

**APPENDIX W**  
**CONSISTENCY OF THE NCCP/MSAA/HCP WITH THE FESA**  
**SUBSTANTIVE CRITICAL HABITAT DESIGNATION/ADVERSE**  
**MODIFICATION CRITERIA**

**INTRODUCTION**

The analyses in this Appendix review the manner in which the proposed Conservation Strategy employs and addresses the standards set forth in FESA Sections 3 and 4 with regard to listed species presently found within the Planning Area. The actual application of FESA standards is the responsibility of USFWS and NMFS at such time that agency discretion is required to be exercised. Accordingly, the analyses and conclusions set forth in this Appendix employ the referenced FESA substantive standards for analytical purposes but do not represent the final conclusions of federal agency decisions that are required to be made in the future.

**I. OVERVIEW OF THIS APPENDIX**

With regard to regulatory coverage, FESA Section 7 contains requirements relating to “adverse modification” determinations required for listed species where proposed Covered Activities would impact areas included within proposed or existing critical habitat designations. Such “adverse modification” determinations involve potential impacts of proposed Covered Activities both with respect to the internal Section consultation for the NCCP/MSAA/HCP and with regard to Section 7 consultations involving federal permits. Additionally, for those listed species that do not have critical habitat designations within Subarea 1, future modifications to critical habitat designations (either at the initiative of USFWS or NMFS, or as a result of court order), the NCCP/MSAA/HCP IA is intended to provide assurances for Participating Landowners that any such future modification of a critical habitat designation will, to the maximum extent allowable by law, not require further avoidance, minimization and mitigation actions on the part of Participating landowners. Accordingly, this Appendix builds on the analyses set forth in *Chapter 13* and relates the proposed Covered Species and Conserved Vegetation Communities in the *Chapter 13* reviews for listed species to the specific provisions of FESA Section 3 that identify the substantive biological standards for critical habitat determinations.

**II. FESA SECTION 3(5)(A)(i) REQUIREMENTS**

**A. Identification, Management and Protection of Occupied Habitat Essential to the Conservation of the Species**

FESA Section 3(5)(A)(i) contains three elements relating to the occupied habitat of listed species: (1) occupied habitat essential to the conservation of the species must be identified; (2)

any special management considerations must be identified; and (3) any special protection must be identified. These elements are summarized as follows:

- **Identify habitat essential to the conservation of the species** - Regarding the first element of FESA Section 3(5)(A)(i), as noted above, the Draft Southern Planning Guidelines identify *key locations* for all listed planning species and most of the other planning species. *Key locations* are defined as those locations that are deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat “essential to the conservation” of any such species (*i.e.*, species for which *key location* determinations have been set forth in *Chapter 4*). With regard to federally-listed species and other species ultimately designated as Covered Species in the final Southern NCCP/MSAA/HCP, a main purpose of the final Conservation Strategy that is addressed in *Chapter 13* is to provide for the protection of those physical and biological features essential to the conservation of proposed Covered Species in a manner consistent with the definitions set forth in FESA Section 3(5)(A)(i) and (ii). As indicated in *Chapter 4*, the Draft Southern Planning Guidelines and Draft Watershed Planning Principles have been formulated to identify *key locations* for listed and other species that are deemed necessary for the conservation of the species in the Subregion. These *key location* determinations, as well as specific connectivity, management and restoration recommendations, are provided for each planning area sub-basin, as well as for the overall planning area. In relation to FESA critical habitat considerations, the Southern NCCP/MSAA/HCP thus provides the opportunity for a more focused analysis of species protection needs, including a more detailed analysis of special management considerations and habitat protection, consistent with FESA Section 3(5)(A)(i), than that which can be undertaken on a species-wide critical habitat designation (see discussion in footnote one from *Chapter 4* set forth below).<sup>1</sup>
- **Identify and provide for the implementation of special management considerations** - Regarding the second element of FESA Section 3(5)(A)(i), “special management considerations,” including restoration recommendations, are included in the Species Accounts (*Appendix E*), in the Draft Southern Planning Guidelines sub-basin planning considerations and recommendations, and in the *Chapter 13* goals and objectives for proposed Covered Species. Further, *Chapter 7* reviews major elements of the Habitat Reserve Management Program (HRMP), Ongoing Management Program (OMP) and the Adaptive Management Program (AMP) intended to be applied at a large-scale within the

<sup>1</sup> The USFWS stated that “The HCP development process provides an opportunity for more intensive data collection and analyses regarding the use of particular habitat areas by the gnatcatcher. The process also enables us to conduct detailed evaluations of the importance of such lands to the long-term survival of the species in the context of constructing a biologically configured system of interlinked habitat blocks. We will provide technical assistance and work closely with applicants throughout the development of future HCPs to identify lands essential for the long-term conservation of the gnatcatcher and appropriate management for those lands. By definition, if the gnatcatcher is a covered species under future HCPs, the plans should provide for the long-term conservation of the species.” (65 Federal Register, No. 206, 10/24/00, 63693)

subregion including habitat enhancement/restoration, invasive species control and fire management (see *Appendices H, J and N*, respectively). Additionally a Grazing Management Plan (GMP; *Appendix G*) and a Water Quality Management Plan (WQMP; *Appendix K*) have been prepared in support of the HRMP. As reviewed in *Chapters 7 and 13*, the HRMP would benefit species in specific ways over the long-term (*e.g.*, invasive species control would remove a major threat to arroyo toad habitat, eliminate existing degradation and allow for natural regeneration of arroyo toad habitat conditions). The contributions of the AMP to recovery of the listed species found within the subregion are reviewed in *Chapter 13*.

- **Provide special protection for species** - Regarding the third element of FESA Section 3(5)(A)(i), “special . . . protection,” a Habitat Reserve is proposed that would provide “special protection” in the form of a “hard-line reserve” protection system encompassing all habitats, including those constituting *key locations* for relevant proposed Covered Species. Because Alternative B-12 does not require the use of public or other acquisition funds, “special protection” of the habitats of proposed Covered Species would be assured under the proposed Subarea 1 Plan.

#### **B. Identification, Management and Protection of Unoccupied Habitat Essential to the Conservation of the Species**

FESA Section 3(5)(A)(ii) does not identify what criteria are to be applied in determining which unoccupied habitat is essential to the conservation of the species. However, consistent with USFWS critical habitat regulations, the protection of habitat essential for species dispersal and genetic interchange, as well as movement for foraging and other essential behavioral characteristics, would appear to be central to identifying unoccupied areas essential to the conservation of species.

The Draft Southern Planning Guidelines and Draft Watershed Planning Principles address unoccupied areas “essential to the conservation of the species” in terms of the concept of “connectivity” and in the context of identifying areas for enhancement and restoration (*e.g.*, coastal sage scrub restoration areas, riparian habitat that could be regenerated through the control of giant reed). Tenet 5 of the SRP Conservation Guidelines states:

“Link reserves with corridors: Interconnected blocks of habitat serve conservation purposes better than do isolated blocks of habitat. Corridors or linkages function better when the habitat within them resembles habitat that is preferred by target species.”

A discussion of the role of linkages and wildlife corridors is set forth in General Policy 3 of Section 3 of the Draft Southern Planning Guidelines (see *Chapter 4, Section 4.3*). General Policy 3 reviews the concept of “connectivity” both in terms of wildlife and habitat connectivity and provides analytic criteria for defining both “habitat linkages” and “wildlife corridors.” Further, General Policy 3 also provides a map (see *Figure 41-M, Part IV Map Book*) and accompanying description of important habitat linkages/corridors identified for the planning area. The manner in which Alternative B-12 addresses “connectivity” is reviewed in *Chapter 14, Section 14.4.4*.

The contributions of invasive species controls and habitat restoration to increasing habitat value for species are reviewed in Chapters 7 and 13 and are summarized below for proposed Covered Species.

