

Rancho Jamul Ecological Reserve

Land Management Plan



prepared for:
State of California
The Resources Agency
Department of Fish and Game
South Coast Region
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San Diego, California 92123

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Land Management Plan

for the

Rancho Jamul Ecological Reserve

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ACRONYMS AND ABBREVIATIONS

ASMD – Area Specific Management Directives
BEPA – Bald Eagle Protection Act
BLM – Bureau of Land Management
CCC – Civilian Conservation Corps
CCR – California Code of Regulations
CEC – Conservation Education Center
ESA – Endangered Species Act (State of California)
ESL – Endangered Habitats League
FD – Federally delisted
FE – Federally endangered
FESA – Federal Endangered Species Act
FSC – Federal species of concern
FT – Federally threatened
HCPB – California Department of Fish and Game Habitat Conservation Planning Branch
HCWA – Hollenbeck Canyon Wildlife Area
LMP – Land Management Plan
MHCP – Multiple Habitat Conservation Plan
MHPA – Multiple Habitat Planning Area
MOU – Memorandum of Understanding
MSCP – Multiple Species Conservation Program
NCCP – Natural Communities Conservation Program
NGO – Non-governmental organization
RJER – Rancho Jamul Ecological Reserve
ROW – Right of Way
SCC – State Coastal Conservancy
SDG&E – San Diego Gas and Electric
SE – State endangered
SFP – State fully protected
SR – State rare
SR 94 – State Route 94
SSC – State species of concern
ST – State threatened
TPL – Trust for Public Lands
USFWS – United States Fish and Wildlife Service
WCB – Wildlife Conservation Board (State of California)
WPA – Work Projects Administration

I. INTRODUCTION

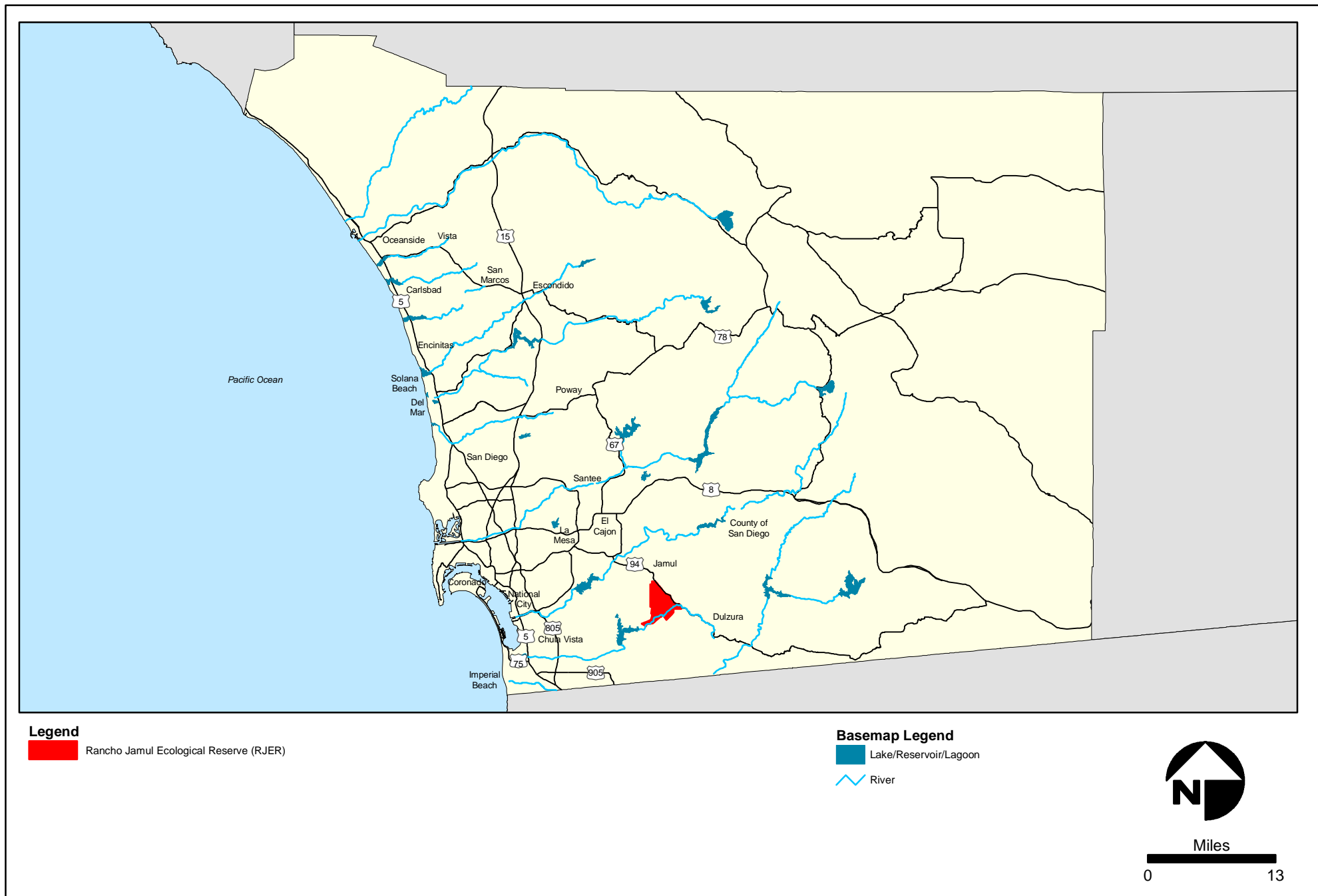
This Land Management Plan (LMP) was prepared to guide the California Department of Fish and Game (herein referred to as the Department) in the management, maintenance and restoration of the biological diversity and ecosystem components currently and historically present within the Rancho Jamul Ecological Reserve (RJER). RJER is located in southwestern San Diego County between the communities of Jamul and Dulzura, approximately 26 miles east-southeast from downtown San Diego (Figure 1). It is nestled between the Jamul Mountains to the west, Otay Mountains to the south, and Cleveland National Forest to the northeast (Figure 2). The irregularly-shaped area covered by this LMP occupies 4,701.5 acres, which does not include two non-contiguous areas (2 of 3 Proctor Valley Unit pieces) to the west. This will be explained in more detail in Section B. Acquisition History. RJER borders on State Route (SR) 94 for approximately four miles along the northeastern edge of the property (Figure 3). Otay Lakes Road runs east to west just north of the southern border of the property.

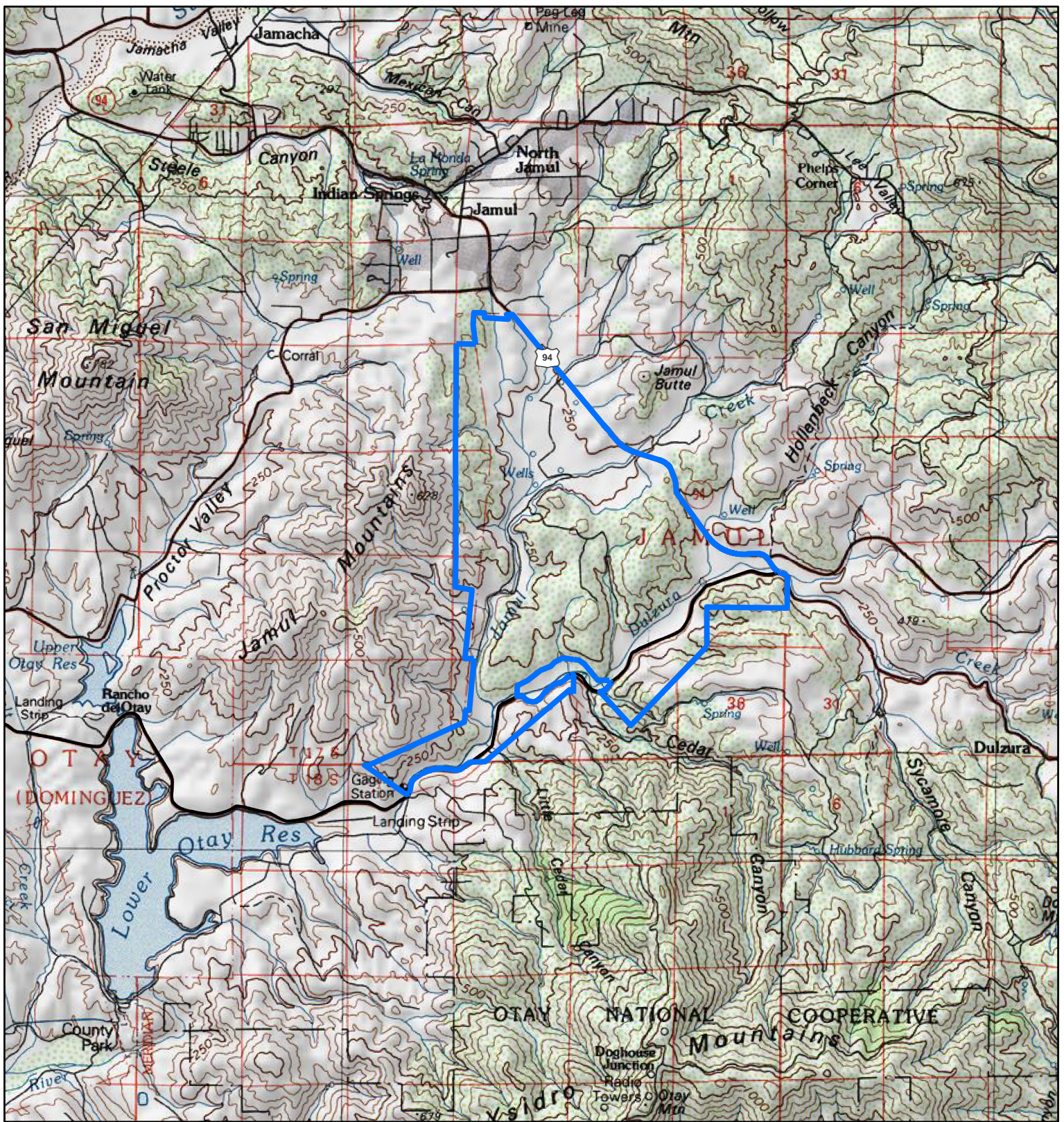
A. Purpose of Acquisition

The acquisition of the RJER property provides a unique opportunity to conserve, restore and protect declining sensitive species and their associated habitats in one of the largest blocks of contiguous land available in the County's Multiple Species Conservation Program (MSCP) open space planning area. The property is characterized by natural communities (grasslands, coastal sage scrub, chaparral, wetlands, riparian scrub and riparian woodland) that function as valuable foraging and breeding habitat for numerous sensitive plant and animal species. The primary purpose for this land acquisition was to provide long term protection for these valuable biological resources. Additionally, this property will offer sensible and compatible wildlife-dependent recreational and educational opportunities for the public and opportunities for research and scientific study (per. Fish and Game Code Sec. 1580-1586; Appendix A), as well as the protection of important historical and cultural resources, such as the homestead site of Pio Pico, the last Mexican governor.

1. Regional Conservation Efforts

This acquisition has enhanced regional efforts to conserve southern California's natural heritage, the goal of which is to establish an open space network that will protect native habitat and associated species (Figure 4). For example, The Wildlife Conservation Board



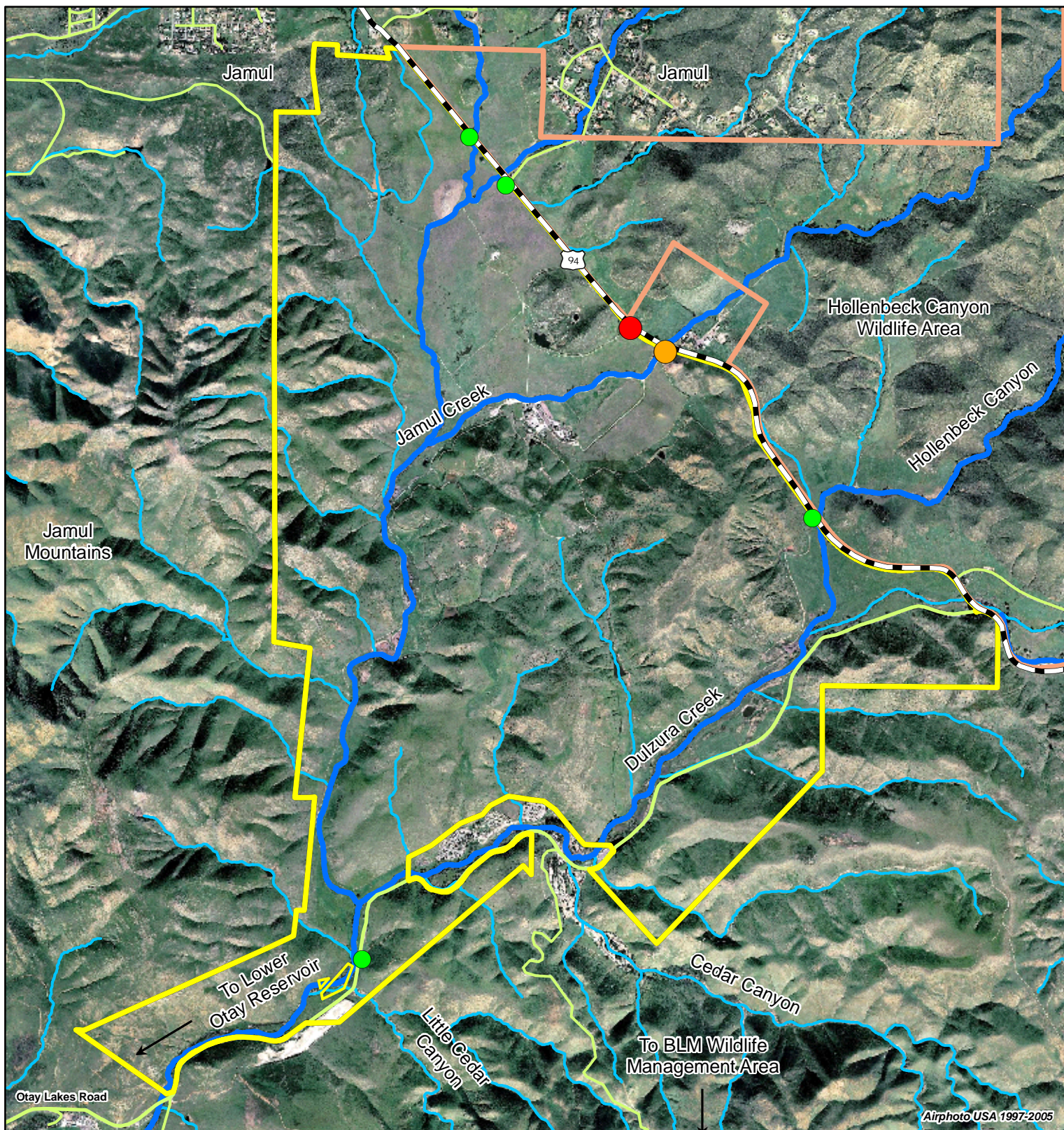


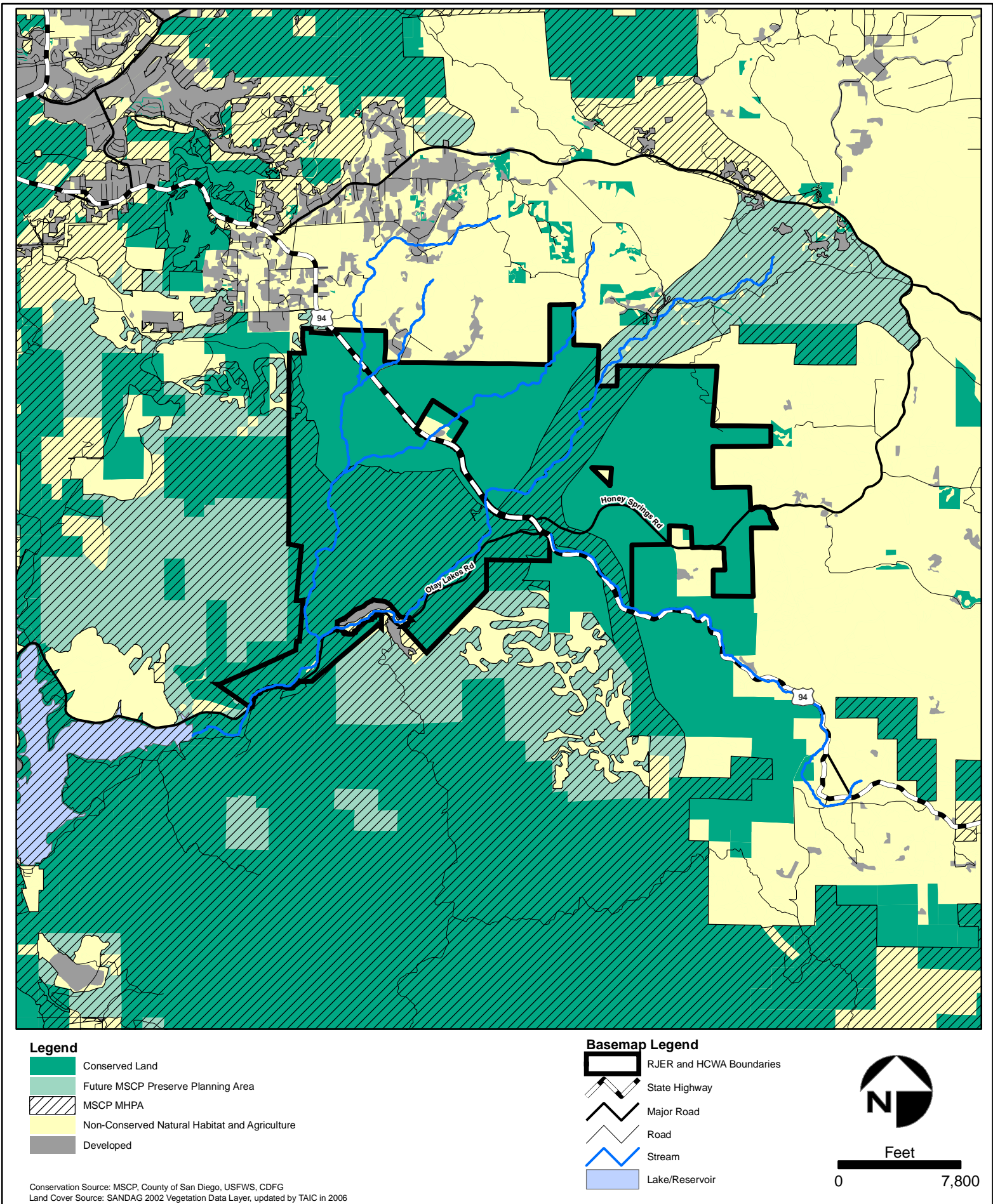
USGS 100,000 El Cajon Quadrangle

Basemap Legend
 RJER Boundary



Feet
 0 6,700





(State of California) is actively partnering with other agencies, such as the Bureau of Land Management (BLM), the US Fish and Wildlife Service (USFWS), and the California Coastal Conservancy (CCC), to coordinate funding and conservation planning efforts in the region. This collaboration has enabled the acquisition and protection of contiguous parcels of public open space lands, thereby conserving important regional wildlife habitat, habitat linkages, and wildlife movement corridors in perpetuity. Consequently, the RJER fits into a larger, relatively intact habitat mosaic, and was identified by the MSCP as a high priority acquisition for linking contiguous habitat preserves.

Other coordinated regional planning efforts in San Diego County include multiple species and habitat conservation plans under California's Natural Community Conservation Program (NCCP) Act of 1992, as amended. These plans serve as: (1) a multiple species Habitat Conservation Plan pursuant to Section 10(a) of the federal Endangered Species Act of 1973, as amended; and, (2) a conservation plan under the NCCP Act. Subregional plans in the county include the MHCP, which covers the major cities in north San Diego County, and the MSCP, which covers portions of north county, south county, and east county. Each of these covered areas operates under its own subarea plan. RJER falls within the Metro-Lakeside-Jamul segment of the South County MSCP subarea plan.

The primary objective of the MSCP is to protect natural communities and biodiversity by preserving a network of natural habitat and open space. The MSCP preserve system will be assembled within the area identified as the Multiple Habitat Planning Area (MHPA) and will be managed for its biological resources. The MHPA (hatched area, Figure 4) consists of acquired conservation areas (areas that have already been acquired for preservation, shown in dark green) and future preserve planning areas (areas that are desired for acquisition from willing sellers in the future, shown in light green). The acquisition of RJER by the Department demonstrates its ongoing commitment towards NCCP planning efforts in San Diego County.

MSCP/NCCP planning will become even more important as the population of San Diego County continues to grow. In 1996 Rancho Jamul was identified by the Endangered Habitats League (EHL) as highly threatened by urban growth (written comm.). Much of this property is flat, located near the fringe of development, and bordered by SR 94, making it potentially desirable to developers. The Department's acquisition of RJER and adjacent Hollenbeck Canyon Wildlife Area (HCWA) located on the opposite side of SR 94, will help protect these valuable biological resources.

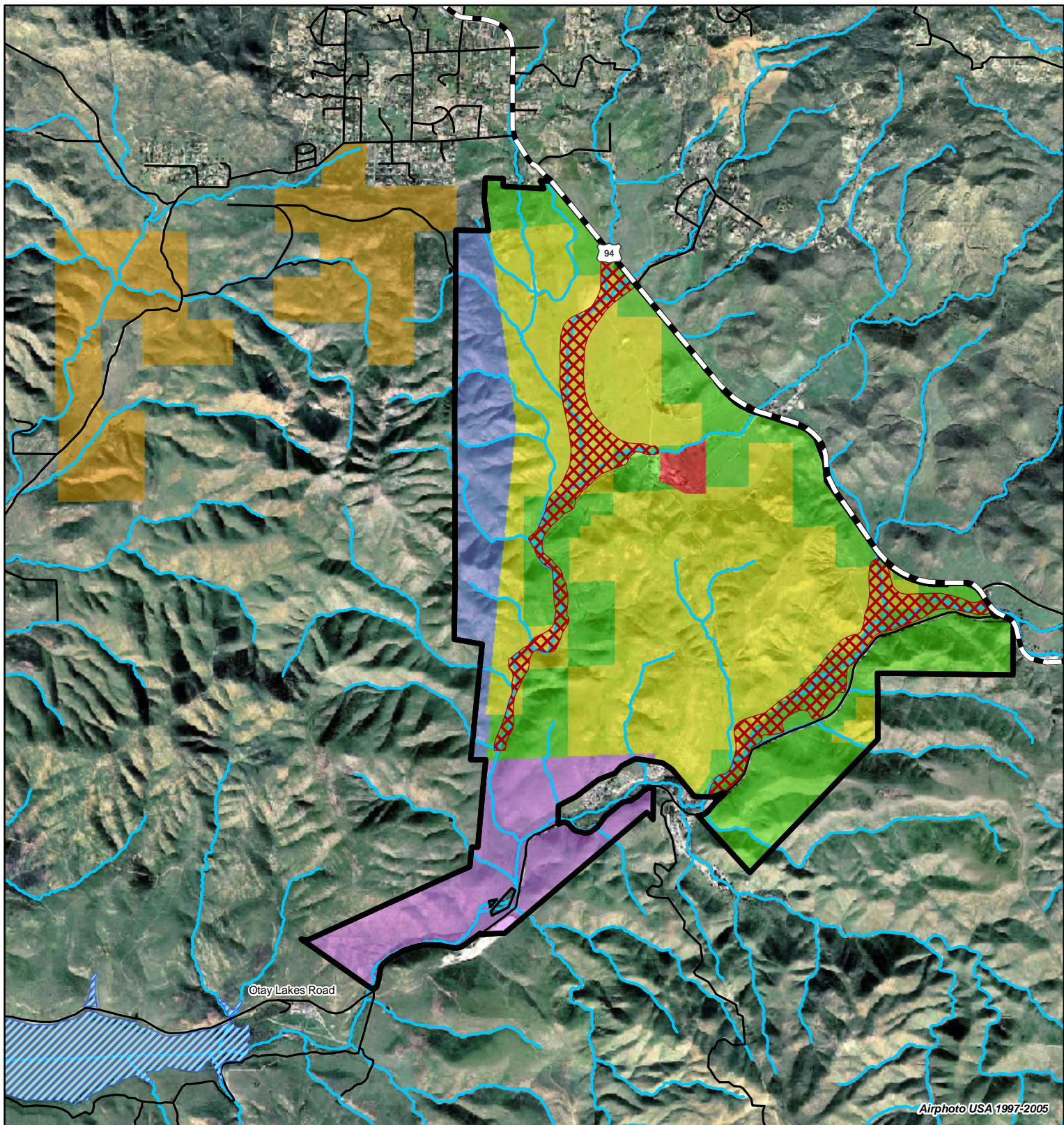
B. Acquisition History

1. Acquisitions

RJER was acquired by the State of California (Wildlife Conservation Board on behalf of the Department) in several phases over the course of 5 years (Table 1, Figure 5). This acquisition was made possible through an agreement between landowner Donald Daley, the Trust for Public Land (TPL), and Wells Fargo Bank, which enabled TPL to purchase Rancho Jamul for later conveyance to the Department, thereby insuring its preservation for conservation purposes. The ranch had been owned by the Daley Family since 1929. In addition to the ranch property, two adjacent parcels of land (identified as the CalMat and Proctor Valley properties) were purchased and combined with the ranch lands to form the state ecological reserve. The acquisitions were made in stages, Phase I, Phase II (identified as Expansions 1, 2, and 3), and the Proctor Valley Unit. The following summarizes this acquisition history in order of purchase date:

- **Phase I** of the Rancho Jamul property acquisition was approved by the State of California Wildlife Conservation Board (WCB) in November, 1997, and transferred to the Department in early 1998. This acquisition consisted of 2,275 acres of disjunct parcels of land south of Jamul between the Jamul Mountains and SR 94.
- **Expansion 1**, purchased in May 1999, consisted of 1,385 acres of Rancho Jamul property which fit together with Phase I parcels to create a block of contiguous habitat, except for a small inholding as described below.
- **Expansion 2** consists of this 50.1-acre inholding, which was later purchased in September, 2001. It includes a large single family residence, several outbuildings, and three manufactured houses. These facilities will serve as the reserve Conservation Education Center (CEC) after being remodeled. This inholding is not formally part of the ecological reserve and, as such, will be managed as a separate facility in a manner that is consistent with the goals of the reserve (T. Dillingham pers. comm.).

The Proctor Valley Unit was purchased by the State in April, 2003. The Unit consists of three pieces of land located to the west of Rancho Jamul. One of these parcels is a long sliver that snaps into place along the western edge of the reserve.



Legend

- Phase I
- Expansion 1
- Expansion 2
- Expansion 3 (CalMat Property)
- Proctor Valley Unit - RJER Parcel
- Proposed Proctor Valley Unit - USFWS Managed
- Wildlands Mitigation Bank Easement

Basemap Legend

- RJER Boundary
- State Highway
- Road
- Stream
- Lake/Reservoir



Feet
0 4,000

The other two pieces are west of, but not contiguous with, the rest of the reserve. These pieces were intended to be managed as part of the San Diego National Wildlife Refuge Complex and are, therefore, not addressed in this LMP. However, management of the two pieces of land will be consistent with this LMP.

- **Expansion 3** (also known as the CalMat property) was approved by the Wildlife Conservation Board in May 2003 and purchased in March 2004. The 560 acre property is located on the southern end of the Department's Rancho Jamul holdings.

Table 1. Acquisition History for Rancho Jamul Ecological Reserve

Acquisition	Date	Acres	Funding
Phase I	01/1998	2,275	<ul style="list-style-type: none"> • Habitat Conservation Funds (Proposition 117) • USFW FESA Section 6 • State Coastal Conservancy
Expansion 1	5/17/1999	1,385	<ul style="list-style-type: none"> • Habitat Conservation Funds • USFWS FESA Section 6 • TPL donation
Expansion 2	9/20/2001	50	<ul style="list-style-type: none"> • Proposition 12
Proctor Valley Unit ¹	4/24/2003	431	<ul style="list-style-type: none"> • Proposition 12 • USFWS FESA Section 6
Expansion 3 (CalMat Property)	3/23/2004	560	<ul style="list-style-type: none"> • Proposition 12

¹ The acreage includes only one of three Proctor Valley Unit pieces. The other two pieces were intended to be managed as part of the USFWS National Wildlife Refuge and are, therefore, not included in this table.

