Teale Street*
- *Lincoln Boulevard and Washington Boulevard*

The proposed Alternative D improvements at LAX are sited in areas outside the coastal zone (excepting the navigation aids project, below) and will not directly affect existing access or recreation facilities in the coastal zone. As noted above, the proposed employee parking structure at the west end of the airport (southeast of the intersection of Pershing Drive and World Way West) would increase the number of vehicles using Pershing Drive, which is a vehicle and bicycle route inland of and parallel to the shoreline and which provides access to the coastal zone. The consistency certification submitted by LAWA outlines the numerous street and intersection improvements and the public transportation enhancements that would be implemented to mitigate potential adverse traffic impacts generated by the parking facility (see above). In addition, under LAX Master Plan Commitment LU-5, LAWA has agreed to comply with the City of Los Angeles Transportation Element Bicycle Plan and to this end would also:

... provide maximum feasible incorporation of bike paths and lanes into the Master Plan circulation systems. In addition, bicycle access and parking facilities would be provided at the GTC, ITC, and major parking lots.

It is difficult to accurately predict at this point in time the potential adverse impacts to coastal access – and their significance – from the proposed LAX Alternative D improvements, due to their location inland of the coastal zone, a facilities construction schedule that extends through the year 2014, and the implementation uncertainty that is inherent in a project of this complexity and controversy. This challenge is compounded by further uncertainties in anticipating future increases in traffic volumes on major surface arterials providing access to the coast in this area, and over which the Commission has no control, as a result of: (1) other traffic-generating projects in the LAX area that could be developed over the next ten years; (2) the growth in LAX-related traffic that would occur under a No Action/No Project alternative; or (3) the outcome of inexorable population and economic growth in the region with its concurrent increase in vehicle trips in the LAX area. Based on the available information and commitments made at this time, the Commission concludes that the proposed Alternative D project, as it is implemented over the next ten years in conjunction with the aforementioned surface transportation measures, will not adversely impact coastal access routes in the areas adjacent to LAX significantly beyond that which can be reasonably expected to occur in this area absent the Alternative D project.

Therefore, the Commission concludes that the project is consistent with the public access policies (Sections 30210, 30211, 30212, 30214, and 30252) of the Coastal Act.

(2) **CD-062-04.** The consistency determination examines potential effects on public access from the proposed reconfiguration of navigation aids in the El Segundo Dunes:

Relocation of the existing navigational aids would occur within an area owned by LAX that lies within the coastal zone. This area is, and will continue to be, secured from public access due to airport safety and national security needs. Coastal access is, and would continue to be, allowed on the public roads outside of the secured area . . . Development activities related to the relocation of existing navigational aids would not interfere with public access to the sea nor affect lower cost visitor and recreational facilities.

The proposed reconfiguration of and improvements to the navigation aids system located in the El Segundo Dunes will not affect public access to and along this section of the coastal zone. As noted above, the navigation aids are located in an area long-closed to public access due to airport safety and operations requirements, and due to the environmentally sensitive nature of the dunes habitat. The proposed reconfiguration of the existing navigational aids would not alter these existing public access restrictions. Therefore, the Commission concludes that the proposed navigation aids project will not adversely affect public access and is consistent with the public access policies (Sections 30210, 30211, 30212, 30214, and 30252) of the Coastal Act.

D. Visual Resources. Section 30251 of the Coastal Act provides:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

LAWA's consistency certification examines the potential visual resource impacts arising from proposed Alternative D projects:

The majority of proposed Alternative D improvements at LAX are substantially outside of, and not visible from, the coastal zone surrounding LAX. As discussed in FAA's consistency determination, the relocated navigational aids would not be visible from surrounding streets. Under Alternative D, a four-level employee parking structure is proposed on property in the western portion of LAX (east of the coastal zone). As discussed in Section 4.21, Design, Art and Architecture Application/Aesthetics, of the Final EIR, views of the

employee parking structure from the coastal zone would be limited and would not represent an aesthetic or view impact to the scenic and visual qualities of the coastal zone.

The FAA's consistency determination examines the potential visual resource impacts generated by the reconfigured navigation aids in the El Segundo Dunes:

The navigational aids proposed to be relocated in conjunction with Alternative D would generally be similar in size and design to the existing facilities that have existing in the dunes for decades, and would continue to exist irrespective of Alternative D. Similar to the existing navigational aids, the relocated navigational aids would not be readily apparent from either Pershing Drive or Vista del Mar. The area of the Los Angeles/El Segundo Dunes in which the existing and proposed navigational aids are located is fenced off with green security fencing to prevent public access. The design of navigational aids is mandated by FAA standards, and due to the strict safety specifications, the aesthetic appearance of the navigational aids cannot be changed in any way.

The only element of the Alternative D project that could be visible from the coastal zone is the proposed four-story employee parking garage southeast of the intersection of Pershing Drive and World Way West. However, this facility would only be visible from Pershing Drive and would not be visible from coastal recreational areas at Dockweiler State Beach, Vista del Mar Park, and the South Bay Bike Trail. The view eastward from Pershing Drive across the western end of the LAX complex would not be significantly altered by the parking garage, whose presence would be consistent with the existing aviation-related development in this area. The visibility of the reconfigured navigation aids from coastal zone vantage points is minimal, would be similar in nature to the existing aids, and would not adversely affect coastal views to or along the shoreline from points west of the El Segundo Dunes. Therefore, the Commission concludes that the proposed Alternative D project (CC-061-04) and the proposed navigation aids project (CD-062-04) are consistent with the visual resource policies (Section 30251) of the Coastal Act.

E. Cultural Resources. Section 30244 of the Coastal Act provides:

Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

The Final EIR for the LAX project reports that the project area lies within a region that was occupied during the late prehistoric period by Native American groups now known as the Gabrielino. The Gabrielino may have numbered as many as 5,000 people at their peak in the pre-European contact period (approx. 1769) in the Los Angeles basin. The consistency certification addresses the potential presence of cultural resources in the project area as follows:

The proposed Alternative D improvements at LAX would not directly or indirectly affect any known archaeological or paleontological resources within the coastal zone. According to previous archaeological and paleontological surveys, as discussed in Section 4.9,

Historic/Architectural and Archaeological/Cultural and Paleontological Resources, of the Final EIR, no known archaeological or paleontological resources exist within the coastal zone area of the LAX property . . .

The consistency determination additionally states that relocation of the existing navigational aids would not directly or indirectly affect any known archaeological or paleontological resources in the El Segundo Dunes.

Both submittals include a commitment that in the event that previously unidentified cultural, archaeological, and/or paleontological resources are discovered during construction activities, implementation of mitigation measures described in the Final EIR would eliminate the potential for adverse impacts to these resources. Mitigation measures MM-HA-4 through MM-HA-10 address cultural resource discovery, monitoring, excavation and recovery, administration, reporting, curation, and notification and are provided in **Exhibit 23**. Mitigation measures MM-PA-1 through MM-PA-7 address paleontological resource discovery, monitoring, collection, and reporting and are provided in **Exhibit 24**. With these measures, the Commission concludes that the proposed Alternative D project at LAX (CC-061-04) and the reconfiguration of the navigation aids in the El Segundo Dunes (CD-062-04) would not adversely affect cultural resources, and that the projects are consistent with the cultural resource policy (Section 30244) of the Coastal Act.

X. Substantive File Documents.

1. Coastal Development Permits: 5-86-217G (Interim Habitat Restoration for El Segundo Blue Butterfly at El Segundo Dunes, City of Los Angeles Department of Airports); 5-87-777 (Habitat Restoration at El Segundo Dunes, City of Los Angeles Department of Airports); 5-90-1149 (Interim Habitat Restoration at El Segundo Dunes, City of Los Angeles Department of Airports); 5-92-131 (El Segundo Dunes Restoration Program, City of Los Angeles Department of Airports).
2. Consistency Certification CC-058-01, Santa Barbara Municipal Airport Improvements, City of Santa Barbara.
3. Long-Term Habitat Management Plan for Los Angeles Airport/El Segundo Dunes. City of Los Angeles Environmental Affairs Department, June 23, 1994.
4. Supplement to the Draft Environmental Impact Statement/Environmental Impact Report, Los Angeles International Airport Proposed Master Plan Improvements. Federal Aviation Administration et.al., July 2003.
5. Los Angeles International Airport Proposed Master Plan Improvements, Final Environmental Impact Report. City of Los Angeles, April 2004.

6. Los Angeles/El Segundo Dunes Habitat Restoration Plan. Federal Aviation Administration, October 29, 2004.

APPENDIX A

Los Angeles/El Segundo Dunes Habitat Restoration Plan

(Note: The detailed planting and irrigation specifications (Appendices A and B of the Habitat Restoration Plan) and a background document on the Los Angeles/El Segundo Dunes (Appendix C of the Habitat Restoration Plan) are not included in this Appendix.)

LOS ANGELES/EL SEGUNDO DUNES
HABITAT RESTORATION PLAN

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
15000 AVIATION BOULEVARD
HAWTHORNE, CALIFORNIA 90261

PREPARED BY:

SAPPHOS ENVIRONMENTAL, INC.
133 MARTIN ALLEY
PASADENA, CALIFORNIA 91105

OCTOBER 29, 2004

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SECTION 1.0 INTRODUCTION

The U.S. Department of Transportation Federal Aviation Administration (FAA) intends to issue its Record of Decision (ROD) in support of the Final Environmental Impact Report (EIR) for the Los Angeles International Airport (LAX) Master Plan in February 2005.¹ Prior to issuance of the ROD, the FAA is seeking the California Coastal Commission's (CCC's) consistency concurrence with the FAA's Coastal Consistency Determination for Relocation of Existing Navigational and Safety Aids² in support of Alternative D of the LAX Master Plan. At the request of CCC staff, the FAA is submitting this coastal dune Habitat Restoration Plan for the Los Angeles/El Segundo Dunes (Dunes) at LAX to the CCC in support of the Coastal Consistency Determination pursuant to Section 930.32 et seq. of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (Title 15, *Code of Federal Regulations*, Part 930).

This Habitat Restoration Plan (Plan) for the Dunes was developed following guidelines provided to the FAA (Mr. David Kessler) by the CCC (Mr. John Dixon).³ The Plan provides for the establishment and/or enhancement of (referred to herein as "the restoration of") 5.8 acres of coastal dune habitat within the Dunes to mitigate impacts to 2.92 acres of coastal dune habitat resulting from the installation of navigational aids in support of Alternative D (1.53 acres) and the disturbance associated with the removal of existing navigational aids (1.4 acres). The amount of mitigation is consistent with the 2:1 mitigation ratio requested by the CCC. It is understood that the feasibility of the ultimate restoration of areas where navigational aids are to be removed may be further reviewed and evaluated by the CCC and FAA. However, the Plan assumes that all areas where navigational aids are scheduled for removal will be restored to the appropriate coastal dune plant community.

Located at the western terminus of LAX, the 302-acre Dunes are bound on the north by Napoleon Street and Waterview Street, on the south by Imperial Highway, on the east by Pershing Drive, and on the west by Vista del Mar Boulevard. The subject area contains environmentally sensitive areas, as defined in Section 30107.5 of the California Coastal Act (CCA) of 1976, as amended. Pursuant to Section 30240 of the CCA, Environmentally Sensitive Habitat Areas (ESHAs) shall be protected against any significant disruption of habitat values. Additionally, in 1992, the City of Los Angeles, by way of Ordinance No. 167940, established the 302-acre site as the Los Angeles Airport/El Segundo Dunes Specific Plan "in order to restore and preserve the natural ecology of the Dunes and those native dune-dependent species that exist thereon" consistent with the CCA, as amended. Within the 302-acre site, that is located entirely within the California Coastal Zone Boundary, the ordinance additionally established a 200-acre ecosystem preserve currently designated as the El Segundo Blue Butterfly Habitat Restoration Area (HRA) and home to the federally endangered El Segundo blue butterfly. Section 3 of the ordinance describes land use regulations for the specific plan area. Subsection F of Section 3 states "notwithstanding any other provisions of this Specific Plan, no use, development or activity regarding the Specific Plan Area may compromise the safety

¹ City of Los Angeles. April 2004. *Final Environmental Impact Report*. Available at: <http://www.laxmasterplan.org>.

² U.S. Department of Transportation, Federal Aviation Administration. August 2004. Federal Aviation Administration, Los Angeles International Airport, City of Los Angeles, California Coastal Consistency Determination for Relocation of Existing Navigational Aids. Contact: U.S. Department of Transportation, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591.

³ Dixon, J. 30 September 2004. "Suggested language for a filing requirement for a Restoration and Monitoring Plan when resource impacts and mitigation are anticipated." Contact: California Coastal Commission, 45 Fremont, Suite 2000, San Francisco, CA 94105.

of airport flight operations in any way. Final authority for determining whether airport flight operation safety is compromised rests with the Federal Aviation Administration."

In accordance with the Federal Coastal Zone Management Act of 1972 (CZMA), as amended, the FAA has determined that the relocation of existing navigational aids and associated service roads at LAX is consistent, to the maximum extent practicable, with the California Coastal Management Program (CCMP) pursuant to the requirements of the CZMA and the CCA, as amended. This determination was based on a consistency analysis between policy sections of the CCC (Division 20, California Public Resources Code) and FAA proposals and actions at LAX within the California Coastal Zone Boundary, specifically the proposed relocation of existing navigational and safety aids in support of Alternative D of the LAX Master Plan.

Under Alternative D, a navigational aid system known as Approach Lighting System (Flashing)-2 (ALSF-2) and associated service roads would be constructed (Figure 1-1, *ALSF-2 Towers in the Los Angeles/El Segundo Dunes*). The ALSF-2 consists of 23 lighting standards spaced at 100 feet with upwardly directed lighting that would be used during nighttime for aircraft approaching LAX from the west when low visibility Santa Ana conditions (strong easterly winds) are present. During normal operations, only one-half of the lights would be illuminated. The construction of navigational aids and associated service roads would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Dunes (Figure 1-2, *Location of Proposed Navigational Aids - Alternative D*). Of the 1.53 acres of impact to the Dunes, 0.77 acres are located within the HRA, 0.24 acres of which are habitat for the El Segundo blue butterfly. Additionally, an estimated 1.4 acres of state-designated sensitive habitat will be impacted by the removal of existing navigational aids. Mitigation for impacts to 2.92 acres will take place at a 2:1 ratio for a total 5.8 acres.

Measures to compensate for the conversion of 1.53 acres of habitat within the Dunes are described in the Final EIR for the LAX Master Plan. However, impacts associated with the removal of existing navigational aids are not addressed in the Final EIR because it was anticipated that the navigational aids would be abandoned in place. However, the CCC has requested that the existing navigational aids be removed. Thus, this Habitat Restoration Plan revises those mitigation measures that compensate for impacts within the California Coastal Zone Boundary pursuant to ongoing coordination and discussions between the FAA and CCC. Revisions to the measures include the designation of the FAA as being responsible for the design, implementation, maintenance, and monitoring of measures that compensate for impacts within the California Coastal Zone Boundary. Additionally, revisions incorporate a 2:1 ratio for impacts resulting from the permanent conversion of 1.53 acres of habitat within the Dunes, as well as the estimated impact to 1.4 acres as a result of the removal of navigational aids no longer required to guide aircraft that approach LAX from the west. A total of 5.8 acres will be restored pursuant to this Habitat Restoration Plan: 4.4 acres within Subsite 23 and 1.4 acres "in situ." The revised mitigation measures are summarized below.

MM-BC-1: CONSERVATION OF STATE-DESIGNATED SENSITIVE HABITAT WITHIN AND ADJACENT TO THE EL SEGUNDO BLUE BUTTERFLY HABITAT RESTORATION AREA

The FAA, or its designee, shall take all necessary steps to ensure that the state-designated sensitive habitats within and adjacent to the HRA are conserved and protected during construction, operation, and maintenance, by the implementation of construction avoidance measures, as described in this Habitat Restoration Plan.

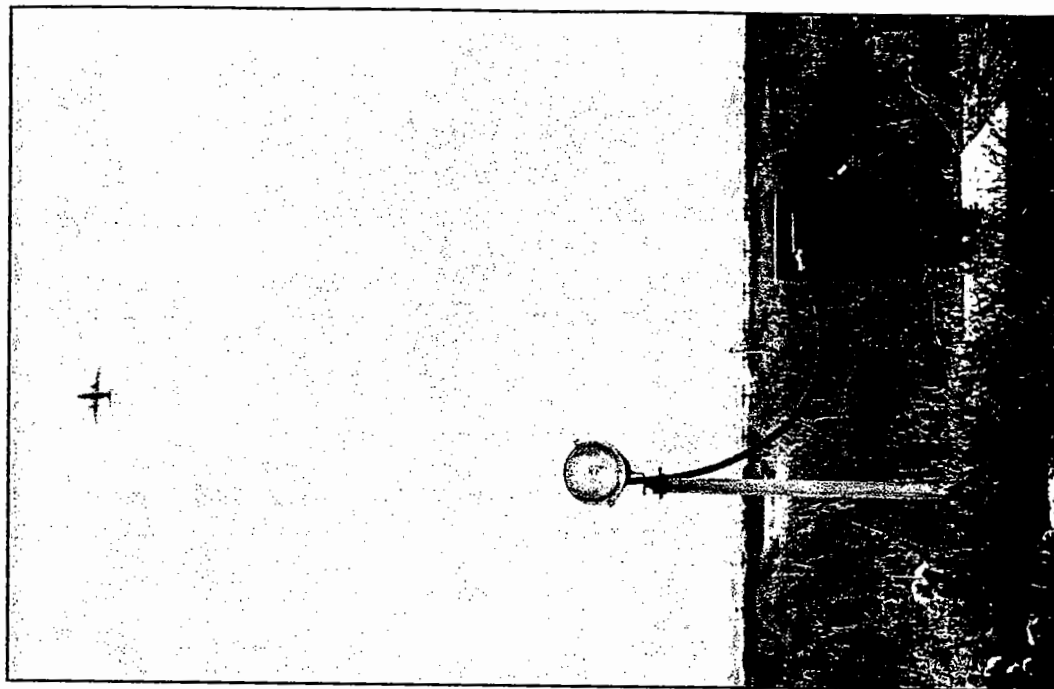
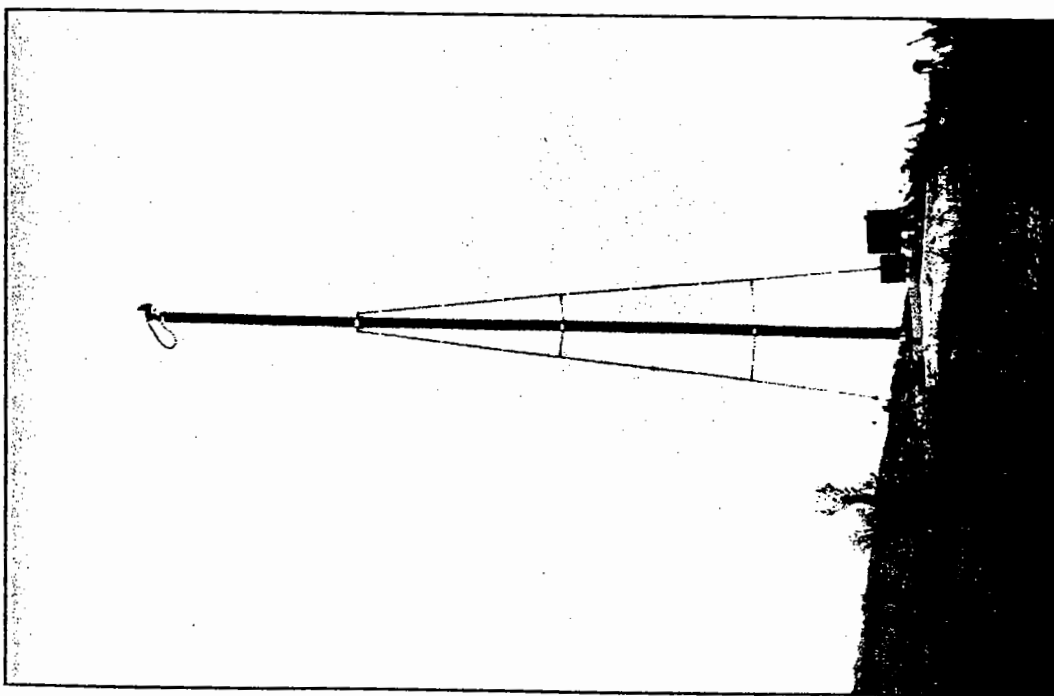


FIGURE 1-1
ALSF-2 Towers in the Los Angeles/El Segundo Dunes



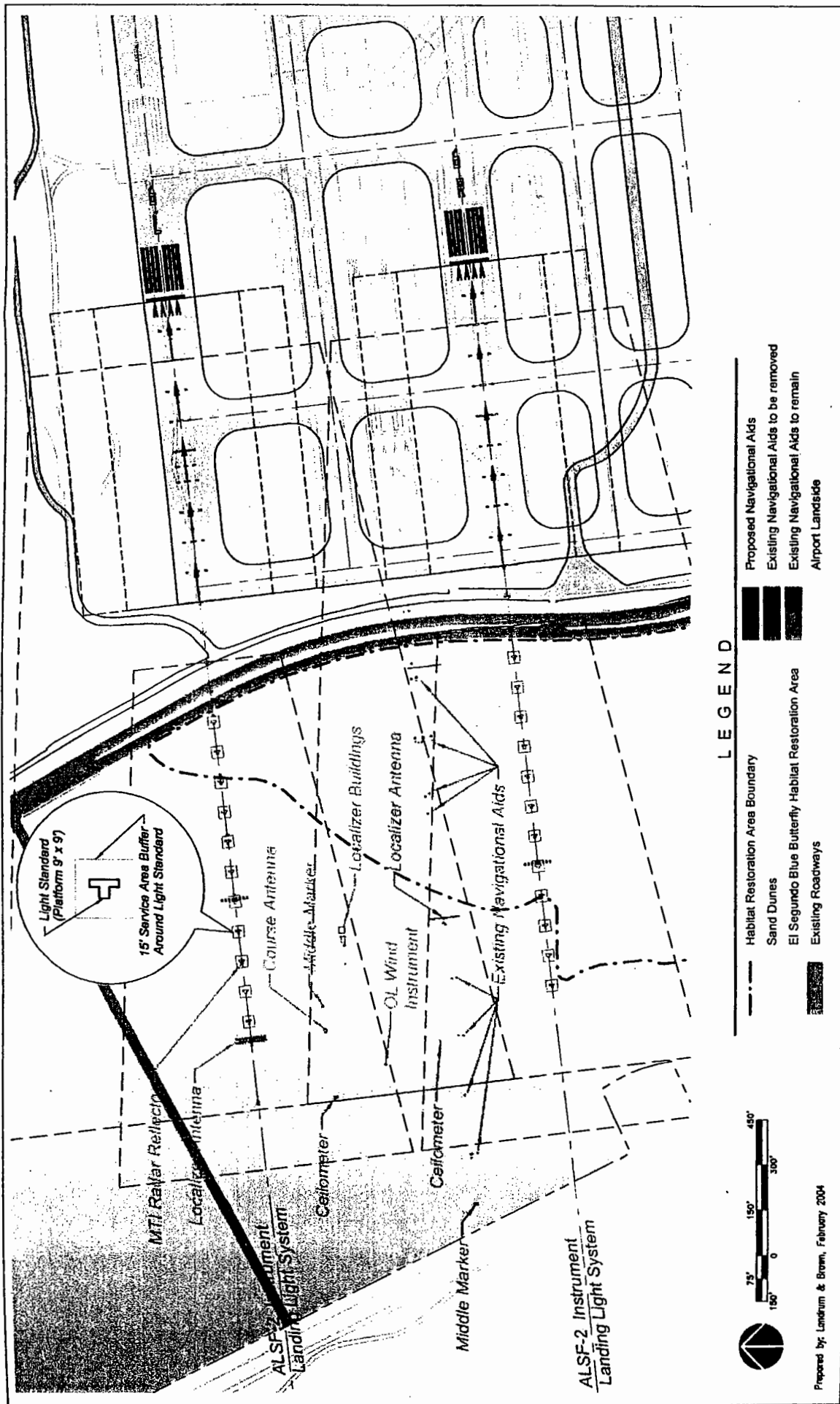


FIGURE 1-2
Location of Proposed Navigational Aids - Alternative D

MM-BC-2: CONSERVATION OF FLORAL RESOURCES: LEWIS' EVENING PRIMROSE

The FAA, or its designee, shall implement a plan to compensate for the loss of individuals of the sensitive Lewis' evening primrose, currently located within the HRA, as described in this Habitat Restoration Plan.

MM-BC-9: CONSERVATION OF FAUNAL RESOURCES

The FAA, or its designee, shall conduct preconstruction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl within the proposed area of impact in the Dunes. Surveys will be conducted at the optimum time to observe these species. Should an individual be observed, they will be relocated to suitable habitat for that species within the HRA, as described in this Habitat Restoration Plan.

MM-BC-13: REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITAT

The FAA, or its designee, will restore at a 2:1 ratio impacts to 1.4 acres of state-designated sensitive habitat to the appropriate state-designated sensitive plant community. An estimated 1.4 acres of state-designated sensitive habitat currently occupied by navigational aids that are scheduled for removal have the potential of being disturbed during removal activities. A total of 2.92 acres will be restored, with 1.4 acres taking place "in situ" and 1.4 acres taking place within Subsite 23 of the HRA, as described in this Habitat Restoration Plan. Implementation of MM-ET-4 and MM-BC-13 will provide for a total of 4.4 acres of Southern Foredune habitat within Subsite 23. Table 1-1, *Impacts Associated with the Removal of Navigational Aids*, describes the impacts associated with navigational aid removal.

TABLE 1-1
IMPACTS ASSOCIATED WITH THE REMOVAL OF NAVIGATIONAL AIDS

Impact Areas	Southern Foredune (acres)	Valley Needlegrass Grassland (acres)
Los Angeles/El Segundo Dunes*	1.19	0.20
Habitat Restoration Area	0	0.20
El Segundo Blue Butterfly- occupied habitat	0	0

NOTE:

*A total of 1.39 acres of the Los Angeles/El Segundo Dunes is impacted as a result of the removal of navigational aids.

MM-ET-4: EL SEGUNDO BLUE BUTTERFLY CONSERVATION: HABITAT RESTORATION

The FAA, or its designee, shall restore 3.0 acres of coastal dune habitat designated as Southern Foredune⁴ within Subsite 23 of the HRA and relocate coast buckwheat individuals that have the potential to be impacted as a result of the installation of ALSF-2 navigational aids in support of Alternative D. In conformance with the Biological Opinion issued by the U.S. Fish and Wildlife Service (USFWS) on April 20, 2004, for the Alternative D of the LAX Master Plan, activities associated with navigational aid development shall be limited to the existing roads and proposed

⁴ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

impacts areas, as described in the Final EIR. Habitat restoration will take place at a minimum of three years prior to the impact (scheduled for 2012–2013), as described in this Habitat Restoration Plan. Implementation of MM-ET-4 and MM-BC-13 will provide for a total of 4.4 acres of Southern Foredune habitat within Subsite 23. Table 1-2, *Impacts Associated with the Installation of Navigational Aids in Support of Alternative D*, describes the impacts associated with navigational aid installation.

TABLE 1-2
IMPACTS ASSOCIATED WITH THE INSTALLATION OF NAVIGATIONAL AIDS
IN SUPPORT OF ALTERNATIVE D

Impact Areas	Southern Foredune (acres)	Valley Needlegrass Grassland (acres)
Los Angeles/El Segundo Dunes*	0.87	0.66
Habitat Restoration Area	0.24	0.53
El Segundo Blue Butterfly- occupied habitat	0.24	0

NOTE:

*A total of 1.53 acres of the Los Angeles/El Segundo Dunes is impacted as a result of the installation of navigational aids.

SECTION 2.0 EXISTING CONDITIONS

2.1 PROJECT LOCATION

The Los Angeles/El Segundo Dunes (Dunes), which lie between the west end of the Los Angeles International Airport (LAX) and the Pacific Ocean, are the largest remaining representation of coastal dune community within Southern California (Figure 2.1-1, *Regional Location Map*). Formerly known as the "Airport/El Segundo Dunes," the 302-acre Dunes site is bordered by Napoleon and Waterview Streets on the north, Imperial Highway on the south, Pershing Drive on the east, and Vista del Mar on the west (Figure 2.1-2, *Project Location*). The site is owned and managed by Los Angeles World Airports (LAWA).

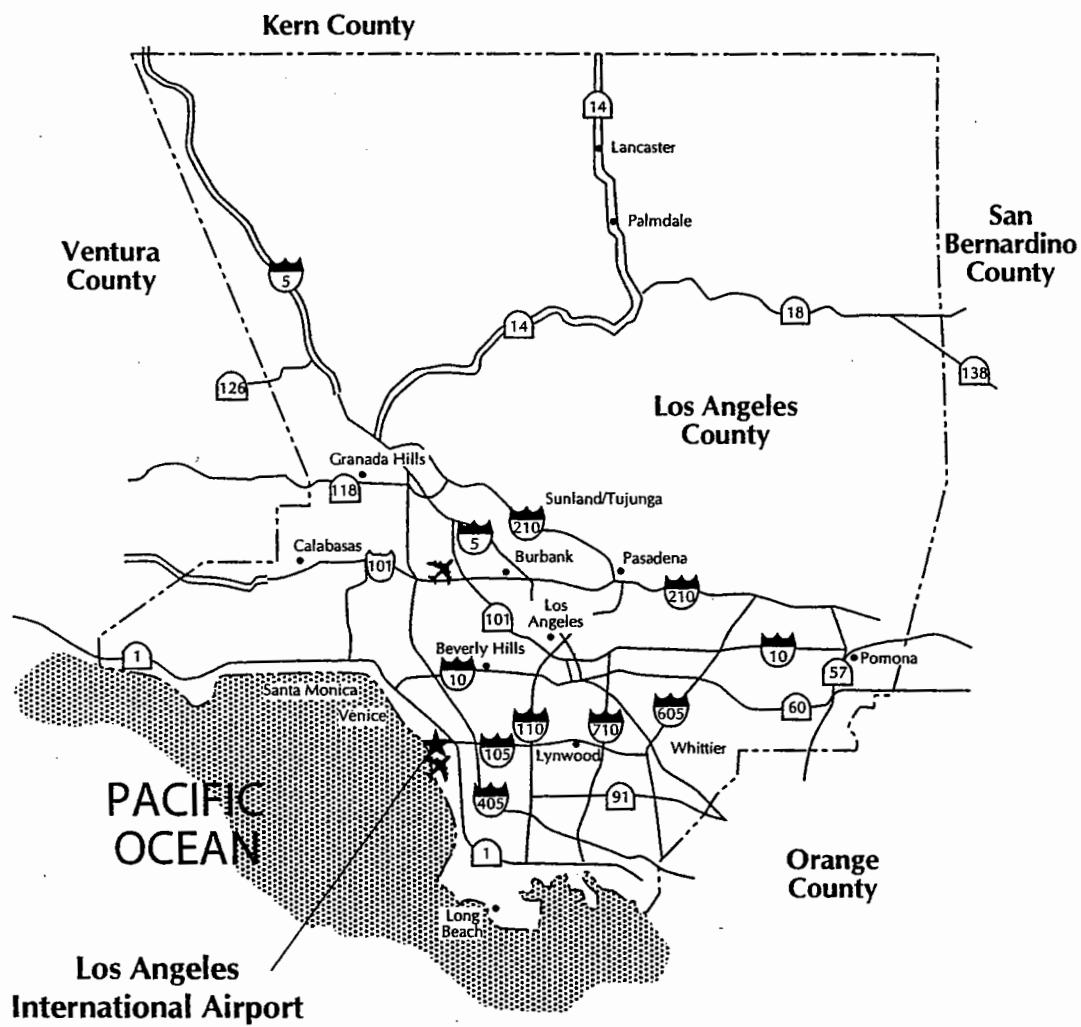
2.2 ECOLOGICAL SIGNIFICANCE OF THE LOS ANGELES/EL SEGUNDO DUNES

The ecological significance of the Dunes is recognized by both federal and state governments, as well as by the City and County of Los Angeles and the California Coastal Commission (CCC). In spite of a long history of land disturbance and increasing isolation from related habitats, the Dunes are unique in their richness of sand-obligate species (species whose survival depends on the free flowing sand characteristic of dunes systems) and in the number of sensitive species or species of limited distribution that inhabit them. Among the Dunes sensitive species is the federally-endangered El Segundo blue butterfly (*Euphilotes battoides allyni*), whose habitat is now reduced to a few coastal dune fragments between Playa del Rey and Malaga Cove. The Dunes are reported to support over 900 species of plant and animals; at least 35 of these species, including the El Segundo blue butterfly, are limited in range to Southern California dunes.⁵

As early as 1972, even before all houses had been removed from the Dunes for reasons of public safety for airport operations, the County of Los Angeles Environmental Resource Committee, in recognition of the Dunes' ecological value, identified the Dunes as a high priority habitat area that should be restored and preserved. The County of Los Angeles (County) designated the Dunes a Significant Ecological Area (SEA No. 28) in the 1976 revised County General Plan. The Southern California Association of Governments included the Dunes among its designated "Areas of Regional Significance and Concern," recommending that the entire area be preserved and restored. The Dunes area was also designated as an Environmentally Sensitive Habitat Area (ESHA) pursuant to Section 30240 of the California Coastal Act (CCA) of 1976, as amended. Southern coastal dune habitat is considered by the Heritage program of the California Department of Fish and Game (CDFG) to be amongst the most highly imperiled natural communities in California. Forming a continuum in response to topography and proximity to the ocean, southern coastal dune habitat at the Dunes is expressed as Southern Foredune, Southern Dune Scrub, and Valley Needlegrass Grassland according to the Holland classification of natural communities.⁶ All three plant community types—Southern Foredune, Southern Dune Scrub, and Valley Needlegrass Grassland—are considered state-designated sensitive plant communities. Finally, the International Union for Conservation of Nature and Natural Resources (IUCN) listed the Dunes as a "Threatened

⁵ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

⁶ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

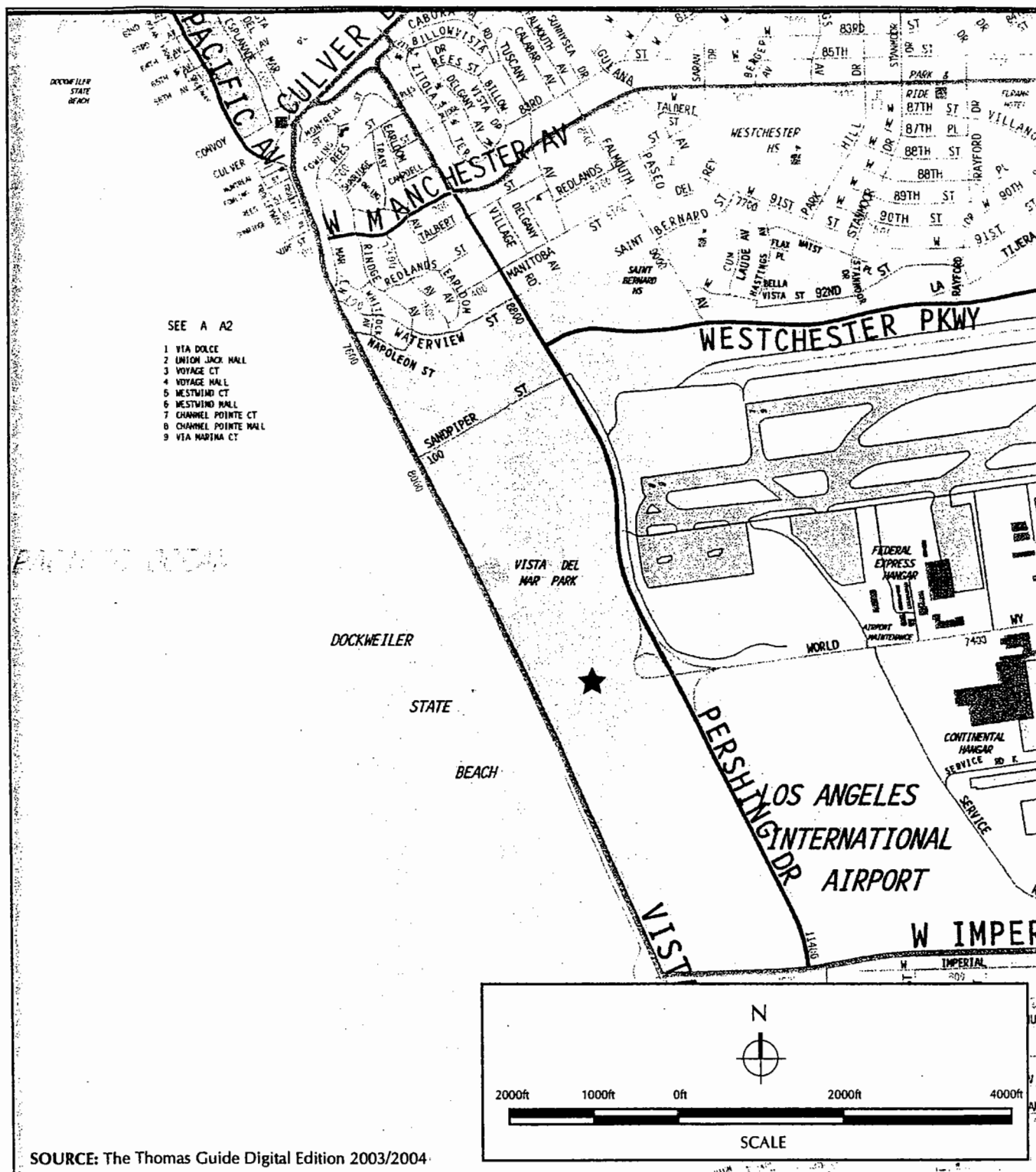


LEGEND

★
Project Location



FIGURE 2.1-1
Regional Location Map



LEGEND

★ El Segundo Dunes



FIGURE 2.1-2
Project Location

Community" in their IUCN Invertebrate Red Data Book, published in 1983, noting the site's ecological significance as habitat for several endemic invertebrates and populations of vulnerable plants.

As a result of a protracted planning history, 200 acres of the site are now designated in the City of Los Angeles Conservation Plan as an "Ecologically Important Area" and as the "Dunes Habitat Preserve," or simply "Preserve," in the Draft Los Angeles/El Segundo Dunes Specific Plan. Restoration efforts, which began in the late 1980s and were completed in 1994, have received wide support from the scientific community, local elected officials, state and federal resource agencies, and the general public.

2.3 BIOTIC COMMUNITIES

Biotic communities are typically named for the dominant or characteristic floral components that comprise the community. Biotic communities are consistent with the descriptions provided in the Final Environmental Impact Report (EIR) for the LAX Master Plan and follow the Holland classification.⁷ Some wildlife species may be limited to a specific community and may be characteristic of that community; however, many wildlife species are associated with several different biotic communities. The biotic communities and vegetation types found within the Dunes are described in accordance with designations and definitions provided by Holland and are further identified by element code numbers. There are six biotic communities that describe the Dunes (Figure 2.3-1, *Biotic Communities of the Los Angeles/El Segundo Dunes*), which are located within two generally designated open areas within the coastal zone:

- The El Segundo Blue Butterfly Habitat Restoration Area (HRA), located to the west of the airfield, is comprised of approximately 202.8 acres. Four biotic communities are represented: Southern Foredune (135.6 acres), Southern Dune Scrub (24.4 acres), Valley Needlegrass Grassland (17.1 acres), and Developed (25.7 acres).
- Approximately 104.3 acres of non-restructured dunes adjacent to and north of the HRA are comprised of three biotic communities: Disturbed Dune Scrub/Foredune (74.6 acres), Nonnative Grassland/Ruderal (16.9 acres), and Developed (12.8 acres).

2.3.1 Southern Foredune (CNDDB Element Code 21230)

Southern Foredune plant communities are typically dominated by perennial species with a high proportion of suffrutescent (slightly woody at base) plants up to 30 cm tall. Species such as red sand verbena (*Abronia maritima*), beach burr (*Ambrosia* sp.), and the nonnative sea rocket (*Cakile* sp.) usually occur in exposed sites, and pink sand verbena (*Abronia umbellata*) and morning-glory (*Calystegia* sp.) occur in less exposed sites.⁸ Establishment of these plants reduces the amount of blowing sand, partially stabilizing the dunes. The mitigation site for restoration of 4.3 acres of dune habitat is located within Subsite 23 the Southern Foredune community (Figure 2.3.1-1, *Mitigation Site for Southern Foredune Restoration*). Photographs of the Dunes are provided in Figure 2.3.1-2, *Site Photographs*.

⁷ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

⁸ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

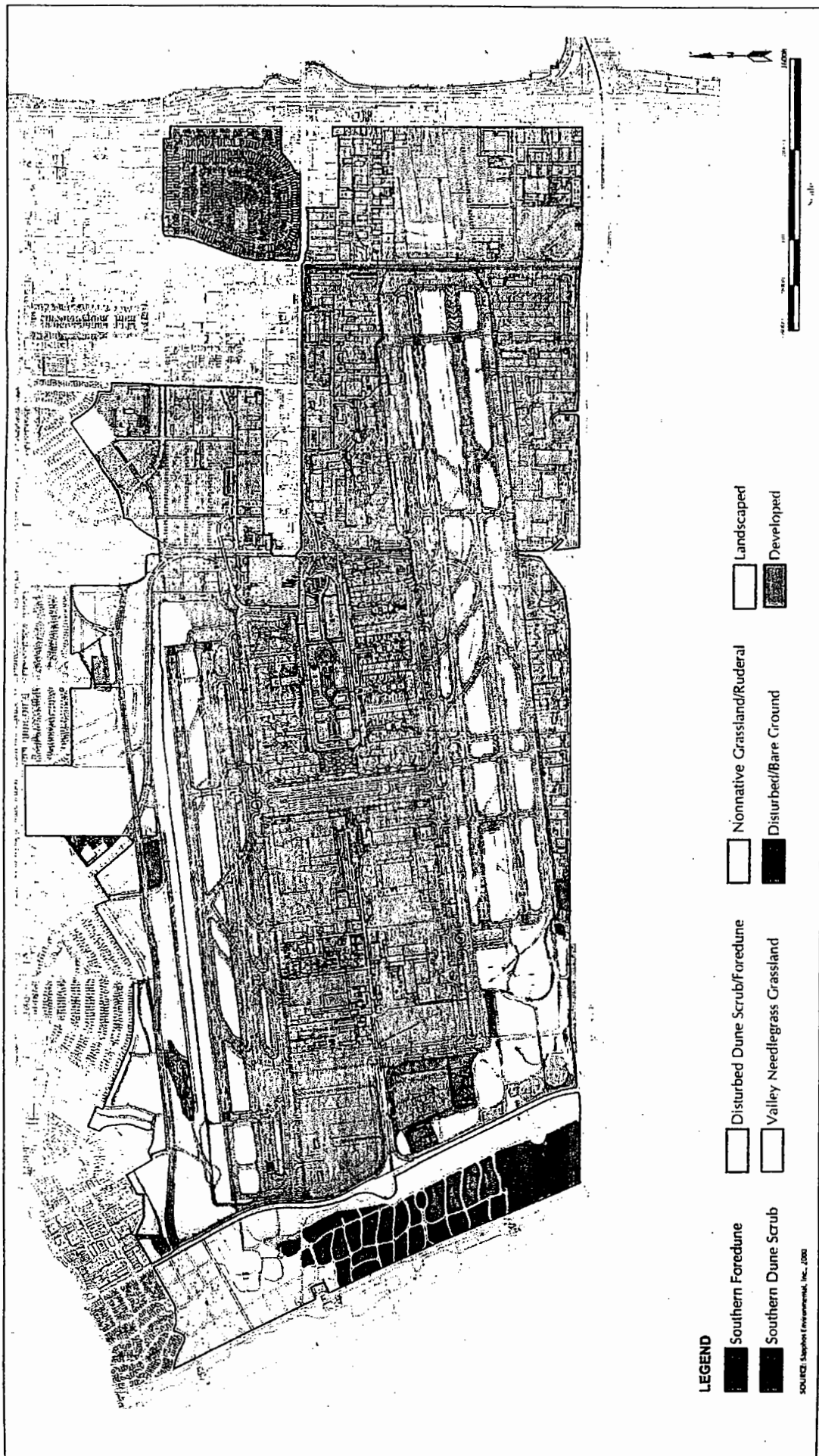
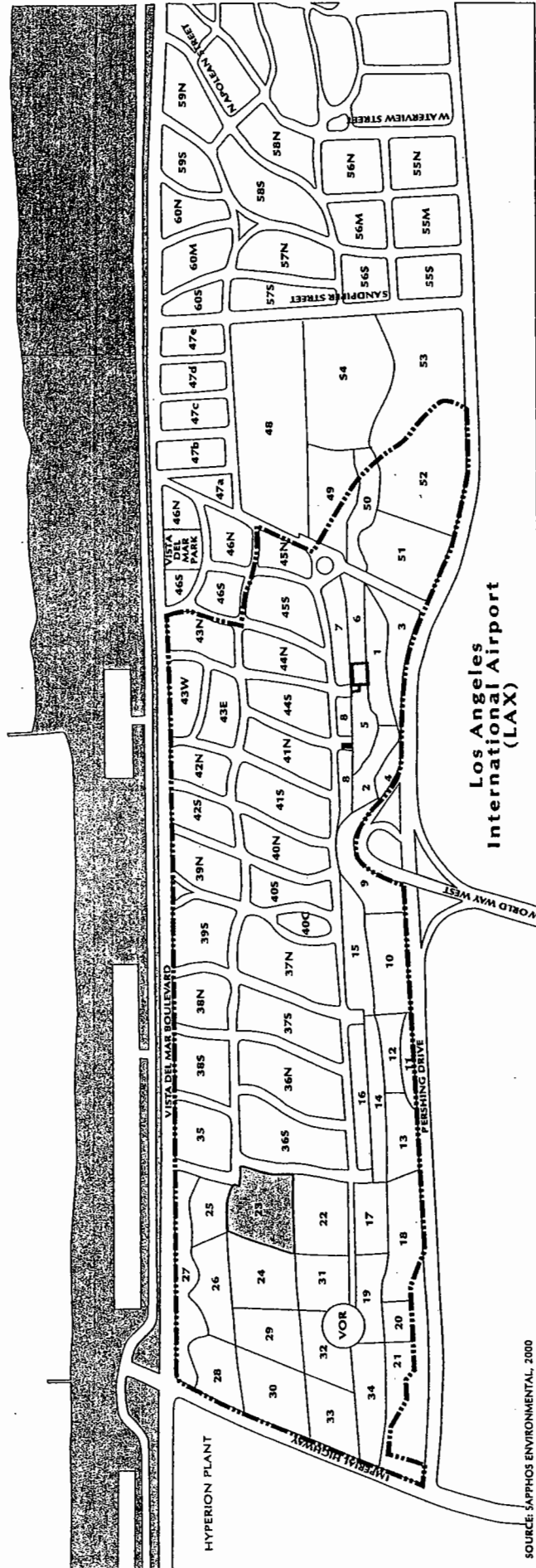


FIGURE 2.3-1
Biotic Communities of the Los Angeles/El Segundo Dunes



P a c i f i c O c e a n



SOURCE: SAPPPOS ENVIRONMENTAL, 2000

LEGEND






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



FIGURE 2.3.1-1
Mitigation Site for Southern Forendune Restoration



PHOTO 1

View of the Dunes from Subsite 23 looking south towards Hyperion.



PHOTO 2

View of the Dunes from Subsite 31 looking west towards Santa Monica.



PHOTO 3

View of the Dunes from the crest of backdune looking east towards LAX. Coastal buckwheat in the forefront.



FIGURE 2.3.1-2
Site Photographs

The Southern Foredune community, identified in Figure 2.3-1, is inhabited by a number of wildlife species, including the federally-listed El Segundo blue butterfly (*Euphilotes battoides allyni*). Historical surveys have recorded a large number of wildlife species (many of which no longer occur at the Dunes) and 151 species of invertebrates. Of the 34 sensitive wildlife species designated by federal or state agencies that were determined to have the potential to occur within the LAX Master Plan Boundaries, 24 were identified within the coastal zone. There are 18 sensitive arthropods (14 sensitive insect species and four sensitive arachnids), all of which were located within the Dunes. Two sensitive reptiles, the silvery legless lizard and the San Diego horned lizard, were determined present within the Dunes. Two sensitive bird species, the burrowing owl and the loggerhead shrike, were detected in the Dunes.

Within the coastal zone, 135.6 acres are found within the HRA of the Dunes. Relatively undisturbed areas (about 40 acres) surrounding the Very High Omni Range Navigation Beacon provide the most representative example of this community. Ecological restoration efforts undertaken between 1987 and 1994 have restored an additional 95.6 acres. The host plant and primary food source for the El Segundo blue butterfly is coast buckwheat (*Eriogonum parvifolium*), which is found in this biotic community. Southern Foredune may intergrade with Southern Dune Scrub.⁹

There are 20 sensitive plant species designated by federal or state agencies that were determined to have the potential to be present within the LAX Master Plan Boundaries. Surveys conducted for sensitive plant species identified three sensitive plant species within the coastal zone. Lewis' evening primrose (*Camissonia lewissii*), El Segundo duneflower (*Pholisma paniculaum*), and California spineflower (*Mucronea californica*) were identified within the Southern Foredune community. The remaining 17 sensitive plant species were determined absent within the coastal zone.

2.3.2 Southern Dune Scrub (CNDDDB Element Code 21330)

Southern Dune Scrub is a dense coastal scrub community of scattered shrubs, subshrubs, and herbs that are generally less than 1 meter in height, often developing considerable cover, and often succulent.¹⁰ Characteristic species include saltbush (*Atriplex leucophylla*), California croton (*Croton californicus*), desert tea (*Ephedra californica*), coast goldenbush (*Isocoma menziesii* var. *vernonioides*), bush lupine (*Lupinus chamissonis*), box thorn (*Lycium brevipes*), prickly pear (*Opuntia littoralis*), lemonade-berry (*Rhus integrifolia*), jojoba (*Simmondsia chinensis*), and the nonnative crystalline iceplant (*Mesembryanthemum crystallinum*). Along the coast, Southern Dune Scrub intergrades with the Southern Foredune plant community.¹¹ Many of the wildlife species in the Southern Foredune community are also found in the Southern Dune Scrub community.

Southern Dune Scrub is considered by the CDFG Heritage Program to be among the most highly imperiled natural communities in California. The Dunes contain virtually the only remaining example of this plant community in mainland Southern California. Within the Dunes, the Southern

⁹ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

¹⁰ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

¹¹ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

Dune Scrub community is found only within the HRA along the steep slope of the backdune (Figure 2.3-1). The Southern Dune Scrub community is comprised of 24.4 acres. The host plant and primary food source for the El Segundo blue butterfly is coast buckwheat, which is found in this biotic community. Because the backdune is subject to lower thermal stress and wind dehydration, the vegetative cover of the Southern Dune Scrub community is typically denser than that of the Southern Foredune community.

2.3.3 Valley Needlegrass Grassland (CNDDDB Element Code 42110)

The deflation plain east of the backdune consists of loosely consolidated (incipient) sandstone covered to variable depths with aeolian (wind-transported) sand. Such deflation areas are commonly found behind coastal dune systems and where erosion down to or near the water table occurs, commonly supporting vernal pools.¹² Limited information is available regarding the historic vegetation of the deflation plain of the Dunes and the sand-dominated substrates that extend inland because extensive disturbance occurred before any botanical studies could be conducted. Historical documents refer to the area as "meadow." Recently, the area has been referred to as the "Los Angeles Coastal Prairie." Although the Los Angeles Coastal Prairie has been overlooked by Holland¹³ as a distinct association, Mattoni has reported on the unique characteristics of this habitat, including the predominance of an herbaceous plant community with extensive vernal pools.¹⁴ This community is considered an instance of Valley Needlegrass Grassland. The deflation plain area is referred to herein as "Valley Needlegrass Grassland," as classified by Holland. The Valley Needlegrass Grassland community occupies 17.1 acres within the HRA and is limited to three distinct areas adjacent to and west of Pershing Drive (Figure 2.3-1). According to Pierce and Pool,¹⁵ the "meadow" was historically composed of the perennial nodding needlegrass (*Nassella [Stipa] cernua*), several annual native grasses, and a number of flowering forbs (herbaceous plants that are not grasses but are associated with grasses). A photograph of the area in 1938 shows a predominance of forbs over grasses.

Many common species of birds are known to utilize this biotic community, including western meadowlark (*Sturnella neglecta*), English sparrow (*Passer domesticus*), killdeer (*Charadrius vociferous*), and mourning dove (*Zenaida macroura*). Butterflies and moths known to occur in this community are the cabbage white butterfly (*Pieris rapae*), the buckeye (*Junonia coenia*), and the common hairstreak (*Strymon melinus*). Reptiles known to occur in this community include the side-blotched lizard (*Uta stansburiana*) and southern alligator lizard (*Gerrhonotus multicarinatus*).

The Valley Needlegrass Grassland community has been significantly altered and degraded by development activities. The floral components typically associated with it are now almost completely absent due to extensive grading and paving and the invasion of exotic annual grasses. No vernal pools exist in the community today.

¹² Barbour, M.G. and A.F. Johnson. 1998. "Beach and dune." In *Terrestrial Vegetation of California*, 2nd Edition. Edited by Barbour, M.G. and J. Major.

¹³ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

¹⁴ Mattoni, R. and T.R. Longcore. 1997. "The Los Angeles Coastal Prairie, A Vanished Community," *Crossosoma* 23(2): 71-102.

¹⁵ Pierce, W.D. and D. Pool. 1938. "The Fauna and Flora of the El Segundo Sand Dunes." *Bulletin of the Southern California Academy of Science* 37:93-97.

2.3.4 Disturbed Dune Scrub/Foredune

This community is made up of 74.6 acres and is located north of the HRA, south of Waterview Street, west of Pershing Drive, and east of Vista Del Mar Boulevard, and it is bisected by Sandpiper Street (Figure 2.3-1). This biotic community is heavily disturbed and is dominated by invasive species that drive out native vegetation. Nonnative species present include acacia, iceplant, exotic annual grasses, and several large patches of giant reed (*Arundo donax*). The few coastal dune elements are patchy and include burbush, dunes evening primrose, bush lupine, pink sand verbena, and deerweed. Coast buckwheat, a plant species necessary to support the El Segundo blue butterfly, is absent from this site. Structural remnants belonging to former residences and an abundance of varied debris can be found among the sandy substrate.

2.3.5 Nonnative Grassland (CNDDDB Element Code 42220)/Ruderal

Nonnative Grassland/Ruderal areas are those that have been subjected to past disturbance. They are dominated by exotic annual grasses with nonnative forbs interspersed. The red fox (*Vulpes vulpes*) has invaded this community and uses it for foraging. Birds commonly found foraging and nesting in this biotic community include western meadowlarks (*Sturnella neglecta*), English sparrows, killdeer, mourning doves, American kestrels (*Falco sparverius*) and red-tailed hawks (*Buteo jamaicensis*). The same butterflies, moths, and reptiles found within the Valley Needlegrass Grassland community are found here.

This biotic community is comprised of 16.9 acres within the coastal zone that was once a residential area (Figure 2.3-1). Currently, the community undergoes regular operations maintenance and is routinely mowed.

2.3.6 Developed

Developed areas within the Dunes occupy 25.7 acres within the HRA and 12.8 acres within the non-restructured dunes adjacent to and to the north of the HRA. Developed areas include the airfield, terminals, parking, roads, support facilities, and the network of streets within the Dunes as well as current navigational aids and associated service roads.

2.4 WETLANDS

A comprehensive wetlands analysis addressing the potential effects of the LAX Master Plan on lakes, rivers, streams, wetlands, and other special aquatic habitats protected by the federal and state governments, is fully described in Section 4.12, *Wetlands*, of the Final EIR.¹⁶ Field efforts undertaken between 1997 and 1998 in support of the wetlands analysis did not identify wetlands within the Dunes. Until 1994, a small artificial freshwater marsh was supported by a leaking water pipe to the south of the entrance to the site; however, it did not meet the U.S. Army Corps of Engineers criteria for wetland soils, hydrology, or vegetation. There are no wetlands within the Dunes; therefore, further discussion of wetlands is not warranted.

¹⁶ City of Los Angeles. April 2004. *Final Environmental Impact Report*. Available at: <http://www.laxmasterplan.org>.

SECTION 3.0

PROJECT GOALS

This section addresses the goals set forth for the habitat restoration of 5.6 acres of coastal dune habitat within the coastal zone as a result of the construction of navigational aids in support of Alternative D of the Los Angeles International Airport (LAX) Master Plan and the removal of navigational aids no longer required to assist aircraft approaching LAX from the west. The goals are five-fold and include the conservation of state-designated sensitive habitats within and adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (HRA), the conservation of floral resources (Lewis' evening primrose), the conservation of faunal resources, the replacement of state-designated sensitive habitats, and the conservation of the El Segundo blue butterfly. The goals are reflected in five mitigation measures, namely MM-BC-1, M-BC-2, MM-BC-9, MM-BC-13, and MM-ET-4, which have been revised as a result of ongoing coordination between the U.S. Department of Transportation Federal Aviation Administration (FAA) and the California Coastal Commission (CCC).

MM-BC-1: CONSERVATION OF STATE-DESIGNATED SENSITIVE HABITAT WITHIN AND ADJACENT TO THE EL SEGUNDO BLUE BUTTERFLY HABITAT RESTORATION AREA

The goal of MM-BC-1 is to ensure that the state-designated sensitive habitats within the HRA are conserved and protected during construction, operation, and maintenance. A description of construction avoidance measures and preconstruction evaluation is described in Section 6.0, *Maintenance and Monitoring Plan*.

MM-BC-2: CONSERVATION OF FLORAL RESOURCES: LEWIS' EVENING PRIMROSE

MM-BC-2 is designed to compensate for the loss of individuals of the sensitive Lewis' evening primrose within the HRA that will be removed as a result of the construction of navigational aids in support of Alternative D of the LAX Master Plan. The goal of this mitigation measure is to ensure the establishment the same number of plants as the number impacted. A description of directed surveys to be undertaken for the Lewis' evening primrose and subsequent restoration efforts are described in Section 4.0, *Restoration Plan*, where details of the restoration efforts for MM-BC-13 and MM-ET-4 are also described.

MM-BC-9: CONSERVATION OF FAUNAL RESOURCES

The primary purpose of MM-BC-9 is to compensate for the loss of habitat units for sensitive species within the LAX Airfield Operation Area (AOA), which is outside the scope of this plan. A component of this measure, as it relates to the Los Angeles/El Segundo Dunes (Dunes), is to conduct preconstruction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl. The goal of this mitigation measure is to ensure that sensitive faunal resources will not be affected by the construction or removal of navigational aids in the Dunes. A description of preconstruction survey methods and relocation efforts are described in Section 5.0, *Implementation Plan*.

MM-BC-13: REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITATS

The goal of MM-BC-13 is to mitigate for the loss of state-designated sensitive habitat within the Dunes as a result of the removal of navigational aids within and adjacent to the northern part of the

HRA (Figure 1-2). Removal of navigational aids and associated service roads under Alternative D of the LAX Master Plan would result in impacts to 1.94 acres of state-designated sensitive habitat within the Dunes. Mitigation for these impacts includes revegetation of all impacted areas and the restoration of Southern Foredune habitat within Subsite 23 to achieve a total mitigation ratio of 2:1. The total acreage for restoration within Subsite 23 associated with this mitigation measure and that of MM-ET-4 is 4.4 acres.

MM-ET-4: EL SEGUNDO BLUE BUTTERFLY CONSERVATION: HABITAT RESTORATION

The mitigation objectives of MM-ET-4 include salvaging and transplanting all coast buckwheat to be removed for navigational aid development within Subsite 23 of the HRA and restoring 3 acres of Southern Foredune habitat within Subsite 23 of the HRA. These activities shall be undertaken three years prior to implementation of proposed navigational aids to ensure that there is no net loss of occupied habitat. The overall goal of the mitigation is to provide habitat for the El Segundo blue butterfly that meets the physiological and ecological requirements of the species. The goal is to ensure that all necessary steps to avoid the flight season of the El Segundo blue butterfly (June 14–September 30) are implemented when undertaking installation of navigational aids and associated service roads proposed under Alternative D of the LAX Master Plan within habitat occupied by the El Segundo blue butterfly.

