



**PRELIMINARY ADMINISTRATIVE DRAFT**  
***Western Riverside County MSHCP***  
***Work Product #1***

*Prepared for:*

**COUNTY OF RIVERSIDE**  
**Transportation and Land Management Agency**

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### VOLUME I - THE PLAN

#### **1.0 INTRODUCTION**

##### **1.1 Project Location and Scope**

1.1.1 Brief statement of project location with graphic

1.1.2 Brief statement of project scope - study area size, ecoregion, multiple species and habitats, multiple jurisdictions

##### **1.2 Purpose and Need**

1.2.1 Background (long-term efforts to address species issues on a regional basis; pressures of species endangerment vs. growth)

1.2.2 Planning Context (Planning Agreement, RCHCA Advisory Committee, combined with RCIP process)

1.2.3 Regulatory Framework (Federal Endangered Species Act (FESA), state NCCP Act of 1991)

1.2.4 Public Outreach (stakeholder driven, RCIP public outreach process)

1.2.5 Related Documentation (CEQA/NEPA EIR/EIS; other RCIP; describe parallel environmental review and public scoping process; IA)

**1.3 MSHCP Goal and Objectives** (provide conservation of up to 160 species within a 510,00 acre conservation area in western Riverside County comprised of approximately 357,000 acres of existing public/quasi-public lands and 153,000 acres of new conservation on private lands; assemble and manage an ecosystem-based reserve consistent with the NCCP; streamline future permitting for impacts to endangered and sensitive species)

#### **2.0 STUDY AREA DESCRIPTION AND SETTING**

##### **2.1 Existing Biological Setting**

2.1.1 Data Sources and Limitations (describe extent and sources for existing biological data base including available aerials; briefly note limitations and note ongoing data collection will occur during the long-term assembly and management process for the reserve)

2.1.2 Bioregions (describe process for assigning bioregions within the study area and describe the bioregions)

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- 2.1.3 Vegetation Communities (provide a brief description of the vegetation communities within the study area with study-area specific information to the extent feasible; describe methodology for collapsing vegetation communities for purposes of analysis; reference previous coastal sage scrub habitat quality modeling undertaken by KTU&A/PSBS; reference riparian mapping using air photo interpretation by UCR)
- 2.1.4 Species Considered for Conservation in the MSHCP (describe the development of the species list from original Table 1 and Table 2 developed by Wildlife Agencies in concert with the Advisory Committee; note analyses completed by DUDEK with respect to the species list (species accounts, literature reviews etc.) and note Wildlife Agencies ongoing comments and review; provide a table listing species still being considered at this time in the conservation analysis)

## **2.2 Land Use Considerations**

- 2.2.1 Existing Land Use (provide a generalized description of existing land uses within the MSHCP study area - total existing acreage, number of acres currently developed and generalized description of development types - acres ag, commercial, residential etc.)
- 2.2.2 Institutional/Political Framework (note that study area is currently comprised of the County, divided into Area Plans and 14 cities - list the cities - also includes a variety of major entities owning and managing public/quasi-public lands - Forest Service, MWD etc. - all of these entities will be involved in assembly of the MSHCP preserve and long-term implementation)
- 2.2.3 Planned Land Uses (note County General Plan process, note cities have their own General Plans; note other relevant planning efforts - Forest Service Management Plan/Strategic Framework, other adjacent HCP/NCCP efforts)

## **2.3 Demographic Considerations** (description of historic and forecast growth)

## **3.0 RESERVE PLANNING PROCESS/DESCRIPTION OF THE RESERVE**

### **3.1 Study-Area Wide Reserve Planning Process/Methodology**

- 3.1.1 Process/Background Overview (stakeholders are participants in the process)
- 3.1.2 Conceptual Conservation Scenario (initial data review and assembly, habitat assessment workshops, meetings with local biologists, preliminary literature

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review, habitat linkages?, Advisory Committee request for Go/No Go; initial definition of narrative conceptual conservation scenario, including acreage ranges and species to be considered for conservation; this may be considered to represent a conceptual biologically preferred alternative)

- 3.1.3 Preliminary Gap Analysis (based on conceptual conservation scenario and definition of existing public/quasi-public lands, existing physical features and land use constraints)
- 3.1.4 Criteria-Based Plan Approach (County/stakeholders direction to develop a criteria-based plan; methodology/approach for criteria-based plan organized by Area Plans; detailed biological issues, materials and methods described on Area Plan basis)

### **3.2 Description of the Reserve**

- 3.2.1 Generalized Reserve Description (study area-wide description of the reserve; acreage and habitat summaries; core areas and linkages)
- 3.2.2 Elsinore Area Plan
- 3.2.3 Southwest Area Plan
- 3.2.4 REMAP
- 3.2.5 San Jacinto Valley Area Plan
- 3.2.6 Highway 74/79 Corridor Area Plan
- 3.2.7 Sun City/Menifee Area Plan
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<b>5.2 Biological Monitoring and Adaptive Management</b> (including species specific recommendations, potential future studies and research efforts, potential habitat restoration efforts and cost estimates)	
<b>5.3 Reserve Management</b> (including addressing issues such as public access, trails and recreation; predator and invasives control and exotics removal; control of litter, illegal dumping and other trespass activities; flood control; adjacency management issues including exotics, fencing, noise, lighting, runoff/erosion etc.; management of existing and future uses within the reserve; should include cost estimates)	
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- local entities; would need to describe anticipated local actions including adoption of implementing measures such as ordinances; also would need to describe any amendments to adopted plans or regulations anticipated necessary as part of implementation strategy)
- 6.2.2 Protection of Wetland Habitats and Species (including measures outside the reserve)
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  - 6.2.4 Protection of Habitat Linkages and Corridors
  - 6.2.5 Interim Controls (includes local actions to maintain resources in their existing condition prior to conveyance to the reserve; interim controls)
- 6.3 Conservation Banks** (role in implementation)
- 6.4 Agriculture** (need to expand on this issue; safe harbors?; need to address pesticides)
- 6.5 Data Base Updates and Refinements/Need for Surveys**
- 6.5.1 Procedures for maintaining updated mapping
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- 6.7 Cooperative Institutional Structure for Implementation of the MSHCP** (includes description of federal, state and local partnership; possible description of an administrative committee structure and strategy - policy committee, stakeholder groups, land conservancies, reserve managers; possible annual meetings and reporting)
- 6.8 Reserve Assembly Accounting** (habitat and species tracking; annual review and reporting requirements)
- 6.9 Assurances for Unforeseen and Changes Circumstances**
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7.2.3	Flood Control (including general principles for flood control; disclosure of anticipated planned facilities; possible allowance for future currently unanticipated facilities; citing, design and operations and maintenance criteria for facilities)
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- e) Conservation Analysis for Individual Species and Conditions of Coverage

#### **B. MSHCP SPECIES ACCOUNTS**

#### **C. MSHCP HABITAT ACCOUNTS**

#### **D. MSHCP LITERATURE CITED AND REFERENCES**

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# SECTION 1.0

## INTRODUCTION

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### 1.1 PROJECT LOCATION AND SCOPE

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional habitat conservation plan (HCP) focusing on conservation of both species and associated habitats to address biological and ecological diversity conservation needs in Western Riverside County. This plan is one of several large multi-jurisdictional habitat planning efforts within southern California which have been instigated with the overall goal of maintaining biological diversity within a rapidly urbanizing region. Large scale HCP planning efforts have been completed in San Diego and Orange County while similar efforts are underway in the Coachella Valley and San Bernardino County. The MSHCP will allow Riverside County (County) and other local jurisdictions the ability to control local land use decisions and maintain economic development flexibility while providing a coordinated reserve system and implementation program that will facilitate the preservation of biological diversity as well as maintain the region's quality of life.

The MSHCP study area encompasses approximately 1.26 million acres (approximately 1,966.7 square miles). This plan includes all unincorporated County land west of the crest of the San Jacinto Mountains to the Orange County line as well as the jurisdictional areas of the Cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet and San Jacinto (see *Figure 1, Regional Map* and *Figure 2, MSHCP Study Area Vicinity Map*). The plan is the largest HCP ever attempted and covers multiple species and multiple habitats within multiple jurisdictions. The plan covers a diverse landscape from urban cities to undeveloped foothills and montane forests. In addition to presence of multiple habitats, the plan stretches across the Santa Ana Mountains, Riverside Lowlands, San Jacinto Foothills, San Jacinto Mountains, Agua Tibia Mountains, Desert Transition and San Bernardino Mountains bioregions.

The MSHCP will serve as a HCP pursuant to Section 10(a)(1)(B) of the federal Endangered Species Act of 1973 (ESA), as well as a Natural Communities Conservation Plan (NCCP) under the NCCP Act of 1991. This plan will be used to allow the participating jurisdictions outlined above to “take” plant and wildlife species identified within this plan through the local land use planning process. The United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG), hereafter “Wildlife Agencies,” have authority to regulate the “take” of threatened, endangered or otherwise sensitive species. The intent of this plan is for the Wildlife Agencies to grant a “take authorization” for otherwise lawful actions such as development that may incidentally take or harm individuals of a species or its habitat outside of preserve areas, in exchange for supporting assembly of a coordinated reserve system.

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Figure 1 Regional Map

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Figure 2 MSHCP Study Area Vicinity Map



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Conservation and management duties as well as implementation assurances will be provided by the County and other signatory agencies or jurisdictions outlined as “take authorization holders” through development of an Implementation Agreement (IA).

### **1.2 PURPOSE AND NEED**

#### **1.2.1 Background**

Historically, urban development in southern California has occurred in coastal areas within Los Angeles, Orange and San Diego Counties. The inland valleys and hillsides of Riverside and San Bernardino counties have therefore largely remained rural, agricultural and relatively undeveloped. Due to this historic development pattern, coupled by a recent surge in “bedroom community” type residential and associated service development within northwest and southwest Riverside County over the last 15 years, natural habitats which were once thought to abound in southern California and specifically Riverside County, have begun to decline. Increasing urbanization in southern California and throughout Riverside County has resulted in a surge of conflicts between landowning interests and the state and federal regulatory process of habitat protection associated with endangered, threatened or rare species.

As urbanization has increased within Riverside County, community development has not only involved the local land use planning process, but coordination with state and federal Wildlife Agencies in order to attain “take permits” for impacts to endangered, threatened or otherwise sensitive species and their habitats. This process has resulted in costly delays for development interests in addition to assemblage of a piecemeal reserve system. This piecemeal process has resulted in the uncoordinated preservation of small areas as mitigation land; these generally small, unconnected habitat areas do not sustain wildlife mobility, genetic flow or ecosystem health which require large, interconnected natural areas.

Riverside County’s population measured 1.5 million in 2000 (Stanley R. Hoffman & Associates, Revised January 2000). The Southern California Association of Governments (SCAG) predicts that due to the anticipated population growth of southern California, a majority of this growth will occur in the Inland Empire (San Bernardino and Riverside Counties) over the next 40 years. Riverside County’s 1.5 million people are expected to double by 2020. SCAG forecasts show the County’s population at 3.5 million by 2030 and 4.5 million by 2040 (Source). Accommodating an increase in population of this magnitude in

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the county will involve the urbanization of thousands of acres of undeveloped land; an increase in urban growth will result in an increase in endangered species protection conflicts. If conflicts over endangered species protection escalates, the development process will become increasingly lengthy and costly.