2. Funding

The Phase I acquisition was purchased with Habitat Conservation Funds (created by Proposition 117, Wildlife Protection Act), and Federal Endangered Species Act (FESA) Section 6 funding, which is set aside for the protection of federal listed species. Funding for Expansion 1 (Phase II) came from a variety of sources. The State Coastal Conservancy, dedicated to the preservation of California's coastal lands, contributed approximately 8% toward the purchase price of the land; Habitat Conservation Funds accounted for 25%; and the rest (67%) was provided by USFWS through a Section 6 grant. The land was offered at only 75% of its approved fair market value, so the purchase was made possible through a generous donation equivalent to 25% of appraised value. The remaining portions of RJER (Expansions 2 and 3, and the Proctor Valley Unit)

were purchased from TPL with funding from Proposition 12 (the Safe Neighborhood Parks, Clean Water and Air, and Coastal Protection Bond Act of 2000) in addition to Section 6 funds which were used to purchase the Proctor Valley parcels.

3. Ecological Reserve Status

Recognizing the importance of the Department's Rancho Jamul holdings to regional conservation efforts through the MSCP/NCCP planning process, the Fish and Game Commission designated the property as an Ecological Reserve in August of 2000. As stated in the California Code of Regulations (Title 14, Division 1, Chapter 11, Section 630; Appendix A), "ecological reserves are established to provide protection for rare, threatened or endangered native plants, wildlife, aquatic organisms, and specialized terrestrial or aquatic habitat types." Other opportunities include scientific study, research, and education (Fish and Game Code Section 1580-1586; Appendix A). Public use and enjoyment of the reserve is encouraged by the Department, but must remain consistent with the primary goal of natural resources protection and compatible wildlife dependant use.

C. Purpose of This Management Plan

The purpose of this LMP is to establish a set of management goals and objectives that are compatible with ecological reserve management principals. This LMP will serve as a guidance document that will ensure the long-term protection of wildlife and their habitats and allow for compatible public uses. By outlining appropriate public uses on the property, the plan seeks to maximize the public's enjoyment of the reserve, while optimizing the Department's mission. The following management guidelines are provided to clarify the purpose of this plan.

1. The plan guides the adaptive management of habitats, species and programs described herein to achieve the Department's mission to protect and enhance wildlife values.
2. The plan serves as a guide for appropriate public uses of the property.
3. The plan serves as a descriptive inventory of wildlife and native plant habitats, which occur on or use the property.

-
4. The plan provides an overview of the property's operation and maintenance, and personnel requirements to implement management goals. It serves as a budget planning aid for annual regional budget preparation.
 5. The plan provides a description of potential and actual environmental impacts and subsequent mitigation which may occur during management, and contains environmental documentation to comply with state and federal statutes and regulations.

II. PROPERTY DESCRIPTION

A. Access to Property

The primary public entrance to RJER is accessed from SR 94 (Figure 3). It can be reached via road by taking I-5 to SR 94, and traveling east on SR 94 through the town of Jamul. The gated entrance is approximately two miles south of the Rural Fire Station on the west side of the road. A public parking area will be constructed at this central location where a kiosk and trails will be available. A second entrance leads directly to the CEC, which will serve as training and meeting facilities for the Department and partner agencies and will eventually provide educational programs for the public. One other future public parking areas is planned along Otay Lakes Road.

Several additional locations have been identified by the Department as secondary access points which, at present, are used for management purposes only (Figure 3). These include a gated entrance at Rancho Jamul Drive and another approximately 1,200 ft to the north. These access points lead to the agriculture areas north of Jamul Creek. The southern portion of the reserve can be accessed from four locations: Just north of Dulzura Creek, near Honey Springs Road, along Otay Lakes Road, and west of Thousand Trails Campground. The Otay Lakes Road gate allows access to Wildlands Inc. restoration areas for construction and maintenance purposes, and to the City of San Diego water conveyance easement.

B. Property Boundaries and Adjacent Lands

1. Property Boundaries

RJER is located on the Dulzura Creek and Jamul Mountains USGS 7.5 minute quadrangle topographic maps which are within the USGS 100,000 scale El Cajon quadrangle. The property occupies all or portions of Sections 15, 22, 27 of Township 17 South, Range 01 East and the Jamul Land Grant. The configuration of the property boundary is illustrated in Figure 2 on a USGS 100,000 scale map.

2. Adjacent Lands: Ownership and Land Use

Much of the land surrounding RJER is undeveloped. Various public agencies and public land conservancies have targeted these parcels as a high priority for open space

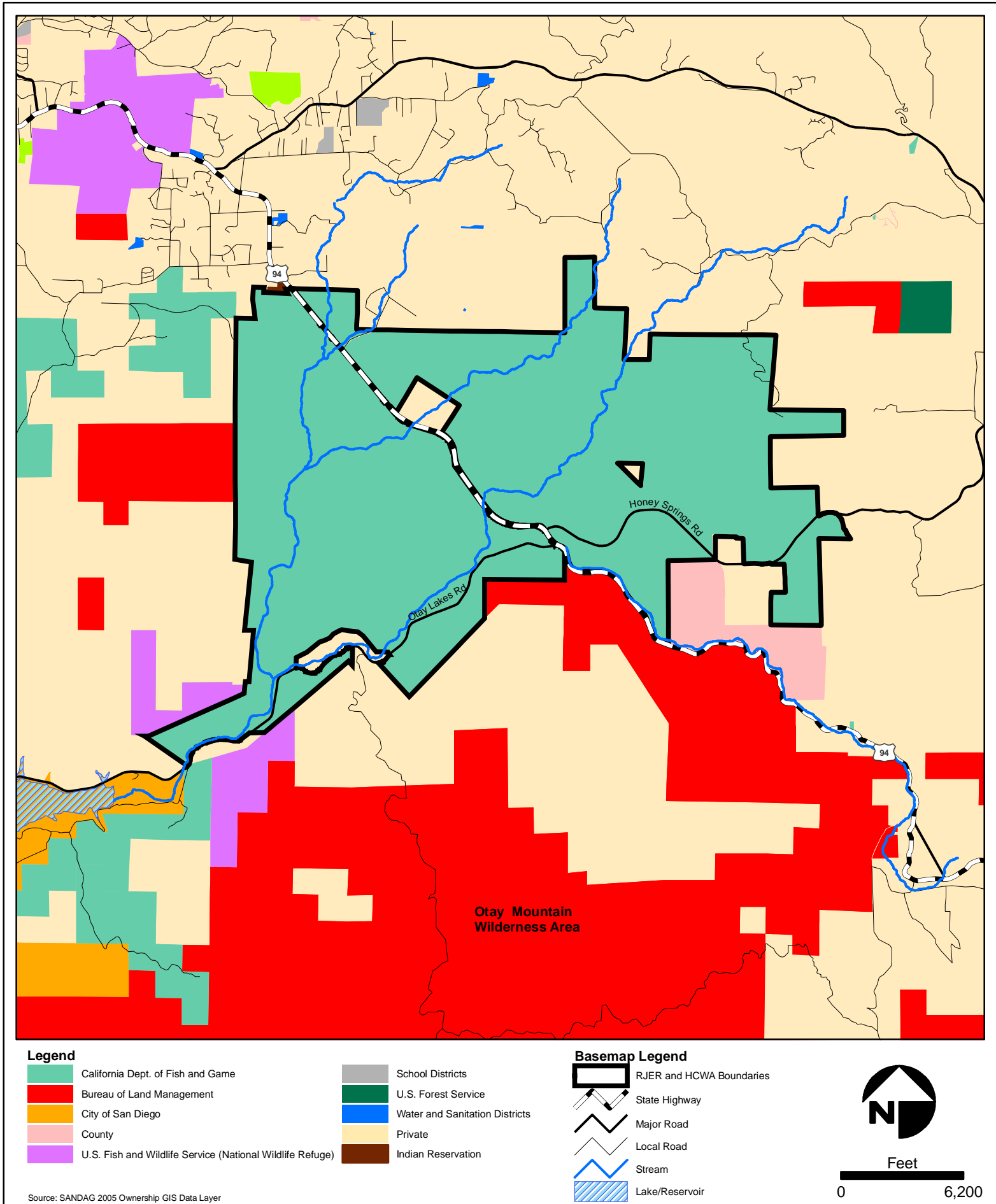
acquisition with the goal of piecing them together to form contiguous blocks of habitat, linkages and wildlife movement corridors. For example, HCWA, acquired by the Department in 2001, lies along the northeastern border of RJER, on the eastern side of SR 94. This property enhances the reserve by adding connectivity along the Jamul and Dulzura Creek corridors, and by integrating high quality coast live oak woodlands, coastal sage scrub, grasslands, chaparral, and more extreme topography.

The majority of other public lands in the vicinity are owned and/or managed by three other agencies in addition to the Department (Figure 6). For example, to the south lies BLM's Otay Mountain Wildlife Management area, a 38,000 acre preserve extending from the southeastern end of RJER to the US-Mexican border; and the Cleveland National Forest, 460,000 acres of US Forest Service land, is located to the east. In addition, the cities of Chula Vista and San Diego, and the County of San Diego jointly manage the Otay River Valley Regional Park, a 3,000 acre open space park that extends approximately 11 miles along the Otay River Valley from San Diego Bay to Lower Otay Lake Reservoir, just touching the far southwestern corner of RJER. The remainder of land in the region is composed of smaller pieces of County or City owned property, undeveloped private lands, and the rural homes of the town of Jamul and the Jamul Indian Reservation.

C. Easements

An easement is a right held by one person or entity to make specific, limited use of land owned by another person or entity. Common easements include the right to pass across the property (Right of Way), the right to construct and maintain a roadway across the property, the right to use a creek or river as a conduit to convey water through the property (Water Conveyance), or the right to place and maintain utility poles, utility trenches, water lines or sewer lines. Easements recorded for RJER are summarized in Table 2.

Prior to the Department's acquisition of Rancho Jamul, TPL had entered into an easement agreement with Wildlands Inc., a for-profit restoration and mitigation banking organization. Under this agreement, Wildlands Inc. agreed to create and monitor a riparian mitigation bank of approximately 412 acres through restoration of the Dulzura and Jamul Creek corridors which were heavily degraded from past cattle grazing and agricultural practices. The mitigation credits that are sold will provide revenues (a portion of the credits' sales price) to the Department that can be used for future management needs of the restored wetlands, as well as the rest of the reserve.



Other easements on the reserve include Right of Way (ROW) access to Otay Lakes Road, Proctor Valley Road and SR 94 granted “for public road purposes,” and to San Diego Gas and Electric (SDG&E) for public utilities uses. In addition to ROW access, the easement entitles the agencies to extend drainage structures and excavation and embankment slopes beyond the limits of ROW where required for maintenance. Through this agreement, the Department retains the right to maintain the automatic gates across the road that leads into the CEC. San Diego Gas and Electric (SDG&E) has also been granted an easement to access the property for maintenance of pipelines, drainage and public utilities. Additionally, the City of San Diego was granted an easement for water conveyance along Jamul and Dulzura Creeks to the Lower Otay Reservoir. Water conveyances are 100 ft wide (50 ft on each side of a central thread), and under this agreement, the City has flowage rights as well as the right to install fences to protect streams from people or animals.

Table 2. Summary of Easements on the RJER Property

Easement Description¹	Grantee of Easement
Mitigation Bank restoration area along Jamul and Dulzura Creeks.	Wildlands Inc.
Right of Way access along SR 94, Otay Lakes Rd. and Proctor Valley Rd. Access beyond the ROW is allowed where required for maintenance.	The public; County of San Diego, SDG&E.
Access to property for maintenance of pipelines, drainages, and public utilities.	SDG&E
Water conveyance along Jamul and Dulzura Creek.	City of San Diego
Proctor Valley Unit: easement for flumes, canals, or aqueducts.	Kimball Brothers Water Company (now the Sweetwater Authority)
Proctor Valley Unit: pipeline easement, (exact location unknown).	Otay Water District

¹Source: title documents

Other easements on record for the Proctor Valley Unit include an easement for flumes, canals, or aqueducts granted to Kimball Brothers Water Co., now Sweetwater Authority, (“exact location and extent of said easement is not disclosed of record”), and an easement granted to the Otay Water District for a water pipeline (“exact location and extent of said easement is not disclosed of record”).

D. Physical Characteristics

1. Geology

The San Ysidro Mountains to the south of the reserve and the Jamul and San Miguel Mountains to the west were at one time part of a series of volcanic islands off the coast of California. Volcanic ash and breccia from these volcanoes metamorphosed to become the fine-grained rock of the Santiago Peak Volcanic Formation. To the east of these islands, a granitic and gabbroic batholith was uplifted to form the Peninsular Range. RJER lies near the contact of these two formations. Granitic boulders and granitic outcrops are present throughout Rancho Jamul.

RJER is located where the coastal plains grade into the foothill mountains, and is traversed by Dulzura and Jamul Creeks, which flow down the watershed into Lower Otay Lake. The site has gently rolling hills and open valleys varying in elevation from 615 to 1250 feet, and contains a diverse mixture of vegetative communities and habitat features.

2. Soils

Figures 7 and 8 displays the various types, locations, and erodibility of soils found on in the vicinity of RJER. Most of this area consists of soils with a high potential for erosion. Additionally, due to damage from recent fires (most notably, the Otay Fire of 2003), soils of the burn areas are even more vulnerable to erosion and will remain that way until natural vegetation returns.

The northern most portion of RJER (toward the northern tributaries of Jamul Creek) is comprised mostly of soils of the Las Posas series, with areas of Cienega and Placentia soils present at the very highest elevations. Farther south lies a large area comprised of soils of the Visalia series, with higher areas of Cienega soils. Jamul Creek runs through a stretch of Grangeville fine sandy loam, which is bordered by bands of Visalia sandy loam and a Escondido fine sandy loam. These latter two soil series are dominant along the remainder of the creek to where it merges with Dulzura Creek.

The remainder of the property (western and the southern half of RJER) is composed of mainly Friant rocky fine sandy loam with large pockets of cobbly loam of the Olivenhain series, and smaller pockets of Las Posas, Rough Broken Land, Bosanko, Auld and Huerfano Series soils. At the very southeastern portion of the reserve, Dulzura Creek flows through soils of the Visalia and Ramona Series, then a stretch of Chino soils which are bordered by Escondido soils, and finally through Visalia soils and a small patch of

Riverwash soil as it leaves the property toward the Lower Otay Reservoir. The characteristics of these soils are described in Table 3.

Table 3. Characteristics of Soil Series within the Reserve

Soil Series	Structure	Slope	Erodibility Potential	Runoff Potential	Suitability for Public Use
Bosanko	well-drained, moderately deep clays	2-30%	slight-moderate	fairly low	well suited to trails, paths, and moderately suitable for roads
Cieneba	excessively drained, shallow coarse sandy loams	5-75%	moderate-high	medium	Moderately suited to trails, paths and roads.
Escondido	upland soils; very fine sandy loams	5-30%	severe	fairly high	poor suitability for heavy use; good to fair suitability for paths; fair to poor suitability for roads
Friant	rocky fine sandy loam; shallow, well-drained, upland soil	9 – 70%	severe	very high	poorly suited to paths, trails, and roads
Grangeville	alluvial fans of fine sandy loams, poorly drained	0 - 2%	severe	fairly low	moderately suitable for paths, trails, and roads
Las Posas	stony, fine sandy loams with a clay subsoil	2 - 65 %	moderate	high	areas with < 15% slope largely unsuitable for heavy use areas
Olivenhain	cobbly loam with a cobbly clay subsoil formed in gravel and cobble alluvium	unknown	severe	very high	poorly suited to trails, roads, or heavy use
Rough Broken Land	well-drained, with areas of exposed raw sediments	very steep	very high	very high	poorly suited to trails, roads, or heavy use
Visalia	alluvial deposits of sandy loam, well drained	unknown	severe	fairly low	well suited to trails, paths, and moderately suitable for roads

Soils and Species Affinities

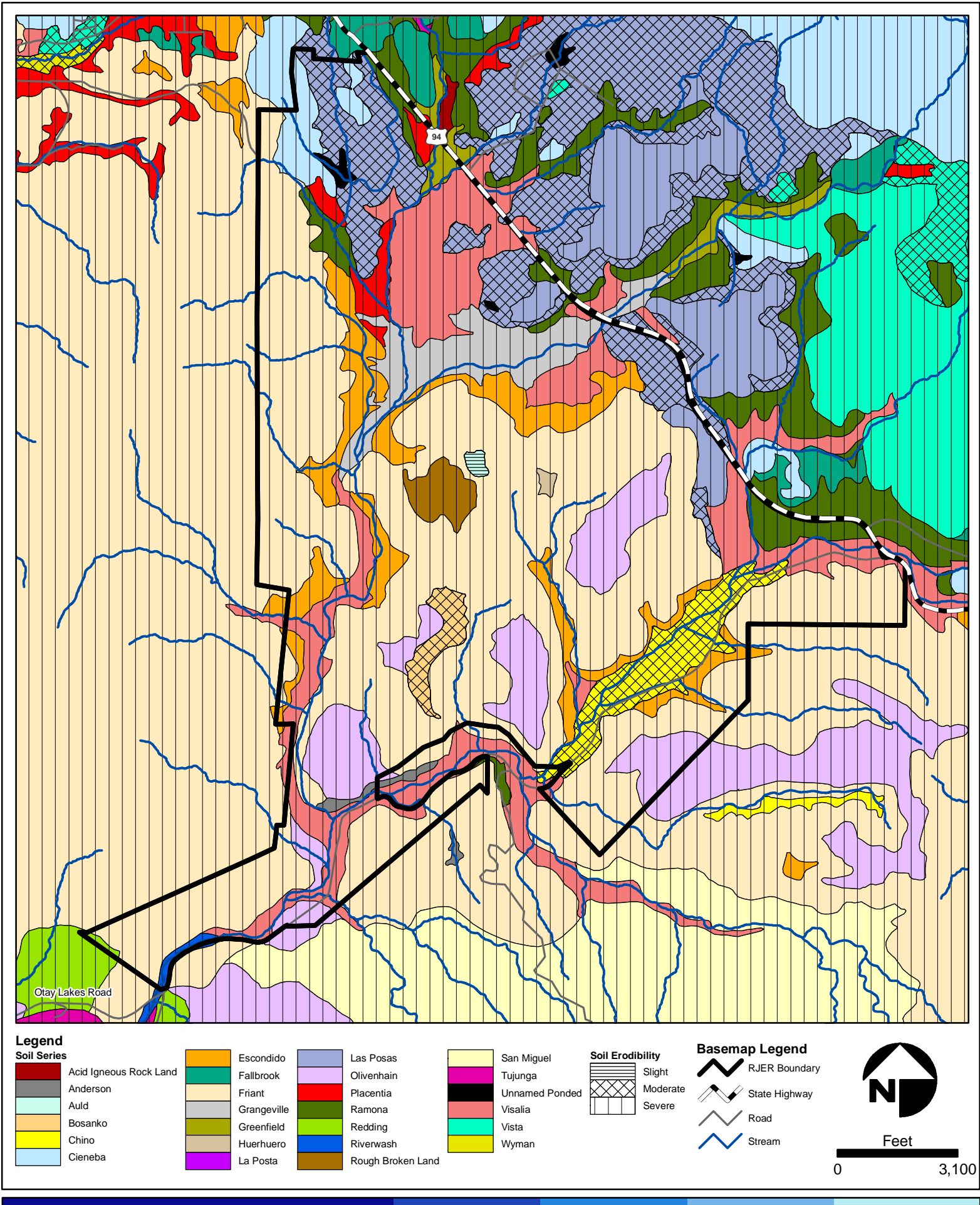
Soils, along with climate, have long been recognized as an important factor in affecting the composition and distribution of vegetation within a region (Jenny 1980; Major 1951). Soils derived from unusual parent material such as limestones, dolomite, shales, gypsum and serpentinite may support unique plant associations, endemic species and/or morphological and physiological modifications of plants (Kruckeberg 1986). Unusual soils, in combination with evolutionary forces such as isolation, and catastrophic

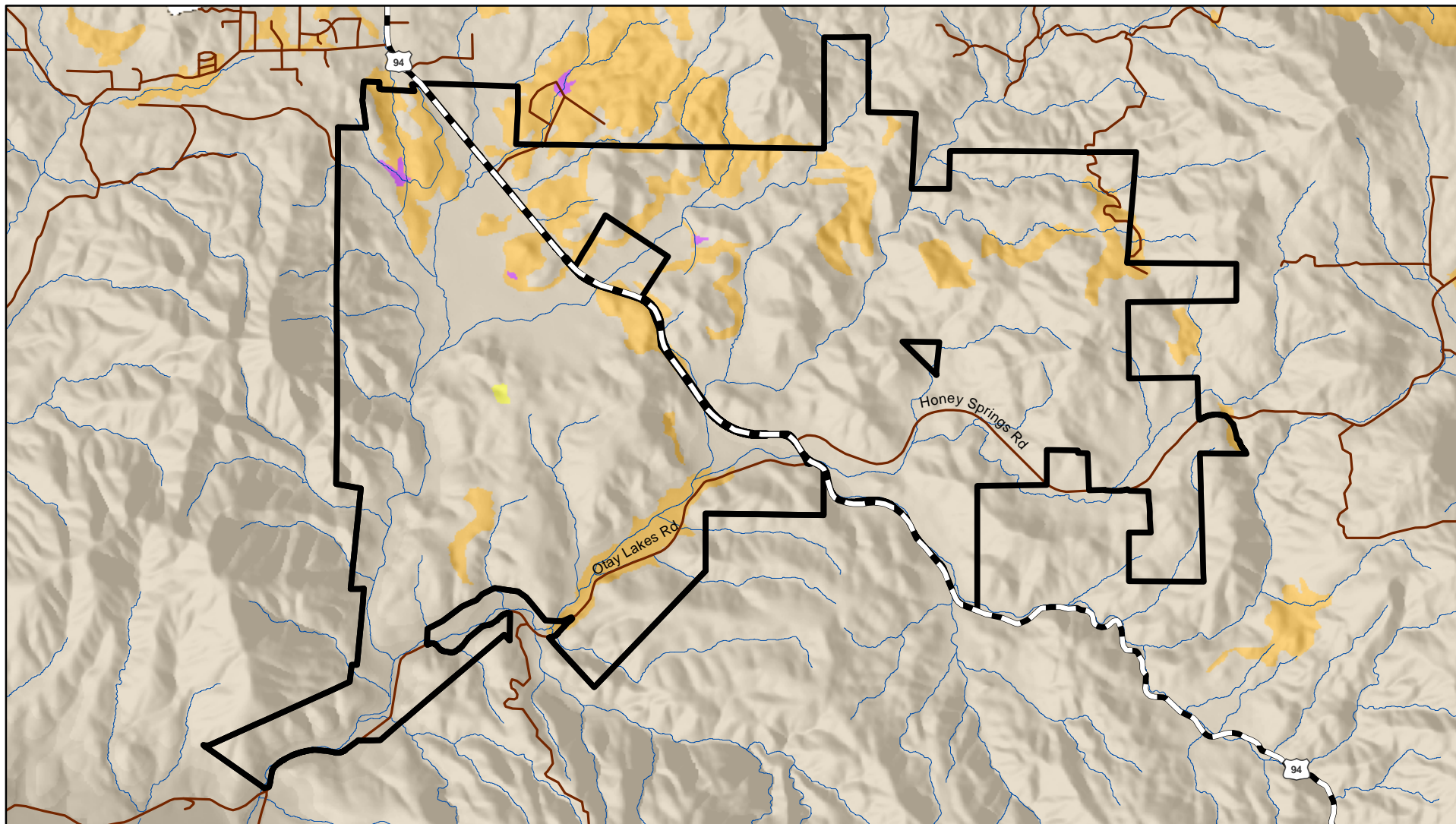
selection, may be an important stimulus for plant speciation (Raven 1964; Kruckeberg 1986). In southern California, unusual soil types including gabbro soils, clay soils and sandstones, are important for supporting endemic plant communities and species (Oberbauer and Vanderwier 1991).

Sensitive plant species found at Rancho Jamul occur on at least seven different soils series. These seven soils series are classified as either an alfisol, mollisol, or vertisol (Table 4).

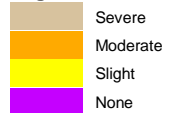
Table 4. Rancho Jamul Soils with Sensitive Plant Species

Soil Order	Soil Series	Soil Types	Sensitive Plant Species Occurring on HCWA	No. of occurrences
Alfisols	Friant	FxE, FxG	<i>Atriplex pacifica</i>	1
			<i>Clarkia delectata</i>	1
			<i>Convolvulus simulans</i>	5
			<i>Deinandra conjugens</i>	2
			<i>Dichondra occidentallis</i>	1
			<i>Dudleya variegata</i>	7
			<i>Ferocactus viridescens</i>	3
			<i>Harpagonella palmeri</i>	1
			<i>Juncus acutus</i>	1
			<i>Muilla clevelandii</i>	1
	Las Posas	LrE2	<i>Romneya coulteri</i>	1
			<i>Viguiera laciniata</i>	15
			<i>Viguiera laciniata</i>	1
	Olivenhain	OhE, OhF	<i>Ambrosia pumilla</i>	1
			<i>Deschampsia danthonioides</i>	1
			<i>Dichondra occidentallis</i>	1
			<i>Dudleya variegata</i>	19
			<i>Ferocactus viridescens</i>	2
			<i>Muilla clevelandii</i>	7
			<i>Myosurus minimus</i>	1
			<i>Viguiera laciniata</i>	2
Mollisol	Visalia	VaB, VbB	<i>Artemisia palmeri</i>	1
			<i>Ericameria palmeri</i>	2
Vertisols	Cieneba	CmrG	<i>Viguiera laciniata</i>	2
	Bosanko Stony Clay	BtC	<i>Deinandra conjugens</i>	2
			<i>Dudleya variegata</i>	6
N.A.	Riverwash	Rm	<i>Cupressus foresii</i>	2

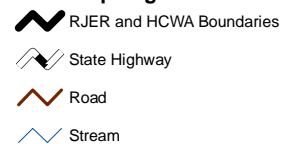




Legend



Basemap Legend



Feet

0 5,000

Alfisols are soils that have been in place long enough for the movement and accumulation of silicate clays within the soil profile. These soils are characterized by a massive, hard surface layer and by horizons of clay accumulation that have a high saturation base. Alfisols that support sensitive plant species on Rancho Jamul include the Friant, Las Posas, and Olivenhain soil series.

The Friant soils are found on mountainous upland areas and consist of shallow, well-drained fine sandy loams that formed from material weathered from fine-grained sedimentary rock. Within Rancho Jamul, these soils support south coast saltbush, delicate clarkia, small-flowered morning-glory, Otay tarplant, western dichondra, variegated dudleya, coast barrel cactus, Palmer's grappling hook, southwestern spiny rush, San Diego goldenstar, Coulter's matilija poppy, and San Diego sunflower. The Las Posas soils are also well-drained, moderately deep, stony, fine sandy loams with a clay subsoil. These soils were formed in material weathered from basic igneous rocks, and on Rancho Jamul these soils support San Diego sunflower. The Olivenhain soils consist of well-drained, moderately deep cobbly loams that have a very cobbly clay subsoil. These soils formed in old gravelly and cobbly alluvium and are usually found on dissected marine terraces. The characteristics of these clay soils are strongly affiliated with the distribution of certain sensitive species. The clay soil endemic species are adapted to these types of soils and the dynamic changes they go through each season, while many of the common native species found in the coastal sage scrub and chaparral are excluded from these environments. Because of this, these areas are often open grasslands that are dominated by annual wildflowers and geophytes. On Rancho Jamul, Olivenhain soils support San Diego ambrosia, annual hairgrass, western dichondra, variegated dudleya, coast barrel cactus, San Diego goldenstar, little mouse-tail, and San Diego sunflower.

Mollisol soils have a thick, dark-colored surface horizon that has a high organic matter content and has moderate to strong structure. In our region, these soils are well drained and do not harden when dry like the more clayey soils. The only mollisol soil on Rancho Jamul is Visalia soil series and Visalia soils are moderately well drained, very deep sandy loams derived from granitic alluvium. These soils are often found on alluvial fans and flood plains. On Ranch Jamul, Visalia soils support Palmer's sagewort, and Palmer's goldenbush.

Vertisols are clayey soils that are more than 20 inches deep and in most years crack to a depth of at least 20 inches. These soils also have other characteristics that result from the shrinking and swelling that occurs seasonally following the winter and spring rains. The vertisol soils on Jamul Ranch that support sensitive plant species include the Bosanko Stony Clay and the Cieneba soils. As with the Olivenhain soil series, the characteristics

of these heavy clay soils are strongly affiliated with the distribution of certain sensitive species, especially the Bosanko Stony Clay soils. As with the Olivenhain soils, these soils often support a dominance of grassland and “clay lens” species, while restricting the more common sage scrub and chaparral vegetation communities. On Rancho Jamul, both Otay tarplant and variegated Dudleya occur on the Bosanko Stony Clay soil type, while the delicate clarkia, Englemann oak, Palmer’s grappling hook, Ramona spineflower, rush chaparral-star, San Diego sagewort, and southwestern spiny rush occur on the Cienega soil series.