SECTION 4.0

RESTORATION PLAN

Ecological restoration is usually defined as an attempt to recreate fully functioning historic ecosystems. Ecological restoration may be differentiated from revegetation, which typically has the more limited objective of reestablishing plant cover on disturbed ground. Habitat enhancement refers to a focus on a particular species or set of species for which the area in question functions as habitat. For example, the 1988 to 1994 ecological restoration efforts at the Los Angeles/El Segundo Dunes (Dunes) involved planting a suite of plant species historically present within the Dunes and included the planting of coastal buckwheat shrubs to enhance the area as habitat for the endangered El Segundo blue butterfly. Ecosystem or habitat creation is also an option when true ecological restoration is not considered financially or technically feasible or when other objectives are more important. Mitigation measures MM-BC-13 and MM-ET-4 involve the restoration of habitat historically present at the Dunes, while MM-BC-2 involves revegetation with Lewis' evening primrose to mitigate for the losses associated with the construction of navigational aids.

Restoration efforts undertaken between 1988 and 1994 were based on a species composition and density determined by the initial quantitative sampling of vegetation assemblages, including meadow, backdune, and foredune habitats within the Dunes.¹⁷ Four transects were established and vegetation data was gathered and analyzed. The analysis resulted in the development of a restoration model that was implemented. The same restoration model and nomenclature for subsites have to be used for this restoration plan.¹⁸

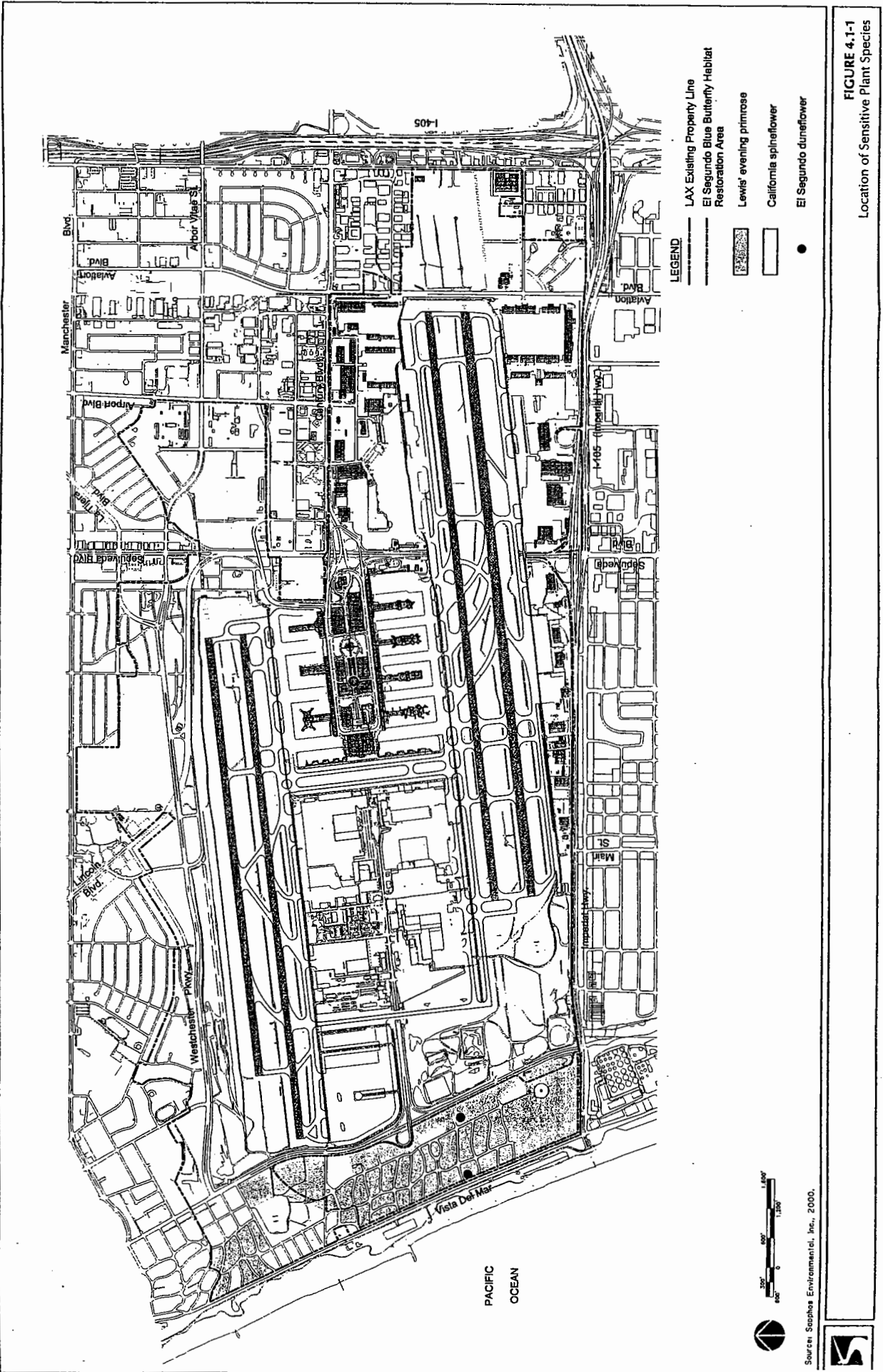
4.1 CONSERVATION OF FLORAL RESOURCES – LEWIS' EVENING PRIMROSE (MM-BC-2)

The areas occupied by Lewis' evening primrose east and west of Pershing Drive are approximately 150 feet apart and most likely represent one inclusive population (Figure 4.1-1, *Location of Sensitive Plant Species*). The area east of Pershing Drive occupied by Lewis' evening primrose is relatively small (300 plants within 2.5 acres) and close to the occupied area within the Dunes (including 9,051 plants within the 200-acre El Segundo Blue Butterfly Habitat Restoration Area (HRA)); therefore, this current configuration does not provide a substantial risk-spreading benefit.

Mitigation for the potential loss of Lewis' evening primrose individuals shall be conducted through the collection of seed east of Pershing Drive and within the HRA followed by the broadcast of seed within Subsite 23. The U.S. Department of Transportation Federal Aviation Administration (FAA), or its designee, shall collect seed from those plants to be removed and properly clean and store the collected seed until used. If possible, seeds shall be collected in multiple years to ensure an adequate seed supply for planting. Collected seed shall be broadcast (distributed) within the 4.3-acre Subsite 23 after the first wetting rain. FAA, or its designee, shall implement a monitoring plan

¹⁷ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

¹⁸ At the beginning of the 1987–1988 research program, the entire 302-acre Dunes property was subdivided into 60 subsites to serve as reference for restoration studies and activities. The subsites were selected on the basis of such factors as soil conditions, plant communities, aerial photographic record, prior butterfly distribution studies, history of environment-modifying activities, and readily available features (e.g., old streets, obvious shifts in soil type, crests, and toes of slope) to enable rapid visual orientation in the field. Individual subsites reveal some biotic and physical variation; they also serve as useful references for description of the Dunes and have proven useful for continuing monitoring and management activities.



to monitor the establishment of individuals of Lewis' evening primrose for a period of not more than five years. Performance criteria shall include the establishment of the same number of plants as the number impacted in the first year following the distribution of seed within the mitigation site. Performance criteria shall also include confirmation of recruitment for two years following the first year that flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year that flowering is observed. Monitoring shall be undertaken in the manner set forth in Section 6.0, *Maintenance and Monitoring Plan*, of this habitat restoration plan. The area will receive monitoring and management for the presence of Lewis' evening primrose individuals equal to or greater than the number of individuals impacted by installation or removal of navigational aids.

4.2 REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITATS (MM-BC-13)

FAA, or its designee, shall undertake mitigation for the loss of state-designated sensitive habitat within the Dunes, including the HRA. Installation of navigational aids and associated service roads under Alternative D of the Los Angeles International (LAX) Master Plan would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Dunes. These 1.53 acres will be replaced at a 2:1 ratio within Subsite 23 of Dunes for a total of 3.06 acres. Additionally, the removal of navigational aids no longer required to assist aircraft approaching from the west has the potential to disturb an estimated 1.4 acres of habitat. These 1.4 acres will be replaced at a 2:1 ratio for a total of 2.92 acres in two locations: 1.4 acres will be undertaken in-situ, and 1.4 acres will be undertaken within Subsite 23. The in-situ restoration of 1.4 acres consists of planting dominant species of both Southern Foredune and Valley Needlegrass Grassland, while restoration of Subsite 23 consists of planting species of Southern Foredune only. The revegetation plan for 1.4 acres of Southern Foredune vegetation type and Valley Needlegrass Grassland within the HRA requires planting specifications and schedules, a weed eradication program, and an irrigation plan, which are provided in Sections 5.0, *Implementation Plan*, of this habitat restoration plan.

4.2.1 In-situ Valley Needlegrass Grassland Restoration

Valley Needlegrass Grassland – Deflation Plain

In-situ restoration efforts will occur within Subsites 47–52 following the removal of existing navigational aids. Subsites 51 and 52 are historically characterized as Valley Needlegrass Grassland and will be revegetated accordingly. This grassland was once part of a larger area referred to as the "Los Angeles Coastal Prairie." The Los Angeles Coastal Prairie is (or was) an instance of Valley Needlegrass Grassland, as classified by Holland.¹⁹ At the Dunes, the grassland plant community was composed of nodding needlegrass (*Nassella* [Stipa] *cernua*) and a number of flowering forbs (herbaceous plants that are not grasslike but are associated with grasses). When Pershing Drive was widened and realigned in 1974, the deflation plain slack area was scraped, and the soil substrate was removed. The area was then hydromulched with a native but inappropriate seed mix that resulted in the transformation of the forb-dominated prairie into one dominated by California buckwheat, iceplant, and Mediterranean grasses. The removal of these species was the focus of previous restoration efforts and continues to be the focus of ongoing maintenance efforts.

¹⁹ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

Plant Palette

Any areas within Subsites 51 and 52 that have been disturbed due to removal of navigational aids will be revegetated with nodding needlegrass (*Nassella cernua*). Additionally, the following species will be distributed as broadcast seed: Dunes primrose (*Camissonia chieranthifolia*), Lewis' evening primrose (*Camissonia lewisii*), yellow pincushion (*Chaenactis glabriuscula*), slender eriogonum (*Eriogonum gracile*), deerweed (*Lotus scoparius*), California poppy (*Eschscholzia californica*), bedstraw (*Gnaphalium biocolor*), California croton (*Croton californica*), and fescue (*Festuca megalura*).

Propagation

Propagation and planting of nodding needlegrass will be accomplished by the propagation from seed collected on site during late spring/early summer. Seed shall be properly cleaned, dried, and stored until used. In late summer, nodding needlegrass seed will be propagated by a qualified contract grower in 2-inch thimble pots and properly maintained. Seed collection for species to be distributed as broadcast seed will be undertaken during the appropriate time of year, and the collected seed will be properly cleaned and stored until used. If possible, seeds shall be collected in multiple years to ensure an adequate seed supply for broadcast.

Plant Installation

Nodding needlegrass shall be planted at a rate of 1,500 plants per acre (18 inches on center, as previously described in the restoration model for the Dunes).²⁰ Planting shall take place in the fall or after the first wetting rain. Maintenance of restoration plantings shall consist of adequate irrigation and weed abatement, as described in Section 6.0, *Implementation Plan*.

4.2.2 In-situ Southern Foredune Restoration

Southern Foredune

In-situ restoration efforts will occur within Subsites 23, 47, and 49 following the removal of existing navigational aids. Under MM-ET-4, these subsites will be restored with Southern Foredune vegetation. Of the three communities described on the Dunes, the "pioneer community" is most likely associated with the foredune.²¹ The foredune historically supported red sand verbena, pink sand verbena (*Abronia umbellata*), silver beach bur (*Ambrosia chamissonis*), beach morning glory (*Calystegia soldonella*) (no longer present), spectacle pod (*Dithyrea californica* var. *maritime*) (no longer present), and Russian thistle (*Salsola tragus*). Undisturbed areas in the southern-most portion of the Dunes provide the most representative example of this community. As described by Holland, the community is dominated by perennial species with a high proportion of suffrutescent plants (shrubby but not very woody) up to 30 centimeters (~12 inches) tall.²²

²⁰ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

²¹ Pierce, W.D. and D. Pool. 1938. "The Fauna and Flora of the El Segundo Sand Dunes." *Bulletin of the Southern California Academy of Science* 37:93-97.

²² Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. A Non-Game Heritage Program. California Department of Fish and Game. Sacramento.

On undisturbed foredune area, individual plants are usually spaced 2 to 3 feet apart. Mature perennial shrubs, such as coastal buckwheat (*Eriogonum parvifolium*), dunes lupine (*Lupinus chamissonis*), and silver beach bur are usually separated by 2 to 3 feet. The reason for this spacing is not clear but is probably related to water availability and/or underground root growth into a zone where the plants compete for water and/or nutrients.

Plant Palette

All plants within the plant palette (Table 4.2.2-1, *Southern Foredune Plant Palette: In-situ Restoration*) were chosen based on their natural occurrence in southern foredune communities and their establishment success during the 1988–1994 restoration efforts.²³ Table 4.2.2-1 depicts the species to be planted, species density, and species size at the time of planting. The long-term plant density target has been determined based on the average size, growth form, and longevity of individual plants. Initial densities were determined to be adequate to achieve the long-term plant density target. All plants, with the exception of coastal prickly pear, will be planted as container plants.

As a result of coordination efforts undertaken between CCC, FAA, and LAWA, it has been mutually agreed to that in lieu of including coast buckwheat within the plant palette for in-situ restoration of the Southern Foredune plant community, enhancement of the 4.3-acre Subsite 22 within the HRA will be undertaken by planting the appropriate number of coast buckwheat plants sufficient to enhance existing clusters of buckwheat and to establish a new cluster. Subsite 22 has been identified as an appropriate site for the enhancement plantings due to the current low numbers of coast buckwheat individuals (approximately 56 coast buckwheat plants), thus providing opportunities to not only enhance the existing clusters of buckwheat but to establish a new cluster of plants. While Subsite 22 will be monitored concurrently with monitoring efforts at Subsite 23, no success criteria are established for plantings within Subsite 22.

²³ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

**TABLE 4.2.2-1
SOUTHERN FOREDUNE PLANT PALETTE: IN-SITU RESTORATION**

Plant Species	Density (plants per acre)	Size (gallons)
Primary perennial species for foredune revegetation		
Coastal buckwheat* <i>Eriogonum parvifolium</i>	TBD	1
Coast goldenbush <i>Ericameria [Haplopappus] ericoides</i>	385	1
California encelia <i>Encelia californica</i>	146	1
Bladderpod <i>Isomeris arboreus</i>	195	1
Narrow-leaved bedstraw <i>Galium angustifolium</i>	129	1
Coastal prickly pear <i>Opuntia littoralis</i>	125	cuttings
Secondary plant species of the foredune to be introduced as container plants		
Morning glory <i>Calystegia macrostegia</i>	158	1
California aster <i>Corethrogyne filaginifolia</i>	225	1
Butterweed <i>Senecio douglasii</i>	88	1
Saltgrass <i>Distichlis spicata</i>	52	1
Lance-leaf dudleya <i>Dudleya lanceolata</i>	46	1
California sagebrush <i>Artemisia californica</i>	164	1

NOTE:

*Coast buckwheat to be revegetated as a result of the removal of navigational aids outside the HRA shall be planted within the HRA (Subsite 22).

Propagation

The planting palette shall be made up exclusively of native plants that are appropriate to the coastal dune habitat and Southern California coastal region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used.

All plants for restoration shall be propagated from seed collected within the Dunes and supplemented by a qualified contract grower, as needed, with local stock. Collection of coast buckwheat seed on the Dunes with no adverse effect on the El Segundo blue butterfly shall take place from September 15 through June 1 of any given year. All plants listed in the plant palette shall have seed collected following the flight season of the El Segundo blue butterfly. The El Segundo blue butterfly flight season is from mid June through early September. Seed shall be cleaned and stored in a cool, dry location until propagation begins in October 2004. Propagation should be conducted at a reputable nursery, allowing four to six months for seedlings to reach a suitable size for out planting.

Plant Installation

Planting of stock shall be in the existing substrate. Prior to plant installation, a qualified habitat restoration specialist shall place colored, pin flags on the enhancement site to mark planting locations of the shrubs. The placement of these flags shall be in concurrence with Appendix A, *Draft Implementation Plan*, and set forth according to Appendix B, *Planting and Irrigation Specifications*. The limits of the restoration site shall also be clearly marked with wooden stakes and delineated using a global positioning system (GPS) unit.

Foredune vegetation stock to be planted shall be healthy, vigorous, well-formed, and free from disease and environmental stress (e.g., windburn). Foredune vegetation stock shall be planted from 1-gallon containers into holes dug to a size twice the width and three times the depth of the container. Plants shall be removed from the container/sleeve, and if necessary, the sides of the root ball shall be scarified to promote root development. Plants shall be placed in the planting holes, as prescribed in Appendix B, so that the crown of the plant is at ground level. Excavated sand shall be used to fill the bottom of each hole to achieve the proper planting level and to backfill the remaining space around the root ball. Immediately after installation, plants shall be deep-soaked with sufficient water to reach the lower roots.

4.3 MITIGATION MEASURE MM-ET-4

MM-ET-4 has two restoration components associated with the conservation of the endangered El Segundo blue butterfly and the species' host plant, coast buckwheat. Subsite 23 of the HRA was selected as the site for implementation of MM-ET-4 due to the low shrub diversity present, as well as low numbers of coastal buckwheat, the foodplant for the El Segundo blue butterfly.

- Coast buckwheat plants are to be salvaged and relocated, along with any larvae on the plant or pupae in the soil below the plant that would be removed to accommodate the replacement navigational aids. These salvaged plants shall be replanted in Subsite 23 combined with previously established MM-BC-13 actions.
- 3.0 acres are to be restored in Subsite 23 to mitigate for the loss of 1.53 acres of state-designated sensitive habitat following the installation of navigational aids within and adjacent to the northern part of the HRA.

4.3.1 Specifications for Coast Buckwheat Salvage and Relocation

Salvage and Transplant

All coast buckwheat to be removed during installation of navigational aids shall be salvaged and transplanted to Subsite 23 within the HRA. Prior to installation of navigational aids, a permitted and qualified biologist shall salvage El Segundo blue butterfly larvae in order to minimize impacts to the butterfly. Salvage and transplantation efforts will take place after the onset of winter rains in January, which coincides with the normal period of dormancy of coast buckwheat. Each plant shall be excavated with its entire root ball such that sand at the base of each plant is disturbed to the least extent possible. Each plant will be transported in a suitable container and planted immediately in Subsite 23.

4.3.2 Southern Foredune Restoration (Subsite 23)

Plant Palette

All plants within the plant palette (Table 4.3.2-1, *Southern Foredune Plant Palette: Subsite 23*) were chosen based on their natural occurrence in Southern Foredune communities and their establishment success during the 1988–1994 restoration efforts.²⁴ Table 4.3.2-1 depicts the species to be planted, the species density, and the species size at the time of planting. The long-term plant density target has been determined based on the average size, growth form, and longevity of individual plants. Initial densities were determined to be adequate to achieve the long-term plant density target. All plants, with the exception of coastal prickly pear, will be planted as container plants.

²⁴ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

TABLE 4.3.2-1
SOUTHERN FOREDUNE PLANT PALETTE: SUBSITE 23

Plant Species	Density (plants per acre)	Size (gallons)
Primary perennial species for foredune revegetation		
Coastal buckwheat <i>Eriogonum parvifolium</i>	200	1
Coast goldenbush <i>Ericameria [Haplopappus] ericoides</i>	30	1
California encelia <i>Encelia californica</i>	75	1
Bladderpod <i>Isomeris arboreus</i>	60	1
Narrow-leaved bedstraw <i>Galium angustifolium</i>	75	1
Coastal prickly pear <i>Opuntia littoralis</i>	33	cuttings
Secondary plant species of the foredune to be introduced as container plants		
Morning glory <i>Calystegia macrostegia</i>	30	1
California aster <i>Corethrogyne filaginifolia</i>	150	1
Butterweed <i>Senecio douglasii</i>	30	1
Saltgrass <i>Distichlis spicata</i>	15	1
Lance-leaf dudleya <i>Dudleya lanceolata</i>	150	1
California sagebrush <i>Artemisia californica</i>	15	1

Propagation

The planting palette shall be made up exclusively of native plants that are appropriate to the coastal dune habitat and southern California coastal region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used.

All plants for restoration shall be propagated from seed collected within the Dunes and supplemented by a qualified contract grower as needed with local stock. Collection of coast buckwheat seed on the Dunes with no adverse effect on the El Segundo blue butterfly shall take place from September 15 through June 1 of any given year. All plants listed in the plant palette shall have seed collected following flight season of the El Segundo blue butterfly. The El Segundo blue butterfly flight season is from mid June through early September. Seed shall be cleaned and stored in a cool, dry location until propagation begins in October 2004. Propagation should be conducted at a reputable nursery, allowing four to six months for seedlings to reach a suitable size for out planting.

Plant Installation

Planting of stock shall be in the existing substrate. Prior to plant installation, a qualified habitat restoration specialist shall place colored, pin flags on the enhancement site to mark planting locations of the shrubs, as described in Appendix A. The placement of these flags shall also be in concurrence with Appendix B. The limits of the restoration site shall also be clearly marked with wooden stakes and delineated using a GPS unit.

Foredune vegetation stock to be planted shall be healthy, vigorous, well-formed, and free from disease and environmental stress (e.g., windburn). Foredune vegetation stock shall be planted from 1-gallon containers into holes dug to a size twice the width and three times the depth of the container. Plants shall be removed from the container/sleeve, and if necessary, the sides of the root ball shall be scarified to promote root development. Plants shall be placed in the planting holes, as prescribed in Appendix B, so that the crown of the plant is at ground level. Excavated sand shall be used to fill the bottom of each hole to achieve the proper planting level and to backfill the remaining space around the root ball. Immediately after installation, plants shall be deep-soaked with sufficient water to reach the lower roots.

4.3.3 Coast Buckwheat Enhancement (Subsite 22)

As a result of coordination efforts undertaken between CCC, FAA, and LAWA, it has been mutually agreed to that in lieu of including coast buckwheat within the plant palette for in-situ restoration of the Southern Foredune plant community, enhancement of the 4.3-acre Subsite 22 within the HRA will be undertaken by planting the appropriate number of coast buckwheat plants sufficient to enhance existing clusters of buckwheat and to establish a new cluster. Subsite 22 has been identified as an appropriate site for the enhancement plantings due to the current low numbers of coast buckwheat individuals (approximately 56 coast buckwheat plants), thus providing opportunities to not only enhance the existing clusters of buckwheat but to establish a new cluster of plants. While Subsite 22 will be monitored concurrently with monitoring efforts at Subsite 23, no success criteria are established for plantings within Subsite 22.

Subsite 22 will be surveyed to identify appropriate areas for the enhancement of existing clusters of coast buckwheat and for the establishment of a new cluster.

SECTION 5.0 IMPLEMENTATION PLAN

This section of this habitat restoration plan describes site preparation, an irrigation plan, planting schedule, and a strategy for weed eradication. The planting plan and irrigation plan is provided in Appendix A. Planting and irrigation specifications are provided in Appendix B. In developing the implementation plan, site preparation techniques most applicable to this restoration/revegetation plan were taken from the Long-Term Habitat Management Plan and provide the basis for the invasive plant removal techniques presented in this section.²⁵ The planting schedule will reflect the optimal time for plant installation and the recommended irrigation plan.

5.1 SITE PREPARATION: INVASIVE PLANT REMOVAL

During the 1988–1994 restoration efforts, the most cost- and labor-intensive aspects of revegetation were completed. Nonnative plants, primarily iceplant and acacia, were largely removed within the El Segundo Blue Butterfly Habitat Restoration Area (HRA), and the site had been revegetated with plant species that are characteristic of the Los Angeles/El Segundo Dunes (Dunes). It was the intent of the Long-Term Habitat Management Plan to continue a maintenance and monitoring plan in order to support completed efforts. The success of future restoration efforts within the HRA is contingent on the removal of nonnative plants during the site preparation process and during subsequent monitoring periods. During site preparation, should nonnative species be determined to be common (greater than 15-percent cover), a buffer area of 10–15 feet around each restoration polygon will also be weeded.

5.1.1 Iceplant, Acacia, and California Buckwheat

The invasive capacity of the iceplant and acacia species and their capability of rapidly recolonizing the site make continued vigilance in their removal the first priority in vegetation management. Seeds of acacia are present in the soil and will remain viable and continue to germinate and grow for some years. Acacia also expands vegetatively from stumps left in the ground or from roots. Iceplant spreads from an extensive seed bank and expands vegetatively from parts of the plant left in the soil. Although iceplant has been removed manually throughout the 200-acre preserve area and the numbers of both sets of plants have been greatly reduced, small plants continue to regenerate throughout the site; continued removal should be carried out on a routine basis. It is anticipated that regular, intensive eradication efforts will be necessary for a period of at least five years.

California buckwheat (*Eriogonum fasciculatum*) was introduced to the Dunes area through the use of an inappropriate seed mix in hydromulching along Pershing Drive. The subsequent expansion of California buckwheat at the expense of the indigenous coastal buckwheat (*Eriogonum parvifolium*) was one factor contributing to the decline of the El Segundo blue butterfly on site. While an attempt has been made to remove California buckwheat from the Dunes, it still persists as a

²⁵ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles Airport/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

problem, particularly in prairie subsites. As with iceplant and acacia, an annual inspection and program for removal of California buckwheat is required.

Subsite 23 should be inspected to determine where iceplant and acacia need to be removed. Both small and large patches of iceplant should be uprooted and removed from the HRA. Acacia stumps should be treated with herbicide as a follow-up treatment, as necessary (see precautions involving handling of herbicides discussed below). During site preparation and subsequent monitoring, California buckwheat should be identified, cut and daubed with herbicide, and hauled off site along with acacia and iceplant.

5.1.2 Exotic Annual Weeds

Mustard (*Brassica nigra*) and other exotic annual weeds, mostly grasses such as oats (*Avena sp.*), brome (*Bromus sp.*), and barley (*Hordeum sp.*), are present on site. Unlike iceplant or acacia, it is unlikely these species will ever be entirely eradicated from the site, and that should not be a management objective.

In areas within Subsite 23, where exotic annual weeds occur in large numbers and threaten young plants, these annuals should be removed by hand, preferably prior to seed set. Ongoing removal efforts are effective in reducing the recurring seed bank. Some efforts should be made to manage their numbers. In general, as the dune scrub shrubs mature and native vegetation becomes established, problems with mustard and other annual weeds should decline.

5.1.3 Nonnative Trees

Nonnative tree species remaining on site include more than one species of palm, Peruvian pepper trees, and seedlings of *Myoporum*. Nonnative tree species provide habitat for European starlings, a flocking species that constitutes a potential hazard for air strikes. In addition, these nonnative trees are inconsistent with the goal of restoring plant communities that historically occurred at the Dunes.

All nonnative trees (in addition to Acacia) within Subsite 23 should be removed prior to implementation of this habitat restoration plan. Each tree should be surveyed (prior to removal) for nesting birds, which are provided protection pursuant to the federal Migratory Bird Treaty Act. Nesting birds should be removed in the fall (between August and February) when breeding birds are not expected on site. Tree removal is best carried out by trained landscape personnel.

5.1.4 Giant Reed, Castor Bean, and Pampas Grass

While the populations of the nonnative invasive giant reed (*Arundo donax*), castor bean (*Ricinus communis*), and pampas grass (*Cortaderia sellona*) do not appear to be expanding rapidly, giant reed has a tremendous capacity to invade natural vegetation where adequate water is available. Many riparian areas in Southern California have been transformed into giant reed monocultures over the course of a few years. It is likely that giant reed's presence on site is tied to the presence of water through irrigation. However, giant reed is also present on the portion of the Dunes outside of the preserve area where there is no irrigation. Pampas grass seed is dispersed by wind and is most likely to colonize leeward areas where other weedy vegetation may have been removed prior to revegetation and recolonization of native perennials. All three species present a potential problem to vulnerable native communities.

Nonnative invasive perennial pest species such as giant reed, castor bean, and pampas grass should be eradicated using manual and chemical methods. Giant reed is most easily eradicated in early spring when the plants are producing new foliage. The canes should be cut near the ground, the stumps should be painted directly with herbicide, and all cut material should be removed from site with care so as not to leave behind any pieces of stem. Even very tiny pieces are capable of resprouting. Castor bean is also most effectively removed in spring prior to the production of seed pods. Herbicides must be applied under the supervision of an individual with a qualified applicators certificate (QAC). All individuals involved in the application of herbicides must receive safety training and wear the appropriate protective gear. With these requirements, it will be most cost-effective for existing City Landscape Crews. Remnant plant material from giant reed and castor bean is not suitable for use as compost due to the ability of these materials to rapidly recolonize from seed and plant material.

5.2 IMPLEMENTATION

Planting specifications for Valley Needlegrass Grassland and Southern Foredune restoration are detailed in Appendix A and Appendix B.

5.3 SCHEDULE

5.3.1 Valley Needlegrass Grassland

Valley Needlegrass Grassland stock shall be planted at least three years prior to the installation of the navigational aid lighting system. As described above, salvage and transplantation efforts for coastal buckwheat shall take place after the onset of winter rains and prior to April 15, 2005. The planting of stock shall also be undertaken within the same period. Installation of plants during the winter season may potentially reduce the need for supplemental irrigation and facilitate successful establishment.

5.3.2 Coast Buckwheat

All plants for restoration shall be propagated from seed collected within the Dunes and supplemented by a qualified contract grower, as needed, with local stock. Collection of coast buckwheat seed on the Dunes with no adverse effect on the El Segundo blue butterfly shall take place from September 15 through June 1 of any given year. All plants listed in the plant palette shall have seed collected following the flight season of the El Segundo blue butterfly. The El Segundo blue butterfly flight season is from mid June through early September. Seed collection shall begin in September 2004 and may continue each year thereafter, until the appropriate amount of seed is collected to achieve the required planting densities and to meet the performance criteria. Seed shall be cleaned and stored in a cool, dry location until propagation begins in October 2004. Propagation is anticipated to occur from October through December 2004. Propagation should be conducted at a reputable nursery, allowing four to six months for seedlings to reach a suitable size for out planting.

5.3.3 Planting Schedule

Coast buckwheat shall be planted at least three years prior to installation of the navigational aid lighting system. As described above, salvage and transplantation efforts shall take place after the onset of winter rains and prior to April 15, 2005, and planting of coast buckwheat stock shall also be undertaken within the same period.

5.4 IRRIGATION

Given the irregularity of rainfall in Southern California, supplemental irrigation shall be provided for two years to ensure the successful establishment of mitigation plantings. For restoration of the areas affected by installation of navigational aids and removal, water shall be manually applied from a water truck due to the infeasibility of providing a temporary irrigation system to this area (Appendix A and Appendix B).

An existing irrigation system proximal to Subsite 23 shall be used to aid in the establishment of coast buckwheat. A drip irrigation system shall be designed to accommodate the planting of clusters or groups of coast buckwheat plants. Drip irrigation systems (either surface or subsurface systems) allow for the efficient and effective use of water through precise application. Drip irrigation reduces the need to over water, reduces evaporation, and reduces or eliminates runoff. Supplemental irrigation of plant clusters or groupings shall be undertaken during the spring and summer months (April through September), or as determined necessary (for instance, during years of exceptionally low precipitation). Supplemental irrigation shall be administered during the first three years of plant establishment and growth.

5.5 SUCCESS CRITERIA

This section addresses the success criteria of Mitigation Measures MM-BC-2, MM-BC-13, and MM-ET-4, which involve restoration. Mitigation Measures MM-BC-1 and MM-BC-9 address the implementation of best management practices (BMP) and preconstruction surveys for sensitive wildlife and thus lie outside the scope of this section.

5.5.1 Mitigation Measure MM-BC-2

Performance criteria shall include the establishment of the same number of Lewis' evening primrose as the number impacted in the first year following the distribution of seed within the mitigation site. Performance criteria shall also include confirmation of recruitment for two years following the first year that flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year that flowering is observed. Final success criteria, to be determined at the end of the fifth year of monitoring, shall be characterized by the same number of Lewis' evening primrose within the mitigation site as the number impacted by navigational aid development.

5.5.2 Mitigation Measure MM-BC-13

MM-BC-13 involves the restoration of 1.4 acres of Southern Foredune, which is to be combined to the mitigation requirements of MM-ET-4 to achieve 4.4 acres of restoration within Subsite 23. The success criteria for restoration within Subsite 23 are addressed below for MM-ET-4. In addition, those areas impacted by the removal of navigational aids must be restored to Valley Needlegrass Grassland and Southern Foredune communities. The following section addresses the success criteria for each of these habitats.

5.5.3 Valley Needlegrass Grassland

Success criteria to be met include the attainment of at least a 10-percent cover of native grass in the first year, and 20-, 30-, 40-, and 45-percent cover of native grass species over a five-year period, as determined by the point-intercept transect method conducted during the spring, to facilitate the

identification of native annual species. Additional success criteria to be met include the attainment of at least a 20-percent cover of native species²⁶ during the first year, and 30-, 40-, 50-, and 60-percent cover of native species over a five-year period, and the attainment of a diversity coefficient of 7 at the end of five years, with no more than 15-percent cover in nonnatives and 0-percent cover in nonnative invasive species, as defined by the California Exotic Pest Plant Council. A diversity coefficient of 7 indicates that seven species (from the plant palette of 10 species) and additional native species typical of the habitat shall be present, with at least four native species having greater than 5-percent cover. It is anticipated that volunteer native species typical of the habitat will occupy the restoration polygons. The California Department of Fish and Game (CDFG) has adopted a 10-percent threshold of native grass cover as its criteria for significance of native grasslands.²⁷ If monitoring discerns any failure in performance goals, remedial plantings shall be undertaken. Habitat restoration shall be conducted by a qualified habitat restoration specialist.

5.5.4 Southern Foredune

Performance criteria to be met include the attainment of 10-, 20-, 30-, 40-, and 45-percent cover of native species, including perennials and annuals typical of the habitat, over a five-year period, as determined by the point-intercept method conducted during the spring, to facilitate the identification of annual species. Additional performance criteria to be met include the attainment of no more than 15-percent cover of nonnative species and 0-percent cover of nonnative invasive species, as defined by the California Exotic Pest Plant Council. In addition, the following model, as prescribed in the Long-Term Management Plan, shall be adhered to with the final value, in conjunction with a 45-percent cover of native species, determining the final success criteria (Table 5.5.4-1, *Southern Foredune Model: Subsite 23*). If monitoring discerns any failure in performance goals, remedial plantings shall be undertaken. Habitat restoration shall be conducted by a qualified habitat restoration specialist. As a result of coordination efforts between CCC, FAA, and LAWA, the coast buckwheat to be planted within Subsite 22 will be monitored and irrigated but will not be subject to success criteria.

²⁶ Native species will include those derived from the plant palette as well as any other species typical of the community.

²⁷ Keeley, J.E. 1990. "The California Valley Grassland." *Endangered Plant Communities of Southern California*, Southern California Botanists Special Publication, No. 3, p. 17.

**TABLE 5.5.4-1
SOUTHERN FOREDUNE MODEL: SUBSITE 23**

Plant Species	Model	Initial	Final
Primary perennial species for foredune revegetation			
<i>Eriogonum parvifolium</i>	130	200	130
<i>Ericameria [Haplopappus] ericoides</i>	20	30	20
<i>Encelia californica</i>	50	75	50
<i>Isomeris arboreus</i>	40	60	40
<i>Galium angustifolium</i>	50	75	50
<i>Opuntia littoralis</i>	22	33	22
Secondary plant species of the foredunes to be introduced as container plants			
<i>Calystegia macrostegia</i>	25	30	25
<i>Corethrogyne filaginifolia</i>	100	150	100
<i>Senecio douglasii</i>	25	30	25
<i>Distichlis spicata</i>	10	15	10
<i>Dudleya lanceolata</i>	25	30	25
<i>Artemisia californica</i>	10	15	10

5.5.5 Mitigation Measure MM-ET-4

Success of the enhancement effort shall be determined through the results of coast buckwheat and vegetation monitoring. Less than ten10 coast buckwheat plants exist in the vicinity of navigational aids scheduled for removal, and have supported the butterfly in two (1998 and 2000) of the seven years of directed surveys.²⁸ Five coast buckwheat plants were determined to be within 100 feet of the centerline of navigational aids. The two closest plants (2) were approximately 39 feet from the centerline of a single light standard and localizer antenna. Given that the numbers of salvaged coast buckwheat will be relatively low, the coast buckwheat to be planted pursuant to MM-BC-13 will be combined with the salvaged coast buckwheat to achieve the success criteria described below, within Subsite 23. The following success criteria are based on coast buckwheat survival and shall be met by the end of each monitoring year. If a success criterion is not met during a monitoring year, then another year of monitoring shall be added. Remedial action shall be taken to bring the enhancement site into compliance with the success criteria. The success criteria do not have to be met consecutively for five years.

Year 1

- Survival of 160 coast buckwheat per acre
- Exotic species cover not exceeding 15 percent

Year 2

- Survival of 160 coast buckwheat per acre
- Exotic species cover not exceeding 15 percent

²⁸ Sapphos Environmental, Inc. 2003. Updated Biological Assessment Technical Report for the Federally Endangered El Segundo Blue Butterfly (*Euphilotes battoides allyni*) at Los Angeles International Airport, Los Angeles, California. Prepared for: Los Angeles World Airports, One World Way West, Los Angeles, CA 90009. Prepared by: Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105.

Year 3

- Survival of 160 coast buckwheat per acre
- 20-percent increase in cover of coast buckwheat
- 50-percent flowering of coast buckwheat
- Exotic species cover not exceeding 15 percent

Year 4

- Survival of 130 coast buckwheat per acre
- 20-percent increase in cover of coast buckwheat
- 70-percent flowering of coast buckwheat
- Exotic species cover not exceeding 15 percent

Year 5

- Survival of 130 coast buckwheat per acre
- 130 coast buckwheat individuals shall be greater than 2 years of age
- The average coast buckwheat plant shall cover 9 square feet. This determination will be made by measuring 40 per 160 coast buckwheat individuals.
- 90-percent flowering of coast buckwheat
- Exotic species cover not exceeding 15 percent

5.5.6 Southern Foredune

Performance criteria to be met include the attainment of 10-, 20-, 30-, 40-, and 45-percent cover of native species over a five-year period, as determined by the point-intercept method. In addition, the following model, as prescribed in the Long-Term Management Plan, shall be adhered to with the final value, in conjunction with a 45-percent cover of native species determining the final success criteria. Table 5.5.6-1, *Southern Foredune Model: In-Situ Restoration*, describes the model for final success criteria for in-situ restoration of individual species within those areas to be impacted by the removal of navigational aids, and to subsequently receive restoration of southern foredune vegetation.

TABLE 5.5.6-1
SOUTHERN FOREDUNE MODEL: IN-SITU RESTORATION

Plant Species	Model	Initial	Final
Primary perennial species for foredune revegetation			
<i>Ericameria [Haplopappus] ericoides</i>	20	385	20
<i>Encelia californica</i>	50	146	50
<i>Isomeris arboreus</i>	40	195	40
<i>Galium angustifolium</i>	50	129	50
<i>Opuntia littoralis</i>	22	125	22
Secondary plant species of the foredunes to be introduced as container plants			
<i>Calystegia macrostegia</i>	25	158	25
<i>Corethrogyne filaginifolia</i>	100	225	100
<i>Senecio douglasii</i>	25	88	25
<i>Distichlis spicata</i>	10	62	10
<i>Dudleya lanceolata</i>	25	46	25
<i>Artemisia californica</i>	10	164	10

5.6 METHODS OF JUDGING SUCCESS CRITERIA

In order to best judge the success of this habitat restoration plan, success criteria reflect the research conducted by Dr. Rudolph Mattoni, in association with Environmental Science Associates and Sapphos Environmental, Inc.^{29,30} The success criteria mirror those of the Long-Term Habitat Management Plan and restoration efforts conducted in the HRA from 1988 to 1994. Model densities in Tables 5.5.4-1 and 5.5.6-1 refer to data derived from surveys conducted in the relatively undisturbed fragments of foredune and backdune communities at the Dunes. Initial densities refer to original planting densities, and final densities are the desired target at completion of restoration.

Those values for coast buckwheat were further derived from values established by the U.S. Fish and Wildlife Service in their non-jeopardy Biological Opinion, issued April 20, 2004, regarding the impacts of Alternative D described in the Supplement to the Draft Environmental Impact Report (EIR) for the LAX Master Plan on the federally endangered Riverside fairy shrimp and El Segundo blue butterfly.³¹ Densities for coast buckwheat, as the host plant of the El Segundo blue butterfly, are intended to ensure the conservation of an ecosystem upon which the endangered El Segundo blue butterfly depend and ensure the successful conservation of the species. Those success criteria for MM-ET-4, with respect to coast buckwheat densities by year, reflect the requirements of the

²⁹ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

³⁰ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

³¹ U.S. Fish and Wildlife Service. 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles County, California*. Contact: U.S. Fish and Wildlife Service, Ecological Services, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92009.

April 20, 2004, Biological Opinion, and reiterated in the El Segundo Blue Butterfly Habitat Enhancement and Monitoring Plan.³²

Final densities derived from a comparing a census of the restoration site to a fixed standard are hoped to match the model densities, as established in relatively undisturbed sites of the same vegetation type. Maximum allowable differences between the restoration value and the reference value for each success criterion are in all cases null, with the exception of lance-leaf dudleya. Given the strict accordance with the reference sites, initial planting will require augmenting with broadcast seed, which should suffice to establish final densities.

5.7 PROVISIONS FOR FURTHER ACTION

Given the success of the 1988–1994 restoration efforts, it is unlikely the success criteria associated with restoration or habitat enhancement will not be met. It should be noted however that the continued effort to remove exotic, invasive species is of primary importance in maintaining the restoration work to be conducted. Failure to continue the removal of nonnative flora is likely to jeopardize the recolonization of native plant species. Such concern will remain until at least 75 percent of the plant cover consists of native species. However, it is important to note that at some point, as native revegetation plantings mature, recolonize, and become more competitive, removal of exotics will become less critical. In fact, in areas where native vegetation has become well-established, continued weed removal efforts are likely to cause more damage than good. Should monitoring efforts after five years reveal that success criteria are not being met, then the FAA, in cooperation with the CCC and CFWO, will determine the set of additional and/or alternative measures necessary for the restoration project to achieve success. It is in the best interest of the future of the HRA to resume restoration efforts within its own boundaries. However, if the HRA proves incompatible with the goals of this habitat restoration plan, an alternative mitigation site will require choosing, along with the creation of a restoration and monitoring plan similar to this habitat restoration plan.

³² Sapphos Environmental, Inc. 2004. "El Segundo blue butterfly Habitat Enhancement and Monitoring Plan." Prepared for: Federal Aviation Administration, 15000 Aviation Boulevard, Hawthorne, CA 90261, and Los Angeles World Airports, One World Way, Los Angeles, CA 90045. Prepared by: Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105.

SECTION 6.0

MONITORING AND MAINTENANCE PLAN

Responsible Agency: U.S. Department of Transportation, Federal Aviation Administration (FAA)

Reviewing Agencies: California Coastal Commission (CCC)

Monitoring and maintenance of the enhancement site is essential to the long-term success of this mitigation effort. The Monitoring and Maintenance Plan details preconstruction monitoring efforts as well as the long-term management approach. This plan is intended to ensure the successful achievement of the goals and objectives of Mitigation Measures MM-BC-1, MM-BC-2, MM-BC-9, MM-BC-13, and MM-ET-4, as described in Section 3.0, *Project Goals*. Final monitoring for success will occur after at least three years during which no remediation or maintenance activities have occurred, other than weeding.

6.1 PRECONSTRUCTION SURVEY FOR THE CONSERVATION OF FAUNAL RESOURCES

6.1.1 Mitigation Measure MM-BC-9

The primary purpose of MM-BC-9 is to compensate for the loss of habitat units for sensitive species within the Los Angeles International Airport Airfield Operations Area (AOA), which is outside the scope of this plan. A component of this measure, as it relates to the construction of navigational aids in the Los Angeles/El Segundo Dunes (Dunes), is the requirement for preconstruction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl. Species accounts for each of the species to be surveyed for are located in Appendix C, *Background of the Los Angeles/El Segundo Dunes*. Should any sensitive wildlife be observed, they are to be relocated to suitable habitat within the HRA. Relocation efforts should be undertaken by a qualified wildlife biologist.

6.1.2 Sensitive Arthropod Surveys

Within and adjacent to those areas to be impacted by the installation or removal of navigational aids, the vegetation is sparse and largely nonnative. Based on surveys conducted from 1996–1998, it was determined that these areas are unsuitable for the sensitive arthropods. As a preventative measure, all ground-dwelling arthropods will, in all likelihood be trapped (and relocated) according to the methods described below for trapping of the silvery legless lizard and the San Diego horned lizard. In addition, immediately prior to construction activities, all herbaceous and non-herbaceous plants will be shaken to remove to flush out insects prior to grubbing.

6.1.3 Sensitive Reptile Surveys

Pitfall traps will be established three days prior to construction in all areas to be impacted by the installation or removal of navigational aids in order to isolate and relocate the silvery legless lizard, the San Diego horned lizard, and any sensitive arthropods that may be present. Each trap will be comprised of a 5-gallon bucket that is embedded in the ground with the mouth of the bucket leveled with the soil surface. The opening will be covered by a slightly raised lid or stone to keep

out predators and prevent trapped animals from being overheated during the day or drowned during rains.

Each trap shall be censused three times during daytime intervals: early morning, midday, and late afternoon. Active opportunistic searches shall be conducted for the silvery legless lizard and the San Diego horned lizard reptiles over a wider area. These searches shall generally be comprised of walking slowly within and adjacent to all areas impacted by the installation or removal of navigational aids habitats, looking for active reptiles and investigating under logs, rocks or other ground debris for sheltering animals. All trapped animals and arthropods shall receive relocation to a suitable habitat within the HRA by a qualified wildlife biologist.

6.1.4 Burrowing Owl Surveys

Burrowing owl observations have been highly infrequent and isolated instances. There are no known burrows within the Dunes that would support burrowing owls. Prior to the installation or removal of navigational aids in the northern portion of the HRA and areas adjacent to the HRA, a qualified biologist will conduct surveys for burrowing owls. If individuals are identified, they will be flushed from the construction site.

6.2 PRECONSTRUCTION MONITORING

Mitigation Measure MM-BC-1 details the extent and methods to be used for preconstruction monitoring of the navigational aids.

6.2.1 MM-BC-1: Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area

Prior to the initiation of construction of LAX Master Plan components to be located within or adjacent to the HRA, a preconstruction evaluation shall be conducted to identify and flag specific areas of state-designated sensitive habitats located within 100 feet of construction areas. Subsequent to the preconstruction evaluation, a preconstruction meeting shall be conducted with all construction personnel, including the landscape contractor, grading contractor, and all others conducting operations within the HRA to explain the sensitivity of the areas outside the limits of grading, the need to avoid them, and the potential consequences of failure to comply with the protocols for working on the site. A written set of preconstruction briefing notes shall be prepared and discussed with the construction contractor. The briefing notes shall describe the mitigation requirements established by the permitting agencies.

Construction avoidance measures include erecting a 10-foot-high, tarped, chain-link fence where the construction or staging area is adjacent to state-designated sensitive habitats 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 to reduce fugitive dust emissions during construction activities within 2,000 feet of the HRA, with a goal to reduce fugitive dust emissions by 90 to 95 percent. In addition, to the extent feasible, no grading or stockpiling for construction activities should take place within 100 feet of a state-designated sensitive habitat. Provisions shall be incorporated for the identification of additional construction avoidance measures to be implemented adjacent to state-designated sensitive areas. All construction avoidance measures that address best management practices (BMP) shall be clearly stated within construction bid documents. In addition, FAA shall include a provision in all construction bid documents requiring the presence of a qualified environmental monitor, which

shall be responsible for those activities detailed below. Construction drawings shall indicate vegetated area within the HRA as "Off-Limits Zone."

In addition, MM-BC-1 states that maintenance and management efforts prescribed in El Segundo Dunes Long-Term Habitat Management Plan shall continue to be carried out as prescribed. Since the success of this mitigation effort is largely contingent on the continued removal of nonnative plants, those maintenance and monitoring efforts that were detailed in Section 5.1, *Site Preparation: Invasive Plant Removal*, should follow the same interval as described in Section 6.5, *Coast Buckwheat*.

6.3 CONSTRUCTION MONITORING

Monitoring of construction activities to ensure adherence to the avoidance measures outlined in Mitigation Measure MM-BC-1 is an important part of the mitigation of impacts to sensitive biological resources. A qualified biologist shall be on site during the entire construction phase. Monitoring results will be documented in monitoring notes and summarized in a monitoring report submitted to the CCC and CFWO.

The biological monitor shall ensure that the following guidelines for avoidance are adhered to during construction:

- Staging of equipment and materials will be accomplished outside of occupied habitat areas of the HRA.
- Equipment or vehicles driven and/or operated within the HRA will use existing roadways and paved and/or gravel areas.
- Equipment or vehicles driven and/or operated within native habitat will not leak oils or fuels that, if introduced to the sandy or soil, could be deleterious to living organisms.
- The cleanup of spills of oil or fuel will take place as soon as they are discovered.
- No rubbish will be deposited, and the construction contractor will be in compliance with all litter pollution laws.
- Disturbance or removal of vegetation will not exceed the surveyed and flagged limits of grading.

6.4 LEWIS' EVENING PRIMROSE

A component of Mitigation Measure MM-BC-2 is to implement a monitoring plan to census individuals of Lewis' evening primrose for a period of no more than five years. Monitoring shall be undertaken on a quarterly basis for the first three years following planting, and twice a year thereafter for a total of five years. Monitoring shall include the establishment of an equal number of plants as that impacted in the installation and removal of navigational aids in the HRA in the first year following the distribution of seed in the mitigation site. Monitoring shall also include confirmation of recruitment for two years following the first year that flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year that flowering is observed. Final success criteria, to be determined at the end of the fifth year of monitoring, shall be characterized by the same number of Lewis' evening primrose within the mitigation site as the number impacted by navigational aid development.

6.5 COAST BUCKWHEAT

In order to meet the criteria of Mitigation Measure MM-ET-4, a census of coast buckwheat shall occur to ensure the successful restoration of El Segundo blue butterfly habitat. Since the successful restoration of El Segundo blue butterfly habitat is strictly contingent on the success of coast buckwheat (*Eriogonum parvifolium*) establishment, monitoring is directed at ensuring successful enhancement of Southern Foredune habitat in support of the El Segundo blue butterfly through the attainment of success criteria goals. Monitoring shall be performed by a qualified botanist with appropriate experience in native habitat restoration. The monitoring interval extends over a five-year period following planting of coast buckwheat within Subsite 23 of the Habitat Restoration Area:

- Quarterly monitoring required during the first three years
- Biannual monitoring in the fourth and fifth years

Quarterly and biannual monitoring of coast buckwheat shall include both qualitative and quantitative observations of survival, growth, and flowering. Census counts of coast buckwheat shall include numbers in addition to the number of plants and measurements for the areas of each plant, for the purposes of calculating absolute cover. Observations of El Segundo blue butterfly's use of coast buckwheat shall also be conducted during the flight season of the butterfly. Standard data log sheets shall be established and used throughout the monitoring period. The data sheets shall include a section to record ambient site conditions at the time of monitoring (i.e., date, time, weather, and special condition) and standard data to be collected for each parameter to be monitored. Data collection for some parameters will vary seasonally.

Other vegetation shall be surveyed only once annually using the line-intercept method along permanent vegetation transects. This method shall evaluate vegetative percent cover (total cover as well as cover of individual species), including the cover of coast buckwheat. Vegetation surveys shall be conducted when the dominant vegetation has matured and both early and late season species can be correctly identified. Standard data log sheets shall also be developed for vegetation surveys and used throughout the monitoring period.

A photographic record of the enhancement site shall be kept through the end of the monitoring program. Selection of photographic stations shall provide appropriate views and orientations for a comprehensive assessment of the progress of enhancement efforts. Photographs shall be taken from the same vantage point and in the same direction, and shall reflect material to be discussed in the monitoring reports. All photographs shall be annotated and recorded on standard field data sheets. When percent cover estimates are made of herbaceous vegetation, photographs shall be taken of sampling transects. Photographs for disturbances or special conditions shall be taken as needed.

6.6 MONITORING REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITATS

As a component of Mitigation Measure MM-BC-13, monitoring for restored Southern Foredune and Valley Needlegrass Grassland will be required for MM-ET-4. Monitoring will occur on a quarterly basis for the first three years following planting, and twice a year thereafter in order to achieve the success criteria detailed in Section 5.6. Monitoring for success will take the form of a census for those species listed in the plant palette. In addition, other vegetation will be surveyed once annually using the line-intercept method to determine percent cover of native species. Sampling shall be conducted with sufficient replication to detect a difference of 10-percent absolute ground cover with a single sample t-test with a statistical power of 90 percent at an alpha of 0.10. The

necessary sample size shall be estimated with a statistical power analysis in the monitoring plan using variance estimates from surveys of reference sites within the Dunes.

6.7 MAINTENANCE PLAN

FAA shall be responsible for all annual operations and maintenance costs required to achieve the success criteria associated with habitat enhancement and monitoring of the enhancement site.

Annual operations and maintenance activities shall include supplemental planting to attain the standards described in the success criteria, and/or to replace those individuals lost as a result of some severe disturbance to the site, installation and maintenance of the irrigation system, trash removal, and weed eradication as described in Section 5.1 of this habitat restoration plan.

SECTION 7.0 REPORTING

7.1 PRECONSTRUCTION MONITORING REPORT

The U.S. Department of Transportation Federal Aviation Administration (FAA) shall submit a preconstruction monitoring report to the executive director of the California Coastal Commission (CCC) upon completion of preconstruction activities for the installation of the navigational aid system within the El Segundo Blue Butterfly Habitat Restoration Area (HRA). These activities include surveys for Lewis' evening primrose (MM-BC-2), sensitive arthropod species, silvery legless lizard, San Diego horned lizard, and the burrowing owl (MM-BC-9). In addition, monitoring efforts pursuant to MM-BC-1 shall be carried out to provide the CCC with an accurate assessment of site conditions prior to construction. This report will include standard data log sheets, including a section to record ambient site conditions at the time of monitoring (i.e., date, time, weather, and special condition). A photographic record of the enhancement sites and Subsite 23 shall be established in the preconstruction monitoring report. Selection of photographic stations shall provide appropriate views and orientations for a comprehensive assessment of the progress of enhancement efforts. Photographs shall be taken from the same vantage point and in the same direction, and shall reflect material to be discussed in the monitoring reports. All photographs shall be annotated and recorded on standard field data sheets. Photographs for disturbances or special conditions shall be taken as needed.

FAA shall also submit a monitoring report to the U.S. Fish and Wildlife Service, Carlsbad Field Office (CFWO), upon completion of nocturnal observations of El Segundo blue butterfly behavior during the first flight period after installation of the navigational aid system.

7.2 POSTCONSTRUCTION REPORT

Within 30 days of planting of foredune vegetation stock, FAA shall be responsible for documenting and reporting the physical and biological "as built" condition of the restoration site. The Initial Conditions Report shall include photographic documentation of site conditions following the initial restoration efforts in addition to a report documenting restoration strategies undertaken and any deviations undertaken not present in this report. The Initial Conditions Report shall include actual planting densities and document whether implementation of the planting design was undertaken according to specifications.

7.3 ANNUAL REPORTING

FAA shall submit annual monitoring reports to the executive director of the CCC by December 1 of each specified monitoring year. If monitoring continues past the five years due to the failure of a success criterion, then a monitoring report shall be filed for that year as well. The report shall discuss the results of monitoring for Mitigation Measures MM-BC-2, MM-BC-13, and MM-ET-4, as they relate to habitat restoration or enhancement. Only the first year annual monitoring report shall address MM-BC-1 and MM-BC-9, since they pertain only to preconstruction efforts. All field notes (standard data collection sheets) and photographs from designated photographic monitoring stations shall be included in the annual report.

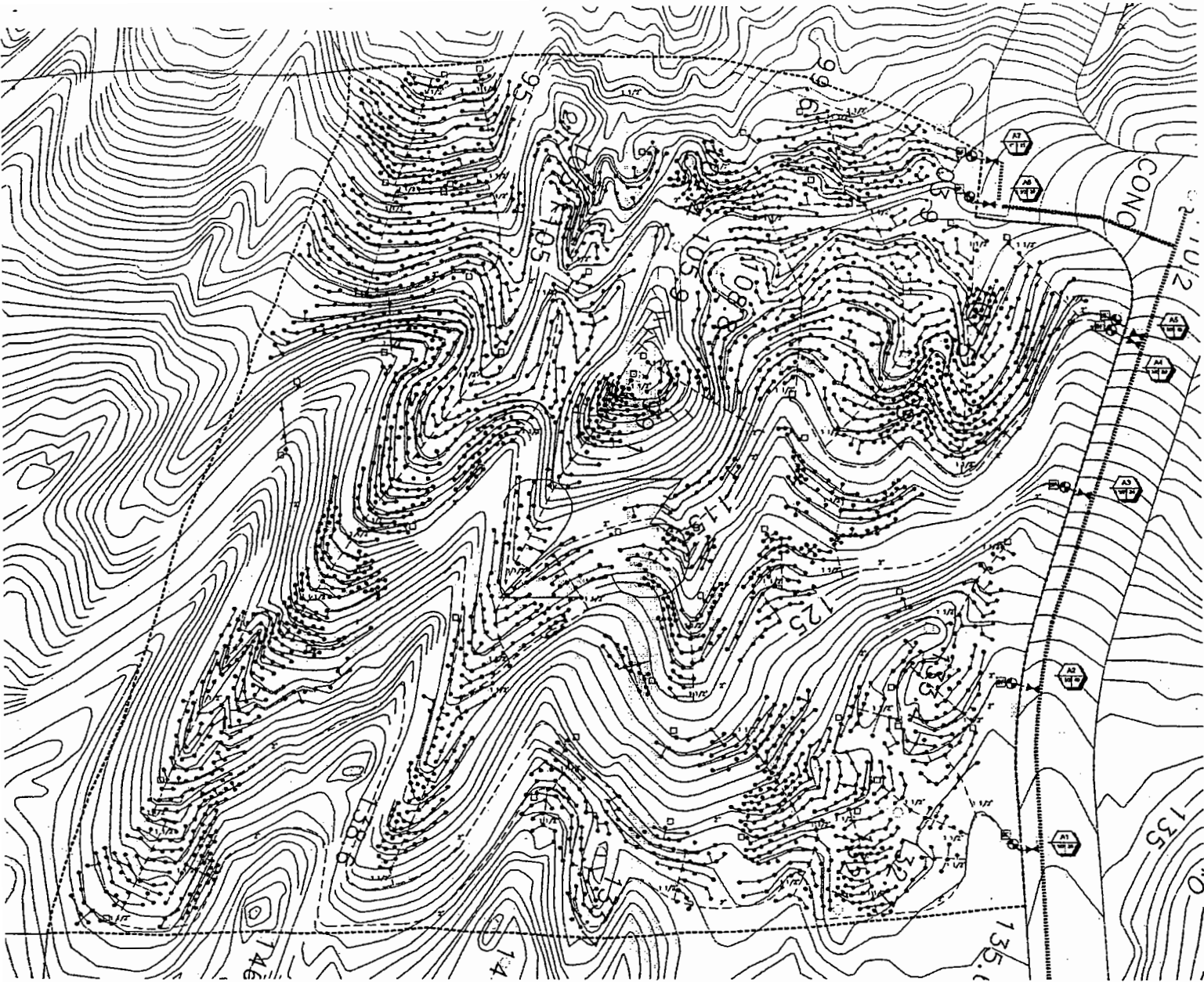
SECTION 8.0 REFERENCES

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- Sapphos Environmental, Inc. 2004. "El Segundo blue butterfly Habitat Enhancement and Monitoring Plan." Prepared for: Federal Aviation Administration, 15000 Aviation Boulevard, Hawthorne, CA 90261, and Los Angeles World Airports, One World Way, Los Angeles, CA 90045. Prepared by: Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105.