### 1.2.2 Planning Context

Regional resource planning has occurred in Riverside County since 1989. The Stephens' kangaroo rat was federally listed as endangered in 1988; this listing resulted in the preparation of the March 1996 Habitat Conservation Plan for the Stephens' kangaroo rat in Western Riverside County. During Stephens' kangaroo rat HCP planning, multiple species planning efforts occurred through the Riverside County Habitat Conservation Agency (RCHCA) as well as through the County Department of Regional Parks and Recreation. In June 1992, the RCHCA, the Riverside County Regional Open Space and Parks Department (RCROSPD) and the Western Riverside Council of Governments (WRCOG) initiated a program to develop a regional multi-species plan for Western Riverside County. This effort began partially in response to the then-anticipated listing of the California gnatcatcher under the federal Endangered Species Act (FESA). The initial multi-species planning effort was intended to bring together the diverse assemblage of local and regional plans and develop a coordinated approach to protecting biodiversity on a regional basis. This effort was initially focused on coastal sage scrub habitat and resulted in preparation of a Phase 1 document – *Information Collection and Evaluation* (RSBS/KTU+A, February 1995).

As part of the initial multiple species planning efforts, a Planning Agreement was drafted between the participating Wildlife Agencies and local entities. The Planning Agreement outlines the following goals and principles for development of the MSHCP.

1. During the development of the MSHCP and the development of both conservation measures and assurances to landowners and users, a general agreement regarding the scope, cost, sources of funding, time required for completion, and other important principles concerning the plan will be developed. This general agreement will be developed in the first six months of the planning process;
2. In comparison to the option of mitigating for species and habitat impacts on a project-by-project basis, the MSHCP must be more equitable and efficient, and less expensive and less time-consuming;

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3. The MSHCP must produce more biologically effective habitat and species conservation than the project-by-project alternative;
4. The MSHCP must be a comprehensive plan which:
  - ! Promotes the biological viability and recovery of western Riverside County ecosystems and habitats, and species dependent thereupon, toward a goal of reducing the need to list additional species in the future;
  - ! Provides a comprehensive means to coordinate, standardize, streamline, and ensure closure regarding mitigation requirements of FESA, CESA, NEPA, CEQA, the California Native Plant Protection Act (CNPPA), and other applicable laws and regulations relating to biological and natural resources within the plan area;
  - ! Assures property owners, local governments, and other affected parties that conservation measures undertaken for species and wildlife habitat adequately covered by the MSHCP will satisfy mitigation requirements of FESA, CESA, NEPA, CEQA and CNPPA concerning impacts to those covered species and habitats;
  - ! Establishes and emphasizes the use of incentives to encourage property owners to voluntarily conserve habitat and species within the plan area as an alternative to regulatory mandates;
  - ! Facilitates economic growth and prosperity so that it occurs in a manner which is consistent with the conservation of biological resources within the plan area;
  - ! Provides the basis for issuance of incidental take permits and management authorizations for listed species adequately covered by the MSHCP by the Service and the Department, respectively;
  - ! Provides a process for issuance of incidental take permits and management authorizations for additional species within the plan area which are adequately covered by the MSHCP and may be listed in the future;

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- ! Establishes consistent mitigation standards for MSHCP covered species for potential application by the Service under Section 7 of FESA.
5. Expenses for the preparation and implementation of the MSHCP must be equitably distributed not only among local, state, and federal participants, but in addition, the local share must be distributed among both new development and general contribution. Federal and state contributions shall be made as provided in the implementation agreements for the MSHCP;
  6. The MSHCP development and approval process must be expedited and completed within a reasonable period of time, taking into consideration the complexity of the issues involved. All parties agree to use their best efforts to ensure that the MSHCP and its environmental documents are completed and approved, if all legal requirements are met, within two years following the commencement of the MSHCP planning process.
  7. The recovery of species presently listed as "Threatened" or "Endangered" under CESA and/or FESA which are found within the plan area will be promoted through MSHCP conservation actions, taking into account factors relating to the range of each species;
  8. Decisions by all parties must be made in timely fashion and in compliance with agreed upon time parameters;
  9. In order to obtain public support for the conservation and economic benefits which the parties and participants seek from the MSHCP, public input and participating must be actively encouraged.

In parallel with the process originally undertaken by the RCHCA, the County and associated stakeholders began developing the framework for the Riverside County Integrated Project (RCIP). The MSHCP is one of the components of the RCIP. The remaining two components are preparation of an updated General Plan for all of Riverside County and completion of a Community and Environmental Transportation Acceptability Process (CETAP) for Western Riverside County. Establishment of the framework for the RCIP planning process was the result of a collaborative effort among a coalition of building industry, property owners, and environmental interest groups. As part of that process, the County superseded the RCHCA as the lead local agency for the MSHCP effort.

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On October 20, 1998, the Board of Supervisors reviewed the following consensus “planning principles” submitted by the coalition of interest groups, and endorsed them to be used as initial guidance in the early stages of the RCIP:

1. A comprehensive new General Plan based on an overall vision of the future should be created, rather than piecemeal Community Plan updates and project-specific General Plan amendments.
2. The new General Plan must assure sufficient measure of certainty providing for a high quality of life, including reasonable accommodation of future growth, housing, biological and multiple species resources, agriculture watersheds and scenic landscapes.
3. The General Plan must acknowledge the rights of private property owners and offer just compensation according to the Constitutional, federal and state law for private property reserved for public purposes.
4. General Plan policies and derivative regulations should include, where appropriate, positive economic and regulatory incentives.
5. General Plan policies must establish that public benefits and improvements that serve the entire community must be funded proportionately by the entire community. New development must bear its share of increased infrastructure costs.
6. The General Plan should base community development on a balanced, sustainable, and integrated set of mapped land uses, including policies promoting the continued viability of agricultural lands.
7. The location of areas mapped for development should be determined with consideration of the following factors:
  - ! Avoidance of resource and hazard areas
  - ! Opportunity for redevelopment
  - ! Availability of infill sites
  - ! Proximity of existing infrastructures
  - ! Proximity of existing municipal spheres of influence

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- ! Conformance with the policies of communities of interest
  - ! Appropriately sited new towns and villages.
8. The new General Plan must coordinate to the maximum extent possible with planning within the incorporated areas, and encourage mutually reinforcing actions by the cities and LAFCO, as appropriate. Similarly, the new General Plan should coordinate with larger regional planning efforts.
  9. The General Plan should plan for and encourage the development of diverse and distinctive communities.
  10. A goal of the new General Plan is to create a more compact urban form, resulting in a reduction in land consumption per capita compared to current modes of development.
  11. The General Plan should plan for and encourage economic development with emphasis on employment opportunities situated within or nearby existing and future communities.
  12. The new General Plan must be fully integrated with transportation planning, so that Land Use and Circulation Elements reinforce each other. Transit/rail corridors should be fully examined by CETAP and incorporated into the new General Plan to the maximum extent possible.
  13. The General Plan should plan for and encourage a wide range of housing choices suitable for residents of all economic means.
  14. The new General Plan should integrate a comprehensive Multiple Species Habitat Conservation Plan.
  15. Existing community plans should be updated as part of this process to bring them into conformance with revised General Plan policies. New community plans, if any, and consistency zoning should be delayed until the new General Plan is completed.

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As part of the initial RCIP planning efforts, a visioning process was undertaken that involved extensive community outreach. The overall vision statement resulting from that process is as follows:

“Riverside is a family of special communities in a remarkable environmental setting.”

### 1.2.3 Regulatory Context

Completion of the MSHCP will allow the Wildlife Agencies the ability to grant take authority to all local agencies participating in the plan. Issuance of take authority will allow all land use planning policies with the County’s Area Plans and Cities’ General Plans to remain at a local level, assuming adherence to the conservation program. A local-streamlined approach to endangered/sensitive species planning will allow for greater economic development certainty in the future. Implementation of the MSHCP will provide for and maintain biological diversity through a system of connected reserve areas throughout the County. In addition to preservation of species and associated habitats, the set-aside of habitat as dedicated open space would allow for maintenance of a quality of life present within Western Riverside County today. For clarification purposes, the county in association with the cities and other special districts or jurisdictions are considered to be “the applicant” for a “take authorization.” The Wildlife Agencies are the granters of a “take authorization” permit.

#### — **Federal Regulatory Framework**

Preparation of this MSHCP must be in compliance with the mandatory requirements of a Habitat Conservation Plan as outlined in Section 10(a)(1)(B) of the 1973 Federal Endangered Species Act. As outlined in the November 1996 Habitat Conservation Planning Handbook by the USFWS and National Marine Fisheries Service (NMFS), Section 10(a)(1)(B) of the ESA requires that an applicant prepare a HCP in order to take a threatened or endangered species or their habitat during otherwise legal activities. The following issuance criteria are incorporated in the ESA that must be adhered to prior to issuance of permits for take of listed species:

- 1) The taking will be incidental to otherwise lawful activities;
- 2) The applicant will minimize and mitigate impacts;
- 3) Adequate funding will be assured;
- 4) The taking will not reduce the likelihood of survival and recovery of the species in the wild;



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- 5) Assurances are provided that the HCP will be implemented;
- 6) Other measures are implemented such as may be required by the Service.

In 1999-2000, an Addendum to the HCP Handbook was adopted. The Final Addendum appeared in the June 1, 2000 Federal Register and outlines five points which must be included in HCPs. These five points include 1) stating the biological goals and objectives of the plan; 2) including an Adaptive Management Plan; 3) including a Monitoring Program; 4) including language regarding the intended duration of the take permit; and 5) outlining public participation requirements. Guidelines for each of the five points are included in the final Addendum to the HCP Handbook (Federal Register, June 1, 2000).

### **— State Regulatory Framework**

As outlined in the Natural Community Conservation Planning General Process Guidelines, Section 2800 of the California Fish and Game Code allows the State the ability to authorize the take of species listed by the state as rare, threatened or endangered for management purposes. This section also allows the take of unlisted species for management purposes (State of California, Department of Fish and Game, 1993; amended 1998). This section identifies and provides for the regional or area-wide protection and perpetuation of plants, animals and their habitats while allowing compatible land use and economic activity.

Similar to the federal HCP equivalent, a state Natural Communities Conservation Plan (NCCP) must include a conservation program in exchange for take authority. A characteristic of an NCCP is to promote wildlife diversity through conservation of habitat on an ecosystem level. CDFG has developed five general reserve design tenants for inclusion in NCCPs. These five reserve design tenants include 1) Conservation of focus species and their habitats throughout the planning area; 2) Conservation of large habitat blocks; 3) Conservation of habitat diversity; 4) Maintenance of reserve contiguity and connectedness; and 5) Protection of reserve areas from encroachment and invasion of non-native species (State of California, Department of Fish and Game, 1993; amended 1998). Although Riverside County is not enrolled as a participant in the NCCP planning process, this plan has been developed in accordance with NCCP requirements and reserve design tenants.