3. Climate

San Diego County experiences a Mediterranean climate, which is characterized by wet winters and dry summers. This is largely due to a semi-permanent high pressure zone that sits over the Pacific Ocean. As it moves northward in the summer, storm tracks are deflected to the north, resulting in little precipitation in the southern part of the state. In the winter, the high pressure zone weakens and moves southward, allowing storms to move into the area.

Coastal San Diego County tends to have small daily and seasonal temperature ranges and a higher relative humidity, whereas inland areas are less affected by maritime influences and tend to be drier and have more extreme temperature fluctuation. RJER is located approximately 17 miles inland and average temperatures vary from 42° F (January low) to 87° F (August high). Average monthly precipitation is low year round, ranging from 0.1 inches in the summer months (June – August) to approximately 2.8 inches during the winter (January and February).

One of the most influential weather phenomena in the region is the Santa Ana winds. Usually beginning in the fall and peaking in December, hot, dry winds originating in the Great Basin blow towards the coast. The winds can be quite strong, with gusts up to 100 mph. This scenario, strong winds, rapidly increasing temperature, and extremely low relative humidity (<25%), tends to create an environment highly conducive to rapidly spreading wildfires. The wildfire dangers increase exponentially if the region has been experiencing a drought.

4. Hydrology

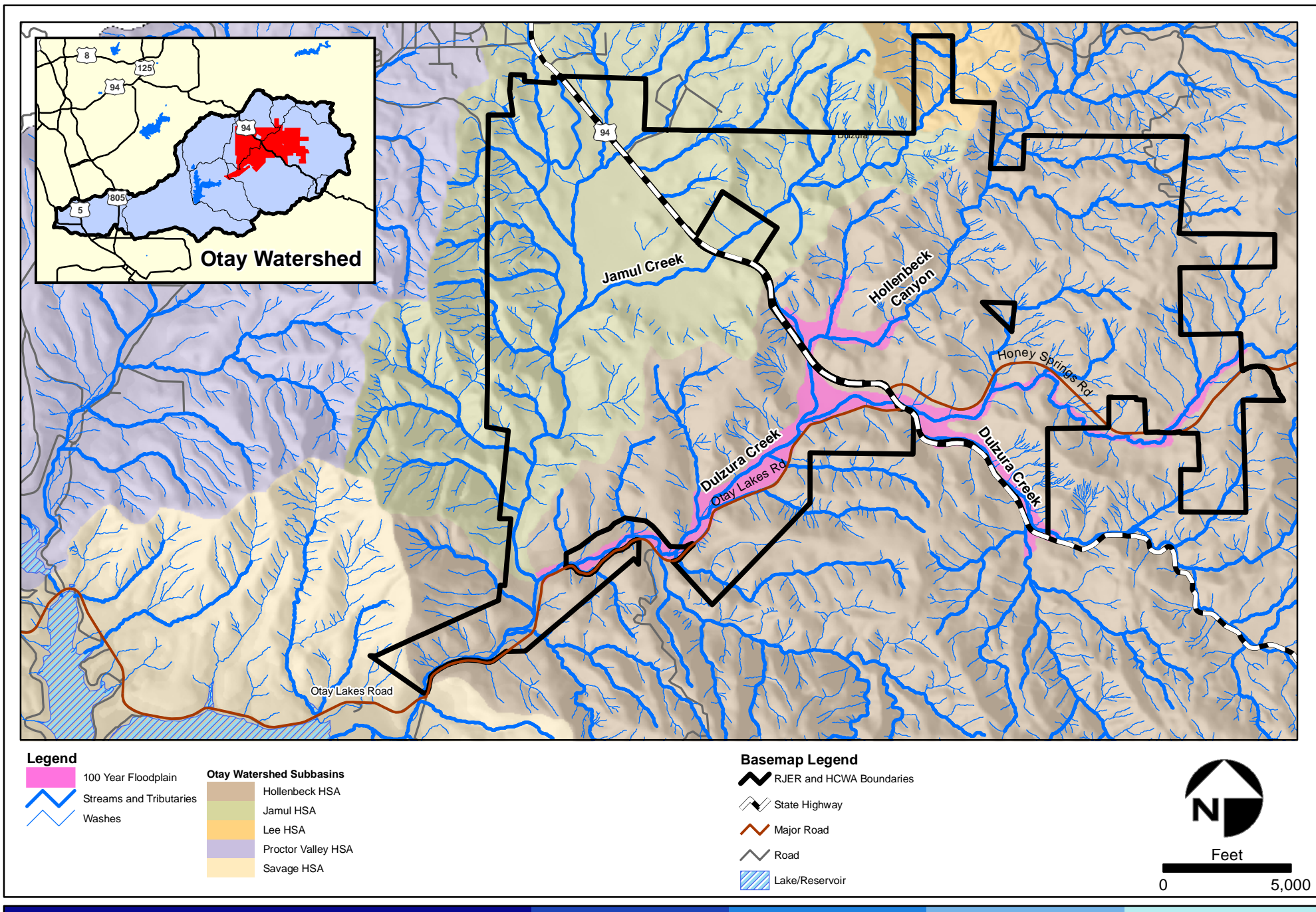
Natural Drainages

RJER lies within the 93,000 acre Otay River Watershed, and is traversed by two major drainages, which flow towards the south and southwest, eventually merging beyond the

reserve and flowing into the Lower Otay Reservoir (Figure 9). One of these drainages, Jamul Creek, is a seasonal tributary that drains the northern portion of the reserve, and has a contributing drainage basin (the Jamul Subbasin) of approximately 7,795 acres. Two branches of the creek enter into the property from the east (HCWA) through culverts underneath SR 94. The northern branch flows directly southward, between the Jamul Mountains to the west and the more gentle hills of the reserve to the east, and merges with the southern branch (main trunk), which flows towards the southwest along a broad plain that accommodates the CEC.

The second major drainage of RJER, Dulzura Creek, is located southeast of Jamul Creek, and drains the southeastern portion of the reserve. This tributary has a contributing drainage basin (the Hollenbeck Subbasin) of approximately 31,713 acres. The northern branch of Dulzura Creek enters into RJER from the HCWA through a culvert underneath SR 94, and flows in a southwesterly direction until it joins the main tributary. This main branch of Dulzura Creek serves as a conduit (shut off at present) for transporting water from Barrett Lake to Lower Otay Reservoir, both of which are operated by the City of San Diego. It flows along SR 94 from the southeast and flows into the southeastern corner of the reserve through a culvert, and then heads southwest along a broad valley between rolling hills. It continues downstream (westbound) along Otay Lakes Road where it joins with Jamul Creek approximately three miles from Hwy 94. Mean daily flow data recorded between 1940 and 1997 by a stream gauge located just below the confluence of Jamul and Dulzura Creeks, indicate that the flow rate ranges seasonally from approximately 5 cubic feet per second (cfs) in October to 68 cfs in March (Wildlands Inc., 1999).

The condition of these two major drainages has improved tremendously since cattle were removed when the area was proposed for acquisition (1996) and since Wildlands Inc. began their restoration efforts in 2000. Past grazing practices and agricultural uses left the creeks denuded, entrenched and disconnected from adjacent terraces, thereby reducing the heterogeneity of the riparian habitat, reducing native species diversity, and increasing the number of non-native plants along the riparian corridor (Wildlands Inc., 1999). Restoration and enhancement efforts have expanded the floodplains, established overflow channels, removed exotics, restored native vegetative cover and increased riparian structural diversity. These efforts will enhance breeding and foraging opportunities for native fauna that is dependent on multiple level riparian habitats.



Artificial Water Bodies

Despite the detrimental impacts caused by past agricultural practices, some of these past practices may have benefited the native flora and fauna, as well as non-native game species. Specifically, artificial ponds, a water tank, wells, pipes and an aqueduct system were constructed to catch, store, and utilize runoff for use in the ranch house (now the CEC) and by domestic animals. These same water sources can be used to support native wildlife. Currently, there are seven main artificial ponds and two water tanks (Figure 10) used for water storage on the property (USGS 2002; T. Dillingham, pers. comm.) as detailed below.

- **Water tank 1**, on hill southwest of CEC;
- **Water tank 2**, same location as water tank 1, installed in 2005;
- **North Pond** (Rancho Pond), at the northern end of the reserve;
- **Main Pond** (Willow Pond), north of the CEC;
- **Cement Pond** (Cistern Pond), just northeast of Main Pond;
- **Corral Pit Pond**, upstream of stream confluence;
- **Corral Pond**, adjacent to Corral Pit Pond;
- **Kiln Pond**, south of Corral Pond;
- **Canyon Pond**, southeast of the Kiln Pond.
- There are additional, smaller ponds as well, and some of these have been named (Hidden pond, Corner Pond, South Pond).

The ponds fill by different means, and retain water to different degrees. During the 1998-2001 USGS field seasons, for example, all ponds except Cement and Corral Pit Ponds (which presumably fill with groundwater) were seasonally dry in the summer, and became wet during the rainy season. Some ponds remained dry during periods of scanty rainfall (USGS 2002). Main Pond is the largest pond on the property and, due to its proximity, can be filled with water flow from Cement Pond, which is connected with underground pipes. The Cement Pond received piped water that is pumped from the Otay Well. This is the source of water into both water tanks that service the CEC and headquarters complex. North and Corral Ponds have the potential for pumping, although the infrastructure is not in place at this time. The rest of the ponds fill from runoff (T. Dillingham pers. comm.).

An aqueduct system consisting of a network of open trenches, levees, pipeline, pumps, and dams was built by one of the previous landowners; however, the exact date is

unknown. It was built to take advantage of seasonal rains by catching and diverting runoff to the storage ponds, mentioned above. Part of the aqueduct system includes maintenance roads, which are located on top of the levy system. These roads also serve as firebreaks. Currently, the system is not functional, due to a few washouts, infilling, and overgrowth in various locations. One of the washouts is located at the confluence of the two branches of Jamul Creek.

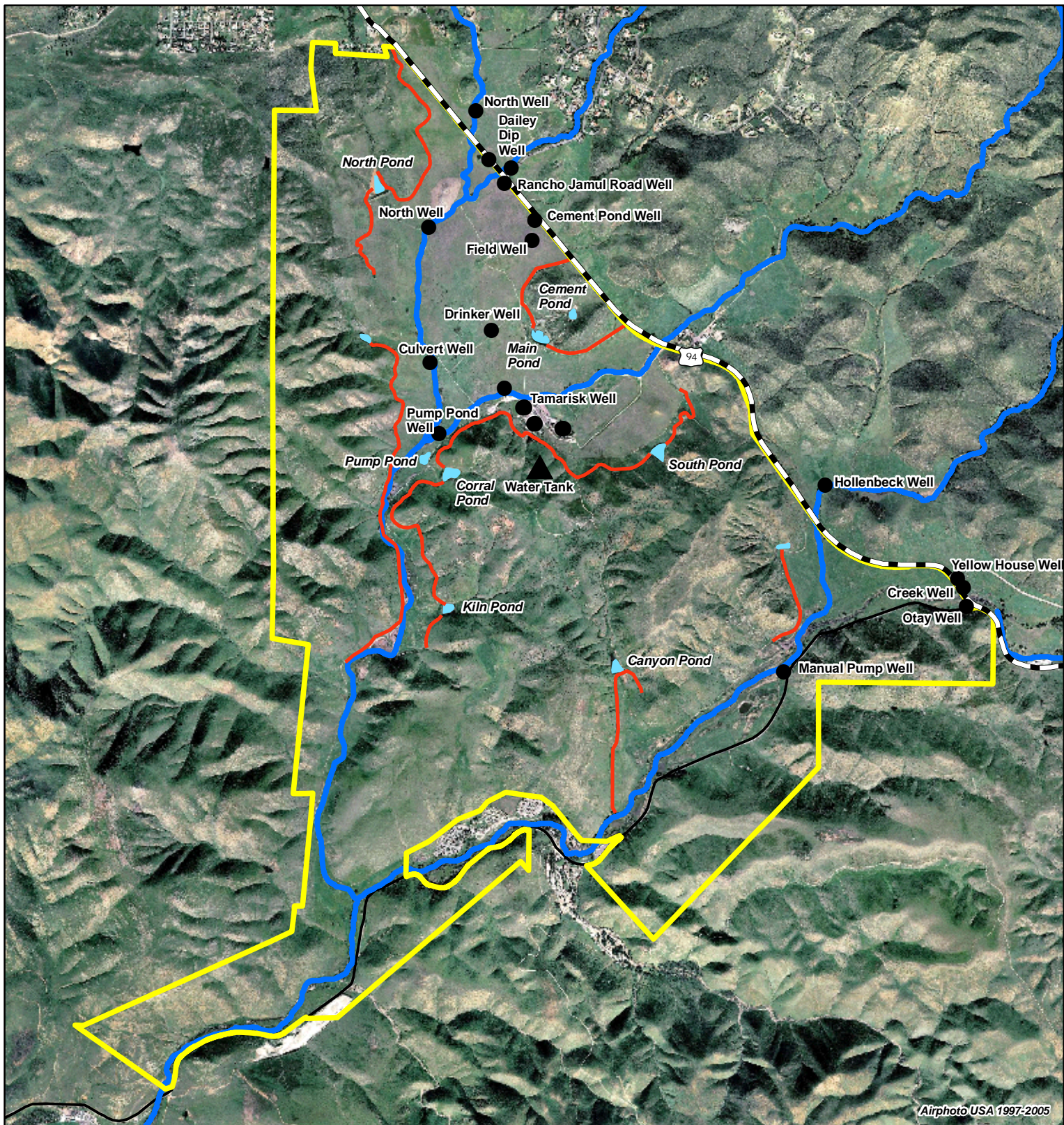
Artificial Wells

Numerous groundwater wells (Figure 10) have been constructed for agricultural purposes and for use at the main residence (now the CEC). There are approximately 19 wells on the property, but not all of them are functional at present (T. Dillingham pers. comm.). The functional wells can be used to draw water for use at the CEC and for wildlife management needs, although only a few of the wells (Otay, Creek, and Hill wells) provide potable water. Potable water delivery to the CEC and surrounding buildings originates at the Hill Well and travels through underground pipes to water tank 1, then to the buildings of the CEC. A second system delivers water from the Otay Well by underground pipeline to Cement Pond, and then Main Pond that also connects to the irrigation system surrounding the CEC. The secondary system is augmented by the Tamarisk well and the Green Well for irrigation and fire suppression purposes at the CEC.

Water Rights

The following information about water rights pertaining to RJER was obtained by reviewing title documents and the California Code of Regulations (Title 23) and through discussions with the Department's Lands and Facilities Water Coordinator:

- **Riparian rights.** Riparian rights are held by the owner of the land abutting a stream. As such, the Department holds riparian rights to Jamul and Dulzura Creeks within RJER. Riparian landowners may use natural flows directly for "reasonable, beneficial purposes" on riparian lands without applying for a permit (California Code of Regulations Title 23).
- **Water conveyance.** The City of San Diego holds the right of way to use Dulzura Creek as a conduit to convey water through the property.



- Legend**
- Pond
 - Aqueduct
 - ▲ Water Tank
 - Well

- Basemap Legend**
- RJER Boundary
 - State Highway
 - Major Stream



Feet

0 3,100

5. Fire History

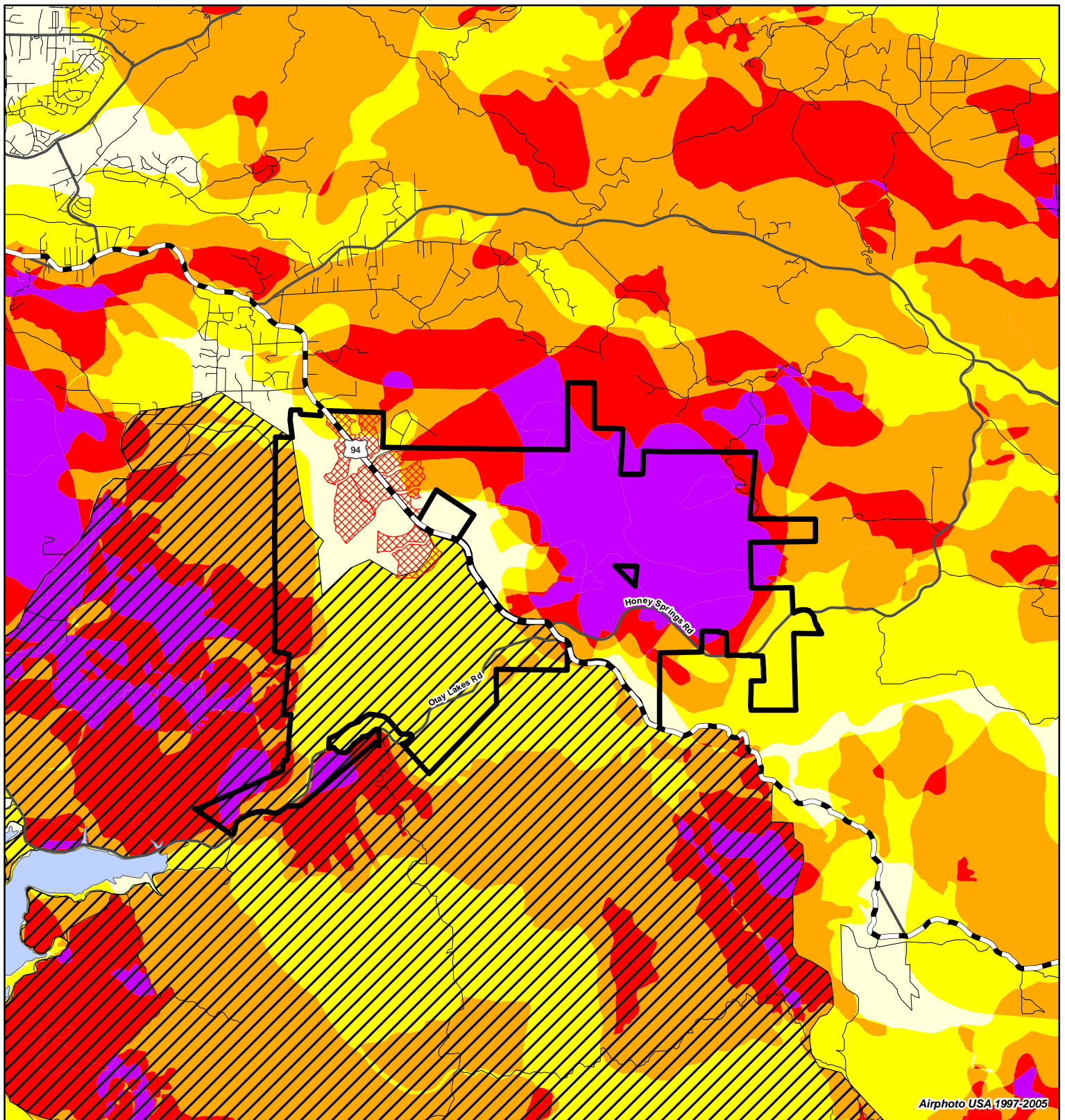
Wildfires

Wildfires, both natural and human-caused, have historically swept through RJER and surrounding areas fueled by the native scrublands and native and non-native grasslands that characterize the landscape. Wildfire burn data for RJER and surrounding vicinity were obtained through the following sources:



- California Department of Forestry and Fire Protection (CDF) burn history database (CDF 2004), which covers the period from 1910 to 2004 in the vicinity of the reserve
- 2003 Southern California Fires, Burned Area Emergency Stabilization and Rehabilitation Plan, prepared by the Interagency Burned Area Emergency Response (BAER) Team; this report provides recommendations for all Bureau of Land Management lands, U.S. Fish and Wildlife lands, and Bureau of Indian Affairs administered lands that were affected by the October 2003 fires.
- Interagency Burned Area Emergency Response (BAER) Team. 2003.
- Post-fire Survey and Recommendations for Four San Diego County Department of Fish and Game Ecological reserves (Bainbridge 2004).

The CDF database includes boundaries of individual fire events, acreage burned, and the year of the event. The CDF fire data were used to prepare fire history and fire frequency maps for the reserve and the surrounding landscape (Figures 11 and 12). The fire history map illustrates the most recent fire (within a decade, or group of years) at a particular location. The fire frequency map illustrates the number of fires that have occurred at that location.






Two important factors to consider when evaluating the effect of fire on vegetation recovery are both season of burn and the intensity of the fire. The CDF database includes the month of ignition for most fires; however, information about fire intensity, if available, must be obtained from other sources. Mapping prepared by the BAER team for the 2003 Otay Fire does include information about the varying intensity of that fire within its perimeter. However, burn severity data for other fires that have burned within RJER or on neighboring areas were not available. An additional factor that can significantly affect vegetation recovery is the time interval between fires. Information about fire size, season of burn, severity, and interval since previous fires is discussed below for the primary wildfires that have affected RJER and the surrounding vicinity. Large-scale fires that



Legend


-  2003 Olay Fire
-  Recent Prescribed Burns

Burn Frequency

-  No Record of Burn
-  Burned Once
-  Burned Twice
-  Burned Three Times
-  Burned More than Three Times

Source: U. S. Forest Service 2004.

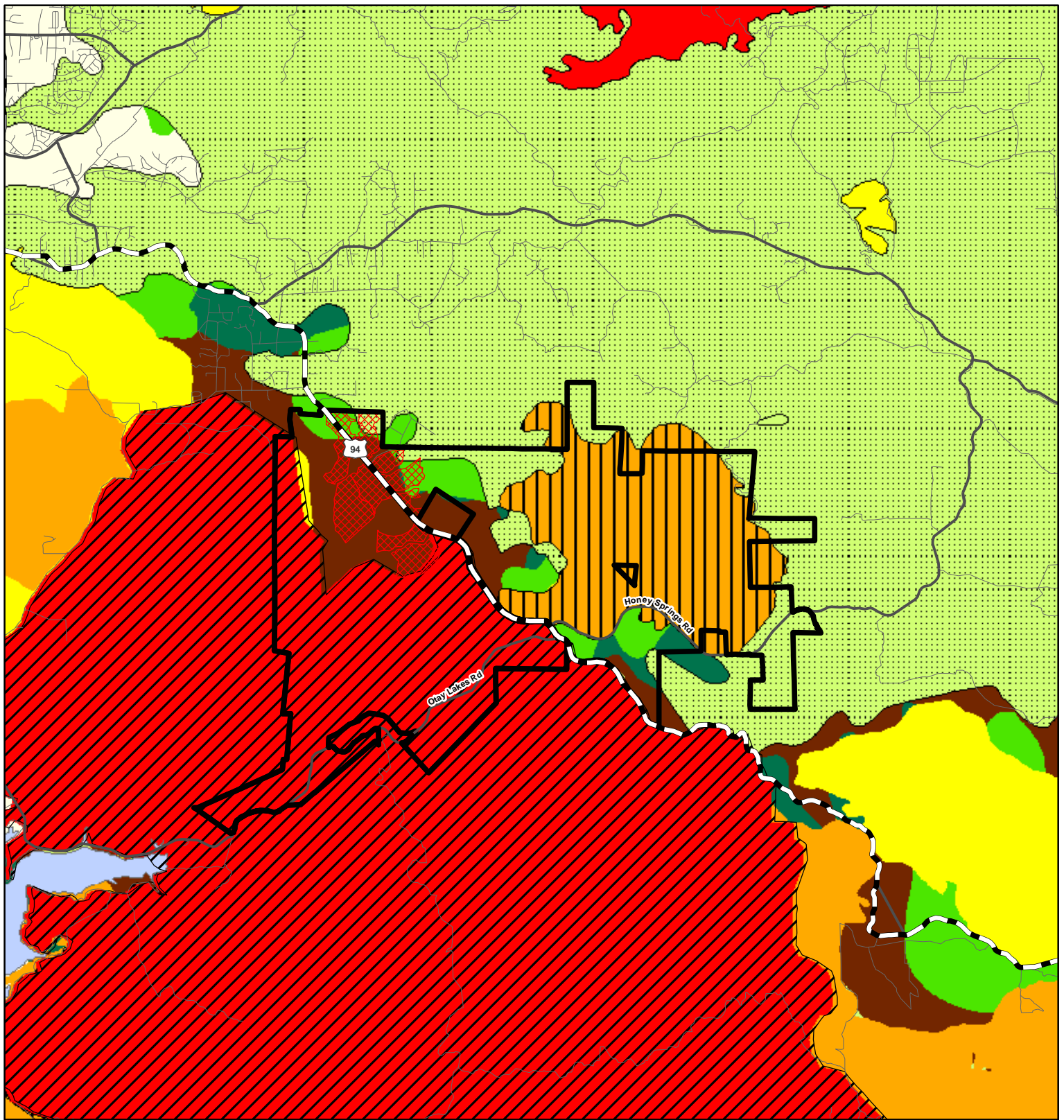
Basemap Legend

-  RJER and HCWA Boundaries
-  State Highway
-  Major Road
-  Road
-  Lake/Reservoir



Feet

0 7,600



- Legend**
- Never Burned
 - 1910 - 1926
 - 1940 - 1958
 - 1969 - 1979
 - 1980 - 1989
 - 1991 - 1999
 - 2000 - 2004
 - 1970 Laguna Fire
 - 1996 Honey Fire
 - 2003 Otay Fire
 - Recent Prescribed Burn

- Basemap Legend**
- RJER and HCWA Boundaries
 - State Highway
 - Major Road
 - Road
 - Lake/Reservoir



Feet

0 7,600

Source: California Dept. of Forestry and Fire Protection 2004.

affected neighboring lands but did not burn RJER are also described, since the condition of fuels on adjacent lands must be considered when assessing the fire risk from surrounding areas.

Otay Fire

As depicted on Figure 12, the majority of RJER burned during the 2003 Otay Fire, which affected 3,710 acres within the reserve, or 79 percent of the reserve area. The Otay Fire also burned all areas within approximately 1.5 miles to the west of RJER, and all areas within approximately 3 miles or further to the southeast of the reserve. Within the southern portion of RJER, the Otay Fire largely burned an area that had not burned prior to this 2003 fire event (based on records). However, areas along the western boundary and southern tip of RJER had burned once, twice, three times, or more than three times prior to the 2003 Otay Fire (Figure 11). The most recent fires that preceded the Otay Fire in these areas occurred in 1968, 1978, 1979, 1980, and 1984; therefore, the age of the vegetation that burned along the western boundary and southern tip of RJER was between 19 and 35 years. Based on field and aerial photograph analyses conducted by the BAER team, the majority of RJER burned at low severity in the Otay Fire. A small pocket of habitat along the western boundary burned at moderate severity, and habitat along Otay Lakes Road in the southwestern portion of the reserve burned at high severity. Portions of RJER were used to control the Otay Fire. Areas to the south and west of the CEC were back-lit to connect up with the flames. This area was burned at night and is considered a low-severity fire. This back fire not only protected the CEC but also the community of Jamul.

Diegan coastal sage scrub habitat dominates all areas that were burned in the Otay Fire within RJER. This vegetation community burns easily and can reburn immediately following a fire event, primarily due to invasion by highly flammable non-native grasses that establish post-burn (BAER 2003). The native species that characterize this vegetation community are fire-adapted and quickly regenerate from seed post-burn. However, fires that occur less than 10 years apart in Diegan coastal sage scrub can reduce the seed bank of native shrub species. When this occurs, invasive grasses often establish in areas once occupied by the native species which then provide flashy fuels that will readily burn in subsequent fires; this leads to further degradation of the native habitat. If the fire frequency increases within this degraded scrub habitat, conversion to a non-native grassland habitat that includes many non-native broadleaf species (e.g., mustards) will occur (BAER 2003). Once habitat conversion occurs, the non-native species continue to out-compete any native species that attempt to re-establish themselves.

Much of the Diegan coastal sage scrub that burned once to more than three times prior to the Otay Fire was mapped as disturbed in 2001 (O'Leary 2002, see Section III for a detailed description of the Diegan coastal sage scrub within RJER). Within RJER, all of the disturbed Diegan coastal sage scrub that burned during the Otay Fire is at risk for habitat conversion if another wildfire occurs before there is adequate recovery of the native species.