U.S. Department of Transportation, Federal Aviation Administration. August 2004. Federal Aviation Administration, Los Angeles International Airport, City of Los Angeles, California Coastal Consistency Determination for Relocation of Existing Navigational Aids. Contact: U.S. Department of Transportation, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591.

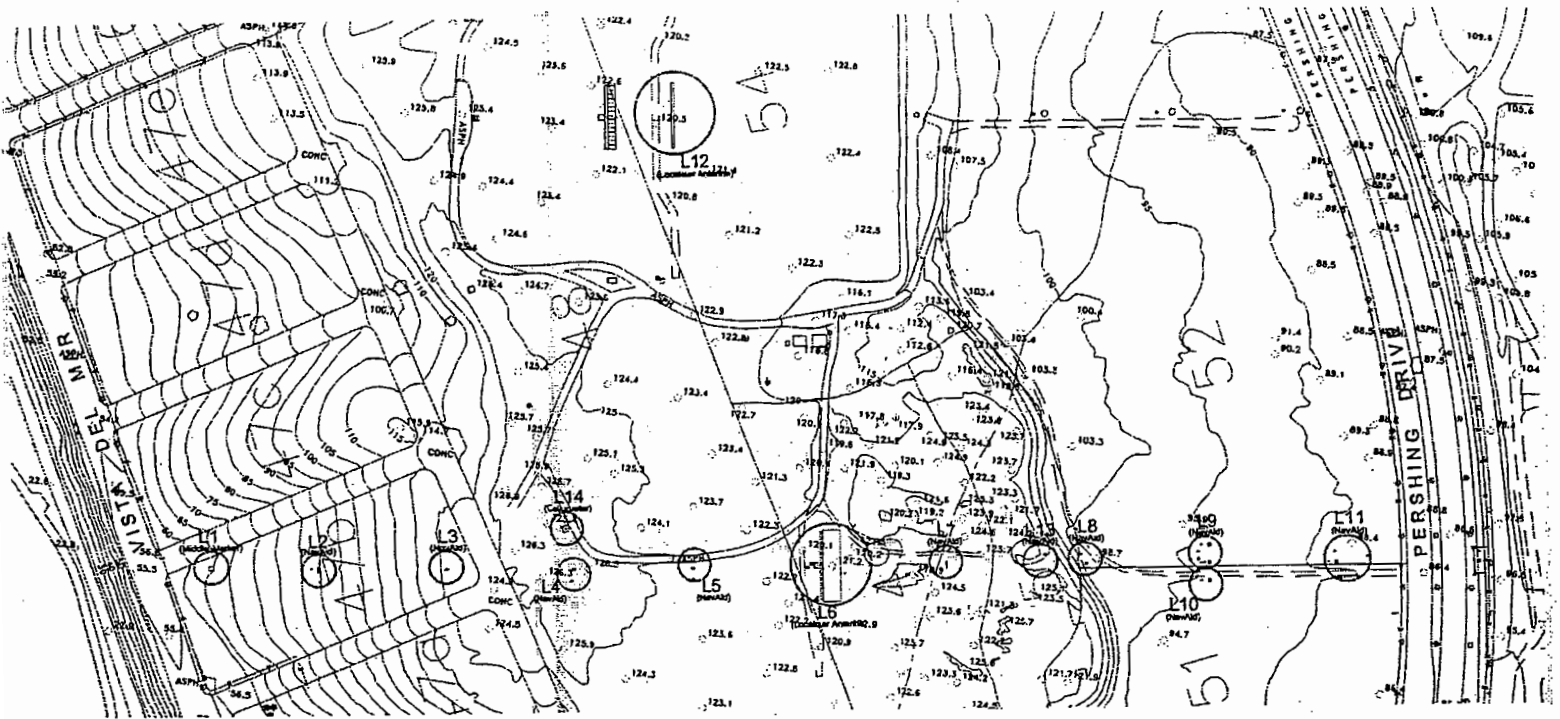
U.S. Fish and Wildlife Service. 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles County, California*. Contact: U.S. Fish and Wildlife Service, Ecological Services, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92009.

APPENDIX A
DRAFT IMPLEMENTATION PLAN



Subsite 23 Irrigation Plan.

Source: Los Angeles/El Segundo Dunes Habitat Restoration Plan, Federal Aviation Administration, October 29, 2004.



Navaid Removal Area Revegetation Plant List. Circled areas L1 through L14 are existing navigation aid sites that will be abandoned and restored. Plant palette comprised of coast goldenbush, California encelia, bladderpod, narrow-leaved bedstraw, coastal prickly pear, morning glory, California aster, butterweed, saltgrass, lance-leaf dudleya, California sagebrush, and nodding feather grass.

Source: Los Angeles/El Segundo Dunes Habitat Restoration Plan, Federal Aviation Administration, October 29, 2004.

EXHIBITS



Source: 1992 Raven Maps & Images
 Prepared By: Landrum & Brown, 05/03

LAX Master Plan -
 Supplement to the Draft EIS/EIR

Location Map

EXHIBIT NO. 2

APPLICATION NO.

CC-061-04

CD-062-04

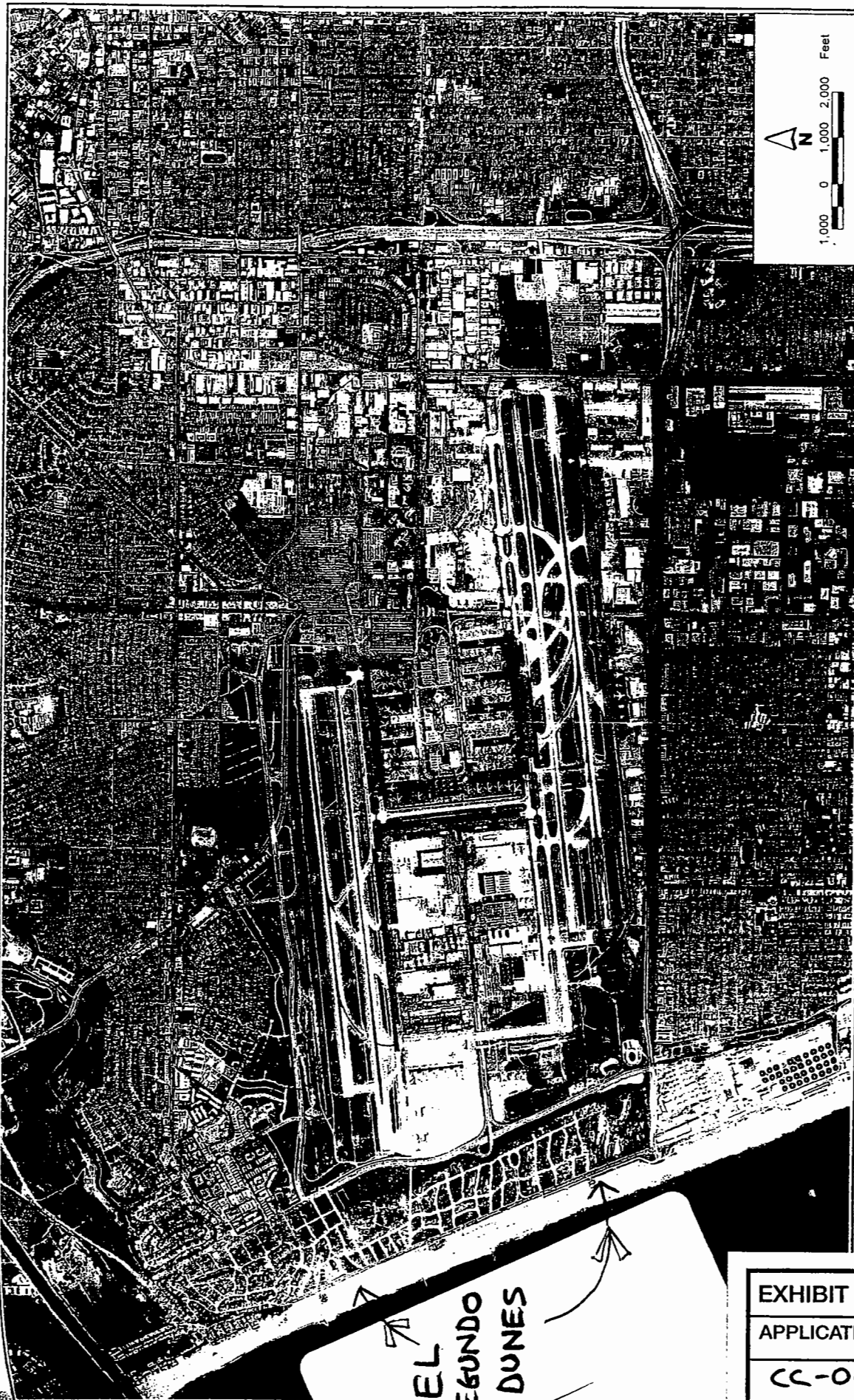


Figure
S1-2

LAX Aerial Photo 2000

Master Plan - Supplement to the Draft EIS/EIR

EL
SEGUNDO
DUNES

EXHIBIT NO.	3
APPLICATION NO.	
	CC-061-04
	CD-062-04



Source: URS Corporation, May 2003

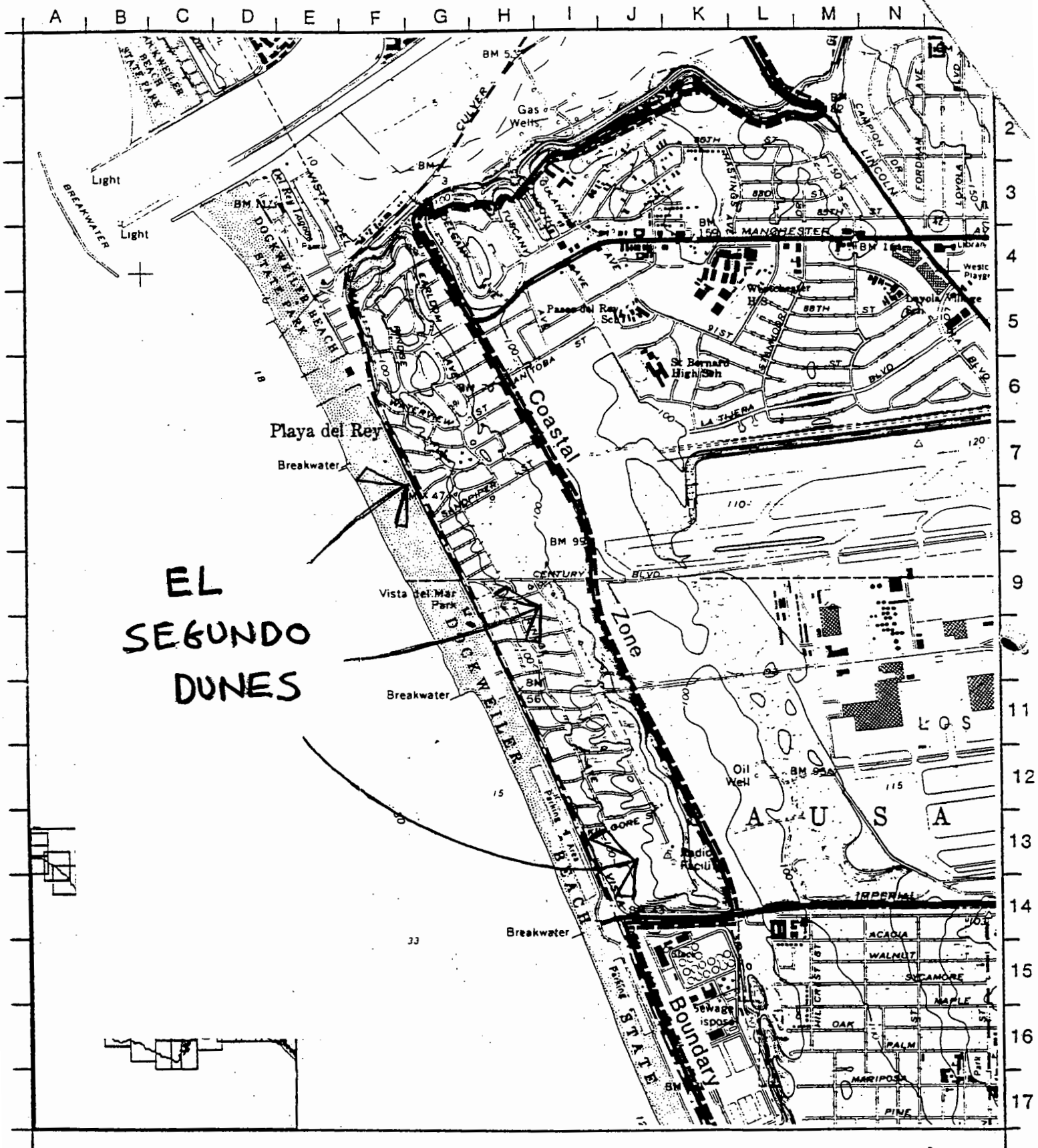
LAX Master Plan - Supplement to the Draft EIS/EIF

EXHIBIT NO. 4

APPLICATION NO.

CC-061-04

CD-062-04



California Coastal Commission

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feet

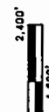
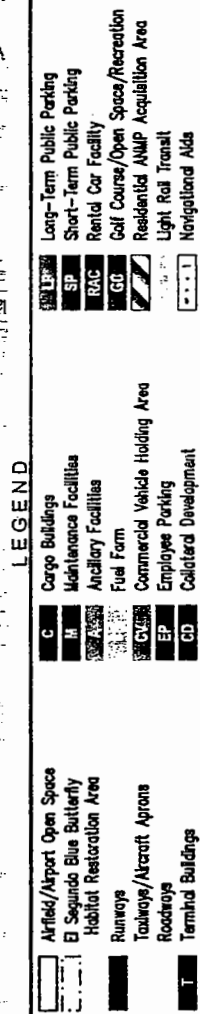
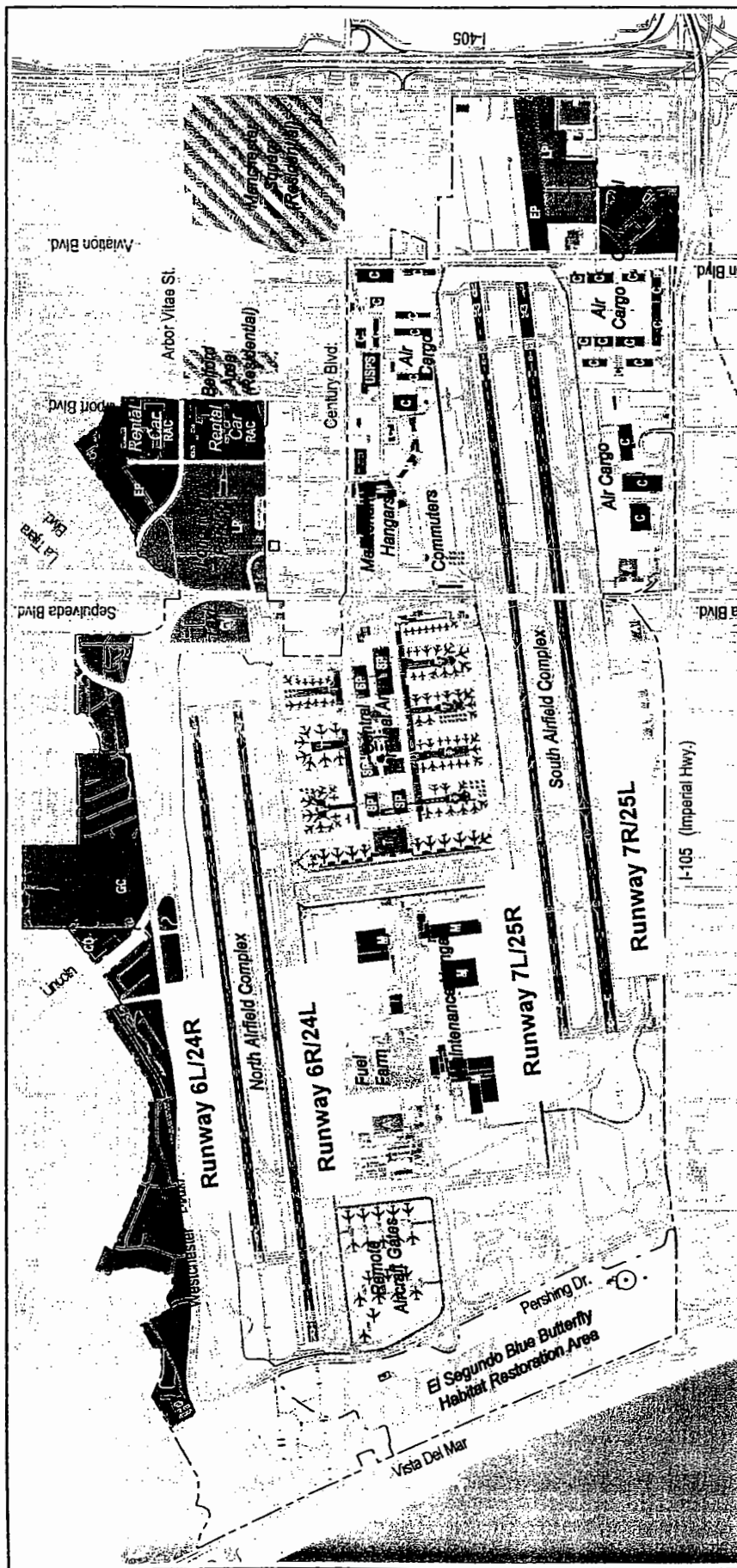
County of Los Angeles

EXHIBIT NO. 5

APPLICATION NO.

CC-061-04

CD-062-04



01

EXHIBIT NO. 6
APPLICATION NO.
CC-061-04
CD-062-04

MEMORANDUM

OFFICE OF CITY ATTORNEY

TO: Alan Murphy
Senior Project Manager
URS Corporation

FROM: Claudia Culling
Senior Assistant City Attorney
General Counsel to the Airport Division

DATE: October 21, 2004

RE: Significance of the October 20, 2004, City Council Vote

You asked me to give you an indication of the import of the recent City Council vote on the LAX Master Plan. On October 20, 2004, the Los Angeles City Council voted 12-3 in support of the LAX Master Plan Program (Alternative D) and also overwhelmingly voted in support of the Master Plan on various other related matters.

In August, the Los Angeles County Airport Land Use Commission (LA-ALUC) reviewed the Master Plan with respect to the County's Comprehensive Land Use Plan (CLUP), which has not been updated since 1991, and found the Master Plan inconsistent with the CLUP. Under state law, the City Council can override that determination by a two-thirds vote of the City Council. However, to override, the state law requires Council to first vote to propose to overrule the LA-ALUC determination and then after 45 days, the City Council can then take its final vote to override. After Council takes that second vote (scheduled for December 7, 2004), it can then adopt the land use entitlements and the Master Plan itself.

The Council vote on October 20, 2004, is very significant in several ways. First, there were two items before the Council that involved a final vote (not subject to the 45-day waiting period). These easily passed. They involved a denial of an appeal to the certification of the EIR and an action noting and filing a communication from the Los Angeles County Board of Supervisors requesting that Council not take the proposed actions on October 20. The logical implication of these final votes is that the Council intends to certify the EIR and also to act in a timely way on the other matters before it.

Furthermore, the overwhelming vote (more than would be required for any override of the LA-ALUC determination) appears to be a clear indication of the Council's intent to override the LA-ALUC determination and approve the LAX Master Plan on December 7, 2004.

If you have any further questions regarding this or any other matter, please feel free to contact me.

EXHIBIT NO. 8
APPLICATION NO.
CC-061-04
CD-062-04



Prepared by: Landrum & Brown, February 2004

LAX Master Plan Final EIS/EIR

Existing Navigational Aids
In the Los Angeles/El Segundo Dunes

EXHIBIT NO. 9

APPLICATION NO.

CC-061-04

CD-062-04

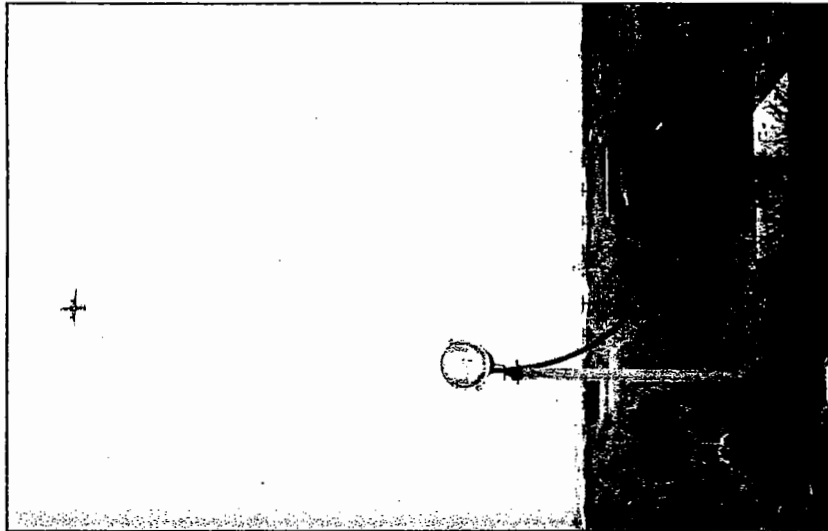
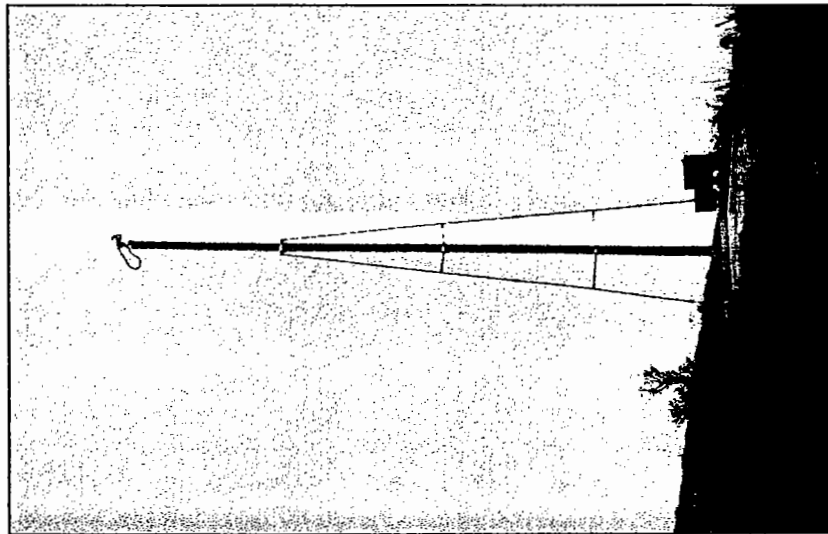


Figure
4

Approach Lighting System (Flashing) Towers
in the Los Angeles/EI Segundo Dunes

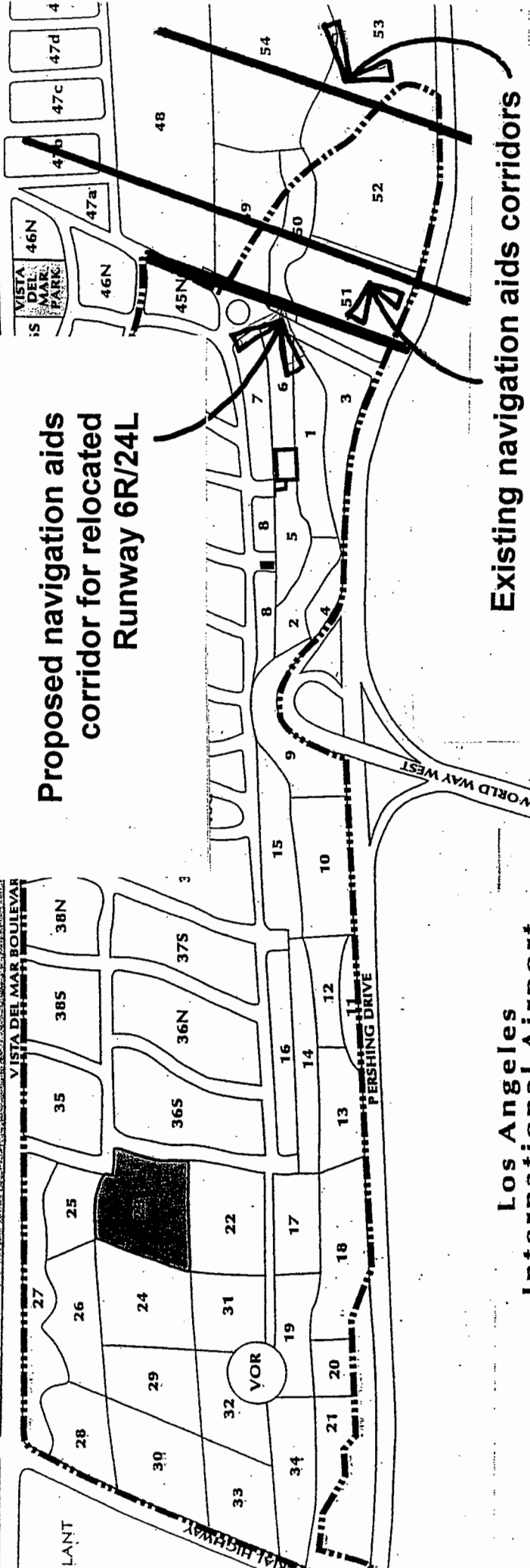
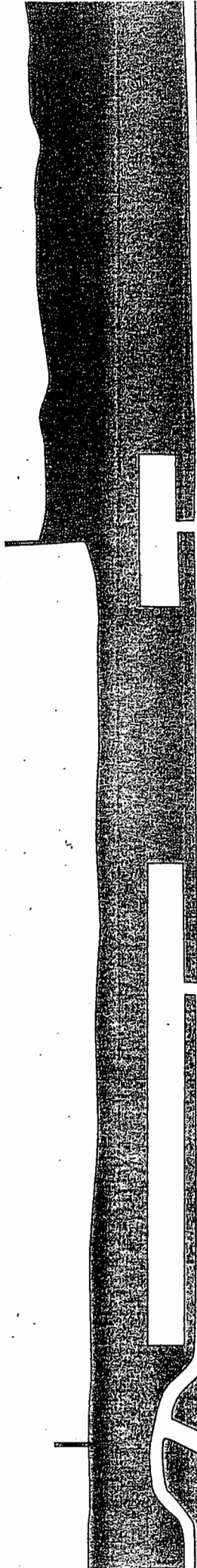
LAX Master Plan

EXHIBIT NO. 10

APPLICATION NO.

CC-061-04

CD-062-04



**Proposed navigation aids
corridor for relocated
Runway 6R/24L**

**Los Angeles
International Airport
(LAX)**

Existing navigation aids corridors

LEGEND






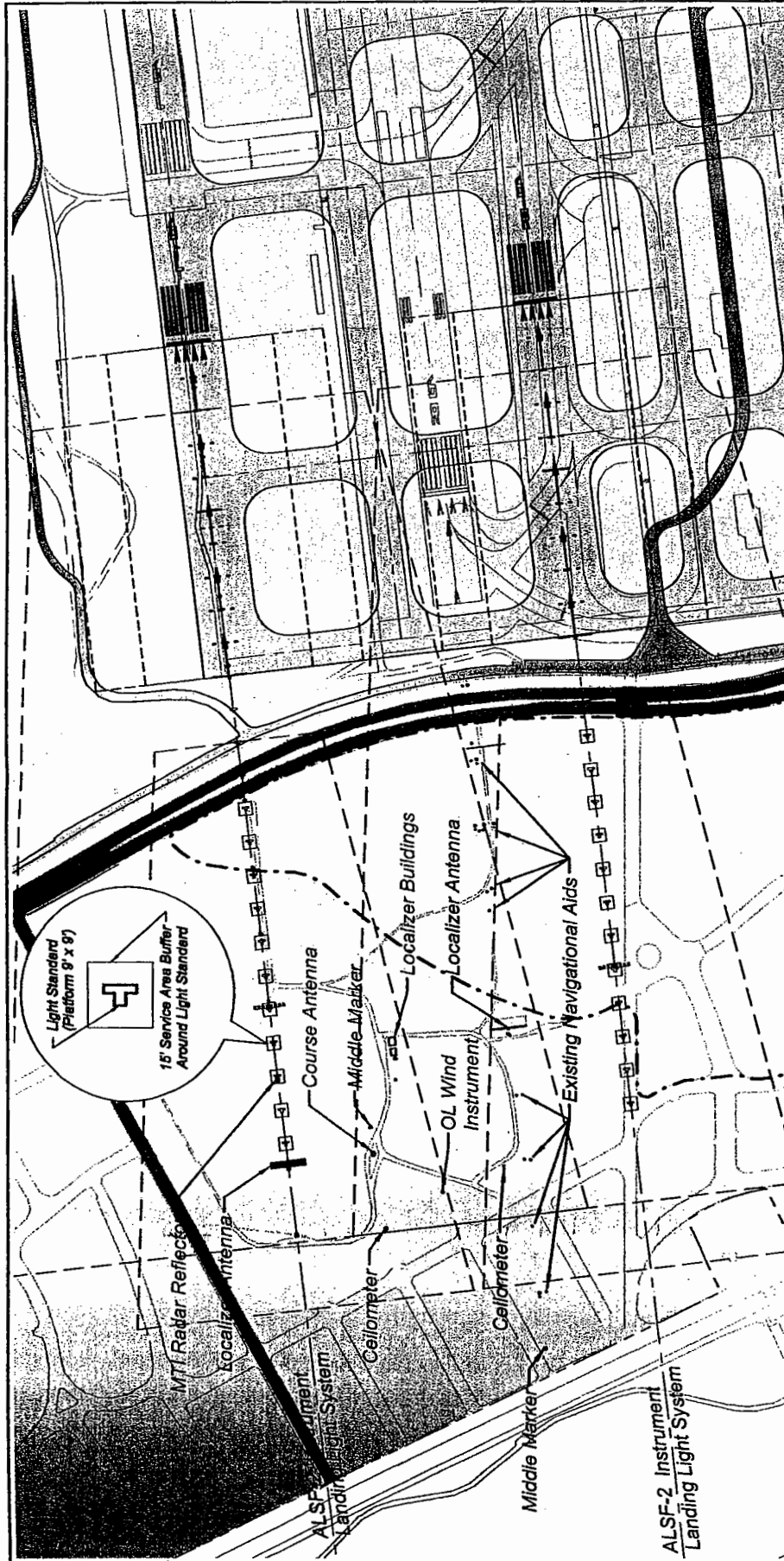
-  Habitat Restoration Area Boundary
-  Remote Communications Site
-  Very High Omni Range Navigation Beacon
-  Trailer
-  Mitigation site

EXHIBIT NO. 11
APPLICATION NO.
CC-061-04
CD-062-04



LEGEND

- Proposed Navigational Aids
- Existing Navigational Aids to be removed
- Existing Navigational Aids to remain
- Airport Landside
- Habitat Restoration Area Boundary
- Sand Dunes
- El Segundo Blue Butterfly Habitat Restoration Area
- Existing Roadways



2004

Figure 3

Location of Proposed Navigational Aids
Alternative D

LAX Master Plan

EXHIBIT NO. 12

APPLICATION NO.

CC-061-04

CD-062-04

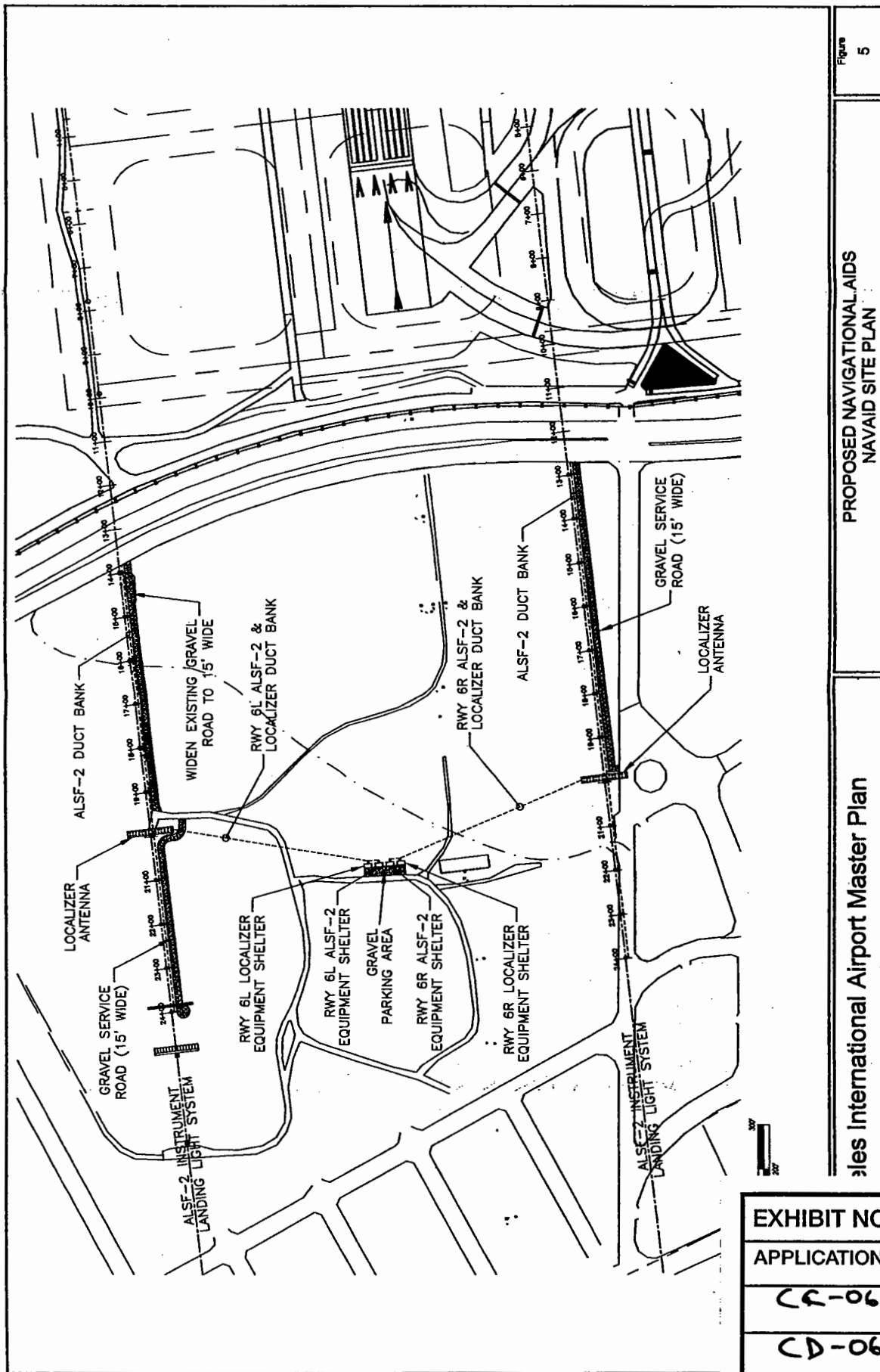


EXHIBIT NO. 13

APPLICATION NO.

CR-061-04

CD-062-04

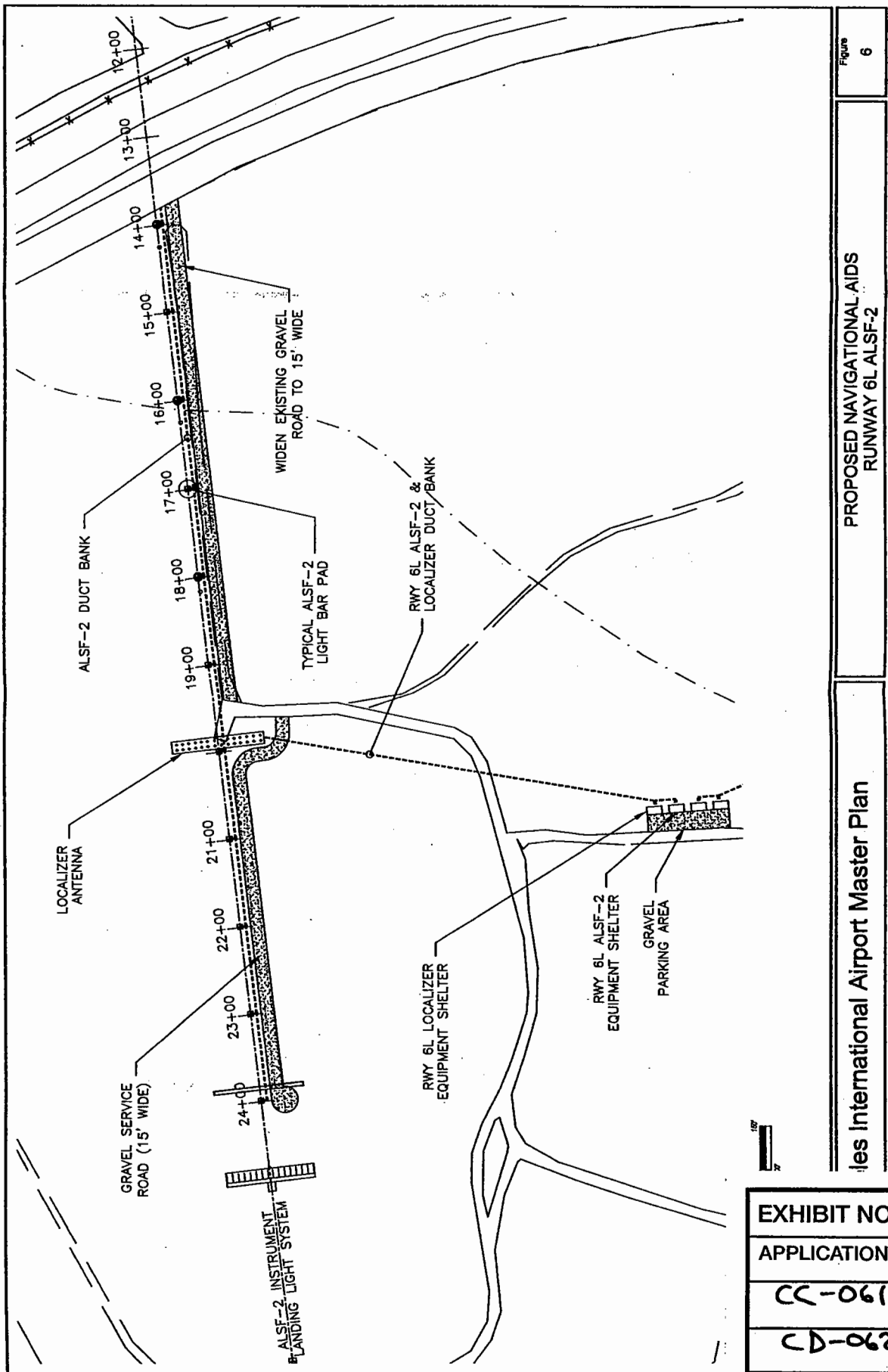


EXHIBIT NO. 14

APPLICATION NO.

CC-061-04

CD-062-04

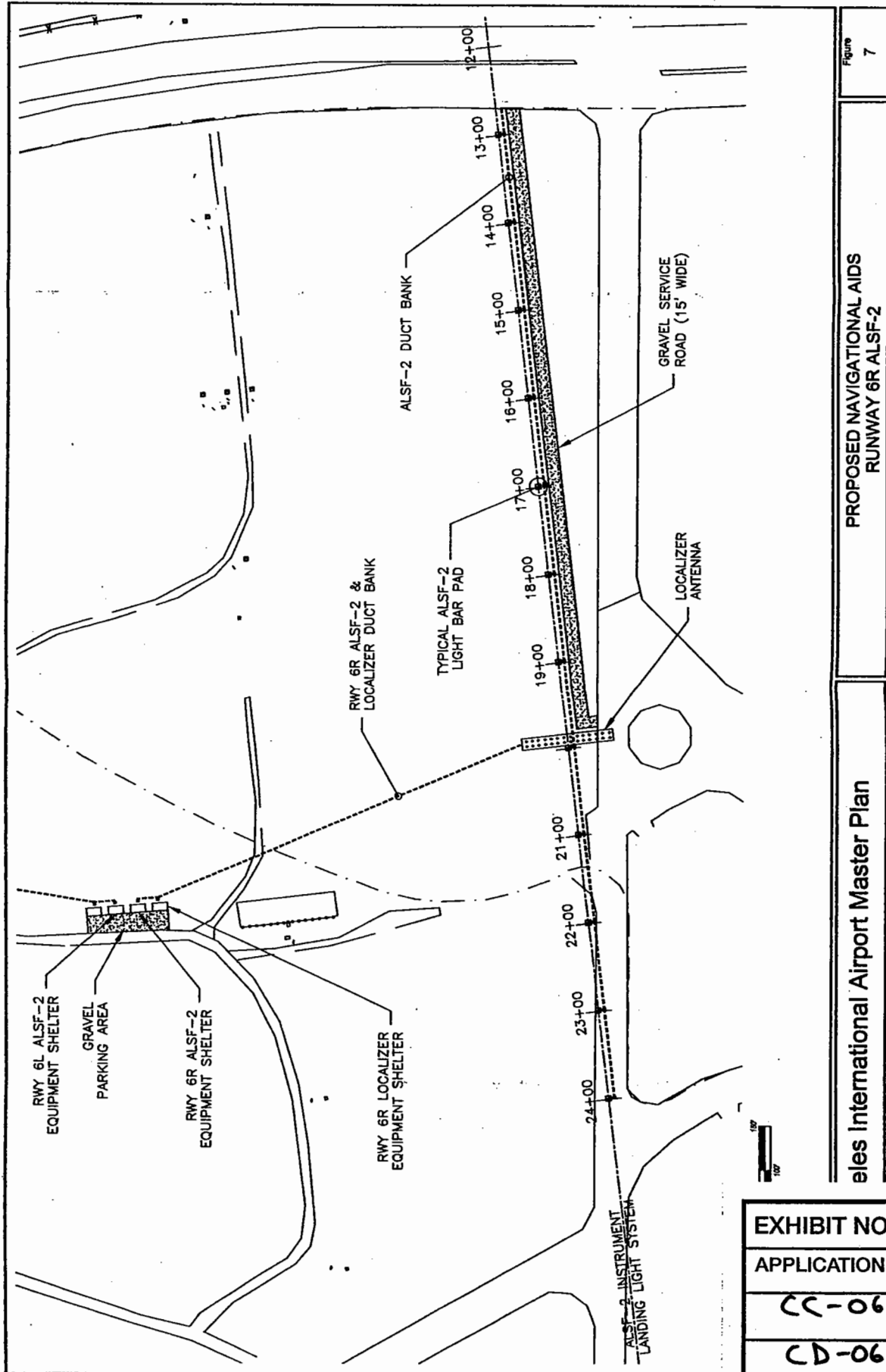
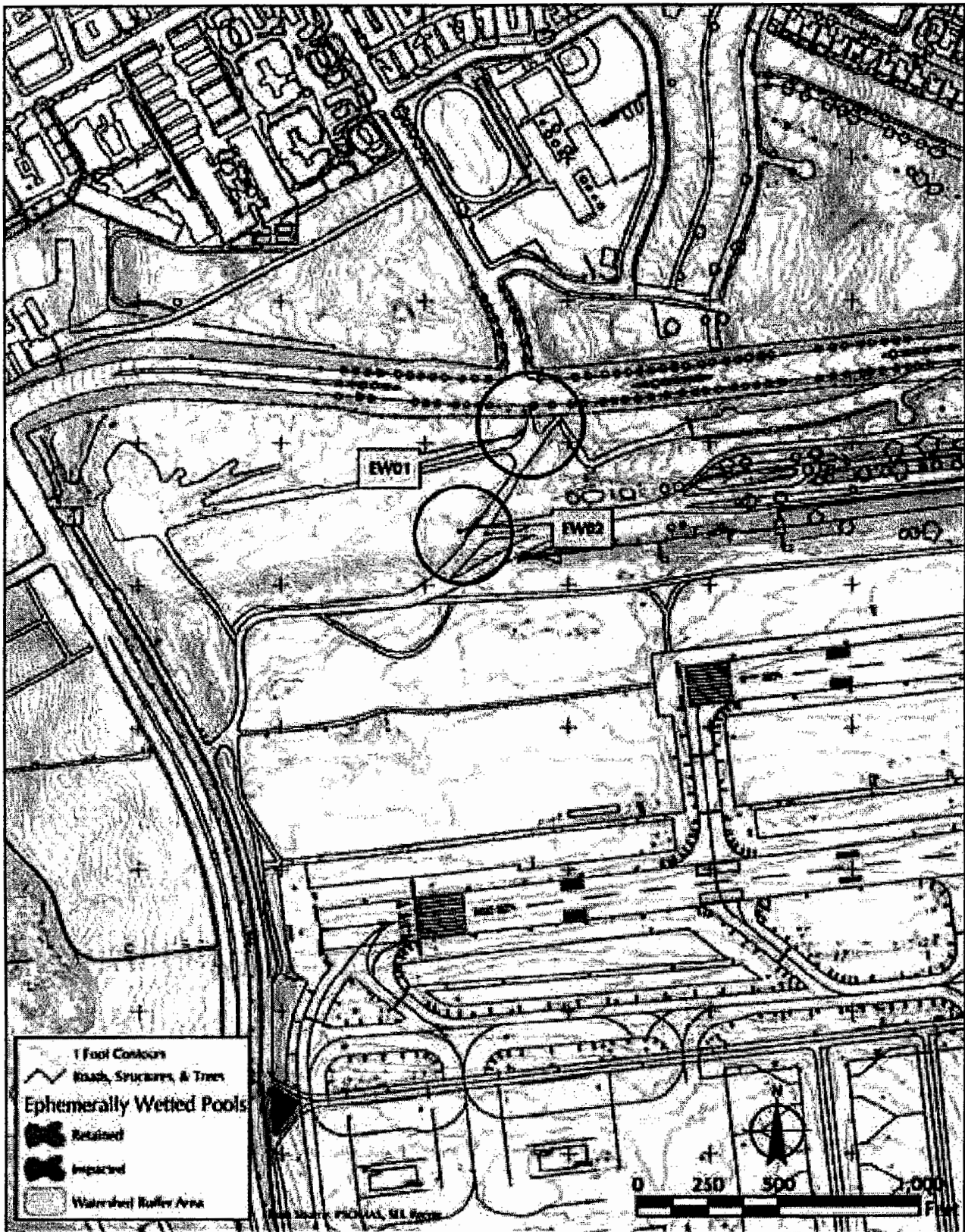


Figure
7

PROPOSED NAVIGATIONAL AIDS
RUNWAY 6R ALSF-2

elles International Airport Master Plan

EXHIBIT NO. 15
APPLICATION NO.
CC-061-04
CD-062-04



LAX Master Plan Final EIS/EIR

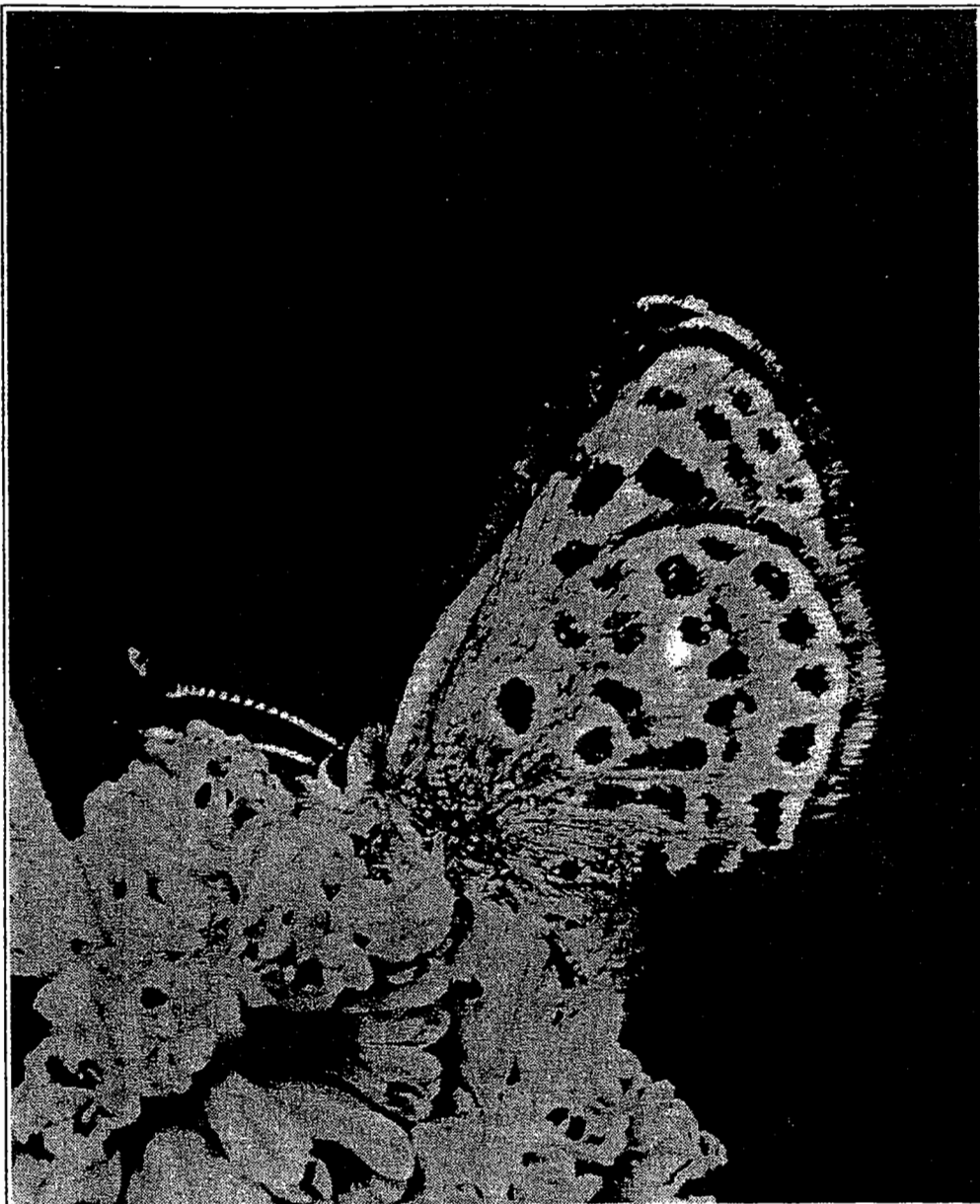
**North Area Ephemeral
Wet Pools and Buffer Area**

EXHIBIT NO. 17

APPLICATION NO.

CC-061-04

CD-062-04

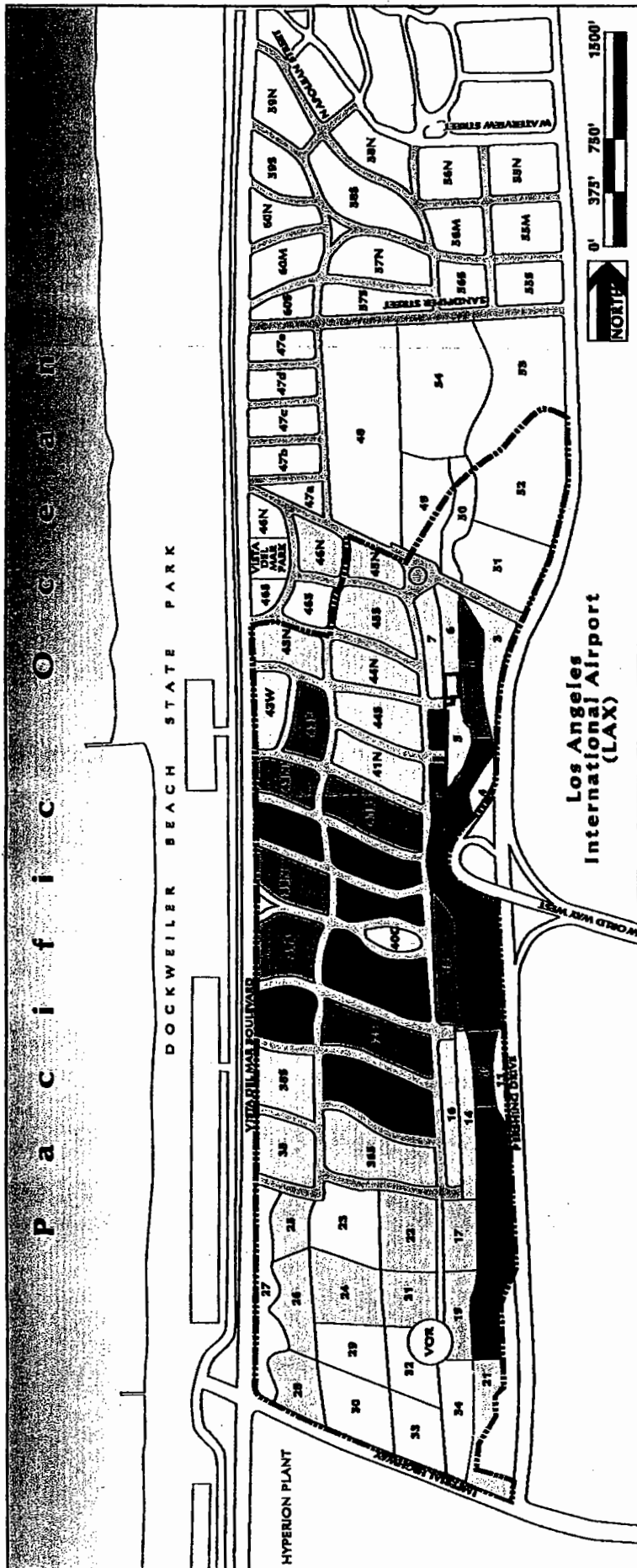


SOURCE: Richard Arnold

910412 Los Angeles Airport/El Segundo Dunes Habitat Management Plan ■

Figure 2.2
The endangered El Segundo blue butterfly
depends on host plant coastal buckwheat
(*Eriogonum parvifolium*) for all stages of its life cycle.

EXHIBIT NO. 18
APPLICATION NO.
CC-061-04
CD-062-04



LEGEND

Road System (Many Sublots Are Delineated by Road System)

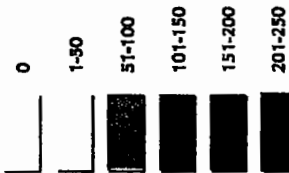
Habitat Restoration Area Boundary

Subsite Number

Remote Communications Site

Very High Omni Range Navigation Beacon

Trailer



Street



EXHIBIT NO. 19
APPLICATION NO
CD-062-04
LA-90-07

LAX Master Plan Final EIS/EIR

1998 El Segundo Blue Butterfly Densities

Figure
P4.11-8

Biotic Communities

- ♦ **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).**

LAWA or its designee shall take all necessary steps to ensure that the state-designated sensitive habitats within and adjacent to the Habitat Restoration Area are conserved and protected during construction, operation, and maintenance. These steps shall, at a minimum, include the following:

Implementation of construction avoidance measures in areas where construction or staging are adjacent to the Habitat Restoration Area. Prior to the initiation of construction of LAX Master Plan components to be located adjacent to the Habitat Restoration Area, LAWA or its designee shall conduct a pre-construction evaluation to identify and flag specific areas of state-designated sensitive habitats located within 100 feet of construction areas. Subsequent to the pre-construction evaluation, LAWA or its designee shall conduct a pre-construction meeting and provide written construction avoidance measures to be implemented in areas adjacent to state-designated sensitive habitats. Construction avoidance measures include erecting a 10-foot-high tarped chain-link fence where the construction or staging area is adjacent to state-designated sensitive habitats 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 to reduce fugitive dust emissions during construction activities within 2,000 feet of the El Segundo Blue Butterfly Habitat Restoration Area, with a goal to reduce fugitive dust emissions by 90 to 95 percent. In addition, to the extent feasible, no grading or stockpiling for construction activities should take place within 100 feet of a state-designated sensitive habitat. LAWA or its designee shall incorporate provisions for the identification of additional construction avoidance measures to be implemented adjacent to state-designated sensitive areas. All construction avoidance measures that address Best Management Practices shall be clearly stated within construction bid documents. In addition, LAWA shall include a provision in all construction bid documents requiring the presence of a qualified environmental monitor. Construction drawings shall indicate vegetated areas within the Habitat Restoration Area as "Off-Limits Zone."

Ongoing maintenance and management efforts for the El Segundo Blue Butterfly Habitat Restoration Area. LAWA or its designee shall ensure that maintenance and management efforts prescribed in the Habitat Management Plan (HMP) for the Habitat Restoration Area shall continue to be carried out as prescribed.

Pre-Construction Surveys to determine presence/absence of California spineflower. Under Alternative A, only, pre-construction surveys will be undertaken during the optimum time of year to determine the presence/absence of individuals of California spineflower within the proposed area of impact within the Habitat Restoration Area. The California spineflower is known to be sparsely distributed in subsite 3 within the Habitat Restoration Area. Should the species be determined present, individuals will be salvaged and relocated to a suitable location within the Habitat Restoration Area. Prior to construction, LAWA or its designee shall develop and implement a relocation plan to avoid the potential loss of individuals from the installation of navigational aids and associated service roads. Relocation efforts shall be undertaken by a qualified biologist, in coordination with CDFG.

- ♦ **MM-BC-2. Conservation of Floral Resources: Lewis' Evening Primrose (Alternatives A, B, C, and D).**

LAWA or its designee shall prepare and implement a plan to compensate for the loss of individuals of the sensitive Lewis' evening primrose, currently located at the westerly end of the north runway and within the Habitat Restoration Area. LAWA or its designee shall collect seed from those plants to be removed, and properly clean and store the collected seed until used. If possible, seeds shall be collected in multiple years to ensure an adequate seed supply for planting. A mitigation site of suitable habitat equal to the area of impact shall be delineated within areas of the Los Angeles/El Segundo Dunes as described in MM-BC-10. Collected seed shall be broadcast (distributed) after the first wetting rain. LAWA or its designee shall implement a monitoring plan to monitor the establishment of individuals of Lewis' evening primrose for a period of not more than five years. Performance criteria shall include the establishment of an equal number of plants as that impacted in the first year following the distribution of seed within the mitigation site. Performance criteria shall also include confirmation of recruitment for two years following the first year flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year flowering is observed. Monitoring shall be undertaken in the manner set forth in MM-BC-5.

EXHIBIT NO. 20

APPLICATION NO.

CC-061-04

CD-062-04

♦ **MM-BC-9. Conservation of Faunal Resources (Alternative D).**

LAWA or its designee shall develop and implement a relocation and monitoring plan to compensate for the loss of 1.34 habitat units (0.3 habitat units + 1.04 habitat units) of occupied western spadefoot toad habitat and for the loss of western spadefoot toad individuals currently in the southwestern portion of the AOA. LAWA or its designee shall identify possible relocation sites in consultation with the CDFG and USFWS and shall develop and implement a monitoring plan to monitor the success of the relocated tadpoles for a period of not more than five years. LAWA or its designee shall relocate the western spadefoot toad population currently inhabiting three locations on the AOA. One potential site is the Madrona Marsh Nature Center in Torrance, 20 miles south of LAX, which supports several vernal pools and one large pond capable of supporting western spadefoot toads.¹⁰⁵² Spadefoot toad experts suggest the best approach to accomplish relocation is to transport tadpoles and metamorphs only, as adults return to their birth site.¹⁰⁵³ Site preparation shall include confirmation by a permitted biologist that no predators, such as mosquitofish or bullfrogs, are present within the proposed relocation site or in waterways surrounding the relocation site. The CDFG has suggested that if the first relocation effort is not successful, another attempt should be made the following year.¹⁰⁵⁴ Therefore, western spadefoot toads shall be collected two consecutive years prior to construction activities taking place in existing occupied spadefoot toad habitat. In addition, since the western spadefoot toad is known to become reproductively mature within three years, an additional performance criterion shall be the identification of tadpoles at the relocation site between years three and four. The success criteria should be 50 percent survival of all tadpoles and metamorphs for the first, second, and third years following the last relocation. This shall be accomplished through a five-year monitoring plan, with bi-monthly monitoring between January 31 and June 1, to document the success of this relocation effort.