#### **1.2.4 Public Outreach**

As provided in the June 2000 Addendum to the HCP Handbook, public involvement is an element of the preparation of a regional HCP such as the MSHCP. In an effort to ensure that the MSHCP, the General



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Plan and the new transportation facility update are all accepted by the residents of Riverside County once the plans are complete, a community outreach program has been implemented. Initial community input was gathered in the summer and fall of 1999 through public meetings and a survey asking Riverside County residents what they think their county should look like in 20 years. Items of concern for the public were retention of the rural environment, ability to attract high-paying jobs and focusing growth around current city centers. This initial information was gathered from the public and compiled to develop a “Vision Statement” to reflect the public view and act as a guiding point for each of the plans. In addition to the community’s involvement with development of the Vision Statement, a website has been set-up for the RCIP. This website has served as an information portal for the public to learn about the status of each plan, upcoming meetings, and read/download documents produced during the planning process. The MSHCP and greater RCIP has also been the subject of many community information meetings throughout the county.

**NEED TO EXPAND DISCUSSION OF PUBLIC OUTREACH PROGRAM, STEERING COMMITTEE AND ADVISORY COMMITTEE STRUCTURE (IN FUTURE, INCORPORATE LIST OF ALL PUBLIC MEETINGS IN APPENDIX).**

### **1.2.5 Related Documentation**

Development of an NCCP/HCP is subject to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). A general plan update as well as development of new transportation corridors are also subject to CEQA and in the RCIP’s case, NEPA. An Environmental Impact Report (EIR) per CEQA and an Environmental Impact Statement (EIS) per NEPA will be prepared in order to document the anticipated consequences of implementation of the MSHCP. The County of Riverside will serve as the local lead agency while the USFWS will serve as the federal lead agency. As the General Plan update and transportation planning processes are proceeding concurrently as a component of the larger RCIP, a separate EIR/EIS will be prepared for the transportation plan while an EIR will be prepared for the general plan update. Analysis of the overall RCIP and how each component’s implementation will impact another component will be presented in the MSHCP EIR/EIS. Although the other MSHCP components of the RCIP are related through integration of the overall plan, the project description of the MSHCP EIR/EIS will be independent of the other two plan component environmental documentation efforts.

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An Implementing Agreement (IA) is also being prepared to accompany the MSHCP. The form of the IA has not yet been determined.

### 1.3 GOALS AND OBJECTIVES

The overall goal of the MSHCP is rooted in the RCIP Vision statement and supporting policy directives. The MSHCP is being developed to allow for maintenance of biological diversity and ecosystem processes while allowing future economic growth. Preservation of a quality of life characterized by well managed and planned growth intersected by an open space system is also a goal of the plan. The goal of the plan is to provide for conservation of approximately 510,000 acres supporting the habitat and life history requirements of up to 164 species. Approximately 357,000 acres are anticipated to be conserved on existing public/quasi public owned lands, with approximately 153,000 additional acres being acquired from existing private landowners. Policy directions regarding this goal was provided by the County Board of Supervisors on December 19, 2000. The overall goal of the MSHCP can be supported by the following:

**Biological Goal:** Maintain and restore biological diversity and the natural ecosystem processes which supports this diversity, to natural areas within Western Riverside County which are known to support threatened, endangered or key sensitive populations of plant and wildlife species.

**Economic Goal:** Maintain a future for economic development within the County by providing a streamlined regulatory process from which development can proceed in an orderly process. The MSHCP along with the General Plan Update will provide the County with a well-thought out blueprint describing where future development should and should not occur.

**Social Goal:** Protect the existing character of Western Riverside County through the implementation of a system of reserves which will provide for permanent open space, community edges and recreational opportunities.

On March 13, 2001, the County Board of Supervisors considered the following policy direction to focus ongoing MSHCP planning. A decision concerning this policy direction was postponed until May 8, 2001.

1. Prepare an MSHCP and draft Implementation Agreement based on Alternative 1.

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2. Includes a conservation analysis which anticipates the participation of all 14 western Riverside cities and which provides a breakdown of the conservation analysis of the 14 cities and the County.
3. Minimizes the need for new local ordinances to ensure its implementation.
4. Utilizes existing processes (including CEQA) to the maximum extent possible for its implementation.
5. Includes a range of incentives for land conservation to facilitate the development of the preserve system.
6. Identifies the number of acres of conservation that would be accomplished by state and federal agencies (primarily the U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Bureau of Land Management, and California Department of Parks and Recreation).
7. Provides for a preserve system that will offer assurances that additional state and federal Endangered Species Act permits will not be needed for future infrastructure development during the term of the permit.
8. Includes an equitable apportionment of conservation actions among local, state and federal governments and new development. The obligation of new development shall be assigned in a manner that does not unnecessarily burden new housing and economic development in the Plan area.
9. Includes a process that allows farmers to be voluntarily covered for incidental take of covered species associated with their ongoing agricultural activities.
10. Includes provisions that allow for the conversion of up to (to be determined) acres of uncultivated lands to cultivated lands in a manner consistent with achieving the conservation goals of the Plan.
11. Focuses the acquisition of lands in a manner consistent with achieving the conservation goals of the Plan.

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12. Demonstrates in a clear way, the linkage between conservation, infrastructure, economic development, housing, and job creation within the County.
13. Includes measurable goals, criteria and safety nets that are easily administered by the local jurisdictions and understood by the public.
14. Include implementing mechanisms that:
  - ! provide incentives for landowner conservation;
  - ! minimize the potential for the Wildlife Agencies to suspend or terminate the County's permit as a result of local jurisdiction action on an individual project;
  - ! minimize the role of the Wildlife Agencies in future decisions regarding individual projects; and,
  - ! do not imply that the program would result in regulatory takings of property or other 5<sup>th</sup> amendment violations of the Constitution.
15. Provides clear guidance to incorporate public use of preserves consistent with achieving the conservation goals of the Plan.
16. Ensures that local land use decisions are made by the local jurisdictions.
17. Clearly defines the monitoring and management of the participants including the associated costs.

## SECTION 2.0

### STUDY AREA DESCRIPTION AND SETTING

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The MSHCP study area includes an area of approximately 1.26 million acres (1,966.7 square miles). This study area encompasses a portion of the unincorporated County of Riverside, and the 14 cities within the western region of the County-Temecula, Murrieta, Lake Elsinore, Canyon Lake, Corona, Norco, Riverside, Moreno Valley, Perris, Hemet, San Jacinto, Banning, Beaumont and Calimesa. The Orange County and San Bernardino County lines define the western study area boundary, the San Bernardino County line the northern border and the San Diego county line the southern border. The eastern boundary of the study area can best be described as the Cabazon Pass/Crest of the San Jacinto Mountains.

A majority of western Riverside County can be characterized by rural and suburban development intermixed with agricultural operations and large blocks of undeveloped lands. Large blocks of land along the south, east and west boundaries of the study area consist of national forest holdings. The natural topography can be described as a valley lowland area intersected with rolling hills surrounded by mountainous ranges. Lowland valley areas exist below 2,000 feet in elevation while scrub/chaparral dominated hillsides range from 2,000 – 3,000 feet in elevation. Mountainous areas within the study area range from 3,000 to over 10,000 feet above mean sea level.

The presence of large blocks of undeveloped mountains and hillsides along the study area boundaries gives evidence of the geographic and ecologic connection between these adjacent counties. Several planning areas within Orange County have completed HCP/NCCPs which abut the western edge of the study area. These efforts are referred to as the *Southern Subregion NCCP and Central and Coastal Subregion NCCP*. San Diego County is developing an HCP/NCCP referred to as the *MSCP North County Subarea of the Multiple Habitat Conservation and Open Space Program* which abuts the southern boundary of the study area. The eastern edge of the study area is bordered by the planning area for the Coachella Valley Association of Governments Multiple Species HCP. This plan is currently within the planning process. San Bernardino County is also undergoing a habitat conservation planning effort which is linked to lands located along the northern and western borders of the study area.

#### 2.1 EXISTING BIOLOGICAL SETTING

This section describes the biological setting in which the goal of assembling a 510,000 acre reserve system for conservation of up to 164 plant and wildlife species will be achieved.

## 2.0 Study Area Description and Setting



### 2.1.1 Data Sources and Limitations

A comprehensive biological database, including species location, vegetation types, wetlands, and soils, was developed for the MSHCP study area. RBF & Associates assembled the database and metadata and maintains the database in digital format compatible with GIS software. The following section describes the sources and limitations for the various data layers created for the development of the MSHCP alternatives.

**MSHCP VEGETATION.** The vegetation map as incorporated into the MSHCP database is depicted in *Figure 4, Vegetation in Western County*. This map was created by Pacific Southwest Biological Services (PSBS) and mapped by KTU+A in 1995. As stated in the February 1995 Pacific Southwest Biological Services/KTU+A Western Riverside County Multi-Species Habitat Conservation Plan Phase I Information Collection and Evaluation Report, this map was created by compiling all known vegetation information within the study area. These data sources include biological survey reports, Weislander vegetation maps, satellite imagery and the Dangermond/RECON data set. Methods used to create and interpret vegetation data included aerial photograph interpretation, edge matching, digitizing and geographically registering the data. In areas of concern, ground truthing occurred. Vegetation types were classified according to Holland. It should be noted that the vegetation map is representative of conditions at the time of the study; existing conditions today may differ from those represented on the map.

**MSHCP SPECIES OCCURRENCE DATABASE.** UCR has assembled a species occurrence data base for use during the MSHCP planning process. This data base is accessible via <http://ecoregion.ucr.edu/mshcp>. This website is a clearinghouse for biological information for the MSHCP. Occurrence information has been compiled from museum records, USFWS data, published and unpublished accounts, environmental impact reports and field notes of local naturalists. As of June 2000, this database contained over 12,800 records.

It should be noted that the species occurrence data represent known records of species observations. Actual presence and distribution of individual species within the MSHCP study area are likely greater than that reflected in the species occurrence database.

**AREAS POTENTIALLY AFFECTED BY WETLAND EXISTING REGULATIONS.** Areas within the MSHCP study area that may be potentially affected by existing state and federal wetlands regulations are depicted as USGS blueline streams, water bodies and appropriate habitat types taken from the

## 2.0 *Study Area Description and Setting*

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MSHCP vegetation map. Other potential areas, including streams, rivers, canals or ditches and ponds, lakes or sea, were mapped by Earth Consultants International during their geologic hazards research/mapping effort in conjunction with the RCIP general plan update (2000). It should be noted that areas that may be potentially affected by wetlands regulations were mapped on the regional-scale database for the MSHCP/RCIP. Actual delineation of areas subject to existing regulations would need to be determined on a project by project basis.

A second riparian coverage was created by UCR students in 2000 through aerial photo interpretation of digital ortho quarter quadrangles (DOQQs) of the study area. Wetland areas were “heads up” digitized and categorized into four different wetland habitat types based on dominant vegetation cover.

**SOILS.** The U.S. Department of Agriculture, Soils Conservation Service (1994) and State Soil Geographic (STATSGO) database for California provided the generalized soils map which depicted 25 general soils types for the study area.

In addition, data related to physical features were gathered for the study area from sources including Earth Consultants International (ECI), USGS, the State of California and the County of Riverside. ECI compiled data and prepared maps depicting flood and inundation susceptibility, liquefaction susceptibility, surface fault susceptibility rupture, subsidence zones and landslide and slope instability susceptibility. A map depicting 25 percent and greater slopes was generated from USGS topography (1970) using 30 meter digital elevation modeling. The State of California and the County of Riverside provided information related to surface fault susceptibility rupture. The *Alternatives Development Document dated October 4, 2000* contains complete description of the sources used in the data collection process.