### **III. CONSISTENCY REVIEW OF NCCP/MSAA/HCP PROPOSED COVERED SPECIES MEASURES THAT ADDRESS THE SUBSTANTIVE PROVISIONS OF FESA SECTION 3(5)(A)(i) AND (ii) AND THE ADVERSE MODIFICATION PROVISIONS OF FESA SECTION 7(a)**

#### **A. Status of Critical Habitat Designations for Listed Species Found in the Southern Subregion**

The California gnatcatcher has a critical habitat designation that is "in effect" over portions of RMV lands, as illustrated on *Figure 8-M, Part IV Map Book*:

Revised critical habitat designations are proposed or finalized for the following species over portions of Subarea 1, including RMV lands (see *Figure 8-M*):

- California gnatcatcher (proposed)
- Thread-leaved brodiaea
- San Diego fairy shrimp

The following species have final critical habitat designations that do not include areas within Subarea 1:

- Arroyo toad
- Least Bell’s vireo
- Southern steelhead
- Southwestern willow flycatcher
- Riverside fairy shrimp

For each listed species found within Subarea 1, the following topics are addressed:

- Identification of occupied habitat with physical or biological attributes essential to the conservation of the species;
- Special management considerations and protections;
- Identification of specific unoccupied areas found essential for the conservation of the species; and
- Conclusion regarding the protection and management of areas essential to the conservation of the species.

Although portions of Subarea 1 were included in the proposed critical habitat designation for the arroyo toad, southwestern willow flycatcher and southern steelhead, these lands were excluded from the final designations. However, as noted above, in order to fully address Section 3 critical habitat designation and Section 7 consultation standards considerations, all federally listed species are analyzed under the FESA Section 3 critical habitat standards.

**B. Review of Listed Species Provisions in the NCCP/MSAA/HCP that Address FESA Section 3/4 Substantive Standards**

**1. Consistency Review for the California Gnatcatcher**

On October 24, 2000 USFWS published a final rule designating 513,650 acres of land as critical habitat for the California gnatcatcher (USFWS 2000b) in Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties, California (USFWS 2000b). Following the designation of critical habitat, several lawsuits were filed challenging various aspects of the designation. On June 11, 2002, the U.S. District Court for the Central District of California granted the USFWS's request for a remand of the California gnatcatcher critical habitat designation so that the USFWS could reconsider the economic impact associated with designating any particular area as critical habitat. The Court ordered the USFWS to complete a new proposed rule on or before April 11, 2003. In a subsequent order, the Court held that the critical habitat designated for the California gnatcatcher should remain in place until such time as a new final regulation becomes effective. The USFWS (2003) subsequently published a revised proposed critical habitat designation on April 23, 2003: as of this date, this proposed rule has not been finalized and therefore the October 24, 2000 Final Rule remains in effect. RMV lands are within the "in effect" designation and the proposed designation of critical habitat for the gnatcatcher.

(a) **Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species**

The Draft Southern Planning Guidelines identify *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat “essential to the conservation” of any such species. For the California gnatcatcher, all *key locations* in Subarea 1 are protected (*Figure 171-M, Part IV Map Book*). Together with areas already protected on County parklands and existing conservancies, the protection of gnatcatcher habitat in Subarea 1 meets the 80 percent protection requirement of the gnatcatcher guidelines for the Chiquita Canyon/Chiquadora *major population/key location*. Subject to the priorities for management and restoration measures recommended by the Reserve Manager and Science Panel and acted upon by the RMVLC, as coastal sage scrub restoration sites identified in the Draft Southern Planning Guidelines for Chiquita Canyon and Sulphur Canyon are restored over the lifetime of the NCCP/MSAA/HCP, total protected/restored habitat for the Chiquita/Chiquadora *major population* would result in no net loss of occupied habitat within this *key location*.

With respect to “connectivity” considerations, the proposed protection areas in Subarea 1 encompass two major gnatcatcher movement corridors (see *Figure 159-M, Part IV Map Book*) linking *important populations/key locations* in the southern portion of the study area and Camp Pendleton to populations in the eastern portion of the Southern Subregion (Bell Canyon, Lucas Canyon, Coto de Caza) and to the *major population/key location* in Chiquita Canyon/Chiquadora Ridge. This *major population/key location* is further connected with the Arroyo Trabuco *important population* through the combination of prior Las Flores and Ladera open space dedication areas.

(b) **Special Management Considerations and Protections**

The following is a summary of NCCP/MSAA/HCP actions that will contribute, over the term of the IA, to the survival and recovery of the California gnatcatcher in the Southern Subregion and contribute its recovery on a rangewide basis:

- protection of gnatcatcher *key locations* through prior open space commitments and the phased dedication program for RMV lands;
- protection of subregional connectivity and connectivity with adjoining subregions carried out through existing protection on County/conservancies lands and through the Phased Dedication Program for RMV lands;
- AMP monitoring/adaptive management of “stressors” with the potential to impact habitat values over time;

- Subject to the priorities for management and restoration measures recommended by the Reserve Manager and Science Panel and acted upon by the RMVLC, enhancement/restoration of coastal sage scrub habitat and coastal sage scrub/valley needlegrass grassland (CSS/VGL) areas in accordance with the restoration recommendations of the AMP (enhancement/restoration of coastal sage scrub habitat in Chiquita Canyon and in Sulphur Canyon is proposed in areas that benefit the Chiquita/Chiquadora *major population*, resulting in likely occupied habitat comparable to existing conditions in this *key location*);
- long-term fire management through the AMP in order to significantly reduce the likelihood of type conversion to annual grassland, in contrast with existing conditions;
- comparative analysis of fire regimes and grazing regimes over time within the Subregion, and in relation to areas within the Central/Coastal NCCP Subregion, in order to better understand the roles of fire and grazing in maintaining and enhancing occupied coastal sage scrub habitat; and
- long-term control of invasive species through the AMP to help reduce the likelihood of type conversion to annual grassland and loss of habitat, in contrast with existing conditions lacking an AMP, to assure the implementation of invasive species control measures.

**(c) Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species**

The gnatcatcher is already at recovery levels within the Subregion and the species goal is to maintain net habitat value for the species both through ongoing management of stressors and through habitat enhancement/restoration within unoccupied habitat. Unoccupied habitat essential for the conservation of the gnatcatcher is identified in the Uplands Habitat Restoration Plan component of the AMP (see *Appendix H*). These lands comprise areas identified for CSS restoration or CSS/VGL restoration subject to the management and restoration priorities recommended by the Reserve Manager and Science Panel and acted upon by the RMVLC. All CSS restoration sites and CSS/VGL restoration areas are protected on RMV lands. The restoration, over the term of the IA, of approximately 363 acres of coastal sage scrub habitat within the Chiquita Canyon/Chiquadora Ridge *major population/key location*, or other equivalent measures, will provide for likely occupied habitat equivalent to currently occupied habitat within this major population/key location, thereby furthering recovery goals. CSS/VGL restoration within the San Mateo Watershed also should help increase gnatcatcher populations.

**(d) Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the California Gnatcatcher**

Measures to be undertaken pursuant to the NCCP/MSAA/HCP IA will contribute significantly to the survival and recovery of the gnatcatcher through the following: (1) identification of *key locations* that are by definition deemed necessary for the conservation of the species; (2) provisions for special management recommendations, including restoration recommendations; (3) commitment of RMV dedication lands to provide “special protection” dedications encompassing habitats on RMV lands consistent with the Draft Southern Planning Guidelines *key locations* recommendations; and (4) identification of unoccupied habitat for protection, restoration and management within the Habitat Reserve pursuant to the AMP. When combined with previously protected California gnatcatcher sites and the demonstrated ability of gnatcatchers to persist in proximity to developed areas such as Coto de Caza and the smaller 4(d) permit conservation easement areas (Dudek 2004), the proposed RMV protection and management program is expected to provide for the survival and recovery of the California gnatcatcher within Subarea 1 and contribute significantly to recovery on a regional basis.