No new firebreaks or staging areas were cleared on RJER lands during the Otay Fire. Post-fire site assessment conducted during January 2004 identified several areas where erosion problems from the fire could occur, including gullies near the old adobe on the western valley floor, near the Corral Pond, near old culverts and undersized crossings within the reserve, and at other locations (Bainbridge 2004).

Honey Fire

Outside of the Otay Fire perimeter, the most recent fire within or neighboring RJER was the 1996 Honey Fire that burned 3,387 acres immediately to the east, including 2,935 acres within the adjacent HCWA (Figure 12). The majority of the area that burned during the Honey Fire had burned three or more times prior to 1996 (Figure 11). The most recent fires that preceded the Honey Fire within HCWA occurred in 1926, 1943, and 1970; therefore, the age of the vegetation that burned in this portion of the preserve was between 26 and 70 years.

Most of the area that burned during the Honey Fire supported Diegan coastal sage scrub habitat. The response of this vegetation community to fire is described above. The northern portion of the Honey Fire within HCWA, however, is characterized by chaparral habitat. Chaparral is also a fire-adapted vegetation community and the characteristic species quickly regenerate from seed or by resprouting from underground burls post-burn. While fires may occur within chaparral vegetation communities every 20 to 30 years, the typical fire interval for this habitat is 50 to 75 years (Minnich 1995). Based on field observations during 2004, the chaparral habitat and much of the Diegan coastal sage scrub that was burned during the Honey Fire is recovering well. However, some areas of Diegan coastal sage scrub are relatively disturbed and are characterized by substantial cover of non-native grasses.

Laguna Fire

A large-scale blaze that affected 174,162 acres immediately east of SR 94, including 1,115 acres within the adjacent HCWA, was the 1970 Laguna Fire (Figure 12). When this fire occurred 35 years ago, all areas within many miles north and east of RJER burned. Aside from the Honey Fire described above, and other relatively small fires that have occurred in the vicinity, most of the area affected by the Laguna Fire has not burned since the 1970s (Figure 12).

Information about the three major fires that burned within or immediately adjacent to RJER is summarized in Table 5.

Table 5. Large-Scale Fires within or adjacent to RJER

Name	Month, Year	Acres	Notes
Laguna Fire	October 1970	174,162	Burned majority of the landscape east of RJER, including 1,115 acres (21 percent) within HCWA.
Honey Fire	1996	3,387	Burned up to the SR 94 corridor east of RJER, including 2,935 acres (56 percent) within HCWA.
Otay Fire	October 2003	45,971	Burned 3,710 acres (79 percent) within RJER. Fire analysis indicates that burn severity was predominantly low.

Additional Fire History

Both the fire history and the fire frequency maps depict a large area in the northern portion of RJER where there is no record of burn. Similar areas occur on the opposite side of the SR 94 corridor. Aside from the Honey Fire which burned up to SR 94 from the east, and the Otay Fire which burned up to SR 94 from the west, the SR 94 roadway corridor in the vicinity of the reserve is predominantly flanked by land that either has no record of wildfire or has not burned since the 1940s. The general lack of fire in this area since fire records have been maintained is likely due to fire suppression around the ranch facilities and the agricultural fields, and active fuel management along the SR 94 road corridor.

Prescribed Fires

Controlled burns have been conducted along the SR 94 and Honey Springs Road corridors to create fuel breaks to prevent fires from spreading from ignition sources along these roads. These sources may include cigarettes, matches, or car fires. During May 2004, a controlled burn was conducted by the CDF, USFWS, and the County Rural Fire Department during May 2004 along approximately 2 miles of the SR 94 corridor and 1 mile of Honey Springs Road. The objective was to reduce the flashy fuels within 5 to 30 feet of these roadways within both RJER and HCWA, thereby reducing the risk of another fire in the area too soon after the Otay Fire. This controlled burning was designed to remain 100 feet outside of the drainages that cross these roadways.

Since acquisition of RJER, four prescribed burns have been conducted by the Department in the northeastern portion of the reserve in addition to as-needed roadside burns to protect RJER habitat from highway fires (Figures 11 and 12). The following list summarizes the purpose, acreage, and location, of the burns:

- November 15, 2001 – Controlled burn to remove thatch and improve habitat; 51.2 acres adjacent to main entrance.
- November 20, 2001 – Controlled burn to remove thatch and improve habitat; 61.3 acres adjacent to Northern perimeter.
- October 2005 – Controlled burn to remove thatch and improve habitat; 91.2 acres in the south field by the racetrack.
- February 9-10, 2006 – Controlled burn in central fields; 198 acres north of Cement Pond; in the east (74 acres) and west (124 acres) fields, to reduce thatch and improve habitat.
- As needed – roadside burns to control weeds and to protect the reserve from spreading highway fires.

E. Cultural Features

Cultural features include resources of architectural, historical, archaeological, and spiritual value. The following definitions, adapted from the terms defined by Susan Hector (2002), are used to describe the cultural resources within the project area.

-
- **Habitation Site** - site containing evidence of long-term use and occupation by native people; also called a village site
 - **Sacred Site** - location or resource important to native people
 - **Rock Art** - art that consists of petroglyphs (art pecked into the surface of rocks) or pictographs (art painted on rocks)
 - **Temporary Camp** - campsite used by native people during certain times of the year to collect or process specific resources, such as acorns
 - **Bedrock Milling** - granite or other bedrock outcrops used for grinding and processing plant and animal foods by native people; types include slicks (flat, polished surfaces), basins (shallow, oval surfaces), and mortars (deep, circular holes in the rock)
 - **Quarry** - an area where native people removed raw materials that they could then form into tools; typical remnants would include flakes and shatter from the removal process
 - **Lithic Scatter** - refuse from the manufacture of stone tools by native people; typically a lithic scatter includes flaked stone and shatter from flint knapping (the manufacture of stone tools by striking the rock with another rock or antler to produce sharp edges)
 - **Isolate** - three or less artifacts without any other cultural objects nearby
 - **Ditches and Ponds** - historic water control features that may or may not still be in use
 - **Historic Foundation, Adobe, etc.** - any feature made between 1769 and the present (although a structure generally has to be more than 50 years old to be considered historic)
 - **Reservoir** - a historic feature that may or may not still contain water; these could be earthen or concrete
 - **Structure Location** - mapped location of a structure or building; there may be no observable remains on the surface of the ground

1. Prehistory and Early History

Radiocarbon dating indicates that human settlement in southern California occurred at least 10,000-12,000 years ago. These early inhabitants were hunter-gatherers who lived in small bands and traveled seasonally between the coast and inland areas to hunt large game, gather shellfish, and process plant materials. This period is often referred to as the Paleoindian period represented locally by the San Dieguito complex. In San Diego County, the earlier San Dieguito complex was followed by the Archaic period La Jolla complex, which more heavily emphasized processed plant foods. The Archaic period is

differentiated from the earlier Paleoindian period by a shift to a more generalized economy and an increased focus on use of grinding and seed technology. Large bifaces, manos and portable metates, and core tools are characteristic of this period. During the Late Prehistoric period, around 2,000 years ago, Yuman-speaking people from the eastern Colorado River region began migrating into southern California. This period is categorized by smaller projectile points, the replacement of flexed inhumation with cremation, the introduction of ceramics, and an emphasis on inland plant food collection and processing, such as acorns (True 1966).

The Kumeyaay (previously referred to as Diegueño) who inhabited the southern region of San Diego County, western and central Imperial County, and northern Baja California are the direct descendants of these early Yuman hunter-gatherers. Their territory extends from Agua Hedionda Lagoon south into Baja California and east to the Sand Hills of Imperial County. This territory includes marine, foothill, mountain, and desert environments. The material culture of the Kumeyaay include ceramics for cooking and storage vessels, woven baskets, flaked lithic and ground stone tools, arrow shaft straighteners, as well as stone, bone, and shell ornaments.

Kumeyaay culture and society remained relatively stable until the introduction of the mission system during the 18th century. The founding of the mission and presidio of San Diego in 1769 drastically changed the lifestyle and culture of the Kumeyaay, as many were forcibly removed from their land and required to assimilate into the Spanish culture. The Kumeyaay employed many strategies to resist their new lifeways such as fleeing into the mountains, fighting back, and burning Spanish settlements (Hector 2002). However, by the 1820s, the Kumeyaay of Jamul had all been removed to the mission (de Barros et al. 1998).

2. Rancho Jamul

In 1831, the Jamul Valley, consisting of approximately 9,000 acres, including present day RJER and HCWA, was granted to Pio Pico (former governor of California) as Rancho Jamul (de Barros et al. 1998). Pico built an adobe house on the property and stocked the ranch with livestock. Colonel Henry S. Burton and his family occupied the land after Pio Pico, in the mid-1850s. However, the Burton family lost their title to Rancho Jamul at the end of the decade and began an intense court battle (that lasted almost 40 years) to regain its possession.

During the 1860s, several farmers began to settle on Rancho Jamul believing that it was government land available for homesteading (since the land was still under litigation). On September 12, 1889, the Jamul Portland Cement Manufacturing Company opened on

a portion of the Burton homestead. The plant closed in October 1891 because it could not compete with cement imported from Great Britain (Burkenroad 1979). During the late 1890s, John D. Spreckels, San Diego entrepreneur and sugar fortune heir, gained control of the land and formed the Southern California Mountain Water Company. This venture helped capture rainfall from the watersheds of southern San Diego County's backcountry with the construction of Morena, Barrett, and Otay dams. In July 1916, Spreckels sold the property to former San Diego Mayor Louis J. Wilde, who hoped to convert it into a Wild West dude ranch and movie studio. However, these plans did not materialize, and Wilde planted Turkish tobaccos on the property instead.

In 1929, George R. Daley bought the property and returned it to a cattle ranch (de Barros et al. 1998). Donald Daley inherited Rancho Jamul from his uncle and continued the ranching and agricultural business. The TPL and Wells Fargo purchased the property from the Daleys in 1996. The State of California acquired the property in three phases, from 1997 to 2001. In August of 2000, the California Department of Fish and Game designated the property as an Ecological Reserve.

3. Previous Investigations

Cultural Resources Surveys Conducted in RJER

Since 1997, there have been four major cultural resources surveys conducted in the RJER project area. For surveys conducted before 1997, Refer to Table 3 in de Barros et al. (1998). The results of these four most recent investigations are summarized below.

In August 1997, the California Department of Transportation (Caltrans) conducted a survey for proposed widening of State Route 94 (Corum and Crafts 1997). Caltrans identified four significant archaeological or cultural sites within Rancho Jamul and the Caltrans study area. The sites included bedrock milling, surface artifacts, a potential midden, a pictograph panel, and a small scatter of stone tools. The presence of these artifact types indicates a Late Prehistoric occupation of the sites within Rancho Jamul (Corum and Crafts 1997).

In March 1998, Tierra Environmental Services conducted an intensive archaeological survey of a 940-acre property. This was proposed as part of a larger Jamul and Dulzura Creek Biological Mitigation Bank (Pignuolo et al. 1998). The survey followed portions of Jamul Creek and Dulzura Creek, which were the areas to be restored by Wildlands, Inc. under a banking Agreement. These areas had not been previously surveyed. A total of 45 prehistoric sites, 3 historic resources, and 18 isolates were identified. Based on this

and the alluvial nature of the area, they indicated there was a potential for buried cultural resources (Pigniolo et al. 1998:S-1).

In March 1998, Tierra Environmental Services conducted a more comprehensive survey of the Rancho Jamul area encompassing 3,248-acres (de Barros et al. 1998). The survey was conducted for acquisition of land using federal Section 6 funds (Hector 2003). There were no proposed improvements or developments to the land as part of the acquisition. A total of 131 prehistoric sites, 7 historic resources, and 61 isolates were identified at this time.

The most recent survey occurred in 2003 (Hector 2003). This 120-acre survey was assessed for two proposed staging areas: Otay Lakes Road and the Rancho Jamul Conservation and Education Center (CEC). It also included an assessment of the remains of the Robinson Adobe. The property west of Otay Lakes Road had not been previously surveyed. No cultural resources were found within this proposed staging area near Otay Lakes Road (Hector 2003). One isolated artifact, a quartzite cobble, was found near the Rancho Jamul CEC. This area had been previously surveyed by de Barros and others (1998). These documents are on file with the Department. Approximately 991 acres of RJER have not been surveyed for cultural resources including Expansion 3, and the Proctor Valley Unit parcel (see Figure 5).

Summary of Survey Results

Prehistoric Period Resources

Based on the four recent surveys of RJER described above, a total of 197 prehistoric cultural resources have been identified (Appendix B, confidential). Of these cultural resources, there are 135 sites and 62 isolated finds. The sites consist of 75 bedrock milling, 31 lithic scatters, 15 quarries, eight temporary camps, five habitation sites, and one potential sacred site. The 62 isolated finds include flakes, flake or ground stone tools, projectile points, cores, historic ceramics, and shell.

Historic Period Resources

There are seven historic cultural resources recorded within RJER (Appendix B, confidential). These cultural resources include a series of ditches and ponds, a water reservoir, two historic foundations, one historic adobe, and two structure locations (Table 6). The Jamul Cement Works contains kiln ruins and quarry pits. The historic rock

foundation is part of the G. Rennie residence. The historic adobe is the Robinson house, which consists of an adobe wall and foundations.

4. Cultural Resource Status Recommendations

All sites were given a preliminary National Register of Historic Places (NRHP) evaluation based on surface survey data and archival and literature searches (de Barros et al. 1998; Hector 2002). Forty-five prehistoric sites, the Jamul Cement Works, the Robinson Adobe, and three mid-to-late 19th century squatters' residences (Riley, G. Rennie, and Faquay residences) were recommended as potentially eligible for the NRHP (see Appendix B, confidential). One historic water reservoir was evaluated as a potentially contributing element to the Jamul Ranch complex. Eighty-five prehistoric sites (mostly small lithic scatters and bedrock milling without associated artifacts and quarries) and a series of ditches and ponds were evaluated as probably not eligible for the NRHP (de Barros et al. 1998).

Table 6. Historic Resources within RJER

Resource	Dimensions	Findings
Ditches and Ponds	unknown	agricultural water and erosion control system distributed across RJER; includes trenches or ditches, associated berms, and reservoirs
Water Reservoir	unknown	small roofed water reservoir; tank is excavated into the ground and lined with cement
G. Rennie Residence	145 x 130 m	foundation remnants
Jamul Cement Works	475 x 600 m	kiln ruins, tracks, 3 quarry pits, rail spikes, wood, bricks, and slag
William Robinson Adobe	160x130m	includes adobe wall and foundation, a kiln, barn, horse corral, roads, levees, and fences; artifacts include ceramics and sun-purple glass
Riley Residence	unknown	features or artifacts not yet identified
Faquay Residence	unknown	features or artifacts not yet identified

Several sites were recommended as a focus of future research, interpretation, and stabilization (de Barros et al. 1998). The property is an ideal laboratory for the study of changing prehistoric subsistence and settlement patterns in southern California (de Barros et al. 1998). The William Robinson Adobe house site (CA-SDI-14,826) contains a great deal of information about pioneering farmers in this region after 1860. Stabilization

measures have been recommended for the Robinson Adobe and the Jamul Cement Works (CA-SDI-6967H). The Jamul Cement Works provides a wonderful opportunity to learn about late 19th century cement-making technology and kilns.

As previously noted, of the 4,701.5 acres set aside for RJER, approximately 1,393 acres (Expansion 3 and the Proctor Valley Units) have not yet been surveyed for cultural resources. Before any ground disturbance can occur within an area that has not been surveyed, an archaeological survey and evaluation should be conducted.

F. Historical and Existing Land Use

Historically, the property has been used for farming, grazing, cattle ranching, and cement production. Over the years, various crops have been planted, including spineless cactus, Turkish tobaccos, grain crops, and fruit orchards. Ranching and agricultural land practices can play an important role in the protection of natural communities by serving as a buffer between urban areas and native habitat, and by providing foraging and nesting grounds for some species. Fortunately, much of the land in the surrounding area has been used in a similar fashion, and therefore, it has not lost its rural character.

As an ecological reserve, RJER provides different land use opportunities than were available historically. The primary purpose of an ecological reserve is “to protect threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and aquatic, or large heterogeneous natural gene pools” (Fish and Game Code, Section 1580, Appendix A), and that remains the primary focus of this property. However, the reserve provides numerous public use opportunities as well, including compatible wildlife-dependent recreation, managed hunting, scientific study, and education. All public use on RJER is, and will continue to be, compatible with the protection of the biological resources of the reserve. The following section describes existing land use, existing structures such as gates and fences, areas that are closed for management purposes, and activities that are prohibited on the reserve. These elements are illustrated in Figure 13.

The San Diego County Community Trails Master Plan has been adopted by the County to establish a system of interconnected regional and community trails and pathways. These trails and pathways are intended to address an established public need for recreation and transportation, but will also provide health and quality of life benefits associated with hiking, biking, and horseback riding throughout the County's biologically diverse environments. Existing RJER and HCWA trails connect with the existing and proposed County trail system.

1. Public Access

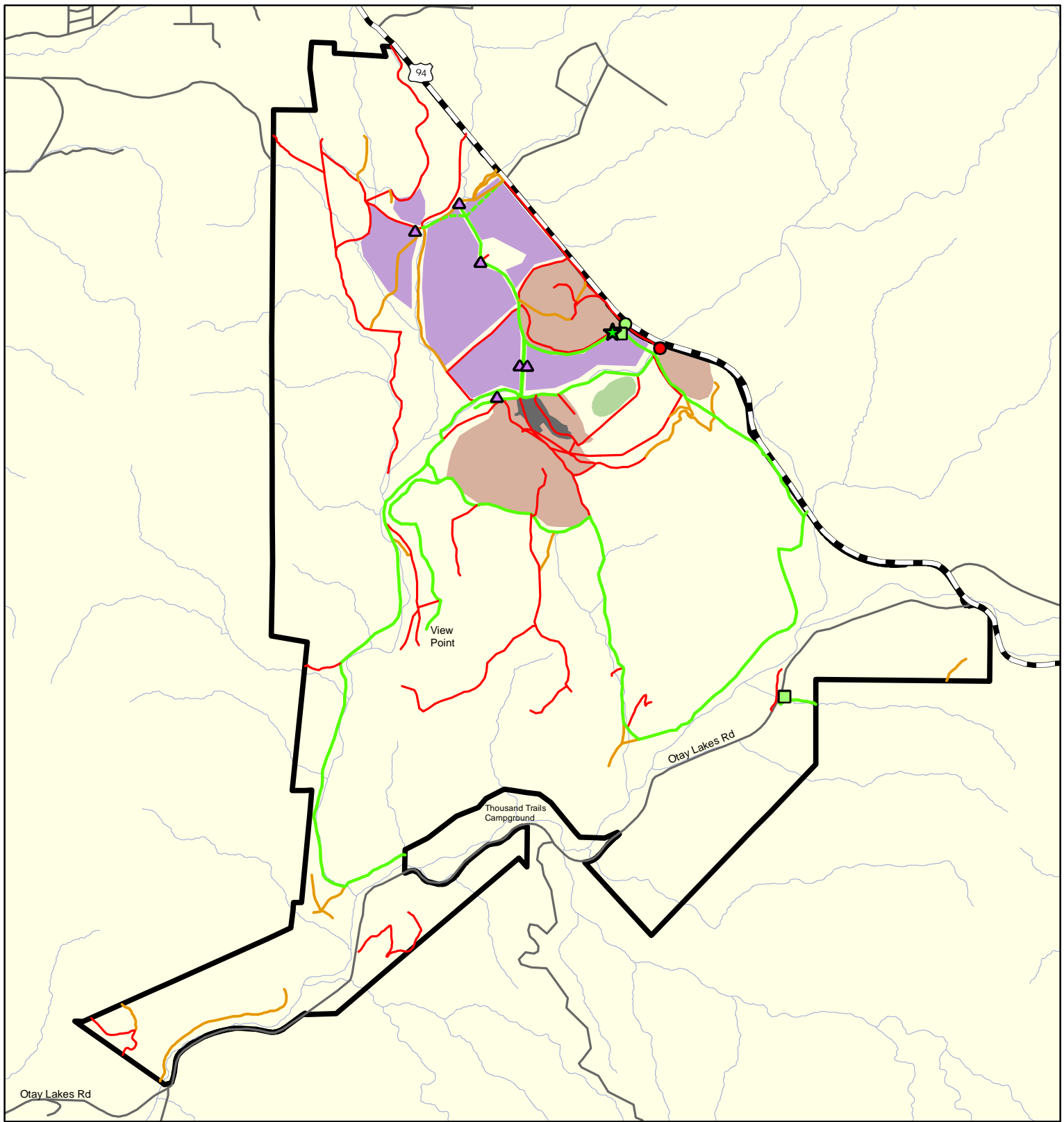
Currently there is a single point of access for the public, which is located along SR 94 (Figure 13). Public access to RJER at this time is by special permit only and public uses are limited to managed hunting, scientific research, and limited equestrian rides. Educational groups also visit the area by special arrangement. RJER is otherwise closed to the public. Expanded public access that does not require permits may be allowed in the future. However, this level of access is being postponed to allow restoration projects to be completed and to allow for the recovery of areas that were burned (approximately 80% of the reserve) during the October 2003 Otay Fire. There are several other reasons for limiting current public access, including the presence of open wells that pose a safety hazard, the presence of historical and cultural resources that may also present safety hazards and that require actions to protect them from human disturbance, and until the installation of a public parking area can be completed, it is currently unsafe to park along SR 94 or Otay Lakes Road. These and other considerations regarding future public use at RJER are discussed further in Section IV of this document.

2. Existing Roads and Trails

RJER contains a network of old ranch roads. Some of these roads are currently used for Department management and law enforcement, access to research sites, and by Fire Agencies and Border Patrol staff. The portions of these roads that do not cut through sensitive areas also serve as a trail network used by hunters and equestrians using the area under permit. In the future, these roads may provide recreational opportunities for hikers and other visitors (Figure 13). Future plans to restore and revegetate some of these roads and to develop others into a recreational trail network will be explored in Chapter IV.

3. Allowable Public Use

The Department of Fish and Game is managing the reserve with the overall goal of protecting and enhancing unique biological resources and providing the public with compatible wildlife-dependent educational and recreational opportunities. Compatibility of recreation with resource protection is a critical element of the planning effort. The reserve was designated as an Ecological Reserve as defined in Section 630, Title 14, California Code of Regulations (CCR) for the protection of sensitive species such as the least Bell's vireo, Quino checkerspot butterfly, California gnatcatcher, and Otay Tarplant. Protection of these species will also help support the goals of the MSCP subarea plan.



- Legend**
- Conservation Education Center
 - Closed Area
 - Proposed Interpretive Area
 - Special Hunting Areas
 - Proposed Visitor Center
 - Proposed Main Public Access Gate
 - CEC Access Gate

- Parking Lots**
- Proposed Public - Permanent
 - Hunting - Temporary
- Trails**
- Public/Management
 - Proposed New Public/Management
 - Management Only
 - Trail Restoration

- Basemap Legend**
- RJER Boundary
 - State Highway
 - Road
 - Stream



Feet

0 3,100

Four special regulations, specific to the reserve, are included in Section 630, Title 14 to expressly allow or prohibit activities not addressed in the general regulations: (1) Controlled retriever training may be permitted within a designated area. This area will be clearly posted; (2) hunting will be allowed in accordance with the general hunting regulations, but only at such times and in specific areas as designated by the Department; (3) within the 50.51 acre Headquarters Unit, the Department may develop facilities and conduct activities consistent with training programs, meeting and storage needs, fire suppression and control, and educational programs under guidelines established by the regional manager; and (4) uses associated with occupied state housing will be allowed within the 50.51 acre Headquarters Unit.

Title 14 of the CCR and other statutes regulate use within ecological reserves. Title 14 supersedes the authority of this LMP. If regulations pertaining to ecological reserves in Title 14 are changed in the future, those revised regulations would apply to RJER, overriding this LMP. Proposed changes in uses identified in this LMP would need to be added to Title 14 during the next regulatory review cycle before those changes can become legal. Title 14 regulations are reviewed and changed, as needed, every three years. Area-specific LMPs are reviewed and updated, as needed, every five years. Therefore, every five years this LMP will be updated to reflect any future regulation changes that apply to ecological reserves in general or RJER in particular.

In addition to the uses that are authorized through the Title 14 regulations, the Department's Regional Manager has the authority to issue permission to access Department lands for special uses, provided those uses do not violate any other laws. A special use permit may include habitat enhancement projects, public use projects, public events, volunteer events, specific research studies, educational field trips, or organized group activities. The Department has developed criteria to evaluate potential special uses to ensure that the proposed use does not violate any existing laws, e.g. CEQA, the federal Endangered Species Act (ESA), the California ESA, etc. The criteria for issuance of regional letters of permission for special use on Department lands include:

- The applicant will provide to the Department a description of the proposed activity that will have sufficient detail to evaluate the uses under CEQA, the federal ESA, and California ESA, including date, time, location, number of participants, activity planned, any vehicular access needed, animals included in the activity (e.g., dogs, horses). The information has to be of sufficient detail for the Department to be able to conclude the following:
 - The activity is safe for the participants;

-
- The activity does not significantly impact sensitive habitat;
 - The activity does not significantly impact sensitive species;
 - The activity does not significantly impact cultural resources;
 - The activity does not conflict with approved public uses or affect other previously authorized special uses;
 - The activity does not cause significant damage (i.e., anything requiring repairs) to the property;
 - The activity results in a net benefit to species and/or habitats or achieves public use, monitoring/research or outreach objectives as outlined in the LMP for the property; and
 - The activity does not result in the Department incurring any costs (staff time or other), or is offset by in-kind improvements to the property of equal or greater value.
- The proponents must provide proof of insurance for the activity (two million dollars with the Department named as additional insured) once the activity is conceptually approved under other existing laws.
 - Following the special use, the applicant (or proponent) must provide a summary of the activity and provide participant numbers, project completion details, or study results to the Department.

Hunting

This section describes the regulations, permits, licenses, and species pertaining to hunting applicable to the RJER. As prescribed in Title 14 of the California Code of Regulations (CCR), Section 630, Ecological Reserves, hunting at RJER is permitted only at such times and places as designated by the Department (Appendix A). Under special regulations, hunting at RJER is conducted through scheduled hunts by which hunters are chosen to participate through a random public drawing of applications (a lottery). Hunters are required to have a valid license and the appropriate equipment, stamps, and tags. Designated hunting areas, which are used in special pheasant hunts, consist of disturbed habitat or non-native grasslands in the northeastern portion of the reserve (Figure 13). Scheduled quail and dove hunting occurs throughout the reserve.

RJER is used as one of the Southern California Region's locations for "put and take" (released pen raised birds) pheasant hunts. These hunts are provided primarily as an educational tool for beginners or as an opportunity for family hunting. Shooting instruction is provided, practice sessions using clay targets is provided and generally, volunteer dog handlers are on-site to provide a quality hunting experience. Providing a safe and controlled environment for new hunters has been found to increase their enjoyment of hunting and desire to continue hunting. It is also hoped that by educating new hunters in the field following their classroom instruction good hunter ethics and safety will be emphasized throughout their lifetime.

RJER provides hunting opportunities for dove and quail, and special junior or family hunts (pheasant hunts). The primary goals of the hunting management program are to keep hunting safe, to provide the public with an opportunity to hunt locally, and to provide a sustainable yield of native game species. Care is taken to ensure that lands are not over-hunted and that hunting does not interfere with other stewardship goals. This includes the protection of sensitive habitat (e.g. that which is occupied by state and federal listed species), as well as the protection of sensitive plants and animals.

Currently, RJER hosts approximately 40 specially permitted hunts per year for a total of 20 days. Three upland game bird species are hunted on the reserve: dove, quail, and pen-raised pheasant. Most hunting days are divided into morning and afternoon hunts, which increases the number of people who can participate. Typical hunter density is approximately 20 to 30 people per hunt. A maximum number of hunters for the pheasant hunts are 40, based on the number of available fields and purchased birds. The maximum number of hunters for dove and/or quail hunt is also 40.

Hunters may hunt with shotguns; no pistols or rifles are allowed due to safety concerns. Shotguns are allowed for hunting only. Falconry is prohibited on ecological reserves (per Title 14). To protect nearby residents, a buffer has been established around the Rancho Jamul Estates. If hunters come too close to the homes, the Department can be notified at 1-888-DFG-CalTIP (1-888-334-2847). Additionally, the Department will work with the Homeowners Association to place signs to assist in informing hunters of the buffer if existing signage is insufficient.