Other data sources include color aerial photography provided by Eagle Aerial. The aerials were flown in March 2000 and were used during field checks and land use analyses. Where current color aerial photographs were not available, DOQQs from the 1994 to 1996 time frame were used as an aerial photo source during field checks and land use analyses. DOQQs were provided by the USFWS and created by the USGS.

A literature database was compiled by UCR to guide literature reviews and research on MSHCP plant and wildlife species, habitat accounts, reserve design and selection, and other various topics. Review of the

## **2.0 Study Area Description and Setting**

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articles and documents included in the UCR literature database formed the basis for the habitat and species accounts included in the Alternatives Document. Other work prepared by UCR include two white papers related to reserve design (Scott, no date) were also reviewed during the preparation of the Alternatives Document.

The data collection for biological information will be an ongoing process throughout the MSHCP development and during the long-term assembly and management of the reserve.

### **2.1.2 Bioregions**

By overlaying the existing soils map, hill-shaded digital elevation map with the topographic map of the study area, a bioregions map, representing the regional diversity in species and habitats known to occur in western Riverside County, was created. The boundary between two bioregions indicate areas where species turnover and habitat zones transitions are pronounced in relation to changes in landform and other environmental features. Seven distinct bioregions have been identified for the MSHCP study area: Santa Ana Mountains, Riverside Lowlands, San Jacinto Foothills, Agua Tibia Mountains, Desert Transition, San Bernardino Mountains, and San Jacinto Mountains (*Figure 3*). The characteristic features of each bioregion are described below.

**SANTA ANA MOUNTAINS BIOREGION.** The Santa Ana Mountains bioregion extends south of SR 91 to the Riverside/San Diego County line and occurs west of Interstate 15 (*Figure 3*). It encompasses the Cleveland National Forest and areas north of the Santa Margarita River. This bioregion generally occurs above 2,000 feet in elevation and supports Diegan coastal sage scrub, mesic chaparral, and sparse coniferous vegetation. The Santa Ana Mountains bioregion is heavily influenced by coastal climate factors such as fog, rainfall and wind. This bioregion is relatively undisturbed and not urbanized.

**RIVERSIDE LOWLANDS BIOREGION.** The Riverside Lowlands bioregion characterizes areas east of the Santa Ana Mountains bioregion, south of the Riverside/San Bernardino County line, west of Diamond Valley Lake, Lake Skinner and Gilman Hot Springs and north of the Riverside/San Diego County line (*Figure 3*). This bioregion encompasses Estelle Mountain, Lake Mathews, Reche Canyon/Badlands, the San Jacinto Valley, Gavilan Hills, Lakeview Mountains and French Valley. The Riverside Lowlands bioregion generally occur below 2,000 feet in elevation and is

## ***2.0 Study Area Description and Setting***

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Figure 3 Preliminary Bio-regions and Generalized Vegetation on Hillshaded Relief

## 2.0 Study Area Description and Setting



characterized by Riversidian sage scrub and annual grasslands. The relatively arid climate is in part the result of the rain shadow cast by the Santa Ana Mountains. A high level of disturbance and urbanization are noted within this bioregion.

**SAN JACINTO FOOTHILLS BIOREGION.** The San Jacinto Foothills bioregion generally includes areas north of SR-79, east of the Riverside Lowlands bioregion and west of the San Jacinto Mountains bioregion (*Figure 3*). This bioregion encompasses Vail Lake, Sage, and Cactus Valley. The San Jacinto Foothills bioregion occurs between 2,000 and 3,000 feet in elevation and is dominated by Riversidean sage scrub and xeric chaparral associations. This bioregion receives less frequent frost and snow than the mountainous areas.

**AGUA TIBIA MOUNTAINS BIOREGION.** The Agua Tibia Mountains bioregion extends south from SR 79 to the Riverside/San Diego County line (*Figure 3*). It encompasses the Agua-Tibia Mountains and generally occurs above 2,000 feet. This bioregion supports Diegan coastal sage scrub, mesic chaparral and sparse coniferous vegetation. The Agua-Tibia Mountains bioregion has not been heavily disturbed or urbanized.

**DESERT TRANSITION BIOREGION.** The Desert Transition bioregion is located in the southeastern portion of the study area and supports red shank chaparral, Big Basin sage scrub and semi-desert succulent scrub habitat (*Figure 3*). This bioregion encompasses the Cahuilla Indian Reservation and Lake Riverside area. The Desert Transition bioregion generally occurs above 3,000 feet in elevation and is arid and desert-influenced.

**SAN BERNARDINO BIOREGION.** The San Bernardino bioregion is located in the northwestern portion of the study area and supports coniferous forests, montane chaparral and broad-leaved forest (*Figure 3*). This bioregion encompasses areas north of I-10 within the Pass and generally occurs above 3,000 feet in elevation. The San Bernardino bioregion is floristically distinct from the San Jacinto Mountains bioregion.

**SAN JACINTO MOUNTAINS BIOREGION.** The San Jacinto Mountains bioregion occurs in the eastern portion of the study area and encompasses the San Bernardino National Forest, Pine Cove, Idyllwild and upper San Jacinto River and Bautista Canyon Creek (*Figure 3*). This bioregion supports coniferous forests, montane chaparral and broad-leaved forest and generally occurs above 3,000 feet in elevation. The San Jacinto Mountains bioregion is floristically distinct from the San Bernardino bioregion.

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### 2.1.3 Vegetation Communities

As previously mentioned, the MSHCP vegetation communities map was created in 1995 by PSBS and mapped by KTU+A. For purposes of analysis, the 1995 vegetation communities were subsequently generalized to ensure consistency in mapping scale across the study area. The number of vegetation communities was reduced to 17. In addition to the vegetation communities map, PSBS and KTU+A created a coastal sage scrub habitat quality map for the purposes of regional reserve planning for the California gnatcatcher. Other vegetation mapping efforts include a riparian map coverage created by UCR in 2000.

The MSHCP study area encompasses approximately 1.26 million acres with approximately 871,000 acres (69%) supporting natural vegetation (*Figure 4*). A total of fifteen habitat types occur within the study area: chaparral (434,938 acres), cismontane alkali marsh (1,266 acres), coastal (Diegan and Riversidean) sage scrub (156,446 acres), desert scrubs (14,564 acres), native and non-native grassland (154,139 acres), meadows (537 acres), meadows and marshes (478 acres), montane coniferous forest (29,880 acres), peninsular juniper woodland and scrub (1,081 acres), playas and vernal pools (7,914 acres), riparian scrub/woodland/forests (15,028 acres), Riversidean alluvial fan sage scrub (7,943 acres), unknown (1,348 acres) open water (12,206 acres) and woodlands and forests (33,222 acres). In addition, approximately 169,475 acres are in agriculture and the remaining 218,262 acres are considered disturbed or developed land. *Appendix A* of the Alternatives Document (DUDEK 2000) contains detailed habitat accounts describing the biogeography, range and distribution, vegetation characteristics, species composition, physical environment, ecosystem processes, community relationships and threats for each habitat type within the study area. A brief description of each habitat type is provided below.

**AGRICULTURE.** Agricultural lands include areas occupied by dairies and livestock feed yards or areas that have been tilled for use as croplands or groves/orchards. Approximately 13.5% of the study area (169,475 acres) consists of agricultural lands. The largest areas of dairy and livestock feed yards are located north of San Jacinto and north of Juniper Flats in the communities of Lakeview, Mystic Lake, Nuevo, southeast Perris, Eastvale, and Lake Norconian off of Bellegrave Avenue. Norco, and in Glen Avon. Field croplands are mapped extensively throughout the study area. The largest areas are: around SR-371 in the vicinity of Anza; in an east-west strip from Murrieta Hot Springs; through French Valley; Antelope Valley; Paloma Valley; Menifee Valley; Winchester; Domenigoni Valley; to West Hemet; and the Diamond Valley area; and in Eastvale. The largest area of grove/orchard is in Santa Rosa East between Gavilan Mountain and Mesa de Colorado.

## ***2.0 Study Area Description and Setting***

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Figure 4 Vegetation Map

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**CHAPARRAL.** Chaparral vegetation is the most abundant and widespread vegetation type in western Riverside County, covering approximately 35% (435,000 acres) of the study area. Large contiguous stands of chaparral occur along the Santa Ana Mountains in the western portion of the study area, and along the San Bernardino, San Jacinto, and Agua Tibia Mountains in the eastern and southern portions. Although chaparral is less common than other vegetation types in the central lowlands of Riverside County, three large chaparral-dominated areas occur on steeper lands near the Gavilan Hills-Gavilan Plateau-Meadowbrook Region, the Lakeview Mountains-Double Butte area, and the Sedco Hills-Hogbacks area.

Chaparral is a shrub-dominated habitat that is composed largely of evergreen species that range from 1 to 4 meters in height (Keeley 2000). The most common and widespread species within chaparral is chamise (*Adenostoma fasciculatum*) (Hanes 1971). Other common shrub species include manzanita (*Arctostaphylos* spp.), wild-lilac (*Ceanothus* spp.), oak (*Quercus* spp.), redberry (*Rhamnus* spp.), laurel sumac (*Malosma laurina*), mountain-mahogany (*Cercocarpus betuloides*), toyon (*Heteromeles arbutifolia*), and mission manzanita (*Xylococcus bicolor*) (Holland 1986). Soft-leaved subshrubs are less common in chaparral than in coastal sage scrub (see below) but occur within canopy gaps of mature stands (Holland 1986; Keeley and Keeley 1988; Sawyer and Keeler-Wolf 1995). Common species include California buckwheat (*Eriogonum fasciculatum*), sages (*Salvia* spp.), California sagebrush (*Artemisia californica*), and monkeyflower (*Mimulus* spp.). In addition, herbaceous species, including deerweed (*Lotus scoparius*), nightshade (*Solanum* spp.), Spanish bayonet (*Yucca whipplei*), rock-rose (*Helianthemum scoparium*), onion (*Allium* spp.), soap plant (*Chlorogalum* spp.), bunchgrasses (*Nassella* spp., and *Melica* spp.), wild cucumber (*Marah* spp.), bedstraw (*Galium* spp.), and lupine (*Lupinus* spp.) are also present (Holland 1986; Keeley and Keeley 1988; Sawyer and Keeler-Wolf 1995).

**CISMONTANE ALKALI MARSH.** Cismontane alkali marsh habitat is scattered sparsely over the western Riverside region, occupying approximately 0.1% (1,266 acres) of the study area. Cismontane alkali marsh was mapped in two general localities along Cahuilla Creek south of Anza and upstream from Lake Mathews along the Colorado River aqueduct.

Typical cismontane alkali marsh species include yerba mansa (*Anemopsis californica*), saltgrass (*Distichlis spicata*), alkali-heath (*Frankenia salina*), cattails (*Typha* spp.), common pickleweed (*Salicornia virginica*), rushes (*Juncus* spp.), marsh flea-bane (*Pluchea odorata*) and sedges (*Carex* spp.) (Holland 1986).