**(e) Potential “Adverse Modification” of Critical Habitat for the California Gnatcatcher**

The October 24, 2000 “in effect” critical habitat designation is very broad-brush and expansive on RMV lands and includes areas generally unsuitable for the gnatcatcher, such as the chaparral-dominated La Paz Canyon. The 2004 proposed critical habitat designation is similarly over-broad, even though certain refinements were made in this proposal in an attempt to have the designation more closely follow occupied habitat within the Southern Subregion. The refined 2004 designation still includes areas that are not suitable breeding habitat for the gnatcatcher such as the Donna O’Neill Land Conservancy.

As reviewed in *Chapter 4*, the Southern NCCP/MSAA/HCP provides an opportunity for a more focused analysis of species protection needs, including a more detailed analysis of special management considerations and habitat protection, consistent with FESA Section 3(5)(A)(i), than can be provided on a species-wide critical habitat designation. Indeed the USFWS stated, regarding the gnatcatcher that “The HCP development process provides an opportunity for more intensive data collection and analysis regarding the use of particular habitat areas by the gnatcatcher” (65 Federal Register, No. 206, 10/24/00, 63693).

The Draft Southern Planning Guidelines defines *key locations* as “those locations that are deemed necessary for the conservation of the species in the subregion.” *Chapter 4* in the NCCP/MSAA/HCP identifies *key locations* for the gnatcatcher within the Southern Subregion

based on the cumulative NCCP database. Of 12 populations identified as either *major* or *important*, nine are identified as *key locations* and thus, by definition, are essential to conservation of the gnatcatcher within the Southern Subregion. These *key locations* are:

- Chiquita Canyon, Western Gobernadora/Chiquadora Ridge, Wagon Wheel
- West Foothill- Trabuco Specific Plan
- East Coto de Caza/Starr Ranch
- West San Juan Capistrano
- East San Juan Capistrano
- Trampas Canyon
- North San Clemente
- Upper Cristianitos Canyon
- Avenida Pico

From the conservation analysis in *Chapter 13*, a total of 12,191 acres (73 percent) of coastal sage scrub and 400 California gnatcatcher locations (77 percent) would be conserved in the Habitat Reserve (*Table 13-2* and *Figure 171-M, Part IV Map Book*). An additional 2,196 acres (13 percent) of coastal sage scrub and 28 locations (5 percent) are in Supplemental Open Space (SOS), resulting in the total conservation of 14,387 acres (87 percent) of coastal sage scrub and 428 locations (83 percent). Of the 2,196 acres and 28 locations in SOS, 2,061 acres and 21 locations are on NAS Starr Ranch (*Table 13-4* and *Figure 171-M, Part IV Map Book*).

Conservation of the California gnatcatcher includes 298 of 349 locations (85 percent) and 2,320 acres of 2,653 acres of coastal sage scrub (87 percent) within the *major population/key location* in the Chiquita Canyon/Wagon Wheel sub-basins and Chiquadora Ridge portion of the Gobernadora sub-basin that are in Subarea 1 (*Figure 171-M, Part IV Map Book*). (Note that 44 locations and 441 acres of coastal sage scrub in this *major population/key location* are located in Subarea 3 [Coto de Caza], of which 26 locations are in SOS.)

Conservation of *important populations* is as follows:

- All 14 locations of the East Caspers Wilderness Park *important population* are in Habitat Reserve (note: one location is mapped in the Nichols Institute property and is not a part of the analysis);

- 14 locations of the East Coto de Caza/Starr Ranch *important population/key location* are in Habitat Reserve in Caspers Wilderness Park and 19 locations are in SOS on NAS Starr Ranch (19 locations are in Subarea 3, of which seven are in SOS);
- six of seven locations of the Trampas Canyon *important population/key location* are in Habitat Reserve;
- 28 of 41 locations of the Arroyo Trabuco *important population* are in Habitat Reserve (six locations are in areas “Not a Part” of the plan and seven have no designated protection status);
- seven of 21 locations in the North San Clemente *important population/key location* are in Prima Deshecha SOS (eight locations are in SOS in Subarea 4);
- 11 of 13 locations in the upper Crisitianitos *important population/key location* are in Habitat Reserve and one location is in Subarea 4 SOS; and
- two locations in the West Foothill-Trabuco Specific Plan *important population/key location* are in Habitat Reserve in O’Neill Regional Park and three are in SOS in the Foothill-Trabuco Specific Plan (FTSP).

Overall, of the 428 conserved locations, 399 locations (93 percent) are within *major/important populations*, and 29 locations are outside of *major/important populations*. The 399 conserved locations in *major/important populations*, of which 373 are in the Habitat Reserve and 26 are in SOS, comprise 83 percent of the 483 total locations mapped in *major/important populations* in Subarea 1. Of the gnatcatcher locations outside *major/important populations* in Subarea 1, 29 of 56 locations (52 percent) would be conserved.

In light of the conservation and management actions reviewed in this subsection as applied to the critical habitat designation criteria set forth in FESA Section 3, impacts of Covered Activities on California gnatcatcher occupied and unoccupied habitat included within the present and proposed critical habitat designations will not result in adverse modification of critical habitat.

## **2. Consistency Review for the Arroyo Toad**

On February 7, 2001 USFWS published a final rule designating critical habitat for the arroyo toad in Monterey, Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties, California (USFWS 2001a). Following the designation of critical habitat, several lawsuits were filed challenging various aspects of the designation. In response to these

lawsuits, the critical habitat designation was vacated and the USFWS was instructed by the court to re-evaluate its previous position. A new critical habitat designation was finalized on April 13, 2005 in which the NCCP Subarea 1 lands were excluded in accordance with FESA 4(b)(2) findings (USFWS 2005b). Although Subarea 1 lands were excluded from the final designation, on August 23, 2005 the Center for Biological Diversity filed a Complaint in federal court challenging the final designation. For this reason and because the critical habitat standards fully encompass the Section 7/10 jeopardy standard, the following analysis is applied as if there were no exclusion for Subarea 1 lands in effect.

**(a) Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species**

All documented arroyo toad breeding sites and associated streamcourse habitat areas on Subarea 1 lands are identified as *key locations* depicted on *Figure 173-M, Part IV Map Book* (in the case of the Talega Creek population, approximately half of the creek is within the boundaries of MCB Camp Pendleton and thus is within the control of the United States Department of Defense). In conjunction with protection of San Juan Creek provided through County and U.S. Forest Service ownership upstream of RMV lands, all streamcourse movement areas between *important* and *major populations* would be protected. Lateral setbacks from arroyo toad breeding areas have generally been identified on the basis of either: **(1)** the 80-foot contour line standard used in the court-vacated arroyo toad critical habitat designation and *Chapter 13* analyses of soils types on slopes adjoining arroyo toad breeding habitat: or **(2)** in the case of the Gobernadora (PA 3) and East Ortega (PA 4) planning areas, a 1,300-foot (400 meter) setback of pervious surface development from the centerline of the Creek per SAMP USACE Permit Special Condition I.D.2 requirements. The criteria included in the arroyo toad critical habitat designation have been used because the designation addressed the most recent studies of arroyo toad movement along streamcourses and lateral movement from streamcourses into adjacent alluvial terraces and foraging/estivation areas. According to the prior critical habitat designation for the arroyo toad (incorporated by reference into the new designation):

“The width of the upland component of critical habitat varies based on topography. The habitat widens in broad alluvial valleys and narrows in places where streams run through constricted canyons or between surrounding hills.”

(USFWS 2001a)

“Although the upland habitat use patterns of this species are poorly understood, activity probably is concentrated in the alluvial flats (areas created when sediments from the stream are deposited) and sandy terraces found in valley bottoms of currently active drainages (USFWS 1999, Griffin *et al.* 1999, Sweet in litt., 1999, Ramirez 2000, Holland and Sisk 2000).”