Environmental Education, Wildlife Viewing and Nature Study

RJER provides a wide variety of terrain and habitats that support diverse plant and wildlife communities. The quality and diversity of habitat and wildlife species throughout the area provide extensive opportunities for nature study and wildlife viewing. Habitat

types include a variety of upland and riparian communities, which attract a large number of invertebrate and vertebrate wildlife species. For example, 21 species of butterflies and 113 species of native birds have been recorded from RJER. These are the preferred subjects of many photographers, birders, and hikers because of their colorful appearance and diurnal habits. In addition, approximately 170 native plant species occur on RJER, many of which, such as wildflowers and sages, produce beautiful blooms or unique fragrances. A detailed description of the flora and fauna of RJER is given in Chapter III .

Occasionally, small or large groups, including school field trip groups, are hosted by Department staff. The Department uses the red hay barn, a steel structure with a roof and open sides, as an outdoor education center. Picnic tables have been placed under the roof for visitor groups to use. Hosting these groups is an important function of RJER and an important part of meeting the Department's mission. In the future, the CEC or other areas within RJER will provide additional space and opportunities for environmental education.

Horseback Riding

Local equestrian groups organize occasional rides at RJER, conducted under a special permit. The permit process requires that riders outline their route, which must use existing roads and trails. From 20 to 100 people participate in each ride. Equestrian use is not allowed for three days after recent significant rain events. Equestrians ride through the area using internal roads, and use the red hay barn for special activities.

Hiking

The current system of access by permit limits the amount of hiking activity, although hiking occurs in conjunction with other uses such as hunting and environmental education. Hiking occurs on existing roads only, although hunters may walk off-trail while hunting. Once the reserve is open to the public, more hikers are expected to visit RJER for the purpose of wildlife viewing while hiking.

Research

Monitoring of habitats and the numerous sensitive species found on the reserve is being conducted by Department biologists as well as other agency and contract biologists. In addition, graduate students from local universities have conducted research or are currently working on projects such as habitat quality and species home range studies.

Prohibited and Unauthorized Uses

Under Title 14, Section 630 (general regulations) a bicycle is considered a vehicle and vehicles are not allowed on ecological reserves although some unauthorized riding may occur from adjacent lands (e.g., biking is allowed at the Department's adjacent Hollenbeck Canyon Wildlife Area). All public motorized vehicle use is also prohibited, including use of standard vehicles, motorcycles, and all-terrain vehicles (ATV's). No overnight use is permitted, and dumping of any kind is also strictly prohibited.

4. On-Site Structures

Structures on the property that will be used for public or management needs consist of buildings, fences, and gates. There are three units of state-owned housing at RJER, all located at the former ranch compound. Presently, the former ranch house is being used for reserve headquarters as well as training and meeting facilities for the Department. The nearby red hay barn is used periodically for outdoor education. The headquarters building has been renovated into offices and a center for conservation education. Potential future uses of the CEC will be discussed in Chapter IV below.

Gates provide access control into RJER. The primary CEC entrance to RJER is accessed from SR 94 (Figure 3). A proposed public parking area is also off of Hwy 94. All other access points along SR 94 are gated. Several additional locations have been identified by the Department as secondary access points which, at present, are used for management purposes only.

Fences can be used to control access, to protect sensitive wildlife habitat or cultural resources, to protect the public from danger (such as uncapped wells), to protect wildlife from traffic, or to direct wildlife movement through protected corridors. The previous landowners built numerous fences on the property for agricultural purposes and to control grazing cattle. Unfortunately, these fences may hinder the movement of native wildlife. Many of the fences have been or are being removed since the Department acquired RJER. Recommendations for removal and/or construction of additional fencing will be discussed in the Management section below (Chapter IV).

5. Closed Areas

There are several closed areas within RJER (Figure 13):

- The twin hills area (near Cement and Main Ponds), due to sensitive habitat and species;
- A quarter-mile area around water tanks and wells, to protect the water system;
- CEC/Headquarters compound (future RJER offices), except during special events;
- 200-foot zone around historic brick kiln and other historic sites, for safety and to protect them from damage.
- Some cattle trails and roads that enter sensitive areas are also closed.

III. HABITAT AND SPECIES DESCRIPTION

Prior to the acquisition of RJER by the Department, while still under TPL ownership, Dudek and Associates (1998) conducted plant and animal surveys along Dulzura and Jamul Creek riparian corridors in preparation for the Rancho Jamul mitigation bank project, which is described in the Easements section above. The primary purpose of the field surveys was to assemble a biological resources inventory, determine their extent, and assess impacts from previous, current, and proposed land uses. A list of observed plant and animal species, including those with special status, was compiled and the wetland resources were mapped.

Subsequently, shortly after the Department acquired the RJER property, field surveys were initiated to establish baseline flora and fauna species data and vegetation community data layers. The United States Geological Survey (USGS) was contracted to conduct aquatic surveys in 1998-2001 to identify the native and non-native aquatic species in the artificial ponds on the property that were previously used for agricultural purposes (USGS 2002). The Department conducted general biological surveys for plants and animals in the spring of 1999, and determined that additional focused surveys would be needed to obtain more complete, species-specific data. In response to this need, the USGS, in cooperation with San Diego State University, was contracted to conduct vegetation mapping, rare plant surveys, ant surveys, and a variety of vertebrate surveys specifically designed to detect fishes, amphibians, reptiles, birds, and small, medium, and large mammals (including bats). Surveys identified the presence/absence of each species, as well as relative abundance whenever possible. The USGS surveys and vegetation mapping were conducted between November 2000 and January 2002, and supplementary bird surveys were conducted in 2003 and 2004 (USGS 2002 and 2004b).

Additional surveys were conducted by the Department in 2000-2002 to assess biological resources such as insects, the coastal California gnatcatcher (*Polioptila californica californica*), and the grasshopper sparrow (*Ammodramus savannarum*); by the San Diego Natural History Museum (SDNHM) to assess mammal and bird species distributions for the Mammal and Bird Atlas Projects (SDNHM 2005; 2006); and by the County of San Diego, MSCP Division, in 2001 to assess potential Quino checkerspot butterfly habitat. In addition, focused Quino surveys were conducted in 1999 and 2001 by the Department and USFWS. Additional surveys for bats were conducted by USGS for MSCP monitoring purposes (Stokes et al. 2003). Finally, incidental observations made by various groups or individuals that have worked on RJER property since the Department took ownership have also been recorded.

In addition to biological surveys, species data were compiled using various species databases, field notes, annual reports, and written correspondence. Table 7 provides a summary of these data sources and includes citations for survey reports and databases when available. Appendices C and D provide a complete inventory of plants and animals documented or potentially occurring in the LMP area.

The following section summarizes the vegetation communities and the plant and animal species within the LMP area, and presents an overview of ecological and management requirements. This information is organized in the following manner: sections A and B consist of a general description of the plant communities and wildlife in RJER, including a discussion of representative non-sensitive species and their associated habitats, and a summary of potentially occurring species; section C reviews the federal and state listed species and other non-listed sensitive species; section D discusses the non-native plant and animal species on the reserve; section E covers wildlife linked diseases; and section F reviews regional habitat linkages and wildlife movement corridors.

A. Vegetation Communities, Habitats, and Plant Species

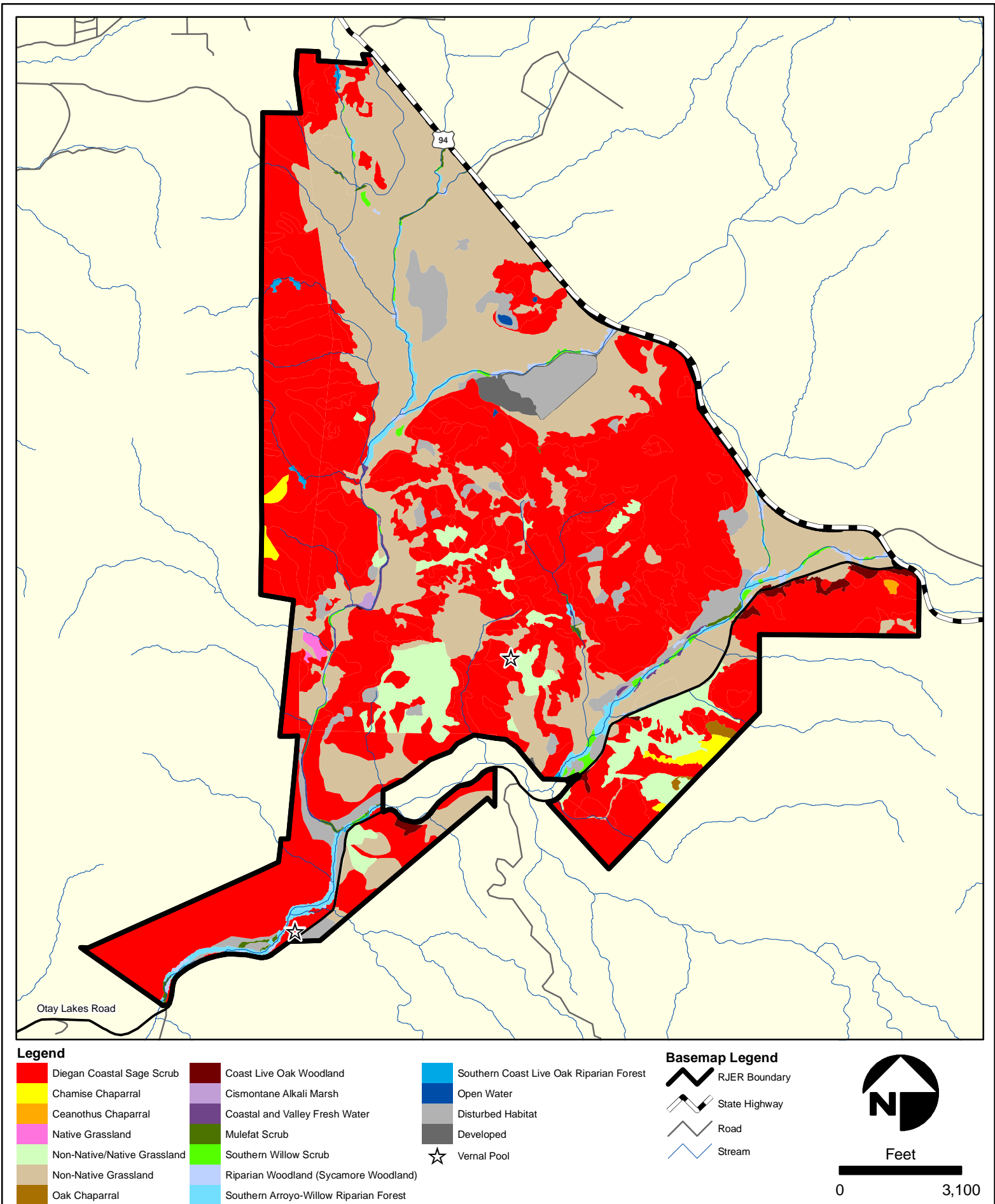
1. Vegetation Communities

Vegetation types are assemblages of plants that coexist in space and time. Vegetation classification and mapping for the RJER (exclusive of the Expansion 3 and Proctor Valley Unit, see Figure 5) was conducted in the field by Dr. John O’Leary and his graduate students (O’Leary 2002), and was based on O’Leary’s *Mapping Rules for Vegetation and Land Cover Types for MCAS Miramar* (2001). Subsequent to this mapping effort, the Proctor Valley Unit expansion area was added to the RJER. Additional vegetation mapping was extended into the Proctor Valley Unit expansion area by TAIC biologists, based on recent aerial imaging and edge matching to provide a transition to vegetation mapped by O’Leary (2002). No field confirmation of vegetation is available for the Proctor Valley Unit. Finally, two areas where vernal pools were observed were mapped as part of other focused surveys in the area. One of the areas of vernal pool habitat was mapped as part of rare plant surveys conducted during the 2001 season (USGS 2002), and the other area of vernal pool habitat was mapped during surveys of the Calmat property along the southern boundary of RJER (LMA 1994).

Table 7. Data Sources Used to Compile Species and Habitat Inventories for RJER

Data Description	Data Source	Survey Date
General biological resources surveys conducted prior to the Department's ownership of RJER	LMA 1994; Sweetwater Environmental 1996a, 1996b Dudek & Associates 1998	1994-1998
US Geological Survey: Aquatic surveys (invertebrates, fish, amphibians)	USGS 2002	1998-2001
General biological surveys	Hathaway and Fisher 2001	1999
Vegetation mapping (O'Leary)	USGS 2002; O'Leary et al. 2002	
Rare plant surveys (McMillan Consultants)	USGS 2002	
Ant surveys	"	2000-2002
Amphibian and reptile surveys	"	
Bat Surveys	"	
Mammal Surveys (small, medium, large)	"	
Bird Surveys	"	2000-2004
	USGSb 2004	
Department General biological resources surveys MSCP surveys for bats incidental sightings	Field notes; CDFG 2002; Comrack et al. 2002; Stokes et al. 2003; written communication 1999-2004	2000-2002
Quino checkerspot butterfly habitat surveys	Marschalek, D. 2001a	2001
San Diego Natural History Museum Bird surveys	Bird Atlas Project	2001
Department, USFWS Focused species survey: Quino checkerspot	Marschalek, D. 2001b Department GIS data layer	1999, 2001
Incidental sightings	Various groups or individuals	1998-2004
Species Databases	CNDDb	The most current data available
	SANDAG	
	San Diego Natural History Museum databases	
	US Forest Service	

The extent of twenty-six vegetation types and two additional land cover types (i.e., areas that do not support vegetation) has been mapped for the RJER (Figure 14). The extent of an additional vegetation type, vernal pools, was not mapped in detail; however, the location of the pools observed was noted in the field and is represented by points on Figure 14. All of the land cover types and associated acreages are summarized in Table 8. Due to the lack of detailed mapping, no acreage is included for the vernal pools. The numeric codes that are noted for each land cover type are based on O'Leary (2001 and



2002) and are included for cross-referencing to this original work. O’Leary’s mapping rules (2001) do not address vernal pools; therefore, no numeric code is included and this vegetation type is described based on information noted during the past surveys. As summarized in Table 8, RJER is dominated by various types of scrublands and grasslands, which account for 56.1 and 35.2 percent of the total cover within the Reserve, respectively. All vegetation types are described below.

Diegan Coastal Sage Scrub (30)

Areas mapped as Diegan coastal sage scrub have greater than 50 percent ground cover of low, drought-deciduous, malacophyllous subshrubs (which contribute greater than 60 percent of the relative cover). California sagebrush (*Artemisia californica*), flat-topped buckwheat (*Eriogonum fasciculatum*), and San Diego viguiera (*Viguiera laciniata*) are the primary co-dominants within this vegetation type on the RJER. Wishbone plant (*Mirabilis laevis*), laurel sumac (*Malosma laurina*), and yellow bush penstemon (*Keckiella antirrhinoides* ssp. *antirrhinoides*) are relatively uncommon throughout the reserve overall, although locally common in some areas. Common early season native annuals and herbaceous perennials include goldfields (*Lasthenia californica*), lupines (*Lupinus* spp.), blue dicks (*Dichelostemma capitatum*), and Nievitas cryptantha (*Cryptantha intermedia*). This vegetation type lacks significant cover of bare ground and/or non-native herbs. Diegan coastal sage scrub occurs on most of the hillsides and slopes of the RJER. This is the most common vegetation type within the RJER occurring on approximately 1575.6 acres.

Disturbed Diegan Coastal Sage Scrub (31)

Areas mapped as disturbed Diegan coastal sage scrub have from 20 to 50 percent ground cover of low, drought-deciduous, malacophyllous subshrubs (which contribute greater than 60 percent of the relative cover). Similar to the undisturbed sage scrub, California sagebrush, flat-topped buckwheat, and San Diego viguiera are the primary co-dominants within this vegetation type on the RJER. Wishbone plant, laurel sumac, and yellow bush penstemon are relatively uncommon throughout the reserve overall, although locally common in some areas. Common early season native annuals and herbaceous perennials, e.g., goldfields, lupines, blue dicks, and *Nievitas cryptantha*, are still all present however in much lower numbers. Indication of disturbance is present in the form of significant percentage cover of bare ground and/or non-native and native herbs, such as wild oats (*Avena barbata*), foxtail chess (*Bromus madritensis* ssp. *rubens*), mustard (*Hirschfeldia incana*), goldentop (*Lamarkia aurea*) fascicled tarweed (*Deinandra fasciculata*), and

Table 8. Vegetation Communities and Acreage within RJER

Vegetation Type	Acreage	% of RJER
Diegan coastal sage scrub (30)	1575.6	
Disturbed Diegan coastal sage scrub (31)	1028.7	
Chamise chaparral (50)	26.5	
Disturbed ceanothus chaparral (53)	2.2	
Scrub oak chaparral (54)	4.9	
Disturbed scrub oak chaparral (55)	1.6	
<i>Subtotal Scrublands =</i>	<i>2639.6</i>	<i>56.1</i>
Non-native grassland (80)*	1408.1	
Disturbed non-native grassland (81)	24.4	
Disturbed native grassland (83)	5.4	
Non-native/native grassland (84)	118.8	
Disturbed non-native/native grassland (85)	97.6	
<i>Subtotal Grasslands =</i>	<i>1654.4</i>	<i>35.2</i>
Cismontane alkali marsh (86)	2.7	
Coastal and valley freshwater marsh (100)	8.0	
Disturbed coastal and valley freshwater marsh (101)	2.3	
<i>Subtotal Marsh Habitats =</i>	<i>13.0</i>	<i>0.3</i>
Southern coast live oak riparian forest (110)	5.9	
Southern arroyo-willow riparian forest (112)	57.9	
Disturbed southern arroyo-willow riparian forest (113)	1.0	
Riparian woodland (sycamore woodland) (120)	14.5	
Disturbed riparian woodland (sycamore woodland) (121)	8.6	
Southern willow scrub (130)	15.4	
Disturbed southern willow scrub (131)	5.9	
Mulefat scrub (132)	5.4	
Disturbed mulefat scrub (133)	6.6	
<i>Subtotal Riparian Habitats =</i>	<i>121.2</i>	<i>2.6</i>
Coast live oak woodland (150)	16.5	
Disturbed coast live oak woodland (151)	7.2	
<i>Subtotal Upland Woodland Habitats =</i>	<i>23.7</i>	<i>0.5</i>
Disturbed habitat (240)	220.7	
<i>Subtotal Disturbed Habitat =</i>	<i>220.7</i>	<i>4.7</i>
Open water (200)	2.4	
Developed (250)	26.5	
<i>Subtotal Open Water/Developed =</i>	<i>28.9</i>	<i>0.6</i>
TOTALS	4701.5	100.0

* Note: Six vernal pools in two areas have been detected within the non-native grassland vegetation within the reserve.

filaree (*Erodium* spp.). Disturbed Diegan coastal sage scrub is scattered throughout the RJER, but occurs in areas that may have previously been grazed and/or burned, and as such have lower cover values. This is the third most common vegetation type within the RJER, occupying approximately 1028.7 acres on the hillsides and slopes.

Chamise Chaparral (50)

Areas mapped as chamise chaparral have greater than 70 percent ground cover attributable to evergreen sclerophyllous shrubs and drought-deciduous malacophyllous subshrubs (evergreen sclerophyllous shrubs constitute greater than 60 percent of the relative cover) with chamise (*Adenostoma fasciculatum*) contributing greater than 50 percent of the cover. Other species within this vegetation type include laurel sumac, mission manzanita (*Xylococcus bicolor*), Ramona lilac (*Ceanothus tomentosus*), and toyon (*Heteromeles arbutifolia*). This vegetation type lacks significant cover of disturbance-specialist species or bare ground. This vegetation type is restricted to a small area in the southeast corner of the RJER. Approximately 26.5 acres of this vegetation type occur within the RJER.

Disturbed Ceanothus Chaparral (53)

Areas mapped as disturbed ceanothus chaparral are characterized as having from 50 to 70 percent cover attributable to evergreen sclerophyllous shrubs and drought-deciduous malacophyllous subshrubs (evergreen sclerophyllous shrubs constitute greater than 60 percent of the relative cover) with Ramona lilac contributing greater than 50 percent of the cover. Disturbance is indicated by a significant amount of bare ground and/or coverage by disturbance-specialist species (e.g., deer weed (*Lotus scoparius*), wild oats, brome (*Bromus* spp.), filaree, and fascicled tarplant. This vegetation type is restricted to small areas of north-facing slopes in the far eastern portion of the RJER. Approximately 2.2 acres of this vegetation type occur within the RJER.

Scrub Oak Chaparral (54)

Areas mapped as scrub oak chaparral have greater than 70 percent ground cover attributable to evergreen sclerophyllous shrub species and drought-deciduous malacophyllous subshrubs (evergreen sclerophyllous shrubs constitute greater than 60 percent of the relative cover) with scrub oak (*Quercus berberidifolia*) contributing greater than 50 percent of the cover. Chamise, Ramona lilac, mission manzanita and toyon may also be present. This vegetation type is restricted to a small area of north-facing slopes in

the southeastern portion of the RJER. Approximately 4.9 acres of this vegetation type occur within RJER.

Disturbed Scrub Oak Chaparral (55)

Areas mapped as disturbed scrub oak chaparral were characterized as having from 50 to 70 percent cover attributable to evergreen sclerophyllous shrubs and drought-deciduous malacophyllous subshrubs (evergreen sclerophyllous shrubs constitute greater than 60 percent of the relative cover) with scrub oak contributing greater than 50 percent of the cover. Disturbance is indicated by a significant amount of bare ground and/or coverage by disturbance-specialist species (e.g., deer weed, wild oats, brome, filaree, and fascicled tarplant. This vegetation type is restricted to a small area of north-facing slopes in the southeastern portion of the RJER. Approximately 1.6 acres of this vegetation type occur within the RJER.

Non-Native Grassland (80)

Areas mapped as non-native grassland have greater than 40 percent cover of grasses and forbs, with greater than 2/3 cover attributable to non-native annual grasses. Foxtail chess, wild oats, and ripgut grass (*Bromus diandrus*) are the dominant non-native grass species although purple needlegrass (*Nassella pulchra*) is sometimes present in very low numbers. Non-native annual forbs such as filaree, wild radish (*Raphanus sativus*), and mustard may also be present. This vegetation type occurs on the flatter areas of the RJER, areas that have been formerly heavily grazed or were under agricultural production. This is the second most common vegetation type within the RJER, occurring on approximately 1,408.1 acres.

Vernal Pools

Vernal pools were not mapped as part of the O'Leary vegetation surveys, but were found during sensitive plant surveys (USGS 2002; LMA 1994). Vernal pool complexes are characterized by depressions in clay soils that hold enough water during winter rains to develop a unique and ephemeral ecosystem of plants, reptiles, amphibians, and invertebrates, including sensitive and listed plant and animal species, such as fairy shrimp. When the water slowly evaporates in the spring and early summer, and during multiple wet and dry cycles, this unique ecosystem matures. It sustains itself in a dormant state during the dry summer months, often for several years, to rehydrate again during the next wet season.

In southern California, the vernal pool basins are usually associated with native and non-native grasslands, coastal sage scrub, maritime succulent scrub, or chaparral habitats. There are two vernal pool locations known from RJER, and both are associated with non-native grassland vegetation (Table 8). One vernal pool location is next to Otay Lakes Road adjacent to the Calmat property. A total of 4 vernal pools were found during a vegetation communities delineation conducted on the CalMat property (LMA 1994). The location of these pools is found in both USFWS and SANDAG vernal pool databases, but no information is given for the plant and animal species diversity for these pools.

The other vernal pool location was mapped as part of rare plant surveys conducted on RJER during the 2001 season (USGS 2002). Two pools were observed on a plateau approximately 2,200 feet north of the Thousand Trails Campground and included in point data mapping that was collected. Additionally, plant species diversity was recorded for each pool. The timing of these surveys was too late in the spring to determine the extent of ponding in these pools, or whether any species of fairy shrimp was present. The two pools at this location had vernal pool stonecrop (*Crassula aquatica*) and grass poly (*Lythrum hyssopifolium*), both of which are vernal pool indicator species. In addition, one of the pools had woolly marbles (*Psilocarphus brevissimus*) and the other had about 20 individuals of annual hairgrass (*Deschampsia danthonioides*). Both the woolly marbles and annual hairgrass are vernal pool species, as well as indicators of less disturbed pool basins, especially the annual hairgrass.

Both pools at the second location are in the direct path of an access road that was being used by patrols and other management vehicle traffic. Management access will need to avoid these pools (see management section). Weed invasion is also a problem with these vernal pools and the surrounding habitat.

Disturbed Non-Native Grassland (81)

Areas mapped as disturbed non-native grassland have from 20 to 40 percent cover of grasses and forbs of which greater than two-thirds of the cover is attributable to non-native annual grasses. Characteristic species include wild oats and brome, although the aforementioned non-native annual forbs may be intermixed. Evidence of recent mechanical disturbance such as tilling or mowing is present. Significant amounts of bare ground may be present. Approximately 24.4 acres of this vegetation type occur within the flatter portions of the RJER.

Disturbed Native Grassland (83)

Areas mapped as disturbed native grassland have from 20 to 40 percent cover of grasses and forbs of which greater than two-thirds cover is attributable to needlegrass species (*Nassella pulchra* and *N. lepida*). Native and introduced annual herbs may be intermixed including fennel (*Foeniculum vulgare*), yarrow (*Achillea millefolium*), tocalote (*Centaurea melitensis*), fascicled tarplant and checker-bloom (*Sidalcea malvaeflora* ssp. *sparsifolia*). There is evidence of mechanical disturbance and significant amounts of bare ground may be present. Approximately 5.4 acres of this vegetation type occur within the RJER.

Non-Native/Native Grassland (84)

Areas mapped as non-native/native grassland have greater than 40 percent ground cover of grasses and forbs, with greater than two-thirds relative overall ground cover attributable to native and non-native grasses. These areas exhibit no evidence of recent mechanical disturbance. Wild oats, foxtail chess, and purple needlegrass are the common grasses, with filaree the most common non-native forb. Approximately 118.8 acres of this vegetation type occur on the flatter mesa tops within the southern portion of the RJER.

Disturbed Non-Native/Native Grassland (85)

Areas mapped as disturbed non-native/native grassland have from 20 to 40 percent ground cover of grasses and forbs, with greater than two-thirds relative overall ground cover attributable to native and non-native grasses. Evidence of recent mechanical disturbance may occur. Significant amounts of bare ground may occur. Wild oats, foxtail chess, and purple needlegrass are the common grasses with filaree the most common non-native forb. Approximately 97.6 acres of this vegetation type occur on the flatter mesa tops within the southern portion of the RJER.

Cismontane Alkali Marsh (86)

Areas mapped as cismontane alkali marsh have greater than 40 percent cover of grasses and forbs with saltgrass (*Distichlis spicata*) dominating. Associated forbs and grasses may include salt heliotrope (*Heliotropium curassavicum*), curly dock (*Rumex crispus*), yerba mansa (*Anemopsis californica*), and Bermuda grass (*Cynodon dactylon*). This vegetation type is subject to seasonal inundation. This vegetation type is restricted to a

small area along Jamul Creek. Approximately 2.7 acres of this vegetation type occur within the RJER.

Coastal and Valley Freshwater Marsh (100)

Areas mapped as coastal and valley freshwater marsh are dominated by perennial, emergent monocots such as cattails (*Typha latifolia*), bulrush (*S. californicus*), and curly dock. This vegetation type occurs on sites lacking significant current, permanently flooded by permanent water (rather than brackish, alkaline, or variable). This vegetation type is scattered along Jamul and Dulzura creeks. Approximately 8.0 acres of this vegetation type occur within the RJER.

Disturbed Coastal and Valley Freshwater Marsh (101)

Areas mapped as disturbed coastal and valley freshwater marsh are dominated by perennial, emergent monocots such as cattails, bulrush, and curly dock. Significant amounts of non-native forbs such as common catchfly (*Silene gallica*) may occur as well. This vegetation type occurs on sites lacking significant current, permanently flooded by permanent water (rather than brackish, alkaline, or variable). Approximately 2.32 acres of this vegetation type occur within the RJER.

Southern Coast Live Oak Riparian Forest (110)

Areas mapped as southern coast live oak riparian forest have greater than 40 percent cover by the coast live oak (*Quercus agrifolia*), with western sycamore (*Platanus racemosa*) as a minor associate. Understory species include poison oak (*Toxicodendron diversilobum*), mulefat (*Baccharis salicifolia*), and California mugwort (*Artemisia douglasiana*). Approximately 5.9 acres of this vegetation type is scattered along the drainages within the RJER.