LAWA or its designee shall develop and implement a relocation and monitoring plan to compensate for the loss of 2.38 habitat units of occupied San Diego black-tailed jackrabbit habitat located within the AOA. LAWA or its designee shall relocate the San Diego black-tailed jackrabbit population currently inhabiting the AOA. Relocation efforts shall be coordinated with CDFG. The San Diego black-tailed jackrabbit shall be captured on the AOA using live traps and shall be released into the Habitat Restoration Area. Compensation for the loss of 2.38 habitat units shall be the utilization of at least 2.38 habitat units within the Los Angeles/El Segundo Dunes by the San Diego black-tailed jackrabbit individuals relocated to the site. Black-tailed jackrabbit is currently absent for the Los Angeles/El Segundo Dunes. Opportunities for compensation for the loss of 2.38 habitat units include 13.52 habitat units from restoration of Non-Native Grassland/Ruderal habitat to a Valley Needlegrass Grassland; 14.4 habitat units from removal and restoration of 50 percent of the existing roadways to Southern Foredune; and 59.68 habitat units from restoration of Disturbed Dune Scrub/Foredune to Southern Foredune. LAWA or its designee shall implement a monitoring plan to monitor the success of the relocated individuals for a period of not more than five years. Performance criteria shall include confirmed success of survival for three years of the San Diego black-tailed jackrabbit within the Habitat Restoration Area. This shall be accomplished through a quarterly monitoring plan to document the success or failure of this relocation effort.

LAWA or its designee shall compensate for the loss of areas utilized by loggerhead shrike currently located on the western airfield and composed of 10.83 habitat units (equivalent to 83.25 acres). Compensation for the loss of 10.83 habitat units of habitat utilized by the loggerhead shrike shall be the utilization of at least 10.83 habitat units within the Los Angeles/El Segundo Dunes. Opportunities for compensation for the loss of 10.83 habitat units include 13.52 habitat units from restoration of Non-Native Grassland/Ruderal habitat to a Valley Needlegrass Grassland; 14.4 habitat units from removal and restoration of 50 percent of the existing roadways to Southern Foredune; and 59.68 habitat units from restoration of Disturbed Dune Scrub/Foredune to Southern Foredune. Compensation for the loss of at least 10.83 habitat units shall take place prior to construction. LAWA or its designee shall implement a monitoring program for a period of not more than five years. Performance criteria shall include the use of at least 10.83 habitat units of improved habitat by the loggerhead shrike for foraging and nesting. Monitoring shall take place quarterly for the first three years and biannually thereafter. Monitoring shall be timed appropriately to include monitoring during the breeding period, which is between February and June.

¹⁰⁵² Wright, Walt, Madrona Marsh Nature Center, Personal Communication, April 28, 1998.

¹⁰⁵³ Fisher, Dr. Robert, California State University San Diego, Frank Hovore, Hovore and Associates, Dr. Steve Moray, U.S. Fish and Wildlife Service, Personal Communication, April 28, 1998.

¹⁰⁵⁴ Maxwell, Dwayne, California Department of Fish and Game, Letter to Dr. Brad Blood, Sapphos Environmental, Inc., April 29, 1998.

MM-BC-9. Conservation of Faunal Resources (Alternative D), continued.

As a means of minimizing incidental take of active nests of loggerhead shrike, LAWA or its designee shall have all areas to be graded surveyed by a qualified biologist at least 14 days before construction activities begin to ensure maximum avoidance to active nests for loggerhead shrike. Construction avoidance measures shall include flagging of all active nests for loggerhead shrike and a 300 feet wide buffer area shall be designated around the active nests. A biological monitor shall be present to ensure that the buffer area is not infringed upon during the active nesting season, March 15 to August 15. In addition, LAWA or its designee shall require that vegetation clearing within the designated 300 feet buffer be undertaken after August 15 and before March 15.

LAWA or its designee shall conduct pre-construction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl within the proposed area of impact within the Los Angeles/El Segundo Dunes. Surveys will be conducted at the optimum time to observe these species. Should an individual be observed, they will be relocated to suitable habitat for that species within the Habitat Restoration Area. Prior to construction, LAWA or its designee shall develop and implement a relocation plan to avoid the potential loss of individuals from the installation of navigational aids and associated service roads. Relocation efforts shall be undertaken by a qualified biologist, in coordination with CDFG.

♦ MM-BC-13. Replacement of State-Designated Sensitive Habitat (Alternative D).

LAWA or its designee shall undertake mitigation for the loss of State-designated sensitive habitat within the Los Angeles/El Segundo Dunes, including the Habitat Restoration Area. Installation of navigational aids and associated service roads under Alternative D would result in impacts to 66,675 square feet (1.53 acres) of State-designated sensitive habitat within the Los Angeles/El Segundo Dunes, including 33,334 square feet (0.77 acre) within the Habitat Restoration Area (of which 10,597 square feet (0.24 acre) are within habitat occupied by the El Segundo blue butterfly. These square feet shall be replaced at a no net loss ratio of 1:1 ratio within the Los Angeles/El Segundo Dunes. The replacement of 66,675 square feet (1.53 acres) of State-designated sensitive habitat shall be undertaken through restoration of 66,675 square feet (1.53 acres). Opportunities for restoration include: 16.9 acres of Non-Native Grassland/Ruderal habitat to a Valley Needlegrass Grassland; 36.11 acres from removal and restoration of 50 percent of the existing roadways to Southern Foredune; and 74.6 acres of Disturbed Dune Scrub/Foredune to Southern Foredune. The restoration and enhancement of biotic communities as related to the establishment or enhancement of wildlife habitat shall consider and comply with the provisions of the FAA Advisory Circular 150/5200-33 regarding hazardous wildlife attractants on or near airports. Additionally, such restoration and enhancement shall take into account, as appropriate, the Memorandum of Agreement between FAA and other federal agencies, including the USFWS, pertaining to environmental conditions that could contribute to aircraft-wildlife strikes.

Valley Needlegrass Grassland restoration efforts consist of site preparation, propagation and planting of Valley Needlegrass Grassland species, and maintenance and monitoring of the restoration site as described in MM-BC-5, Replacement of Habitat Units (Alternative A).

Southern Foredune restoration efforts consist of site preparation, propagation, and planting of the species characteristic of the Southern Foredune community at the Los Angeles/El Segundo Dunes, and maintenance and monitoring of the restoration site as described in MM-BC-5, Replacement of Habitat Units (Alternative A).

Replacement of the 10,597 square feet (0.24 acre) of habitat occupied by the El Segundo blue butterfly shall be undertaken as described in MM-ET-4, El Segundo Blue Butterfly Conservation: Habitat Restoration (Alternative D).

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➔ **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.¹⁰⁵⁷ The plantings of coast buckwheat shall be located within the southwest corner of subsite 23 of the Habitat Restoration Area, as depicted in Figure F5-5, 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 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.

¹⁰⁵⁷ 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/EI Segundo Dunes.

Source: LAX Master Plan Final EIS/EIR, April 2004

EX. 20, CONT.

Hydrology and Water Quality

♦ HWQ-1. Conceptual Drainage Plan (Alternatives A, B, C, and D).

Once a Master Plan alternative is selected, and in conjunction with its design, LAWA will develop a conceptual drainage plan of the area within the boundaries of the Master Plan alternative (in accordance with FAA guidance and to the satisfaction of the City of Los Angeles Department of Public Works, Bureau of Engineering). The purpose of the drainage plan will be to assess area-wide drainage flows as related to the Master Plan project area, at a level of detail sufficient to identify the overall improvements necessary to provide adequate drainage capacity to prevent flooding. The conceptual drainage plan will provide the basis and specifications by which detailed drainage improvement plans shall be designed in conjunction with site engineering specific to each Master Plan project. Best Management Practices (BMPs) will be incorporated to minimize the effect of airport operations on surface water quality and to prevent a net increase in pollutant loads to surface water resulting from the selected Master Plan alternative.

To evaluate drainage capacity, LAWA will use either the Peak Rate Method specified in Part G - Storm Drain Design of the City of Los Angeles' Bureau of Engineering Manual or the Los Angeles County Modified Rational Method, both of which are acceptable to the LADPW. In areas within the boundary of the selected alternative where the surface water runoff rates are found to exceed the capacity of the storm water conveyance infrastructure with the potential to cause flooding, LAWA will take measures to either reduce peak flow rates or increase the structure's capacity. These drainage facilities will be designed to ensure that they adequately convey storm water runoff and prevent flooding by adhering to the procedures set forth by the Peak Rate Method/Los Angeles County Modified Rational Method. Methods to reduce the peak flow of surface water runoff could include:

- ♦ Decreasing impervious area by removing unnecessary pavement or utilizing porous concrete or modular pavement.
- ♦ Building storm water detention structures.
- ♦ Diverting runoff to pervious areas (reducing directly-connected impervious areas).
- ♦ Diverting runoff to outfalls with additional capacity (reducing the total drainage area for an individual outfall).
- ♦ Redirecting storm water flows to increase the time of concentration.

Measures to increase drainage capacity could include:

- ♦ Increasing the size and slope (capacity) of storm water conveyance structures (pipes, culverts, channels, etc.).
- ♦ Increasing the number of storm water conveyance structures and/or outfalls.

To evaluate the effect of the selected Master Plan alternative on surface water quality, LAWA will prepare a specific Standard Urban Stormwater Mitigation Plan (SUSMP) for the selected alternative, as required by the LARWQCB. The SUSMP addresses water quality and drainage issues by specifying source control, structural, and treatment control BMPs with the objective of reducing the discharge of pollutants from the storm water conveyance system to the maximum extent practicable. Once BMPs are identified, an updated pollutant load estimate will be calculated that takes into account reductions from treatment control BMPs. These BMPs will be applied to both existing and future sources with the goal of achieving no net increase in loadings of pollutants of concern to receiving water bodies. LAWA will therefore address water quality issues, including erosion and sedimentation, and comply with the SUSMP requirements by designing the storm water system through incorporation of the structural and treatment control BMPs specified in the SUSMP.

The following list includes some of the BMPs that could be employed to infiltrate or treat storm water runoff and dry weather flows, and control peak flow rates:

- ♦ Vegetated swales and strips
- ♦ Oil/Water separators
- ♦ Clarifiers
- ♦ Media filtration
- ♦ Catch basin inserts and screens
- ♦ Continuous flow deflective systems
- ♦ Bioretention and infiltration
- ♦ Detention basins
- ♦ Manufactured treatment units
- ♦ Hydrodynamic devices

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HWQ-1. Conceptual Drainage Plan (Alternatives A, B, C, and D), continued.

Other structural BMPs may also be selected from the literature and the many federal, state and local guidance documents available. It should be noted that, if an alternative is selected that involves the elimination of the Imperial water quality retention basin (Alternatives A, B, and C), an alternative retention and/or water quality treatment BMP will be provided as per SUSMP requirements.

Performance of structural BMPs varies considerably based on their design.¹⁰³⁵ USEPA has published estimated ranges of pollutant removal efficiencies for structural BMPs based on substantial document review. These ranges of removal efficiencies are presented in Table F5-1, Structural BMP Expected Pollutant Removal Efficiency.

Table F5-1
Structural BMP Expected Pollutant Removal Efficiency

BMP Type	Typical Pollutant Removal (percent)			
	Suspended Solids	Nitrogen	Phosphorus	Metals
Dry Detention Basins	30-35	15-45	15-45	15-45
Retention Basins	50-80	30-65	30-65	50-80
Infiltration Basins	50-80	50-80	50-80	50-80
Infiltration Trenches/Dry Wells	50-80	50-80	15-45	50-80
Porous Pavement	65-100	65-100	30-65	65-100
Grassed Swales	30-65	15-45	15-45	15-45
Vegetated Filter Strips	50-80	50-80	50-80	30-65
Surface Sand Filters	50-80	<30	50-80	50-80
Other Media Filters	65-100	15-45	0	50-80

Source: U.S. Environmental Protection Agency, Preliminary Data Summary of Urban Storm Water Best Management Practices Methodology, August 1999.

In addition to the structural BMP types that will be used, non-structural/source control BMPs will continue to be a part of the LAX program to reduce pollutant loadings. Existing practices and potentially new ones will be extended to acquisition areas and to the areas where airport operations will increase in frequency or duration. These source control BMPs will be incorporated into the LAX Storm Water Pollution Prevention Plan (SWPPP) and will consequently be required of LAWA and all airport tenants at all locations where industrial activities occur that have the potential to impact water quality.

The overall result of Master Plan Commitment HWQ-1 will be a drainage infrastructure that provides adequate drainage capacity to prevent flooding and control peak flow discharges, that incorporates BMPs to minimize the effect of airport operations on surface water quality, and that prevents a net increase of pollutant loads to either receiving water body as a result of the selected Master Plan alternative.

¹⁰³⁵ U.S. Environmental Protection Agency, Preliminary Data Summary of Urban Stormwater Best Management Practices Methodology, August 1999.

Source: LAX Master Plan Final EIS/EIR, April 2004

EX.21, CONT.

Comments On the Hydrology and Water Quality Components Of
The LAX Master Plan Improvements Draft EIS/EIR

1. Los Angeles World Airports (LAWA) is committed to developing a detailed drainage plan (HWQ-1) upon the selection of a final build alternative. They believe that with the implementation of HWQ-1, any hydrology and water quality associated impacts would be less than significant. It is, however, very difficult to assess the future success of such a plan without having the opportunity to examine it first. The CCC believes that the drainage plan should be made public for review prior to implementation.
2. LAWA fails to propose specific potential management measures and practices to be implemented for each of the build alternatives. At a minimum, a conceptual design with minimum mitigation measures should be developed for each build alternative at this time. This is made feasible by the fact that the three build alternatives are really very similar in nature. CCC believes that the potential hydrology and water quality impacts associated with the build alternatives and the proposed mitigation measures should be an integral part of the build alternative selection process.
3. Besides the narrative stormwater BMP design standards customary in NPDES permits, the CCC believes that here exists a perfect opportunity for LAWA to take more meaningful and quantifiable measures to address the runoff issues and their associated impacts. The LA Regional Water Quality Control Board has recently taken steps to require numerical BMP design standards in its Standard Urban Storm Water Mitigation Plan (SUSMP). However, these standards only apply to a few categories of new and re-developments, of which airport is not one. Nevertheless, due to the scale of the proposed development and the significant impacts associated with the runoff as a result of the intensified uses, establishing specific design criteria such as the 85th percentile, 24-hour design storm standard is reasonable. Specifically, for design purposes, post-construction structural BMPs (or suites of BMPs) should be designed to treat, infiltrate or filter stormwater runoff from each storm event, up to and including the 85th percentile, 24-hour storm event for volume-based BMPs, and/or the 85th percentile, 1-hour storm event, with an appropriate safety factor, for flow-based BMPs. For LAX, this means treating runoff associated with up to and including 0.75 inch of rainfall in 24 hours or 0.2 inch per hour.
While it is commendable that LAWA has aimed for "reducing impacts to water quality to the maximum extent practicable and achieving no net gain in pollutant loads discharged to receiving water bodies," there exist no practical and feasible guiding principles for designing management practices. Furthermore, the goal of "no net gain" is merely to hold steady the current level of pollutant contributions by LAX to the Santa Monica Bay and Dominguez Channel. It then begs the question of whether or not the current level is good enough for safeguarding the quality of the receiving waters. Judging from the information provided, LAX's current stormwater measures seem inadequate to satisfactorily treat the runoff generated onsite.

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Since both of the receiving water bodies are on the CWA Section 303(d) list for impairment by several pollutants of concern of which LAX is a contributor (e.g., Cu, Pb, and Zn), it is conceivable that the future Total Maximum Daily Loads (TMDLs) developed for these pollutants would require LAX to share in the necessary load reductions. It simply is sensible to anticipate those future needs by incorporating the necessary stormwater designs during the current phase of development when opportunities abound. It may be worth pointing out that LAWA already acknowledges "[d]ue to the relatively large area that would be redeveloped, substantial opportunities would exist to replace existing facilities with ones that incorporate water quality control BMPs into their design, construction and operations thereby reducing total LAX-related pollutant loads."

4. It is not clear whether or not baseline information for the various pollutant loadings has been established. Pollutant loads used in the analysis were calculated by multiplying the pollutants' Event Mean Concentrations (EMCs) and average annual runoff. And, these EMCs were obtained from various sources not necessarily specific to the region (e.g., Federal Highway Administration) or most up-to-date. Pollutant loads could have been underestimated as a result. In addition, without locally relevant data for determining baseline levels, it will be impossible in the future to determine whether the goal of "no net gain" is being attained. Lastly, using LAWA's method where EMCs remain constant, the only variable in the formula for calculating pollutant loads before and after development would be land use (i.e., the change in impervious area coverage). This will most likely result in underestimates of pollutant loads because it ignores the potential increase in pollutant contributions due to the intensification of various activities at LAX. Stormwater BMPs designed using these projections may then fall short of intended treatment efficacy.
5. Only nine pollutants are considered in the DEIR. Several pollutants, including cadmium, mercury, nickel, silver, chromium, PAHs, and PCBs, scheduled for TMDL development for the Santa Monica Bay and Dominguez Channel have been prematurely eliminated from the study. The DEIR provides no valid reasons for their exclusion. The CCC strongly urges baseline information on the omitted pollutants be established and a rigorous monitoring program be implemented to determine the exact LAX contribution of these pollutants to the downstream water bodies.
6. The planned parking capacity for each of the build alternatives would exceed demand for both 2005 and 2015 by about 6,800 stalls and 3,800 stalls, respectively. This is meant to reduce the number of double trips by people recirculating on the terminal service loop due to Central Terminal Area congestion or by not being able to find parking spaces. While this sounds like a good idea, the concern with these additional spaces are the potential increase in impervious areas. Are these additional stalls located in (existing) vertical structures or are they horizontal ground spaces built on formerly pervious areas? One of the most effective practices to reducing runoff and its associated pollutants is minimizing the creation of impervious areas in the first place. There needs to be a balanced analysis between traffic relief and water quality

impacts. If these extra stalls are critical to ensuring traffic relief, active measures should be undertaken to minimize any negative runoff impacts associated with the increase in impervious areas. Examples of these measures include, but are not limited to, retention and/or detention basins, catch basin filters and underground sand filters.

7. CCC strongly encourages LAWA to, wherever appropriate, design water quality components into LAX's flood control measures. While it is important to ensure that drainage facilities can adequately convey stormwater runoff and prevent flooding, increasing the structure's capacity is often less effective than reducing peak flow rates. As mentioned in the DEIR, reducing peak flow rates could be achieved, for example, by reducing the directly connected impervious areas. Taking this one step further, peak flow rates could be reduced by minimizing overall impervious areas, period, or by creating pervious areas such as filtering strips and/or grassy swales to intercept flows.

8. While the pollutant loads associated with wet weather flows were estimated quantitatively, those associated with the dry weather flows were only addressed qualitatively. The reason given was that "[s]ince, the types of pollutants in dry weather flows are governed by the source of the flow and, therefore, are extremely variable and cannot be quantified, the analysis of dry weather flows is limited to the identification of factors that are likely to increase or decrease their occurrence." Were there no past sampling results or chemical use records to assist in the quantification? There needs to be a better effort in quantifying pollutant loading as a result of dry weather flows.

LAWA acknowledges that there will be an overall intensification of use at LAX under all three build alternatives. In addition, the DEIR states, "the Imperial retention basin would be removed and dry weather flows entering the storm drain system would have the potential to discharge untreated to the Santa Monica Bay or Dominguez Channel water bodies." The only mitigation measures proposed are compliance with existing regulations and airport procedures, particularly the LAX SWPPP, and incorporation of some unspecified source control, structural and treatment BMPs under HWQ-1. Unfortunately, these may not be adequate. The SWPPP developed pursuant to the Industrial Activities Storm Water General Permit (Industrial NPDES Permit) is often only required to be available onsite and ready for inspection by the appropriate authorities when requested, but not required as a part of the permit application process. In other words, the SWPPP is often not evaluated for adequacy. LAWA is strongly urged to propose clear measures to prevent and control dry weather runoff. This could be accomplished by allowing public review of the SWPPP. In light of their smaller quantities, diversion of dry weather runoffs for treatment (or treatment onsite) should be considered.

9. The DEIR fails to analyze a more comprehensive list of BMPs that could be implemented during the construction phase. It simply states that by following the procedures outlined in the SWPPP, prepared pursuant to the construction NPDES permit, and employing the eight BMPs listed in the DEIR, impacts to water quality associated with construction activities would be less than significant. For the same

reason stated above for industrial NPDES permit, SWPPP developed according to the requirements of a construction permit is often not subject to agency/public review and cannot guarantee water quality protection. In addition, the eight BMPs listed in the DEIR fail to address, among others, the timing of land disturbance and chemical use and storage.

10. There is very little mention of BMP inspection, monitoring, and maintenance. Besides inappropriate and inadequate designs, BMPs often fail because they are not being properly maintained. A rigorous program needs to be in place to ensure that the BMPs continue to operate at their design capacities in preventing and controlling polluted runoff. It is also imperative to identify BMP inadequacies in terms of type, size, location, and number. Structural BMPs should be inspected prior to the start of the rainy season (no later than October 15th), after the first storm of the rainy season, and monthly thereafter until April 30th. Major observations to be made during inspections include:
 - Locations of discharges of pollutants from the site;
 - BMPs that are in need of maintenance;
 - BMPs that are not performing, failing to operate, or inadequate; and
 - Locations where additional BMPs are needed.
11. While it is important to have structural and/or treatment stormwater BMPs, the CCC strongly encourages the implementation of nonstructural BMPs for source control as well. These include, among others, personnel training for good housekeeping measures.

♦ **MM-HA-4. Discovery (Alternatives A, B, C, and D).**

The FAA shall prepare an archaeological treatment plan (ATP), in consultation with SHPO, that ensures the long-term protection and proper treatment of those unexpected archaeological discoveries of federal, state, and/or local significance found within the APE of the selected alternative. The ATP shall include a monitoring plan, research design, and data recovery plan. The ATP shall be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation;¹⁰⁴² California Office of Historic Preservation's (OHP) *Archaeological Resources Management Report*, Recommended Contents and Format (1989), and the *Guidelines for Archaeological Research Design* (1991); and shall also take into account the ACHP's publication *Treatment of Archaeological Properties: A Handbook*. The ATP shall also be consistent with the Department of the Interior's Guidelines for Federal Agency Responsibility under Section 110 of the NHPA. In addition, those steps outlined in Section 21083.2(i) of CEQA and Section 15064.5(f) of the CEQA Guidelines shall be implemented, as necessary.

♦ **MM-HA-5. Monitoring (Alternatives A, B, C, and D).**

Any grading and excavation activities within LAX proper or the acquisition areas that have not been identified as containing redeposited fill material or as having been previously disturbed shall be monitored by a qualified archaeologist. The archaeologist shall be retained by LAWA and shall meet the Secretary of the Interior's Professional Qualifications Standards.¹⁰⁴³ The project archaeologist shall be empowered to halt construction activities in the immediate area if potentially significant resources are identified. Test excavations may be necessary to reveal whether such findings are significant or insignificant. In the event of notification by the project archaeologist that a potentially significant or unique archaeological/cultural find has been unearthed, LAWA shall be notified and grading operations shall cease immediately in the affected area until the geographic extent and scientific value of the resource can be reasonably verified. Upon discovery of an archaeological resource or Native American remains, LAWA shall retain a Native American monitor from a list of suitable candidates obtained from the Native American Heritage Commission.

♦ **MM-HA-6. Excavation and Recovery (Alternatives A, B, C, and D).**

Any excavation and recovery of identified resources (features) shall be performed using standard archaeological techniques and the requirements stipulated in the ATP. Any excavations, testing, and/or recovery of resources shall be conducted by a qualified¹⁰⁴⁴ archaeologist selected by LAWA.

♦ **MM-HA-7. Administration (Alternatives A, B, C, and D).**

Where known resources are present, all grading and construction plans shall be clearly imprinted with all of the archaeological/cultural mitigation measures. All site workers shall be informed in writing by the on-site archaeologist of the restrictions regarding disturbance and removal as well as procedures to follow should a resource deposit be detected.

♦ **MM-HA-8. Archaeological/Cultural Monitor Report (Alternatives A, B, C, and D).**

Upon completion of grading and excavation activities in the vicinity of known archaeological resources, the Archaeological/Cultural monitor shall prepare a written report. The report shall include the results of the fieldwork and all appropriate laboratory and analytical studies that were performed in conjunction with the excavation. The report shall be submitted in draft form to the FAA, LAWA, and City of Los Angeles-Cultural Affairs Department. City representatives shall have 30 days to comment on the report. All comments and concerns shall be addressed in a final report issued within 30 days of receipt of city comments.

♦ **MM-HA-9. Artifact Curation (Alternatives A, B, C, and D).**

All artifacts, notes, photographs, and other project-related materials recovered during the monitoring program shall be curated at a facility meeting federal and state standards.

♦ **MM-HA-10. Archaeological Notification (Alternatives A, B, C, and D).**

If human remains are found, all grading and excavation activities in the vicinity shall cease immediately and the appropriate LAWA authority shall be notified; compliance with those procedures outlined in Section 7050.5(b) and (c) of the State Health and Safety Code, Section 5097.94(k) and (i) and Section 5097.98(a) and (b) of the Public Resources Code shall be required. In addition, those steps outlined in Section 15064.5(e) of the CEQA Guidelines shall be implemented.

¹⁰⁴² 48 FR 44634-37.

¹⁰⁴³ 48 FR 22716, September 1983.

¹⁰⁴⁴ The Secretary of the Interior's Professional Qualifications Standards (48 FR 22716, September 1983).

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♦ **MM-PA-1. Paleontological Qualification and Treatment Plan (Alternatives A, B, C, and D).**

A qualified paleontologist shall be retained by LAWA to develop an acceptable monitoring and fossil remains treatment plan (that is, a Paleontological Management Treatment Plan - PMTP) for construction-related activities that could disturb potential unique paleontological resources within the project area. This plan shall be implemented and enforced by the project proponent during the initial phase and full phase of construction development. The selection of the paleontologist and the development of the monitoring and treatment plan shall be subject to approval by the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County to comply with paleontological requirements, as appropriate.

♦ **MM-PA-2. Paleontological Authorization (Alternatives A, B, C, and D).**

The paleontologist shall be authorized by LAWA to halt, temporarily divert, or redirect grading in the area of an exposed fossil to facilitate evaluation and, if necessary, salvage. No known or discovered fossils shall be destroyed without the written consent of the project paleontologist.

♦ **MM-PA-3. Paleontological Monitoring Specifications (Alternatives A, B, C, and D).**

Specifications for paleontological monitoring shall be included in construction contracts for all LAX projects involving excavation activities deeper than six feet.

♦ **MM-PA-4. Paleontological Resources Collection (Alternatives A, B, C, and D).**

Because some fossils are small, it will be necessary to collect sediment samples of promising horizons discovered during grading or excavation monitoring for processing through fine mesh screens. Once the samples have been screened, they shall be examined microscopically for small fossils.

♦ **MM-PA-5. Fossil Preparation (Alternatives A, B, C, and D).**

Fossils shall be prepared to the point of identification and catalogued before they are donated to their final repository.

♦ **MM-PA-6. Fossil Donation (Alternatives A, B, C, and D).**

All fossils collected shall be donated to a public, nonprofit institution with a research interest in the materials, such as the Los Angeles County Museum of Natural History.

♦ **MM-PA-7. Paleontological Reporting (Alternatives A, B, C, and D).**

A report detailing the results of these efforts, listing the fossils collected, and naming the repository shall be submitted to the lead agency at the completion of the project.

Source: LAX Master Plan Final EIS/EIR, April 2004

EXHIBIT NO. 24

APPLICATION NO.

CC-061-04

CD-062-04



Appendix
LAX Master Plan Second Addendum to the Final EIR

**AD(2)-A4. Los Angeles/El Segundo Dunes
Habitat Restoration Plan**

December 2004

LOS ANGELES/EL SEGUNDO DUNES
HABITAT RESTORATION PLAN

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
15000 AVIATION BOULEVARD
HAWTHORNE, CALIFORNIA 90261

PREPARED BY:

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OCTOBER 29, 2004

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SECTION 1.0 INTRODUCTION

The U.S. Department of Transportation Federal Aviation Administration (FAA) intends to issue its Record of Decision (ROD) in support of the Final Environmental Impact Report (EIR) for the Los Angeles International Airport (LAX) Master Plan in February 2005.¹ Prior to issuance of the ROD, the FAA is seeking the California Coastal Commission's (CCC's) consistency concurrence with the FAA's Coastal Consistency Determination for Relocation of Existing Navigational and Safety Aids² in support of Alternative D of the LAX Master Plan. At the request of CCC staff, the FAA is submitting this coastal dune Habitat Restoration Plan for the Los Angeles/El Segundo Dunes (Dunes) at LAX to the CCC in support of the Coastal Consistency Determination pursuant to Section 930.32 *et seq.* of the National Oceanic and Atmospheric Administration Federal Consistency Regulations (Title 15, *Code of Federal Regulations*, Part 930).

This Habitat Restoration Plan (Plan) for the Dunes was developed following guidelines provided to the FAA (Mr. David Kessler) by the CCC (Mr. John Dixon).³ The Plan provides for the establishment and/or enhancement of (referred to herein as "the restoration of") 5.8 acres of coastal dune habitat within the Dunes to mitigate impacts to 2.92 acres of coastal dune habitat resulting from the installation of navigational aids in support of Alternative D (1.53 acres) and the disturbance associated with the removal of existing navigational aids (1.4 acres). The amount of mitigation is consistent with the 2:1 mitigation ratio requested by the CCC. It is understood that the feasibility of the ultimate restoration of areas where navigational aids are to be removed may be further reviewed and evaluated by the CCC and FAA. However, the Plan assumes that all areas where navigational aids are scheduled for removal will be restored to the appropriate coastal dune plant community.

Located at the western terminus of LAX, the 302-acre Dunes are bound on the north by Napoleon Street and Waterview Street, on the south by Imperial Highway, on the east by Pershing Drive, and on the west by Vista del Mar Boulevard. The subject area contains environmentally sensitive areas, as defined in Section 30107.5 of the California Coastal Act (CCA) of 1976, as amended. Pursuant to Section 30240 of the CCA, Environmentally Sensitive Habitat Areas (ESHAs) shall be protected against any significant disruption of habitat values. Additionally, in 1992, the City of Los Angeles, by way of Ordinance No. 167940, established the 302-acre site as the Los Angeles Airport/El Segundo Dunes Specific Plan "in order to restore and preserve the natural ecology of the Dunes and those native dune-dependent species that exist thereon" consistent with the CCA, as amended. Within the 302-acre site, that is located entirely within the California Coastal Zone Boundary, the ordinance additionally established a 200-acre ecosystem preserve currently designated as the El Segundo Blue Butterfly Habitat Restoration Area (HRA) and home to the federally endangered El Segundo blue butterfly. Section 3 of the ordinance describes land use regulations for the specific plan area. Subsection F of Section 3 states "notwithstanding any other provisions of this Specific Plan, no use, development or activity regarding the Specific Plan Area may compromise the safety

¹ City of Los Angeles. April 2004. *Final Environmental Impact Report*. Available at: <http://www.laxmasterplan.org>.

² U.S. Department of Transportation, Federal Aviation Administration. August 2004. Federal Aviation Administration, Los Angeles International Airport, City of Los Angeles, California Coastal Consistency Determination for Relocation of Existing Navigational Aids. Contact: U.S. Department of Transportation, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591.

³ Dixon, J. 30 September 2004. "Suggested language for a filing requirement for a Restoration and Monitoring Plan when resource impacts and mitigation are anticipated." Contact: California Coastal Commission, 45 Fremont, Suite 2000, San Francisco, CA 94105.

of airport flight operations in any way. Final authority for determining whether airport flight operation safety is compromised rests with the Federal Aviation Administration."

In accordance with the Federal Coastal Zone Management Act of 1972 (CZMA), as amended, the FAA has determined that the relocation of existing navigational aids and associated service roads at LAX is consistent, to the maximum extent practicable, with the California Coastal Management Program (CCMP) pursuant to the requirements of the CZMA and the CCA, as amended. This determination was based on a consistency analysis between policy sections of the CCC (Division 20, California Public Resources Code) and FAA proposals and actions at LAX within the California Coastal Zone Boundary, specifically the proposed relocation of existing navigational and safety aids in support of Alternative D of the LAX Master Plan.

Under Alternative D, a navigational aid system known as Approach Lighting System (Flashing)-2 (ALSF-2) and associated service roads would be constructed (Figure 1-1, *ALSF-2 Towers in the Los Angeles/El Segundo Dunes*). The ALSF-2 consists of 23 lighting standards spaced at 100 feet with upwardly directed lighting that would be used during nighttime for aircraft approaching LAX from the west when low visibility Santa Ana conditions (strong easterly winds) are present. During normal operations, only one-half of the lights would be illuminated. The construction of navigational aids and associated service roads would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Dunes (Figure 1-2, *Location of Proposed Navigational Aids - Alternative D*). Of the 1.53 acres of impact to the Dunes, 0.77 acres are located within the HRA, 0.24 acres of which are habitat for the El Segundo blue butterfly. Additionally, an estimated 1.4 acres of state-designated sensitive habitat will be impacted by the removal of existing navigational aids. Mitigation for impacts to 2.92 acres will take place at a 2:1 ratio for a total 5.8 acres.

Measures to compensate for the conversion of 1.53 acres of habitat within the Dunes are described in the Final EIR for the LAX Master Plan. However, impacts associated with the removal of existing navigational aids are not addressed in the Final EIR because it was anticipated that the navigational aids would be abandoned in place. However, the CCC has requested that the existing navigational aids be removed. Thus, this Habitat Restoration Plan revises those mitigation measures that compensate for impacts within the California Coastal Zone Boundary pursuant to ongoing coordination and discussions between the FAA and CCC. Revisions to the measures include the designation of the FAA as being responsible for the design, implementation, maintenance, and monitoring of measures that compensate for impacts within the California Coastal Zone Boundary. Additionally, revisions incorporate a 2:1 ratio for impacts resulting from the permanent conversion of 1.53 acres of habitat within the Dunes, as well as the estimated impact to 1.4 acres as a result of the removal of navigational aids no longer required to guide aircraft that approach LAX from the west. A total of 5.8 acres will be restored pursuant to this Habitat Restoration Plan: 4.4 acres within Subsite 23 and 1.4 acres "in situ." The revised mitigation measures are summarized below.

MM-BC-1: CONSERVATION OF STATE-DESIGNATED SENSITIVE HABITAT WITHIN AND ADJACENT TO THE EL SEGUNDO BLUE BUTTERFLY HABITAT RESTORATION AREA

The FAA, or its designee, shall take all necessary steps to ensure that the state-designated sensitive habitats within and adjacent to the HRA are conserved and protected during construction, operation, and maintenance, by the implementation of construction avoidance measures, as described in this Habitat Restoration Plan.



FIGURE 1-1
ALSF-2 Towers in the Los Angeles/El Segundo Dunes

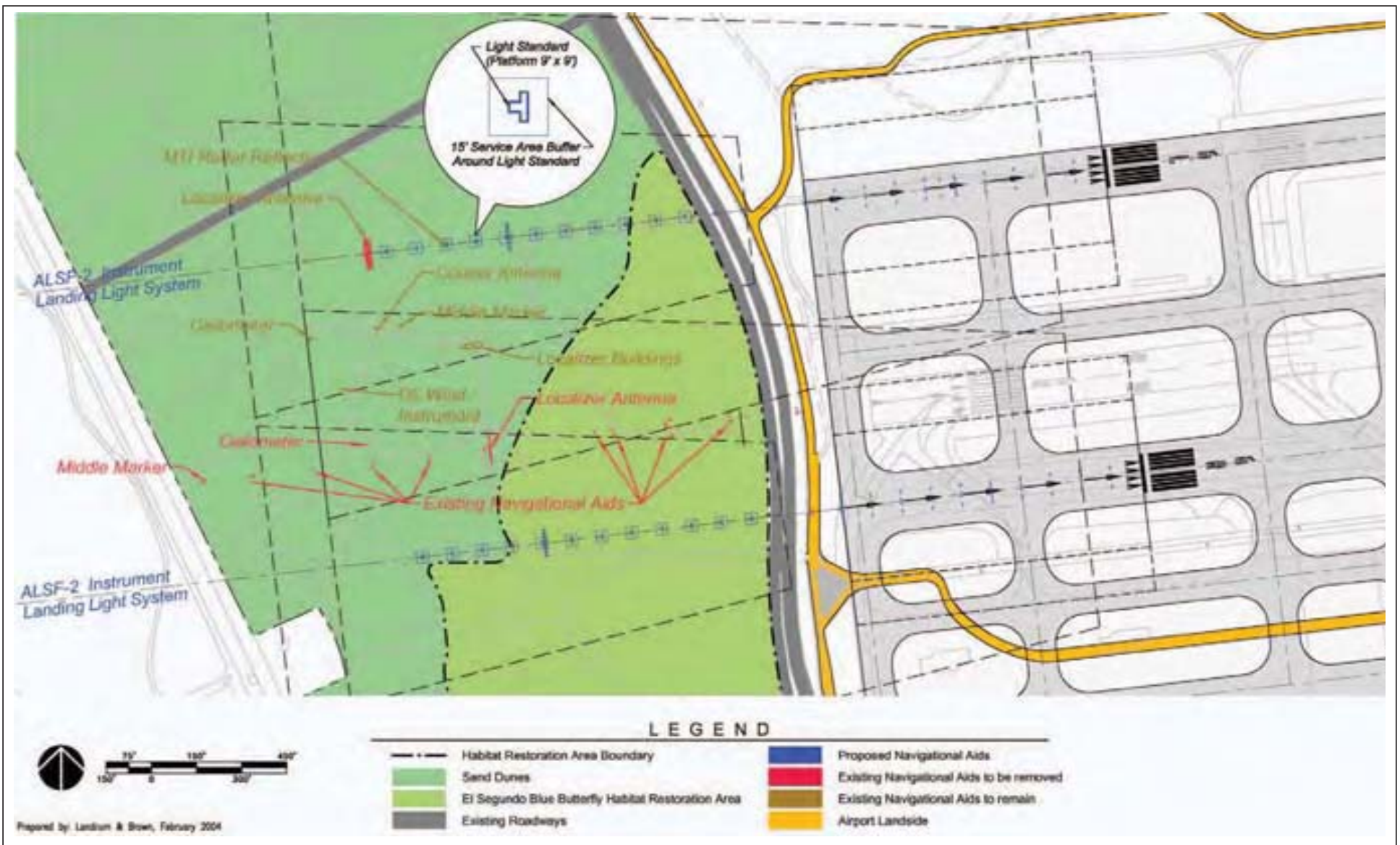


FIGURE 1-2
Location of Proposed Navigational Aids - Alternative D

MM-BC-2: CONSERVATION OF FLORAL RESOURCES: LEWIS' EVENING PRIMROSE

The FAA, or its designee, shall implement a plan to compensate for the loss of individuals of the sensitive Lewis' evening primrose, currently located within the HRA, as described in this Habitat Restoration Plan.

MM-BC-9: CONSERVATION OF FAUNAL RESOURCES

The FAA, or its designee, shall conduct preconstruction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl within the proposed area of impact in the Dunes. Surveys will be conducted at the optimum time to observe these species. Should an individual be observed, they will be relocated to suitable habitat for that species within the HRA, as described in this Habitat Restoration Plan.

MM-BC-13: REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITAT

The FAA, or its designee, will restore at a 2:1 ratio impacts to 1.4 acres of state-designated sensitive habitat to the appropriate state-designated sensitive plant community. An estimated 1.4 acres of state-designated sensitive habitat currently occupied by navigational aids that are scheduled for removal have the potential of being disturbed during removal activities. A total of 2.92 acres will be restored, with 1.4 acres taking place "in situ" and 1.4 acres taking place within Subsite 23 of the HRA, as described in this Habitat Restoration Plan. Implementation of MM-ET-4 and MM-BC-13 will provide for a total of 4.4 acres of Southern Foredune habitat within Subsite 23. Table 1-1, *Impacts Associated with the Removal of Navigational Aids*, describes the impacts associated with navigational aid removal.

**TABLE 1-1
IMPACTS ASSOCIATED WITH THE REMOVAL OF NAVIGATIONAL AIDS**

Impact Areas	Southern Foredune (acres)	Valley Needlegrass Grassland (acres)
Los Angeles/El Segundo Dunes*	1.19	0.20
Habitat Restoration Area	0	0.20
El Segundo Blue Butterfly– occupied habitat	0	0

NOTE:

*A total of 1.39 acres of the Los Angeles/El Segundo Dunes is impacted as a result of the removal of navigational aids.

MM-ET-4: EL SEGUNDO BLUE BUTTERFLY CONSERVATION: HABITAT RESTORATION

The FAA, or its designee, shall restore 3.0 acres of coastal dune habitat designated as Southern Foredune⁴ within Subsite 23 of the HRA and relocate coast buckwheat individuals that have the potential to be impacted as a result of the installation of ALSF-2 navigational aids in support of Alternative D. In conformance with the Biological Opinion issued by the U.S. Fish and Wildlife Service (USFWS) on April 20, 2004, for the Alternative D of the LAX Master Plan, activities associated with navigational aid development shall be limited to the existing roads and proposed

⁴ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

impacts areas, as described in the Final EIR. Habitat restoration will take place at a minimum of three years prior to the impact (scheduled for 2012–2013), as described in this Habitat Restoration Plan. Implementation of MM-ET-4 and MM-BC-13 will provide for a total of 4.4 acres of Southern Foredune habitat within Subsite 23. Table 1-2, *Impacts Associated with the Installation of Navigational Aids in Support of Alternative D*, describes the impacts associated with navigational aid installation.

TABLE 1-2
IMPACTS ASSOCIATED WITH THE INSTALLATION OF NAVIGATIONAL AIDS
IN SUPPORT OF ALTERNATIVE D

Impact Areas	Southern Foredune (acres)	Valley Needlegrass Grassland (acres)
Los Angeles/El Segundo Dunes*	0.87	0.66
Habitat Restoration Area	0.24	0.53
El Segundo Blue Butterfly– occupied habitat	0.24	0

NOTE:

*A total of 1.53 acres of the Los Angeles/El Segundo Dunes is impacted as a result of the installation of navigational aids.

SECTION 2.0 EXISTING CONDITIONS

2.1 PROJECT LOCATION

The Los Angeles/El Segundo Dunes (Dunes), which lie between the west end of the Los Angeles International Airport (LAX) and the Pacific Ocean, are the largest remaining representation of coastal dune community within Southern California (Figure 2.1-1, *Regional Location Map*). Formerly known as the “Airport/El Segundo Dunes,” the 302-acre Dunes site is bordered by Napoleon and Waterview Streets on the north, Imperial Highway on the south, Pershing Drive on the east, and Vista del Mar on the west (Figure 2.1-2, *Project Location*). The site is owned and managed by Los Angeles World Airports (LAWA).

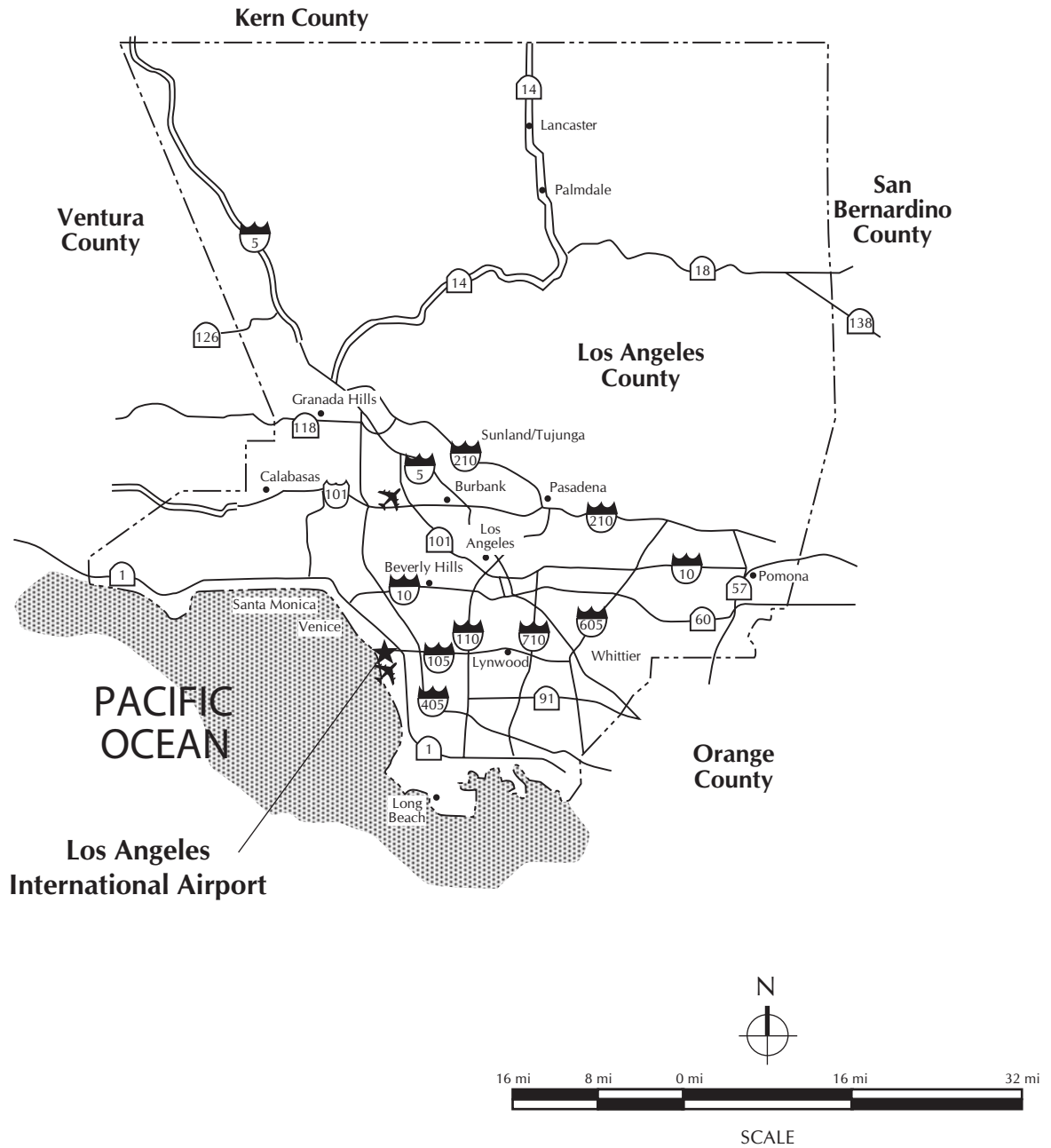
2.2 ECOLOGICAL SIGNIFICANCE OF THE LOS ANGELES/EL SEGUNDO DUNES

The ecological significance of the Dunes is recognized by both federal and state governments, as well as by the City and County of Los Angeles and the California Coastal Commission (CCC). In spite of a long history of land disturbance and increasing isolation from related habitats, the Dunes are unique in their richness of sand-obligate species (species whose survival depends on the free flowing sand characteristic of dunes systems) and in the number of sensitive species or species of limited distribution that inhabit them. Among the Dunes sensitive species is the federally-endangered El Segundo blue butterfly (*Euphilotes battoides allyni*), whose habitat is now reduced to a few coastal dune fragments between Playa del Rey and Malaga Cove. The Dunes are reported to support over 900 species of plant and animals; at least 35 of these species, including the El Segundo blue butterfly, are limited in range to Southern California dunes.⁵

As early as 1972, even before all houses had been removed from the Dunes for reasons of public safety for airport operations, the County of Los Angeles Environmental Resource Committee, in recognition of the Dunes’ ecological value, identified the Dunes as a high priority habitat area that should be restored and preserved. The County of Los Angeles (County) designated the Dunes a Significant Ecological Area (SEA No. 28) in the 1976 revised County General Plan. The Southern California Association of Governments included the Dunes among its designated “Areas of Regional Significance and Concern,” recommending that the entire area be preserved and restored. The Dunes area was also designated as an Environmentally Sensitive Habitat Area (ESHA) pursuant to Section 30240 of the California Coastal Act (CCA) of 1976, as amended. Southern coastal dune habitat is considered by the Heritage program of the California Department of Fish and Game (CDFG) to be amongst the most highly imperiled natural communities in California. Forming a continuum in response to topography and proximity to the ocean, southern coastal dune habitat at the Dunes is expressed as Southern Foredune, Southern Dune Scrub, and Valley Needlegrass Grassland according to the Holland classification of natural communities.⁶ All three plant community types—Southern Foredune, Southern Dune Scrub, and Valley Needlegrass Grassland—are considered state-designated sensitive plant communities. Finally, the International Union for Conservation of Nature and Natural Resources (IUCN) listed the Dunes as a “Threatened

⁵ Mattoni, R.H.T. 1990. “Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX.” Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

⁶ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.



LEGEND

★ Project Location



FIGURE 2.1-1
Regional Location Map



LEGEND

★ El Segundo Dunes



FIGURE 2.1-2
Project Location

Community" in their IUCN Invertebrate Red Data Book, published in 1983, noting the site's ecological significance as habitat for several endemic invertebrates and populations of vulnerable plants.

As a result of a protracted planning history, 200 acres of the site are now designated in the City of Los Angeles Conservation Plan as an "Ecologically Important Area" and as the "Dunes Habitat Preserve," or simply "Preserve," in the Draft Los Angeles/El Segundo Dunes Specific Plan. Restoration efforts, which began in the late 1980s and were completed in 1994, have received wide support from the scientific community, local elected officials, state and federal resource agencies, and the general public.

2.3 BIOTIC COMMUNITIES

Biotic communities are typically named for the dominant or characteristic floral components that comprise the community. Biotic communities are consistent with the descriptions provided in the Final Environmental Impact Report (EIR) for the LAX Master Plan and follow the Holland classification.⁷ Some wildlife species may be limited to a specific community and may be characteristic of that community; however, many wildlife species are associated with several different biotic communities. The biotic communities and vegetation types found within the Dunes are described in accordance with designations and definitions provided by Holland and are further identified by element code numbers. There are six biotic communities that describe the Dunes (Figure 2.3-1, *Biotic Communities of the Los Angeles/El Segundo Dunes*), which are located within two generally designated open areas within the coastal zone:

- The El Segundo Blue Butterfly Habitat Restoration Area (HRA), located to the west of the airfield, is comprised of approximately 202.8 acres. Four biotic communities are represented: Southern Foredune (135.6 acres), Southern Dune Scrub (24.4 acres), Valley Needlegrass Grassland (17.1 acres), and Developed (25.7 acres).
- Approximately 104.3 acres of non-restructured dunes adjacent to and north of the HRA are comprised of three biotic communities: Disturbed Dune Scrub/Foredune (74.6 acres), Nonnative Grassland/Ruderal (16.9 acres), and Developed (12.8 acres).

2.3.1 Southern Foredune (CNDDB Element Code 21230)

Southern Foredune plant communities are typically dominated by perennial species with a high proportion of suffrutescent (slightly woody at base) plants up to 30 cm tall. Species such as red sand verbena (*Abronia maritima*), beach burr (*Ambrosia* sp.), and the nonnative sea rocket (*Cakile* sp.) usually occur in exposed sites, and pink sand verbena (*Abronia umbellata*) and morning-glory (*Calystegia* sp.) occur in less exposed sites.⁸ Establishment of these plants reduces the amount of blowing sand, partially stabilizing the dunes. The mitigation site for restoration of 4.3 acres of dune habitat is located within Subsite 23 the Southern Foredune community (Figure 2.3.1-1, *Mitigation Site for Southern Foredune Restoration*). Photographs of the Dunes are provided in Figure 2.3.1-2, *Site Photographs*.

⁷ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

⁸ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

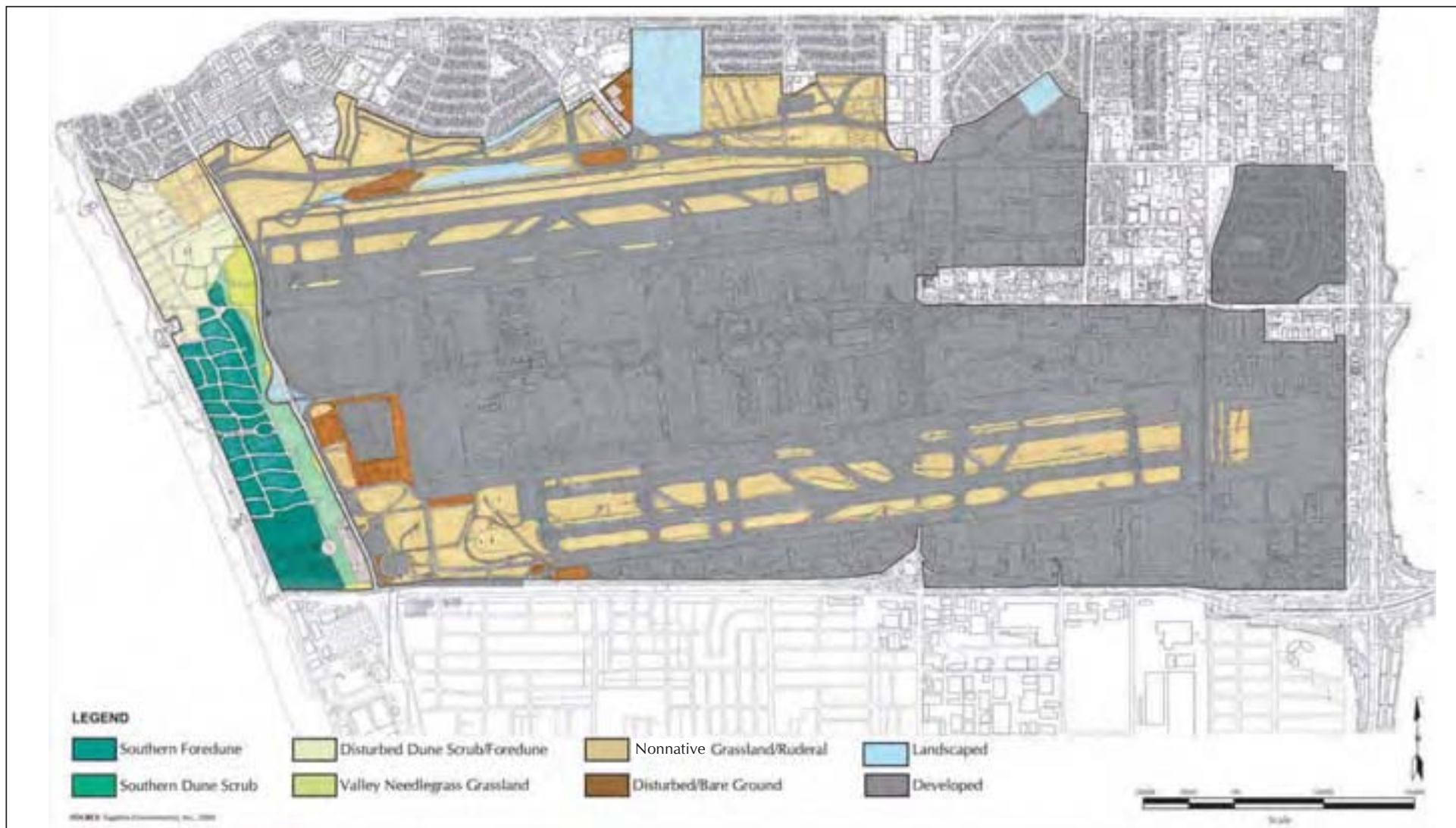


FIGURE 2.3-1
Biotic Communities of the Los Angeles/El Segundo Dunes

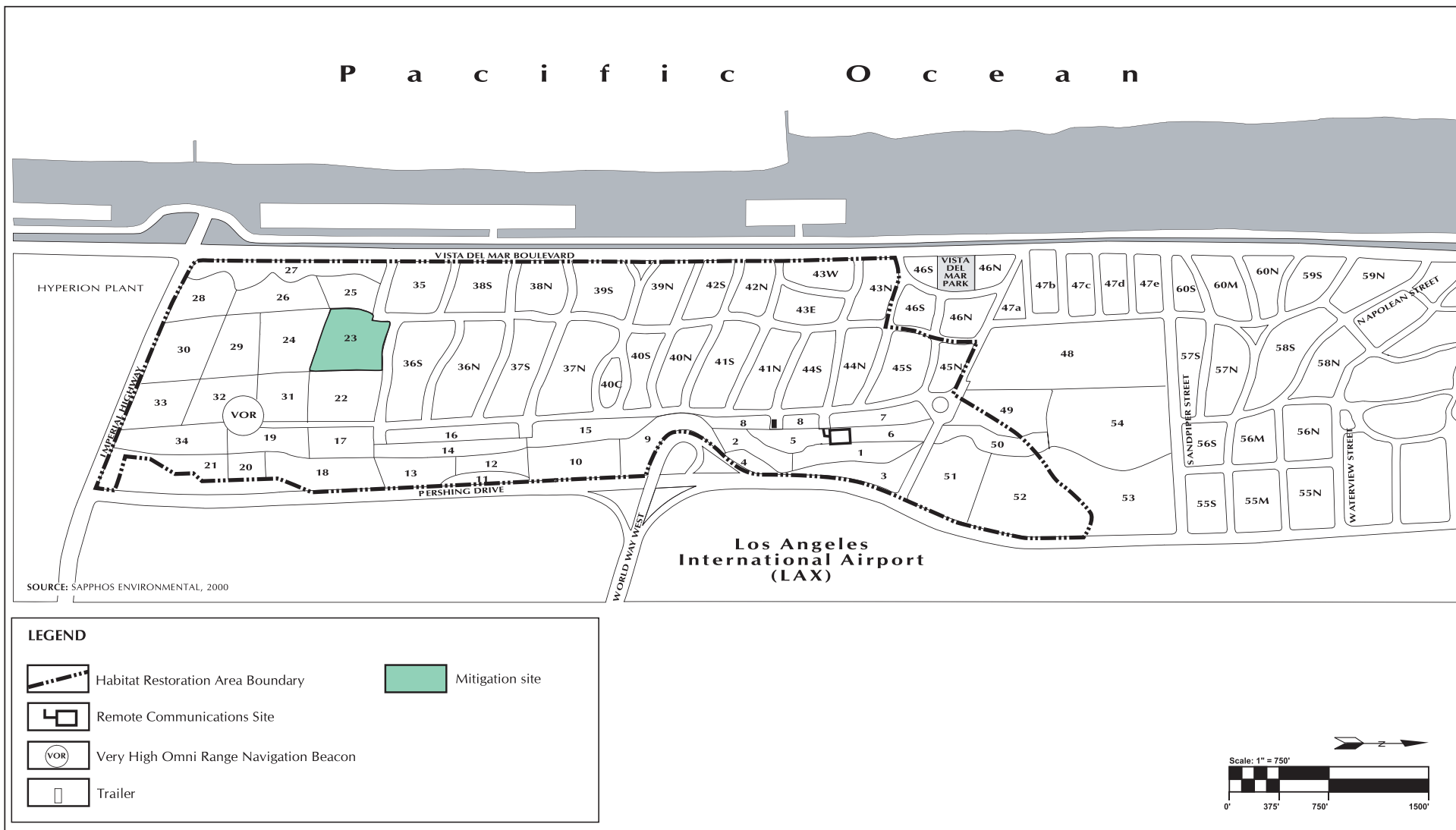


FIGURE 2.3.1-1
Mitigation Site for Southern Foredune Restoration



PHOTO 1

View of the Dunes from Subsite 23 looking south towards Hyperion.



PHOTO 2

View of the Dunes from Subsite 31 looking west towards Santa Monica.



PHOTO 3

View of the Dunes from the crest of backdune looking east towards LAX. Coastal buckwheat in the forefront.