(Ib. p. 9415)

On the same page in the prior arroyo toad critical habitat designation, the USFWS examined the Holland and Sisk (2000) study of toad upland habitats and noted that 35 of the 466 toad captures were in upland habitats (7.5 percent) at distances ranging from 15 to 1,175 meters from the upland/riparian ecotone boundary. The USFWS concluded the following regarding the use of the 25-meter (80-foot) upland limit standard employed in designating the upland extent of critical habitat:

“For the two areas sampled in this study, our modeled critical habitat boundaries encompassed 88 percent of the pitfall trapping stations where arroyo toads were detected.”

(Ib. p. 9420)

Accordingly, the use of the 80-foot contour employed in the vacated arroyo toad critical habitat designation is considered appropriate in addressing the arroyo toad and sub-basin Protection Recommendation to “Protect breeding and foraging habitat and movement opportunities within the streamcourse and adjacent alluvial terraces” because this criterion protects 88 percent of upland movements of the arroyo toad. In terms of lateral setbacks beyond adjacent alluvial terraces, the 80-foot contour standard has also been supplemented with information on soils types in slopes adjacent to arroyo toad streamcourse habitats. According to the vacated critical habitat designation, arroyo toads “tend to utilize upland habitats that have sandy, friable (readily crumbled) soils.” (Ib, p. 9415).

*Chapter 13* contains an analysis of protected upland potential arroyo toad use areas in the San Juan Creek Watershed and concludes that substantial potential uplands uses areas will be protected. In the case of the San Mateo Creek Watershed PA 8 impact analysis area in proximity to arroyo toad *key locations*, the terrains map indicates that underlying soils types on the slopes are primarily clays which are not considered friable soils and thus not likely estivation habitat. In order to protect upland use areas for the arroyo toad, the USACE has proposed the following measure that is also included in the Avoidance/Minimization Appendix (*Appendix U*) as a requirement of the NCCP/MSAA/HCP:

“The permittee shall undertake telemetry monitoring studies for arroyo toad near Planning Area 8 for five years and submit the results to the Corps before submittal of an application for Planning Area 8. The results shall be used in designing appropriate measures to minimize impacts to the arroyo toad in Planning Area 8” (USACE Special Condition I.D.8)

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**(b) Provide for Special Management Considerations and Protections**

Long-term management action elements of the AMP, including specific AMP measures directed toward arroyo toad habitat, in conjunction with the protection of *key locations*, will contribute to the survival and recovery of the arroyo toad within the subregion. The following is a summary of actions that will provide for the survival and recovery of the arroyo toad in the planning area:

- **Key Location Protection:** The protection of the *key locations* of the arroyo toad in accordance with the recommendations of the Draft Southern Planning Guidelines.
- **San Juan Creek Restoration Actions:** The arroyo toad population downstream of the *key location* in San Juan Creek has been impacted by a major infestation of giant reed, bullfrog predation, and decreased water supplies due both to giant reed water demands and groundwater pumping. Specific enhancement/restoration actions proposed by the AMP, IWMD Prima Deshecha Landfill GDP Mitigation Program and the WQMP intended to enhance and restore arroyo toad breeding habitat areas are: (1) control of giant reed in San Juan Creek that will provide more area for riparian habitat and breeding pools and that will increase water supplies to help sustain such habitat; (2) control of bullfrog populations that presently have significant impacts on arroyo toad populations will reduce predation; (3) increased flows in San Juan Creek resulting from development stormwater flows that will be managed pursuant to the WQMP (reviewed in Section 8.7 of the WQMP) to provide additional flow during toad breeding season; (4) the protection of upstream sources of coarse sediments and maintenance of episodic flood events that is expected to help maintain natural succession for riparian habitat and the overall hydrologic/geomorphic conditions identified in the *Geomorphic and Hydrologic Needs of Aquatic and Riparian Endangered Species* report (PCR and Dudek 2002); and (5) grazing management to protect arroyo toad breeding habitat (following dedication) during the breeding season in accordance with the GMP.
- **USACE SAMP Avoidance/Mitigation Measures:** The USACE has proposed the following condition to be in the SAMP Avoidance/Minimization Measures Appendix and that is intended to improve streamcourse functions and values within San Juan Creek that would benefit arroyo toad movement, as well as that of two sensitive native fish species – the arroyo chub and partially-armored threespine stickleback:

“The permittee shall retrofit the existing Cow Camp culvert crossing across San Juan Creek upon receiving authorization to discharge fill materials associated with Planning Area 3 to allow for fish passage. Alternatively, the crossing may be relocated to accomplish the same functional objectives as above and the current

crossing may be removed and the disturbed area restored to provide a smooth, continuous longitudinal channel profile. The culverts shall comply with these following guidelines:

- The culvert shall be a minimum of 6 feet in width.
  - The bottoms of the culverted crossings shall not be less than 25% of the culvert height.
  - Retrofitted culverts shall be at grade” (ACOE Special Condition I.D.3).
- **San Mateo Watershed Protection and Enhancement Program:** The following management and enhancement/restoration actions are intended to help maintain and increase net habitat value for arroyo toad populations both within the Subarea 1 lands and arroyo toad and other significant aquatic species habitats in areas downstream: **(1)** protection of existing sources of coarse sediments; **(2)** reduction in the generation of fine sediments from areas with clay soils that will be achieved through remediation of the existing clay pits; **(3)** control of bullfrogs in ponds adjacent to and in proximity to arroyo toad populations in lower Gabino Creek; **(4)** control of invasive plants, particularly tamarisk and pampas grass; and **(5)** grazing management, following dedication, to protect arroyo toad breeding pools.
  - **Terrains and Hydrologic/Geomorphic Processes:** Terrains and hydrology/geomorphology habitat protection and management considerations for the arroyo toad have been central planning precepts for the NCCP/MSAA/HCP. Natural processes considered important to maintaining suitable habitat conditions for arroyo toads were reviewed in the report titled *Geomorphic and Hydrologic Needs of Aquatic and Riparian Endangered Species* (PCR and Dudek 2002); these processes have been addressed and provided for in the Habitat Reserve design. Sources of coarse sediments and cobbles important for arroyo toad breeding and life cycle needs such as the creation of breeding pools and sediment sources for sandy benches have been protected (Verdugo Canyon, middle Gabino Canyon, and La Paz Canyon). The proposed WQMP includes provisions for assuring that flow duration under rainfall conditions and episodic events under post-development conditions mimic, to the extent feasible, pre-development conditions and that water quality protection for toad habitat is assured.

**(c) Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species**

As summarized above, a comprehensive Invasive Species Control Plan is included as part of the AMP (see *Appendix J*). In combination with the County Prima Deshecha Landfill GDP

mitigation program, giant reed eradication efforts upstream of the planning area in San Juan Creek will help enhance/restore arroyo toad breeding habitat in portions of San Juan Creek that are presently unoccupied or have limited breeding areas. With respect to arroyo toad water supply considerations in San Juan Creek, the eradication of large areas of giant reed and contributions of developed areas to baseflow in San Juan Creek will improve water supplies to the portions of San Juan Creek where arroyo toad breeding appears to be limited, in part, by a lack of breeding pool water supply.

With respect to arroyo toad populations both within the San Mateo Creek Watershed portion of the study area and downstream of the study area, a similar effort will be undertaken in the San Mateo Creek Watershed, with particular emphasis on invasive plant species in lower Cristianitos Creek and on tamarisk and pampas grass removal in uplands areas. Bullfrog and crayfish control in areas potentially affecting arroyo toad populations will also be undertaken both to enhance existing breeding sites and to further the restoration of breeding opportunities in presently unoccupied areas.