Southern Arroyo-Willow Riparian Forest (112)

Areas mapped as southern arroyo willow riparian forest have greater than 60 percent cover of arroyo willow (*Salix lasiolepis*) that average greater than 20 feet in height. Approximately 57.9 acres of this vegetation type occur within the RJER, primarily along Jamul and Dulzura creeks and their tributaries.

Disturbed Southern Arroyo-Willow Riparian Forest (113)

Areas mapped as disturbed southern arroyo willow riparian forest have from 40 to 60 percent overstory cover of willows (*Salix* spp.) that average greater than 20 feet in height. This vegetation type exhibits evidence of past mechanical disturbance, and/or invasion by non-native species such as tamarisk (*Tamarix* sp.) and castor bean (*Ricinus communis*). Approximately 1.0 acre of this vegetation type occurs within the RJER.

Riparian Woodland (Sycamore Woodland) (120)

Areas mapped as riparian (sycamore) woodland are characterized by a tall, open, broadleaved, winter-deciduous streamside woodland dominated by western sycamore, with an overstory cover greater than 25 percent. Coast live oak, poison oak, and California mugwort are the most common associates. Approximately 14.5 acres of this vegetation type occur within the RJER, scattered along Jamul and Dulzura creeks.

Disturbed Riparian Woodland (Sycamore Woodland) (121)

Areas mapped as disturbed riparian (sycamore) woodland are characterized by a tall, open, broadleaved, winter-deciduous streamside woodland dominated by western sycamore, with an overstory cover ranging from 15-25 percent. Coast live oak, poison oak, and California mugwort are the most common associates. This vegetation type exhibits evidence of past mechanical disturbance, and/or invasion by non-native species such as tamarisk and castor bean. Approximately 8.6 acres of this vegetation type occur within the RJER.

Southern Willow Scrub (130)

Areas mapped as southern willow scrub have greater than 60 percent cover of broadleaved, winter-deciduous riparian thickets dominated by several species of willows (*Salix* spp.) that average less than 20 feet in height. This vegetation type is scattered along Jamul and Dulzura creeks and occurs on approximately 15.4 acres within the RJER.

Disturbed Southern Willow Scrub (131)

Areas mapped as disturbed southern willow scrub have 20 to 60 percent coverage of broadleaved, winter-deciduous riparian thickets dominated by several species of willows (*Salix* spp.) that average less than 20 feet in height. This vegetation type exhibits

evidence of past mechanical disturbance, and/or invasion by non-native species such as tamarisk and castor bean. Approximately 5.9 acres of this vegetation type is scattered along the drainages within the RJER.

Mulefat Scrub (132)

Areas mapped as mulefat scrub have greater than 50 percent cover of riparian scrub habitat strongly dominated by mulefat. This early seral vegetation type is maintained by frequent flooding and occurs on intermittent stream channels with fairly coarse substrate and moderate depth to water table. Approximately 5.4 acres of this vegetation type occur along Jamul and Dulzura creeks within the RJER.

Disturbed Mulefat Scrub (133)

Areas mapped as disturbed mulefat scrub have between 20 to 50 percent cover of riparian scrub habitat strongly dominated by mulefat. Similar to undisturbed mulefat, this vegetation type is also an early seral vegetation type maintained by frequent flooding, occurring on intermittent stream channels with fairly coarse substrate and moderate depth to water table. This vegetation type exhibits evidence of past mechanical disturbance, and/or invasion by non-native species such as tamarisk and castor bean. A total of approximately 6.6 acres of this vegetation type are scattered along the drainages within the RJER.

Coast Live Oak Woodland (150)

Areas mapped as coast live oak woodland have greater than 25 percent overstory cover of coast live oak found on north-facing slopes and moist ravines. This vegetation type may contain a discontinuous understory of shrubs/vines such as toyon, white-flowered currant (*Ribes indecorum*), Mexican elderberry (*Sambucus mexicana*), and poison oak. This vegetation type is scattered along the north-facing slopes, just south of Dulzura Creek. Approximately 16.5 acres of this vegetation type occur within the RJER.

Disturbed Coast Live Oak Woodland (151)

From 15 to 25 percent overstory cover of coast live oak (*Quercus agrifolia*) found on north-facing slopes and moist ravines. This vegetation type is found on north-facing slopes and in moist ravines and may contain a discontinuous understory of shrubs/vines such as toyon, white-flowered currant, Mexican elderberry, and poison oak. Evidence of mechanical disturbance and/or invasion by non-native shrubs or trees is present.

Approximately 7.2 acres of this vegetation type occur on the slopes above Dulzura Creek along the southern boundary of the RJER.

Open Water (200)

This land coverage type is characterized as having greater than 0.3 acre of perennially standing water. Approximately 2.4 acres of this land cover type occur at several locations within the RJER as former cattle stock ponds.

Disturbed Habitat (240)

Areas mapped as disturbed habitat exhibit past or present prevalent physical disturbances (e.g., brushing, tilling, vehicular disturbance, etc.). These areas are typically comprised of a mixture of grasses and forbs with grasses contributing less than two-thirds of the relative cover with non-native forbs. On the RJER these areas are dominated by filaree, mustard, wild radish, California and foxtail chess. Substantial amounts of bare ground may exist but these areas do have the potential for colonization and succession of native plant communities. This vegetation type on the RJER corresponds to areas that have been previously disturbed by operations of the former Daley Ranch (e.g., vegetation clearing, gravel pits, etc.). Large patches of this vegetation type occur in the flatter areas of the RJER, especially near the CEC and along Dulzura Creek. Approximately 220.7 acres of this vegetation type occur within the RJER.

Developed (250)

Areas mapped as developed include permanent features that provide little or no short-term potential for the colonization and succession of native plant communities. Developed areas within the RJER consist of roads, old buildings, barns and domestic animal structures (corrals, etc.). Developed areas include the former Daley Ranch house complex (future CEC). Approximately 26.5 acres of this land cover type occur within the RJER.

2. General Flora

A total of 231 species are documented as occurring on the RJER. Of these 231 species, 170 (74 percent) are native species and the remaining 61 (26 percent) are non-native species. This diversity of species and relative proportion of native and non-native species parallels regional (i.e., San Diego County) patterns as well. The 231 taxa (including subspecies and varieties) observed during the surveys represent 11 percent of the

documented flora of the county (2,147 taxa reported by Simpson and Rebman 2001), though the number of documented taxa in the county is increasing as a result of the comprehensive Plant Atlas Program that was recently initiated by the San Diego Natural History Museum. In addition, Simpson and Rebman (2001) state that 78 percent of the total taxa of San Diego County are native to the county while 22 percent are non-native and naturalized, as compared to 74 and 26 percent respectively on the RJER. For its size, the RJER supports a relatively large representative sample of the county's flora. The two largest plant families in the county are also the families with the most species present on the RJER, with 44 taxa in the Asteraceae and 30 taxa in the Poaceae. Similar to the pattern observed for the native taxa, the highest number of non-native taxa within RJER also belong to the Asteraceae (15 observed) and Poaceae (21 observed).

The high number of native species reflects the large amount of contiguous natural habitat within the RJER that would promote plant species diversity. In addition, a number of areas of RJER are underlain by clay, gabbro, and metasedimentary soils, which would also contribute to plant diversity by providing a mosaic of different substrates for plant establishment. Table 4 (Section II. D. 2. Soils) provides a list of soil associations for sensitive species within RJER, if available.

A list of the plant species observed during past surveys within RJER is included in this LMP for reference (Appendix C). Sensitive species are presented in section C, and followed by a discussion of invasive non-native plants in section D.

B. Wildlife

Baseline surveys, species databases, and incidental sighting reports have identified the diversity and distribution of invertebrate and vertebrate species that occupy various habitats within the LMP area (CNDDDB 2006, Comrack and Lawhead written comm. 1999-2004, Dudek & Associates 1998, Hathaway and Fisher 2001, LMA 1994, Sweetwater Environmental 1996a and 1996b, SDNHM 2005 and 2006, Unitt 2004, USGS 2002 and 2004, USFW 2006). This section presents an overview of native species and associated habitats that have been documented from RJER as well as a summary of potentially occurring species. Sensitive species will be discussed in more detail in the next section, C; section D will discuss non-native species and their effect on native flora and fauna; section E presents information on wildlife linked diseases; and section F reviews the local and regional habitat linkages and wildlife corridors in the vicinity of the reserve.

A complete compendium of wildlife species known or potentially occurring in RJER is included in Appendix D. This list includes common and scientific names, federal and state listing status, MSCP coverage, data sources, and a special notation to differentiate potentially occurring or non-native species from documented native species.

1. Wildlife Species Documented within RJER

Invertebrates

Aquatic Invertebrates. Aquatic invertebrates were assessed by USGS in the seven main artificial ponds (Figure 10) using a variety of survey methods in order to acquire data for species of different sizes and life histories. No native aquatic invertebrates were detected.

Terrestrial Insects. The LMP area has an abundant diversity of terrestrial insects (Marschalek 2001a and 2001b, USGS 2002). Seventy-three types of insects have been observed since the Department took ownership of the property, including two families of Odonata (dragonflies and damselflies), four families of Orthoptera (grasshoppers, crickets, and katydids), eight families of beetles, five families of bees and wasps, 21 species of ants, and 21 species of butterflies (Appendix D).

Fish

No native fish occur within RJER. Non-native fish are described in the Non-Native Species section D below.

Amphibians

Terrestrial and aquatic amphibians were surveyed by the USGS in 2000-2002 using pit fall traps, minnow traps, seining, dip netting, and hand capture. A total of five native amphibian species (one salamander, two frogs and two toads) were identified in the LMP area, as described below.

Salamanders. The garden slender salamander (*Batrachoseps major*) was observed in disturbed coastal sage scrub and non-native grassland habitat on RJER. This species requires moist habitats which enable it to respire through the skin; however, it is fully terrestrial, and therefore does not require standing water in order to breed. Garden slender salamanders can occur in a variety of habitats, including coastal sage scrub, chaparral, oak woodlands, and wooded riparian canyons, as well as coniferous forest, grassland, and

occasionally in salt marshes. This species is mostly nocturnal, but is also active in the day during periods of rain. When not active, it remains in cavities, under the bark of oak trees, or in burrows. Food preferences include small invertebrates such as beetles, caterpillars, and ants.

Frogs and Toads. Although likely extirpated from the area, the red-legged frog (*Rana aurora draytonii*) was documented from RJER in 1950 (USFS 2006). During the 2000-2002 USGS baseline surveys, three additional species of native frogs and toads were observed in the artificial ponds on RJER, the western spadefoot (*Spea hammondi*; federal and state species of concern), western toad (*Bufo boreas*), and Pacific treefrog (*Hyla regilla*). Pitfall trapping conducted in upland habitat documented the western spadefoot and western toad in coastal sage scrub, non-native grassland, and riparian woodland (USGS 2002).

The most common threats to amphibians include the loss or alteration of habitat and predation. Frogs and toads require the presence of water (shallow pools, flowing streams, or marshes) during some or all of their life cycle. Therefore, any alteration of habitat that results in changes to the local hydrology is likely to negatively impact these species.

The amphibian predators known to occur on RJER include swamp crayfish (*Procambarus clarkii*), bullfrog (*Rana catesbeiana*), African-clawed frog (*Xenopus laevis*), native snakes, turtles, birds, raccoons and a variety of non-native fish (see Appendix D). It is believed that non-native predators are partially responsible for the amphibian declines that have been reported in the United States during the last 20 years (USGS 2005A).

Reptiles

RJER supports a high diversity of reptiles due to the presence of large, contiguous blocks of undeveloped native habitat. A total of 22 species of native reptiles have been documented, including 10 lizards and 12 snakes (Table 9; Appendix D).

Table 9. Reptiles Documented from RJER¹

Coast Horned Lizard	Western Skink	Common Kingsnake	Calif. Black-headed Snake
Western Fence Lizard	Orange-throated Whiptail	Baja California Coachwhip	Two-striped Garter Snake
Granite Spiny Lizard	Western Whiptail	Striped Racer	Red Diamond Rattlesnake
Side-blotched Lizard	Southern Alligator Lizard	Gopher Snake	Western Rattlesnake
Granite Night Lizard	Western Blind Snake	Long-nosed Snake	
Gilbert's Skink	Ringneck Snake	Coast Patch-nosed Snake	

¹ See Table 7 for source documentation

Lizards. Seven of the native lizard species on RJER are common to San Diego County, including the western fence lizard (*Sceloporus occidentalis*), the granite spiny lizard (*Sceloporus orcutti*), the side-blotched lizard (*Uta stansburiana*), the granite night lizard (*Xantusia henshawi*), Gilbert's skink (*Eumeces gilberti*), the western whiptail (*Cnemidophorus tigris*), and the southern alligator lizard (*Elgaria multicarinata*). Less common species include the coast horned lizard (*Phrynosoma coronatum*), western skink (*Eumeces skiltonianus*), and orange-throated whiptail (*Cnemidophorus hyperythrus*).

Snakes. Ten species of snakes common to the region and generally found throughout the reserve include the western blind snake (*Leptotyphlops humilis*), ringneck snake (*Diadophis punctatus*), common kingsnake (*Lampropeltis getula*), coachwhip (*Masticophis flagellum*), California whipsnake (*Masticophis lateralis*), gopher snake (*Pituophis melanoleucus*), long-nosed snake (*Rhinocheilus lecontei*), western patch-nosed snake (*Salvadora hexalepis*), California black-headed snake (*Tantilla planiceps*), and western rattlesnake (*Crotalus viridis*). Less common rattlesnakes include the speckled rattlesnake (*Crotalus michellii*) and red diamond rattlesnake (*Crotalus ruber*). These snakes have a wide habitat preference and occur in grassland, coastal sage scrub, chaparral, and disturbed habitats within the LMP area. Some have slightly more specific habitat requirements such as the western blind snake which requires loose, sandy soil for burrowing, the ringneck snake, which prefers moist areas, and the two-striped garter snake (*Thamnophis hammondi*; state species of concern), which is generally found near creeks or ponds.

Birds

RJER supports a rich diversity of bird species (Table 10; Appendix D). Diurnal and nocturnal surveys, point counts, and incidental observations during 1997-2004 identified 113 native species (See Table 7 for complete list of data sources). The USGS species

Table 10. Bird Species Documented from RJER¹

Eared Grebe	Short-eared Owl	Swainson's Thrush	
Great Blue Heron	Long-eared Owl	Mountain Bluebird	Lincoln's Sparrow
Green Heron	Burrowing Owl	Western Bluebird	Spotted Towhee
Snowy Egret	Great Horned Owl	Northern Mockingbird	California Towhee
Black-crowned Night-Heron	Western Screech Owl	California Thrasher	Vesper Sparrow
Turkey Vulture	Lesser Nighthawk	Marsh Wren	Chipping Sparrow
Mallard	Common Poorwill	Bewick's Wren	White-crowned Sparrow
Ring-necked Duck	Black-chinned Hummingbird	House Wren	Yellow-rumped Warbler
Bufflehead	Anna's Hummingbird	Blue-gray Gnatcatcher	Yellow Warbler
Cooper's Hawk	Costa's Hummingbird	California Gnatcatcher	Townsend's Warbler
Sharp shinned Hawk	Allen's Hummingbird	Oak Titmouse	Yellow-breasted Chat
Golden Eagle	Belted Kingfisher	Bushtit	Common Yellowthroat
Red-tailed Hawk	Northern Flicker	Cliff Swallow	Orange-crowned Warbler
Red-shouldered Hawk	Acorn Woodpecker	N Rough-winged Swallow	Nashville Warbler
Ferruginous Hawk	Nuttall's Woodpecker	Violet-green Swallow	Wilson's Warbler
Northern Harrier	Western Wood Pewee	Ruby-crowned Kinglet	Western Tanager
White-tailed Kite	Pacific-Slope Flycatcher	Golden-crowned Kinglet	Blue Grosbeak
Osprey	Ash-throated Flycatcher	Wrentit	Lazuli Bunting
Merlin	Black Phoebe	Horned Lark	Black-headed Grosbeak
Prairie Falcon	Say's Phoebe	Lawrence's Goldfinch	Red-winged Blackbird
Peregrine Falcon	Western Kingbird	Lesser Goldfinch	Brewer's Blackbird
American Kestrel	Cassin's Kingbird	American Goldfinch	Bullocks Oriole
American Coot	Loggerhead Shrike	House Finch	Hooded Oriole
California Quail	Least Bell's Vireo	So. CA Rufous-crowned Sparrow	Western Meadowlark
Killdeer	Warbling Vireo	Grasshopper Sparrow	
Greater Yellowlegs	Hutton's Vireo	Bell's Sage Sparrow	
Forster's Tern	Western Scrub-Jay	Lark Sparrow	
Mourning Dove	American Crow	Dark-eyed Junco	
Greater Roadrunner	Common Raven	Song Sparrow	
Common Barn Owl	Phainopepla	Savannah Sparrow	

¹ See Table 7 for source documentation

database includes habitat information for all bird species observed during the 1999-2003 baseline surveys (USGS 2002 and 2004). These data show that coastal sage scrub, which is the most common habitat type in RJER (55%), supports the greatest number of bird

species in RJER. Riparian habitat also supports high species diversity, contributing 49% of all species surveyed by USGS even though it covers less than 3% of RJER. Chaparral and oak woodland cover approximately 1.5% of the LMP area, and contributed 22% and 21% respectively of all bird species observed. Lastly, grassland habitat which occurs on 35% of the LMP area, supports the least (16 %) avian biodiversity in RJER.

Water birds observed in the riparian areas and artificial ponds include the eared grebe (*Podiceps nigricollis*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), snowy egret (*Egretta thula*), black-crowned night-heron (*Nycticorax nycticorax*), mallard (*Anas platyrhynchos*), ring-necked duck (*Aythya collaris*), bufflehead (*Bucephala albeola*), and American coot (*Fulica americana*). Shorebirds include killdeer (*Charadrius vociferus*), greater yellowlegs (*Tringa melanoleuca*), and Forster's tern (*Sterna forsteri*).

The following native bird species are found in marsh, riparian scrub, riparian woodland, oak woodland, and/or riparian forest: belted kingfisher (*Ceryle alcyon*), Nuttall's woodpecker (*Picoides nuttallii*), Pacific-slope flycatcher (*Empidonax difficilis*), ash-throated flycatcher (*Myiarchus cinerascens*), least Bell's vireo (*Vireo bellii pusillus*), warbling vireo (*Vireo gilvis*), Hutton's vireo (*Vireo huttoni*), phainopepla (*Phainopepla nitens*), marsh wren (*Cistothorus palustris*), oak titmouse (*Baeolophus inornatus*), yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), common yellowthroat (*Geothlypis trichas*), and red-winged blackbird (*Agelaius phoeniceus*).

Bird species that commonly forage and/or breed in grasslands include the short-eared owl (*Asio flammeus*), burrowing owl (*Athene cunicularia hypugaea*), white-tailed kite (*Elanus leucurus*), and northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), horned lark (*Eremophila alpestris*), grasshopper sparrow (*Ammodramus savannarum*), savannah sparrow (*Passerculus sandwichensis*), and western meadowlark (*Sturnella neglecta*). Active management of grasslands will be essential to maintain habitat for these species.

Birds in RJER that are typically associated with coastal sage scrub include the California quail (*Callipepla californica*), greater roadrunner (*Geococcyx californianus*), Bewick's wren (*Thryomanes bewickii*), wrentit (*Chamaea fasciata*), California gnatcatcher (*Poliioptila californica californica*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Bell's sage sparrow (*Amphispiza bellii*), California towhee (*Pipilo crissalis*).

Large expanses of contiguous habitat and thriving populations of prey base (rodents and rabbits) contribute to a diverse array of raptors in the RJER. Regionally common species that breed in the vicinity of RJER include the turkey vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperi*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), western screech owl (*Megascops kennicottii*), and great-horned owl (*Bubo virginianus*) (Unitt 2004).

Mammals

Numerous survey techniques were used in 2000-2002 by USGS to identify the full suite of mammalian biodiversity, and to account for different body sizes and life histories of species. Methods included pit-fall trapping, Sherman live-trapping, track surveys and camera surveys. In addition, bat species were documented through acoustical surveys, roost surveys, and mist netting. A total of 38 species of native mammals have been documented from RJER (Table 11; Appendix D).

Table 11. Mammals Documented from RJER¹

Desert Shrew	Western Pipistrelle	San Diego Pocket Mouse	Gray Fox
Ornate Shrew	Western Mastiff Bat	Agile Kangaroo Rat	Raccoon
Pallid Bat	Pocketed Free-tailed Bat	San Diego Kangaroo Rat	Long-tailed Weasel
Townsend's Big-eared Bat	Big Free-tailed Bat	California Vole	Striped Skunk
Big Brown Bat	Brazilian Free-tailed Bat	Desert Woodrat	Western Spotted Skunk
Hoary Bat	Black-tailed Jackrabbit	California Mouse	Bobcat
California Myotis	Audubon's Cottontail	Cactus Mouse	Mountain Lion
W. Small-footed Myotis	Brush Rabbit	Deer Mouse	Mule Deer
Long-eared Myotis	California Ground Squirrel	Western Harvest Mouse	
Yuma Myotis	Botta's Pocket Gopher	Coyote	

¹ See Table 7 for source documentation

Bats. RJER supports a high diversity of bat species including twelve of the sixteen species commonly found in the county, and one of the rare visitors, the big free-tailed bat (*Nyctinomops macrotis*) (USGS 2002). Species detected within RJER include the pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), big brown bat (*Eptesicus fuscus*), hoary bat (*Lasiurus cinereus*), four species of little brown bats (*Myotis californicus*, *M. ciliolabrum*, *M. evotis*, and *M. yumanensis*), western pipistrelle (*Pipistrellus hesperus*), and three species of free-tailed bats (*Eumops perotis*, *Nyctinomops femorosacca*, and *Tadarida brasiliensis*).

Dulzura Creek, Jamul Creek, and the artificial ponds are the most important elements of bat foraging habitat in RJER because they provide drinking water, and are a good source of aquatic–emergent insects. Unfortunately, water release from Barrett Lake to Otay Lake was shut off in 2001, resulting in seasonal drying of Dulzura Creek, which previously had perennial water flow. This condition may adversely affect the local bat populations. However, in addition to foraging habitat, the creeks also provide roosting opportunities by supporting riparian vegetation such as sycamores and oaks. Man-made structures are also important for roosting, including culverts underneath SR 94 where it intersects with the creeks, and the horse stables near the main house. The historic brick kiln is a potentially good site as well, although it is heavily used by owls, which might deter bats from roosting there.

Coastal Sage Scrub and Grassland Mammals. Aside from bats, the most common mammal species on RJER are common residents of coastal sage scrub and/or grassland habitat, including the Audubon’s cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), Botta’s pocket gopher (*Thomomys bottae*), San Diego pocket mouse (*Chaetodipus fallax fallax*), cactus mouse (*Peromyscus eremicus*), western harvest mouse (*Reithrodontomys megalotis*), and deer mouse (*Peromyscus maniculatus*). Other small mammals identified onsite include two species of shrews (*Notiosorex crawfordi* and *Sorex ornatus*), brush rabbit (*Sylvilagus bachmani*), agile kangaroo rat (*Dipodomys agilis*), San Diego kangaroo rat (*Dipodomys simulans*), California vole (*Microtus californicus*), desert woodrat (*Neotoma lepida*), and California mouse (*Peromyscus californicus*).

Carnivores. Predators documented in the LMP area include the coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*), western spotted skunk (*Spilogale gracilis*), bobcat (*Lynx rufus*), mountain lion (*Puma concolor*), and non-native Virginia opossum (*Didelphis virginiana*).

2. Non-Sensitive Species with the Potential to Occur Onsite

A number of additional species have a high probability to occur within the reserve based on overall species distribution and habitat preferences. These species are not addressed in detail in this section; however, they are summarized in Table 12 and included in the species compendium (Appendix D) with a special notation. In addition, potentially occurring sensitive species are discussed in Subsection C.

Table 12. Potentially Occurring Non-Sensitive Species

Common Name	Scientific Name
Amphibians	
Arboreal salamander	<i>Aneides lugubris</i>
California Tree Frog	<i>Hyla cadaverina</i>
Reptiles	
California Lyre Snake	<i>Trimorphodon biscutatus</i>
Glossy Snake	<i>Arizona elegans</i>
Night Snake	<i>Hypsiglena torquata</i>
Birds	
American Pipit	<i>Anthus rubescens</i>
American Robin	<i>Turdus migratorius</i>
Fox Sparrow	<i>Passerella iliaca</i>
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
White-throated Swift	<i>Aeronautes saxatalis</i>
Mammals	
Broad-footed Mole	<i>Scapanus latimanus</i>
Brush Mouse	<i>Peromyscus boylii</i>
Dusky-footed Woodrat	<i>Neotoma fuscipes</i>

C. Threatened, Endangered, and Other Sensitive Species

Sensitive plant and wildlife species are legally protected under the federal and state Endangered Species Acts (ESA) or other regulations, or species that are considered by the scientific community to be sufficiently rare to qualify for such listing. The USFWS no longer keeps a list of federal species of concern, and therefore this designation has not been included in this LMP. Sensitive species include the following:

- **Listed or candidate species:** listed or proposed for listing as endangered, threatened or rare under the federal ESA, the California ESA, or the California Native Plant Protection Act.
- **Federal acts and treaties:** Species protected by the Migratory Bird Treaty Act or Bald Eagle Protection Act,
- **California state species of special concern:** as determined by the Department,
- **Fully protected:** full protection by the state or federal government,
- **MSCP covered species:** covered by appropriate MSCP plans, and

-
- **California Native Plant Society (CNPS) rare species lists:** species contained in lists 1A, 1B, and 2.

Sensitive species were identified by reviewing all known survey data for RJER, including incidental sightings, and by reviewing species databases (Table 7). The following databases were used in this review: USGS 1998-2003 survey data; California Natural Diversity Database (CNDDDB), San Diego Natural History Museum Bird Atlas and Mammal Atlas databases, U.S. Forest Service database, and MSCP species database. Appendix E displays a full list of all sensitive species that are known or expected to occur in RJER. These species and associated habitats are described below. This discussion includes all sensitive species that have been documented on RJER, as well as those with a high potential to occur. Listed species that are known to occur on RJER are highlighted first, and followed by a discussion of other sensitive species observed onsite. A summary of sensitive species that are expected to occur on RJER is included at the end of this section.

1. Listed Species Documented from RJER

Table 13 displays the federal and state listed species that have been documented from RJER. A total of seven species have been observed throughout the reserve in vegetation communities consistent with their habitat preferences (Figure 15). Riparian species include the least Bell's vireo. In addition, although not strictly a riparian species, San Diego ambrosia was recorded near the edge of Jamul Creek near Otay Lakes Road, and verified in 2006 by Department personnel (T. Dillingham, pers. Comm.). This species often occurs in association with floodplain terraces along creeks and rivers. The peregrine falcon is also commonly found near creeks, as well as inland lakes and coastal waters during the non-breeding season. A single observation was made in 2001 by USGS near Dulzura Creek.

Upland species documented from the reserve include the Otay tarplant, which occurs in non-native grassland north of Thousand Trails Campground, California gnatcatcher, a coastal sage scrub species, and Quino checkerspot butterfly (QCB) which occurs in open scrub or grassland habitat (Figure 16). Habitat assessments for QCB were conducted in 1999 and 2001, and followed by an adult focused species survey during the 2001 flight season (Marschalek 2001a). Potential habitat, host plant resources, butterfly observations, and areas of QCB sightings have been mapped (Figure 16). In addition, incidental observations of this species that were made during the 2001 USGS plant surveys are included in this figure as well.

Specific details regarding habitat preferences, potential threats, distribution within the reserve are given in brief species accounts (Appendix F).