FIGURE 2.3.1-2
Site Photographs

The Southern Foredune community, identified in Figure 2.3-1, is inhabited by a number of wildlife species, including the federally-listed El Segundo blue butterfly (*Euphilotes battoides allyni*). Historical surveys have recorded a large number of wildlife species (many of which no longer occur at the Dunes) and 151 species of invertebrates. Of the 34 sensitive wildlife species designated by federal or state agencies that were determined to have the potential to occur within the LAX Master Plan Boundaries, 24 were identified within the coastal zone. There are 18 sensitive arthropods (14 sensitive insect species and four sensitive arachnids), all of which were located within the Dunes. Two sensitive reptiles, the silvery legless lizard and the San Diego horned lizard, were determined present within the Dunes. Two sensitive bird species, the burrowing owl and the loggerhead shrike, were detected in the Dunes.

Within the coastal zone, 135.6 acres are found within the HRA of the Dunes. Relatively undisturbed areas (about 40 acres) surrounding the Very High Omni Range Navigation Beacon provide the most representative example of this community. Ecological restoration efforts undertaken between 1987 and 1994 have restored an additional 95.6 acres. The host plant and primary food source for the El Segundo blue butterfly is coast buckwheat (*Eriogonum parvifolium*), which is found in this biotic community. Southern Foredune may intergrade with Southern Dune Scrub.⁹

There are 20 sensitive plant species designated by federal or state agencies that were determined to have the potential to be present within the LAX Master Plan Boundaries. Surveys conducted for sensitive plant species identified three sensitive plant species within the coastal zone. Lewis' evening primrose (*Camissonia lewissii*), El Segundo duneflower (*Pholisma paniculaum*), and California spineflower (*Mucronea californica*) were identified within the Southern Foredune community. The remaining 17 sensitive plant species were determined absent within the coastal zone.

2.3.2 Southern Dune Scrub (CNDDB Element Code 21330)

Southern Dune Scrub is a dense coastal scrub community of scattered shrubs, subshrubs, and herbs that are generally less than 1 meter in height, often developing considerable cover, and often succulent.¹⁰ Characteristic species include saltbush (*Atriplex leucophylla*), California croton (*Croton californicus*), desert tea (*Ephedra californica*), coast goldenbush (*Isocoma menziesii* var. *vernonioides*), bush lupine (*Lupinus chamissonis*), box thorn (*Lycium brevipes*), prickly pear (*Opuntia littoralis*), lemonade-berry (*Rhus integrifolia*), jojoba (*Simmondsia chinensis*), and the nonnative crystalline iceplant (*Mesembryanthemum crystallinum*). Along the coast, Southern Dune Scrub intergrades with the Southern Foredune plant community.¹¹ Many of the wildlife species in the Southern Foredune community are also found in the Southern Dune Scrub community.

Southern Dune Scrub is considered by the CDFG Heritage Program to be among the most highly imperiled natural communities in California. The Dunes contain virtually the only remaining example of this plant community in mainland Southern California. Within the Dunes, the Southern

⁹ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

¹⁰ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

¹¹ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

Dune Scrub community is found only within the HRA along the steep slope of the backdune (Figure 2.3-1). The Southern Dune Scrub community is comprised of 24.4 acres. The host plant and primary food source for the El Segundo blue butterfly is coast buckwheat, which is found in this biotic community. Because the backdune is subject to lower thermal stress and wind dehydration, the vegetative cover of the Southern Dune Scrub community is typically denser than that of the Southern Foredune community.

2.3.3 Valley Needlegrass Grassland (CNDDDB Element Code 42110)

The deflation plain east of the backdune consists of loosely consolidated (incipient) sandstone covered to variable depths with aeolian (wind-transported) sand. Such deflation areas are commonly found behind coastal dune systems and where erosion down to or near the water table occurs, commonly supporting vernal pools.¹² Limited information is available regarding the historic vegetation of the deflation plain of the Dunes and the sand-dominated substrates that extend inland because extensive disturbance occurred before any botanical studies could be conducted. Historical documents refer to the area as “meadow.” Recently, the area has been referred to as the “Los Angeles Coastal Prairie.” Although the Los Angeles Coastal Prairie has been overlooked by Holland¹³ as a distinct association, Mattoni has reported on the unique characteristics of this habitat, including the predominance of an herbaceous plant community with extensive vernal pools.¹⁴ This community is considered an instance of Valley Needlegrass Grassland. The deflation plain area is referred to herein as “Valley Needlegrass Grassland,” as classified by Holland. The Valley Needlegrass Grassland community occupies 17.1 acres within the HRA and is limited to three distinct areas adjacent to and west of Pershing Drive (Figure 2.3-1). According to Pierce and Pool,¹⁵ the “meadow” was historically composed of the perennial nodding needlegrass (*Nassella [Stipa] cernua*), several annual native grasses, and a number of flowering forbs (herbaceous plants that are not grasses but are associated with grasses). A photograph of the area in 1938 shows a predominance of forbs over grasses.

Many common species of birds are known to utilize this biotic community, including western meadowlark (*Sturnella neglecta*), English sparrow (*Passer domesticus*), killdeer (*Charadrius vociferous*), and mourning dove (*Zenaida macroura*). Butterflies and moths known to occur in this community are the cabbage white butterfly (*Pieris rapae*), the buckeye (*Junonia coenia*), and the common hairstreak (*Strymon melinus*). Reptiles known to occur in this community include the side-blotched lizard (*Uta stansburiana*) and southern alligator lizard (*Gerrhonotus multicarinatus*).

The Valley Needlegrass Grassland community has been significantly altered and degraded by development activities. The floral components typically associated with it are now almost completely absent due to extensive grading and paving and the invasion of exotic annual grasses. No vernal pools exist in the community today.

¹² Barbour, M.G. and A.F. Johnson. 1998. “Beach and dune.” In Terrestrial Vegetation of California, 2nd Edition. Edited by Barbour, M.G. and J. Major.

¹³ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

¹⁴ Mattoni, R. and T.R. Longcore. 1997. “The Los Angeles Coastal Prairie, A Vanished Community,” Crossosoma 23(2): 71-102.

¹⁵ Pierce, W.D. and D. Pool. 1938. “The Fauna and Flora of the El Segundo Sand Dunes.” *Bulletin of the Southern California Academy of Science* 37:93-97.

2.3.4 Disturbed Dune Scrub/Foredune

This community is made up of 74.6 acres and is located north of the HRA, south of Waterview Street, west of Pershing Drive, and east of Vista Del Mar Boulevard, and it is bisected by Sandpiper Street (Figure 2.3-1). This biotic community is heavily disturbed and is dominated by invasive species that drive out native vegetation. Nonnative species present include acacia, iceplant, exotic annual grasses, and several large patches of giant reed (*Arundo donax*). The few coastal dune elements are patchy and include burbush, dunes evening primrose, bush lupine, pink sand verbena, and deerweed. Coast buckwheat, a plant species necessary to support the El Segundo blue butterfly, is absent from this site. Structural remnants belonging to former residences and an abundance of varied debris can be found among the sandy substrate.

2.3.5 Nonnative Grassland (CNDDDB Element Code 42220)/Ruderal

Nonnative Grassland/Ruderal areas are those that have been subjected to past disturbance. They are dominated by exotic annual grasses with nonnative forbs interspersed. The red fox (*Vulpes vulpes*) has invaded this community and uses it for foraging. Birds commonly found foraging and nesting in this biotic community include western meadowlarks (*Sturnella neglecta*), English sparrows, killdeer, mourning doves, American kestrels (*Falco sparverius*) and red-tailed hawks (*Buteo jamaicensis*). The same butterflies, moths, and reptiles found within the Valley Needlegrass Grassland community are found here.

This biotic community is comprised of 16.9 acres within the coastal zone that was once a residential area (Figure 2.3-1). Currently, the community undergoes regular operations maintenance and is routinely mowed.

2.3.6 Developed

Developed areas within the Dunes occupy 25.7 acres within the HRA and 12.8 acres within the non-restructured dunes adjacent to and to the north of the HRA. Developed areas include the airfield, terminals, parking, roads, support facilities, and the network of streets within the Dunes as well as current navigational aids and associated service roads.

2.4 WETLANDS

A comprehensive wetlands analysis addressing the potential effects of the LAX Master Plan on lakes, rivers, streams, wetlands, and other special aquatic habitats protected by the federal and state governments, is fully described in Section 4.12, *Wetlands*, of the Final EIR.¹⁶ Field efforts undertaken between 1997 and 1998 in support of the wetlands analysis did not identify wetlands within the Dunes. Until 1994, a small artificial freshwater marsh was supported by a leaking water pipe to the south of the entrance to the site; however, it did not meet the U.S. Army Corps of Engineers criteria for wetland soils, hydrology, or vegetation. There are no wetlands within the Dunes; therefore, further discussion of wetlands is not warranted.

¹⁶ City of Los Angeles. April 2004. *Final Environmental Impact Report*. Available at: <http://www.laxmasterplan.org>.

SECTION 3.0

PROJECT GOALS

This section addresses the goals set forth for the habitat restoration of 5.6 acres of coastal dune habitat within the coastal zone as a result of the construction of navigational aids in support of Alternative D of the Los Angeles International Airport (LAX) Master Plan and the removal of navigational aids no longer required to assist aircraft approaching LAX from the west. The goals are five-fold and include the conservation of state-designated sensitive habitats within and adjacent to the El Segundo Blue Butterfly Habitat Restoration Area (HRA), the conservation of floral resources (Lewis' evening primrose), the conservation of faunal resources, the replacement of state-designated sensitive habitats, and the conservation of the El Segundo blue butterfly. The goals are reflected in five mitigation measures, namely MM-BC-1, M-BC-2, MM-BC-9, MM-BC-13, and MM-ET-4, which have been revised as a result of ongoing coordination between the U.S. Department of Transportation Federal Aviation Administration (FAA) and the California Coastal Commission (CCC).

MM-BC-1: CONSERVATION OF STATE-DESIGNATED SENSITIVE HABITAT WITHIN AND ADJACENT TO THE EL SEGUNDO BLUE BUTTERFLY HABITAT RESTORATION AREA

The goal of MM-BC-1 is to ensure that the state-designated sensitive habitats within the HRA are conserved and protected during construction, operation, and maintenance. A description of construction avoidance measures and preconstruction evaluation is described in Section 6.0, *Maintenance and Monitoring Plan*.

MM-BC-2: CONSERVATION OF FLORAL RESOURCES: LEWIS' EVENING PRIMROSE

MM-BC-2 is designed to compensate for the loss of individuals of the sensitive Lewis' evening primrose within the HRA that will be removed as a result of the construction of navigational aids in support of Alternative D of the LAX Master Plan. The goal of this mitigation measure is to ensure the establishment the same number of plants as the number impacted. A description of directed surveys to be undertaken for the Lewis' evening primrose and subsequent restoration efforts are described in Section 4.0, *Restoration Plan*, where details of the restoration efforts for MM-BC-13 and MM-ET-4 are also described.

MM-BC-9: CONSERVATION OF FAUNAL RESOURCES

The primary purpose of MM-BC-9 is to compensate for the loss of habitat units for sensitive species within the LAX Airfield Operation Area (AOA), which is outside the scope of this plan. A component of this measure, as it relates to the Los Angeles/El Segundo Dunes (Dunes), is to conduct preconstruction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl. The goal of this mitigation measure is to ensure that sensitive faunal resources will not be affected by the construction or removal of navigational aids in the Dunes. A description of preconstruction survey methods and relocation efforts are described in Section 5.0, *Implementation Plan*.

MM-BC-13: REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITATS

The goal of MM-BC-13 is to mitigate for the loss of state-designated sensitive habitat within the Dunes as a result of the removal of navigational aids within and adjacent to the northern part of the

HRA (Figure 1-2). Removal of navigational aids and associated service roads under Alternative D of the LAX Master Plan would result in impacts to 1.94 acres of state-designated sensitive habitat within the Dunes. Mitigation for these impacts includes revegetation of all impacted areas and the restoration of Southern Foredune habitat within Subsite 23 to achieve a total mitigation ratio of 2:1. The total acreage for restoration within Subsite 23 associated with this mitigation measure and that of MM-ET-4 is 4.4 acres.

MM-ET-4: EL SEGUNDO BLUE BUTTERFLY CONSERVATION: HABITAT RESTORATION

The mitigation objectives of MM-ET-4 include salvaging and transplanting all coast buckwheat to be removed for navigational aid development within Subsite 23 of the HRA and restoring 3 acres of Southern Foredune habitat within Subsite 23 of the HRA. These activities shall be undertaken three years prior to implementation of proposed navigational aids to ensure that there is no net loss of occupied habitat. The overall goal of the mitigation is to provide habitat for the El Segundo blue butterfly that meets the physiological and ecological requirements of the species. The goal is to ensure that all necessary steps to avoid the flight season of the El Segundo blue butterfly (June 14–September 30) are implemented when undertaking installation of navigational aids and associated service roads proposed under Alternative D of the LAX Master Plan within habitat occupied by the El Segundo blue butterfly.

SECTION 4.0

RESTORATION PLAN

Ecological restoration is usually defined as an attempt to recreate fully functioning historic ecosystems. Ecological restoration may be differentiated from revegetation, which typically has the more limited objective of reestablishing plant cover on disturbed ground. Habitat enhancement refers to a focus on a particular species or set of species for which the area in question functions as habitat. For example, the 1988 to 1994 ecological restoration efforts at the Los Angeles/El Segundo Dunes (Dunes) involved planting a suite of plant species historically present within the Dunes and included the planting of coastal buckwheat shrubs to enhance the area as habitat for the endangered El Segundo blue butterfly. Ecosystem or habitat creation is also an option when true ecological restoration is not considered financially or technically feasible or when other objectives are more important. Mitigation measures MM-BC-13 and MM-ET-4 involve the restoration of habitat historically present at the Dunes, while MM-BC-2 involves revegetation with Lewis' evening primrose to mitigate for the losses associated with the construction of navigational aids.

Restoration efforts undertaken between 1988 and 1994 were based on a species composition and density determined by the initial quantitative sampling of vegetation assemblages, including meadow, backdune, and foredune habitats within the Dunes.¹⁷ Four transects were established and vegetation data was gathered and analyzed. The analysis resulted in the development of a restoration model that was implemented. The same restoration model and nomenclature for subsites have to be used for this restoration plan.¹⁸

4.1 CONSERVATION OF FLORAL RESOURCES – LEWIS' EVENING PRIMROSE (MM-BC-2)

The areas occupied by Lewis' evening primrose east and west of Pershing Drive are approximately 150 feet apart and most likely represent one inclusive population (Figure 4.1-1, *Location of Sensitive Plant Species*). The area east of Pershing Drive occupied by Lewis' evening primrose is relatively small (300 plants within 2.5 acres) and close to the occupied area within the Dunes (including 9,051 plants within the 200-acre El Segundo Blue Butterfly Habitat Restoration Area (HRA)); therefore, this current configuration does not provide a substantial risk-spreading benefit.

Mitigation for the potential loss of Lewis' evening primrose individuals shall be conducted through the collection of seed east of Pershing Drive and within the HRA followed by the broadcast of seed within Subsite 23. The U.S. Department of Transportation Federal Aviation Administration (FAA), or its designee, shall collect seed from those plants to be removed and properly clean and store the collected seed until used. If possible, seeds shall be collected in multiple years to ensure an adequate seed supply for planting. Collected seed shall be broadcast (distributed) within the 4.3-acre Subsite 23 after the first wetting rain. FAA, or its designee, shall implement a monitoring plan

¹⁷ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

¹⁸ At the beginning of the 1987–1988 research program, the entire 302-acre Dunes property was subdivided into 60 subsites to serve as reference for restoration studies and activities. The subsites were selected on the basis of such factors as soil conditions, plant communities, aerial photographic record, prior butterfly distribution studies, history of environment-modifying activities, and readily available features (e.g., old streets, obvious shifts in soil type, crests, and toes of slope) to enable rapid visual orientation in the field. Individual subsites reveal some biotic and physical variation; they also serve as useful references for description of the Dunes and have proven useful for continuing monitoring and management activities.

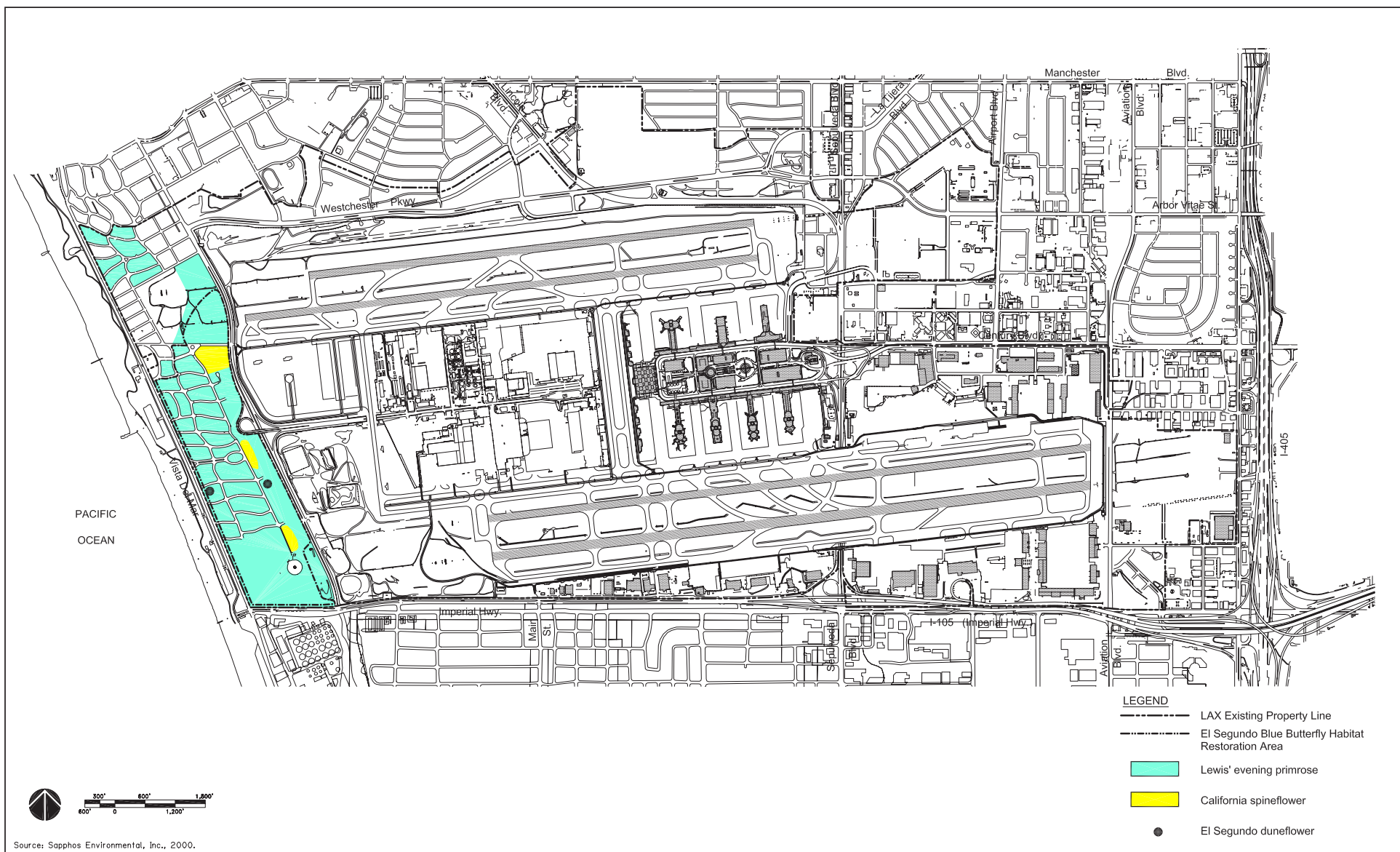


FIGURE 4.1-1
Location of Sensitive Plant Species

to monitor the establishment of individuals of Lewis' evening primrose for a period of not more than five years. Performance criteria shall include the establishment of the same number of plants as the number impacted in the first year following the distribution of seed within the mitigation site. Performance criteria shall also include confirmation of recruitment for two years following the first year that flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year that flowering is observed. Monitoring shall be undertaken in the manner set forth in Section 6.0, *Maintenance and Monitoring Plan*, of this habitat restoration plan. The area will receive monitoring and management for the presence of Lewis' evening primrose individuals equal to or greater than the number of individuals impacted by installation or removal of navigational aids.

4.2 REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITATS (MM-BC-13)

FAA, or its designee, shall undertake mitigation for the loss of state-designated sensitive habitat within the Dunes, including the HRA. Installation of navigational aids and associated service roads under Alternative D of the Los Angeles International (LAX) Master Plan would result in impacts to 66,675 square feet (1.53 acres) of state-designated sensitive habitat within the Dunes. These 1.53 acres will be replaced at a 2:1 ratio within Subsite 23 of Dunes for a total of 3.06 acres. Additionally, the removal of navigational aids no longer required to assist aircraft approaching from the west has the potential to disturb an estimated 1.4 acres of habitat. These 1.4 acres will be replaced at a 2:1 ratio for a total of 2.92 acres in two locations: 1.4 acres will be undertaken in-situ, and 1.4 acres will be undertaken within Subsite 23. The in-situ restoration of 1.4 acres consists of planting dominant species of both Southern Foredune and Valley Needlegrass Grassland, while restoration of Subsite 23 consists of planting species of Southern Foredune only. The revegetation plan for 1.4 acres of Southern Foredune vegetation type and Valley Needlegrass Grassland within the HRA requires planting specifications and schedules, a weed eradication program, and an irrigation plan, which are provided in Sections 5.0, *Implementation Plan*, of this habitat restoration plan.

4.2.1 In-situ Valley Needlegrass Grassland Restoration

Valley Needlegrass Grassland – Deflation Plain

In-situ restoration efforts will occur within Subsites 47–52 following the removal of existing navigational aids. Subsites 51 and 52 are historically characterized as Valley Needlegrass Grassland and will be revegetated accordingly. This grassland was once part of a larger area referred to as the “Los Angeles Coastal Prairie.” The Los Angeles Coastal Prairie is (or was) an instance of Valley Needlegrass Grassland, as classified by Holland.¹⁹ At the Dunes, the grassland plant community was composed of nodding needlegrass (*Nassella* [Stipa] *cernua*) and a number of flowering forbs (herbaceous plants that are not grasslike but are associated with grasses). When Pershing Drive was widened and realigned in 1974, the deflation plain slack area was scraped, and the soil substrate was removed. The area was then hydromulched with a native but inappropriate seed mix that resulted in the transformation of the forb-dominated prairie into one dominated by California buckwheat, iceplant, and Mediterranean grasses. The removal of these species was the focus of previous restoration efforts and continues to be the focus of ongoing maintenance efforts.

¹⁹ Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.

Plant Palette

Any areas within Subsites 51 and 52 that have been disturbed due to removal of navigational aids will be revegetated with nodding needlegrass (*Nassella cernua*). Additionally, the following species will be distributed as broadcast seed: Dunes primrose (*Camissonia chieranthifolia*), Lewis' evening primrose (*Camissonia lewisii*), yellow pincushion (*Chaenactis glabriuscula*), slender eriogonum (*Eriogonum gracile*), deerweed (*Lotus scoparius*), California poppy (*Eschscholzia californica*), bedstraw (*Gnaphalium biocolor*), California croton (*Croton californica*), and fescue (*Festuca megalura*).

Propagation

Propagation and planting of nodding needlegrass will be accomplished by the propagation from seed collected on site during late spring/early summer. Seed shall be properly cleaned, dried, and stored until used. In late summer, nodding needlegrass seed will be propagated by a qualified contract grower in 2-inch thimble pots and properly maintained. Seed collection for species to be distributed as broadcast seed will be undertaken during the appropriate time of year, and the collected seed will be properly cleaned and stored until used. If possible, seeds shall be collected in multiple years to ensure an adequate seed supply for broadcast.

Plant Installation

Nodding needlegrass shall be planted at a rate of 1,500 plants per acre (18 inches on center, as previously described in the restoration model for the Dunes).²⁰ Planting shall take place in the fall or after the first wetting rain. Maintenance of restoration plantings shall consist of adequate irrigation and weed abatement, as described in Section 6.0, *Implementation Plan*.

4.2.2 In-situ Southern Foredune Restoration

Southern Foredune

In-situ restoration efforts will occur within Subsites 23, 47, and 49 following the removal of existing navigational aids. Under MM-ET-4, these subsites will be restored with Southern Foredune vegetation. Of the three communities described on the Dunes, the "pioneer community" is most likely associated with the foredune.²¹ The foredune historically supported red sand verbena, pink sand verbena (*Abronia umbellata*), silver beach bur (*Ambrosia chamissonis*), beach morning glory (*Calystegia soldonella*) (no longer present), spectacle pod (*Dithyrea californica* var. *maritime*) (no longer present), and Russian thistle (*Salsola tragus*). Undisturbed areas in the southern-most portion of the Dunes provide the most representative example of this community. As described by Holland, the community is dominated by perennial species with a high proportion of suffrutescent plants (shrubby but not very woody) up to 30 centimeters (~ 12 inches) tall.²²

²⁰ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

²¹ Pierce, W.D. and D. Pool. 1938. "The Fauna and Flora of the El Segundo Sand Dunes." *Bulletin of the Southern California Academy of Science* 37:93-97.

²² Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. A Non-Game Heritage Program. California Department of Fish and Game. Sacramento.

On undisturbed foredune area, individual plants are usually spaced 2 to 3 feet apart. Mature perennial shrubs, such as coastal buckwheat (*Eriogonum parvifolium*), dunes lupine (*Lupinus chamissonis*), and silver beach bur are usually separated by 2 to 3 feet. The reason for this spacing is not clear but is probably related to water availability and/or underground root growth into a zone where the plants compete for water and/or nutrients.

Plant Palette

All plants within the plant palette (Table 4.2.2-1, *Southern Foredune Plant Palette: In-situ Restoration*) were chosen based on their natural occurrence in southern foredune communities and their establishment success during the 1988–1994 restoration efforts.²³ Table 4.2.2-1 depicts the species to be planted, species density, and species size at the time of planting. The long-term plant density target has been determined based on the average size, growth form, and longevity of individual plants. Initial densities were determined to be adequate to achieve the long-term plant density target. All plants, with the exception of coastal prickly pear, will be planted as container plants.

As a result of coordination efforts undertaken between CCC, FAA, and LAWA, it has been mutually agreed to that in lieu of including coast buckwheat within the plant palette for in-situ restoration of the Southern Foredune plant community, enhancement of the 4.3-acre Subsite 22 within the HRA will be undertaken by planting the appropriate number of coast buckwheat plants sufficient to enhance existing clusters of buckwheat and to establish a new cluster. Subsite 22 has been identified as an appropriate site for the enhancement plantings due to the current low numbers of coast buckwheat individuals (approximately 56 coast buckwheat plants), thus providing opportunities to not only enhance the existing clusters of buckwheat but to establish a new cluster of plants. While Subsite 22 will be monitored concurrently with monitoring efforts at Subsite 23, no success criteria are established for plantings within Subsite 22.

²³ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

TABLE 4.2.2-1
SOUTHERN FOREDUNE PLANT PALETTE: IN-SITU RESTORATION

Plant Species	Density (plants per acre)	Size (gallons)
Primary perennial species for foredune revegetation		
Coastal buckwheat* <i>Eriogonum parvifolium</i>	TBD	1
Coast goldenbush <i>Ericameria [Haplopappus] ericoides</i>	385	1
California encelia <i>Encelia californica</i>	146	1
Bladderpod <i>Isomeris arboreus</i>	195	1
Narrow-leaved bedstraw <i>Galium angustifolium</i>	129	1
Coastal prickly pear <i>Opuntia littoralis</i>	125	cuttings
Secondary plant species of the foredune to be introduced as container plants		
Morning glory <i>Calystegia macrostegia</i>	158	1
California aster <i>Corethrogyne filaginifolia</i>	225	1
Butterweed <i>Senecio douglasii</i>	88	1
Saltgrass <i>Distichlis spicata</i>	52	1
Lance-leaf dudleya <i>Dudleya lanceolata</i>	46	1
California sagebrush <i>Artemisia californica</i>	164	1

NOTE:

*Coast buckwheat to be revegetated as a result of the removal of navigational aids outside the HRA shall be planted within the HRA (Subsite 22).

Propagation

The planting palette shall be made up exclusively of native plants that are appropriate to the coastal dune habitat and Southern California coastal region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used.

All plants for restoration shall be propagated from seed collected within the Dunes and supplemented by a qualified contract grower, as needed, with local stock. Collection of coast buckwheat seed on the Dunes with no adverse effect on the El Segundo blue butterfly shall take place from September 15 through June 1 of any given year. All plants listed in the plant palette shall have seed collected following the flight season of the El Segundo blue butterfly. The El Segundo blue butterfly flight season is from mid June through early September. Seed shall be cleaned and stored in a cool, dry location until propagation begins in October 2004. Propagation should be conducted at a reputable nursery, allowing four to six months for seedlings to reach a suitable size for out planting.

Plant Installation

Planting of stock shall be in the existing substrate. Prior to plant installation, a qualified habitat restoration specialist shall place colored, pin flags on the enhancement site to mark planting locations of the shrubs. The placement of these flags shall be in concurrence with Appendix A, *Draft Implementation Plan*, and set forth according to Appendix B, *Planting and Irrigation Specifications*. The limits of the restoration site shall also be clearly marked with wooden stakes and delineated using a global positioning system (GPS) unit.

Foredune vegetation stock to be planted shall be healthy, vigorous, well-formed, and free from disease and environmental stress (e.g., windburn). Foredune vegetation stock shall be planted from 1-gallon containers into holes dug to a size twice the width and three times the depth of the container. Plants shall be removed from the container/sleeve, and if necessary, the sides of the root ball shall be scarified to promote root development. Plants shall be placed in the planting holes, as prescribed in Appendix B, so that the crown of the plant is at ground level. Excavated sand shall be used to fill the bottom of each hole to achieve the proper planting level and to backfill the remaining space around the root ball. Immediately after installation, plants shall be deep-soaked with sufficient water to reach the lower roots.

4.3 MITIGATION MEASURE MM-ET-4

MM-ET-4 has two restoration components associated with the conservation of the endangered El Segundo blue butterfly and the species' host plant, coast buckwheat. Subsite 23 of the HRA was selected as the site for implementation of MM-ET-4 due to the low shrub diversity present, as well as low numbers of coastal buckwheat, the foodplant for the El Segundo blue butterfly.

- Coast buckwheat plants are to be salvaged and relocated, along with any larvae on the plant or pupae in the soil below the plant that would be removed to accommodate the replacement navigational aids. These salvaged plants shall be replanted in Subsite 23 combined with previously established MM-BC-13 actions.
- 3.0 acres are to be restored in Subsite 23 to mitigate for the loss of 1.53 acres of state-designated sensitive habitat following the installation of navigational aids within and adjacent to the northern part of the HRA.

4.3.1 Specifications for Coast Buckwheat Salvage and Relocation

Salvage and Transplant

All coast buckwheat to be removed during installation of navigational aids shall be salvaged and transplanted to Subsite 23 within the HRA. Prior to installation of navigational aids, a permitted and qualified biologist shall salvage El Segundo blue butterfly larvae in order to minimize impacts to the butterfly. Salvage and transplantation efforts will take place after the onset of winter rains in January, which coincides with the normal period of dormancy of coast buckwheat. Each plant shall be excavated with its entire root ball such that sand at the base of each plant is disturbed to the least extent possible. Each plant will be transported in a suitable container and planted immediately in Subsite 23.

4.3.2 Southern Foredune Restoration (Subsite 23)

Plant Palette

All plants within the plant palette (Table 4.3.2-1, *Southern Foredune Plant Palette: Subsite 23*) were chosen based on their natural occurrence in Southern Foredune communities and their establishment success during the 1988–1994 restoration efforts.²⁴ Table 4.3.2-1 depicts the species to be planted, the species density, and the species size at the time of planting. The long-term plant density target has been determined based on the average size, growth form, and longevity of individual plants. Initial densities were determined to be adequate to achieve the long-term plant density target. All plants, with the exception of coastal prickly pear, will be planted as container plants.

²⁴ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

TABLE 4.3.2-1
SOUTHERN FOREDUNE PLANT PALETTE: SUBSITE 23

Plant Species	Density (plants per acre)	Size (gallons)
Primary perennial species for foredune revegetation		
Coastal buckwheat <i>Eriogonum parvifolium</i>	200	1
Coast goldenbush <i>Ericameria [Haplopappus] ericoides</i>	30	1
California encelia <i>Encelia californica</i>	75	1
Bladderpod <i>Isomeris arboreus</i>	60	1
Narrow-leaved bedstraw <i>Galium angustifolium</i>	75	1
Coastal prickly pear <i>Opuntia littoralis</i>	33	cuttings
Secondary plant species of the foredune to be introduced as container plants		
Morning glory <i>Calystegia macrostegia</i>	30	1
California aster <i>Corethrogyne filaginifolia</i>	150	1
Butterweed <i>Senecio douglasii</i>	30	1
Saltgrass <i>Distichlis spicata</i>	15	1
Lance-leaf dudleya <i>Dudleya lanceolata</i>	150	1
California sagebrush <i>Artemisia californica</i>	15	1

Propagation

The planting palette shall be made up exclusively of native plants that are appropriate to the coastal dune habitat and southern California coastal region and that are grown from seeds or vegetative materials obtained from local natural habitats so as to protect the genetic makeup of natural populations. Horticultural varieties shall not be used.

All plants for restoration shall be propagated from seed collected within the Dunes and supplemented by a qualified contract grower as needed with local stock. Collection of coast buckwheat seed on the Dunes with no adverse effect on the El Segundo blue butterfly shall take place from September 15 through June 1 of any given year. All plants listed in the plant palette shall have seed collected following flight season of the El Segundo blue butterfly. The El Segundo blue butterfly flight season is from mid June through early September. Seed shall be cleaned and stored in a cool, dry location until propagation begins in October 2004. Propagation should be conducted at a reputable nursery, allowing four to six months for seedlings to reach a suitable size for out planting.

Plant Installation

Planting of stock shall be in the existing substrate. Prior to plant installation, a qualified habitat restoration specialist shall place colored, pin flags on the enhancement site to mark planting locations of the shrubs, as described in Appendix A. The placement of these flags shall also be in concurrence with Appendix B. The limits of the restoration site shall also be clearly marked with wooden stakes and delineated using a GPS unit.

Foredune vegetation stock to be planted shall be healthy, vigorous, well-formed, and free from disease and environmental stress (e.g., windburn). Foredune vegetation stock shall be planted from 1-gallon containers into holes dug to a size twice the width and three times the depth of the container. Plants shall be removed from the container/sleeve, and if necessary, the sides of the root ball shall be scarified to promote root development. Plants shall be placed in the planting holes, as prescribed in Appendix B, so that the crown of the plant is at ground level. Excavated sand shall be used to fill the bottom of each hole to achieve the proper planting level and to backfill the remaining space around the root ball. Immediately after installation, plants shall be deep-soaked with sufficient water to reach the lower roots.

4.3.3 Coast Buckwheat Enhancement (Subsite 22)

As a result of coordination efforts undertaken between CCC, FAA, and LAWA, it has been mutually agreed to that in lieu of including coast buckwheat within the plant palette for in-situ restoration of the Southern Foredune plant community, enhancement of the 4.3-acre Subsite 22 within the HRA will be undertaken by planting the appropriate number of coast buckwheat plants sufficient to enhance existing clusters of buckwheat and to establish a new cluster. Subsite 22 has been identified as an appropriate site for the enhancement plantings due to the current low numbers of coast buckwheat individuals (approximately 56 coast buckwheat plants), thus providing opportunities to not only enhance the existing clusters of buckwheat but to establish a new cluster of plants. While Subsite 22 will be monitored concurrently with monitoring efforts at Subsite 23, no success criteria are established for plantings within Subsite 22.

Subsite 22 will be surveyed to identify appropriate areas for the enhancement of existing clusters of coast buckwheat and for the establishment of a new cluster.

SECTION 5.0

IMPLEMENTATION PLAN

This section of this habitat restoration plan describes site preparation, an irrigation plan, planting schedule, and a strategy for weed eradication. The planting plan and irrigation plan is provided in Appendix A. Planting and irrigation specifications are provided in Appendix B. In developing the implementation plan, site preparation techniques most applicable to this restoration/revegetation plan were taken from the Long-Term Habitat Management Plan and provide the basis for the invasive plant removal techniques presented in this section.²⁵ The planting schedule will reflect the optimal time for plant installation and the recommended irrigation plan.

5.1 SITE PREPARATION: INVASIVE PLANT REMOVAL

During the 1988–1994 restoration efforts, the most cost- and labor-intensive aspects of revegetation were completed. Nonnative plants, primarily iceplant and acacia, were largely removed within the El Segundo Blue Butterfly Habitat Restoration Area (HRA), and the site had been revegetated with plant species that are characteristic of the Los Angeles/El Segundo Dunes (Dunes). It was the intent of the Long-Term Habitat Management Plan to continue a maintenance and monitoring plan in order to support completed efforts. The success of future restoration efforts within the HRA is contingent on the removal of nonnative plants during the site preparation process and during subsequent monitoring periods. During site preparation, should nonnative species be determined to be common (greater than 15-percent cover), a buffer area of 10–15 feet around each restoration polygon will also be weeded.

5.1.1 Iceplant, Acacia, and California Buckwheat

The invasive capacity of the iceplant and acacia species and their capability of rapidly recolonizing the site make continued vigilance in their removal the first priority in vegetation management. Seeds of acacia are present in the soil and will remain viable and continue to germinate and grow for some years. Acacia also expands vegetatively from stumps left in the ground or from roots. Iceplant spreads from an extensive seed banks and expands vegetatively from parts of the plant left in the soil. Although iceplant has been removed manually throughout the 200-acre preserve area and the numbers of both sets of plants have been greatly reduced, small plants continue to regenerate throughout the site; continued removal should be carried out on a routine basis. It is anticipated that regular, intensive eradication efforts will be necessary for a period of at least five years.

California buckwheat (*Eriogonum fasciculatum*) was introduced to the Dunes area through the use of an inappropriate seed mix in hydromulching along Pershing Drive. The subsequent expansion of California buckwheat at the expense of the indigenous coastal buckwheat (*Eriogonum parvifolium*) was one factor contributing to the decline of the El Segundo blue butterfly on site. While an attempt has been made to remove California buckwheat from the Dunes, it still persists as a

²⁵ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles Airport/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

problem, particularly in prairie subsites. As with iceplant and acacia, an annual inspection and program for removal of California buckwheat is required.

Subsite 23 should be inspected to determine where iceplant and acacia need to be removed. Both small and large patches of iceplant should be uprooted and removed from the HRA. Acacia stumps should be treated with herbicide as a follow-up treatment, as necessary (see precautions involving handling of herbicides discussed below). During site preparation and subsequent monitoring, California buckwheat should be identified, cut and daubed with herbicide, and hauled off site along with acacia and iceplant.

5.1.2 Exotic Annual Weeds

Mustard (*Brassica nigra*) and other exotic annual weeds, mostly grasses such as oats (*Avena sp.*), brome (*Bromus sp.*), and barley (*Hordeum sp.*), are present on site. Unlike iceplant or acacia, it is unlikely these species will ever be entirely eradicated from the site, and that should not be a management objective.

In areas within Subsite 23, where exotic annual weeds occur in large numbers and threaten young plants, these annuals should be removed by hand, preferably prior to seed set. Ongoing removal efforts are effective in reducing the recurring seed bank. Some efforts should be made to manage their numbers. In general, as the dune scrub shrubs mature and native vegetation becomes established, problems with mustard and other annual weeds should decline.

5.1.3 Nonnative Trees

Nonnative tree species remaining on site include more than one species of palm, Peruvian pepper trees, and seedlings of *Myoporum*. Nonnative tree species provide habitat for European starlings, a flocking species that constitutes a potential hazard for air strikes. In addition, these nonnative trees are inconsistent with the goal of restoring plant communities that historically occurred at the Dunes.

All nonnative trees (in addition to Acacia) within Subsite 23 should be removed prior to implementation of this habitat restoration plan. Each tree should be surveyed (prior to removal) for nesting birds, which are provided protection pursuant to the federal Migratory Bird Treaty Act. Nesting birds should be removed in the fall (between August and February) when breeding birds are not expected on site. Tree removal is best carried out by trained landscape personnel.

5.1.4 Giant Reed, Castor Bean, and Pampas Grass

While the populations of the nonnative invasive giant reed (*Arundo donax*), castor bean (*Ricinus communis*), and pampas grass (*Cortaderia sellona*) do not appear to be expanding rapidly, giant reed has a tremendous capacity to invade natural vegetation where adequate water is available. Many riparian areas in Southern California have been transformed into giant reed monocultures over the course of a few years. It is likely that giant reed's presence on site is tied to the presence of water through irrigation. However, giant reed is also present on the portion of the Dunes outside of the preserve area where there is no irrigation. Pampas grass seed is dispersed by wind and is most likely to colonize leeward areas where other weedy vegetation may have been removed prior to revegetation and recolonization of native perennials. All three species present a potential problem to vulnerable native communities.

Nonnative invasive perennial pest species such as giant reed, castor bean, and pampas grass should be eradicated using manual and chemical methods. Giant reed is most easily eradicated in early spring when the plants are producing new foliage. The canes should be cut near the ground, the stumps should be painted directly with herbicide, and all cut material should be removed from site with care so as not to leave behind any pieces of stem. Even very tiny pieces are capable of resprouting. Castor bean is also most effectively removed in spring prior to the production of seed pots. Herbicides must be applied under the supervision of an individual with a qualified applicators certificate (QAC). All individuals involved in the application of herbicides must receive safety training and wear the appropriate protective gear. With these requirements, it will be most cost-effective for existing City Landscape Crews. Remnant plant material from giant reed and castor bean is not suitable for use as compost due to the ability of these materials to rapidly recolonize from seed and plant material.

5.2 IMPLEMENTATION

Planting specifications for Valley Needlegrass Grassland and Southern Foredune restoration are detailed in Appendix A and Appendix B.

5.3 SCHEDULE

5.3.1 Valley Needlegrass Grassland

Valley Needlegrass Grassland stock shall be planted at least three years prior to the installation of the navigational aid lighting system. As described above, salvage and transplantation efforts for coastal buckwheat shall take place after the onset of winter rains and prior to April 15, 2005. The planting of stock shall also be undertaken within the same period. Installation of plants during the winter season may potentially reduce the need for supplemental irrigation and facilitate successful establishment.

5.3.2 Coast Buckwheat

All plants for restoration shall be propagated from seed collected within the Dunes and supplemented by a qualified contract grower, as needed, with local stock. Collection of coast buckwheat seed on the Dunes with no adverse effect on the El Segundo blue butterfly shall take place from September 15 through June 1 of any given year. All plants listed in the plant palette shall have seed collected following the flight season of the El Segundo blue butterfly. The El Segundo blue butterfly flight season is from mid June through early September. Seed collection shall begin in September 2004 and may continue each year thereafter, until the appropriate amount of seed is collected to achieve the required planting densities and to meet the performance criteria. Seed shall be cleaned and stored in a cool, dry location until propagation begins in October 2004. Propagation is anticipated to occur from October through December 2004. Propagation should be conducted at a reputable nursery, allowing four to six months for seedlings to reach a suitable size for out planting.

5.3.3 Planting Schedule

Coast buckwheat shall be planted at least three years prior to installation of the navigational aid lighting system. As described above, salvage and transplantation efforts shall take place after the onset of winter rains and prior to April 15, 2005, and planting of coast buckwheat stock shall also be undertaken within the same period.

5.4 IRRIGATION

Given the irregularity of rainfall in Southern California, supplemental irrigation shall be provided for two years to ensure the successful establishment of mitigation plantings. For restoration of the areas affected by installation of navigational aids and removal, water shall be manually applied from a water truck due to the infeasibility of providing a temporary irrigation system to this area (Appendix A and Appendix B).

An existing irrigation system proximal to Subsite 23 shall be used to aid in the establishment of coast buckwheat. A drip irrigation system shall be designed to accommodate the planting of clusters or groups of coast buckwheat plants. Drip irrigation systems (either surface or subsurface systems) allow for the efficient and effective use of water through precise application. Drip irrigation reduces the need to over water, reduces evaporation, and reduces or eliminates runoff. Supplemental irrigation of plant clusters or groupings shall be undertaken during the spring and summer months (April through September), or as determined necessary (for instance, during years of exceptionally low precipitation). Supplemental irrigation shall be administered during the first three years of plant establishment and growth.

5.5 SUCCESS CRITERIA

This section addresses the success criteria of Mitigation Measures MM-BC-2, MM-BC-13, and MM-ET-4, which involve restoration. Mitigation Measures MM-BC-1 and MM-BC-9 address the implementation of best management practices (BMP) and preconstruction surveys for sensitive wildlife and thus lie outside the scope of this section.

5.5.1 Mitigation Measure MM-BC-2

Performance criteria shall include the establishment of the same number of Lewis' evening primrose as the number impacted in the first year following the distribution of seed within the mitigation site. Performance criteria shall also include confirmation of recruitment for two years following the first year that flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year that flowering is observed. Final success criteria, to be determined at the end of the fifth year of monitoring, shall be characterized by the same number of Lewis' evening primrose within the mitigation site as the number impacted by navigational aid development.

5.5.2 Mitigation Measure MM-BC-13

MM-BC-13 involves the restoration of 1.4 acres of Southern Foredune, which is to be combined to the mitigation requirements of MM-ET-4 to achieve 4.4 acres of restoration within Subsite 23. The success criteria for restoration within Subsite 23 are addressed below for MM-ET-4. In addition, those areas impacted by the removal of navigational aids must be restored to Valley Needlegrass Grassland and Southern Foredune communities. The following section addresses the success criteria for each of these habitats.

5.5.3 Valley Needlegrass Grassland

Success criteria to be met include the attainment of at least a 10-percent cover of native grass in the first year, and 20-, 30-, 40-, and 45-percent cover of native grass species over a five-year period, as determined by the point-intercept transect method conducted during the spring, to facilitate the

identification of native annual species. Additional success criteria to be met include the attainment of at least a 20-percent cover of native species²⁶ during the first year, and 30-, 40-, 50-, and 60-percent cover of native species over a five-year period, and the attainment of a diversity coefficient of 7 at the end of five years, with no more than 15-percent cover in nonnatives and 0-percent cover in nonnative invasive species, as defined by the California Exotic Pest Plant Council. A diversity coefficient of 7 indicates that seven species (from the plant palette of 10 species) and additional native species typical of the habitat shall be present, with at least four native species having greater than 5-percent cover. It is anticipated that volunteer native species typical of the habitat will occupy the restoration polygons. The California Department of Fish and Game (CDFG) has adopted a 10-percent threshold of native grass cover as its criteria for significance of native grasslands.²⁷ If monitoring discerns any failure in performance goals, remedial plantings shall be undertaken. Habitat restoration shall be conducted by a qualified habitat restoration specialist.

5.5.4 Southern Foredune

Performance criteria to be met include the attainment of 10-, 20-, 30-, 40-, and 45-percent cover of native species, including perennials and annuals typical of the habitat, over a five-year period, as determined by the point-intercept method conducted during the spring, to facilitate the identification of annual species. Additional performance criteria to be met include the attainment of no more than 15-percent cover of nonnative species and 0-percent cover of nonnative invasive species, as defined by the California Exotic Pest Plant Council. In addition, the following model, as prescribed in the Long-Term Management Plan, shall be adhered to with the final value, in conjunction with a 45-percent cover of native species, determining the final success criteria (Table 5.5.4-1, *Southern Foredune Model: Subsite 23*). If monitoring discerns any failure in performance goals, remedial plantings shall be undertaken. Habitat restoration shall be conducted by a qualified habitat restoration specialist. As a result of coordination efforts between CCC, FAA, and LAWA, the coast buckwheat to be planted within Subsite 22 will be monitored and irrigated but will not be subject to success criteria.

²⁶ Native species will include those derived from the plant palette as well as any other species typical of the community.

²⁷ Keeley, J.E. 1990. "The California Valley Grassland." *Endangered Plant Communities of Southern California*, Southern California Botanists Special Publication, No. 3, p. 17.

**TABLE 5.5.4-1
SOUTHERN FOREDUNE MODEL: SUBSITE 23**

Plant Species	Model	Initial	Final
Primary perennial species for foredune revegetation			
<i>Eriogonum parvifolium</i>	130	200	130
<i>Ericameria [Haplopappus] ericoides</i>	20	30	20
<i>Encelia californica</i>	50	75	50
<i>Isomeris arboreus</i>	40	60	40
<i>Galium angustifolium</i>	50	75	50
<i>Opuntia littoralis</i>	22	33	22
Secondary plant species of the foredunes to be introduced as container plants			
<i>Calystegia macrostegia</i>	25	30	25
<i>Corethrogyne filaginifolia</i>	100	150	100
<i>Senecio douglasii</i>	25	30	25
<i>Distichlis spicata</i>	10	15	10
<i>Dudleya lanceolata</i>	25	30	25
<i>Artemisia californica</i>	10	15	10

5.5.5 Mitigation Measure MM-ET-4

Success of the enhancement effort shall be determined through the results of coast buckwheat and vegetation monitoring. Less than ten10 coast buckwheat plants exist in the vicinity of navigational aids scheduled for removal, and have supported the butterfly in two (1998 and 2000) of the seven years of directed surveys.²⁸ Five coast buckwheat plants were determined to be within 100 feet of the centerline of navigational aids. The two closest plants (2) were approximately 39 feet from the centerline of a single light standard and localizer antenna. Given that the numbers of salvaged coast buckwheat will be relatively low, the coast buckwheat to be planted pursuant to MM-BC-13 will be combined with the salvaged coast buckwheat to achieve the success criteria described below, within Subsite 23. The following success criteria are based on coast buckwheat survival and shall be met by the end of each monitoring year. If a success criterion is not met during a monitoring year, then another year of monitoring shall be added. Remedial action shall be taken to bring the enhancement site into compliance with the success criteria. The success criteria do not have to be met consecutively for five years.

Year 1

- Survival of 160 coast buckwheat per acre
- Exotic species cover not exceeding 15 percent

Year 2

- Survival of 160 coast buckwheat per acre
- Exotic species cover not exceeding 15 percent

²⁸ Sapphos Environmental, Inc. 2003. Updated Biological Assessment Technical Report for the Federally Endangered El Segundo Blue Butterfly (*Euphilotes battoides allyni*) at Los Angeles International Airport, Los Angeles, California. Prepared for: Los Angeles World Airports, One World Way West, Los Angeles, CA 90009. Prepared by: Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105.

Year 3

- Survival of 160 coast buckwheat per acre
- 20-percent increase in cover of coast buckwheat
- 50-percent flowering of coast buckwheat
- Exotic species cover not exceeding 15 percent

Year 4

- Survival of 130 coast buckwheat per acre
- 20-percent increase in cover of coast buckwheat
- 70-percent flowering of coast buckwheat
- Exotic species cover not exceeding 15 percent

Year 5

- Survival of 130 coast buckwheat per acre
- 130 coast buckwheat individuals shall be greater than 2 years of age
- The average coast buckwheat plant shall cover 9 square feet. This determination will be made by measuring 40 per 160 coast buckwheat individuals.
- 90-percent flowering of coast buckwheat
- Exotic species cover not exceeding 15 percent

5.5.6 Southern Foredune

Performance criteria to be met include the attainment of 10-, 20-, 30-, 40-, and 45-percent cover of native species over a five-year period, as determined by the point-intercept method. In addition, the following model, as prescribed in the Long-Term Management Plan, shall be adhered to with the final value, in conjunction with a 45-percent cover of native species determining the final success criteria. Table 5.5.6-1, *Southern Foredune Model: In-Situ Restoration*, describes the model for final success criteria for in-situ restoration of individual species within those areas to be impacted by the removal of navigational aids, and to subsequently receive restoration of southern foredune vegetation.

TABLE 5.5.6-1
SOUTHERN FOREDUNE MODEL: IN-SITU RESTORATION

Plant Species	Model	Initial	Final
Primary perennial species for foredune revegetation			
<i>Ericameria [Haplopappus] ericoides</i>	20	385	20
<i>Encelia californica</i>	50	146	50
<i>Isomeris arboreus</i>	40	195	40
<i>Galium angustifolium</i>	50	129	50
<i>Opuntia littoralis</i>	22	125	22
Secondary plant species of the foredunes to be introduced as container plants			
<i>Calystegia macrostegia</i>	25	158	25
<i>Corethrogyne filaginifolia</i>	100	225	100
<i>Senecio douglasii</i>	25	88	25
<i>Distichlis spicata</i>	10	62	10
<i>Dudleya lanceolata</i>	25	46	25
<i>Artemisia californica</i>	10	164	10

5.6 METHODS OF JUDGING SUCCESS CRITERIA

In order to best judge the success of this habitat restoration plan, success criteria reflect the research conducted by Dr. Rudolph Mattoni, in association with Environmental Science Associates and Sapphos Environmental, Inc.^{29,30} The success criteria mirror those of the Long-Term Habitat Management Plan and restoration efforts conducted in the HRA from 1988 to 1994. Model densities in Tables 5.5.4-1 and 5.5.6-1 refer to data derived from surveys conducted in the relatively undisturbed fragments of foredune and backdune communities at the Dunes. Initial densities refer to original planting densities, and final densities are the desired target at completion of restoration.

Those values for coast buckwheat were further derived from values established by the U.S. Fish and Wildlife Service in their non-jeopardy Biological Opinion, issued April 20, 2004, regarding the impacts of Alternative D described in the Supplement to the Draft Environmental Impact Report (EIR) for the LAX Master Plan on the federally endangered Riverside fairy shrimp and El Segundo blue butterfly.³¹ Densities for coast buckwheat, as the host plant of the El Segundo blue butterfly, are intended to ensure the conservation of an ecosystem upon which the endangered El Segundo blue butterfly depend and ensure the successful conservation of the species. Those success criteria for MM-ET-4, with respect to coast buckwheat densities by year, reflect the requirements of the

²⁹ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

³⁰ Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.

³¹ U.S. Fish and Wildlife Service. 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles County, California*. Contact: U.S. Fish and Wildlife Service, Ecological Services, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92009.

April 20, 2004, Biological Opinion, and reiterated in the El Segundo Blue Butterfly Habitat Enhancement and Monitoring Plan.³²

Final densities derived from a comparing a census of the restoration site to a fixed standard are hoped to match the model densities, as established in relatively undisturbed sites of the same vegetation type. Maximum allowable differences between the restoration value and the reference value for each success criterion are in all cases null, with the exception of lance-leaf dudleya. Given the strict accordance with the reference sites, initial planting will require augmenting with broadcast seed, which should suffice to establish final densities.

5.7 PROVISIONS FOR FURTHER ACTION

Given the success of the 1988–1994 restoration efforts, it is unlikely the success criteria associated with restoration or habitat enhancement will not be met. It should be noted however that the continued effort to remove exotic, invasive species is of primary importance in maintaining the restoration work to be conducted. Failure to continue the removal of nonnative flora is likely to jeopardize the recolonization of native plant species. Such concern will remain until at least 75 percent of the plant cover consists of native species. However, it is important to note that at some point, as native revegetation plantings mature, recolonize, and become more competitive, removal of exotics will become less critical. In fact, in areas where native vegetation has become well-established, continued weed removal efforts are likely to cause more damage than good. Should monitoring efforts after five years reveal that success criteria are not being met, then the FAA, in cooperation with the CCC and CFWO, will determine the set of additional and/or alternative measures necessary for the restoration project to achieve success. It is in the best interest of the future of the HRA to resume restoration efforts within its own boundaries. However, if the HRA proves incompatible with the goals of this habitat restoration plan, an alternative mitigation site will require choosing, along with the creation of a restoration and monitoring plan similar to this habitat restoration plan.

³² Sapphos Environmental, Inc. 2004. "El Segundo blue butterfly Habitat Enhancement and Monitoring Plan." Prepared for: Federal Aviation Administration, 15000 Aviation Boulevard, Hawthorne, CA 90261, and Los Angeles World Airports, One World Way, Los Angeles, CA 90045. Prepared by: Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105.

SECTION 6.0

MONITORING AND MAINTENANCE PLAN

Responsible Agency: U.S. Department of Transportation, Federal Aviation Administration (FAA)

Reviewing Agencies: California Coastal Commission (CCC)

Monitoring and maintenance of the enhancement site is essential to the long-term success of this mitigation effort. The Monitoring and Maintenance Plan details preconstruction monitoring efforts as well as the long-term management approach. This plan is intended to ensure the successful achievement of the goals and objectives of Mitigation Measures MM-BC-1, MM-BC-2, MM-BC-9, MM-BC-13, and MM-ET-4, as described in Section 3.0, *Project Goals*. Final monitoring for success will occur after at least three years during which no remediation or maintenance activities have occurred, other than weeding.

6.1 PRECONSTRUCTION SURVEY FOR THE CONSERVATION OF FAUNAL RESOURCES

6.1.1 Mitigation Measure MM-BC-9

The primary purpose of MM-BC-9 is to compensate for the loss of habitat units for sensitive species within the Los Angeles International Airport Airfield Operations Area (AOA), which is outside the scope of this plan. A component of this measure, as it relates to the construction of navigational aids in the Los Angeles/El Segundo Dunes (Dunes), is the requirement for preconstruction surveys to determine the presence of individuals of sensitive arthropod species, the silvery legless lizard, the San Diego horned lizard, and the burrowing owl. Species accounts for each of the species to be surveyed for are located in Appendix C, *Background of the Los Angeles/El Segundo Dunes*. Should any sensitive wildlife be observed, they are to be relocated to suitable habitat within the HRA. Relocation efforts should be undertaken by a qualified wildlife biologist.

6.1.2 Sensitive Arthropod Surveys

Within and adjacent to those areas to be impacted by the installation or removal of navigational aids, the vegetation is sparse and largely nonnative. Based on surveys conducted from 1996–1998, it was determined that these areas are unsuitable for the sensitive arthropods. As a preventative measure, all ground-dwelling arthropods will, in all likelihood be trapped (and relocated) according to the methods described below for trapping of the silvery legless lizard and the San Diego horned lizard. In addition, immediately prior to construction activities, all herbaceous and non-herbaceous plants will be shaken to remove to flush out insects prior to grubbing.

6.1.3 Sensitive Reptile Surveys

Pitfall traps will be established three days prior to construction in all areas to be impacted by the installation or removal of navigational aids in order to isolate and relocate the silvery legless lizard, the San Diego horned lizard, and any sensitive arthropods that may be present. Each trap will be comprised of a 5-gallon bucket that is embedded in the ground with the mouth of the bucket leveled with the soil surface. The opening will be covered by a slightly raised lid or stone to keep

out predators and prevent trapped animals from being overheated during the day or drowned during rains.

Each trap shall be censused three times during daytime intervals: early morning, midday, and late afternoon. Active opportunistic searches shall be conducted for the silvery legless lizard and the San Diego horned lizard reptiles over a wider area. These searches shall generally be comprised of walking slowly within and adjacent to all areas impacted by the installation or removal of navigational aids habitats, looking for active reptiles and investigating under logs, rocks or other ground debris for sheltering animals. All trapped animals and arthropods shall receive relocation to a suitable habitat within the HRA by a qualified wildlife biologist.

6.1.4 Burrowing Owl Surveys

Burrowing owl observations have been highly infrequent and isolated instances. There are no known burrows within the Dunes that would support burrowing owls. Prior to the installation or removal of navigational aids in the northern portion of the HRA and areas adjacent to the HRA, a qualified biologist will conduct surveys for burrowing owls. If individuals are identified, they will be flushed from the construction site.

6.2 PRECONSTRUCTION MONITORING

Mitigation Measure MM-BC-1 details the extent and methods to be used for preconstruction monitoring of the navigational aids.

6.2.1 MM-BC-1: Conservation of State-Designated Sensitive Habitat Within and Adjacent to the El Segundo Blue Butterfly Habitat Restoration Area

Prior to the initiation of construction of LAX Master Plan components to be located within or adjacent to the HRA, a preconstruction evaluation shall be conducted to identify and flag specific areas of state-designated sensitive habitats located within 100 feet of construction areas. Subsequent to the preconstruction evaluation, a preconstruction meeting shall be conducted with all construction personnel, including the landscape contractor, grading contractor, and all others conducting operations within the HRA to explain the sensitivity of the areas outside the limits of grading, the need to avoid them, and the potential consequences of failure to comply with the protocols for working on the site. A written set of preconstruction briefing notes shall be prepared and discussed with the construction contractor. The briefing notes shall describe the mitigation requirements established by the permitting agencies.