**(d) Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Arroyo Toad**

The proposed protection and management measures will contribute significantly to the survival and recovery of the arroyo toad through the following: **(1)** identification of *key locations* that are by definition deemed necessary for the conservation of the species in Subarea 1 and, as a result, encompass all occupied habitat “essential to the conservation” of the species; **(2)** commitment of RMV dedication lands to the Habitat Reserve in order to provide “special protection” by means of a specific Phased Dedication Program encompassing all habitats constituting *key locations* for the arroyo toad on Subarea 1 lands; **(3)** provisions for special management recommendations including restoration recommendations; and **(4)** identification of unoccupied habitat for inclusion within the Habitat Reserve for purposes of restoration and management.

For the above reasons, the implementation of the NCCP/MSAA/HCP will further the survival and recovery of the species within the study area and contribute significantly to the recovery of the species on a subregional and regional basis.

**3. Consistency Review for the Least Bell’s Vireo**

**(a) Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species**

According to the Species Account (*Appendix E*) for the least Bell’s vireo, there are two *key locations* that must be protected to provide for conservation of the species within the subregion –

Gobernadora Creek (GERA) and lower Arroyo Trabuco (see *Figure 172-M, Part IV Map Book*). Both areas are already protected pursuant to conservation easements.

**(b) Provide for Special Management Considerations and Protections**

As noted above, the two *key locations* for the least Bell's vireo are protected under existing conservation easements. However, both of the *key locations* for the least Bell's vireo are currently subject to significant stressors impacts – the Arroyo Trabuco population is being impacted by giant reed infestation while the Gobernadora Creek population is being impacted by erosion/sediment impacts resulting from excessive surface and subsurface flows emanating from upstream urban development. Smaller vireo populations in San Juan Creek and lower Cristianitos Creek also are being impacted by invasive plant species. Another population near the Prima Deshecha Landfill could be impacted by the future expansion of landfill operations. Specific habitat protection and AMP actions will help increase habitat values and functions for the least Bell's vireo over time in the following ways:

- **Conservation easements:** Habitat areas supporting the *key locations* of least Bell's vireo *important populations* have been protected through prior conservation easements in Arroyo Trabuco and GERA.
- **Arroyo Trabuco enhancement/restoration:** Invasive species control and natural restoration for the *key location* in Arroyo Trabuco will enhance and restore riparian habitat (see AMP Invasive Species Control Plan, *Appendix J*).
- **Gobernadora restoration actions:** (1) Management of excessive surface and subsurface water flows from Coto de Caza through the construction of the Gobernadora Multi-purpose Basin that will help protect existing vireo habitat and potential new habitat upstream of the knickpoint; (2) management of GERA and implementation of additional restoration per the Aquatic Resources Restoration Plan will provide additional breeding habitat and sediment/streamflow management; and (3) invasive species control will remove a threat that currently exists.
- **San Juan Creek restoration actions:** (1) Control of giant reed will provide more area for riparian habitat and will increase water supplies to help sustain such habitat – natural restoration of willow habitat is expected to occur in an area that presently supports a small population of vireo; (2) increased baseflow through WQMP stormwater control measures to help sustain existing and new riparian habitat; and (3) the protection of upstream sources of coarse sediments and maintenance of episodic flood events are expected to help maintain natural succession for willow habitat.

- **Lower Cristianitos Creek:** Invasive species control in lower Cristianitos Creek, under an existing Northrop Grumman permit condition and the AMP following dedication will protect habitat supporting existing populations; further, the reduction in fine sediments due to CSS/VGL restoration and landform restoration will correspondingly reduce adverse sediment impacts.

Additional management actions include control of Argentine ants and cowbird trapping where needed in accordance with the Invasive Species Control Plan. Implementation of the proposed WQMP would allow for further management of groundwater and surface flows in support of Gobernadora Creek restoration actions.

**(c) Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species**

The coordinated San Juan Creek invasive species controls will result in the removal of giant reed, thereby increasing the area of San Juan Creek available for natural riparian habitat restoration and increasing water flows and groundwater for sustaining such habitat in areas presently unoccupied by the species (two vireo sites are in nearby portions of San Juan Creek). Because this area is in close proximity to the *key location* in GERA in the Gobernadora sub-basin, the creation of new habitat would likely allow for an expansion of the GERA population.

**(d) Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Least Bell's Vireo**

Proposed protection and management actions would substantially contribute to the region-wide recovery of the least Bell's vireo. The Draft Recovery Plan for the least Bell's vireo (USFWS 1998b) establishes criteria for downlisting to threatened and delisting the species. The downlisting criterion is stable or increasing least Bell's vireo populations/metapopulations for a period of five consecutive years in the following areas: Tijuana River, Dulzura Creek/Jamul Creek/Otay River, Sweetwater River, San Diego River, San Luis Rey River, Camp Pendleton/Santa Margarita River, Santa Ana River, an Orange County/Los Angeles County metapopulation, Santa Clara River, Santa Ynez River and an Anza Borrego Desert metapopulation. Two additional criteria must be met for five consecutive years to consider delisting of the species:

1. *Stable or increasing least Bell's vireo populations/metapopulations, each consisting of several hundred or more breeding pairs, have become established and are protected and managed at the following sites: Salinas River, a San Joaquin Valley metapopulation, and a Sacramento Valley metapopulation.*

2. *Threats are reduced or eliminated so that least Bell's vireo populations/metapopulations listed above are capable of persisting without significant human intervention, or perpetual endowments are secured for cowbird trapping and exotic plant control in riparian habitat occupied by least Bell's vireo.*  
(USFWS 1998b, p. iv-v)

With regard to the criterion of protection of the Orange County/Los Angeles County metapopulation, the USFWS states:

*Management planning should address the need to maintain the remaining patches of suitable, important least Bell's vireo habitat throughout the lower and middle elevations of both counties, and particularly, the closely spaced habitat patches that are likely important "stepping stones" to the continuing (northward) expansion and full recovery of the species.*  
(USFWS 1998b, p. 70-71)

Although the planning area does not support a large breeding population of the least Bell's vireo (60 documented nest locations), implementation of the AMP would contribute to recovery of the species. Protection and management of the two *important populations* in *key locations* in the Arroyo Trabuco and in GERA in lower Gobernadora Creek, respectively, would contribute to the protection of the Orange County/Los Angeles County metapopulation. Furthermore, proposed invasive species control measures would help meet the criterion for delisting the species of reducing or eliminating threats to the species (*e.g.*, provide for cowbird trapping where needed and exotic plant species controls in Arroyo Trabuco and San Juan Creek, thus increasing the least Bell's vireo productivity in these areas).

Thus, the proposed permitting procedures measures will contribute significantly to the survival and recovery of the least Bell's vireo through the following: **(1)** identification and protection of *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat "essential to the conservation" of the species; **(2)** provisions for special management recommendations, including restoration recommendations; and **(3)** identification of unoccupied habitat for protection, restoration and management.

For the above reasons, the implementation of the NCCP/MSAA/HCP will further the survival and recovery of the species within the study area and contribute significantly to the recovery of the species on a subregional and regional basis.

#### 4. Consistency Review for the Southwestern Willow Flycatcher

##### (a) Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

According to the Species Account (*Appendix E*) for the southwestern willow flycatcher, there is one *key location* (GERA) that must be protected to provide for conservation of the species within RMV lands (*Figure 172-M Part IV Map Book*).

##### (b) Provide for Special Management Considerations and Protections

The *key location* for the southwestern willow flycatcher is protected by conservation easements associated with GERA. Further protection is provided by the inclusion of this habitat area within the proposed Habitat Reserve on RMV lands.

The *key location* in the Gobernadora sub-basin is currently subject to significant stressors impacts – the *key location* is being impacted by erosion/sediment impacts resulting from excessive surface and subsurface flows emanating from upstream urban development. These pre-existing, ongoing impacts will be addressed through the following element of the AMP:

- **Gobernadora restoration actions:** (1) management of excessive surface and subsurface water flows from Coto de Caza will help protect existing vireo habitat and potential new habitat upstream of the knickpoint; (2) restoration of the historic meander through the operation of the multi-purpose basin and associated habitat above the knickpoint will provide additional breeding habitat; (3) management of GERA and implementation of additional restoration (the latter depends on future AMP priorities) will provide additional breeding habitat and sediment/streamflow management; and (4) invasive species control will remove a threat that currently exists.