Table 13. Federally and State Listed Species Documented from RJER

Common Name	Scientific Name	Status	Covered by MSCP
Otay tarplant	<i>Deinandra (Hemizonia) conjugens</i>	FT/SE, List 1B	Yes
San Diego ambrosia	<i>Ambrosia pumila</i>	FE/List 1B	Yes
Quino checkerspot butterfly	<i>Euphydryas editha quino</i>	FE/--	No
California gnatcatcher	<i>Poliophtila californica</i>	FT/SSC	Yes
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE/SE	Yes
Peregrine falcon	<i>Falco peregrinus</i>	FD/SE, SFP	Yes

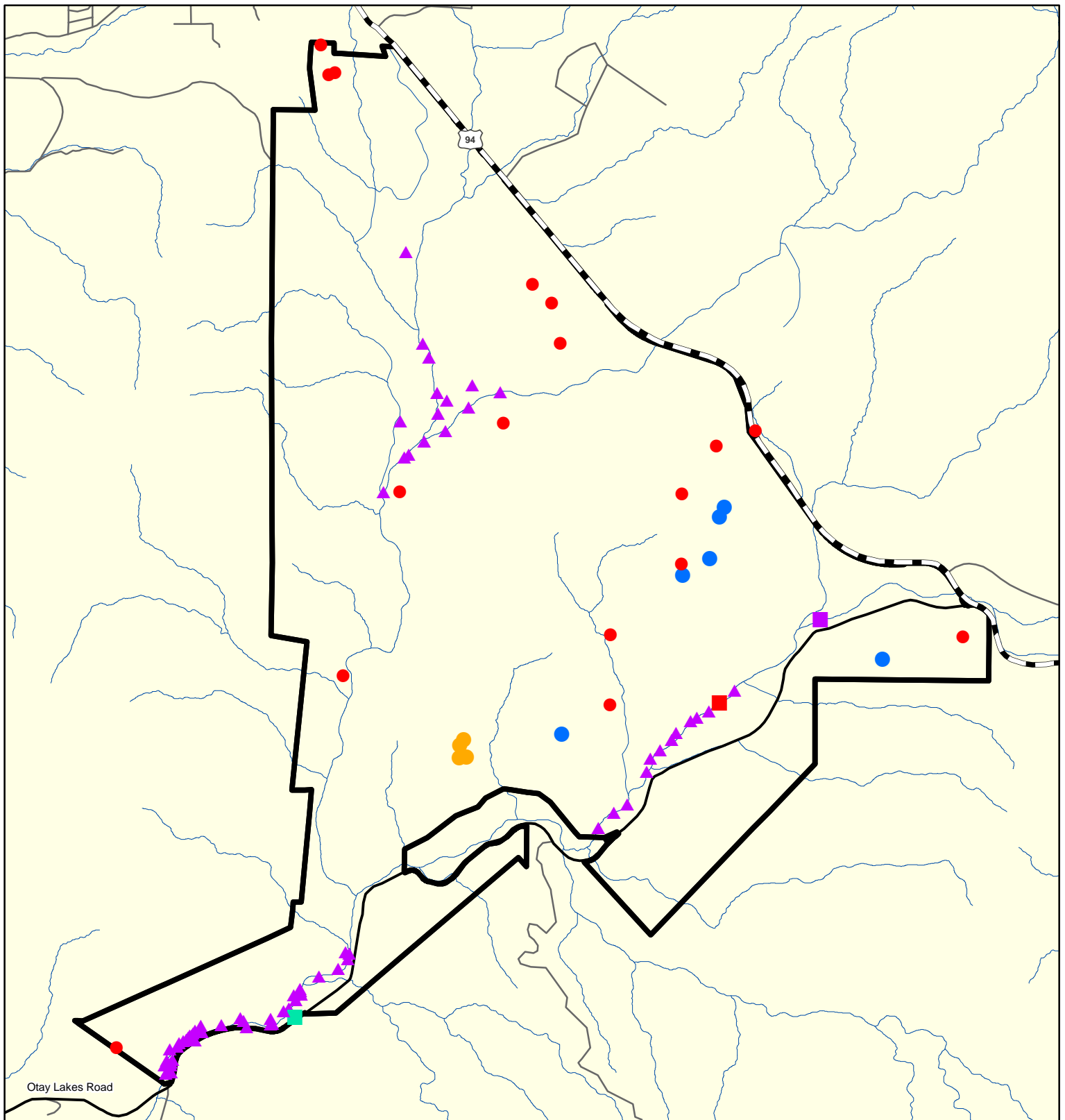
2. Non-Listed Sensitive Species Documented from RJER

This subsection describes the non-listed sensitive species that have been documented throughout RJER, including state species of concern, state and federal fully protected species, species covered by MSCP, and species considered by the scientific community to be of concern (Figure 17). Table 14 provides summary of these species. A complete list of sensitive species, including scientific names, state and federal status, and MSCP coverage is included in Appendix E.

Non-Listed Sensitive Plants

Rare plant surveys and incidental observations detected the presence of 19 non-listed sensitive plant species (USGS 2002, CDFG 2002). All of these are listed as sensitive species by the California Native Plant Society (CNPS), and five of these are covered by MSCP.

Five of the non-listed sensitive plant species are found in native grassland and heavy clay soil habitats. Palmer's grappling hook and small-flowered morning glory are both known from the heavy clay soils that are dominated by native annual and bulb species, with scattered native grasses and shrubs. Both species can be found on the numerous clay soil lenses that are distributed throughout RJER.



Legend

- California gnatcatcher
- Historical California red-legged frog Location (1950)
- ▲ Least Bell's vireo
- Otay tarplant
- Peregrine falcon
- Quino checkerspot
- San Diego ambrosia

Basemap Legend

- RJER Boundary
- State Highway
- Road
- Stream



Feet

0 3,100

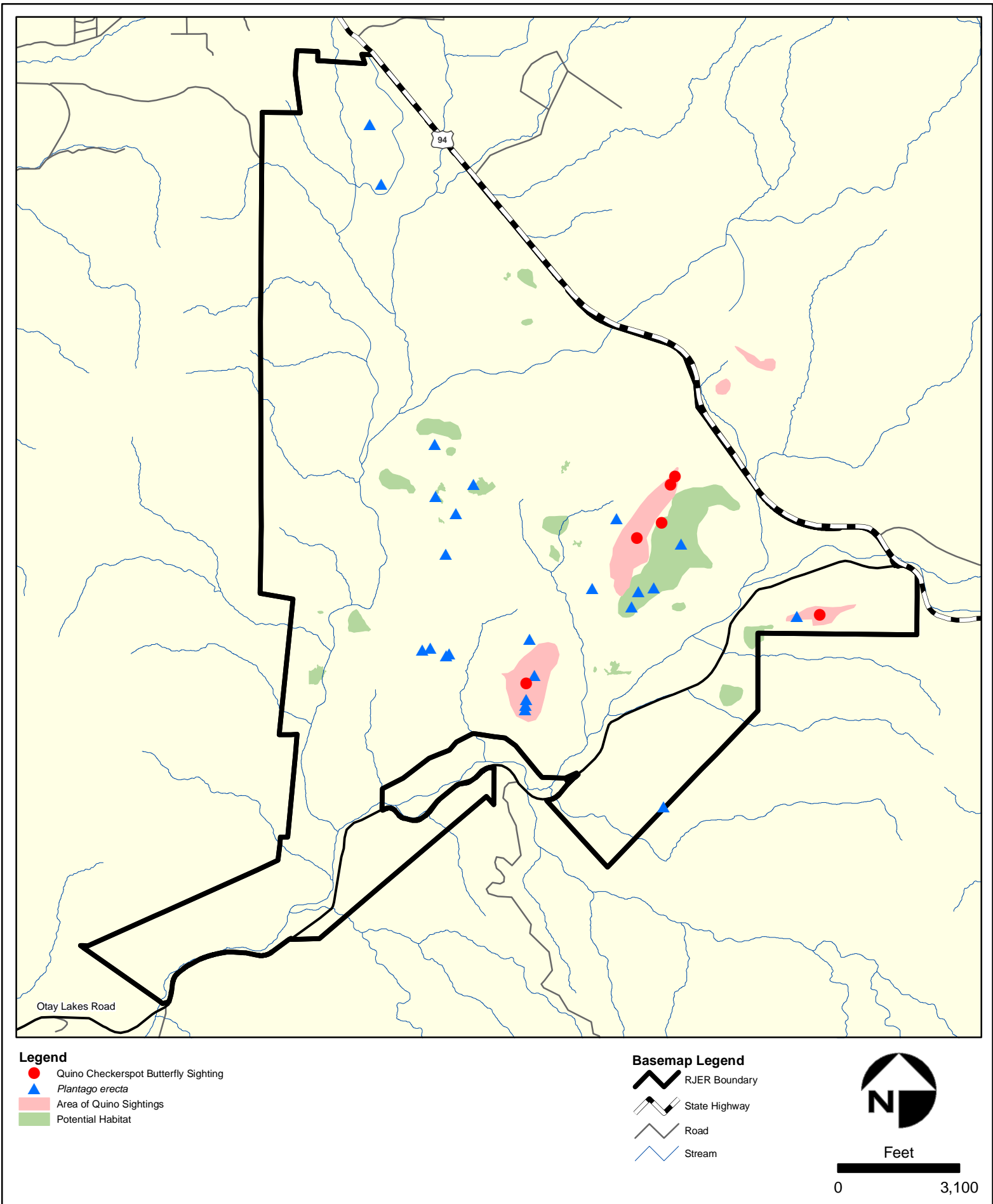


Table 14. Other Sensitive Species Documented from RJER

Plants

Tecate Cypress	San Diego Marsh Elder	South Coast Saltbush	Coulter's Matilija Poppy
San Diego Ambrosia	San Diego Sunflower	Western Dichondra	Little Mousetail
San Diego Sagewort	Palmer's Grapplinghook	Sm.-flowered Morn. Glory	SW Spiny Rush
Palmer's Goldenbush	Coast Barrel Cactus	Variegated Dudleya	San Diego Needlegrass
	Coulter's Saltbush	Delicate Clarkia	San Diego Goldenstar

Amphibians

Western Spadefoot Toad

Reptiles

Coast Horned Lizard	Orange-throated Whiptail	Two-striped Garter Snake
Western Skink	Coast Patch-nosed Snake	Red Diamond Rattlesnake

Birds

Cooper's Hawk	Osprey	Allen's Hummingbird	S. CA Rufous-cr. Sparrow
Sharp shinned Hawk	Merlin	Loggerhead Shrike	Grasshopper Sparrow
Golden Eagle	Prairie Falcon	Western Bluebird	Bell's Sage Sparrow
Ferruginous Hawk	Short-eared Owl	California Thrasher	Yellow Warbler
Northern Harrier	Long-eared Owl	Horned Lark	Yellow-breasted Chat
White-tailed Kite	Burrowing Owl	Lawrence's Goldfinch	

Mammals

Pallid Bat	Long-eared Myotis	Big Free-tailed Bat	Mountain Lion
Townsend's Big-eared Bat	Yuma Myotis	Black-tailed Jackrabbit	Mule Deer
Hoary Bat	Western Mastiff Bat	San Diego Pocket Mouse	
Western Sm-footed Myotis	Pocketed Free-tailed Bat	Desert Woodrat	

Five of the non-listed sensitive plant species are found in native grassland and heavy clay soil habitats. Palmer's grappling hook and small-flowered morning glory are both known from the heavy clay soils that are dominated by native annual and bulb species, with scattered native grasses and shrubs. Both species can be found on the numerous clay soil lenses that are distributed throughout RJER.

San Diego goldenstar, San Diego needlegrass, and variegated dudleya can be found in a number of localities throughout the native grassland and clay lens habitats of RJER. These species are found in the more typical native grassland areas, but can also be found in the more rocky clay soils as well. The populations of these species on RJER are some of the largest known for each of the three species.

Three of the non-listed sensitive plant species are found in riparian habitats and drainage systems. Both the San Diego marsh-elder and the southwestern spiny rush can be found in almost every drainage system on RJER. San Diego sagewort is found along the

drainage edges and in the transition zone between the riparian habitat and the coastal sage scrub and chaparral habitats.

Six of the non-listed sensitive plant species occur in the coastal sage scrub and chaparral habitats found throughout RJER. These species include Coulter's matilija poppy, south coast saltbush, Palmer's goldenbush, and delicate clarkia. Two additional species that occur on RJER, San Diego barrel cactus and San Diego sunflower, are most commonly found in the sage scrub and chaparral on the south facing slopes.

Tecate cypress, also a non-listed sensitive species, occurs in the southern portions of RJER. The Tecate cypress on RJER are mostly at the bottoms of the major canyons that drain the northern slopes of Otay Mountain. In these canyons Tecate cypress seeds have washed down from the upper elevations of the mountain and occasionally become established at lower elevations.

Little mousetail is a non-listed sensitive plant species found in vernal pools and other types of ephemeral basin areas throughout California, southern Oregon and northwestern Baja California, Mexico. On RJER, little mousetail is known from the vernal pools mapped next to the Calmat property (Figure 14).

Non-Listed Sensitive Invertebrates

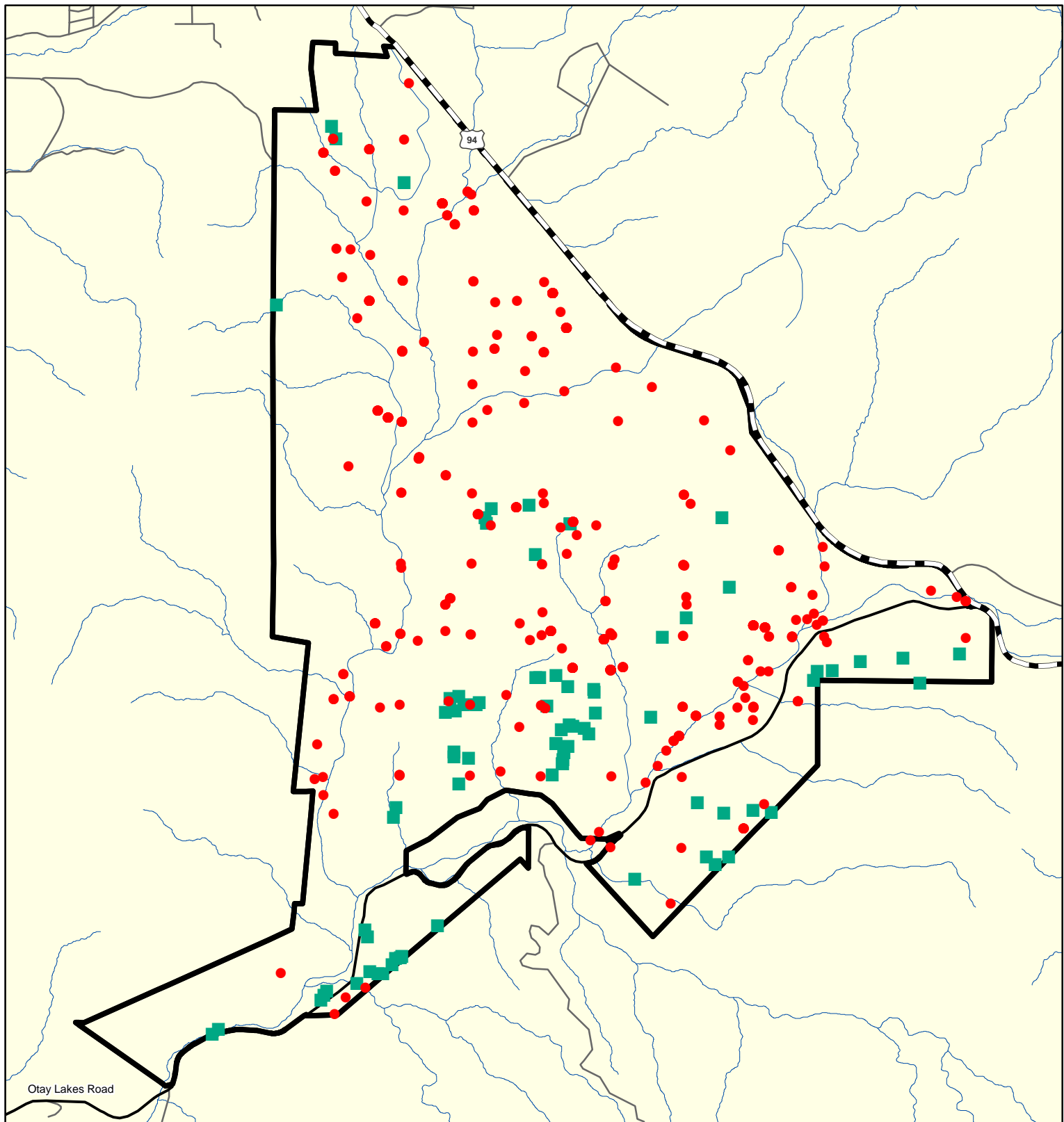
Two non-listed butterfly species have been documented on RJER. The Harbison's dun skipper (*Euphyes vestries harbisoni*), a narrow endemic species, and Hermes copper butterfly (*Lycaena hermes*) are federal species of concern, but are not covered by MSCP.

Non-Listed Sensitive Amphibians

The spadefoot toad has been collected in the artificial ponds as well as a variety of upland habitats in the reserve. Habitat requirements for this species are similar to those of other frogs and toads, and have been described in the previous subsection. This species of state and federal concern is not covered by MSCP because there is not enough life history or distributional data known to determine conservation level.

Non-Listed Sensitive Reptiles

Sensitive species observed in the LMP area include the coast horned lizard, western skink, and orange-throated whiptail. These lizards are state species of concern, but MSCP covers only the whiptail and horned lizard.



- Legend**
- Amphibians, Reptiles, Birds, Mammals
 - Plants

- Basemap Legend**
- RJER Boundary
 - State Highway
 - Road
 - Stream



Feet

0 3,100

The two-striped garter snake was found in Canyon Pond, Main Pond, Corral Pit Pond, Cement Pond, and in coastal sage scrub habitat near Canyon Pond. This highly aquatic species requires a permanent source of water. The red diamond rattlesnake occurs throughout the site in all habitat types. Neither species are covered by MSCP. The western patch-nosed snake was found in an area of disturbed coastal sage scrub and non-native grassland.

Non-Listed Sensitive Riparian Birds

Two sensitive riparian bird species documented from RJER, the yellow warbler and yellow-breasted chat, are commonly found in habitat that is also preferred by the federal listed least Bell's vireo and southwestern willow flycatcher. Ideal habitat consists of a multi-layered riparian woodland with willows, cottonwoods, and mulefat, as well as the presence of surface water. The biggest threats to these species are cowbird parasitism, destruction of habitat due to urban growth, and invasion by non-native species such as the giant reed (*Arundo donax*) or salt cedar.

Non-Listed Sensitive Grassland birds

Grassland provides habitat for several sensitive species of perching birds. For example, the horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), are state species of concern that prefer grassland or open scrub habitats. In addition, although the grasshopper sparrow has not been given special status by the wildlife agencies, local populations in the western United States are known to be in rapid decline, most likely due to a concurrent decline in grassland habitat resulting from heavy development pressure. RJER is critical to the conservation of this species and associated native grassland habitat in San Diego County (P. Unitt, written comm.). Only Camp Pendleton and MCAS Miramar have more habitat for the grasshopper sparrow; however, conservation of this species is not directly provided on military bases.

Grasslands are also important as foraging habitat for a number of sensitive raptor species, the majority of which occur in forest edges near or adjacent to grasslands. The white-tailed kite (*Elanus leucurus*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), and long-eared owl (*Asio otus*) occur in this type of habitat. Other species, including the ferruginous hawk (*Buteo regalis*), merlin (*Falco columbarius*), and short-eared owl, are more restricted to grassland, and some even nest on (northern harrier, *Circus cyaneus*) or in (burrowing owl, *Athene cunicularia hypugaea*) the ground.

Two to three individual burrowing owls have been observed onsite near Canyon Pond during winter months. The burrowing owl is in imminent danger of becoming extirpated from the county due to destruction of its preferred habitat (grassland and open scrub) from urban development (Unitt, 2004). Intensive management, such as artificial burrow construction, habitat modification, and reintroduction, may be required to save this species (CBOC 1993; CDFG 1995), and RJER is an ideal location for these activities (P. Unitt, per. comm.). However, in general, reintroductions have had relatively low success. The reasons for failure of reintroduction efforts include low migratory return, high predation rates, and a lack of knowledge about nest characteristics.

Recent observations of the short-eared owl are significant as well. A large group (23 to 36 individuals) was detected in RJER by the Department in February, 2004. This may be the largest group ever observed in San Diego County (the Department, written comm.). They were observed in grassland and coastal sage scrub habitat in the hills west of North Pond at the north end of the reserve. Short-eared owls are very rare in the grasslands and marshes of San Diego County. There are few recent winter records, mostly from the coastal slope, and only one confirmed breeding record (historic) in National City (Department, written. comm.). This species roosts during the day, and is easily spooked.

Non-Listed Sensitive Coastal sage scrub birds

In addition to the federally threatened coastal California gnatcatcher, two non-listed species are typically associated with coastal sage scrub habitat within the reserve: the southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), and Bell's sage sparrow (*Amphispiza belli*).

Non-Listed Sensitive Woodland Birds

Several sensitive species occur in wooded or forested habitat. For example, the sharp shinned hawk (*Accipiter striatus*), a winter visitor, occurs in a variety of habitats but prefers trees and tall shrubs. A similar species, the Cooper's hawk, prefers mature riparian woodland but is also well adapted to the urban landscape (Unitt, 2004). The long-eared owl (*Asio otus*), uses thickly wooded areas for nesting and roosting, and nearby open spaces for hunting. Although not given special status by wildlife agencies, the western bluebird (*Sialia mexicana*), is covered by the MSCP in recognition of its decline throughout the west. This species prefers oak woodlands and coniferous forest near open meadows.

Non-Listed Sensitive Mammals

Although eight species of bats that occur on RJER are considered sensitive, none are covered under MSCP due to the lack of life history or distributional information available to determine level of conservation. General habitat requirements for bats have been discussed previously in section B.

The mountain lion and mule deer are the largest mammals that occur in RJER. Both are habitat generalists. However, because of their large body size, they have special habitat requirements, including large areas of unfragmented habitat to accommodate large home ranges. In addition, they require access to habitat linkages and movement corridors that are adequate in size. Smaller species known to occur on RJER are the San Diego Pocket mouse (*Chaetodipus fallax fallax*), desert woodrat (*Neotoma lepida*), and black-tailed jackrabbit (*Lepus californicus*).

3. Potentially Occurring Sensitive Species

Table 15 summarizes the sensitive plant and animal species that have the potential to occur on RJER due to their overall distribution and habitat preferences. Habitat requirements for federal and state listed species are detailed in species accounts located in Appendix E.

Table 15. Potentially Occurring Sensitive Species

Common Name	Scientific Name	Status¹	Covered by MSCP
Plants			
San Diego Thornmint	<i>Acanthomintha ilicifolia</i>	FT/SE, List 1B	Yes, NE
Amphibians			
Arroyo toad	<i>Bufo californicus</i>	FE/SSC	Yes
Reptiles			
California legless lizard	<i>Anniella pulchra pulchra</i>	--/SSC	No
Coastal rosy boa	<i>Lichanura trivirgata roseofusca</i>	--/--	No
Southwestern pond turtle	<i>Clemmys marmorata pallida</i>	--/SSC	Yes
Western banded gecko	<i>Coleonyx variegatus</i>	--/SSC	No

Table 15. Potentially Occurring Sensitive Species *continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP
Birds			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	FD, BEPA/SE	Yes
Coastal cactus wren	<i>Campylorhynchus brunneicapillus cousei</i>	--/SSC	Yes
Gray vireo	<i>Vireo vicinior</i>	--/SSC	No
Purple martin	<i>Progne subis</i>	--/SSC	No
Tricolored blackbird	<i>Agelaius tricolor</i>	FSC/SSC	Yes
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE/SSC	Yes
Swainson's hawk	<i>Buteo swainsoni</i>	FSC/ST	Yes
Mammals			
California pocket mouse	<i>Chaetodipus californicus</i>	--/SSC	No
Southern grasshopper mouse	<i>Onychomys torridus</i>	--/SSC	No
American badger	<i>Taxidea taxus</i>	--/SSC	Yes

D. Non-Native Species

1. Invasive Non-Native Plant Species

Non-native plant species that have the ability to outcompete native plants, and ultimately change the character of a native habitat, are of great concern to land managers. The California Invasive Plant Council (Cal-IPC) has identified exotic plant species that are considered most invasive in its 2006 California Invasive Plant Inventory. The 2006 Inventory has been used to assess the potential non-native plant species threats to RJER. The inventory rates plants as High, Moderate, or Limited, based on scoring for three criteria: ecological impact, invasive potential, and ecological amplitude and distribution. It is important to note that even those species rated as Limited are invasive and should be of concern to land managers. Although the impact of each plant varies regionally, its rating represents cumulative impacts statewide. Therefore, a plant whose statewide impacts are categorized as Limited may have more severe impacts in a particular region. Conversely, a plant categorized as having a High cumulative impact across California may have very little impact in some regions. Table 16 identifies the level of infestation of each non-native invasive plant based on site surveys, and the Cal-IPC rating. The Cal-IPC ratings used in Table 16 are described below.

- **High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and

other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

- **Moderate** – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- **Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

In addition Cal-IPC Inventory also provides an Alert designation to identify plants with High or Moderate ratings that have the potential to increase their ranges in California. Among the invasive weed species that occur within RJER, only Crystalline iceplant (*Mesembryanthemum crystallinum*) has been given an Alert designation by Cal-IPC.

A total 62 plant species that have been detected on RJER are non-native species which represent 26 percent of the flora within the preserve. As noted above, this diversity of non-native species parallels regional (i.e., San Diego County) patterns as well. Simpson and Rebman (2000) state that 22 percent of the county's flora are non-native and naturalized species. Within RJER, the highest number of non-native taxa belongs to the Asteraceae (15 observed) and Poaceae (21 observed).

Non-native species have their highest relative concentration in areas previously heavily grazed such as the pastures on the flatter terrain in the northern portions of the RJER (Figure 18). However, large areas of the RJER support disturbed habitats, either from previous grazing activities or fires.

Within the RJER, the five species of greatest concern, based on the Cal-IPC list (i.e., High) are tamarisk (*Tamarix* sp.), giant reed (*Arundo donax*), pampas grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), and foxtail chess (*Bromus madritensis* ssp. *rubens*). All of these species have the potential to expand the limits of their current populations, and/or establish new satellite populations within the RJER. Current eradication efforts by the Department have kept these species under control.

Table 16. Invasive Weeds Present within RJER

Species	Level of Infestation	Cal-IPC Rating
Andean pampas grass (<i>Cortaderia jubata</i>)	Scarce (ID uncertain)	High
Australian saltbush (<i>Atriplex semibaccata</i>)	Uncommon	Moderate
Black mustard (<i>Brassica nigra</i>)	Fairly common	Moderate
Bristly ox-tongue (<i>Picris echioides</i>)	Scarce	Limited
Bull thistle (<i>Cirsium vulgare</i>)	Scarce	Moderate
Castor bean (<i>Ricinus communis</i>)	Scarce	Limited
Crystalline iceplant (<i>Mesembryanthemum crystallinum</i>)	Uncommon	Moderate
Fennel (<i>Foeniculum vulgare</i>)	Scarce	High
Fountain grass (<i>Pennisetum setaceum</i>)	Uncommon	Moderate
Foxtail chess (<i>Bromus madritensis</i> ssp. <i>rubens</i>)	Uncommon	High
Giant Reed (<i>Arundo donax</i>)	Scarce	High
Goosefoot (<i>Chenopodium</i> spp.)	Scarce/uncommon	Not Listed
Mediterranean schismus (<i>Schismus barbatus</i>)	Common	Moderate
Milk thistle (<i>Silybum marianum</i>)	Scarce	Limited
Peruvian pepper tree (<i>Schinus molle</i>)	Scarce	Limited
Ripgut grass (<i>Bromus diandrus</i>)	Common	Moderate
Russian thistle (<i>Salsola tragus</i>)	Uncommon	Limited
Slender mustard (<i>Hirschfeldia incana</i>)	Fairly common	Moderate
Tamarisk (<i>Tamarix</i> sp.)	Uncommon	High
Tocalote (<i>Centaurea melitensis</i>)	Uncommon	Moderate
Tree of Heaven (<i>Ailanthus altissima</i>)	Uncommon	Moderate
Tree tobacco (<i>Nicotiana glauca</i>)	Uncommon	Moderate
Wild oat (<i>Avena barbata</i>)	Fairly common	Moderate

Tamarisk occurs along the drainages of the RJER and infrequently along the perennial drainages. This species is associated with dramatic changes in geomorphology, groundwater availability, soil chemistry, fire frequency, and plant community composition. For example, high evapotranspiration rates can result in the lowering of groundwater tables. Additionally, soil salinities increase as a result of inputs of salt from glands on this species' leaves. Increased salinity inhibits the growth and germination of native riparian plant species. High amounts of leaf litter can increase the frequency of fire where tamarisk is dominant in cover; moreover, this species resprouts vigorously following fires. These effects on the ecosystem from the presence of tamarisk can result the domination of this species in riparian communities (Bossard et al. 2000).