Construction avoidance measures include erecting a 10-foot-high, tarped, chain-link fence where the construction or staging area is adjacent to state-designated sensitive habitats 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 to reduce fugitive dust emissions during construction activities within 2,000 feet of the HRA, with a goal to reduce fugitive dust emissions by 90 to 95 percent. In addition, to the extent feasible, no grading or stockpiling for construction activities should take place within 100 feet of a state-designated sensitive habitat. Provisions shall be incorporated for the identification of additional construction avoidance measures to be implemented adjacent to state-designated sensitive areas. All construction avoidance measures that address best management practices (BMP) shall be clearly stated within construction bid documents. In addition, FAA shall include a provision in all construction bid documents requiring the presence of a qualified environmental monitor, which

shall be responsible for those activities detailed below. Construction drawings shall indicate vegetated area within the HRA as "Off-Limits Zone."

In addition, MM-BC-1 states that maintenance and management efforts prescribed in El Segundo Dunes Long-Term Habitat Management Plan shall continue to be carried out as prescribed. Since the success of this mitigation effort is largely contingent on the continued removal of nonnative plants, those maintenance and monitoring efforts that were detailed in Section 5.1, *Site Preparation: Invasive Plant Removal*, should follow the same interval as described in Section 6.5, *Coast Buckwheat*.

6.3 CONSTRUCTION MONITORING

Monitoring of construction activities to ensure adherence to the avoidance measures outlined in Mitigation Measure MM-BC-1 is an important part of the mitigation of impacts to sensitive biological resources. A qualified biologist shall be on site during the entire construction phase. Monitoring results will be documented in monitoring notes and summarized in a monitoring report submitted to the CCC and CFWO.

The biological monitor shall ensure that the following guidelines for avoidance are adhered to during construction:

- Staging of equipment and materials will be accomplished outside of occupied habitat areas of the HRA.
- Equipment or vehicles driven and/or operated within the HRA will use existing roadways and paved and/or gravel areas.
- Equipment or vehicles driven and/or operated within native habitat will not leak oils or fuels that, if introduced to the sandy or soil, could be deleterious to living organisms.
- The cleanup of spills of oil or fuel will take place as soon as they are discovered.
- No rubbish will be deposited, and the construction contractor will be in compliance with all litter pollution laws.
- Disturbance or removal of vegetation will not exceed the surveyed and flagged limits of grading.

6.4 LEWIS' EVENING PRIMROSE

A component of Mitigation Measure MM-BC-2 is to implement a monitoring plan to census individuals of Lewis' evening primrose for a period of no more than five years. Monitoring shall be undertaken on a quarterly basis for the first three years following planting, and twice a year thereafter for a total of five years. Monitoring shall include the establishment of an equal number of plants as that impacted in the installation and removal of navigational aids in the HRA in the first year following the distribution of seed in the mitigation site. Monitoring shall also include confirmation of recruitment for two years following the first year that flowering is observed and establishment of individuals throughout the mitigation area within three years following the first year that flowering is observed. Final success criteria, to be determined at the end of the fifth year of monitoring, shall be characterized by the same number of Lewis' evening primrose within the mitigation site as the number impacted by navigational aid development.

6.5 COAST BUCKWHEAT

In order to meet the criteria of Mitigation Measure MM-ET-4, a census of coast buckwheat shall occur to ensure the successful restoration of El Segundo blue butterfly habitat. Since the successful restoration of El Segundo blue butterfly habitat is strictly contingent on the success of coast buckwheat (*Eriogonum parvifolium*) establishment, monitoring is directed at ensuring successful enhancement of Southern Foredune habitat in support of the El Segundo blue butterfly through the attainment of success criteria goals. Monitoring shall be performed by a qualified botanist with appropriate experience in native habitat restoration. The monitoring interval extends over a five-year period following planting of coast buckwheat within Subsite 23 of the Habitat Restoration Area:

- Quarterly monitoring required during the first three years
- Biannual monitoring in the fourth and fifth years

Quarterly and biannual monitoring of coast buckwheat shall include both qualitative and quantitative observations of survival, growth, and flowering. Census counts of coast buckwheat shall include numbers in addition to the number of plants and measurements for the areas of each plant, for the purposes of calculating absolute cover. Observations of El Segundo blue butterfly's use of coast buckwheat shall also be conducted during the flight season of the butterfly. Standard data log sheets shall be established and used throughout the monitoring period. The data sheets shall include a section to record ambient site conditions at the time of monitoring (i.e., date, time, weather, and special condition) and standard data to be collected for each parameter to be monitored. Data collection for some parameters will vary seasonally.

Other vegetation shall be surveyed only once annually using the line-intercept method along permanent vegetation transects. This method shall evaluate vegetative percent cover (total cover as well as cover of individual species), including the cover of coast buckwheat. Vegetation surveys shall be conducted when the dominant vegetation has matured and both early and late season species can be correctly identified. Standard data log sheets shall also be developed for vegetation surveys and used throughout the monitoring period.

A photographic record of the enhancement site shall be kept through the end of the monitoring program. Selection of photographic stations shall provide appropriate views and orientations for a comprehensive assessment of the progress of enhancement efforts. Photographs shall be taken from the same vantage point and in the same direction, and shall reflect material to be discussed in the monitoring reports. All photographs shall be annotated and recorded on standard field data sheets. When percent cover estimates are made of herbaceous vegetation, photographs shall be taken of sampling transects. Photographs for disturbances or special conditions shall be taken as needed.

6.6 MONITORING REPLACEMENT OF STATE-DESIGNATED SENSITIVE HABITATS

As a component of Mitigation Measure MM-BC-13, monitoring for restored Southern Foredune and Valley Needlegrass Grassland will be required for MM-ET-4. Monitoring will occur on a quarterly basis for the first three years following planting, and twice a year thereafter in order to achieve the success criteria detailed in Section 5.6. Monitoring for success will take the form of a census for those species listed in the plant palette. In addition, other vegetation will be surveyed once annually using the line-intercept method to determine percent cover of native species. Sampling shall be conducted with sufficient replication to detect a difference of 10-percent absolute ground cover with a single sample t-test with a statistical power of 90 percent at an alpha of 0.10. The

necessary sample size shall be estimated with a statistical power analysis in the monitoring plan using variance estimates from surveys of reference sites within the Dunes.

6.7 MAINTENANCE PLAN

FAA shall be responsible for all annual operations and maintenance costs required to achieve the success criteria associated with habitat enhancement and monitoring of the enhancement site.

Annual operations and maintenance activities shall include supplemental planting to attain the standards described in the success criteria, and/or to replace those individuals lost as a result of some severe disturbance to the site, installation and maintenance of the irrigation system, trash removal, and weed eradication as described in Section 5.1 of this habitat restoration plan.

SECTION 7.0 REPORTING

7.1 PRECONSTRUCTION MONITORING REPORT

The U.S. Department of Transportation Federal Aviation Administration (FAA) shall submit a preconstruction monitoring report to the executive director of the California Coastal Commission (CCC) upon completion of preconstruction activities for the installation of the navigational aid system within the El Segundo Blue Butterfly Habitat Restoration Area (HRA). These activities include surveys for Lewis' evening primrose (MM-BC-2), sensitive arthropod species, silvery legless lizard, San Diego horned lizard, and the burrowing owl (MM-BC-9). In addition, monitoring efforts pursuant to MM-BC-1 shall be carried out to provide the CCC with an accurate assessment of site conditions prior to construction. This report will include standard data log sheets, including a section to record ambient site conditions at the time of monitoring (i.e., date, time, weather, and special condition). A photographic record of the enhancement sites and Subsite 23 shall be established in the preconstruction monitoring report. Selection of photographic stations shall provide appropriate views and orientations for a comprehensive assessment of the progress of enhancement efforts. Photographs shall be taken from the same vantage point and in the same direction, and shall reflect material to be discussed in the monitoring reports. All photographs shall be annotated and recorded on standard field data sheets. Photographs for disturbances or special conditions shall be taken as needed.

FAA shall also submit a monitoring report to the U.S. Fish and Wildlife Service, Carlsbad Field Office (CFWO), upon completion of nocturnal observations of El Segundo blue butterfly behavior during the first flight period after installation of the navigational aid system.

7.2 POSTCONSTRUCTION REPORT

Within 30 days of planting of foredune vegetation stock, FAA shall be responsible for documenting and reporting the physical and biological "as built" condition of the restoration site. The Initial Conditions Report shall include photographic documentation of site conditions following the initial restoration efforts in addition to a report documenting restoration strategies undertaken and any deviations undertaken not present in this report. The Initial Conditions Report shall include actual planting densities and document whether implementation of the planting design was undertaken according to specifications.

7.3 ANNUAL REPORTING

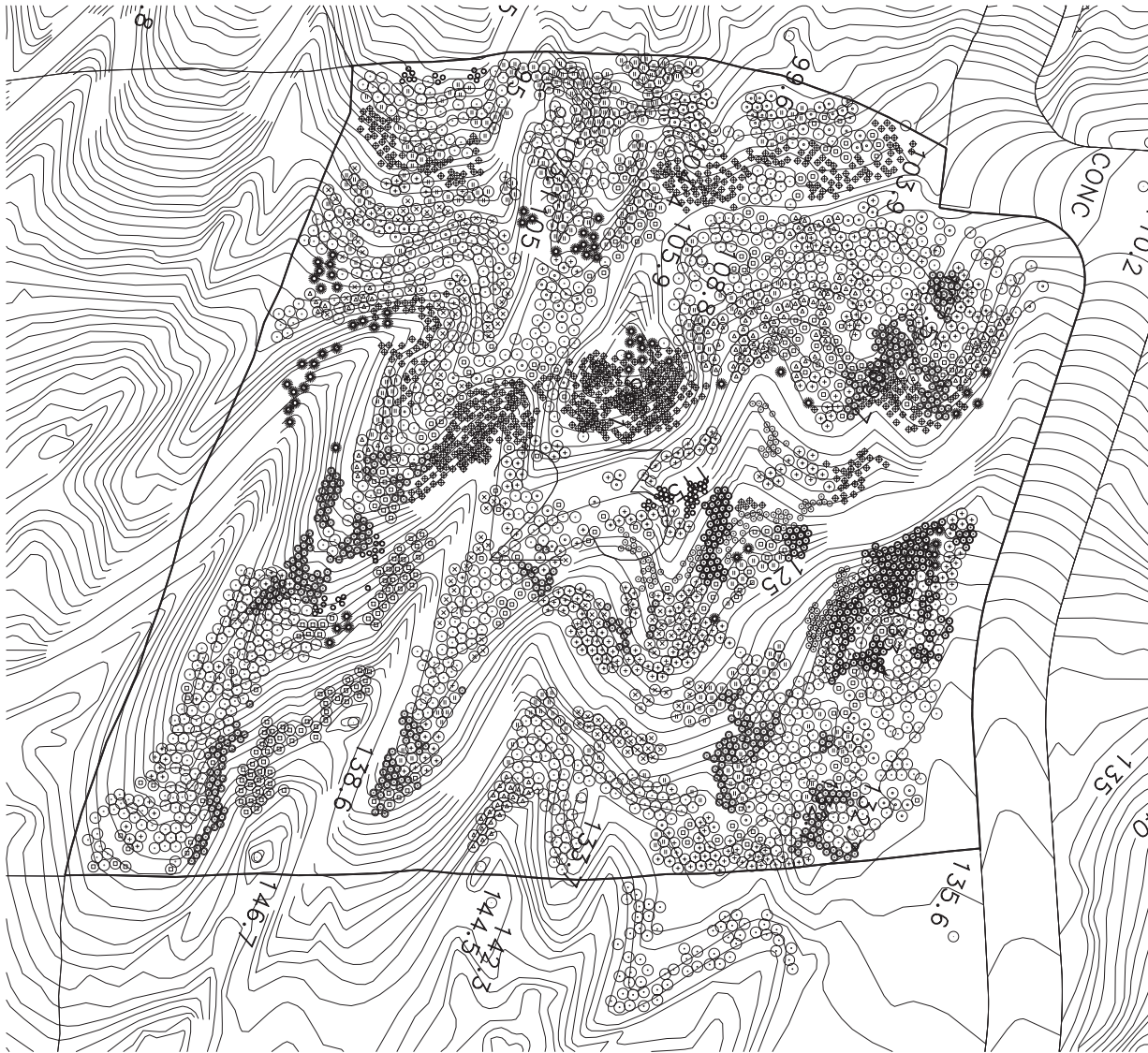
FAA shall submit annual monitoring reports to the executive director of the CCC by December 1 of each specified monitoring year. If monitoring continues past the five years due to the failure of a success criterion, then a monitoring report shall be filed for that year as well. The report shall discuss the results of monitoring for Mitigation Measures MM-BC-2, MM-BC-13, and MM-ET-4, as they relate to habitat restoration or enhancement. Only the first year annual monitoring report shall address MM-BC-1 and MM-BC-9, since they pertain only to preconstruction efforts. All field notes (standard data collection sheets) and photographs from designated photographic monitoring stations shall be included in the annual report.

SECTION 8.0 REFERENCES

- Barbour, M.G. and A.F. Johnson. 1998. "Beach and dune." In Terrestrial Vegetation of California, 2nd Edition. Edited by Barbour, M.G. and J. Major.
- City of Los Angeles. April 2004. *Final Environmental Impact Report*. Available at: <http://www.laxmasterplan.org>.
- Dixon, J. 30 September 2004. "Suggested language for a filing requirement for a Restoration and Monitoring Plan when resource impacts and mitigation are anticipated." Contact: California Coastal Commission, 45 Fremont, Suite 2000, San Francisco, CA 94105.
- Environmental Science Associates. 1994. "Long Term Management Plan for Los Angeles/El Segundo Dunes." Prepared for: City of Los Angeles Environmental Affairs Department, One World Way West, Los Angeles, CA 90045. Prepared by: Environmental Science Associates, 4221 Wilshire Boulevard, Suite 480 Los Angeles, CA 90010-3512; Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105; and Rudolf H.T. Mattoni, Agresearch, Inc., 9620 Heather Road, Beverly Hills, CA 90210.
- Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, CA: California Department of Fish and Game, Non-Game Heritage Program.
- Keeley, J.E. 1990. "The California Valley Grassland." *Endangered Plant Communities of Southern California*, Southern California Botanists Special Publication, No. 3, p. 17.
- Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.
- Mattoni, R. and T.R. Longcore. 1997. "The Los Angeles Coastal Prairie, A Vanished Community," Crossosoma 23(2): 71-102.
- Pierce, W.D. and D. Pool. 1938. "The Fauna and Flora of the El Segundo Sand Dunes." *Bulletin of the Southern California Academy of Science* 37:93-97.
- Sapphos Environmental, Inc. 2003. Updated Biological Assessment Technical Report for the Federally Endangered El Segundo Blue Butterfly (*Euphilotes battoides allyni*) at Los Angeles International Airport, Los Angeles, California. Prepared for: Los Angeles World Airports, One World Way West, Los Angeles, CA 90009. Prepared by: Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105.
- Sapphos Environmental, Inc. 2004. "El Segundo blue butterfly Habitat Enhancement and Monitoring Plan." Prepared for: Federal Aviation Administration, 15000 Aviation Boulevard, Hawthorne, CA 90261, and Los Angeles World Airports, One World Way, Los Angeles, CA 90045. Prepared by: Sapphos Environmental, Inc., 133 Martin Alley, Pasadena, CA 91105.

U.S. Department of Transportation, Federal Aviation Administration. August 2004. Federal Aviation Administration, Los Angeles International Airport, City of Los Angeles, California Coastal Consistency Determination for Relocation of Existing Navigational Aids. Contact: U.S. Department of Transportation, Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591.

U.S. Fish and Wildlife Service. 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles County, California*. Contact: U.S. Fish and Wildlife Service, Ecological Services, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92009.

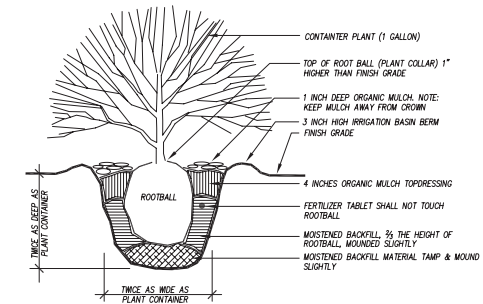


SubSite 23

SUBSITE 23-REVEGETATION PLANT LIST

SYMBOL	BOTANICAL NAME	COMMON NAME	DENSITY (PLANTS/ACRE)	QTY: SUBSITE 23 (4.34 ACRES)	SIZE
PRIMARY FOREDUNE PERENNIAL PLANT SPECIES					
○	ERIOGONUM PARVIFOLIUM	CALIFORNIA BUCKWHEAT	200	928	1 GALLON
●	ERICAMERIA ERICOIDES	COAST GOLDENBUSH	30	131	1 GALLON
○	ENCELIA CALIFORNIA	CALIFORNIA ENCELIA	75	325	1 GALLON
⊙	ISOMERIS ARBOREUS	BLADDERPOD	60	260	1 GALLON
○	GALIUM ANGUSTIFOLIUM	NARROW-LEAVED BEDSTRAW	75	325	1 GALLON
○	OPUNTIA LITTORALIS	COASTAL PRICKLY PEAR	33	143	CUTTINGS

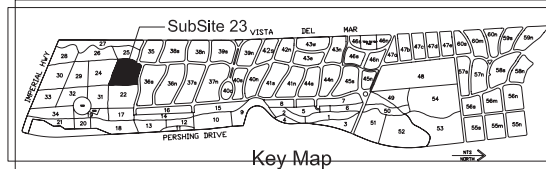
SECONDARY FOREDUNE PLANT SPECIES					
⊗	CALYSTEGIA MACROSTEGIA	MORNING GLORY	30	130	1 GALLON
○	CORETHROGYNE FILAGINIFOLIA	CALIFORNIA ASTER	150	651	1 GALLON
○	SENECIO DOUGLASHI	BUTTERWEED	30	130	1 GALLON
●	DISTICHLIS SPICATA	SALTGRASS	15	65	1 GALLON
●	DUDLEYA LANCEOLATA	LANCE-LEAF DUDLEYA	150	651	1 GALLON
⊕	ARTEMISIA CALIFORNIA	CALIFORNIA SAGEBRUSH	15	65	1 GALLON



CONTAINER PLANTING DETAIL
NTS

IMPLEMENTATION NOTES

1. AVOID DAMAGE TO ALL EXISTING NATIVE PLANTS WITHIN THE REVEGETATION AREA THAT HAVE BEEN IDENTIFIED BY SAPPPOS ENVIRONMENTAL TO BE PROTECT IN PLACE.
2. THE CONTRACTOR SHALL IDENTIFY "IN-FIELD" EACH PLANT TYPE, USING MULTIPLE COLORED FLAGS THAT WILL REPRESENT THEIR EXACT PLANTING LOCATION. THE LANDSCAPE ARCHITECT AND/OR SAPPPOS ENVIRONMENTAL SHALL REVIEW AND APPROVE THE FINAL LOCATION PRIOR TO PLANTING.
3. PRIOR TO PLANTING EACH CONTAINER PLANT THE CONTRACTOR SHALL FILL EACH HOLE WITH WATER AND ALLOW TO PERCOLATE INTO SUBSOIL.
4. IMMEDIATELY AFTER THE PLANTING, THOROUGHLY WATER IN EACH PLANT TO SETTLE BACKFILL, MULCH AND BERM. ALLOW TO SOAK AND REPEAT.
5. DURING THE FIRST THREE MONTHS OF INSTALLATION OR WITHIN THE CONTRACTED MAINTENANCE PERIOD DO NOT LET THE ROOTBALL DRY OUT. IRRIGATE AT A FREQUENCY TO MAINTAIN A MOIST ROOTBALL. IF AFTER WATERINGS, THE SOIL REMAINS SOGGY FOR LONG PERIODS OF TIMES DECREASE OR STOP THE FREQUENCY OF IRRIGATION.
6. AVOID OVERHEAD WATERING DURING THE HOT PART OF THE DAY IN THE WARM SEASONS.



Key Map
NTS

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SEAL:



1-800-424-4132
DOUGLAS

UNDERGROUND SERVICE UNIT OF SOUTHERN CALIFORNIA GAS COMPANY. THIS UNIT IS THE PROPERTY OF SOUTHERN CALIFORNIA GAS COMPANY. IT IS THE RESPONSIBILITY OF THE USER TO OBTAIN A COPY OF THE SOUTHERN CALIFORNIA GAS COMPANY'S UNDERGROUND SERVICE UNIT MANUAL AND TO FOLLOW THE INSTRUCTIONS THEREIN. THE USER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THIS UNIT AND FOR THE REPAIR OF ANY DAMAGE TO THIS UNIT. THE USER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THIS UNIT AND FOR THE REPAIR OF ANY DAMAGE TO THIS UNIT.

REVISIONS	DATE	BY

PROJECT: DUNE RESTORATION PRESERVE
EL SEGUNDO BLUE BUTTERFLY PRESERVE
SUBSITE 23 LOCATION

PREPARED FOR:
Sapppos Environmental, Inc.
17000 Bakersfield Blvd., Suite 300
Fountain Valley, CA 92708
T 310.260.1520, F 310.260.1521

"PLANTING"
IMPLEMENTAL PLAN
APPENDIX 1

JOB #
DESIGNED: GVS/MS
DRAWN: GVS/MS
CHECKED: GVS/MS
DATE: OCTOBER 18, 2004
SCALE IN FEET
0 20 40 60 80
Scale: 1"=20'-0"

DRAWING NO: P.1
SHEET 1 OF 5



IRRIGATION NOTES

- A. ALL DRIP EMITTER HEADS IN SHRUB OR GROUND COVER AREAS SHALL BE INSTALLED SO THAT THE DISTRIBUTION LINE IS ON GRADE.
- B. ALL PRESSURE LINES SHALL BE TESTED FOR TWO HOURS UNDER HYDROSTATIC PRESSURE OF 150 PSI AND BE PROVEN WATER TIGHT. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT FOR TEST.
- C. ALL DISTRIBUTION LINE SHALL BE SET PERPENDICULAR TO FINISH GRADE OF THE AREA TO BE IRRIGATED UNLESS OTHERWISE NOTED ON THE PLANS.
- D. THE SPRINKLER SYSTEM IS BASED ON THE MINIMUM OPERATING PRESSURE AND THE MAXIMUM FLOW DEMAND SHOWN ON THE IRRIGATION DRAWINGS AT EACH POINT OF CONNECTION. THE IRRIGATION CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. REPORT TO THE DISTRICT'S AUTHORIZED REPRESENTATIVE ANY DIFFERENCE BETWEEN THE WATER PRESSURE SHOWN ON THE DRAWINGS AND THE ACTUAL PRESSURE READING AT THE IRRIGATION POINT OF CONNECTION. IN THE EVENT PRESSURE DIFFERENCES ARE NOT REPORTED PRIOR TO START OF CONSTRUCTION, THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
- E. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, ETC. SHOWN WITHIN PAVED AREAS ARE FOR DESIGN CLARIFICATION ONLY. INSTALL PIPING AND VALVES IN PLANTING AREAS WHERE POSSIBLE.
- F. THE IRRIGATION CONTRACTOR SHALL FLUSH AND ADJUST ALL DISTRIBUTION LINE FOR OPTIMUM PERFORMANCE. THIS SHALL INCLUDE SELECTING THE AND THROTTLING THE FLOW CONTROL AT EACH VALVE TO OBTAIN OPTIMUM OPERATING PRESSURE FOR EACH SYSTEM.
- G. DO NOT WILLFULLY INSTALL THE SPRINKLER SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBTAINS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES, OR DIFFERENCES IN SITE DIMENSIONS EXIST THAT MIGHT NOT HAVE BEEN FORESEEN AND CONSIDERED IN THE ENGINEERING. THE OWNER'S AUTHORIZED REPRESENTATIVE SHOULD BE INFORMED OF SUCH OBSTRUCTIONS AND DIFFERENCES, BUT IN THE EVENT THAT THIS NOTIFICATION IS NOT PERFORMED, THE IRRIGATION CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
- H. INSTALL ALL PIPE MATERIALS AND EQUIPMENT AS SHOWN IN CONSTRUCTION DETAILS. USE TEFLON TAPE OR TEFLON PIPE DOPE ON ALL PVC MALE PIPE THREADS OF ALL SPRINKLER SWING JOINT AND VALVE ASSEMBLIES.

- I. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE HIMSELF WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, STRUCTURES EXISTING TREES AND UTILITIES. THE IRRIGATION CONTRACTOR SHALL EXERCISE EXTREME CARE, AND BE RESPONSIBLE FOR ANY DAMAGE IN EXCAVATING AND WORKING NEAR UTILITIES. HE SHALL COORDINATE HIS WORK WITH THE GENERAL CONTRACTOR AND OTHER SUB-CONTRACTORS FOR THE LOCATION OF UTILITIES AND THE INSTALLATION OF PIPE SLEEVES THROUGH WALLS, UNDER ROADWAYS, AND NEAR STRUCTURES.
- J. DRAINAGE OF WATER THROUGH SPRINKLER HEAD WILL NOT BE ALLOWED. SOME SPRINKLERS WILL REQUIRE THE INSTALLATION OF AN ANTI-DRAIN VALVE WITHIN THE DISTRIBUTION LINE TO PREVENT DRAINAGE. DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL INSTALL AN ANTI-DRAIN AS REQUIRED AT ANY SPRINKLER SHOWING SIGNS OF DRAINING AFTER THE IRRIGATION SYSTEM HAS OPERATED FOR AN ON TO OFF POSITION. INSTALLATION OF ANTI-DRAIN VALVES SHALL BE INCLUDED IN THE BID PRICE WITHOUT ADDITIONAL COST TO THE DISTRICT.

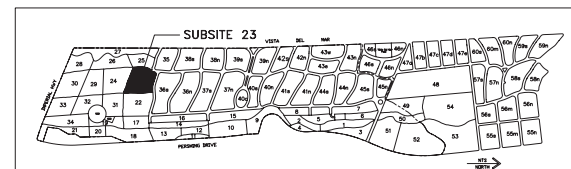
IRRIGATION LEGEND

SYMBOL	MANUFACTURER	MODEL NO.	/ DESCRIPTION
●	RAIN BIRD	PC 05 10-32	WITH PC DIFFUSER CAP-LIGHT BROWN 5 GPH FOR SHRUBS. PLACE IN DISTRIBUTION LINE. ONE PER PLANT, AT BASE OF PLANT.
⊕	RAIN BIRD	RAINBIRD PEB-PRS W/EASY RAIN SINGLE-VALVE BATTERY OPERATED CONTROLLER, SIZE PER PLAN	
□	NIBCO	MANUAL FLUSH BALL VALVE IN VALVE BOX AT LOWEST END OF EACH SYSTEM	
BF	FEBCO	2" ATMOSPHERIC VACUUM BREAKER, DOWNSTREAM OF CONTROL VALVE, 1 1/2" AT VALVE A7	
⋈		2" BRASS LINE BALL VALVE - NIBCO	
=====		EXISTING 2" WATER MAIN LINE (P.O.C.)	
-----		NEW 2" WATER MAIN LINE, MATCH EXISTING	
----		2" SCH 40 PVC LATERAL LINE, ON GRADE, BROWNLINE UV RESISTANT USE GALVANIZED TIE-DOWN STAKE AT 10' O.C.	
----		XERI-TUBE 700 DISTRIBUTION TUBING ON GRADE W/ 700 SERIES FITTINGS. USE GALVANIZED TIE-DOWN STAKE AT 10' O.C.	
A3	VALVE		
1 1/2"	GPM'S		
	VALVE SIZE		

IRRIGATION NOTES:

1. THE CONTRACTOR SHALL CONNECT NEW VALVES INTO EXISTING 2" MAINLINE.
2. THE CONTRACTOR SHALL VERIFY THE STATIC PRESSURE, WATER METER SIZE AND LOCATION PRIOR TO THE INSTALLATION OF THE SYSTEM.
3. DISTRIBUTION LINE SHALL BE PLACED ON GRADE AND STABILIZED WITH RAINBIRD GALVANIZED TIE-SOWN STAKES AT 10' O.C.

KEY MAP



PREPARED BY:

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Fountain Valley, California 92708
Fax: 714 955-3330
Phone: 714 955-3330

SEAL:



UNDERSTANDING SERVICE AREA OF SOUTHERN CALIFORNIA
SOUTHERN CALIFORNIA GAS COMPANY (SCG) is the owner of the gas service area shown on this plan. SCG is not responsible for the design or construction of the gas service area shown on this plan. SCG is not responsible for the design or construction of the gas service area shown on this plan. SCG is not responsible for the design or construction of the gas service area shown on this plan.

REVISIONS	DATE	BY

PROJECT: DUNE RESTORATION
EL SEGUNDO BLUE BUTTERFLY PRESERVE

PREPARED FOR:
Sagebrush Environmental, Inc.
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Fountain Valley, California 92708
T 310.260.1520, F 310.260.1521

IRRIGATION
PLAN

IMPLEMENTAL PLAN
APPENDIX 1

DRAWING:

JOB #	DESIGNED	DRAWN	CHECKED	DATE
000000	000000	000000	000000	OCTOBER 18, 2004
SCALE IN FEET	1" = 20'-0"			

DRAWING NO.
1-1

SHEET 3 OF 5



UNITS	SIZE	TYPE	DESCRIPTION	GPM	UNIT PSI LOSS
1	2"	PRESS.	ATMOSPHERIC VACUUM BREAKER	53.80	1.00
	2"	BRASS	AUTOMATIC VALVE	53.80	3.10
	2"	BRASS	GATE VALVE	53.80	2.50
679	1 1/2"	SOH 40	MAINLINE	53.80	5.50
26	1 1/2"	SO 40	LATERAL LINE	10.17	.11
29	3/4"	PE	DISTRIBUTION LINE	.58	1.31
		FITTINGS	ALLOWANCE		13.52
					1.86
STATION: 44				COMPONENT LOSSES:	
STATIC PRESSURE: 50.87 MIN REQ. AT POC				MIN. REQ. BY HEAD: 30.00	
MAX. GPM DEMAND: 53.80				ELEV. LOSS (CAN): -4.33	
				TOTAL PRESSURE REQ'D: 40.87	
				RESIDUAL PRESSURE: 10.90	

ESTIMATED WATER USE TURF:	=	(ETO) (KC) (AREA) (.62) / (IE)
	=	(33.0) (.80) (0) (.62) / (.70)
	=	0 (GALLONS/YEAR)
ESTIMATED WATER USE SHRUBS:	=	(ETO) (KC) (AREA) (.62) / (IE)
	=	(33.0) (.25) (215,670) (.62) / (.70)
	=	1,575,931.4 (GALLONS/YEAR)
TOTAL ESTIMATED WATER USE:	=	1,575,931.4 (GALLONS/YEAR)
25% RAINFALL: (10) (.25) (.8) (215,670) =	=	- 431,340 (GALLONS/YEAR)
TOTAL	=	1,144,591.4 (GALLONS/YEAR)

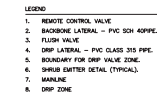
UNITS	SIZE	TYPE	DESCRIPTION	GPM	UNIT PSI LOSS
1	2"	PRESS.	ATMOSPHERIC VACUUM BREAKER	49.50	1.00
1	2"	BRASS	AUTOMATIC VALVE	49.50	3.10
1	2"	BRASS	GATE VALVE	49.50	2.00
698	2"	SCH 40	MAINLINE	49.50	12.14
58	1 1/2"	SCH 40	LATERAL LINE	6.25	1.55
18	3/4"	PE	DISTRIBUTION LINE	42	0.67
MISC		FITTINGS	ALLOWANCE		20.47
					2.05
STATIC: A1			COMPONENT LOSSES:		22.63
STATION PRESSURE:	59.00	MIN REQ. AT POC	MIN. REQ. BY HEAD:		30.00
MAX. GPM DEMAND:	49.50		ELEV. LOSS (A1 - B1):		-4.33
			TOTAL PRESSURE REQ:		48.20
			RESIDUAL PRESSURE:		10.80

TOTAL LANDSCAPE AREA	
SQ. FT. OF TURF	= 0
SQ. FT. OF SHRUB	= 215,670
TOTAL AREA	= 215,670

UNITS	SIZE	TYPE	DESCRIPTION	GPM	UNIT PSI LOSS
1	1 1/2"	PRESS.	ATMOSPHERIC VACUUM BREAKER	22.40	1.00
1	1"	BRASS	AUTOMATIC VALVE	22.40	3.55
1	1 1/2"	BRASS	GATE VALVE	22.40	2.00
356	1 1/2"	SCH 40	MAINLINE	22.40	5.66
62	1 1/2"	SCH 40	LATERAL LINE	6.83	0.02
11	3/4"	PE	DISTRIBUTION LINE	1.7	0.27
		FITTINGS	ALLOWANCE		12.50
MISC.					1.25
STATION: A7			COMPONENT LOSSES:		13.75
STATIC PRESSURE:	59.42 MIN REQ. AT POC		MIN. REQ. BY AGEN:		30.00
MAX. GPM DEMAND:	22.40		ELEV. LOSS HEAD:		-4.33
			TOTAL PRESSURE REQD:		39.42
			RESIDUAL PRESSURE:		10.00

"WATER CONSERVATION CONCEPT STATEMENT"
THE SYSTEM IS DESIGNED TO ACHIEVE CONSERVATION AND EFFICIENCY IN WATER USE BY PROVIDING ANTI-DRAIN VALVES, FOR LOW HEAD DRAINAGE, RAIN CHECK INTERRUPT SWITCH TO PREVENT THE SYSTEM FROM ACTIVATING WHEN RAINING, PRESSURE COMPENSATING SCREENS TO PREVENT OVERSPRAY AND REDUCE WATER USAGE IN SMALLER PLANTING AREAS, AND LOW GALLONAGE HEADS TO REDUCE WATER CONSUMPTION.

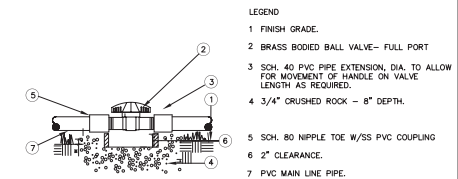
DRAWING NO: I-2	
SHEET 4 OF 5	



PLAN

- 1 ELECTRIC CONTROL VALVE.
- 2 CHRISTY'S I.D. TAG - NUMBERED TO MATCH GROUNDS.
- 3 FINISH GRADE.
- 4 SCH 80 NIPPLES T.O.E. W/A PVC SS COUPLING
- 5 PVC PIPE TO EMITTERS
- 6 COMMON BRICK (4 REQUIRED).
- 7 3/4" CRUSHED ROCK, 8" DEEP.

B	REMOTE CONTROL VALVE (PLACE UNIT ON GRADE)
---	--



C	BALL VALVE (PLACE UNIT ON GRADE)
---	----------------------------------

[illegible]

PROJECT: DUNE RESTORATION
EL SEGUNDO BLUE BUTTERFLY PRESERVE

PREPARE FOR: Sophos Environmental, Inc.
1351 4th. Street, Suite 227
Santa Monica, CA 90401
T 310.260.1520, F 310.260.1521

IRRIGATION
DETAILS

IMPLEMENTAL PLAN
APPENDIX 1

JOB # _____
DESIGNED GVIRAG
DRAWN GVIRAG
CHECKED GV
DATE OCTOBER 18, 2004

DRAWING NO: I-3	
SHEET 5 OF 5	

APPENDIX B

PLANTING IMPLEMENTATION

PART 1: GENERAL

1.01 DESCRIPTION

- A. The general requirements apply to all Landscaping work operations. Provide labor, materials, tools, transportation and all incidentals necessary to perform work as indicated on the Plans and as herein specified.
- B. Related Sections.
 - 1. Section 100: Site Clearing
 - 2. Section 900: Irrigation
- C. The Standard Specifications for Public Works Construction, “Greenbook”, latest edition, is referenced as if herein contained and the Contractor shall keep a copy at the project site. These Specifications shall supersede conflicts with information given in the “Greenbook”, unless otherwise determined by the Owner.

1.02 EXPERIENCE AND PLANTING REQUIREMENTS

A successful restoration project requires a good understanding of native plant communities and the relationship between individual plant types within that community. The Contractor responsible for the installation of plants shall have a minimum of 5 years experience in revegetation or habitat restoration projects and must provide the Owner with a list of three separate projects completed within the past 5 years that demonstrates his/her experience. THE PROJECTS SITES MUST BE SUBMITTED FOR OWNER REVIEW PRIOR TO THE AWARD OF PROJECT.

The oversight of the planting installation must be conducted by the person with the planting restoration experience and must be on site during all planting. The following Contractors have been pre approved and meet the minimum requirements as stated above. Those not listed below must be approved by the Owner.

- 1. Sonora Botanical
Contact: Steve Mudge
Phone: (949) 489-9130
- 2. Nakae & Associates
Contact: Kevin Kirschner
Phone: (949) 786-0405
- 3. Pacific Restoration Group
Contact: John Richards
Phone: (909) 734-9809

1.03 PLANTING LAYOUT

The Contractor shall layout each plant for the review and approval of the Owner's Representative prior to installation. The final placement of the new plant materials shall be done in a manner to conflict with existing dune plantings. Adjustment in the field will be necessary to avoid these conflicts. The specified plants shall be placed to achieve a natural looking mosaic throughout each of the planting areas. The layout of the plant material shall reflect a natural "established" stand of that particular plant community. The Contractor's personnel with Dune planting installation experience must be on-site at all times to oversee the placement and installation of all plants.

1.04 QUALITY ASSURANCE

- A. Comply with all applicable local, state, federal requirements regarding materials, methods of work, and disposal of excess and waste materials.
- B. Manufacturer's directions, specifications and detailed drawings will be followed in all cases where articles used furnish directions covering points not delineated on the Plans or Specifications.
- C. The work included in this section will be done to the satisfaction of the Owner and the decision by the Owner as to the true construction meaning of the Plans and Specifications will be final.
- D. All drop slips for landscape materials (including plants, fertilizers, pesticides, seed mixes) shall be given to the Owner.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not install landscape materials when ambient temperatures may drop below 45 degrees F (12 degrees C) or above 95 degrees F (39 degrees C).
- C. Do not install landscape materials when wind velocity exceeds 30 mph (48 k/hr).

PART 2: PRODUCTS

2.01 REFERENCES

- A. ANSI Z60.1 - Nursery Stock.
- B. California State Department of Agriculture - Regulations for nursery inspections, rules, and grading.

2.02 PLANT MATERIAL

- A. Trees, shrubs, grasses, sedges and bulbs shall be grown by an established nursery having been in the business of growing trees, shrubs, ground cover a minimum of five (5) years.

At the option of the Owner, plants shall be inspected and tagged at the nursery prior to shipment to the planting site.

1. Shrubs: Shrubs shall be of the specified type and size, selected from high quality, well-shaped nursery stock.
 2. All plant stock shall be pre-inoculated with endomycorrhizal inoculum *Glomus intraradices*.
- B. Plant names indicated or listed in the “Plant Legend” on the Plans, conform to the approved names given in “An Annotated Checklist of Woody Ornamental Plants in California, Oregon, and Washington, Manual 4091”, published by the University of California (1979). Except for names not covered therein, the established custom of the nursery is followed.
- C. Condition of plants shall be in accordance with the California State Department of Agriculture’s regulations for nursery inspections, rules, and grading and shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests, or their eggs, and shall have healthy normal root systems, well filling their containers, but not to the point of being root bound.
- D. Plants shall not be pruned prior to delivery, except as authorized by the Owner. In no case shall trees be topped before delivery.
- E. The size of the plants shall correspond with that normally expected for species and variety of commercially available nursery stock, or as specified on the Plans. The minimum acceptable size of all plants, measured before pruning with the branches in normal position, shall conform with measurements, if any, specified on the Plans. Plants larger in size than specified may be used with the approval of the Owner, but the use of larger plants will make no change in contract price.
- F. Bare root planting shall be done only with special approval of the Owner.
- G. All plant material shall be subject to the inspection and acceptance of the Owner before planting. A representative number of plants as determined by the Owner may be inspected for size and condition of root growth, insects, injuries and defects. Plants not accepted are to be removed from the site immediately and replaced with suitable plants. The Owner reserves the right to reject entire lots of plants represented by defective samples.

2.05 FERTILIZERS, SOIL CONDITIONING MATERIALS AND WATER

- A. General.
1. Fertilizing and soil conditioning materials shall comply with the applicable requirements of the State Food and Agricultural Code. All materials shall be packaged first grade, commercial quality products identified as to source, type of material, weight, and manufacturer’s guaranteed analysis. Fertilizing and soil

conditioning material shall not contain toxic ingredients or fillers in quantities harmful to human life, animals, or plants.

2. The Contractor shall furnish a Certificate of Compliance stating that the material substantially meets the specifications.

B. Commercial Fertilizer.

Commercial fertilizer shall contain mycorrhizal inoculum , propagules of the vesicular arbuscular mycorrhizal species Glomus intraradices, Glomus aggregatum, Glomus mosseae, combined with other species and/or additional genera including Sclerocystis, Gigaspora, Scutellospora, Entrophospora and acaulospora. Commercial fertilizer shall be free-flowing material delivered in unopened sacks. Material which becomes caked or otherwise damaged shall not be used

C. Organic Amendment.

1. Humus material shall have an ash content of no less than 8% and no more than 20%.
2. The pH of the material shall be between 6 and 7.5.
3. The salt content shall be less than 10 millimho/cm @ 25 degree Celsius (ECe less than 10) on a saturated paste extract.
4. Boron content of saturated extract shall be less than 1.0 parts per million.
5. Silicon content (acid-insoluble ash) shall be less than 20%.
6. Calcium carbonate shall not be present if to be applied on alkaline soil.
7. Types of acceptable products are composts. Manure, mushroom composts, straw, alfalfa, peat mosses etc. low in salts. Low in heavy metals, free from weed seeds, free of pathogens and other deleterious materials.
8. Composted wood products are conditionally acceptable [stable humus must be present]. Wood based products are not acceptable which are based on redwood or cedar.
9. Sludge-based materials are not acceptable.
10. The compost shall be aerobic without malodorous presence of decomposition products.
11. The maximum particle size shall be 0.5 inch, 80% or more shall pass a No. 4 screen.

D. Water.

Water shall be clean, fresh and free of substances or matter which could inhibit vigorous growth of plants

2.06 NON-SELECTIVE HERBICIDE

Non-selective herbicide for weed abatement shall be Round-Up or approved equal.

2.07 ORGANIC MULCH

- A. Mulch shall be "Forest Floor" (0-4")

Available from or equal to:

Aguinaga

7992 Irvine Boulevard

Irvine, CA 92618

(949) 786-9558

"OR"

Approved Equal

- B. The mulch shall consist of fibrous, woody bark mixture of varied particle size with the following characteristics:

Percent Passing	Sieve Size
90-100	25.4 mm (1")
80-100	12.7 mm (1/2")
20-60	6.35 mm (1/4")

- C. Mulch shall be packaged in bales or bags unless the Owner approves a bulk source in advance of delivery to the site of the work. The Contractor shall submit one sample of three (3) different mulch materials. The Owner, has the right to reject all samples and request additional samples until a suitable mulch material is approved.
- B. The Owner has the right to reject all samples and request additional samples until a suitable mulch material is approved.

2.08 PRE-EMERGENCE WEED CONTROL

Pre-emergence herbicide shall be Ron-star 5G to be applied at a rate specified by the manufacturer for ground cover applications.

2.09 SAMPLES

- A. Samples of products and materials shall be required by the Owner. Submittals for inspection shall be stored on the site until furnishing of material is complete.
- B. Delivery of products and materials may begin upon acceptance of samples or as directed by the Owner.

2.10 PLANT TABLETS

- A. Plant tablets shall be Gro-Life by Gro-Power. All natural Mycorrhizal Inoculum

Tablet Size	7 Grams					
Container	Pot Liner	1 Gallon	5 Gallon	15 Gallon	24" Box and	36" Box and

Size					Larger	Larger
Application Rates (No. of Tablets)	1	3	n/a	n/a	n/a	n/a

PART 3: EXECUTION

3.01 BACKFILL MIX

Blend the following materials into clean leached soil. Remove debris, rocks and foreign material. Soil clods should not exceed 1 ½ inches in diameter. Excessive gravel should not be present. The following material shall be applied at Rates per Cubic Yard:

Ammonium sulfate	(21-0-0)	1/3 pound
Potassium sulfate	(0-50-0)	1/3 pound
Triple superphosphate	(0-45-0)	¼ pound
Gypsum		2 pounds
Organic amendment		15% by volume

3.02 PLANTING GENERAL

- A. All sprinkler/irrigation work shall be inspected and accepted by the Owner, prior to start of any work of this subsection.
- B. Location of utility, structures and lines.
 - 1. Prior to excavation for planting or placing of stakes, locate all utilities, electric cables, conduits, irrigation lines, heads, valves and valve control wires, and all utility lines so that proper precautions may be taken not to damage such improvements.
 - 2. In the event of a conflict between utilities and plant locations, promptly notify the Owner, which shall arrange for one or the other to be relocated. Failure to follow this procedure shall place upon the Contractor the responsibility to make, at his own expense, any and all repairs for damages resulting from work.
- C. All plants will be inspected by the Owner prior to planting, including plants previously approved at the nursery. The Contractor shall be responsible for the condition of all plants, planted or otherwise, until acceptance.
- D. Quantities.

1. Plant materials shall be furnished in the quantities and/or spacing as shown or noted for each location, and shall be of the species, kinds, sizes, etc., as symbolized, and/or described in the Plant Legend, as indicated on the Plans.
 2. The Contractor is to verify all sizes and quantities on the Plans. Promptly report any discrepancy to the Owner.
- E. Substitution.
1. Any plant material or any development materials specified by trade name or equal, shall be according to these Plans and Specifications.
 2. Installation and use of substitute items shall not be made until the Contractor is in receipt of written approval from the Owner. Substitution proposals for plant material must be accompanied by written proof of non-availability within a five hundred mile radius of the project site for material originally specified and proof that material was ordered in a timely matter upon award of contract.
- F. Protection and Storage.
1. The Contractor shall regularly water all nursery stock in containers and place them in a cool area protected from sun and drying winds.
 2. The Contractor shall not allow plants to dry out before or while being planted. Keep exposed roots moist by means of wet sawdust, peat moss or burlap at all times during planting operations. Do not expose roots to the air except while being placed in the ground. Wilted or diseased plants, whether in place or not, will not be accepted and shall be replaced at the Contractor's expense.
- G. The Contractor shall moisten prepared surface immediately prior to installing plant material.
- H. The Contractor shall install plant material immediately after delivery to site, within 24 hours after harvesting to prevent deterioration.
- I. The Contractor shall water landscaped areas immediately after installation.
- J. The Contractor shall verify material quantities from the plan layout.
- K. The Contractor shall notify the Owner within 15 days of bid aware in the event of unavailability of plant material.
- L. No planting shall be started until irrigation system have been completed and approved by the Owner.
- M. The Contractor shall ensure that all excavated plant pits have positive drainage. Plant pits when fully flooded with water shall drain within 8 hours of filling

- N. Finish grade of all planting areas to a smooth and even condition with no water pockets of irregularities. Construct a smooth transition from existing to new grade.

3.03 SHRUB PLANTING

- A. Planting Holes. Planting holes shall be approximately square for container grown plants, and circular for balled and burlapped plants. The holes shall be twice the width of the plant container or ball, unless otherwise shown on the Plans. The holes shall be one-and-half times the depth of the root ball, or as shown on the Plans. The hole shall be larger, if necessary, to permit handling and planting without injury or breakage of the root ball or root system. Any plant having a broken or cracked root ball before or during planting shall not be planted.
- B. Underground Obstructions. In the event that underground construction work or obstructions are encountered in the planting operation, alternate locations for plant material will be selected by the Owner. Operation will be done at no extra cost to the Owner.

- C. Planting Procedures.

- 1. Remove all plants from their containers and set so that, when settled, they bear the same relation to the required grade as they bore to the natural grade before being transplanted. Plant each plant in the center of the pit and backfill with native soil. Hand compact the backfill around the ball or roots. Do not use soil in muddy condition for backfilling. The root ball of the plant shall be 1' to 2" above the backfill. Do not fill around trunks or stems. Cut off all broken or frayed roots.

For balled and burlapped plants, all burlap, ropes or wire shall be removed from the top of the root balls.

- 2. Thoroughly water each plant when the hole is one-half filled.
 - 3. After watering, backfill the remainder of the hole and hand tamp the soil in place until the surface of the backfill is level with the surrounding area and the crown of the plant is at the finished grade of the surrounding area.
 - 4. After backfilling, a basin shall be constructed around each plant. Each basin shall be of a depth sufficient to hold at least six inches (6") of water. Basins shall be the same size as the container size of each individual plant. The the basins shall be constructed of amended backfill material.
 - 5. Set the plant tablets to be used with each plant on the top of the root ball so the required number of tablets to be used in each hole can be easily verified. Bury tablets upon approval by the Owner.
 - 6. Immediately after planting, apply water to each tree and shrub by means of a hose. Apply water in a moderate stream in the planting hole until the material

about the roots is completely saturated from the bottom of the hole to the top of the ground.

7. Apply water in sufficient quantities and as often as seasonal conditions require to keep the planted areas moist at all times, well below the root system of grass and plants.
 8. Basins around shrubs and trees shall be removed at that time directed by the Owner.
- D. Pruning. Pruning shall be limited to the minimum necessary to remove injured twigs and branches, and to compensate for loss of roots during transplanting, but never to exceed one-third of the branching structure. Upon approval of the Owner, pruning may be done before delivery of plants, but not before plants have been inspected and approved.

3.04 GROUND COVER & GRASS PLANTINGS

- A. Soil preparation and fine grading shall be completed prior to ground cover planting.
- B. Ground cover shall be planted in moist, but not soggy, soil and spaced as indicated on the Plans.
- C. Each plant shall be planted with its proportionate amount of flat soil to minimize root disturbance. Soil moisture shall be such that the soil does not crumble when removing plants.
- D. Following planting, ground cover areas shall be regraded to restore smooth finish grade and to ensure proper surface drainage. Hand watering by hose shall begin immediately following planting and mulch shall be spread over the planted areas within eight (8) hours of watering.
- E. To prevent plant damage from pedestrian traffic during the initial growing stage, the Contractor shall erect temporary protective fencing to be removed at the end of the maintenance period.
- F. The Contractor shall hand water with a watering hose all plants individually and immediately following planting. Apply enough water to saturate soil.

3.05 MULCHING

Apply mulch to a depth of (1 ½ to 2 inches)

3.06 TWO YEAR MAINTENANCE AND PLANT ESTABLISHMENT

- A. The “first” year of the maintenance period will begin after the “Date of Acceptance of Installation” for all planting areas. The Contractor shall request in writing from the Owner notification of the date of the start of the maintenance period. At the acceptance of

all planting areas, the Contractor shall request in writing from the Owner notification of the date of the completion of the maintenance period. The maintenance period shall not officially begin or end without written notification from the Owner. The “second year of maintenance shall begin after the completion of the “first” year of maintenance and after written notification from the Owner to begin the “second” year of maintenance.

The “second” year of maintenance shall begin after the completion of the “first” year of maintenance and after written notification from the Owner to begin the “second” year of maintenance.

- B. Construction fencing shall remain until after the maintenance period is complete or as directed by the Owner.
- C. The Contractor shall maintain all planted areas on a continuous basis as they are completed during the progress of the work and during the establishment and maintenance period, and shall continue to maintain them until final acceptance in accordance with the following.
 - 1. Watering or intense hand watering shall include measures to insure seed germination and vigorous plant growth. Weed, fertilize, spray and apply topdressing as necessary to promote a healthy growing condition. All planted areas shall be kept free of debris and shall be weeded and cultivated at intervals not to exceed ten (10) days. Keep project neat and attractive throughout the maintenance period.
 - 2. Apply herbicides for weed control and/or fungicides for fungal control, as needed or directed by Owner, in accordance with manufacturer’s instructions and applicable laws and regulations. Pre-emergent herbicide shall be required in all planting areas. Remedy damage resulting from the use of herbicides.
 - 3. Exterminate rodents and insects as required and in accordance with applicable laws and regulations. Remedy damage from use of insecticides.
 - 4. Plants shall be watered to sufficiently saturate root zone without rotting trees, shrubs, and ground cover.
 - 5. Repair or replace any damaged item caused by vehicles, vandals, bicycles, or foot traffic during the maintenance period.
 - 6. Hand Watering: Hand watering will be required at all NAVAIDS revegetation sites.
 - 7. Any damaged or dead plant material shall be replaced with like and kind on a bi-monthly basis throughout the maintenance period.
- D. Maintenance period shall be extended if plant material is not in a healthy growing condition. When all maintenance work has been completed to the satisfaction of Owner, the Owner will issue the Contractor a written notice of completion of maintenance.

3.07 INSPECTION

- A. All inspections herein specified shall be made by the Owner. The Contractor shall request inspection at least forty-eight (48) hours in advance of the time the inspection is required. Requested inspections, subsequently canceled without twenty-four (24) hours notice, will be billed to the Contractor.
- B. Inspection will be required for, and not necessarily limited to, the following parts of the work.
 - 1. Prior to digging planting pits for shrubs.
 - 2. Prior to final placement of plant materials.
 - 3. During backfilling of plant pits with native backfill.
 - 4. Monthly inspections during the maintenance period.
 - 5. Final inspection at the end of the maintenance period.

PART 4: MEASUREMENT AND PAYMENT

4.01 PLANTING IMPLEMENTATION

- A. The basis of measurement shall be installed in place, healthy, shrubs, and ground cover per each item as counted and/or otherwise determined by the Owner.
- B. Payment shall be made at the unit prices bid in the proposal for 1 Gallon- Shrubs and Cuttings.

4.03 MULCHING

- A. The basis of measurement shall be installed in-place mulch as calculated and/or otherwise determined by the Owner.
- B. Payment shall be made at the lump sum contract price in the proposal for Wood Mulch.

4.04 SOIL PREPARATION

- A. The basis of measurement shall be installed in place, soil preparation and/or otherwise determined by the Owner.
- B. Payment shall be made at the lump sum contract price soil preparation & fine grade.

4.05 PRE-EMERGENCE WEED CONTROL

- A. The basis of measurement shall be the application of pre-emergence weed control as determined by the Owner.
- B. Pre-Emergence weed control will be considered as included in other items of work and no additional payment will be made therefor.

4.06 FIRST YEAR OF MAINTENANCE

- A. The basis of measurement shall be comprehensive maintenance as herein described and as determined by the Owner.
- B. Payment shall be made at the lump sum contract price for “First” Year Maintenance.

4.07 “SECOND” YEAR OF MAINTENANCE

- A. The basis of measurement shall be comprehensive maintenance as herein described and as determined by the Owner.
- B. Payment shall be made at the lump sum contract price for “Second” Year of Maintenance.

END OF SECTION

APPENDIX B

IRRIGATION IMPLEMENTATION

PART 1 - GENERAL

1.01 SUMMARY

- A. It is the intent of the specifications and drawings that the finished system is complete in every respect and shall be ready for operation satisfactory to the Owner.
- B. The work shall include all materials, labor, services, transportation, and equipment necessary to perform the work as indicated on the drawings, in these specifications, and as necessary to complete the contract.
- C. Related Sections.
 - 1. Section 100: Site Clearing
 - 2. Section 800: Landscaping
- D. The latest edition of the State of California Department of Transportation Standard Specifications and the Standard Specifications for Public Works Construction, latest edition, are referenced as if herein contained and the Contractor shall keep a copy at the project site. These Specifications shall supersede conflicts with information given in the, standard specifications unless otherwise determined by the Owner. Irrigation installation and materials shall conform to Owner of Tracy's Parks and Parkways Design Manual, latest edition.

1.02 CONSTRUCTION DRAWINGS

- A. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, sleeves, etc. which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of his work and plan his work accordingly, furnishing such fittings, etc. as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed. The work shall be installed in such a manner as to avoid conflicts between irrigation systems, planting, and architectural features.
- B. All work called for on the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specifications. When an item is shown on the plans but not shown on the specifications or vice versa, it shall be deemed to be as shown on both. The Owner shall have final authority for clarification.
- C. The Contractor shall not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been considered in Ownering. Such obstructions or differences should be brought to the attention of the Owner as soon as detected. In the event this notification is not performed, the Irrigation Contractor shall assume full responsibility for any revision necessary.

1.03 QUALITY ASSURANCE

- A. Provide at least one English speaking person who shall be present at all times during execution of all phases of work and who shall be thoroughly familiar with the type of materials being installed and the manufacturer's recommended methods of installation and who shall direct all work performed under this section.
- B. Manufacturer's directions and detailed drawings shall be followed in all cases where the manufacturer of articles used in this contract furnishes directions covering points not shown in the drawings and specifications.
- C. All local, municipal, and state laws, rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications, and their provisions shall be carried out by the Contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations of the same. However, when these specifications and drawings call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by the above rules and regulations, the provisions of these specifications and drawings shall take precedence.
- D. All materials supplied for this project shall be new and free from any defects. All defective materials shall be replaced immediately at no additional cost to Owner.
- E. The Contractor shall secure the required licenses and permits including payments of charges and fees, give required notices to public authorities, verify permits secured or arrangements made by others affecting the work of this section.

1.04 SUBMITTALS

- A. Materials List:
 - 1. After award of contract and before any irrigation system materials are delivered to the job site, submit to the Owner a complete list of all irrigation systems, materials, or processes proposed to be furnished and installed as part of this contract.
 - 2. Show manufacturer's name and catalog number for each item, furnish six sets of complete catalog cuts and technical data, furnish the manufacturer's recommendations as to the method of installation.
 - 3. No substitutions will be allowed without prior written acceptance by the Owner. Any requests for substitutions must be made within 30 days after award of contract.
 - 4. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.
- B. Substitutions:

If the Irrigation Contractor wishes to substitute any equipment or materials for equipment or materials listed on the irrigation drawings and specifications, he may do so by providing the following information to the Owner for approval.

1. Provide a written statement indicating the reason for making the substitution.
2. Provide catalog cut sheets, technical data, and performance information for each substitute item.
3. Provide in writing the difference in installed price if the item is accepted.

1.05 EXISTING CONDITIONS

- A. The Contractor shall verify and be familiar with the locations, size and detail of points of connection provided as the source of water and electrical supply, connection to the irrigation system.
- B. Irrigation design is based on the available static water pressure shown on the drawings. Contractor shall verify static water on the project prior to the start of construction. Should a discrepancy exist, notify the Owner authorized representative prior to beginning construction.
- C. Prior to cutting into the soil, the Contractor shall locate all cables, conduits, and other utilities as are commonly encountered underground and he shall take proper precautions not to damage or disturb such improvements. If a conflict exists between the such obstacles and the proposed work, the Contractor shall promptly notify the Owner who will arrange for relocations. The Contractor will proceed in the same manner if a rock layer or any other such conditions are encountered.
- D. The Contractor shall protect all existing utilities and features to remain on and adjacent to the project site during construction. Contractor shall repair, at his own cost, all damage resulting from his operations or negligence.
- E. The Irrigation Contractor shall coordinate with the General Contractor for installation of required sleeving as shown on the plans.
- F. Do not install irrigation as shown on the drawings when it is obvious in the field that obstructions, grade differences or differences in site dimensions exist that might have been foreseen and considered in the Ownering. The Owner should be notified (in writing) of such obstructions and differences. In the event that the notification is not given, the Contractor assumes full responsibility for all necessary changes.
- G. Irrigation system is based on the minimum operating pressure and maximum flow demand shown on plans. The Contractor shall verify water pressure at point of connection prior to start of irrigation installation. Notify Owner if water pressure shown on plans and actual site reading differ. In the event pressure differences are not reported in writing, Contractor assumes full responsibility for all necessary changes.
- H. Field adjustments may be required to provide optimum operating efficiency. Contractor shall be responsible for adjusting system for optimum performance.