Additional management actions include control of Argentine ants and cowbird trapping where needed through implementation of the AMP Invasive Species Control Plan. Implementation of the proposed WQMP would allow for further management of groundwater and surface flows in support of the Gobernadora Creek restoration plan.

##### (c) Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species

The proposed critical habitat designation for the southwestern willow flycatcher, based on a habitat modeling exercise, identified potential future population expansion areas in lower Cristianitos Creek because it is located within 18 miles of a population outside the study area in

downstream San Mateo Creek. This area was subsequently removed in the final designation. Although habitat conditions in this area are unlikely to support the southwestern willow flycatcher, the following AMP measures would enhance habitat conditions in this presently unoccupied riparian area (*i.e.*, lower Cristianitos Creek):

- **Lower Cristianitos Creek:** Invasive species control in lower Cristianitos Creek under conditions of an existing permit and pursuant to the AMP will protect potential willow flycatcher habitat. Further, the reduction in fine sediments due to clay mine remediation will correspondingly reduce adverse sediment impacts on riparian habitat with the potential for supporting the willow flycatcher.

**(d) Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Southwestern Willow Flycatcher**

A recovery plan has not been completed for the southwestern willow flycatcher. The proposed protection/management measures, however, would contribute to the future region-wide recovery of the southwestern willow flycatcher in combination with the other conservation planning efforts completed or underway in southern California. Within California, there are an estimated 121 breeding territories (Finch and Stoleson 2000), which appear to be scattered around southern California (recent estimates indicate 1,153 territories scattered throughout the southwestern states and California). The population size in the Santa Margarita River from Camp Pendleton to Fallbrook is an estimated 15-16 territories (San Diego Museum of Natural History 1995). Within western Riverside County, there are an estimated 15-20 territories, including three to five territories in the Prado Basin, three to five territories in the Santa Ana River, two to four territories at Vail Lake, and three territories in Temecula Creek (Dudek 2002). The Camp Pendleton population is on federal land and is addressed in the Biological Opinion (1-6-95-F-02) for Programmatic Activities and Conservation Plans in Riparian and Estuarine/Beach Ecosystems on Marine Corps Base, Camp Pendleton. The southwestern willow flycatcher is a Covered Species under the San Diego MSCP, a Covered Species under the San Diego MHCP, and a “Covered Species Adequately Conserved” under the Western Riverside County MSHCP.

The proposed NCCP/MSAA/HCP protection and management measures will contribute significantly to the survival and recovery of the southwestern willow flycatcher through the following: **(1)** identification and protection of a *key location* that is by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompasses all occupied habitat “essential to the conservation” of the species; **(2)** provisions for special management recommendations, including restoration recommendations; and **(3)** identification of unoccupied habitat preliminarily identified as a potential population expansion area (in the proposed critical habitat designation) for inclusion within the Habitat Reserve, including AMP

management measures. These measures, in combination with circulation system construction minimization measures, will assure no adverse modification of critical habitat within presently unoccupied habitat in lower Cristianitos Creek.

With an estimated 121 territories in California, the two general nesting areas in the planning area in GERA and Talega development open space account for only a minor part of the population. However, protection and management of the GERA site where nesting by the willow flycatcher has consistently occurred in recent years would contribute to recovery of the species.

For the above reasons, the implementation of the NCCP/MSAA/HCP will further the survival and recovery of the species within the study area and contribute significantly to the recovery of the species on a subregional and regional basis.

## **5. Consistency Review for the Riverside Fairy Shrimp**

### **(a) Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species**

All three vernal pools supporting the Riverside fairy shrimp and their contributing hydrological resources on Chiquita Ridge and on Radio Tower mesa (see *Figure 173-M, Part IV Map Book*) are identified as *key locations* in accordance with the recommendations of the Riverside fairy shrimp Species Account (*Appendix E*).

### **(b) Provide for Special Management Considerations and Protections**

With regard to special protections, the vernal pool on Chiquita Ridge is already protected by a conservation easement as part of the Ladera Open Space. This vernal pool along with the two occupied vernal pools on the Radio Tower Road mesa that together constitute the *key locations* for the Riverside fairy shrimp are avoided through RMV avoidance measures and inclusion in the Habitat Reserve.

Provisions for special management considerations include the following:

- Management of vernal pools located along Radio Tower Road primarily through implementation of timed grazing for exotic species control during the vernal pool dry period, and seasonal exclusion of grazing during the vernal pool wet period (following dedication of the vernal pool areas). Experimental prescribed burns may also be used as an exotics control technique.

- Management of vernal pools located on Chiquita Ridge within the Ladera Open Space primarily by implementation of exotics control through mowing and/or selective weeding (cattle are excluded from the Ladera Open Space and prescribed burns seem unlikely due to the proximity of developed areas).

The AMP also includes monitoring of the Radio Tower Road mesa and Chiquita Ridge vernal pools and Riverside fairy shrimp populations, managing hydrologic regimes by maintaining the existing local contributing hydrological sources, managing water quality to emulate baseline conditions (through and in coordination with the WQMP) and controlling public access (particularly during the rainy season).

**(c) Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species**

AMP monitoring will include monitoring of the two small protected vernal pools on Chiquita Ridge and the one pool on Radio Tower Road mesa lacking documented Riverside fairy shrimp. If the species is subsequently found present in any of these presently unoccupied vernal pools, the AMP measures will be applied to any such vernal pool as specified above.

**(d) Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Riverside Fairy Shrimp**

NCCP/MSAA/HCP actions will contribute significantly to the survival and recovery of the Riverside fairy shrimp through the following: **(1)** identification of *key locations* that are by definition deemed necessary for the conservation of the species in Subarea 1 and, as a result, encompasses all occupied habitat “essential to the conservation” of the species; **(2)** provisions for special management recommendations including restoration recommendations; **(3)** an existing conservation easement covering one *key location* that provides “special protections,” which is further augmented by including all of the remaining *key locations* within the Habitat Reserve Phased Dedication Program; and **(4)** identification of unoccupied habitat in the AMP monitoring program for potential future inclusion of unoccupied vernal pools for restoration and management.

For the above reasons, the implementation of the NCCP/MSAA/HCP will further the survival and recovery of the species within the study area and contribute significantly to the recovery of the species on a subregional and regional basis.

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## 6. Consistency Review for the San Diego Fairy Shrimp

### (a) Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species

All five vernal pools supporting the San Diego fairy shrimp and their contributing hydrological resources on Chiquita Ridge and on Radio Tower mesa (see *Figure 173-M, Part IV Map Book*) are identified as *key locations* in accordance with the recommendations of the San Diego fairy shrimp Species Account (*Appendix E*) and are avoided through inclusion in the proposed Habitat Reserve.

### (b) Provide for Special Management Considerations and Protections

With regard to special protections, the vernal pools on Chiquita Ridge are already protected by a conservation easement as part of the Ladera Open Space. These vernal pools along with the three occupied vernal pools on Radio Tower mesa that together constitute the *key locations* for the San Diego fairy shrimp are included within the proposed Habitat Reserve.

Provisions for special management considerations include the following:

- Management of vernal pools located along Radio Tower Road primarily through implementation of timed grazing for exotic species control during the vernal pool dry period, and seasonal exclusion of grazing during the vernal pool wet period (following dedication of a conservation easement). Experimental prescribed burns may also be used as an exotics control technique.
- Management of vernal pools located on Chiquita Ridge within the Ladera Open Space primarily through implementation of exotics control through mowing and/or selective weeding (cattle are excluded from the Ladera Open Space and prescribed burns seem unlikely due to the proximity of developed areas).