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**COASTAL SAGE SCRUB.** Coastal sage scrub is distributed throughout western Riverside County, occupying approximately 12% (159,000 acres) of the study area (PSBS 1995). It occurs from the eastern slopes of the Santa Ana Mountains to elevations in the San Jacinto Mountains less than 5,000 feet. Sage scrub often is patchily distributed throughout its range (O’Leary 1992); over a scale of several miles, it can be found in diverse habitat mosaics with other plant communities, particularly grassland and chaparral, and oak/riparian woodland in wetter areas. In western Riverside County coastal sage scrub is found both in large contiguous blocks scattered throughout the county as well as intergraded with chaparral and grasslands.

Coastal sage scrub is dominated by a characteristic suite of low-statured, aromatic, drought-deciduous shrubs and subshrub species. Composition varies substantially depending on physical circumstances and the successional status of the habitat; however, characteristic species include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), California encelia (*Encelia californica*), and several species of sage (e.g., *Salvia mellifera*, *S. apiana*) (Holland 1986; Sawyer-Wolf 1995). Other common species include brittlebush (*E. farinosa*), lemonadeberry (*Rhus integrifolia*), sugarbush (*Rhus ovata*), yellow bush penstemon (*Keckiella antirrhinoides*), Mexican elderberry (*Sambucus mexicana*), sweetbush (*Bebbia juncea*), boxthorn (*Lycium* spp.), shore cactus (*Opuntia littoralis*), coastal cholla (*O. proliferata*), tall prickly-pear (*Opuntia oricola*), and species of *Dudleya*.

**DESERT SCRUB.** Desert scrub, including big sagebrush scrub and Sonoran desert scrub, occurs mostly in the southeastern portion of the western Riverside study area. Desert scrub occupies approximately 1% (14,564 acres) of the study area. Large acreages of the vegetation occur north and south of SR-371 within Tule Valley, Culp Valley, Wilson Creek, Cahuilla, the Ramona Indian Reservation, the Community of Anza and east of the City of Aguanga and Lake Riverside.

Desert scrub is typically comprised of shrubs such as big sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), rubber rabbit-bush (*Chrysothamum nauseosum*), yellow rabbitbrush (*C. viscidiflorus*), black bush (*Coleogyne ramosissima*), Mormon-tea (*Ephedra viridis*), horsebrush (*Tetradymia canescens*), plateau gooseberry (*Ribes velutinum*) and hopsage (*Grayia spinosa*), burro weed (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), crucifixion-thorn (*Canotia holacantha*), ocotillo (*Fouquieria splendens*) and creosote scrub (*Larrea tridentata*) (Holland 1986; California Gap Analysis Report 1998). The herbaceous cover

## 2.0 Study Area Description and Setting

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generally is dominated by a mixture of perennial bunch grasses such as ricegrass (*Achnatherum hymenoides*), needle-and-thread (*Stipa comata*), letterman's needlegrass (*S. lettermanii*), needlegrass (*S. occidentalis*), needlegrass (*S. thurberiana*), desert needlegrass (*S. speciosa*), one-sided bluegrass (*Poa secunda*), bluebunch wheatgrass (*Agropyron spicata*), and Great Basin wild rye (*Leymus cinereus*). Annual grasses and forbs may occur also within big sagebrush scrub. Cheatgrass (*Bromus tectorum*), an introduced annual grass, has become the dominant herbaceous species in many areas.

**GRASSLANDS.** Grasslands occur throughout most of western Riverside County and cover approximately 11.8% (154,421 acres) of the study area. Two general types of grasslands occur in southern California: (1) non-native dominated, primarily annual grassland ("non-native grassland"); and (2) native dominated, perennial grassland ("valley and foothill grassland") (Heady 1977; Keeley 1989; Sims and Risser 2000). The only valley and foothill grasslands mapped within the study area are distributed over approximately 0.2% (2,700 acres) of the study area on the Santa Rosa Plateau. Non-native grasslands occur throughout the majority of the study area (11.6%), usually within close proximity to urbanized or agricultural land uses. Large patches of non-native grasslands occur in the Riverside east area near March Air Reserve base, Lake Mathews, Lake Perris, Lake Elsinore, near Banning, Cahuilla, and in the Terwilliger Valley south of Anza.

Valley and foothill grasslands typically contain the perennial bunch grasses *Nassella pulchra* and *Nassella lepida*. Lesser amounts of other native grasses such as *Melica* spp., *Leymus* spp., *Muhlenbergia* spp., and beard grass (*Bothriochloa barbinodis*) may also be present. In addition, non-native grasses or forbs may be present to a varying degree. Native herbaceous plants commonly found within Valley and foothill grasslands include yellow fiddleneck (*Amsinckia menziesii*), common calyptidium (*Calyptidium monardum*), suncup (*Camissonia* spp.), *Chinese houses* (*Collinsia heterophylla*), *California poppy* (*Eschscholzia californica*), *tarweed* (*Hemizonia* spp.), *coast goldfields* (*Lasthenia californica*), *common tidy-tips* (*Layia platyglossa*), *Lupinus* spp., *Plagiobothrys* spp., *blue dicks* (*Dichelostemma capitata*), *Muilla* spp., *blue-eyed grass* (*Sisyrinchium bellum*), and *Dudleya* spp. (Holland 1986; Keeley 1989; Sims and Risser 2000).

Non-native grasslands are likely to be dominated by several species of grasses that have evolved to persist in concert with human agricultural practices: slender oat (*Avena barbata*), wild oat (*A. fatua*), fox tail chess (*Bromus madritensis*), soft chess (*B. hordeaceus*), rippgut grass (*B.*

## 2.0 Study Area Description and Setting

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*diandrus*), barley (*Hordeum* spp.), rye grass (*Lolium multiflorum*), English ryegrass (*L. perrene*), rat-tail fescue (*Vulpia myuros*), and Mediterranean schismus (*Schismus barbatus*) (Jackson 1985 in Sims and Risser 2000).

**MEADOWS** - Meadows, including wet montane meadow, occupy 0.04% (537 acres) of the study area. This habitat type was mapped in the San Jacinto Mountains in the San Bernardino National Forest, primarily within the vicinity of Hemet Lake. Meadows are dominated by sedges (*Carex* spp.), spike rushes (*Eleocharis* spp.), and bulrushes (*Scirpus* spp.), but also contain perennial and biennial herbs (e.g., *Oenothera* spp., *Polygonum* spp., *Lupinus* spp., *Potentilla* spp., and *Sidalcea* spp.) and grasses (e.g., *Agrostis* spp., *Deschampsia* spp. and *Muhlenbergia* spp.) (Barbour and Major 1977; Sawyer and Keeler-Wolf 1995; Stephenson and Calcarone 1999). Wet montane meadows that dry out by mid-summer have a higher percentage of perennial grasses than meadows that remain moist during the entire growing season (Holland and Keil 1995).

**MEADOWS AND MARSHES.** Approximately 478 acres of meadow and marsh habitat, including coastal and Valley freshwater marsh and undifferentiated marsh, exist within the study area, comprising 0.03% of the study area. Occurrences of this habitat type has been mapped in the Prado Basin in the Santa Ana River Valley, on the Santa Ana River near Pedley, north of Lake Elsinore in Walker Canyon, near San Jacinto, along the shores of Lake Skinner and Vail Lake, and adjacent to the cismontane alkali marsh on Cahuilla Creek. Undifferentiated marsh was mapped in three locations including the shore of Lake Mathews, near Mystic Lake, and upstream from Vail Lake along Temecula Creek in the Aguanga Valley.

Meadow and marsh habitat occur in both flowing and still water. This habitat type includes cattails (*Typha* spp.), bulrush (*Scirpus* spp.), sedges (*Carex* spp.), spike rushes (*Eleocharis* spp.), flatsedges (*Cyperus* spp.), smartweed (*Polygonum* spp.), watercress (*Rorippa* spp.) and yerba mansa (*Anemopsis californica*) (Barbour and Major 1977; Holland and Keil 1995; Sawyer and Keeler-Wolf 1995). Rooted aquatic plant species with floating stems and leaves also may be present, such as pennywort (*Hydrocotyle* spp.), water smartweed (*Polygonum amphibium*), pondweeds (*Potamogeton* spp.) and water-parsley (*Oenanthe sarmentosa*) (Holland and Keil 1995).

**PENINSULAR JUNIPER WOODLAND AND SCRUB.** Peninsular juniper woodland and scrub occurs in several distinct low-lying areas of western Riverside County. Several populations were mapped

## 2.0 Study Area Description and Setting

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in the study area totaling 0.9% of the study area (1,081 acres). A small population occurs in the vicinity of Table Mountain and Tule Spring. A single occurrence is mapped west of Pine Cove, south of Indian Mountain. Other single occurrences are northeast of Squaw Mountain, west of the peak of the Lakeview Mountains, and west of Monument Peak. Scattered populations are mapped in the Gavilan Hills, Gavilan Plateau, north of Estelle Mountain and on the south and east sides of Lake Mathews.

Four-needle pinyon (*Pinus quadrifolia*), single-leaf pinyon pine (*Pinus monophylla*) and California juniper (*Juniperus californica*) are the canopy species which most commonly occur in southern California, forming a scattered canopy from three to 15 m tall (Sawyer and Keller-Wolf 1995; Holland and Keil 1995). Southern California occurrences of juniper woodlands often grade into Joshua tree woodlands or desert scrub communities (Holland and Keil 1995). Shrub cover within this habitat type is generally intermittent or open and the ground layer is sparse to grassy (Sawyer and Keller-Wolf 1995). Common species on the lower elevational slopes include Mojave yucca (*Yucca schidigera*) (*Y. baccata*) (Holland and Keil 1995). Higher elevation species include chamise (*Adenostoma fasciculatum*) and desert ceanothus (*Ceanothus greggi* var. *vestitus*) (Holland and Keil 1995). Some other dominant vegetation species include phlox (*Leptodactylon pungens*), desert needlegrass (*Achnatherum speciosum*), matchweed (*Gutierrezia sarothrae*), beargrass (*Nolina parryi*), and shrub live oak (*Quercus turbinella*) (Vasek and Thorne 1977).

**PLAYAS AND VERNAL POOLS.** These habitat types comprise 0.6% (approximately 8,000 acres) of the study area. Playas and vernal pools are found in western Riverside County in the San Jacinto Valley/Perris Basin and on the Santa Rosa Plateau.

Vernal pools are ephemeral wetlands that form in shallow depressions underlain by a substrate near the surface that restricts the downward percolation of water. Depressions in the landscape fill with rainwater and runoff from adjacent areas during the winter and may remain inundated until spring or early summer, sometimes drying more than once during the wet season. Smaller pools can fill, and dry, and larger pools can hold water longer and may in the deeper portions, support species that are more representative of freshwater marshes.