1.06 INSPECTIONS

- A. All lines shall not be covered over until accepted by the Owner. The Contractor shall be solely responsible for notifying the, Owner, a minimum of 48 hours in advance, where and when the work is ready for testing. Should any work be covered without testing or acceptance, it shall be, if so ordered, uncovered at the Contractor's expense.
- B. Inspections will be required for the following at a minimum:
 - 1. System layout
 - 2. Pressure test irrigation main line (3 hours at 125 PSI)
 - 3. Coverage test of irrigation system
 - 4. Final inspection prior to start of maintenance period
 - 5. Final acceptance
- C. Site observations and testing will not commence without the record drawings as prepared by the Irrigation Contractor. Record drawings shall be complete and up to date for each site visit.
- D. Work that fails testing and is not accepted will be re-tested. Hourly rates and expenses of the Owner for re-inspection or re-testing will be paid by the Irrigation Contractor at no additional expense to Owner.

1.07 STORAGE AND HANDLING

- A. Use all means necessary to protect irrigation system materials before, during, and after installation and to protect the installation work and materials of all other trades. In the event of damage, immediately make all repairs and replacements necessary to the acceptance of the Owner and at no additional cost to the Owner.
- B. Exercise care in handling, loading, unloading, and storing plastic pipe and fittings under cover until ready to install. Transport plastic pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load.

1.08 Cleanup and Disposal

- A. Dispose of waste, trash, and debris in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. Bury no such waste material and debris on the site. Burning of trash and debris will not be permitted. The Contractor shall remove and dispose of rubbish and debris generated by his work and workmen at frequent intervals minimum daily or when ordered to do so by the Owner.
- B. At the time of completion the entire site will be cleared of tools, equipment, rubbish and debris which shall be disposed of off-site in a legal disposal area.

1.09 Turnover Items

A. Drawings of Record:

1. Record accurately on one set of contract drawings all changes in the work constituting departures from the original contract drawings.
2. The changes and dimensions shall be recorded in a legible and workmanlike manner to the satisfaction of the Owner. Prior to final inspection of work, submit record drawings to the Owner.
3. Dimensions from/to permanent points of reference such as buildings, sidewalks, curbs, etc. shall be shown. Data on record drawings shall be recorded on a day to day basis as the project is being installed. All lettering on drawings shall be minimum 1/8 inch in size.
4. Show locations and depths of the following items:
 - a. Point of connection (including water P.O.C., master control valves, quick couplers, etc.)
 - b. Routing of sprinkler pressure lines (dimensions shown at a maximum of 100 feet along routing)
 - c. Isolation valves
 - d. Automatic remote control valves
 - e. Quick coupling valves
 - f. Routing of control wires
 - g. Irrigation controllers
 - h. Related equipment (as may be directed)
 - i. Quick Link equipment
5. Maintain record drawings on site at all times. Upon completion of work, transfer all as-built information and dimensions to Owner's original mylar set.

B. Controller Charts:

1. Record drawings as "Drawings of Record" must be approved by the Owner before charts are prepared.
2. Provide two "updated" controller charts for the controller that controls the new irrigation for Area III. The chart shall show the area covered by the particular controller and the irrigation zone of each remote control valve and or Quick-Link equipment.
3. The chart is to be a reduced copy of the actual "Drawings of Record". In the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a readable size.

4. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being minimum 20 mils in thickness.

C. Operation and Maintenance Manuals:

1. Two individually bound copies of operation and maintenance manuals shall be delivered to the Owner authorized representative at least 10 calendar days prior to final inspection. The manuals shall describe the material installed and the proper operation of the system.
2. Each complete, bound manual shall include the following information:
 - a. Index sheet stating Contractor's address and telephone number, duration of guarantee period, list of equipment including names and addresses of local manufacturer representatives.
 - b. Operating and maintenance instructions for all equipment.
 - c. Spare parts lists and related manufacturer information for all equipment.
 - d. Irrigation schedules.

D. Equipment:

Supply as a part of this contract the following items:

- a. Two (2) wrenches for disassembly and adjustment of each type of sprinkler head used in the irrigation system.
 - b. Two (2) 30-inch sprinkler keys for manual operation of control valves.
 - c. Two (2) keys for each automatic controller.
 - d. One (1) valve box cover key or wrench.
 - e. Four (4) extra sprinkler heads of each size and type.
- E. Turn over drawings, charts, manuals and extra equipment to the Owner at time of final walk-through inspection as part of final pre-maintenance acceptance.

1.10 COMPLETION

- A. At the time of the pre-maintenance period inspection, the Owner, and governing agencies will inspect the work, and if not accepted, will prepare a list of items to be completed by the Contractor. At the time of the post-maintenance period or final inspection the work will be re-inspected and final acceptance will be in writing by the Owner.
- B. The Owner shall have final authority on all portions of the work.

- C. After the system has been completed, the Contractor shall instruct Owner's authorized representative in the operation and maintenance of the irrigation system and shall furnish a complete set of operating and maintenance instructions.
- D. The Contractor without any additional expense to the Owner shall repair any settling of trenches, which may occur during the one-year period following acceptance, to the Owner's satisfaction. Repairs shall include the complete restoration of all damage to planting, paving or other improvements of any kind as a result of the work.

1.11 Guarantee

- A. The entire sprinkler system, including all work done under this contract, shall be unconditionally guaranteed against all defects and fault of material and workmanship, including settling of backfilled areas below grade, for a period of one (1) year following the filing of the Notice of Completion.
- B. Should any problem with the irrigation system be discovered within the guarantee period, the Contractor at no additional expense to Owner shall correct it within ten (10) calendar days of receipt of written notice from Owner. When the nature of the repairs as determined by the Owner constitute an emergency (i.e. broken pressure line) the Owner may proceed to make repairs at the Contractor's expense. Any and all damages to existing improvement resulting either from faulty materials or workmanship, or from the necessary repairs to correct same, shall be repaired to the satisfaction of the owner by the Contractor, all at no additional cost to the Owner.
- C. Guarantee shall be submitted on Contractors own letterhead as follows:

GUARANTEE FOR SPRINKLER IRRIGATION SYSTEM

We hereby guarantee that the sprinkler irrigation system we have furnished and installed is free from defects in materials and workmanship, and the work has been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect excepted. We agree to repair or replace any defective material during the period of one year from date of filing of the Notice of Completion and also to repair or replace any damage resulting from the repairing or replacing of such defects at no additional cost to the owner. We shall make such repairs or replacements within 10 calendar days following written notification by the owner. In the event of our failure to make such repairs or replacements within the time specified after receipt of written notice from owner, we authorize the owner to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT NAME:

PROJECT LOCATION:

CONTRACTOR NAME:

ADDRESS:

TELEPHONE:

SIGNED:

DATE:

PART 2 - MATERIALS

2.01 Summary

Use only new materials of the manufacturer, size and type shown on the drawings and specifications. Materials or equipment installed or furnished that do not meet Owner standards will be rejected and shall be removed from the site at no expense to the Owner.

2.02 Pipe

- A. Pressure supply lines 2 1/2 inches in diameter and up to 4 inches in diameter downstream of backflow prevention unit shall be Class 315 solvent weld PVC. Piping shall conform to ASTM D2241.
- B. Pressure supply lines 2 inches in diameter and smaller downstream of the backflow prevention unit shall be Schedule 40 solvent weld PVC conforming to ASTM D1785.
- C. Non-pressure lines 3/4 inch in diameter and larger downstream of the remote control valve shall be Schedule 40 solvent weld PVC conforming to ASTM D1785.

2.03 Plastic Pipe and Fittings

- A. Pipe shall be marked continuously with manufacturer's name, nominal pipe size, schedule or class, PVC type and grade, National Sanitation Foundation approval, Commercial Standards designation, and date of extrusion.
- B. All plastic pipe shall be extruded of an improved PVC virgin pipe compound in accordance with ASTM D2241 or ASTM D1785.
- C. All solvent weld PVC fittings shall be standard weight Schedule 40 and shall be injection molded of an improved virgin PVC fitting compound. Slip PVC fittings shall be the "deep socket" bracketed type. Threaded plastic fittings shall be injection molded. All tees and ells shall be side gated. All fittings shall conform to ASTM D2466.
- D. All threaded nipples shall be standard weight Schedule 80 with molded threads and shall conform to ASTM D1785.
- E. All solvent cementing of plastic pipe and fittings shall be a two-step process, using primer and solvent cement applied per the manufacturer's recommendations. Cement shall be of a fluid consistency, not gel-like or ropy. Solvent cementing shall be in conformance with ASTM D2564 and ASTM D2855.
- F. When connection is plastic to metal, female adapters shall be hand tightened, plus one turn with a strap wrench. Joint compound shall be non-lead base Teflon paste, tape, or equal.

2.04 Backflow Prevention Units

- A. The backflow prevention unit shall be a reduced pressure type vacuum breaker of the size, manufacturer and model number as indicated on the drawings.
- B. Install a new stainless steel backflow prevention enclosure. The backflow enclosure shall be of the manufacturer, size, and type indicated on the drawings.

2.05 Valves

A. Ball Valves

- 1. Ball valves shall be of the manufacturer, size, and type indicated on the drawings.
- 2. Ball valves shall be constructed of a bronze body, ball and stem, full port with a malleable iron hand lever. Ball valves shall have threaded connections.
- 3. All ball valves shall have a minimum working pressure of not less than 150 psi and shall conform to AWWA standards.

B. Quick Coupler Valves:

- 1. Quick coupler valves shall be of the manufacturer, size, and type indicated on the drawings.
- 2. Quick coupler valves shall be brass with a wall thickness guaranteed to withstand normal working pressure of 150 PSI without leakage. Valves shall have 1" female threads opening at base, with two-piece body. Valves to be operated only with a coupler key designed for that purpose. Coupler key is inserted into valve and a positive, watertight connection shall be made between the coupler key and valve.

C. Automatic Remote Control Valves and Master Control Valve.

- 1. Automatic remote control valves and master control valve shall be of the manufacturer, size, and type indicated on the drawings.
- 2. Automatic remote control valves shall be electrically operated, spring loaded, self cleaning, puckless diaphragm activated normally closed type valve. Master valve working with flow sensor shall be normally open.
- 3. Valve solenoid shall be corrosion-proof and constructed of stainless steel molded in epoxy to form one integral unit, and shall be 24 volt A.C.

D. Flow Meter: Flow meter shall be as shown on the Plans and conform to manufacturing specifications.

2.06 Valve Boxes

- A. Valve boxes shall be fabricated from a durable, weather-resistant plastic material resistant to sunlight and chemical action of soils.

- B. The valve box cover shall be green in color and secured with a hidden latch mechanism or bolts.
- C. The cover and box shall be capable of sustaining a load of 1,500 pounds.
- D. Valve box extensions shall be by the same manufacturer as the valve box.
- E. Automatic control valve boxes shall be 14"x19"x12" rectangular size. Valve box covers shall be marked "RCV" with the valve identification number "heat branded" onto the cover in 2 inch high letters / numbers.
- F. Gate and quick coupler valve boxes shall be 14" x 19" size. Valve box covers shall be marked with either "GV" or "QCV" "heat branded" onto the cover in 2 inch high letters. Upgrade quick coupler value boxes in lawn areas to sustain loads of 1500lbs.

2.07 Automatic Controller

- A. Automatic controller shall be of the manufacturer, size, and type indicated on the drawings.
- B. Stainless steel controller enclosure shall be of the manufacturer, size, and type indicated on the drawings.

2.08 Electrical

- A. All electrical equipment shall be NEMA Type 3, waterproofed for exterior installations.
- B. All electrical work shall conform to local codes and ordinances.
- C. Flow sensor (Bermad) cable shall be 14 gauge. Install 5 control wires from controllers to flow sensors.

2.09 Low Voltage Control Wiring

- A. Remote control wire shall be direct-burial AWG-UF type, size as indicated on the drawings, and in no case smaller than 14 gauge.
- B. Connections shall be Spears DS400 Drisplice connectors.
- C. Ground wires shall be white in color. Control wires shall be red (where two or more controllers are used, the control wires shall be a different color for each controller. These colors shall be noted on the "Record Drawings" plans located on controller door).

2.10 Irrigation Heads

- A. Irrigation heads shall be of the manufacturer, size, type, with radius of throw, operating pressure, and discharge rate indicated on the drawings.
- B. Irrigation heads shall be used as indicated on the drawings.

PART 3 - EXECUTION

3.01 Site Conditions

A. Inspections:

1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
2. Verify that irrigation system may be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards, and the manufacturer's recommendations.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the Owner.
2. Do not proceed with installation in areas of discrepancy until all discrepancies have been resolved.

C. Grades:

1. Before starting work, carefully check all grades to determine that work may safely proceed, keeping within the specified material depths with respect to finish grade.
2. The Owner shall accept final grades before work on this section will be allowed to begin.

D. Field Measurements:

1. Make all necessary measurements in the field to ensure precise fit of items in accordance with the original design. Contractor shall coordinate the installation of all irrigation materials with all other work.
2. All scaled dimensions are approximate. The Contractor shall check and verify all size dimensions prior to proceeding with work under this section.
3. Exercise extreme care in excavating and working near existing utilities. Contractor shall be responsible for damages to utilities, which are caused by his operations or neglect.

E. Diagrammatic Intent:

1. The drawings are essentially diagrammatic. The size and location of equipment and fixtures are drawn to scale where possible. Provide offsets in piping and changes in equipment locations as necessary to conform with structures and to avoid obstructions or conflicts with other work at no additional expense to Owner.

F. Layout:

1. Prior to installation, the Contractor shall stake out all pressure supply lines, routing and location of sprinkler heads, valves, backflow preventer, and automatic controller.
2. Layout irrigation system and make minor adjustments required due to differences between site and drawings. Where piping is shown on drawings under paved areas, but running parallel and adjacent to planted areas, install the piping in the planted areas.

G. Water Supply:

1. Connections to, or the installation of, the water supply shall be at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no additional expense to the Owner.

H. Electrical Service:

1. Connections to the electrical supply shall be at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no additional expense to Owner.
2. Contractor shall connect existing 120V electrical service as necessary to the irrigation controllers..

3.02 Trenching

- A. Excavations shall be straight with vertical sides, even grade, and support pipe continuously on bottom of trench. Trenching excavation shall follow layout indicated on drawings to the depths below finished grade and as noted. Where lines occur under paved area, these dimensions shall be considered below subgrade.
- B. Provide minimum cover of 18 inches on pressure supply lines.
- C. Provide minimum cover of 18 inches for control wires.
- D. Provide minimum cover of 12 inches for non-pressure lines.
- E. Pipes installed in a common trench shall have a 6-inch minimum space between pipes.

3.03 Backfilling

- A. Backfill material on all lines shall be the same as adjacent soil free of debris, litter, and rocks over 1/2 inch in diameter.
- B. Backfill shall be tamped in 4-inch layers under the pipe and uniformly on both sides for the full width of the trench and the full length of the pipe. Backfill materials shall be sufficiently damp to permit thorough compaction, free of voids. Backfill shall be compacted to 90% relative compaction and shall conform to adjacent grades.
- C. Jetting or flooding in lieu of tamping is not allowed.
- D. Under no circumstances shall truck wheels be used to compact backfill.

- E. Provide sand backfill a minimum of 6 inches over and under all piping under paved areas.

3.04 Piping

- A. Piping under existing pavement may be installed by jacking, boring, or hydraulic driving. No hydraulic driving is permitted under asphalt pavement.
- B. Cutting or breaking of existing pavement is not permitted.
- C. Carefully inspect all pipe and fittings before installation, removing dirt, scale, burrs, and reaming. Install pipe with all markings up for visual inspection and verification.
- D. Remove all dented and damaged pipe sections.
- E. All lines shall have a minimum clearance of 6 inches from each other and 12 inches from lines of other trades.
- F. Parallel lines shall not be installed directly over each other.
- G. In solvent welding, use only the specified primer and solvent cement and make all joints in strict accordance with the manufacturer's recommended methods including wiping all excess solvent from each weld. Allow solvent welds at least 15 minutes setup time before moving or handling and 24 hours curing time before filling.
- H. PVC pipe shall be installed in a manner, which will provide for expansion and contraction as recommended by the pipe manufacturer.
- I. Centerload all plastic pipe prior to pressure testing.
- J. All threaded plastic-to-plastic connections shall be assembled using Teflon tape or Teflon paste.
- K. For plastic-to-metal connections, work the metal connections first. Use a non-hardening pipe dope on all threaded plastic-to-metal connections, except where noted otherwise. All plastic-to-metal connections shall be made with plastic female adapters.

3.05 Existing Controller

- A. Existing Controllers and wiring to be protected.
- B. The Irrigation Contractor shall be responsible for necessary wiring within the existing controller to accommodate the Quick-Link equipment.
- C. The irrigation system shall be programmed to operate during the periods of minimal use of the design/planting area

3.06 Control Wiring

- A. Low voltage control wiring shall occupy the same trench and shall be installed along the same route as the pressure supply lines whenever possible.
- B. Where more than one wire is placed in a trench, the wiring shall be taped together in a bundle at intervals of 10 feet. Bundle shall be secured to the mainline with tape at intervals of 20 feet.
- C. All connections shall be of an approved type and shall occur in a valve box. Provide a 36" inch service loop at each connection.
- D. An expansion loop of 36" inches shall be provided at each wire connection and/or directional change, and one of 36 inches shall be provided at each remote control valve.
- E. A continuous run of wire shall be used between a controller and each remote control valve. Under no circumstances shall splices be used without prior approval.

3.07 Valves

- A. Automatic control valves, quick coupler, and ball valves are to be installed in the approximate locations indicated on the drawings.
- B. Valves shall be installed in shrub areas whenever possible.
- C. Install all valves as indicated in the detail drawings.
- D. Valves to be installed in valve boxes shall be installed one valve per box.

3.08 Valve Boxes

- A. Valve boxes shall be installed in shrub areas whenever possible.
- B. Each valve box shall be installed on a foundation of 3/4 inch gravel backfill, 3 cubic feet minimum. Valve boxes shall be installed with their tops 1/2 inch above the surface of surrounding finish grade in lawn areas and 1 inch above finish grade in ground cover areas.

3.09 Irrigation Heads

- A. Irrigation heads shall be installed as indicated on the drawings.
- B. Spacing of heads shall not exceed maximum indicated on the drawings.
- C. Riser nipples shall be of the same size as the riser opening in the sprinkler body.

3.10 Miscellaneous Equipment

- A. Install all assemblies specified herein according to the respective detail drawings or specifications, using best standard practices.

- B. Quick coupler valves shall be set approximately 12 inches from walks, curbs, header boards, or paved areas where applicable.

3.11 Flushing the System

- A. Prior to installation of irrigation heads, the valves shall be opened and a full head of water used to flush out the lines and risers.
- B. Irrigation heads shall be installed after flushing the system has been completed.

3.12 Adjusting the System

- A. Contractor shall adjust valves, align heads, and check the coverage of each system prior to coverage test.
- B. If it is determined by the Owner that additional adjustments or nozzle changes will be required to provide proper coverage, all necessary changes or adjustments shall be made prior to any planting.
- C. The entire system shall be operating properly before any planting operations commence.
- D. Automatic control valves are to be adjusted so that the irrigation heads and drip tubing operate at the pressure recommended by the manufacturer.

3.13 Testing and Observation

- A. Do not allow or cause any of the work of this section to be covered up or enclosed until it has been observed, tested and accepted by the Owner.
- B. The Contractor shall be solely responsible for notifying the Owner, a minimum of 48 hours in advance, where and when the work is ready for testing.
- C. When the sprinkler system is completed, the Contractor shall perform a coverage test of each system in its entirety to determine if the water coverage for the planted areas is complete and adequate in the presence of the Owner.
- D. The Contractor shall furnish all materials and perform all work required to correct any inadequacies of coverage due to deviations from the plans, or where the system has been willfully installed as indicated on the drawings when it is obviously inadequate, without bringing this to the attention of the Owner. This test shall be accepted by the Owner and accomplished before starting any planting.
- E. Final inspection will not commence without record drawings as prepared by the Irrigation Contractor.

3.14 Maintenance

During the maintenance period the Contractor shall adjust and maintain the irrigation system in a fully operational condition providing complete irrigation coverage to all intended plantings. The

contractor will prune plants if determined necessary by the Owner Owner to provide 100 % coverage.

3.15 Completion Cleaning

Clean-up shall be made as each portion of the work progresses. Refuse and excess dirt shall be removed from the site, all walks and paving shall be broomed, and any damage sustained on the work of others shall be repaired to original conditions.

3.16 Irrigation System Design and Water Supply:

The irrigation system designed is based upon a minimum available static water pressure of 75 p.s.i at a flow rate 38 g.p.m. Individual stations are designed to this minimum p.s.i.

The system is also designed to withstand a maximum pressure of 120 p.s.i. Contractor shall verify the existing working water pressure at the water supply location shown on the drawings prior to starting construction. The Contractor shall notify the Owner in writing of any discrepancies noted. Failure to provide such written notification shall result in the Contractor being required to provide modifications to the irrigation system as necessary to achieve a fully operational systems providing 100% coverage, at no additional charge to the Owner.

PART 4 – MEASUREMENT AND PAYMENT

4.01 IRRIGATION

- A. The basis of measurement shall be installed in place, fully operational landscape irrigation system as herein described and as determined by the Owner.
- B. Payment will be made at the Lump Sum Contract Price for irrigation systems.

END OF SECTION

BACKGROUND OF THE LOS ANGELES/EL SEGUNDO DUNES

1.0 HISTORICAL BACKGROUND OF CALIFORNIA COASTAL SAND DUNES

The following section is adapted from Mattoni.¹ Coastal sand dunes represent a vanishing habitat in California. Statewide, coastal dunes have been reduced to less than 25 percent of the area they originally occupied. The three largest coastal dunes systems in the state, both historic and current, are located in central California: the 28,000-acre San Francisco dunes system has been almost entirely eliminated by urbanization; and the Monterey and Santa Maria systems, 84,000 and 104,000 acres, respectively, are about 40 percent intact, with evident disturbances to the remaining areas.

Mainland Southern California harbored 12 discrete dunes systems south of Point Conception, totaling about 5,100 acres. Less than 1,000 acres, or 19 percent, are still recognizable as sand dunes. The Los Angeles/El Segundo Dunes (Dunes) were the largest dunes system in Southern California, originally encompassing 2,900 acres. Remnants are now limited to the following four sites:

- The Dunes parcel is the largest remnant, encompassing 277 acres of actual dunes, of which 43 acres are relatively undisturbed and 137 acres are in the final stages of clearing and revegetation.
- The Los Angeles Department of Water and Power ("Hyperion") right-of-way, south of the Dunes parcel, encompasses about 55 acres of relatively disturbed backdune and dune crest habitat of potential high habitat value.
- The Chevron El Segundo Blue Butterfly Preserve, south of Hyperion, encompasses 1.6 acres devoted largely to the maintenance of the butterfly's food plant.
- Sand Dunes Park in Manhattan Beach, further south, encompasses 4 acres of disturbed habitat, with some retained habitat values.

Two other nearby sites are important biological extensions of the Dunes habitat for purposes of conservation. Although they have not been recently connected, they share many of the same species:

- Ballona Wetland-Playa del Rey, north of the Airport parcel, contains a 2.5 to 5 acre highly degraded backdune; and
- Malaga Cove to the south consists of 1.5 acres of rapidly degrading pre-Flandrian sandstone bluff, with some free sand cover, facing the ocean. Some native plants support a population of the El Segundo blue butterfly (ESB).

¹ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

Biological relationships also exist between the dunes systems of Southern California and three dunes systems in northern Baja California. Those systems share a number of plant and animal species. However, of the three dunes systems in Baja California—Ensenada, Rosarita, and Descondido—only Ensenada’s 1,000-acre dune habitat remains and is in serious jeopardy from population expansion. Also biologically related to the Dunes is a series of 11 dunes systems on the Channel Islands that total 3,500 acres. Although they are now largely protected by governmental agencies, their habitats have suffered severe losses from past overgrazing by cattle, feral sheep, goats, and swine.

The remaining undisturbed fragments of the Dunes, together with areas under restoration, constitute the richest remaining site representing Southern California sand dunes communities. The Preserve area, therefore, has an irreplaceable function as a refugium for sand-obligate plant species. The Dunes constitute the sole significant reservoir for carrying these species into the future.

2.0 GEOLOGY OF THE LOS ANGELES/EL SEGUNDO SAND DUNES COMPLEX

The geologic history of the Dunes has been described by Cooper.² For the most part, the Dunes are of recent geologic origin. The Dunes complex has two major components: pre-Flandrian relict “sand hills” and active Flandrian dunes shown as foredune and backdune (“Flandrian” and “pre-Flandrian” are geologic terms that refer to the time of formation). The older pre-Flandrian dunes form a base of cemented sands (sandstones) of varying hardness beneath the newer dunes and extend far inland from them. The active dunes are perched atop the pre-Flandrian formation and are thereby separated from the strand by a 10- to 15-foot bluff. The active dunes provide substrate supporting a sclerophyllous (having stiff, leathery leaves) scrub community unique to dunes, and the older pre-Flandrian dunes, where exposed or near the surface, have physiochemical properties that present distinctive adaptive requirements for plants and animals and therefore support a different biota.

The pre-Flandrian sand formations were deposited when sea level was about the same as today. Sea levels dropped during the last glaciation, which reached its maxima 18,000 years ago, and then rose again from their low during the glaciation to approximately present levels. The Flandrian dunes were formed during the last 4,000–6,000 years as the sea level was rising. The formation of sand dunes is well described by Cooper, both in general terms and in regards to the specific case of the Dunes.³

Prior to settlement and modification of the area, active Flandrian formations at the Dunes extended about 9 miles along the coast and reached an average of about 0.5 mile inland. To the north, the Dunes were limited by the Playa del Rey bluffs. At the foot of the bluffs, a Dunes segment bordered both sides of Ballona Creek and extended north as low hummocks into what is today Ocean Park. The large deflation plain of the pre-Flandrian dunes and the Torrance plain formed the boundaries of the Dunes to the east. The southern boundary of the Dunes was in the vicinity of the Palos Verdes terraces in Redondo Beach.

The deflation plain to the east of the backdune is the weathered remnant of the pre-Flandrian formations. It consists of loosely consolidated (incipient) sandstone covered to variable depths with Aeolian (wind-transported) sand. Within the deflation plain, areas referred to as dune slack areas, where the land was eroded down to or near the water table, were found in isolated locations both

² Cooper, W.S. 1967. “Coastal Dunes of California.” Geological Society of America Memoir, 104:1-131.

³ Cooper, W.S. 1967. “Coastal Dunes of California.” Geological Society of America Memoir, 104:1-131.

within the Dunes and on the lee side. A series of these depressions, either coinciding with the water table or underlain by undrained impermeable substrate that allowed spring rain water to briefly pool before evaporating, were found over the whole of the pre-Flandrian formation. These depressions formed a series of vernal pools, with a few permanent marshes. Excepting a few relict marshes, for example Madrona Marsh, these wetland habitats have disappeared from the Dunes site and vicinity as a result of both land disturbance and likely alterations in the water table.⁴

2.1 Recent (19th and 20th Century) Land Use History

The Dunes and adjacent deflation plain were undisturbed until 1890. In the first decade of the 1900s, the City of Redondo Beach and community of Venice were developed, the former separating the main dunes from south Redondo Beach and the Malaga Cove extensions and the latter destroying all the dunes north of the mouth of Ballona Creek.

Construction of the Chevron refinery in 1911 divided the remaining dunes into two large fragments. The southern fragment was gradually converted to residential housing starting in the late 1940s. The residential area on the northern fragment—the Dunes—was subdivided, with the installation of streets and utilities, beginning in 1928, but construction was delayed until after World War II. Indeed, until the end of World War II the northern dunes and coastal plain were virtually pristine. Within a few years, residences blanketed the southern half of the Dunes. Substantial amounts of sand were removed for construction of the Hyperion Wastewater Treatment and Scattergood generating plants in the 1940s and 1950s. These alterations, along with continued development of housing on the present Dunes, reduced the northern undisturbed fragment to about 100 dispersed acres of actual dunes by 1960.

The next major causes of disturbance arose from the expansion of the former Mines Field into the Los Angeles International Airport (LAX). The Federal Aviation Administration (FAA) installed radar equipment—Very high Omni Range (VOR) Navigation Beacon—on a 5-acre site at the southern end of the Dunes in 1950. Large quantities of sand were reconfigured to elevate the facility.

With increasing air traffic necessitating construction of the north runway and prompting the need for greater safety considerations and with the onset of jet age noise, residential living conditions adjacent to the airport became increasingly difficult. Residents elected to have their land acquired by the City of Los Angeles as a noise and safety buffer zone. Between 1966 and 1972, some 822 residences were purchased and cleared from nearly 200 acres. About 70 percent of the backdune area was also excavated and recontoured in order to realign Pershing Drive in 1975; the entire 302-acre area was fenced as an airport security measure. The recontoured backdunes were stabilized by hydromulch containing seeds of plants that were “native” to California but were composed mistakenly of coastal sage scrub species rather than the coastal dune scrub plant community. One of the coastal sage scrub species introduced was the common California buckwheat (*Eriogonum fasciculatum*). California buckwheat vigorously expanded on the dunes, out-competing the dunes native, coastal buckwheat (*Eriogonum parvifolium*). The reduction in the number of local dunes buckwheat had dire consequences for the endangered ESB, which is dependent on coastal buckwheat for virtually all life cycle functions. The ESB was listed as an endangered species in 1976, under the federal Endangered Species Act.

⁴ Mattoni, R.H.T. 1990. “Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX.” Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

During the same general time period, a 12-acre portion of the foredune south and west of the VOR was disturbed by sand mining operations, and a nearby area was used as a spoils site for excess soil. Sand was also removed and relocated to widen Dockweiler beach. The lee area prairie between the backdune and Pershing Drive was completely scraped, iceplant was introduced to stabilize cut slopes, and portions were also oiled for soil stabilization. From the late 1960s through the late 1970s, undisturbed acreage at the Dunes was reduced to a total of 40 acres, which served as a refugia and the sole source of local populations for subsequent colonizations.

The Los Angeles coastal prairie, which historically was found on the deflation plain to the lee of the Dunes, has been completely destroyed. The community associated with this prairie (valley needlegrass grassland in the Holland [1986] classification) was dominated by the perennial *Nassella* [*Stipa*], with a rich mix of herbaceous flowering plants. The valley needlegrass grassland community is now almost completely absent due to extensive grading and paving and the invasion of exotic annual grasses. Similarly, the vernal pool communities mentioned above are also gone.

Today, less than 10 percent of the historic sand dunes survive as open space, and only 15 percent of this is represented by habitat that can be characterized as partially to wholly undisturbed in comparison with historical conditions.

2.2 Soils And Hydrology

With the exception of soils in the extreme northeast corner that were once farmed (Subsites 53, 55, and 56), the soils throughout the Dunes have sand content greater than 97 percent and reveal no significant difference in soil texture in either surface or subsurface samples. However, underlying sandstone is exposed near or at the surface in several areas, revealing the uneven nature of pre-Flandrian deposits. For example, grading for construction of the previous residential development exposed hard sandstones in the foredune areas close to the bluffs. Sandstone substrates may channel and/or block subsurface water flows, but this has not been studied on the dunes.

The Dunes are also fairly homogenous in soil fertility chemistry, showing no significant differences among subsites.⁵ The sands are high in sodium content, and conversely, low in the major fertility components—nitrogen, phosphorous, and potassium. The Dunes flora must be capable of dealing with these conditions, which are normally suboptimum for plant growth.

Limited assays in 1987–1988 did not reveal unexpected concentrations of heavy metals and hydrocarbon in surface or subsurface sand layers. However, because the concentration range of boron between a plant's "essential" requirement and toxicity is narrow (1–5 parts per million [ppm] in most cases) and borates are increasingly used in jet fuels, boron from this source could become a significant factor in toxifying the dunes ecosystem.⁶

The sole source of natural water for the Dunes is direct precipitation and local runoff. Average annual rainfall at LAX is less than 14 inches. Runoff is briefly retained at the surface only in areas where the weathered, cemented sand remnants of the pre-Flandrian dunes are exposed or near the

⁵ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

⁶ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

surface. Therefore, the toe of the backdune slope, where the sand substrate of the dunes meets the relatively impermeable sandstone layer, serves as a moisture trap, and the slack area itself has the theoretical capability of retaining water in small depressions. Mattoni discusses the inherent difficulties with reestablishing vernal pools that have been subjected to disturbance. Little is known about the original character of these features. Mattoni postulates that changes in hydrology, particularly the lowering of groundwater table, may have contributed to their loss.⁷

2.3 Dunes Landforms and Communities

Present Configuration of Dune Landforms

The physical environment of the 302-acre Dunes complex forms a dynamic interface zone between the high-energy processes of the open ocean and the protected inland areas of the coastal plain that are outside the direct influence of ocean water, salt spray, and sand. Historically, the plant communities formed a continuum in response to topography and proximity to the ocean, beginning with the beach (strand), bordered by a bluff, foredune, and backdune, and then forming a transition into plant communities typical of the coastal plain. At the Dunes, human activities and site modifications have altered these components without eliminating their essential physical and biological relationships.

The Dunes site now contains no native beach or bluff communities. Four main landforms or aspects are present, each associated with a distinct plant community. These landforms include the following estimated acreages: 222 acres of both pristine and disturbed (restored) foredune covering the majority of the western land area; 29 acres of pristine and disturbed (restored) backdune slope generally paralleling the eastern boundary; 26 acres of deflation plain, largely disturbed, in several easterly locations; and 25 acres of highly disturbed soil type that was heavily farmed in the northeast corner (this area now lies outside the Preserve). Only 43 acres of the total 277 acres of actual Dunes complex are undisturbed; about 25 acres are covered by roads and buildings.

The beach is defined as that expanse of sandy substrate between the mean tide line and the beginning of the foredune. The beach is formed typically by the farthest inland reach of storm waves. In areas where sand is available and winds are present, active shifting accumulations of sand may form. Historically, at the Dunes, a narrow 100- to 150-foot-wide strand extended from the mean tide line to the base of a 10- to 15-foot bluff formed by wave erosion of an older deposit of weakly consolidated sand. The natural vegetation of the strand and bluff was largely removed and the foredune “relocated” about 150 feet eastward of its historically seaward border by the artificial widening of Dockweiler Beach, construction of Vista del Mar Boulevard, and placement of extensive parking lots on top of the bluff.

Notwithstanding its eastward relocation, the foredune continues to be perched on top of the pre-Flandrian dunes, extending from the remaining bluff just above the beach to the point of drop-off that forms the backdune. The foredune is a single gradual slope, rising to a maximum of over 70 meters (215 feet) with an average width of 800 meters (~2460 feet). The foredune is subject to the most severe physical stress within the dunes system: exposed to intense afternoon sun, unprotected from prevailing westerly winds, and exposed to some salt spray as well. Temperature extremes are greater over any 24-hour period than in any other part of the Dunes complex. The substrate is fine-

⁷ Mattoni, R.H.T. 1990. “Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX.” Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

grained sand, accepting local microenvironments with accumulated organic debris from plant growth on the north- and east-facing slopes formed by small depressions and gullies on the foredune.

Toward the southern end of the foredune near the VOR are three large “blowouts”—areas of barren sand where plant growth is limited by sand actively transported by prevailing westerly winds east. The blowouts cut across five relatively undisturbed study subsites (Subsites 22, 23, 24, 29, and 31) and fit the popular visual conception of sand dunes as areas of constantly shifting sand. These particular blowouts have persisted almost unchanged, except for some modification by sand mining, since the earliest aerial views.

Roughly 75 percent of the foredune developed as residences was later cleared of homes and some infrastructure and has now undergone restoration (i.e., rubble and alien plants have been removed and the area has been revegetated with plants native to Southern California coastal dunes). A narrow edge of the foredune bordering the backdune (Subsites 5, 6, 14, 17, and 50) was never developed; these subsites retain relatively pristine conditions. Within the formerly developed areas of the foredune, Subsite 39 is notable in that about 50 percent of the subsite was covered by native land species when restoration of surrounding subsites began.

The backdune was formed as wind-transported sand was deposited at the dune crest because of the decrease in wind velocity at this point. The backdune slope is steep. Because it is steep, the slope is also unstable. Sand falls easily, except where stabilized by dense plant growth. The backdune faces east and receives morning sun, but is shaded by 3:00 p.m., even in summer. Fog also tends to hang over the backdune, so humidity is generally higher than on the foredune. Likewise, the backdune is in the lee of the prevailing, drying westerly winds, although it does receive the brunt of annual fall Santa Ana winds. Thus, the backdune experiences less thermal stress and generally less wind-drying than the foredune; it is cooler and more humid.

Environmental variation is provided where the backdune slope exposure changes from predominately eastward to southerly and northerly aspects. The toe of the backdune slope, where the sand substrate of the dunes meets the relatively impermeable sandstone layer, serves as a trap, for both moisture and nutrients. Microenvironmental patches, such as this area and the topographic “pockets” of organic material within the foredune sand substrate, are an important factor in creating community diversity, particularly for small organisms such as insects and small annual plants.

Historically, the area behind the Dunes intergraded with the coastal plain, while narrow construction of the term “dune ecosystem” would apply only to the dunes proper, the influence of sand extended substantially inland from the actual Dunes complex. The deflation plain (slack area) may have originally covered as much as 30 square miles.⁸ Dune ecosystems are not strictly closed with sharply demarcated boundaries. Some proportions of species either range into or inhabit adjacent territory, resulting in an extra rich biota at the interface (“edge”) of the dune and its inland neighbor communities. Thus dunes community biology is enhanced by surrounding habitats and by the interfaces between them and the dunes.⁹

⁸ Cooper, W.S. 1967. “Coastal Dunes of California.” Geological Society of America Memoir, 104:1-131.

⁹ Mattoni, R.H.T. 1990. “Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX.” Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

The many undrained impermeable depressions shown in historic maps over the whole formation are known to have supported vernal pools and the distinctive vegetation associated with these water features. Most of the historic deflation area has been either eliminated in development or physically and biologically transformed. The small remaining area has been graded, and none of the historic vernal pools exist any longer.

2.4 Vegetation of Los Angeles/El Segundo Dunes

Plant Communities

The vegetation of coastal sand dunes in Southern California is not well known or understood, as much of the dunes were destroyed or heavily impacted before scientific investigations could take place. The native vegetation of the Dunes is not found anywhere else in the County of Los Angeles and is uncommon throughout Southern California.¹⁰ By fortuitous circumstance, the Dunes were investigated by Pierce et al. in 1938 and 1939. Other pertinent early studies include Couch (1914), who surveyed dune vegetation at Manhattan Beach, and Johnson (1973), who described the vegetation of dunes at Ensenada, Mexico, about 160 miles south of the California/Mexico border.¹¹ The following description of the historic plant communities at Dunes is based on these past historic investigations.

Beach

The available information on the beach vegetation of Southern California is compiled in Barbour and Johnson.¹² Unfortunately, much of the early data collected by Couch for coastal areas of California does not clearly differentiate between beach and dune vegetation. Pierce and Pool found saltbush (*Atriplex leucophylla*) as occasionally occurring in the beach community.¹³ Vegetation is normally limited to the upper edge of the high water line. With the construction of Vista Del Mar Boulevard and the development of Dockweiler Beach, this community is no longer present at the Dunes.

Foredune

Of the three communities described on the Dunes by Pierce and Pool (1938), the “pioneer community” is most likely associated with the foredune. The foredune supported red sand verbena, pink sand verbena (*Abronia umbellata*), silver beach bur (*Ambrosia chamissonis* ssp. *bipinnatisecta*), beach morning glory (*Calystegia soldonella*), spectacle pod (*Dithyrea californica* var. *maritima*, and Russian thistle (*Salsola tragus*). Undisturbed areas near the VOR (Subsites 22 and 23) that contain these species provide the most representative example of this community, classifies as “southern foredune.” As described by Holland, the community is dominated by

¹⁰ England and Nelson. 1976. Los Angeles County Significant Ecological Areas Study. Prepared for: County of Los Angeles Department of Regional Planning, 320 West Temple Street, Los Angeles, CA 90012. Prepared by: England and Nelson Environmental Consultants, P.O. Box 1026, Riverside, CA 92502.

¹¹ Barbour, M.G. and A.F. Johnson. 1988. “Beach and dune.” In *Terrestrial Vegetation of California*. California Native Plant Society. Special Publication No. 9.

¹² Barbour, M.G. and A.F. Johnson. 1988. “Beach and dune.” In *Terrestrial Vegetation of California*. California Native Plant Society. Special Publication No. 9.

¹³ Pierce, W.D. and D. Pool. 1938. “The Fauna and Flora of the El Segundo Sand Dunes.” *Bulletin of the Southern California Academy of Science*, 37:93-97.

perennial species with a high proportion of suffrutescent plants, which are shrubby but not very woody and up to 30 centimeters (~ 12 inches) tall.¹⁴

On undisturbed foredune area, individual plants are usually spaced 2 to 3 feet apart. Mature perennial shrubs, such as coastal buckwheat, dune bush lupine (*Lupinus chamissonis*), and silver beach bur are usually separated by about this distance. The reason for this spacing is not clear but is probably related to water availability and/or underground root growth into a zone where the plants compete for water and/or nutrients.

Backdune

On more or less stabilized ridges, flats, and backdune slopes, a denser vegetation referred to as “southern dune scrub” (California Natural Diversity Database [CNDDB] Element Code 21330) can be found.¹⁵ Southern dune scrub consists of a dense coastal scrub community of scattered shrubs, subshrubs, and herbs, generally less than 3 feet tall. This community typically develops considerable cover. The plant diversity of the backdune is higher than that of the foredune, with the richest biota of the entire dune complex occurring along the toe of the backdune slope. The microenvironment discussed above serves as an ecotone, creating an “edge effect” between the sand substrate of the dunes and the relatively impermeable sandstone layer of the deflation plain.

The semi-established dune community described at the Dunes by Pierce and Pool included species such as mock heather (*Ericameria* [Happlopappus] *ericoides*) and dune bush lupine, described as dominant components of dune vegetation as far north as the Monterey Peninsula.¹⁶ In addition, Pierce and Pool described an established and distinctive dune shrub community characterized by bladderpod (*Isomeris arborea*) and lemonadeberry (*Rhus integrifolia*), with an herbaceous component including the following native and introduced species: sea fig (*Mesembryanthemum chilense*), Hottedtot fig (*M. edule*), common ice ant (*M. crystallinum*), Parish’s bristlescale (*Atriplex parishii*), lamb’s quarters (*Chenopodium album*), coast sand bur (*Cenchrus* [pauciflorus] *incertus*), wishbone bush (*Mirabilis laevis*), black nightshade (*Solanum nigrum*), and coast prickly pear (*Opuntia littoralis*).¹⁷ Two plants, hedge-leaved horkelia (*Horkelia cuneatus*) and hairy goldenaster (*Heterotheca sessiflora* ssp. *fastigiata* [as *Chrysopsis villosis*]), were noted as occurring only at the backdunes–slack interface. These latter two plants are limited to the same situation today.

¹⁴ Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento: California Department of Fish and Game.

¹⁵ California Department of Fish and Game. 2004. *Rarefind: A Database Application for the Use of the California Department of Fish and Game’s Natural Diversity Database*. Sacramento: California Department of Fish and Game.

¹⁶ Pierce, W.D. and D. Pool. 1938. “The Fauna and Flora of the El Segundo Sand Dunes.” *Bulletin of the Southern California Academy of Science*, 37:93-97.

¹⁷ Pierce, W.D. and D. Pool. 1938. “The Fauna and Flora of the El Segundo Sand Dunes.” *Bulletin of the Southern California Academy of Science*, 37:93-97.

Valley Needlegrass Grassland – Deflation Plain

The deflation plain to the east of the dunes supported an area of grasslands and vernal pools. Such deflation areas are commonly found behind coastal dune systems, and where eroded down to or near the water table, commonly support vernal pools.¹⁸ The grasslands of the Dunes were part of a larger area, the Los Angeles coastal prairie. The Los Angeles coastal prairie is (or was) an instance of valley needlegrass grassland and classified by Holland.¹⁹ At the Dunes, the grassland plant community was composed of nodding needlegrass (*Nassella* [Stipa] *cernua*) and a number of flowering forbs (herbaceous plants that are not grasslike but are associated with grasses). A photograph of the area in 1938 shows a predominance of forbs over grasses. valley needlegrass grasslands are most commonly associated with heavier soils, not sandy substrates. Barry lists some 195 soil series on which these grasslands are found.²⁰ The grassland at the Dunes was probably transitional to the grasslands found further inland on non-sandy substrates.

When Pershing Drive was widened and realigned, the deflation plain slack area was scraped, and the soil substrate was removed. The area was then hydromulched with a native but inappropriate seed mix that resulted in the transformation from a forb-dominated prairie to one dominated by California buckwheat, iceplant, and Mediterranean grasses. Much of the iceplant and buckwheat have been removed as a part of the restoration efforts, but the latter species is persistent.

Vernal Pools

Historically, vernal pools and the associated unique plant community occurred within the deflation plain, and at least one occurred on the southerly foredune. Vernal pools in the vicinity of the Dunes are known to have supported a number of indicator species such as California Orcutt grass (*Orcuttia californica*), ground pink (*Linanthus dianthiflorus*), purple owl's clover (*Castilleja exserta* [*Orthocarpus purpurascens*]), and California plantain (*Plantago erecta*), and others. Currently, there are no vernal pools within the Dunes.

Flora of the Dunes

In 1994, some 160 species of plants were known to occur on the Dunes. These plants species are arrayed across the Dunes in the plant communities discussed above. The contemporary flora of the Dunes is complex due to its long history of human influence. Species have been lost due to human disturbance and destruction of habitat. Many invasive weedy species have found their way into the Dunes. Several alleged “native” species from other plant communities were introduced with standard hydromulching. In addition, former residents deliberately introduced some species in association with residential landscaping.

What is known of the original species composition is largely limited to plant collections made by Pierce and his colleagues.²¹ While the dunes were relatively undisturbed at that time, it is likely that some changes had already occurred. A number of European-introduced annual species were

¹⁸ Barbour, M.G. and A.F. Johnson. 1988. “Beach and dune.” In *Terrestrial Vegetation of California*. California Native Plant Society. Special Publication No. 9.

¹⁹ Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento: California Department of Fish and Game.

²⁰ Barry, W.J. 1972. *The Central Valley Prairie*. Sacramento: California Department of Parks and Recreation.

²¹ Pierce, W.D. 1938/1940. Unpublished Notes on the El Segundo Sand Dunes Study. 5 volumes. Los Angeles: Natural History Museum of Los Angeles County.

already present, and some native species were likely already extirpated. The prairie communities had been the most altered, and to a lesser extent, at the beach and lower foredune, the introduced landscape species had their greatest impact. Small areas of foredune and backdune were relatively untouched and thus provided useful information of naturally occurring species composition.

At the time of plant surveys in 1988, some 24 plant taxa recorded by Pierce, 50 years prior, were absent.²² A number of the extirpated species were associated with the Dunes habitats—beach, valley needlegrass grassland, and vernal pools—that had been most disturbed by human activities. The changes to the beach discussed above effectively removed habitat for a suite of beach-adapted species. Likewise, the activities associated with the construction of Pershing Drive had a heavy impact on the prairie and vernal pools of the deflation plain behind the dunes. The loss here included a suite of species associated with the vernal pools habitat as well as some associated with the prairie itself.

The removal of houses from the site in 1979 and wide-spread physical disturbance of native soils provided opportunities for nonnative plants and animals to invade otherwise integrated natural communities. Therefore, iceplant and acacia expanded quickly. Surveys conducted in 1987 showed that two iceplant species (*Carpobrotus edulis* and *C. aequilaterus*) covered approximately 35 percent of the site, which resulted in a proportionate displacement of native plants. Similarly, two species of acacia (*Acacia cyclops* and *A. retinoides*) expanded. From 1979 to 1987, acacia increased from less than 40 individuals to 671.²³ Portions of the former residential area came to be dominated by acacia and iceplant. The physical structure of the prairie and vernal pool wetland was disrupted, and the plant community was converted to a nonnative scrub. The removal of the acacia and iceplant has been a major component of the restoration activities to date. The numbers of both genera have been greatly reduced; however, they are still present on site and reproducing. Continued vigilance in their removal will be required to ensure that iceplant and acacia do not yet reclaim the site.

An extensive effort has been made to reintroduce most of the extirpated plant species with mixed results. Some plant introductions have been very successful. Less successful reintroductions may have been due to insufficient information about species propagation requirements for germination and establishment. Directed research on the germination requirements of these species at a botanical garden, academic institution, or nursery specializing in native plants would be appropriate. Reintroduction of species associated with habitats that are no longer present, such as beach and vernal pools, is difficult if not impossible.

2.5 Sensitive Species Addressed in the Mitigation Measures

This section addresses the specific species that are addressed in Mitigation Measures MM-BC-2, MM-BC-9, and MM-ET-4.

²² Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

²³ Mattoni, R.H.T. 1990. "Species Diversity and Habitat Evaluation Across the El Segundo Sand Dunes at LAX." Prepared by: Mattoni, R.H.T., Agresearch, Inc. Prepared for: The Board of Airport Commissioners, One World Way West, Los Angeles, CA 90009.

El Segundo Blue Butterfly (ESB)

Species Description

The ESB is one of five subspecies of the square-spotted blue butterfly (*Euphilotes battoides*) and is endemic to Southern California. The ESB is distinguished from the other four subspecies by a combination of underside black spot size, amount of orange on the wings, wingspread, foodplant, and other characters.²⁴ The adults have a wingspan of 0.75 to 1.25 inches. The wings of the males are a bright blue color with an orange border on the rear of the upper hindwings. The females are a dull brown color with an orange border on the upper distal surface of the hindwings.²⁵

Habitat Requirements

Distribution of the ESB is dependent on adequate habitat and occurrence of its foodplant, the coast buckwheat. Furthermore, the ESB appears to be limited to habitats with high sand content. These sites historically consisted of the Dunes, where the key indicator of primary, undisturbed habitat is the coast buckwheat. The biological communities of sand dunes are adapted to continuously moving sand and extreme aridity. ESB are present within extant and restored southern foredune and southern dune scrub habitats within the Habitat Restoration Area of the Dunes. The Dunes population represents more than 90 percent of the known population of this species. The Dunes are the largest fragment of ESB habitat and are also the closest approximation to a prehistoric dune ecosystem composition.²⁶ More research is necessary to determine those factors necessary in determining ESB endemism to the Dunes.

Life History

The ESB, as with all species of the genus *Euphilotes*, spends virtually its entire life cycle in intimate association with the flowerheads of a specific species of buckwheat. In this case, the coast buckwheat is where virtually all stages of the ESB's life cycle occur.²⁷ The ESB undergoes four major phases, or instars, of maturation (complete metamorphosis): egg, larvae, pupae, and adult. The life span of the ESB is about one year; however, some pupae will remain in diapause for two years or more. Adults usually fly from mid-June to mid-August, although the exact timing is weather dependent. The onset of flight is closely synchronized with the flowering of coast buckwheat. In addition, by late August, the larvae generally pupate underground, which coincides with the senescence of the coast buckwheat flowerhead. Thus, significant arrays of population regulating mechanisms operate within the flowerhead environment.

Upon emerging from their pupae, adults fly directly to flowering heads of the coast buckwheat. Upon arrival at the flowerheads, females begin mating with males that are moving constantly from flowerhead to flowerhead. Immediately after mating, the females begin laying eggs that hatch in

²⁴ Mattoni, R.H.T. 1992. "The Endangered El Segundo Blue Butterfly." *Journal of Research Lepidoptera*, 29: 277–304.

²⁵ U.S. Fish and Wildlife Service. 20 April 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles, County, California*. Prepared for: U.S. Department of Transportation, Federal Aviation Administration, P.O. Box 92007, Los Angeles, CA 90009.

²⁶ Mattoni, R.H.T. 1992. "The Endangered El Segundo Blue Butterfly." *Journal of Research Lepidoptera*, 29: 277–304.

²⁷ Mattoni, R.H.T. 1992. "The Endangered El Segundo Blue Butterfly." *Journal of Research Lepidoptera*, 29: 277–304.

three to five days, and larvae will undergo four instars prior to pupation in 18 to 25 days.²⁸ ESB are described as sedentary, but formal and informal mark/recapture studies indicate that adult dispersal can occur infrequently. Each larva will require two to three flowerheads during its development.

ESB larvae have a symbiotic relationship with ants. During the third instar, ESB larvae develop an eversible tube and glands that secrete a fluid that attracts ants, usually *Iridomyrmex humilis* or *Conomyrmex* sp., which may protect them from parasitoids and small predators. By late August or September, the ESB pupate when inflorescences become senescent, and the pupae winter either underground or within the leaf litter.²⁹

Little is known about the predators of the ESB. It is assumed that crab and lynx spiders capture mature ESB. Braconid wasps and tachinid flies parasitize ESB eggs on flowerheads in the dunes.³⁰

Population Dynamics

ESB population densities have decreased dramatically due to urban development on the Dunes, which were undisturbed until the late 1880s, when the cities from Redondo Beach to Venice were established.³¹

Numbers of ESB have been monitored since the City of Los Angeles initiated active management of the Habitat Restoration Area in 1995 and are reported in Table 2.5-1, *El Segundo Blue Butterfly Population Figures*.

²⁸ U.S. Fish and Wildlife Service. 20 April 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles, County, California*. Prepared for: U.S. Department of Transportation, Federal Aviation Administration, P.O. Box 92007, Los Angeles, CA 90009.

²⁹ U.S. Fish and Wildlife Service. 20 April 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles, County, California*. Prepared for: U.S. Department of Transportation, Federal Aviation Administration, P.O. Box 92007, Los Angeles, CA 90009.

³⁰ Arnold, R.A. 1986. "Habitat Enhancement Techniques for the El Segundo Blue Butterfly: An Urban Endangered Species." In *Integrating Man and Nature, in the Metropolitan Environment, Proceeding of a National Symposium on Urban Wildlife*. Edited by L. W. Adams and D.L. Leedy. Columbia, MD: National Institute for Urban Wildlands.

³¹ U.S. Fish and Wildlife Service. 1998. *Recovery Plan for the El Segundo Blue Butterfly (Euphilotes abtoides allyni)*. Portland, OR: U.S. Fish and Wildlife Service.

TABLE 2.5-1
EL SEGUNDO BLUE BUTTERFLY POPULATION FIGURES

Year	Acreage	Block	Historic Transect	Estimated Population
1995	200	Not performed	1,240	Not performed
1996	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	1,741	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	34,737 to 109,814

NOTES:

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 ESB Habitat Restoration Area during the entire flight season.

³ Prior to 1996, only historic transect counts were performed. Block counts began during the 1996 flight season.

Peak numbers of 5,803 individuals were recorded as a result of block counts conducted in 2003. The total population estimate, which was extrapolated from the 2003 block counts, ranged from 34,737 to 109,814 ESB.³² The Dunes are divided into 87 subsites for the purpose of maintenance and monitoring activities. During 2003, ESB were observed within 50 of the 87 subsites.³³ Previous counts in 1999 rendered estimates of total population ranging from 9,867 to 39,000.³⁴ Counts in 2000 showed that the butterfly population increased significantly when compared to 1999. Similarly, counts of ESB in 2001 rendered an increased estimate of the total population, ranging from 24,134 to 79,109 individuals since 2000. 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.³⁵ Population fluctuations of this magnitude are not unusual among insects, especially those that have a single generation per year. Indeed, several forest pest moths that are routinely monitored can exhibit a 10-fold increase in population numbers within a few generations or may decline just as rapidly.³⁶ Factors such as seasonal weather conditions, increased parasitism and predation, a higher incidence of disease, or a decline in foodplant numbers (or flowerhead numbers in the case of the ESB) may individually or collectively affect population numbers.

³² Arnold, R.A. 2003. *Report of the El Segundo Blue Monitoring Activities in 2003 at the Los Angeles International Airport*. Contact: Entomological Consulting Services, LTD., 104 Mountain View Court, Pleasant Hill, CA 94523-2188.

³³ Los Angeles World Airports. 25 November 1998. Memorandum for the Record to Maurice Laham from Andrew Huang: Estimate of the 1998 LAX El Segundo Blue Butterfly Population.

³⁴ Arnold, R.A. 1983. "Ecological Studies of Six Endangered Butterflies (*Lepidoptera: Lycaenidae*); Island Biogeography, Patch Dynamics, and the Design of Habitat Preserves." *Entomology*, 99: 153.

³⁵ Arnold, R.A. 2003. *Report of the El Segundo Blue Monitoring Activities in 2003 at the Los Angeles International Airport*. Contact: Entomological Consulting Services, LTD., 104 Mountain View Court, Pleasant Hill, CA 94523-2188.

³⁶ Varley, G.C., G.R. Gradwell, and M.P. Hassell. 1974. *Insect Population Ecology*. Berkeley, CA: University of California Press.

Status and Distribution

ESB are currently found exclusively within the Dunes. The Dunes complex historically covered an area of about 4.5 square miles, stretching from the mouth of Ballona Creek south to the Palos Verdes Peninsula. The Dunes were bordered on the west by the Pacific Ocean and continue inland approximately 0.5 mile. Museum specimens of ESB were collected in El Segundo, Redondo Beach, Manhattan Beach, and on the Palos Verdes Peninsula.³⁷ Recently, ESB have been found at the Ballona Wetlands, Dunes, Chevron Butterfly Preserve, and Malaga Cove. Each of these areas represents a recovery unit within the ESB Recovery Plan.³⁸

The Ballona recovery unit is the northern-most unit and extends south to Westchester Boulevard. It contains two sites with suitable habitat for ESB. The Ballona Wetlands have a degraded dune with 7 acres of degraded habitat. A small portion of the 7 acres was planted with native vegetation and coastal buckwheat plants, but was later altered by a lagoon restoration project. Another privately owned 6-acre site in the Ballona Wetlands is where one male was observed in 1987.³⁹

The LAX recovery unit is the largest remaining undeveloped coastal sand dune system in Southern California.⁴⁰ It also contains what is believed to be the largest remaining population of ESB. Population estimates for ESB vary greatly from year to year, and there is disagreement regarding the survey methods employed to estimate the ESB population. The 2002 survey at the Dunes estimated the population to be between 52,000 and 54,000 ESB.⁴¹ The 2003 population estimate was between 105,000 and 109,000.⁴² It is quite possible that the current population estimate model used by LAX has significantly overestimated the size of the ESB population.⁴³ The 2002 survey also noted that the coast buckwheat population is declining and showed that the current rate of recruitment would not be sufficient to replace the growing number of senescent plants. The size of the population and the status of the Dunes as a preserve for ESB and other coastal dune-dependent species make this recovery unit the cornerstone for the survival and recovery of ESB.⁴⁴

The El Segundo recovery unit is immediately south of the Dunes unit. The unit contains 1.6 acres owned and managed by the Chevron Corporation. The estimated number of ESB and host plants in 2002 was between 9,500 and 9,900 ESB and 907 coast buckwheat host plants.⁴⁵ The population

³⁷ Donahue, J.P. 1975. *A Report on the 24 Species of California Butterflies Being Considered for Placement on the Federal Lists of Endangered or Threatened Species*. (Unpublished report.) Los Angeles: Natural History Museum of Los Angeles County.

³⁸ U.S. Fish and Wildlife Service. 1998. *Recovery Plan for the El Segundo Blue Butterfly* (*Euphilotes abtoides allyni*). Portland, OR: U.S. Fish and Wildlife Service.

³⁹ Mattoni, R.H.T. 1992. "The Endangered El Segundo Blue Butterfly." *Journal of Research Lepidoptera*, 29: 277–304.

⁴⁰ U.S. Fish and Wildlife Service. 1998. *Recovery Plan for the El Segundo Blue Butterfly* (*Euphilotes abtoides allyni*). Portland, OR: U.S. Fish and Wildlife Service.

⁴¹ Arnold, R.A. 2002. *Report of the El Segundo Blue Monitoring Activities in 2002 at the Los Angeles International Airport*. Contact: Entomological Consulting Services, LTD., 104 Mountain View Court, Pleasant Hill, CA 94523-2188.