The AMP also will include monitoring of the Radio Tower Road mesa and Chiquita Ridge vernal pools and San Diego fairy shrimp populations, managing hydrologic regimes by maintaining the existing local contributing hydrological sources, managing water quality to emulate baseline conditions (through and in coordination with the WQMP) and controlling public access (particularly during the rainy season).

(c) **Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species**

AMP monitoring will include monitoring of the one small protected vernal pool on Chiquita Ridge lacking documented San Diego fairy shrimp. If the species is subsequently found present in this presently unoccupied vernal pool, the AMP measures will be applied to the vernal pool as specified in *subsection (b)* above.

(d) **Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the San Diego Fairy Shrimp**

NCCP/MSAA/HCP actions will contribute significantly to the survival and recovery of the San Diego fairy shrimp through the following: (1) identification of *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat “essential to the conservation” of the species; (2) provisions for special management considerations including restoration recommendations; (3) an existing conservation easement covering one *key location* that provides “special protections,” which is further augmented by including all of the *key locations* within the conservation easement Phased Dedication Program encompassing all habitats constituting *key locations* for all listed species; and (4) identification of unoccupied habitat in the AMP monitoring program for potential future restoration and management.

**7. Consistency Review for the Thread-leaved Brodiaea**

(a) **Identify Occupied Habitat with Physical or Biological Attributes Essential to the Conservation of the Species**

The thread-leaved brodiaea Species Account (*Appendix E*) identifies a *major population* in a *key location* on Chiquadora Ridge and a second *major population* in a *key location* located on the hill outcrop adjacent to and within the clay mine pits in the southern portion of Cristianitos Canyon/lower Gabino Canyon (*Figure 173-M, Part IV Map Book*). A total of 9,248 individuals (98 percent) and 20 locations (61 percent) of thread-leaved brodiaea would be conserved in the Habitat Reserve.

(b) **Provide for Special Management Considerations and Protections**

With regard to special protections, the two *key locations* included in the B-12 Alternative open space dedication program are preserved (96 percent of the Chiquadora Ridge *major population*

and 100 percent of the Cristianitos Canyon *major population*) and would, along with the Aliso/Wood Canyon population, be the only *major populations* protected in place within the two Orange County NCCP subregions (tripling the size of the protected populations). Thus, the proposed protection measures would contribute significantly to the survival and recovery of this plant species on a rangewide basis. Additionally, the *important populations* in Trampas Canyon, Arroyo Trabuco, and the Talega sub-basin would be protected. Although distances between existing populations may exceed the apparent dispersal capability of the documented likely pollinators, habitat connectivity and contiguity allowing for potential genetic exchange between populations via pollinators and other localities will be maintained among the Arroyo Trabuco, Chiquadora Ridge, Trampas Canyon, lower Cristianitos and Talega populations. Protection of the *key locations* of the thread-leaved brodiaea in accordance with the recommendations of the Species Account (*Appendix E*) is in contrast with other major populations in the subregion where translocation has been permitted.

With regard to special management considerations, several proposed actions of the AMP will help further the recovery of this species within Subarea 1. The following is a summary of AMP actions that, together with Habitat Reserve protections, will provide for recovery of the thread-leaved brodiaea in Subarea 1:

- Control of the main stressors, primarily non-native invasive species such as artichoke thistle, ryegrass, bromes, wild oats and mustards; and restoration of native grasslands.
- Fire management to reduce the likelihood of frequent fire that may exacerbate invasions of exotic plants.
- Translocation of smaller populations to areas with clay soils and without competing plants.

The Management Recommendations involving the control of non-native invasive species are incorporated into the AMP. Management Recommendations for the protection of brodiaea populations from human disturbance (particularly potential edge effects from residential and golf course development) and data collection on pollinators will also be part of the AMP. Efforts to salvage and translocate the smaller populations located within development areas will enhance public understanding of the potential for translocation in other areas of the range of this species and thus further the recovery of the species.

**(c) Identify Specific Unoccupied Areas Found Essential for the Conservation of the Species**

Under the B-12 Alternative, substantial areas with clay soils will be protected within close proximity to protected occupied sites and, with greater understanding of management and translocation/propagation over time, may allow for an expansion of existing populations into presently unoccupied areas.

**(d) Conclusion Regarding the Protection and Management of Areas Essential to the Conservation of the Thread-leaved Brodiaea**

The proposed NCCP/MSAA/HCP protection and management program will contribute significantly to the survival and recovery of the thread-leaved brodiaea through the following: **(1)** identification of *key locations* that are by definition deemed necessary for the conservation of the species in the subregion and, as a result, encompass all occupied habitat “essential to the conservation” of the species; **(2)** provisions for special management recommendations, including experimental translocation recommendations; **(3)** commitment to the phased dedication of conservation easements over lands within the RMV portions of the proposed Habitat Reserve in order to provide “special protection” encompassing all habitats constituting *key locations* for all listed species; and **(4)** identification of unoccupied habitat for inclusion within the AMP restoration and management program.

A recovery plan has not been completed for the thread-leaved brodiaea. AMP measures, in conjunction with Habitat Reserve open space protection, would substantially contribute to the future region-wide recovery of the thread-leaved brodiaea in combination with the other conservation planning efforts completed or underway in southern California. The planning area supports about 9,500+ counted flowering stalks, or about 2-4 percent of the estimated individuals regionwide (see Species Account for thread-leaved brodiaea, *Appendix E*). The thread-leaved brodiaea is addressed in the San Diego MSCP and MHCP plans as a “narrow endemic” that requires surveys for proposed projects. The MHCP area in particular, which includes the vast majority of thread-leaved brodiaea in San Diego County, has a conservation goal of 90 percent conservation of known locations and major populations and assumes that “critical locations” in Carlsbad and San Marcos would be 100 percent conserved. Similarly the Western Riverside County MSHCP includes the brodiaea on the “Additional Survey Needs and Procedures” list and requires surveys within the “Criteria Area” where suitable habitat is present. Overall, under the MSHCP, approximately 83 percent of suitable habitat for the thread-leaved brodiaea in the plan area would be in the proposed Conservation Area, including 12 known occurrences along the San Jacinto River in Nuevo, Perris and the San Jacinto Wildlife Area; on Salt Creek; on the Santa Rosa Plateau, and west of the Santa Rosa Plateau. The approximately 5,000 individuals on

Camp Pendleton and San Onofre State Park are provided federal and state protections. Outside of the Southern Subregion in Orange County, approximately 2,000-3,000 individuals occur in Aliso and Woods Canyon Regional Park.

The protection and management of approximately 9,248 individuals (98 percent) of the thread-leaved brodiaea on RMV lands, including the *major populations* in *key locations* and *important populations* on Chiquadora Ridge, in Cristianitos and Trampas canyons, in the Talega sub-basin, and in Arroyo Trabuco would provide for recovery within Subarea 1 and substantially contribute to the recovery of the species on a rangewide basis.

**(e) Potential “Adverse Modification” of Critical Habitat for the Thread-leaved Brodiaea**

Similar to the gnatcatcher, the Draft Southern Planning Guidelines identify a *key location* for brodiaea on Chiquadora Ridge. By definition, conservation of this population is essential to the survival of the species in the subregion. *Appendix U* contains avoidance and minimization measures for the RMV Covered Activities, including the following avoidance measure pursuant to USACE Special Condition I.A.3 regarding this specific population:

- The permittee shall avoid all impacts to the thread-leaved brodiaea (a threatened facultative wetland plant) in a *major population* in a *key location* (as described in the Draft Southern NCCP Planning Guidelines) on Chiquadora Ridge as part of construction for Planning Area 2

From *Chapter 13*, conservation of *major/important populations* of brodiaea would include:

- all six locations and all 6,105 individuals (100 percent) in the Cristianitos Canyon/Lower Gabino Canyon *major population*;
- seven locations (54 percent) and 341 individuals (85 percent) in the Cristianitos Canyon *important population*;
- all four locations and all 288 individuals in the East Talega *important population*;
- one location (100 percent) and 80 individuals (100 percent) in the Lower Arroyo Trabuco *important population*;
- one location (100 percent) and 183 individuals (100%) in the Middle Gabino *important population*; and

- one location (100 percent) and 250 individuals (100 percent) in the Trampas Canyon *important population*.