Vernal pools are well-known for their high level of endemism (Stone 1989) and abundance of rare, threatened, or endangered species (Sawyer and Keeler-Wolf 1995). Many vernal pools are characterized by concentric rings of plants that flower sequentially as the pools dry. Vernal pools

## 2.0 Study Area Description and Setting

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are dominated by native annual plants, with low to moderate levels of perennial herbaceous cover. Common vernal pool plant species in western Riverside County include woolly marbles (*Psilocarphus brevissimus*), toad rush (*Juncus bufonius*), and spike rush (*Eleocharis* spp.). In addition, the following sensitive or listed plant species are found in one or more of these pools: California Orcutt grass (*Orcuttia californica*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), little mouse-tail (*Myosurus minimus* ssp. *apus*), spreading navarretia (*Navarretia fossalis*), low navarretia (*N. prostrata*), Orcutt's brodiaea (*Brodiaea orcuttii*), thread-leaved brodiaea (*Brodiaea filifolia*), Parish brittlescale (*Atriplex parishii*), Parish meadowfoam (*Limnanthes gracilis* ssp. *parishii*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), and Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*) (Sawyer and Keeler-Wolf 1995). San Jacinto Valley crowscale (*Atriplex coronata* var. *notatior*), and smooth tarplant (*Hemizonia pungens* ssp. *laevis*). The Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*) occurs only here as well as the southernmost record for the vernal pool fairy shrimp (*Branchinecta lynchi*) (Erikson and Belk 1999).

**RIPARIAN FOREST/WOODLAND/SCRUB.** Riparian vegetation including forest, woodland, and scrub subtypes is distributed in waterways and drainages throughout much of western Riverside County, covering approximately 1.1 percent (14,545 acres) of the study area. Southern cottonwood/willow forest makes up the largest proportion of the riparian vegetation in the study area, comprising nearly one-half (6,610 acres) of the acreage. Most of the southern cottonwood/willow forest habitat occurs along the Santa Ana River drainage from Lake Evans to beyond the Prado basin, along the San Gorgonio River north of Banning and along Temecula Creek east of Vail Lake. Additional types of riparian vegetation can be found along the San Gorgonio River north of Banning (montane riparian forest), Temescal Canyon Wash and its tributaries (riparian scrub and mulefat scrub), the stream channels within the San Mateo Canyon watershed (riparian forest, southern sycamore/alder riparian woodland and riparian scrub) and Vail Lake (tamarisk scrub).

Riparian communities typically consist of one or more deciduous tree species with an assorted understory of shrubs and herbs (Holland and Keil 1995). Depending on community type, a riparian community may be dominated by any of several trees/shrubs: box elder (*Acer negundo*), big-leaf maple (*A. macrophyllum*), coast live oak (*Q. agrifolia*), white alder (*Alnus rhombifolia*), sycamore (*Platanus racemosa*), Fremont's cottonwood (*Populus fremontii*), California walnut (*Juglans californica*), Mexican elderberry (*Sambucus mexicana*), wild grape (*Vitis girdiana*)

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giant reed (*Arundo donax*), mulefat (*Baccharis salicifolia*), tamarisk (*Tamarix* spp.), or any of several species of willow (*Salix* spp.). In addition, various understory herbs may be present: salt grass (*Distichlis spicata*), wild cucumber (*Marah macrocarpus*), mugwort (*Artemisia douglasiana*), stinging nettle (*Urtica dioica*), and poison oak (*Toxicodendron diversilobum*).

**RIVERSIDEAN ALLUVIAL FAN SAGE SCRUB.** Riversidean alluvial fan sage scrub occurs throughout many drainages in the western Riverside study area and comprises approximately 0.6% (7,943 acres) of the study area. Large acreages of the vegetation occur on the Santa Ana River near Lake Evans in the City of Riverside, along the San Geronio River and tributaries near Banning, on the San Jacinto River from the National Forest to the Soboba Indian Reservation, near Temecula along Temecula Creek, the Aguanga area, Bautista Creek south of Hemet, and near Murrieta and Glen Ivy in the Temescal Valley.

Riversidean alluvial fan sage scrub is a Mediterranean shrubland type that occurs in washes and on gently sloping alluvial fans. Alluvial scrub is made up predominantly of drought-deciduous soft-leaved shrubs, but with significant cover of larger perennial species typically found in chaparral (Kirkpatrick and Hutchinson 1977). Scalebroom generally is regarded as an indicator of Riversidean alluvial scrub (Smith 1980; Hanes *et al.* 1989). In addition to scalebroom, alluvial scrub typically is composed of white sage (*Salvia apiana*), redberry (*Rhamnus crocea*), flat-top buckwheat (*Eriogonum fasciculatum*), our lord's candle (*Yucca whipplei*), California croton (*Croton californicus*), cholla (*Opuntia* spp.), tarragon (*Artemisia dracunculus*), yerba santa (*Eriodictyon* spp.), mule fat (*Baccharis salicifolia*), and mountain-mahogany (*Cercocarpus betuloides*) (Hanes *et al.* 1989; Smith 1980). Annual species composition has not been studied but is probably similar to that found in understories of neighboring shrubland vegetation. Two sensitive annual species are endemic to alluvial scrub vegetation in the study area: slender-horned spineflower (*Dodecahema leptocerus*), and Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*).

**UNKNOWN.** Approximately 1,328 acres within the study area were not classified into a habitat type during the 1995 PSBS and KTU+A mapping effort.

**WATER.** Approximately 0.9% (12,206 acres) of the study area consists of open water habitat. Open water was mapped at Vail Lake, Lake Skinner, Eastside Reservoir, Lake Perris, Mystic Lake, Canyon Lake, Lake Elsinore, Lee Lake, Lake Mathews, Hemet Lake, portions of the San Jacinto

## 2.0 Study Area Description and Setting

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River, and portions of the Santa Ana River as well as various small ponds, private reservoirs and portions of stream channels.

Open water habitat typically is unvegetated due to a lack of light penetration. However, open water may contain suspended organisms such as filamentous green algae, phytoplankton (including diatoms) and desmids (Grenfell 1988). Floating plants such as duckweed (*Lemna* spp.), water buttercup (*Ranunculus aquatilis*) and mosquito fern (*Azolla filiculoides*) also may be present (Holland and Keil 1995). Open water habitat includes inland depressions, ponds, lakes, reservoirs, stream channels containing standing water and often occur in conjunction with riparian habitats and upland habitats. Depth may vary from hundreds of meters to a few centimeters.

**WOODLANDS AND FORESTS.** The study area supports approximately 33,222 acres (2.6% of study area) of woodlands and forests composed of black oak forest, broad-leaved upland forest and oak woodlands habitat types. Woodland and forest habitat types are dominated by Englemann oak (*Quercus englemannii*), coast live oak (*Q. agrifolia*), canyon live oak (*Q. chrysolepis*), interior live oak (*Q. wislizenii*) and black oak (*Q. kelloggii*) in the canopy which may be continuous to intermittent or savannah-like.

Many understory plants in oak woodlands are shade tolerant and include wild blackberry (*Rubus ursinus*), snowberry (*Symphoricarpos mollis*), California walnut (*Juglans californica*), California-lilac (*Ceanothus* spp.), *Rhus* spp., currant (*Ribes* spp.), toyon (*Heteromeles arbutifolia*), California bay (*Umbellularia californica*), Engelmann oak, manzanita (*Arctostaphylos* spp.), laurel sumac (*Malosma laurina*), poison-oak (*Toxicodendron diversilobum*) and herbaceous plants including bracken fern (*Pteridium aquilinum*), polypody fern (*Polypodium californicum*), fiesta flower (*Pholistorma auritum*) and miner's lettuce (*Claytonia perfoliata*) (Holland and Keil 1995, Sawyer and Keeler-Wolf 1995, Thorne 1976, Brown 1982). Munz and Keck (1949) identify similar species for this habitat and include that a variety of grasses and soft shrubs also are commonly found. This habitat type can occur on all aspects, on stream sides, canyon bottoms and flat to very steep topography. Woodlands and forests are known to occur throughout the study area.

**DEVELOPED OR DISTURBED LAND.** Developed or disturbed lands consist of areas that have been disced, cleared or otherwise altered. Developed lands may include roadways, existing buildings and structures. The largest areas of developed land are in the cities of Temecula,

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Murrieta/Murrieta Hot Springs, Lake Elsinore (Canyon Lake, Meadowbrook, Alberhill, El Cariso and Lakeland Village), Hemet, East Hemet and Valle Vista, in Moreno Valley, and along the SR-91 corridor from Riverside through Corona and Norco. More medium-sized tracts of developed land are located in the communities of Canyon Lake, Quail Valley, Sun City, Homeland, in Perris along I-215, Mead Valley, Gavilan Hills, Woodcrest, Beaumont, Banning, Cherry Valley, and Calimesa. Small and scattered occurrences include in the southeast portion of the planning area along SR-371 in Terwilliger Valley, Sage, Aguanga and Anza, east of Temecula, and in the Sedco Hills. Disturbed lands may include ornamental plantings for landscaping, escaped exotics, or ruderal vegetation dominated by non-native, weedy species such as mustard (*Brassica* sp.), fennel (*Foeniculum vulgare*), tocalote (*Centaurea melitensis*) and Russian thistle (*Salsola tragus*).

### 2.1.4 Species Considered for Conservation in the MSHCP

Table 1 lists the 164 MSHCP species, (105 animals and 59 plants), that are being evaluated to receive coverage under the MSHCP. This species list is in part the result of previous analyses conducted by USFWS in their preparation of Tables 1 and 2 included in an *August 9, 1999 Draft Proposal* for the MSHCP (Dudek & Associates, 1999). Table 1 of the August 9, 1999 Draft Proposal formed the basis for the initial species list to be considered for conservation in the MSHCP and Table 2 represented the list of species for which additional information was still needed to fully consider the species for conservation. Upon the completion of additional analyses and literature reviews by DUDEK with respect to species accounts and with direction provided by the MSHCP Advisory Committee, a species list of 164 species was determined. This species list of 164 plant and wildlife species is still subject to change due to ongoing comment and review from Wildlife Agencies.

The 164 species represent a broad range of habitats and geographical areas in the study area. They include listed threatened and endangered species that have very specific habitat requirements and conservation and management needs, other regionally or locally sensitive or rare species, and upper trophic or general list species that have broad habitat requirements.

The *October 4, 2000 Alternatives Development Document* prepared as part of the MSHCP planning process provides biological information on each of the species, including their habitat and habitat associations, biogeography, range and known populations within western Riverside County, key populations in the planning area, biology, threats and special biological considerations (Dudek & Associates, 2000). Table 1 below lists the 164 species and their current status.