⁴² Arnold, R.A. 2003. *Report of the El Segundo Blue Monitoring Activities in 2003 at the Los Angeles International Airport*. Contact: Entomological Consulting Services, LTD., 104 Mountain View Court, Pleasant Hill, CA 94523-2188.

⁴³ Longcore, T. and C. Rich. 2001. *Review of Biological Resources Analysis in LAX Master Plan Draft Environmental Impact Statement/Environmental Impact Report*.

⁴⁴ U.S. Fish and Wildlife Service. 1998. *Recovery Plan for the El Segundo Blue Butterfly* (*Euphilotes abtoides allyni*). Portland, OR: U.S. Fish and Wildlife Service.

⁴⁵ Arnold, R.A. 2002. *Report of the El Segundo Blue Monitoring Activities in 2002 at the Chevron Butterfly Preserve*. Contact: Entomological Consulting Services, LTD., 104 Mountain View Court, Pleasant Hill, CA 94523-2188.

estimates for ESB on the Chevron El Segundo Blue Butterfly Preserve use the same method as the Dunes and may overestimate the number of butterflies on the site. The host plant population had declined 23 percent from the previous year.⁴⁶ There is also a 30-acre site east of the Hyperion sewage treatment plant that lies between the Dunes and the Chevron site. There was one butterfly observed on this site in the 1980s.⁴⁷ The Hyperion site may serve as a movement corridor between the Dunes and the Chevron site.

The Torrance recovery unit is the southernmost unit, extending south to the Palos Verdes Peninsula. There are several scattered areas along the beach bluffs that support coast buckwheat and ESB. These areas are scattered and located primarily on private property. A Safe Harbors Agreement has been implemented for this recovery unit. The agreement, administered by the Urban Wildlands Group, allows private landowners to carry out some low-impact shoreline development while maintaining and improving ESB habitat.⁴⁸

California Silvery Legless Lizard

Distribution

The California silvery legless lizard (*Anniella pulchra pulchra*) is a federal Species of Concern and a state Species of Special Concern. This species is known to occur in the coastal ranges from San Francisco to northwest Baja California, Mexico, including the floor of the San Joaquin Valley, the west slope of the southern Sierra, the Tehachapi Mountains, and the mountains of Southern California below 6,000 feet in elevation.^{49,50}

The CNDDDB lists 14 occurrences of this species throughout the California; all are presumed extant. Occurrences of this species are recorded in the following counties: Contra Costa, Merced, Madera, San Benito, Fresno, San Luis Obispo, San Bernardino, Santa Barbara, Los Angeles, Riverside, and San Diego.⁵¹ The three closest occurrences include Leona Valley, along Elizabeth Lake Pine Canyon Road within the County of Los Angeles in 1995 (Ritter Ridge quadrangle); 4.4 miles west of Lancaster within the County of Los Angeles in 1988 (Lancaster West quadrangle); and approximately 4 miles south-southwest of Lancaster within the County of Los Angeles in 1988 (Lancaster West quadrangle).

⁴⁶ Arnold, R.A. 2002. *Report of the El Segundo Blue Monitoring Activities in 2002 at the Chevron Butterfly Preserve*. Contact: Entomological Consulting Services, LTD., 104 Mountain View Court, Pleasant Hill, CA 94523-2188.

⁴⁷ Mattoni, R.H.T. 1992. "The Endangered El Segundo Blue Butterfly." *Journal of Research Lepidoptera*, 29: 277–304.

⁴⁸ U.S. Fish and Wildlife Service. 20 April 2004. *Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles, County, California*. Prepared for: U.S. Department of Transportation, Federal Aviation Administration, P.O. Box 92007, Los Angeles, CA 90009.

⁴⁹ California Department of Fish and Game. 2001. *Rarefind 2: California Natural Diversity Database*. Sacramento: State of California Resource Agency.

⁵⁰ California Department of Fish and Game. 1998. *California's Wildlife, Volume I: Amphibians and Reptiles*. Sacramento: California Department of Fish and Game.

⁵¹ California Department of Fish and Game. 2001. *Rarefind 2: California Natural Diversity Database*. Sacramento: State of California Resource Agency.

Description

This species silvery, beige, or gray above, with a dark middorsal line. It has a yellow ventral side with thin lengthwise lines between the scale rows and very shiny skin. The species is approximately 10.9 to 17.5 centimeters in length.⁵²

Habitat Association

It can be found along the Pacific slope of the coastal mountains, inhabiting areas with sandy or loose, loamy soils under the sparse vegetation of beaches, riparian, oak woodland, coastal sage scrub, chaparral, and alluvial fans of the coastal scrub;⁵³ It requires sandy soil with leaf litter.

Space Use

Presently, there is no data on the size of the species home range. There is also no evidence for territorial defense or predictable seasonal movements.⁵⁴ It forages in the leaf litter during the day, and it may forage on the surface at dusk or at night.⁵⁵

Reproduction

Little is known about the reproduction of the species. It is known that it is live-bearing, mating occurs in the late spring or early summer, and they have 1 to 4 young born between September and November.⁵⁶

Food Habits

This species eats insect larvae, small adult insects, and spiders, and they usually forage at the base of shrubs or other vegetation on the surface or in the leaf litter.⁵⁷

Factors Affecting Distribution

The California silvery legless lizard is primarily threatened by habitat loss and fragmentation occurring in conjunction with urban and agricultural development. Development, flood control measures, habitat isolation, mining, and livestock grazing threaten eight of the known occurrences.

⁵² Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians*. Boston: Houghton Mifflin Company.

⁵³ California Department of Fish and Game. 2001. *Rarefind 2: California Natural Diversity Database*. Sacramento: State of California Resource Agency.

⁵⁴ California Department of Fish and Game. 1998. *California's Wildlife, Volume I: Amphibians and Reptiles*. Sacramento: California Department of Fish and Game.

⁵⁵ Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians*. Boston: Houghton Mifflin Company.

⁵⁶ Stebbins, R.C. 1985. *A Field Guide to Western Reptiles and Amphibians*. Boston: Houghton Mifflin Company.

⁵⁷ California Department of Fish and Game. 1988. *California's Wildlife, Volume I: Amphibians and Reptiles*. Sacramento: California Department of Fish and Game.

San Diego Horned Lizard

Distribution

The San Diego horned lizard (*Phrynosoma coronatum blainvillii*) is both a federal and state Species of Special Concern.⁵⁸ It was historically distributed from the Transverse Range in the Counties of Kern, Santa Barbara, Ventura and Los Angeles southward throughout the peninsular ranges of Southern California to Baja California, Mexico, as far south as San Vicente. In California, this taxon ranges from the transverse ranges to the Mexican border, west of the deserts; however, it occurs at scattered sites along the extreme western desert slope of the peninsular ranges.⁵⁹ There is also an isolated population in Siskiyou County.⁶⁰

The CNDDDB lists 455 known occurrences of the San Diego horned lizard throughout the State of California, all of which are presumed extant, with the exception of the following: three occurrences in San Bernardino County are extirpated; three occurrences in Riverside County are extirpated; four occurrences in the County of Los Angeles are extirpated, and seven occurrences are listed as possibly extirpated; and two occurrences in San Diego County that are listed as possibly extirpated.⁶¹ The nearest known occurrence to the Specific Plan Area includes a sighting at Topanga Canyon, 2.5 miles southwest of Woodland Hills in 1986 (Calabasas quadrangle), which is approximately 5 to 8 miles south of the Specific Plan Area; a sighting 1 mile west of Woodland Hills and north of Highway 101 in 1954 (Calabasas quadrangle), which is approximately 5 to 8 miles east of the Specific Plan Area; and a sighting in Stunt Ranch, 4 miles south of Calabasas in the Santa Monica Mountains in 1953 (Malibu Beach quadrangle), which is approximately 7 to 10 miles south of the Specific Plan Area. Other occurrences of this taxon are distributed throughout the Counties of Kern, San Bernardino, Los Angeles, Orange, Riverside and San Diego.

Description

The San Diego horned lizard is a member of the family Iguanidae. It is a large, dorsoventrally flattened lizard with five backwardly projecting head spines (four large, lateral, sometimes curved, and one moderate-sized median). The lizard has a large shelf above each eye, terminating a backwardly projecting, spine-like, scale (postrictal); large, convex, smooth scales on the forehead (frontals); and two parallel rows of pointed scales, fringing each side of the body.⁶² The ground color above is yellowish or reddish gray, usually darker laterally. The head is more or less uniform without dark marks, yellowish or slate-colored, distinctly lighting on snout. The larger spines are often reddish. There are no distinct bands on the legs. The ventral surfaces are white or cream, usually mottled to a varying degree with dark brown. Ventral surfaces of limbs and tail are unmarked. All others of this genus, with the exception of the closely related California horned lizard, either have very short horns on the head, the tympanum hidden, a single series of peripheral

⁵⁸ California Department of Fish and Game. 2001. *RareFind 2: A Database Application for the Use of the California Department of Fish and Game's Natural Diversity Database*. Sacramento: California Department of Fish and Game.

⁵⁹ Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

⁶⁰ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). November 1990. *California Statewide Wildlife Habitat Relationship Systems. Volume I: Amphibians and Reptiles*. Sacramento: State of California Resources Agency.

⁶¹ California Department of Fish and Game. 2001. *RareFind 2: A Database Application for the Use of the California Department of Fish and Game's Natural Diversity Database*. Sacramento: California Department of Fish and Game.

⁶² Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

spines (or none), keeled ventrals, or only a single longitudinal row of enlarged throat scales on each. Any of these characteristics will separate them from the San Diego horned lizard.⁶³

Habitat Association

The San Diego horned lizard is terrestrial and found in valleys, mesas, and foothills. They are found in a wide variety of habitats, including coastal sage, annual grassland, chaparral, oak woodland, riparian woodland, valley-foothill hardwood, coniferous forests, pine-cypress, and juniper habitats. In the foothill and mountain habitats covered with dense brush or other vegetation, San Diego horned lizards are largely restricted to areas with pockets of open microhabitat, a habitat structure that can be created by natural events such as fire and floods or human created disturbances such as livestock grazing, fire breaks, and roads.⁶⁴ They are chiefly found below 2,000 feet in Northern California and 3,000 feet in Southern California.⁶⁵

Space Use

The San Diego horned lizard is diurnal and most activity occurs during the middle of the day in the spring and fall but is restricted to morning and late afternoon during mid-summer. Nocturnal activity may occur during particularly warm periods. Fall and winter are inactive periods in most areas.⁶⁶ They emerge from hibernation in late March and are surface active mostly during April through July, after which time most adults aestivate. They then reappear again briefly in August, disappearing into overwintering sites from late August through early October, with the variation depending on elevation and perhaps local conditions.⁶⁷ Pronounced seasonal movement or migration has not been reported. Habitat requirements, such as sites for courtship and display, egg-laying, and hibernation, are apparently found within the normal area of activity.

The San Diego horned lizard displays a distinctive sequence with regards to its daily diurnal activity. Frequently, just before sunrise, they emerge from their burial sites in the substrate and later move into a position where the first rays of the sun will allow them to bask. As temperatures warm, they thermoregulate by either shifting the orientation of their bodies relative to the sun or moving in and out of the shade. By late morning, body temperatures are elevated enough to allow the horned lizards to feed or engage in territorial and sexual behavior. During the warmest part of the day, the San Diego horned lizard covers itself with loose soil. In the later afternoon, individuals reemerge from the substrate and resume full activities. The sequence of morning behavior is repeated in reversed order prior to when individuals rebury themselves in the substrate for the night.

⁶³ Smith, H.M. 1946. *Handbook of Lizards / Lizards of the United States and Canada*. Ithaca, NY, and London: Comstock Publishing Associates, A Division of Cornell University Press.

⁶⁴ Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

⁶⁵ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). November 1990. *California Statewide Wildlife Habitat Relationship Systems. Volume I: Amphibians and Reptiles*. Sacramento: State of California Resources Agency.

⁶⁶ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). November 1990. *California Statewide Wildlife Habitat Relationship Systems. Volume I: Amphibians and Reptiles*. Sacramento: State of California Resources Agency.

⁶⁷ Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

The San Diego horned lizard relies on camouflage for protection and often hesitates to move at the approach of a predator. Leopard snakes, sidewinders, striped whipsnakes and other snakes, loggerhead shrikes, and hawks have all been reported as predators of horned lizards.⁶⁸

Reproduction

The reproductive season for the San Diego horned lizard varies from year to year and geographically depending on local conditions.⁶⁹ Males and females require two to three years to reach the minimum size for sexual maturity.⁷⁰ The coast horned lizard, of which the San Diego horned lizard is a subspecies, is apparently unique among lizards in using a belly-to-belly position during copulation.⁷¹ It has been suggested that in mating the male turns the female over on her back. As with many lizards, the male bites and holds the skin at one side of the female's neck.⁷²

They are oviparous and lay one clutch of 6 to 17 eggs each year from May through early July. No data exists suggesting that this taxon can produce more than one clutch per year. Incubation requires approximately two months and hatchlings first appear in late July and early August.⁷³

Food Habits

Horned lizards forage on the ground in open areas, usually between shrubs and often near ant nests. San Diego horned lizards have an insectivorous diet that consists mostly of native harvester ants (*Pogonmyrmex* spp.). Ants can make up over 90 percent of the diet items of the San Diego horned lizard, but the diet of this taxon may vary considerably with locality, since it is an opportunistic feeder that will eat other insects, especially termites, beetles, flies, wasps, and grasshoppers when they are abundant.⁷⁴

⁶⁸ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). November 1990. *California Statewide Wildlife Habitat Relationship Systems. Volume I: Amphibians and Reptiles*. Sacramento: State of California Resources Agency.

⁶⁹ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). November 1990. *California Statewide Wildlife Habitat Relationship Systems. Volume I: Amphibians and Reptiles*. Sacramento: State of California Resources Agency.

⁷⁰ Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

⁷¹ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). November 1990. *California Statewide Wildlife Habitat Relationship Systems. Volume I: Amphibians and Reptiles*. Sacramento: State of California Resources Agency.

⁷² Smith, H.M. 1946. *Handbook of Lizards / Lizards of the United States and Canada*. Ithaca, NY, and London: Comstock Publishing Associates, A Division of Cornell University Press.

⁷³ Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

⁷⁴ Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

Factors Affecting Distribution

The relatively specialized diet and habitat requirements, a high degree of site fidelity, and a defensive behavior based on crypsis make the San Diego horned lizard vulnerable. This taxon was heavily exploited for the curio trade at the turn of the century and later by biological supply companies and the pet trade before commercial collecting was banned in 1981. These factors, coupled with extensive habitat loss from agriculture and urbanization, have been the main reasons cited for the decline of this taxon.⁷⁵ General loss of habitat is another major factor affecting distribution. Habitat loss can be attributed to development and recreational use such as camping and off-road vehicle use.⁷⁶

Perhaps the most insidious threat to the San Diego horned lizard is the progressive elimination of its food base by exotic ants that have invaded upland habitats. Argentine ants build nests in disturbed soils and expand into adjacent areas, eliminating native ant colonies as development continues.

Lewis' Evening Primrose

Distribution

Lewis' evening primrose (*Camissonia lewisii*) is a small annual with a California Native Plant Society (CNPS) listing of "3," which means it is rare and more information on the plant is needed. Lewis' evening primrose is found in the Counties of San Diego, Orange, and Los Angeles, and in Baja California, Mexico, from 0 to 1,300 feet in elevation. Lewis' evening primrose is believed to be severely declining in Southern California and likely throughout its range.⁷⁷ The genus is notoriously difficult to differentiate, since the species can superficially mimic the relatively common *Camissonia bistorta* or *Camissonia micrantha*; therefore, some of the reported inland locales may represent misidentifications.⁷⁸

Reiser provides the greatest description of locations of the Lewis' evening primrose in and around San Diego County, including the coastal strand at Border Field, Spooner's Mesa in the Tijuana Hills, the western edge of Otay Mesa, and a hillside abutting the Penasquitos Lagoon.⁷⁹ Herbarium species have been reported to come from Balboa Park, Otay Lakes Road, Silver Strand, San Luis Rey, Crown Point, the south end of San Diego Bay, and near Old Town. Within the County of Los Angeles, the species has been reported at Point Dume (in the Santa Monica Mountains) and the Dunes.

Description

Lewis' evening primrose is a member of the evening primrose family. The small stature of the plant and sandy or clay microhabitat near the beach are typical of this species. Lewis' evening primrose

⁷⁵ Jennings, M.R. and M.P. Hayes. 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for: California Department of Fish and Game, Island Fisheries Division, 1701 Nimbus Road, Rancho Cordova, CA 95701.

⁷⁶ California Department of Fish and Game. 2001. *RareFind 2: A Database Application for the Use of the California Department of Fish and Game's Natural Diversity Database*. Sacramento: California Department of Fish and Game.

⁷⁷ California Native Plant Society. 2004. Inventory of Rare and Endangered Plants. Available at: <http://www.cnps.org/inventory>.

⁷⁸ Reiser, C.H. 1994. Rare Plants of San Diego County. Available at: <http://sandiego.sierraclub.org/rareplants/>.

⁷⁹ Reiser, C.H. 1994. Rare Plants of San Diego County. Available at: <http://sandiego.sierraclub.org/rareplants/>.

is a small plant with simple leaves that are low to the ground in a rosette pattern. The Lewis' evening primrose has yellow fading to red petals fused with the sepals from 1.5 to 4 millimeters, with 1 to 2 dots near the base of the sepal.⁸⁰

Habitat Association

This small annual grows in sandy or clay substrates near the beach, typically on beach bluffs. However, this small plant has been reported in numerous coastal habitat types, particularly coastal scrub and coastal dunes, and valley/foothill grasslands. The coastal habitat types typically consist of species such as California sagebrush (*Artemisia californica*), sages (*Salvia mellifera*, *Salvia leucophylla*, *Salvia apiana*), California buckwheat (*Eriogonum fasciculatum*), dune buckwheat (*Eriogonum latifolium*), chamise (*Adenostoma fasciculatum*), coast goldenbush (*Isocoma menziesii*), coyote brush (*Baccharis pilularis*), and lemonade berry (*Rhus integrifolia*). The grassland habitats now typically include many nonnative annual species such as ripgut (*Bromus diandrus*), foxtail chess (*Bromus madritensis*), wild oats (*Avena fatua*), and Italian rye grass (*Lolium multiflorum*), in addition to the native perennial needle grasses such as Foothill needlegrass (*Nassella lepida*), nodding needlegrass (*Nassella cernua*), and purple needlegrass (*Nassella puchra*).⁸¹

Reproduction

The Lewis' evening primrose has been observed to flower from early spring through early summer and is self propagating. The dull brownish quadrangular seed capsule is 0.7 to 0.8 millimeters in size.⁸² Additional life history information is required of this rare species.

Factors Affecting Distribution

This species is extremely rare and maybe approaching extirpation in the U.S. Some of the reported locales for San Diego County are now within the boundaries of the urbanized coastal cities where they are likely extirpated. More information is required to identify specific factors affecting distribution.

Burrowing Owl

Distribution

The burrowing owl is both a federal and state Species of Concern. They are found from southern Canada to southern South America. The burrowing owl is resident largely throughout the southern U.S., with several populations inhabiting the gulf coast of Louisiana and the Florida panhandle.⁸³ In Southern California, burrowing owls are common in the Imperial Valley, rather common in agricultural areas within the Colorado River district, and generally scarce and decreasing elsewhere.⁸⁴ Along coastal Southern California, the burrowing owl distribution is greatly reduced and localized.

⁸⁰ Hickman, J.C., ed. 1993. *The Jepson Manual: Higher Plants of California*. Berkeley, CA: University of California Press.

⁸¹ Sawyer, J.O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation*. Sacramento: California Native Plant Society.

⁸² California Native Plant Society. 2004. Inventory of Rare and Endangered Plants. Available at: <http://www.cnps.org/inventory>.

⁸³ Johnsgard, P.A. 1988. *North American Owls*. Washington, DC: Smithsonian Institution Press.

⁸⁴ Garrett, K. and J. Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles: The Artesian Press.

A query of the CNDDDB returned no records for burrowing owl in the Calabasas quadrangle. However, the CNDDDB lists 395 occurrences of this species within the State of California, including both those that are extant and extirpated. Occurrences of this species occur in the Counties of Lassen, Tehama, Glenn, Butte, Colusa, Sutter, Placer, Sonoma, Napa, Yolo, Marin, Solano, Sacramento, Contra Costa, San Joaquin, Alameda, Stanislaus, Santa Cruz, Santa Clara, Merced, Madera, Fresno, Inyo, Monterey, Kings, Tulare, San Luis Obispo, Kern, San Bernardino, Ventura, Los Angeles, Orange, Riverside, San Diego, and Imperial. The CNDDDB did return records in quadrangles adjacent to the Calabasas quadrangle, focused in the Counties of Ventura and Los Angeles. The three closest occurrences to the Specific Plan Area are upper Dry Canyon, 2 miles north of Simi Valley and approximately 10 miles northwest of the Specific Plan Area (Santa Susana quadrangle) in 1990; Playa del Rey near Culver Boulevard and Jefferson Boulevard, approximately 25 miles southeast of the Specific Plan Area (Venice quadrangle), in 1981; and the south side of Anaverde Valley, 2 miles west of the Avenue S Interchange on Highway 14 in Palmdale and approximately 35 miles northeast of the Specific Plan Area (Ritter Ridge quadrangle), in 1999.

Description

Burrowing owls are small- to medium-sized raptors that are characterized by their use of burrows for nesting. Adults are between 7.5 to 10 inches in length and weigh approximately 5 ounces. They have relatively long legs, a distinct yellow iris, brown plumage with buffy white spots on the back, and a white underside with brown barring.⁸⁵

Habitat Association

Burrowing owls prefer dry, open, treeless shortgrass plains, often in areas with little or no vegetation, which are often associated with burrowing mammals and rodents. Burrowing owls can also be found on golf courses, at airports, in cemeteries, in vacant lots in residential areas, and along shoulders of roadways.⁸⁶

Space Use

Typically, burrowing owls occupy abandoned squirrel or rodent burrows and enlarge them by kicking backward with their feet and digging with their bills.⁸⁷ Burrowing owls typically have a nesting burrow and several alternate burrows used for cover and predator protection. They also often line their nest burrow entrances with dried cow or horse manure, which is believed to mask their scent. Burrowing owls are active during the day and night. Typically, this species perches in open sunlight in the mornings then retreats to shade or a burrow during hot afternoons.⁸⁸

Reproduction

Breeding usually begins during March or April in California, and during this time, burrowing owls can be observed foraging and roosting near their burrows. Males begin displaying in front of the

⁸⁵ Sibley, D.A. 2000. *National Audubon Society: The Sibley Guide to Birds*. New York: Alfred A. Knopf, Inc.

⁸⁶ Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

⁸⁷ Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

⁸⁸ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). 1990. *California's Wildlife, Volume II: Birds*. Sacramento: State of California Resources Agency.

nest burrow to attract a female. Clutch size averages from five to six eggs, perhaps greater in the north. Females incubate exclusively for approximately 28 to 29 days. Males bring food to the entrance of the burrow where the female takes the food and feeds the young. The male rarely enters the nesting burrow. Young emerge from the nest burrow after approximately two weeks, fly by approximately four weeks, and begin dispersing in late August and September.⁸⁹

Food Habits

Burrowing owls primarily feed on insects such as grasshoppers, small mammals, rodents, reptiles, other small birds, and carrion. This species generally hunts from a perch and hovers, dives, and hops after the prey.⁹⁰

Factors Affecting Distribution

They occur primarily in agricultural and grassland areas of interior and coastal valleys and in fewer numbers on bluffs along the immediate coast, but they are resident on the Channel Islands. Burrowing owls from more northern areas occasionally migrate into southern and coastal regions of Southern California during the winter. Preliminary data from the Los Angeles County Breeding Bird Atlas indicate records of several breeding pairs of burrowing owls in the Antelope Valley, but no breeding has been documented on the coastal slope of the County of Los Angeles for records between 1995 and 1997.

⁸⁹ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). 1990. *California's Wildlife, Volume II: Birds*. Sacramento: State of California Resources Agency.

⁹⁰ Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds.). 1990. *California's Wildlife, Volume II: Birds*. Sacramento: State of California Resources Agency.

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Appendix
LAX Master Plan Second Addendum to the Final EIR

AD(2)-B. Errata to the Final EIR

December 2004

1. INTRODUCTION

As a result of clarifications to, and comments received on, the LAX Master Plan Draft EIS/EIR, Supplement to the Draft EIS/EIR, and Final EIR, revisions have been made to the text of the Final EIR. A compilation of revisions is provided below. Changes in text are signified by strikeouts where text is removed and by italics where text is added, unless otherwise noted.

Section 4.2, Land Use

1. Mitigation Measures MM-LU-3 and MM-LU-4, on page 4-357 are revised as follows:

- ♦ **MM-LU-3. Conduct Study of the Relationship Between Aircraft Noise Levels and the Ability of Children to Learn (Alternatives A, B, C, and D).**

Current studies of aircraft noise and the ability of children to learn have not resulted in the development of a statistically reliable predictive model of the relative effect of changes in aircraft noise levels on learning. Therefore, a comprehensive study shall be initiated by LAWA to determine what, if any, measurable relationship may be present between learning and the disruptions caused by aircraft noise at various levels. An element of the evaluation shall be the setting of an acceptable replacement threshold of significance *for CEQA purposes* for classroom disruption by both specific and sustained aircraft noise events.

- ♦ **MM-LU-4. Provide Additional Sound Insulation for Schools Shown by MM-LU-3 to be Significantly Impacted by Aircraft Noise (Alternatives A, B, C, and D).**

Prior to completion of the study required by Mitigation Measure MM-LU-3, Conduct Study of the Relationship Between Aircraft Noise Levels and the Ability of Children to Learn, and within six months of the commissioning of any relocated runway associated with implementation of the LAX Master Plan, LAWA shall conduct interior noise measurements at schools that could be newly exposed to noise levels that exceed the interim LAX interior noise thresholds for classroom disruption of 55 dBA L_{max}, 65 dBA L_{max}, or 35 Leq(h), as presented in Section 4.1, Noise, of ~~this Final EIS/EIR~~ *the Final EIR for CEQA purposes*. All school classroom buildings (except those within schools subject to an aviation easement) that are found through the noise measurements to exceed the interim interior noise thresholds, as compared to the 1996 baseline conditions presented in the Final ~~EIS/EIR~~, would become eligible for soundproofing under the ANMP.

Upon completion of the study required by Mitigation Measure MM-LU-3 and acceptance of its results by peer review of industry experts, any schools found to exceed a newly established CEQA threshold of significance for classroom disruption, based on comparison with 1996 baseline conditions, due to implementation of the LAX Master Plan shall be eligible for participation in the ANMP administered by LAWA unless they are subject to an existing aviation easement. A determination of which schools become eligible will be made following application of the new threshold based on measured data.

Section 4.4.3, Environmental Justice

1. The following text hereby replaces the discussion of Air Quality on pages 4-599 through 4-609 of Section 4.4.3, *Environmental Justice*, of the Final EIR. The text below clarifies information pertaining to potential disproportionately high and adverse air quality impacts on minority and/or low-income populations living in the study area.

Air Quality

LAX is located in the South Coast Air Basin, an area with some of the most severe air quality problems in the nation. The South Coast Air Basin currently fails to attain national and California ambient air quality standards (NAAQS and CAAQS, respectively) for ozone (O₃) and particulate matter (PM₁₀) and only recently has been designated as being in attainment of NAAQS for nitrogen dioxide (NO₂). The South Coast Air Basin is currently designated as "Nonattainment/Transitional" of NAAQS for carbon monoxide

(CO). These pollutants, along with lead and sulfur dioxide (SO₂), are known as "criteria pollutants." Some pollutants, such as ozone, are more regional in the nature of their impacts and affect the entire South Coast Air Basin, while others, like CO, typically have more localized impacts. The South Coast Air Quality Management District (SCAQMD) has prepared a revised CO attainment demonstration that indicates the NAAQS were attained in 2002 and will be maintained into the future.

The air quality analysis conducted for the LAX Master Plan has identified existing pollutant concentrations on and around the airport that exceed NAAQS and CAAQS for O₃ and CAAQS for PM₁₀. Many stationary sources of emissions contribute to these air pollution concentrations, including the Chevron El Segundo Refinery, Los Angeles Department of Water and Power Scattergood Generating Station, Southern California Edison El Segundo Generating Station, and Hyperion Treatment Plant. Furthermore, over 60 percent of total criteria pollutant emissions in the South Coast Air Basin originate from on-road motor vehicles. LAX is located near two major freeways (I-405 and I-105) and a number of major arterial roadways, which carry a substantial amount of non-airport traffic. Aircraft operating at LAX contribute less than one percent of the basin-wide emissions of CO, oxides of nitrogen (NO_x), volatile organic compounds (VOC), SO₂, and PM₁₀; however the overall poor air quality in the South Coast Air Basin makes even incremental increases in emissions a cause for public concern.²²³

The analysis below focuses on the relationship between air quality impacts from criteria pollutants and the potential for adverse health effects and evaluates the potential for the alternatives to result in disproportionately high and adverse health effects in minority and/or low-income communities in the study area. Pollutant emissions under the build alternatives are analyzed relative to SCAQMD's thresholds of significance for criteria pollutants in the South Coast Air Basin. However, measures of emissions indicate the amount of pollutants entering the atmosphere from project-related sources, but do not necessarily correlate with the quantity of a particular pollutant in the air at the receptor. The quantity of a particular pollutant at a receptor is measured by the concentration of that pollutant in the air. Therefore, for purposes of this analysis, the determination as to adverse effect rests primarily on whether the build alternatives would result in exceedances of the health-based CAAQS or NAAQS for criteria pollutants, which are based on pollutant concentrations at receptor locations.

Alternatives A, B, and C

Emissions

Following the implementation of proposed mitigation measures, under Alternatives A, B, and C, operational and construction-related emissions of all pollutants are predicted to exceed the SCAQMD thresholds of significance in the Interim Year and 2015, with the exception of construction-related emissions of SO₂.

Under Alternatives A, B, and C, higher ozone (O₃) levels could result from increased NO_x emissions associated with aircraft operations.²²⁴ Ozone is formed through a complex array of photochemical reactions in the atmosphere, and resulting ozone concentrations are regional in nature and often realized far from the emission source. Therefore, the increased NO_x emissions are not expected to contribute to increased ozone concentrations that would result in a disproportionate impact to the minority and/or low-income populations within the study area.

Concentrations

Although Alternatives A, B, and C are expected to result in increased air pollutant emissions, air pollutant concentrations are only predicted to exceed the CAAQS and NAAQS for certain pollutants and years. Combined operational and construction air pollutant concentrations under Alternatives A, B, and C are predicted to exceed the CAAQS and NAAQS for annual and 24-hour PM₁₀ in the Interim Year and CAAQS for annual and 24-hour PM₁₀ in 2015. Under Alternatives A, B, and C, annual NO₂ is predicted to exceed the NAAQS in the Interim Year. Under Alternative A, the 8-hour CO CAAQS and NAAQS are

²²³ For example, because the South Coast Air Basin is classified as an "extreme" nonattainment area for ozone (1-hour average), federally-supported projects with emissions of 10 tons per year of ozone precursors must undertake a "general conformity" analysis, while in other parts of the country, emissions of less than 100 tons per year are considered de minimis.

²²⁴ Because O₃ is formed through a complex array of photochemical reactions in the atmosphere, modeling O₃ concentrations is more complex than modeling concentrations of other criteria pollutants. Therefore, impacts of a particular project on ozone levels usually are analyzed based on the net increase or decrease of O₃ precursors (VOC and NO_x).

predicted to be exceeded in the Interim Year. Under Alternative C, the 1-hour CO CAAQS is predicted to be exceeded in 2015.

The primary source of exceedances of the PM₁₀ standards is construction activity, coupled with high future background concentrations (future background concentrations by themselves would exceed the PM₁₀ CAAQS). Exposure to PM₁₀ may be associated with chronic respiratory illnesses, such as asthma. Although construction activities would often occur in areas located away from minority and/or low-income populations, under Alternatives B and C, predicted exceedances of the CAAQS for PM₁₀ would, nevertheless, occur disproportionately in these communities.

Under Alternatives A, B, and C, the exceedances of the annual NO₂ NAAQS in the Interim Year would occur in an easterly direction, towards predominantly minority and/or low-income communities. Exceedances of the NAAQS for NO₂ could cause irritation to mucous membranes (eyes and respiratory system) of sensitive individuals. Children may be particularly susceptible to health effects of NO₂.²²⁵ However, under Alternative A, NO₂ concentrations would not exceed the NAAQS in minority and/or low-income communities and no disproportionate impact would result. Under Alternatives B and C, exceedances of the NAAQS for NO₂ are predicted to occur within minority and/or low-income communities. The exceedances of the NAAQS for NO₂ under Alternatives B and C would result in disproportionate impacts to minority and/or low-income communities in the study area.

The exceedances of the 8-hour CO CAAQS and NAAQS under Alternative A in the Interim Year and the 1-hour CO CAAQS under Alternative C in 2015 are attributable to on-airport aircraft, motor vehicle, and construction sources. Under Alternative A, the exceedances are predicted to occur on the southern boundary west of Sepulveda Boulevard, not in minority and/or low-income communities in the study area. Similarly, under Alternative C, the exceedance is predicted to occur near the northeast boundary of the airport, near the intersection of Airport Boulevard and Arbor Vitae, not in minority and/or low-income communities in the study area. Because the exceedances would not occur in minority and/or low-income communities, no disproportionate impact would result.

Cumulative Exposure to Multiple Criteria Pollutants

Cumulative exposure²²⁶ to O₃ and other criteria pollutants that are also linked to chronic respiratory illnesses may, in theory, result in adverse health effects in certain populations even where the ozone CAAQS and NAAQS are met.²²⁷ However, available data on the health effects of criteria pollutants do not allow a quantitative analysis of this type of effect from exposure to multiple pollutants. Obtaining the data necessary to conduct such an analysis and evaluate the potential for disproportionate impacts on minority and/or low-income individuals would require long-term health studies of a kind well outside the scope of a CEQA document.²²⁸

Alternative D - Enhanced Safety and Security Plan

Emissions

Similar to Alternatives A, B, and C, the potential for increases in overall emissions under Alternative D is related to potential increases in aircraft operations and vehicle miles traveled. Relative to the other build alternatives, Alternative D would have comparatively fewer aircraft operations, less vehicle miles traveled,

²²⁵ "Adequacy of California Ambient Air Quality Standards: Senate Bill No. 25 - Children's Environmental Health Protection" (Draft Staff Report, Sept. 12, 2000).

²²⁶ For purposes of this discussion, "cumulative exposure" refers to combined exposure to multiple criteria pollutants with the potential for synergistic, additive and/or antagonistic effects.

²²⁷ See World Resources Institute, Linking the Environment and Health: Why the Increase in Asthma? (citing studies that indicate that ozone exposure may render people more susceptible to other pollutants or allergens), available at www.igc.org/wri/wr-98-99/wr-98-001.htm.

²²⁸ See, for example, Asthma Prevention Program of the National Center for Environmental Health, Centers for Disease Control and Prevention (1999) (noting that little is currently known about patterns of asthma occurrence in state or local areas); Pew Environmental Health Commission, Attack Asthma: Why America Needs a Public Health Defense System to Battle Environmental Threats (1999) (calling for longer-term, nationwide "Framingham-style" environmental health studies that track all of the environmental and genetic factors that might be involved in asthma); see also descriptions of EPA's Cumulative Exposure Project (including a community-specific study in the Greenpoint/Williamsburg area of Brooklyn, NY) available at <http://www.epa.gov/oppeccumm/index.htm>; California Air Resources Board, Children's Health Study (10-year research study on fine particles, ozone and other air pollutants and their effect on children's respiratory systems), available www.arb.ca.gov/research/research.htm; California Air Resources Board, Neighborhood Assessment Program Workplan (June 2000), at http://www.arb.ca.gov/ch/nap_plan_7.doc.

and fewer on-airport emissions from aircraft taxi/idle, ground support equipment and gasoline and diesel vehicles. In terms of concentrations, some of these benefits compared to Alternatives A, B, and C would be at least partially offset, as Alternative D, without a West Terminal, would focus activity at the CTA and in areas to the east side of the airport. These factors would therefore result in greater relative emissions on the east side of the airport, closer to minority and/or low-income communities.

With the implementation of proposed mitigation measures, under Alternative D, operational emissions of NO_x, SO₂, and PM₁₀ in the Interim Year²²⁹ are expected to exceed SCAQMD thresholds of significance. In 2015, operational emissions of all criteria pollutants are expected to exceed the SCAQMD thresholds of significance. Construction-related emissions of all pollutants except SO₂ are also expected to exceed SCAQMD thresholds of significance in the Interim Year.

Concentrations

Pollutant concentrations under Alternative D are expected to be lower than the CAAQS and NAAQS for all criteria pollutants except for the annual and 24-hour PM₁₀ CAAQS in both the Interim Year and 2015. As noted above, the primary source of PM₁₀ CAAQS exceedances is construction activity, although future background concentrations, by themselves, are expected to exceed the PM₁₀ CAAQS. Under Alternative D, the majority of the construction activity would occur in the southern airfield and within the eastern portions of the airport, close to minority and/or low-income communities. The resulting exceedances of the annual and 24-hour PM₁₀ CAAQS in both the Interim Year and 2015 are considered to be a disproportionate impact on minority and/or low-income communities in the study area.

Cumulative Exposure to Multiple Criteria Pollutants

Cumulative exposure²³⁰ to O₃ and other criteria pollutants that are also linked to chronic respiratory illnesses may result in adverse health effects in certain populations even where the ozone CAAQS and NAAQS are met. However, available data on the health effects of criteria pollutants do not allow a quantitative analysis of this type of impact from exposure to multiple pollutants. Obtaining the data necessary to conduct such an analysis and evaluate the potential for disproportionate impacts on minority and/or low-income individuals would require long-term health studies of a kind well outside the scope of a CEQA document.

Human Health Risk

Recently, concern about the levels of toxic air pollutants (TAPs) in the Los Angeles region has been growing. Human health risk associated with TAPs focuses on cancer risk and non-cancer health hazards, such as respiratory irritation and other lung disorders. In the absence of data that would require long-range studies of a type well outside of the scope of a CEQA analysis, existing health risks in the area attributable to LAX sources could not be directly calculated. However, under Master Plan Commitment AQ-1, Air Quality Source Apportionment Study, LAWA, in cooperation with USEPA, SCAQMD and others, would participate in a study to gather air quality data through a monitoring and source-apportionment program in minority and/or low-income communities in the vicinity of LAX. Based on a recent study by SCAQMD (MATES II), the central and east central portions of Los Angeles County appear to have the greatest estimated health risk from toxic air pollutants. These areas also contain the heaviest concentrations of minority and/or low-income communities. Based on the SCAQMD study, the greatest contributors to risk include on-road mobile sources (70 percent), followed by other mobile sources including ships, aircraft, and off-road construction vehicles (20 percent). Air dispersion modeling conducted for the LAX Master Plan environmental analysis suggests that health risks associated with airport-related emissions may affect some residents, schools, hospitals and nursing homes in nearby areas with increased risks falling within an area running east-northeast, as a result of meteorological conditions (i.e., wind patterns).

Additional information pertaining to the understanding and analysis of the affected environment was used to evaluate cumulative non-cancer health effects. USEPA examined TAPs in the South Coast Air Basin independently and included many TAPs, including acrolein, that were not evaluated in MATES-II. For Los

²²⁹ For purposes of providing a conservative analysis under CEQA, the Interim Year for Alternative D is 2005 for construction sources and 2013 for on-airport (operational) and off-airport (regional) sources.

²³⁰ For purposes of this discussion, "cumulative exposure" refers to combined exposure to multiple criteria pollutants with the potential for synergistic, additive and/or antagonistic effects.

Angeles County, hazard indices associated with emissions from all sources might fall in the range of 3 to 10 for chronic exposure to acrolein.²³¹ A hazard index greater than 1 indicates that non-cancer hazards would exceed SCAQMD thresholds for chronic non-cancer health effects. That is, in many areas of Los Angeles County, existing concentrations of toxic air pollutants from sources other than the airport could be higher than those that SCAQMD would consider "safe". USEPA did not make any predictions of possible acute hazards due to TAPs in air. Thus, no USEPA data could be used to directly assess potential for acute hazards in the South Coast Air Basin. (See Section 4.24.1, *Human Health Risk Assessment*, of the Final EIR.)

The analysis provided below is based on the findings of Section 4.24.1, *Human Health Risk Assessment*, of the Final EIR. See Tables F4.24.1-5, Summary of Incremental Acute Hazard Indices for LAX Master Plan Pre-Mitigation Assessment for 2015, and F4.24.1-7, Summary of Incremental Cancer Risks and Incremental Non-Cancer Chronic Human Health Hazards for LAX Master Plan Post-Mitigation Assessment. Maps of geographic impacts provided in Section 4.24.1, *Human Health Risk Assessment*, were compared to maps of minority and/or low-income census tracts within the study area provided in this section to determine the potential for a disproportionately high and adverse effect.

Alternatives A, B, and C

Incremental Cancer Risks

As described in Section 4.24.1, *Human Health Risk Assessment*, following the implementation of mitigation measures, estimated incremental cancer risks under Alternatives A, B, and C would be beneficial in the Interim Year (i.e., risks would be lower than 1996 baseline conditions). In 2015, under Alternatives A, B, and C, incremental cancer risks would be higher than 1996 baseline conditions, but would not exceed the threshold of significance for cancer risks. The geographical distribution of the increased risk would vary depending upon the alternative. Under Alternative A, increased risk would occur in a relatively small area to the southeast of the airport. Although increased risk would occur within the minority and/or low-income community, this risk would not exceed the threshold of significance, and the effect on this area is not considered to be disproportionately high and adverse. Under Alternatives B and C, incremental cancer risks would occur in non-low income and/or non-minority communities, and no disproportionate impact would occur.

Incremental Non-Cancer Chronic Health Hazards

As indicated in Section 4.24.1, *Human Health Risk Assessment*, incremental non-cancer health hazards under Alternatives A, B, and C in the Interim Year would increase from 1996 baseline conditions, but would remain below a level of significance. In 2015, incremental non-cancer hazards under Alternatives B and C would exceed thresholds of significance, albeit in small areas immediately adjacent to airport boundaries. Geographically, under all three of these alternatives, increased risk would occur in predominantly minority and/or low-income areas extending east-northeast of the airport boundary. However, under Alternatives A and C, the increased risk within minority and/or low income communities would not exceed thresholds of significance. Under Alternative B, increased risk would exceed thresholds of significance in a very small area northeast of the airport boundary. Because non-cancer chronic health hazards would exceed the threshold of significance under Alternative B within minority and/or low-income communities, the effect on these communities is considered to be disproportionately high and adverse.

²³¹ Estimates of non-cancer health impacts are expressed in terms of a "hazard index," which quantitatively represents a relationship between estimated exposure and an exposure level thought to be safe even for daily exposure over long periods of time. Hazard indices are estimated for potential impacts to particular target organ systems or health effects (e.g., asthma, nervous system disorders, birth defects, and developmental problems in children). A hazard index of one or less indicates that adverse health effects are not expected to result from exposure to emissions of that substance. As a hazard index increases above one, the probability of human health effects increases by an undefined amount. However, it should be noted that a hazard index above 1 is not necessarily indicative of health hazards because of uncertainties in knowledge of chemical toxicology and due to the application of uncertainty factors in deriving reference exposure levels (levels of exposure that pose no adverse health effects).

Incremental Non-Cancer Acute Health Hazards

The acute non-cancer analysis²³² assesses effects from short-term exposure to maximum concentrations of acrolein at 50 locations. Potential incremental acute hazards for Alternatives A, B and C would be greater than 1996 baseline conditions. Under Alternatives A, B and C, the maximum hazard index would exceed the threshold of significance. Although a geographic analysis was not conducted for acute non-cancer risks, possible maximum acute hazards were assessed at many locations throughout the study area surrounding the airport. Acute hazard indices for Alternatives A, B and C are expected to exceed the threshold of 1 at many of these locations, suggesting that exceedances might occur at locations within both minority and/or low-income as well as non-minority and/or non-low-income communities alike. Thus, it does not appear that high and adverse incremental acute health effects would occur disproportionately within minority and/or low-income communities. This analysis, however, did not predict the frequency with which short-term concentrations of toxic air pollutants, primarily acrolein, might occur at different locations around the airport. Such an analysis was not practicable within the scope and timeframe of this CEQA analysis, due to the tremendous number of calculations involved. Therefore, although it does not appear that incremental acute health effects would occur disproportionately within minority and/or low-income communities based on the current analysis, disproportionate impacts are theoretically possible if high, short-term concentrations of acrolein occur more frequently in these communities.

Cumulative Impacts

The analysis suggests that LAX operations would cause a small increase in cumulative cancer risk at some locations near the airport under Alternatives A, B, and C. Any increase that might occur would occur immediately adjacent to the eastern boundaries of the airport, and therefore may occur primarily in minority and/or low-income communities. Because many sources of TAPs in the South Coast Air Basin are not related to LAX, potential cancer risks for all populations within the Basin, especially those at special risk, are currently high, and would remain essentially unchanged by a small increase related to airport operations. With regard to non-cancer risks, Alternatives A, B, and C could add to total average acrolein concentrations in the Basin, and therefore, to possible chronic non-cancer hazards and acute human health hazards associated with exposure to acrolein. Increases in cumulative impacts from chronic exposure to acrolein are likely to be found in areas immediately east of the airport boundaries, and could fall primarily in minority and/or low-income communities. As discussed above, the potential for increases in acute hazards to fall disproportionately in such communities cannot be ascertained in the current analysis.

Furthermore, recent information²³³ suggests that certain environmental factors, such as tobacco smoke, diesel exhaust, respirable particles, and irritant gases (e.g., acrolein) could contribute to cumulative health risks in some urban areas in the U.S.²³⁴ However, comprehensive data on environmental hazards and other risk factors unrelated to LAX have not been collected for populations in the airport environs, although several agencies, including SCAQMD, California Air Resources Board, California Office of Environmental Health Hazard Assessment, and USEPA have expressed interest in initiating studies that might allow a better understanding of cumulative health risks. Due to the lack of available background data, the cumulative or synergistic health effects of TAP emissions associated with Alternatives A, B, and C and other environmental hazards could not be quantitatively analyzed within the scope and timeframe of this CEQA analysis.

Alternative D - Enhanced Safety and Security Plan

Incremental Cancer Risks

As described in Section 4.24.1, *Human Health Risk Assessment*, of the Final EIR, under Alternative D, estimated incremental cancer risk in the Interim Year and 2015 would be marginally greater than 1996

²³² Acute effects are assessed by dividing an estimate of a short-term (1 hour) concentration by an acute reference level that represents a "safe" concentration in ambient air. A ratio greater than 1 indicates the potential for health effects in sensitive individuals. Since essentially all acute hazard is due to potential exposure to acrolein, potential health impacts include only mild irritation of eyes and mucus membranes.

²³³ See for example C. G. Plopper and M. V. Fanucchi, (2000) "Do Urban Environmental Pollutants Exacerbate Childhood Lung Diseases?" *Environmental Health Perspectives*, p. 108(6).

²³⁴ See for example, J. Schwartz, (2000) "Assessing Confounding, Effect Modification, and Thresholds in the Association between Ambient Particles and Daily Deaths," *Environmental Health Perspectives*, p. 108(6).

baseline conditions. The predicted increase in cancer risk would be well below the threshold of significance. Geographically, increased risk would occur in a small area located to the southeast of the airport boundary. Although this increased risk would fall within a minority and/or low-income community, the risk would not exceed the threshold of significance, and the affect on this area is not considered to be disproportionately high and adverse.

Incremental Non-Cancer Chronic Health Hazards

Implementation of Alternative D would result in a beneficial effect with regard to incremental non-cancer chronic hazards in both the Interim Year and 2015. As a result, no disproportionately high and adverse impacts to minority and/or low-income communities in the study area would occur.

Incremental Non-Cancer Acute Health Hazards

Similar to non cancer chronic health hazards, Alternative D would result in a beneficial effect with regard to acute hazards. As a result, no disproportionately high and adverse impacts to the minority and/or low-income communities in the study area would occur.

Cumulative Impacts

Alternative D would have a small beneficial effect on cumulative cancer health risks for most areas, and a small increase in cumulative impacts for one small area nearest the eastern boundary of the airport. These small changes to cumulative impacts would have negligible impact on total risk for areas near the airport because many substantial sources of TAPs exist within the South Coast Air Basin besides LAX. Levels of air pollution, particularly from diesel exhaust, are high throughout the air basin and are associated with high potential cancer risks for all populations in Los Angeles and surrounding communities. The small increase in cumulative impacts for one small area would not represent a disproportionately high and adverse impact.

2. The fifth paragraph, on page 4-612 is revised as follows:

Overall, construction noise impacts would fall predominantly on non-minority/non-low-income communities, with approximately 90 percent of the area exposed to high levels of noise falling within these communities. Of the approximately 2,580 residents within the area adversely affected by construction noise, an estimated 39.8 percent are minority, based on 1990 U.S. Census data for the affected census tracts. Based on the 2000 U.S. Census, of the approximately 2,565 residents within the area adversely affected by construction noise, an estimated 49.5 percent are minority. These figures are well below Los Angeles County community of comparison average of 59 percent minority. Due to the magnitude of construction activities, all criteria pollutant emissions from construction would remain significant after mitigation (*SO₂ would be significant in the Interim Year only*), as would predicted ambient concentrations of *NO₂ and PM₁₀ and CO (Alternative A only) in the Interim Year and PM₁₀ and CO (Alternative C only) in 2015. Based on the characteristics of pollutant dispersion from construction activities, the populations adversely affected would be those in close proximity to the airport boundaries; generally, the same non-minority/non low-income communities exposed to adverse levels of construction noise. Although construction activities would often occur in areas located away from minority and/or low-income populations living in the study area, under Alternatives B and C, predicted exceedances of the CAAQS for PM₁₀ would, nevertheless, occur disproportionately in these communities.*

3. The second paragraph, on page 4-613 is revised as follows:

Due to the magnitude of construction activities, CO, VOC, NO_x, and PM₁₀ emissions from construction would exceed thresholds of significance after mitigation *in the Interim Year*, as would predicted ambient concentrations of *NO₂ and PM₁₀ in both the Interim Year and 2015. Based on the characteristics of pollutant dispersion from construction activities, the populations adversely affected would be those in close proximity to the airport boundaries; generally, the same non-minority/non-low-income communities exposed to adverse levels of construction noise Under Alternative D, predicted exceedances of the CAAQS for annual average PM₁₀ would occur disproportionately in minority and/or low-income communities in the study area.*

4. The second, third, and fourth paragraphs on page 4-615 are revised as follows:

~~Alternatives A, B, and C would each result in significant air quality impacts. After mitigation, on-airport emissions of NO_x and SO₂ would remain significant, and off-airport emissions of all criteria pollutants except SO₂ would remain significant, with related health effects from certain pollutants potentially more severe for minority and low-income populations, particularly those susceptible to asthma and other chronic respiratory illnesses. Also, off-airport emissions under Alternatives A, B, and C would cause an incremental increase over No Action/No Project Alternative emissions of NO_x, a precursor to ozone. In addition, the combined operational and construction-related concentrations of NO₂ are projected to exceed the NAAQS state and national air quality standard under Alternatives A, B, and C in the Interim Year, and concentrations of PM₁₀ are projected to exceed state and national standards in 2015 for Alternatives A and B, and state and national standards in 2015 for Alternative C the CAAQS and NAAQS in the Interim Year and the CAAQS in 2015 for Alternatives A, B, and C, and concentrations of CO are predicted to exceed the CAAQS and NAAQS under Alternative A in the Interim Year and the CAAQS under Alternative C in 2015. Under Alternatives B and C, predicted exceedances of the CAAQS for PM₁₀ and of the NAAQS for NO₂ are expected to occur disproportionately in minority and/or low-income communities in the study area.~~

~~As the CAAQS and NAAQS are health-based standards, the exceedances under Alternatives B and C could result in adverse health effects, which may be more severe for minority and/or low-income populations particularly susceptible to asthma and other chronic respiratory illnesses, or more vulnerable to health effects due to inadequate access to health care. Moreover, the increased NO_x emissions associated with aircraft operations under Alternatives A, B, and C may contribute to total exposure to O₃. While the air quality impacts of increased NO_x emissions associated with aircraft operations, and cumulative exposure²³⁵ to O₃ and other criteria pollutants would be felt throughout the South Coast Air Basin, as with other health effects, any resulting health effects may be more severe for minority and/or low-income populations that may be particularly susceptible to asthma and other chronic respiratory illnesses. However, in the absence of background health data, it is unknown and cannot be quantified whether such combined air quality impacts associated with the LAX Master Plan would have a disproportionately severe human health effect on minority and/or low-income populations living in the study area. Obtaining the data necessary to conduct such an analysis and evaluate the potential for disproportionate impacts on minority and/or low-income individuals would require long-term health studies of a kind well outside the scope of a CEQA document.~~

~~In 2015, Alternatives B and C would exceed thresholds of significance for incremental non-cancer chronic health hazards with the incorporation of mitigation measures. Under Alternative B, these chronic non-cancer health hazards would fall disproportionately on minority and/or low-income populations.²³⁶ In addition, in 2015 Alternatives A, B, and C would exceed thresholds of significance for acute non-cancer health hazards with the incorporation of mitigation measures. These chronic and acute non-cancer health hazards would fall disproportionately on minority and/or low-income populations.²³⁷ Based on available data, it does not appear that acute non-cancer health hazards would fall disproportionately on minority and/or low-income communities under Alternatives A, B, or C, however, disproportionate impacts are theoretically possible. Conducting the analysis to make such a determination was not practicable within the scope and~~

²³⁵ For purposes of this discussion, "cumulative exposure" refers to combined exposure to multiple criteria pollutants with the potential for synergistic, additive and/or antagonistic effects.

²³⁶ As further described in Section 4.24.1, *Human Health Risk Assessment* (subsection 4.24.1.2), estimates of non-cancer hazards relative to acrolein emissions are very uncertain, therefore estimates of non-cancer hazards associated with each of the alternatives may not represent absolute estimates of potential health impacts.

²³⁷ As further described in Section 4.24.1, *Human Health Risk Assessment* (subsection 4.24.1.2), estimates of non-cancer hazards relative to acrolein emissions are very uncertain, therefore estimates of non-cancer hazards associated with each of the alternatives may not represent absolute estimates of potential health impacts.

timeframe of this CEQA analysis. Alternatives A, B, and C may also contribute to cumulative health risks associated with air pollution in some areas to the east/northeast adjacent to the airport, although beneficial impacts (i.e., reduction in cancer risks) are predicted for other areas as a result of implementation of Alternatives A, B, or C. The cumulative health risks would affect minority and/or low-income individuals more severely than the general population. Because emissions associated with these alternatives represent only a small portion of total emissions in this area, it is expected that any such cumulative health risks would occur with or without improvements under Alternative A, B, or C. Furthermore, disproportionately high and adverse human health effects, if any, would be attributable primarily to factors such as *potential for* heightened vulnerability to health effects, inadequate access to health care, and synergistic effects of multiple environmental hazards rather than higher levels of pollutants in minority and/or low-income communities. However, due to the lack of available background data, *absence of clear cause-and-effect information*, and limited information on the cumulative effect of multiple air pollutants, it is impossible to quantify with any accuracy the incremental contribution of Alternatives A, B, and C to cumulative health risks among minority and/or low-income populations *living in the study area*.

5. The second and third paragraphs, under the heading Alternative D-Enhanced Safety and Security Plan, on page 4-616 are revised as follows:

Air quality effects under Alternative D would be reduced when compared to Alternatives A, B, and C, ~~and for certain pollutants compared to the No Action/No Project Alternative.~~ However, ~~effects would remain adverse after mitigation with~~ *after mitigation, combined operational and construction-related concentrations of PM₁₀ would exceed the CAAQS in both the Interim Year and 2015. These exceedances are expected to occur disproportionately in minority and/or low-income communities.* Related health effects ~~could be~~ potentially more severe for minority and/or low-income populations to the north/northeast of the airport, particularly those susceptible to asthma and other chronic respiratory illnesses. As previously indicated, in the absence of background health data, and without established scientific criteria and protocols, it is unknown and cannot be quantified whether ~~air quality impacts associated with NO_x emissions from aircraft operations, and cumulative exposure to O₃²³⁸ and other air-criteria pollutants would have a disproportionately severe human health effect on minority and/or low-income populations living in the study area.~~ Obtaining the data necessary to conduct such a quantitative analysis would require long-term health studies of a kind well outside the scope of a CEQA ~~or NEPA~~ document.

Incremental cancer risks and non-cancer chronic health hazards under Alternative D would be reduced when compared to ~~the No Action/No Project Alternative and Alternatives A, B, and C.~~ *Cancer risks would be slightly greater than 1996 baseline conditions in both the Interim Year and 2015, but substantially below the threshold of significance and, therefore, would not result in disproportionately high and adverse effects on minority and/or low-income communities in the study area.* In addition, ~~Alternative D could~~ *is predicted to result in a beneficial effect with regard to incremental non-cancer chronic and acute non-cancer hazards in both the Interim Year and 2015. Alternative D would not result in a disproportionately high and adverse impact relative to cumulative cancer risks within minority and/or low-income communities.* Nonetheless, because many sources of TAPs in the South Coast Basin are not related to LAX, potential cumulative cancer risks for all populations within the Basin, especially those at special risk, would remain high.

Section 4.6, Air Quality

1. Footnote 2 on Table F4.6-11a and Footnote 3 on Table F4.6-23a are hereby revised to read as follows:

²³⁸ For purposes of this discussion, "cumulative exposure" refers to combined exposure to multiple criteria pollutants with the potential for synergistic, additive and/or antagonistic effects.

^{2/3} Interim year is 2005 for NA/NP and Alternatives A, B, and C. For Alternative D, interim year for on-airport and off-airport emissions is 2013, and for construction emissions is 2005.

Section 4.7, Hydrology and Water Quality

1. In order to clarify regulatory requirements, Master Plan Commitment HWQ-1, paragraph 4, on page 4-767 is revised as follows:

To evaluate the effect of the selected Master Plan alternative on surface water quality, ~~LAWA will prepare a specific Standard Urban Stormwater Mitigation Plan (SUSMP) for the selected alternative, as required by the LARWQCB. The SUSMP~~ *the Conceptual Drainage Plan will address* water quality and drainage issues by specifying source control, structural, and treatment control BMPs with the objective of reducing the discharge of pollutants from the storm water conveyance system to the maximum extent practicable. Once BMPs are identified, an updated pollutant load estimate will be calculated that takes into account reductions from treatment control BMPs. These BMPs will be applied to both existing and future sources with the goal of achieving no net increase in loadings of pollutants of concern to receiving water bodies. *Subsequently, LAWA will prepare Standard Urban Stormwater Mitigation Plans (SUSMP) for individual projects associated with the selected alternative during project design and review based on the Conceptual Drainage Plan, as required by the LARWQCB. The purpose of these SUSMPs will be to evaluate water quality impacts associated with individual project components at a design level of detail, as required by LARWQCB, and to identify specific BMPs that will be incorporated into the project design.* LAWA will therefore address water quality issues, including erosion and sedimentation, and comply with the SUSMP requirements, by designing the storm water system through incorporation of the structural and treatment control BMPs specified in the SUSMP.

This revision does not alter the overall intent or effectiveness of the Master Plan Commitment. LAWA will still prepare a conceptual airport-wide drainage plan for the selected alternative prior to implementation of the first project, as required by Master Plan Commitment HWQ-1, which will quantify drainage and surface water quality impacts, and will specify, at a conceptual level, Best Management Practices that will mitigate these impacts. Subsequently, specific SUSMPs will be prepared for individual projects. As required by the LARWQCB, these SUSMPs will evaluate surface water quality impacts using design-level detail currently unavailable at the programmatic level. The SUSMPs will be based on conceptual approaches identified in the conceptual drainage plan, and will identify specific BMPs appropriate for each individual project that will meet the performance standards provided in Master Plan Commitment HWQ-1.