A total of 20 locations (61 percent) and 9,248 individuals (98 percent) of thread-leaved brodiaea would be conserved in the Habitat Reserve.

While protection of the vast majority of the brodiaea is important for conservation of the species, maintaining adequate adjacent habitat to support pollinators of this species also is important. In 2004, the USFWS (2004d) proposed critical habitat for the thread-leaved brodiaea included an area of 820 feet (250 meters) around each eligible occurrence to provide for pollinator habitat, resulting in over 1,000 acres of RMV lands being designated as proposed critical habitat for the brodiaea. RMV provided comments on the proposed designation in which RMV stated its belief that “the 250-meter buffer is an arbitrary feature of the proposed CHD that is not supported by the published scientific literature or current studies being conducted in the Southern Subregion” (RMV February 4, 2005). In particular RMV was referring to the lack of discussion regarding the pollinator studies performed by RMV at the USFWS direction per the Arroyo Trabuco Golf Course Biological Opinion.

As reviewed in *Chapter 13*, the Habitat Reserve would conserve adequate habitat in the vicinity of the conserved brodiaea populations and provide for habitat connectivity between populations (see *Figure 173-M, Part IV Map Book*). Pollinator studies of the Arroyo Trabuco and Cristianitos Canyon brodiaea populations conducted by Glenn Lukos Associates (GLA) have determined that burrowing bees (family Anthrophoridae), sweat bees (family Halictidae) and flower-loving flies (family Syrphidae) are the most common pollinators of thread-leaved brodiaea in these two areas (GLA, unpublished data). Their data also show that grading for the Arroyo Trabuco Golf Course, for example, has not had an adverse effect on pollination of brodiaea because adequate habitat to support the pollinators was conserved as part of the project open space. Sweat bees do not travel more than about 328 feet (100 m) from nest sites to forage (Roubik 1989) and burrowing bees are expected to have similar size home ranges. Therefore, as long as natural open space is maintained within about 328 feet of brodiaea populations, effects on pollinators should be minimal.<sup>2</sup> All three major conserved populations in the Habitat Reserve easily achieve this threshold.

In light of the conservation and management actions reviewed in this subsection as applied to the critical habitat designation criteria set forth in FESA Section 3, impacts of Covered Activities on thread-leaved brodiaea populations included within the areas identified in the proposed critical habitat designation will not result in adverse modification of critical habitat.

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<sup>2</sup> The reader is referred to Cane, J.H. 2001. Habitat fragmentation and native bees: a premature verdict? *Conservation Ecology* [www.consecol.org/vol5/iss1/art3](http://www.consecol.org/vol5/iss1/art3) for a discussion of native bee persistence in habitat fragments of “modest size.” Cane concludes that networks of even small reserves can provide for “considerable pollinator diversity and the ecological services pollinators provide.”

## **8. Southern Steelhead**

The potential presence of southern steelhead has been documented in the Arroyo Trabuco, a tributary to San Juan Creek, south of the I-5 underpass, which is adjacent to the NCCP Study Area boundary (CDFG, November 25, 2003 letter to the National Oceanic and Atmospheric Administration). The CDFG letter acknowledges the barrier of the I-5 underpass as a “complete barrier to upstream migration of steelhead” at this location. Genetic studies are currently underway to confirm the initial identification of steelhead in the Arroyo Trabuco; however the results of these studies are not available. Steelhead have not been documented in San Juan Creek within the Subarea 1 limits during decades of various biological surveys along San Juan Creek, including surveys specifically designed to detect fish species. In addition, there is no anecdotal information from fishing records within San Juan Creek in the RMV portion of Subarea 1 for the steelhead.

On September 2, 2005, the National Oceanic and Atmospheric Administration (NOAA 2005) published a final rule for the designation of critical habitat for seven Evolutionary Significant Units (ESUs) of Pacific Salmon and Steelhead in California (70 Federal Register 52487, 9/2/2005). According to the final rule, several watershed units (490121, 490122, 490125, 490126 and 490128) including Trabuco, Upper Trabuco, Middle Trabuco, Upper San Juan, Mid Upper San Juan, and Middle San Juan “were determined to be unoccupied” and as a result of this determination several miles of Trabuco and San Juan creeks were removed from the proposed critical habitat designation. Thus, no critical habitat for the steelhead is designated within Subarea 1. However, critical habitat is designated within the Southern Subregion on lower San Juan and lower Arroyo Trabuco.

Implementation of the NCCP/MSAA/HCP would not hinder the species survival and recovery in the southern portion of the Evolutionary Significant Units’ (ESUs) range for steelhead and, as reviewed above under the arroyo toad consistency review, the NCCP/MSAA/HCP would provide streamcourse protection and management actions supportive of long-term steelhead recovery within the Southern Subregion. The B-12 Alternative proposes a circulation system that would result in bridge structures across San Juan Creek in three new locations. Limited modifications to San Juan Creek in the form of bridge piers for these crossings would occur; however, these modifications are not anticipated to impede potential fish passage through Subarea 1 to the upper watershed where conditions for breeding habitat are found (NMFS, pers. comm. 2005). Fish passage downstream of the RMV Planning Area is questionable because, as noted above, CDFG regards the barrier of the I-5 underpass as a “complete barrier to upstream migration of steelhead.” Therefore, this barrier (the I-5 underpass) would require modification to provide for potential fish passage. Trout Unlimited has applied for a state grant to examine the feasibility of a fish ladder at the I-5 underpass.

The remaining potential issue with regard to fish passage is the existing RMV Planning Area earthen/pipe crossing of San Juan Creek (known as “Cow Camp Crossing”) which CDFG and the National Marine Fisheries Service (John O’Brien, CDFG and Stan Glowacki, NMFS, pers. comm. 2005) have noted may pose difficulties for potential fish passage. The USACE has proposed the following condition included in the Avoidance/Minimization Measures (*Appendix U*) and that is intended to improve streamcourse functions and values within San Juan Creek that would benefit potential future steelhead movement to and from suitable upstream breeding habitat:

“The permittee shall retrofit the existing Cow Camp culvert crossing across San Juan Creek upon receiving authorization to discharge fill materials associated with Planning Area 3 to allow for fish passage. Alternatively, the crossing may be relocated to accomplish the same functional objectives as above and the current crossing may be removed and the disturbed area restored to provide a smooth, continuous longitudinal channel profile. The culverts shall comply with these following guidelines:

- The culvert shall be a minimum of 6 feet in width.
- The bottoms of the culverted crossings shall not be less than 25% of the culvert height.
- Retrofitted culverts shall be at grade” (ACOE Special Condition I.D.3).

Potential benefits to steelhead which would result from the NCCP/MSAA/HCP include proposed restoration/management actions in San Juan Creek identified above for the arroyo toad such as invasives species control (including giant reed removal and bullfrog control), potential increases in water supplies through coordination with the WQMP, and the above stated Cow Camp Road retrofit measure. As reviewed in the *Hydrologic and Geomorphic Needs of Listed Aquatic Species* report (PCR and Dudek 2002), streamcourses within the San Mateo Creek Watershed portion of Southern Subregion do not contain suitable steelhead breeding habitat. Potential downstream cumulative effects in both the San Juan Creek and San Mateo Creek watersheds are addressed through consistency with the SAMP tenets and Baseline Conditions Watershed Planning Principles and are reviewed in the NCCP/MSAA/HCP EIR/EIS.

For the reasons stated above, proposed actions to benefit aquatic habitats within San Juan Creek are expected to further recovery of the species within the San Juan Creek Watershed.