## 2.0 Study Area Description and Setting



**TABLE 1  
SUMMARY OF SPECIES CONSIDERED FOR CONSERVATION**

Species Scientific Name	Species Common Name	Listing Status: State <sup>1</sup> /Federal <sup>2</sup>
<b>BIRDS</b>		
<i>Accipiter cooperii</i>	Cooper's hawk	SCC/-
<i>Accipiter gentilis</i>	northern goshawk	SCC/
<i>Accipiter striatus</i>	sharp-shinned hawk	SCC/-
<i>Agelaius tricolor</i>	tricolored blackbird (colony)	SCC/-
<i>Aimophila ruficeps canescens</i>	rufous-crowned sparrow	SCC/-
<i>Ammodramus savannarum perpallidus</i>	grasshopper sparrow	-/-
<i>Amhispiza belli belli</i>	Bell's sage sparrow	SCC/
<i>Aquila chrysaetos</i>	golden eagle	SCC/
<i>Asio flammeus</i>	short-eared owl (breeding)	SCC/
<i>Asio otus</i>	long-eared owl (breeding)	SSC/-
<i>Botaurus lentiginosus</i>	American bittern	-/-
<i>Buteo regalis</i>	ferruginous hawk	SCC/-
<i>Buteo swainsoni</i>	Swainson's hawk	ST/-
<i>Campylorhynchus brunneicapillus couesi</i>	coastal cactus wren	SSC/ -
<i>Cathartes aura</i>	turkey vulture (breeding)	-/-
<i>Catharus ustulatus</i>	Swainson's thrush (breeding)	-/-
<i>Chaetura vauxi</i>	Vaux's swift	SCC/-
<i>Charadrius alexandrinus nivosus</i>	western snowy plover (nesting)	SSC/-
<i>Charadrius montanus</i>	mountain plover	SSC/PT
<i>Circus cyaneus</i>	northern harrier (breeding)	SSC/-
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	SE/-
<i>Cypseloides niger</i>	black swift (breeding)	SSC/-
<i>Dendroica petechia brewsteri</i>	yellow warbler	SSC/-
<i>Elanus leucurus</i>	white-tailed kite	-/-
<i>Empidonax traillii extimus</i>	southwestern willow flycatcher	SE/FE
<i>Eremophila alpestris actia</i>	California horned lark	SSC/-
<i>Falco columbarius</i>	merlin	SSC/-
<i>Falco mexicanus</i>	prairie falcon (breeding)	SSC/-
<i>Falco peregrinus</i>	peregrine falcon	SE/FE delisted
<i>Glaucidium gnoma</i>	northern pygmy owl	-/-

## 2.0 Study Area Description and Setting



**TABLE 1 (Continued)**  
**SUMMARY OF SPECIES CONSIDERED FOR CONSERVATION**

Species Scientific Name	Species Common Name	Listing Status: State <sup>1</sup> /Federal <sup>2</sup>
<i>Haliaeetus leucocephalus</i>	bald eagle	SE/FT
<i>Icteria virens auricollis</i>	yellow-breasted chat	SSC/-
<i>Ixobrychus exilis hesperis</i>	western least bittern	SSC/-
<i>Lanius ludovicianus</i>	loggerhead shrike	SSC/-
<i>Melospiza lincolni</i>	Lincoln's sparrow (breeding)	-/-
<i>Nycticorax nycticorax nycticorax</i>	black-crowned night heron	-/-
<i>Oporornis tolmiei</i>	Macgillvrays warbler	-/-
<i>Oreortyx picta</i>	mountain quail	-/-
<i>Otus flammeolus</i>	flammulated owl	-/-
<i>Pandion haliaetus</i>	osprey	SSC/-
<i>Phalacrocorax auritus</i>	double-crested cormorant	SSC/-
<i>Picoides pubescens</i>	downy woodpecker	-/-
<i>Plegadis chichi</i>	white-faced ibis	SSC/-
<i>Polioptila californica californica</i>	coastal California gnatcatcher	SSC/FT
<i>Progne subis</i>	purple martin	SSC/-
<i>Speotyto cunicularia hypugaea</i>	western burrowing owl	SSC/-
<i>Sphyrapicus thyroideus</i>	Williamson's sapsucker	-/-
<i>Strix occidentalis occidentalis</i>	California spotted owl	SSC/-
<i>Tachycineta bicolor</i>	tree swallow	-/-
<i>Toxostoma lecontei</i>	Le Conte's thrasher	SSC/-
<i>Vermivora ruficapilla</i>	Nashville warbler	-/-
<i>Vireo belli pusillus</i>	least Bell's vireo	SE/FE
<i>Wilsonia pusilla</i>	Wilson's warbler	-/-
<b>MAMMALS</b>		
<i>Canis laterans clepticus</i>	coyote	
<i>Chaetodipus californicus femoralis</i>	Dulzura California pocket mouse	SSC/-
<i>Chaetodipus fallax fallax</i>	northwestern San Diego pocket mouse	SSC/-
<i>Dipodomys merriami collinus</i>	Aguanga kangaroo rat	None
<i>Dipodomys merriami parvus</i>	San Bernardino kangaroo rat	SSC/FE
<i>Dipodomys stephensi</i>	Stephens' kangaroo rat	ST/FE

## 2.0 Study Area Description and Setting



**TABLE 1 (Continued)**  
**SUMMARY OF SPECIES CONSIDERED FOR CONSERVATION**

Species Scientific Name	Species Common Name	Listing Status: State <sup>1</sup> /Federal <sup>2</sup>
<i>Glaucomys sabrinus californicus</i>	San Bernardino flying squirrel	SSC/-
<i>Lepus californicus bennettii</i>	San Diego black-tailed jackrabbit	SSC/-
<i>Lynx rufus californicus</i>	bobcat	
<i>Mustela frenata latirostra</i>	long-tailed weasel	
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	SSC/-
<i>Onychomys torridus ramona</i>	southern grasshopper mouse	SSC/-
<i>Perognathus longimembrus brevinasus</i>	Los Angeles pocket mouse	SSC/-
<i>Puma concolor</i>	mountain lion	SP/-
<i>Sylvilagus bachmanii</i>	brush rabbit	
<i>Taxidea taxus</i>	American badger	
<b>AMPHIBIANS</b>		
<i>Bufo microscaphus californicus</i>	southwestern arroyo toad	SSC/FE
<i>Ensatina escholtzii klauberi</i>	large-blotched salamander	SSC/-
<i>Rana aurora draytonii</i>	California red-legged frog	SSC/FT
<i>Rana mucosa</i>	mountain yellow-legged frog	SSC/-
<i>Scaphiopus hammondii</i>	western spadefoot toad	SSC/-
<i>Taricha tarosa tarosa</i>	coast range newt	SSC/-
<b>REPTILES</b>		
<i>Anniella pulchra pulchra</i>	California legless lizard	
<i>Arizona elegans occidentalis</i>	Coastal glossy snake	
<i>Charina bottae umbratica</i>	southern rubber boa	SSC/T
<i>Clemmys marmorata pallida</i>	southwestern pond turtle	SSC/N
<i>Cnemidophorus tigris multiscutatus</i>	coastal western whiptail	SSC/N
<i>Cnemidophorus hyperythrus beldingi</i>	orange-throated whiptail	SSC/N
<i>Coleonyx variegatus abbottii</i>	San Diego banded gecko	SSC/N
<i>Crotalus ruber ruber</i>	northern red diamond rattlesnake	SSC/N
<i>Diadophis punctatus modestus</i>	San Bernardino ringneck snake	SSC/N
<i>Gambelia wislizenii</i>	long-nosed leopard lizard	SSC/N
<i>Lampropeltis zonata parvirubra</i>	San Bernardino Mtn. Kingsnake	SSC/N
<i>Lampropeltis zonata pulchra</i>	San Diego Mountain kingsnake	SSC/N

## 2.0 Study Area Description and Setting



**TABLE 1 (Continued)**  
**SUMMARY OF SPECIES CONSIDERED FOR CONSERVATION**

Species Scientific Name	Species Common Name	Listing Status: State <sup>1</sup> /Federal <sup>2</sup>
<i>Lichanura trivirgata roseofusca</i>	coastal rosy boa	SSC/N
<i>Phrynosoma coronatum blainvillei</i>	San Diego horned lizard	SSC/N
<i>Salvadora hexalepis virgultea</i>	coast patch-nosed snake	
<i>Sceloporus graciosus vandenburgianus</i>	southern sagebrush lizard	SSC/N
<i>Sceloporus orcutti orcutti</i>	granite spiny lizard	
<i>Thamnophis hammondi</i>	two-striped garter snake	
<i>Thamnophis sirtalis infernalis</i>	California red-sided garter snake	SSC/N
<i>Xantusia henshawi henshawi</i>	granite night lizard	SSC/N
<b>INVERTEBRATES/CRUSTACEANS</b>		
<i>Brachinecta lynchii</i>	vernal pool fairy shrimp	FT/-
<i>Linderiella santarosae</i>	Santa Rosa Plateau fairy shrimp	FS
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	FE
<b>INVERTEBRATES/INSECTS</b>		
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	/FE
<i>Rhaphiomidas terminatus abdominalis</i>	Delhi sands flower-loving fly	-/FE
<b>FISH</b>		
<i>Catostomus santaanae</i>	Santa Ana sucker	SSC/PT
<i>Gila orcutti</i>	arroyo chub	SSC/-
<i>Rhinichthys osculus</i>	Santa Ana speckled dace	SSC/-
<b>PLANTS</b>		
<i>Allium munzii</i>	Munz's onion	ST/FE
<i>Ambrosia pumila</i>	San Diego ambrosia	FP
<i>Arabis johnstonii</i>	Johnston's rock cress	
<i>Arctostaphylos rainbowensis</i>	Rainbow manzanita	
<i>Astragalus pachypus var. jaegeri</i>	Jaeger's milk-vetch	
<i>Atriplex coronata var. notation</i>	San Jacinto Valley crown scale	FE
<i>Atriplex coulteri</i>	Coulter's saltbush	
<i>Atriplex parishii</i>	Parish's brittle scale	
<i>Atriplex serenana var. davidsonii</i>	Davidson's salt scale	
<i>Berberis nevinii</i>	Nevin's barberry	SE/FE

## 2.0 Study Area Description and Setting



**TABLE 1 (Continued)**  
**SUMMARY OF SPECIES CONSIDERED FOR CONSERVATION**

Species Scientific Name	Species Common Name	Listing Status: State /Federal <sup>2</sup>
<i>Brodiaea filifolia</i>	thread-leaved brodiaea	SE/FT
<i>Brodiaea orcuttii</i>	Orcutt's brodiaea	
<i>Calochortus palmeri</i> var. <i>munzii</i>	Munz's mariposa lily	
<i>Calochortus plummerae</i>	Plummer's mariposa lily	
<i>Calochortus weedii</i> var. <i>intermedius</i>	intermediate mariposa lily	
<i>Caulanthus simulans</i>	Payson's jewelflower	
<i>Ceanothus ophiochilus</i>	Vail Lake ceanothus	ST/FT
<i>Chorizanthe leptotheca</i>	peninsular spineflower	
<i>Chorizanthe parryi</i> var. <i>parryi</i>	Parry's spineflower	
<i>Chorizanthe polygonoides</i> var. <i>longispina</i>	long-spined spineflower	
<i>Chorizanthe procumbens</i>	prostrate spineflower	
<i>Convolvulus simulans</i>	small-flowered morning glory	
<i>Dodecahema leptoceras</i>	slender-horned spineflower	SE/FE
<i>Dudleya multicaulis</i>	many-stemmed dudleya	
<i>Dudleya viscida</i>	sticky-leaved dudleya	
<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Santa Ana River woollystar	SE/FE
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button-celery	SE/FE
<i>Galium angustifolium</i> ssp. <i>jacinticum</i>	San Jacinto Mountains bedstraw	
<i>Galium californicum</i> ssp. <i>primum</i>	California bedstraw	
<i>Harpagonella palmeri</i> var. <i>palmeri</i>	Palmer's grapplinghook	
<i>Hemizonia mohavensis</i>	Mojave tarplant	
<i>Hemizonia pungens</i> ssp. <i>laevis</i>	smooth tarplant	
<i>Heuchera hirsutissima</i>	shaggy-haired alumroot	
<i>Holocarpha virgata</i> ssp. <i>elongate</i>	graceful tarplant	
<i>Hordeum intercedes</i>	vernal barley	
<i>Hulsea vestita</i> ssp. <i>callicarpa</i>	beautiful hulsea	
<i>Juglans californica</i> var. <i>californica</i>	Southern California black walnut	
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	
<i>Lepechinia cardiophylla</i>	heart-leaved pitcher sage	
<i>Lilium humboldtii</i> ssp. <i>ocellatus</i>	ocellated Humboldt lily	

## 2.0 Study Area Description and Setting



**TABLE 1 (Continued)**  
**SUMMARY OF SPECIES CONSIDERED FOR CONSERVATION**

Species Scientific Name	Species Common Name	Listing Status: State <sup>1</sup> /Federal <sup>2</sup>
<i>Lilium parryi</i>	lemon lily	
<i>Limnanthes gracilis</i> var. <i>parishii</i>	Parish's meadowfoam	
<i>Microseris douglasii</i> var. <i>platycharpha</i>	small-flowered micro seris	
<i>Mimulus clelandii</i>	Cleveland's bush monkeyflower	
<i>Mimulus diffusus</i>	Palomar monkeyflower	
<i>Monardella macrantha</i> ssp. <i>hallii</i>	Hall's monardella	
<i>Mucronea californica</i>	California spineflower	
<i>Muhlenbergia californica</i>	California muhly	
<i>Myosurus minimus</i> ssp. <i>apus</i>	little mousetail	
<i>Navarretia fossalis</i>	spreading navarretia	FT
<i>Orcuttia californica</i>	California Orcutt grass	SE/FE
<i>Oxytheca caryophylloides</i>	chickweed oxytheca	
<i>Penstemon californicus</i>	California beardtongue	
<i>Polygala cornuta</i> var. <i>fishiae</i>	Fish's milkwort	
<i>Potentilla rimicola</i>	cliff cinquefoil	
<i>Quercus engelmanni</i>	Engelmann oak	
<i>Romneya coulteri</i>	Coulter's matilija poppy	
<i>Satureja chandleri</i>	San Miguel savory	
<i>Trichocoronis wrightii</i> var. <i>wrightii</i>	Wright's trichocoronis	

### Notes:

#### <sup>1</sup> Federal Designations

- FE      Endangered: Species listed as endangered by the U.S. Fish and Wildlife Service  
 FT      Threatened: Species listed as threatened by the U.S. Fish and Wildlife Service  
 PT      Proposed Threatened: Species proposed for listing as threatened by the U.S. Fish and Wildlife Service  
 P      Petitioned as Threatened or Endangered: Species for which the U.S. Fish and Wildlife Service has received a petition for listing as threatened or endangered

#### <sup>2</sup> State Designations

- SE      Endangered: Species classified as endangered by the California Fish and Game Commission  
 ST      Threatened: Species classified as threatened by the California Fish and Game Commission  
 SSC    Species of Special Concern: Species considered by the California Department of Fish and Game as possibly facing extirpation in California due to declining populations or loss of habitat

## **2.0 Study Area Description and Setting**



### **2.2 LAND USE CONTEXT**

#### **2.2.1 Existing Land Use**

Existing land uses within the study area can generally be characterized by urban development within city areas and agricultural and undeveloped land use in unincorporated areas. Rural residential land uses are also present within many city and unincorporated county areas. Approximately 202,912 acres of the County are developed, 36,821 acres of which are characterized by rural residential development. A total of 161,792 acres are used for agricultural purposes, 13,095 acres are used for recreational open space and 880,958 acres are undeveloped. The 880,958 acres of undeveloped land includes public and quasi public land in addition to private undeveloped land. *Figure 5, Existing Land Use*, depicts existing land uses within the study area.

#### **2.2.2 Institutional/Political Framework**

The study area contains 1,258,758 acres of land. Approximately 843,535 acres or 67% of the study area is privately owned. The remaining 372,745 acres or 29.6% is owned and/or managed by Federal, State or local government entities. Approximately 42,478 acres or 3.4 % of the land within the study area is owned and managed by Native Americans and has therefore been omitted from the planning process due to sovereignty issues. Approximately 272,228 acres of land is located within the 14 cities while the remaining 986,530 are located within the Cities' spheres of influence and the unincorporated county. The ability to acquire approximately 153,000 acres of existing private land is integral to the goal of the MSHCP. Management additions or changes on approximately 357,000 of the 372,745 acres of public land is also integral to the success of the plan. *Table 2* depicts institutional divisions of land within the study area while *Table 3* depicts existing public ownership. *Figure 6, Land Status Map*, gives a visual layout of public/private land ownership patterns. *Figure 7, City and Area Plan Boundaries*, depicts jurisdictional and political boundaries.

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Figure 5 Existing Land Use

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Figure 6 Land Status Map

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Figure7 City and Area Plan Boundaries

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**TABLE 2**  
**LAND DISTRIBUTION BY JURISDICTIONAL AND POLITICAL BOUNDARIES**

Unincorporated County	991,099 acres (78.7%)*
City of Temecula	16,692 acres (1.3%)
City of Murrieta	18,274 acres (1.5%)
City of Lake Elsinore	21,853 acres (1.7%)
City of Canyon Lake	2,419 acres (0.002%)
City of Corona	24,017 acres (1.9%)
City of Norco	8,531 acres (0.01%)
City of Riverside	50,055 acres (4%)
City of Moreno Valley	32,714 acres (2.6%)
City of Perris	20,031 acres (1.61%)
City of Hemet	16,291 acres (1.3%)
City of San Jacinto	15,621 acres (1.3%)
City of Beaumont	16,773 acres (1.3%)
City of Banning	14,840 acres (1.2%)
City of Calimesa	9,535 acres (0.01%)

\* Includes all water bodies within both unincorporated and incorporated areas.

Source: Assembled by Riverside County. Complete source data listed in bibliography.

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**TABLE 3  
LAND OWNERSHIP WITHIN MSHCP STUDY AREA**

Land Ownership	Acres	Percentage of Study Area
Private land	843,535	67%
County lands (Regional Parks and Recreation District)	18,621	1.5%
Riverside County Habitat Conservation Agency	7,313	0.06%
Water Districts	39,280	3.1%
Riverside County Flood Control District	6,743	0.05%
Other Public Utility districts	1,108	0.0008%
State Park Lands	31,289	2.5%
Other State Lands	3,780	0.03%
Military Lands	8,934	0.07%
US Forest Service Lands	199,825	15.9%
Bureau of Land Management Lands	45,264	3.6%
Nature Conservancy Lands	1,360	0.01%
Native American Lands	42,478	3.4 %
Other	10,337	0.08%

Source: Data compiled by RCIP Project Teams. Complete reference listed in bibliography.

### 2.2.3 Planned Land Uses

As outlined in *Section 1.0, Introduction*, the County is updating the General Plan and associated Area Plans concurrent with the development of the MSHCP. Each city has a General Plan, some of which are also being updated. Through the County General Plan update, assumptions as to future land uses have been made study area wide. The General Plan update process has resulted in three alternative land use plans, one of which, General Plan Alternative 3, has been chosen as the preferred plan consistent with the Riverside County Vision. At build-out, General Plan Alternative 3 would result in 473,715 acres of community development within both cities and the unincorporated county within the MSHCP study area (this acreage includes community development which would occur in the eastern sections of The Pass and

## 2.0 Study Area Description and Setting



REMAP area plans outside of the MSHCP study area; this figure does not include community development that would occur within the Cities of Riverside and Norco). At build-out, a total of 307,166 acres would be characterized by rural land uses (this acreage includes rural development which would occur in the eastern sections of The Pass and REMAP area plans outside of the MSHCP study area; this figure does not include rural land uses that would occur within the Cities of Riverside and Norco). A total of 659,793 acres would be designated as open space (this acreage includes open space that would occur within the eastern sections of The Pass and REMAP area plans outside of the MSHCP study area; This figure does not include future open space areas within the Cities of Riverside and Norco). A total of 30,567 acres would be used for agricultural purposes (this acreage includes agricultural areas within the eastern sections of The Pass and REMAP which are outside of the MSHCP study area; This acreage does not reflect future agricultural uses within the Cities of Riverside and Norco) (The Planning Center, 2001). *Table 4* displays this change in land use relationship.

**TABLE 4  
EXISTING VS. PLANNED LAND USE**

Existing Land Use	Acres	Planned Land Use	Acres
Developed	166,091	Community Development	473,715*
Rural	36,821	Rural	407,166*
Agriculture	161,792	Agriculture	30,567*
Undeveloped	880,958	Open Space	659,793*
Recreational Open Space	13,095		
<b>Total</b>	<b>1,258,758</b>		<b>1,471,241*</b>

\* Acreages do not include City of Riverside and Norco future build-out land uses; acreages include eastern portions of The Pass and REMAP Area Plans which are not included in the MSHCP study area.

Sources: Existing Land Use: LSA Associates, 1999 with updates 2000, 2001. Complete source data listed in bibliography.

Planned Land Use: The Planning Center, 2001

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### **2.3 DEMOGRAPHIC CONSIDERATIONS**

#### **2.3.1 Historical Growth**

Riverside County's population numbered 542,900 in 1970; approximately 253,600 of those people lived within Western Riverside County cities and an additional 82,500 lived within unincorporated areas (it is assumed a majority of unincorporated county occupants reside within Western County), (State of California, Department of Finance, 1971-1980). Riverside County's population increased to 663,199 by 1980. Approximately 291,313 people lived in Western County cities and an additional 276,565 in the unincorporated county (State of California, Department of Finance, 1971-1980). The County's population grew from 663,199 in 1980 to 1,144,400 by 1990; Western County cities were populated by 579,775 people with an additional 378,600 people in the unincorporated county (State of California, Department of Finance, 1981-1990). The County's population had grown from 1,144,400 in 1990 to 1,522,910 in 2000. By 2000 a total of 846,250 people resided in Western County cities while an additional 401,400 resided in unincorporated county areas (State of California, Department of Finance, 2000).

#### **2.3.2 Forecast Growth**

Southern California Association of Governments (SCAG) and Western Riverside County cities have historically prepared regional growth forecasts in an effort to allocate resources in the most efficient manner. Forecasts include population, housing, employment and other economic data. SCAG estimates that by 2025 almost seven million people and four million jobs -- the equivalent of adding two cities the size of Chicago -- will be added to the southern California region (SCAG, 1998 with draft update, 2001). This would bring southern California's regional population from 16 million to 22.8 million (SCAG, 1998 with draft update, 2001). Most of the population growth is expected in north Los Angeles, Riverside, and San Bernardino Counties, however experts believe job growth will also occur in Los Angeles and Orange Counties. Average annual components of population growth shows that more than 4/5th of this growth will be due to natural increases (SCAG, 1998 with draft update, 2001).

SCAG released Riverside County's population forecasts for 2020 in 1998; Riverside's population is projected to reach upwards of 2.8 million (Stanley R. Hoffman Associates, Revised 2000). This population growth equates to approximately 2.8% a year from now until 2020 (Stanley R. Hoffman Associates, Revised 2000). Population will continue to increase within the county beyond the 2020 horizon; the County's population will reach 3.5 million by 2030 and 4.5 million by 2050.

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A total of 569,608 housing units will be needed to accommodate this anticipated growth (426,354 in western county and 143,142 in eastern county), (The Planning Center, 2001).

**Note:** Additional forecasting information will be added as it becomes available through the RCIP integration/planning process.