Once established, giant reed can form huge clones, sometimes covering hundreds of acres. It is highly flammable and resprouts quickly after burning. Fires help transform communities of native plants into solid stands of giant reed, changing riverbank habitats

from flood- to fire-defined habitats. Additionally, this species can spread downstream through propagules resulting from such eradication methods as mechanical cutting. Fortunately, the only known occurrence of this species in RJER is at the downstream end of Dulzura Creek.

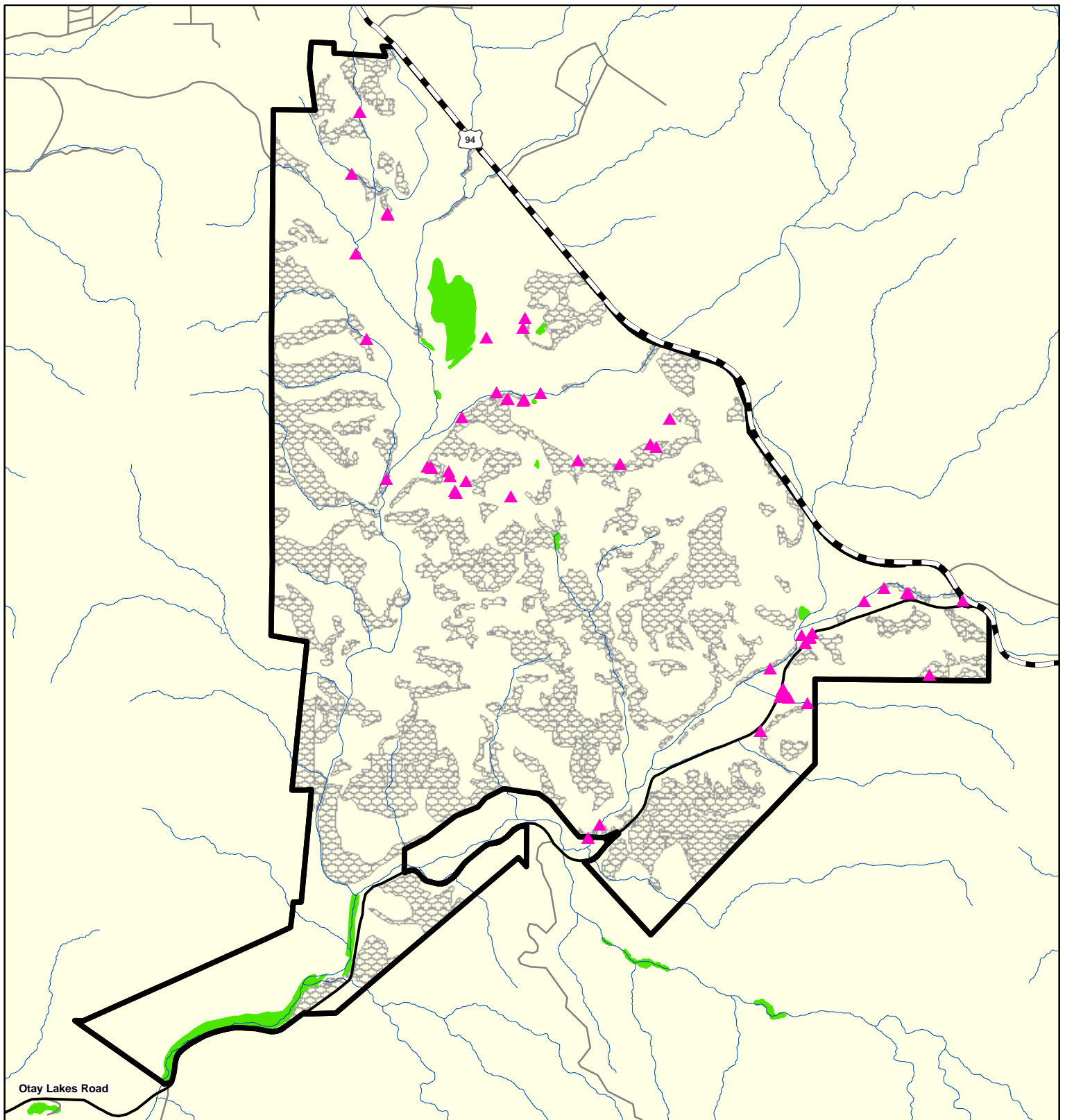
Andean pampas grass displaces native flora and increases fire risk with the excessive build-up of dry leaves, leaf bases and flowering stalks (Bossard et al. 2000). It spreads prolifically through wind induced seed dispersal. Each female plant can produce up to 10,000 seeds, and these seeds can travel up to 15 miles away.




Fennel displaces native species from a variety of habitats by outcompeting them for light, nutrients, water, and perhaps by exuding allelopathic substances that inhibit the growth of natives. Fennel stands can persist for long period of time and may represent edaphic climax communities (a climax community determined by soil factors such as alkalinity or drainage rather than by climate).





Foxtail chess reduces native plant cover similar to Andean pampas grass and fennel. Foxtail chess is especially well-adapted to fire, recovering to pre-burn densities rapidly after a fire. Fire can actually contribute to its spread, raising fuel loads, which increases the intensity and spread of fires resulting in damage to native species (Bossard et al. 2000).

Although castor bean has only a “limited” Cal-IPC rating, it has begun to invade the western portion of Dulzura Creek and is considered a major threat within the Reserve. Prior to the 2003 Otay Fire, this riparian area was occupied by least Bell’s vireo (T. Dillingham pers. comm.). It is currently one of the greatest non-native species management concerns on the Reserve, and should be prioritized for invasive species eradication.

Many of the species in Table 16, such as some of the annual grasses, are common or fairly common throughout the RJER. Because they are ubiquitous, their threat of expansion is considered low (i.e., there is no unoccupied habitat for them to expand into in the absence of large-scale natural or human-induced disturbances).



- Legend**
-  Disturbed Habitat Overlay
 -  Invasive Species Areas
 -  Invasive Species Locations

- Basemap Legend**
-  RJER Boundary
 -  State Highway
 -  Road
 -  Stream



Feet
0 3,100

Disturbance events, natural or human-induced, can have a markedly significant effect on the expansion of non-native species. Many of the species identified in Table 16 would have a very high expansion threat post-disturbance (e.g., fire, floods, extensive grazing, etc.). However, though natural disturbances such as flooding and fires are a certainty in the long-term, in an attempt to prioritize the threat for purposes of this LMP, the expansion threat assessment is based upon a species perceived threat in the absence of a large-scale disturbance.

2. Non-Native Wildlife Species

Seventeen non-native wildlife species have been recorded from RJER, and many of these are considered invasive pests (Table 17). Non-native wildlife species are considered invasive when they threaten native biodiversity by disrupting or altering native ecological communities and have negative consequences for native species and habitats. Invasive animal species outcompete, prey upon, or disturb the habitat of native wildlife and may spread diseases. This section describes non-native wildlife in RJER and how these species may impact the native fauna in the reserve.

Non-Native Invertebrates

The swamp crayfish is a non-native species that often has an adverse impact on native populations of invertebrates, fishes, and frogs due to its highly predatory nature. In addition, burrowing activities of the swamp crayfish can cause damage to water control structures such as earthen dams and levees (NECIS 2004, USGS 2005A). No invasive insects were observed during the 2001-2002 USGS surveys, including the Argentine ant (*Linepithema humile*), a common pest that often occurs near urban fringes. This non-native ant can outcompete native ant species, but is unpalatable to the coast horned lizard, resulting in a decline in food availability for this sensitive species.

Non-Native Fishes

Six non-native fish species were observed in the artificial ponds sampled by USGS in 1998-2001. These include the largemouth bass (*Micropterus salmoides*), mosquito fish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), bluegill sunfish (*Lepomis macrochirus*), black crappie (*Poxomis nigromaculatus*), and black bullhead (*Ameiurus melas*). The ponds had been stocked with non-native species by the previous landowner to provide fishing opportunities. Currently, none of the ponds except for Main Pond (see below) contain non-native fishes.

Table 17. Non-Native Wildlife Known to Occur within RJER

Common Name	Scientific Name
Invertebrates	
Swamp crayfish	<i>Procambarus clarkii</i>
Fishes	
Black bullhead	<i>Ameiurus melas</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
Bluegill sunfish	<i>Lepomis macrochirus</i>
Green sunfish	<i>Lepomis cyanellus</i>
Largemouth bass	<i>Micropterus salmoides</i>
Mosquito fish	<i>Gambusia affinis</i>
Amphibians	
African Clawed Frog	<i>Xenopus laevis</i>
Bullfrog	<i>Rana catesbeiana</i>
Birds	
Brown-headed Cowbird	<i>Molothrus ater</i>
European Starling	<i>Sturnus vulgaris</i>
Magpie Jay	<i>Calocitta colliei</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>
Rock Pigeon	<i>Columba livia</i>
House Sparrow	<i>Passer domesticus</i>
Mammals	
Domestic Dog	<i>Canis familiaris</i>
House Cat	<i>Felis cattus</i>
House Mouse	<i>Mus musculus</i>
Virginia Opossum	<i>Didelphis virginiana</i>

The largemouth bass and the mosquito fish have been nominated among 100 of the world's worst invasive species by IUCN's Invasive Species Specialist Group (Lowe et al 2000). The National Environmental Coalition on Invasive Species describes the largemouth bass as a "voracious, carnivorous, solitary ambush predator that feeds both day and night. Its diet includes other fish, amphibians, insects, and any small living animal or bird that falls into the water" (NECIS 2004). However, although the mosquito fish may negatively impact native species, it is also commonly used as a non-chemical method of mosquito control. The potential impact to native species must be weighed against the need to control mosquitoes, which are the vector for West Nile virus. Mosquito fish are currently kept in the main pond as brood stock to be used throughout the reserve in water sources not connected to drainages (T. Dillingham, pers. comm.).

Non-Native Amphibians and Reptiles

Two non-native amphibians, the bullfrog and African-clawed frog have been documented in the artificial ponds within RJER, and bullfrogs were reported in riparian woodland as well (USGS, 2002). Both species are predatory, although the bullfrog is the most voracious. For example, the bullfrog “will eat virtually any animal they can fit into their mouths, including amphibians, fish, mice, bats, birds, and even other bullfrogs” (USGS 2003). No non-native reptiles have been reported from RJER. The Department routinely conducts bullfrog and clawed frog eradication efforts, and has done so since it acquired the reserve (T. Dillingham pers. comm.).

Non-Native Birds

The following six non-native species of birds have been reported from RJER: ring-necked pheasants (*Phasianus colchicus*), black-throated magpie jay (*Calocitta colliei*), rock pigeon (*Columba livia*), house sparrow (*Passer domesticus*), European starling (*Sternus vulgaris*) and brown-headed cowbird (*Molothrus ater*). Male ring-necked pheasants (*Phasianus colchicus*) are released during the managed pheasant hunts which have been organized on the property since the Department took ownership. Because of the prevalence of medium to large predators in the area and the fact that only males are used in the hunting programs, a self-sustaining pheasant population will not occur (T. Dillingham, pers. comm.).

The black-throated magpie jay (*Calocitta colliei*) is endemic to Mexico. Some escapees from the pet trade in Tijuana have taken up residence in the riparian woodlands of San Diego County (Unitt, 2004); however, the origin of the individuals observed within RJER is unknown.

Three non-native species observed in RJER often occur in the urban landscape, but have also become established in native habitat. The feral pigeon (*Columba livia*), house sparrow (*Passer domesticus*), and European starling (*Sternus vulgaris*) were purposefully introduced by Europeans over 100 years ago. All three species may pose threats to the native avifauna in RJER. For example, the feral pigeon acts as disease reservoir which could affect the health of native species within the reserve. Additionally, the house sparrow and starling compete with native birds for nest cavities. This could potentially impact woodpeckers and bluebirds within RJER.

The brown-headed cowbird (*Molothrus ater*) is a brood parasite native to North America. However, prior to 1915 this species only occurred in San Diego County as an occasional

migrant (Unitt, 2004). At this time, the front of the expanding range of this species arrived in the county (Laymon 1987, Rothstein 1994), and its numbers have been increasing ever since, partially due to conversion of native habitat to agricultural land. The cowbird is attracted to seeds, larvae and insects that are associated with manure of horses and livestock. This species does not build its own nests, but rather lays its eggs in the nests of native birds who then feed and care for the young. Eggs and young of the native species that are already in the nest are usually pushed out. Unfortunately, the cowbird is a contributor to the decline of several sensitive species, including the least Bell's vireo, California gnatcatcher, yellow warbler, and southwestern willow flycatcher.

Non-Native Mammals

Domestic dogs (*Canis familiaris*) and domestic cats (*Felis catus*) are present on RJER. Dogs have been detected throughout the reserve, and a cat was detected at one of the culverts. These animals can have a large impact on the native populations of birds, mammals, lizards, and amphibians. For example, recent studies have shown that free ranging cats can kill hundreds of wild animals every year, and it is believed that the decline in native song sparrow population is partially due to predation by the house cat (Coleman et al. 1997). The two other non-native species, the house mouse (*Mus musculus*), and Virginia opossum (*Didelphis virginianus*) do not pose a significant threat to native wildlife. However, the house mouse may displace native mice, and the opossum may include the eggs of native birds in its diet.

E. Wildlife Linked Diseases

Wildlife linked diseases are caused by harmful viruses or bacteria that can negatively impact wildlife, either directly or indirectly. These diseases present a threefold problem. First, they can weaken, sicken or kill native wildlife thereby negatively impacting populations. This is especially worrisome in populations of rare or isolated species. Second, the infected wildlife can sometimes serve as vectors, passing the disease microorganisms on to humans, who may not have the appropriate immune response to fight off the infection. And third, vector control measures to protect humans can inadvertently harm native wildlife. The wildlife linked diseases of greatest concern in the vicinity of RJER are West Nile Virus, and Avian Influenza. However, neither one has a high potential to occur on RJER.

1. West Nile Virus

Originating in Uganda, the West Nile virus was first detected in the United States in 1999 (CDC 2005). It generally causes mild to moderate flu-like symptoms in humans, but can also cause encephalitis (inflammation of the brain) or meningitis (inflammation of the lining of the brain and spinal cord). The virus is maintained through a complex life cycle involving wild birds and mosquitoes. Mosquitoes become infected with the virus by feeding on the blood of an infected bird. Humans, or other warm blooded animals, may become infected after being bitten by an infected mosquito, and there are records of infected reptiles as well (Boyce et al. 2004). The relevance of West Nile Virus to the management of RJER is that, in addition to impacting the health of people living nearby, this disease can potentially impact native wildlife directly through infected mosquito bites, or indirectly through vector control methods (Boyce et al. 2004). Rare or endangered birds may be especially at risk due to their limited population sizes and distribution. The Department routinely inspects RJER for mosquito larvae in standing water and treats it as necessary. For more information on West Nile Virus, go to the County of San Diego Vector Control website (<http://www.co.san-diego.ca.us/deh/chd/wnv/index.html>).

2. Avian Influenza

Avian Influenza (bird flu) is a viral infection in wild and domestic birds known as type A influenza (CDC 2005). The Highly Pathogenic Avian Influenza (HPAI) H5N1 strain of the virus has not been found in North America as of June 2006. Wild waterfowl are the natural reservoirs of avian viruses though most birds remain healthy and do not infect other birds or people. It is only when the virus mutates into the highly contagious strains that infected birds pose a health risk. Wild aquatic birds, especially of the orders *Anseriformes* (ducks, swans and geese) and *Charadriiformes* (gulls, terns and shorebirds) are carriers of the full variety of influenza A viruses (Harder and Werner 2006).

Avian influenza presents a threat to wild bird conservation in several ways. First, although most strains of avian influenza are relatively benign, HPAI H5N1 appears to be able to cause illness and death in many species of wild birds. Second, there may be speculation regarding wild birds for spreading HPAI H5N1, and there may be calls for culling of wild birds to try to control or limit the spread of HPAI H5N1. Culling can be effective in controlling domestic animal diseases but there are no examples where culling of native wildlife has completely eradicated a wildlife disease (WCS 2005). Strategies that could help prevent the transmission of avian influenza, if detected in RJER, include monitoring, minimizing contact between domestic and wild bird populations, and

educating people who regularly come in contact with bird populations. The Department is currently working with a multi-agency group to develop responses to various scenarios involving avian influenza (see Department's website and associated fact sheets <http://www.dfg.ca.gov/avianflu/index.html> for more information).

F. Habitat Linkages and Wildlife Movement Corridors

1. Habitat Linkages

Habitat linkages are patches of native habitat serve as connections between habitat patches and help reduce the adverse effects of habitat fragmentation. Although individual animals may not move through a habitat linkage, the linkage is a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and avenues of gene flow for small animals such as reptiles, amphibians, and rodents. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat "islands" that function as stepping stones for dispersal and movement (especially for birds and flying insects).

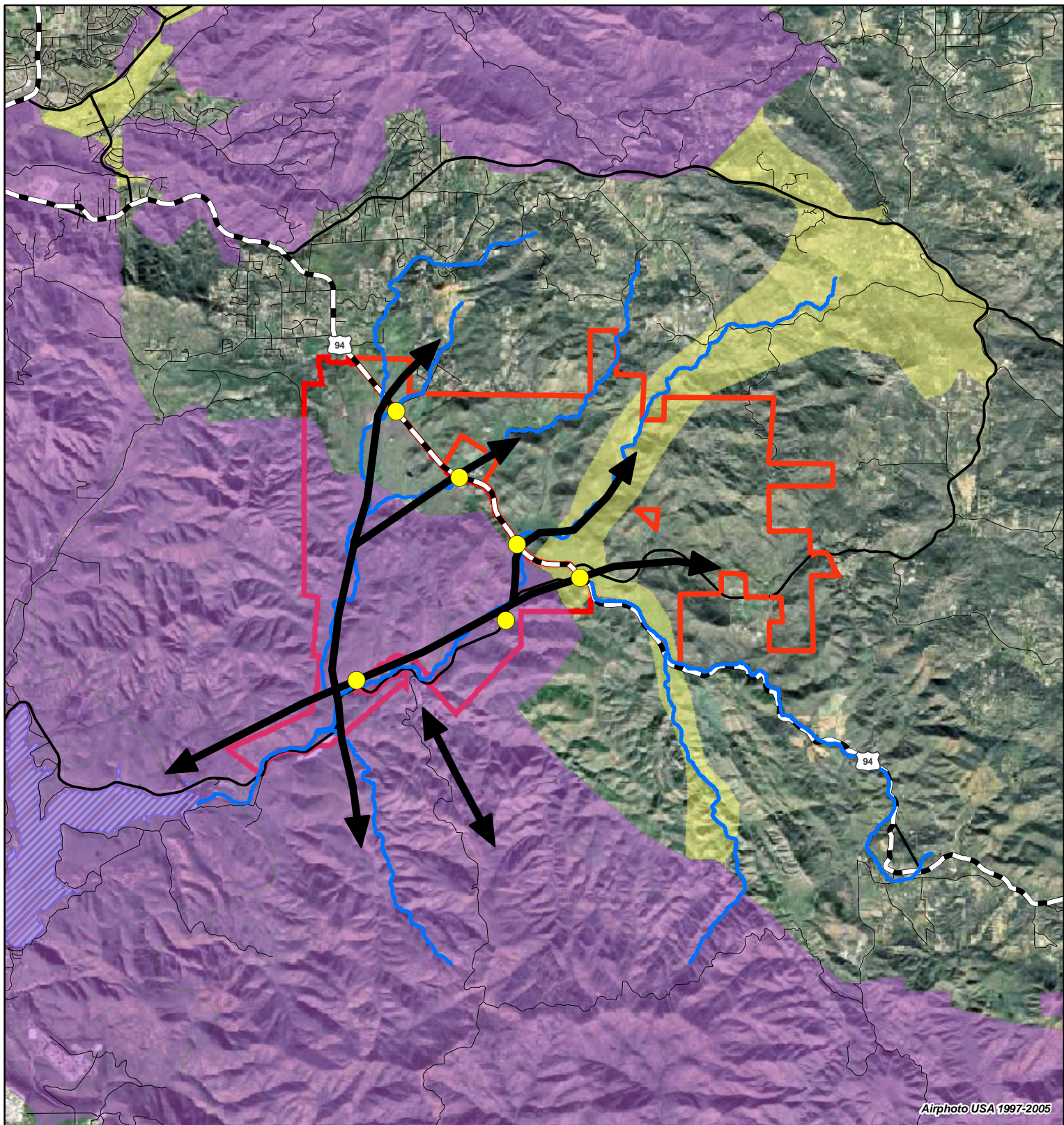
Several coordinated efforts have been made to identify critical wildlife movement corridors and habitat linkages throughout the state of California (CWC 2000), within San Diego County (Ogden 1996), and in the U.S./Mexico border region (CBI 2003a; CBI 2004). The Otay Mountain-Cleveland National Forest linkage was identified by CWC (2000) as having a high priority for conservation. This linkage connects Otay Mountain and other federal and state protected lands near the Mexican border to the Cleveland National Forest, a large, mostly contiguous area of federally protected land to the north. Taking a broader, bi-national perspective, this linkage fits within the Coastal Baja-Otay Mountain-Laguna Mountains critical linkage identified by CBI (2003a). The protected open space lands of the RJER and adjacent HCWA are an important component of this regional linkage.

Figure 19 shows the MSCP biological core and habitat linkage areas for the region surrounding RJER. A biological core area is land that is considered to be of great ecological importance to the MSCP. For example, it may contain biological resources that contribute to the survival of sensitive species, consist of a portion of a regional linkage/corridor, or contain large blocks of unfragmented habitat. Habitat linkages connect blocks of core areas to one another. Biological core and linkage areas were identified to assist local jurisdictions and special districts as one element to be considered in identifying their portion of the MSCP preserve system.

2. Wildlife Corridors

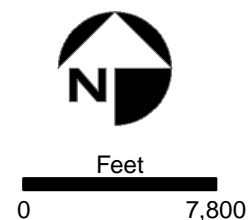
A wildlife corridor is a linear feature that allows animal movement between two patches of habitat. Corridors reduce the isolation of habitat fragments by providing a means for dispersal and genetic flow between habitats (CBI 2003b). Larger animals, such as the mountain lion and mule deer, tend to be more susceptible to habitat fragmentation due to their larger home ranges and, therefore, greater need for movement over a larger area of land. Smaller animals, such as the bobcat, although slightly less sensitive to habitat fragmentation, still require adequate movement corridors between habitat patches. However, some species, such as the coyote or raccoon, are fairly well adapted to disturbed habitat and are less vulnerable to changes in their environment. A chokepoint is a constricted segment of a corridor that restricts movement to some degree. A good example of this is a culvert underneath a highway that limits the functionality of wildlife movement by constricting the space through which wildlife can travel. As development continues to encroach upon rural southern California, maintaining wildlife corridors and habitat linkages will remain critical.

Wildlife movement corridors leading to and from RJER are illustrated in Figure 19. Camera and track station surveys have shown that Dulzura Creek, including the tributary along Hollenbeck Canyon, and Jamul Creek are important movement corridors for a variety of medium and large sized mammals (USGS 2002; CBI 2003b). The wildlife moves in and out of the reserve through four culverts that cross underneath SR 94. SR 94 has been identified as a barrier to wildlife movement (CBI 2004), and the culverts act as a chokepoint in this area. Only one of these (at the southern branch of Jamul Creek) is large enough to accommodate the movement of mule deer (USGS 2002). Other species moving through the culverts include mountain lions, bobcats, coyotes, grey foxes, skunks, raccoons, and possums. In addition to Dulzura and Jamul Creeks, Little Cedar Creek to the south is considered a valuable movement corridor as well, facilitating north-south movement between the San Ysidro Mountains and the Jamul Mountains, Proctor Valley, and San Miguel Mountains via Jamul Creek (LMA 1994). An increase in development in the area will necessitate the enhancement of existing crossing structures, and the addition of new underpasses as traffic in the area increases.



- Legend**
- MSCP Biological Core Areas
 - MSCP Habitat Linkage Areas
 - Highway Undercrossings
 - Wildlife Movement Corridor

- Basemap Legend**
- RJER and HCWA Boundaries
 - State Highway
 - Major Road
 - Local Road
 - Stream
 - Lake/Reservoir



IV. MANAGEMENT GOALS AND ENVIRONMENTAL IMPACTS

The Rancho Jamul Ecological Reserve has a unique position in the landscape connecting BLM's Otay Mountain Wildlife Management Area, the Department's Hollenbeck Canyon Wildlife Area, the Cleveland National Forest, and other protected lands owned by USFWS, the State of California, and the City and County of San Diego. RJER enhances regional efforts to conserve southern California's natural heritage by providing long-term management of biological and ecological resources, while accommodating wildlife-dependent recreation and education for the public, opportunities for scientific research, and protection of cultural resources.

The goals in this chapter provide broad guidance for management and are accompanied by practical tasks directed towards implementation. The goals are based on an ecosystem-based approach to management, which is consistent with the goals of the South County MSCP. Further, South County MSCP guidelines have been incorporated into this LMP. It is important to note that implementation depends on availability of the necessary staff and an adequate operations and management budget. Thus, additional resources may be required to accomplish the tasks identified in this chapter. However, regardless of the amount of resources available, the first priority in this LMP is to identify and remediate all high-priority threats, as defined in this chapter.

This chapter is organized by the following elements, as defined below: biological, cultural resources, public use, facility maintenance, scientific research and biological monitoring, fire management, and managed coordination. Each element includes an introduction, a discussion of related opportunities and constraints, a set of goals and tasks, and a discussion of potential impacts resulting from management activities. Goals and tasks are numbered for cross-referencing and summarized in Table 18 at the end of this chapter. Many of the tasks are repeated for more than one goal, because a particular action may be required to accomplish several goals. For example, invasive plant species eradication is included as a project-specific task, but is also required for general habitat management, habitat restoration, protection of special status species, and post-fire management.

Finally, the management described in this chapter was evaluated for its potential impact on the environment pursuant to the California Environmental Quality Act (CEQA). An Initial Study has been prepared in accordance with the State CEQA Guidelines, and has been submitted to the State Clearinghouse.

A. Definitions of Terms Used in This Plan

The LMP has been developed in accordance with the Department's *Guide and Annotated Outline for Writing Land Management Plan* (California Department of Fish and Game 2003). The elements, goals, and tasks formulate policies and directions for management implementation. Elements relate to broad categories of consideration, goals define objectives within these elements, and tasks identify specific actions necessary to attain these goals. Table 18, at the end of this chapter, provides an abbreviated outline for all elements, goals, and tasks in the order in which they appear to help the reader navigate through this management chapter.

Element: An element refers to any biological unit, cultural resources protection strategy, public use activity, facility maintenance program, scientific research/monitoring activity, fire management activity, or management coordination approach, as defined below, for which goals have been prepared and presented within this plan.

Biological Element: These elements consist of species, habitats, or communities for which specific management goals have been developed within the plan.

Cultural Resources Element: This element refers to the preservation of cultural and archaeological resources.

Public Use Element: Public use elements are any recreational, scientific, or other public use activity appropriate to and compatible with the purposes for which this property was acquired.

Facility Maintenance Element: This is a general-purpose element describing the maintenance and administrative program, which helps maintain orderly and beneficial management of the area.

Scientific Research and Monitoring: This element consists of scientific research and monitoring activities that support the goals of the biological elements with respect to habitat management, habitat restoration, sensitive species protection, and public use.

Fire Management Element: This element consists of any pre-, during-, and post-fire activities that support the attainment of the management goals of this plan.

Management Coordination Element: This element consists of activities related to the coordination of management activities occurring in adjacent and regional open space lands.

Goal: A goal is the statement of the overall condition or result that this LMP is intended to achieve through management efforts.

Biological Goal: A biological goal is a statement of intended long-range results of management based upon the feasibility of maintaining, enhancing or restoring species populations and/or habitat.

Cultural Resources Goal: A cultural resources goal is a statement describing management and its intended results for cultural resources.

Public Use Goal: A public use goal is a statement of the desired type and level of public use compatible with the biological element goals previously specified within the plan.

Facility Maintenance Goal: A facility management goal is a statement describing management and the resulting type and level of facility maintenance in support of the biological and public use element goals.

Scientific Research and Monitoring Goal: A biological management goal is a statement describing the type of scientific research and biological monitoring that is desired to support the biological goals.

Fire Management Goal: A fire management goal is a statement describing a desired component of fire management planning and coordination of activities occurring before, during, and after fires.

Management Coordination Goal: A management coordination goal is a statement describing the desired types of management coordination activities in support of biological elements and associated goals.

Tasks: Tasks are the individual projects or work elements which implement the goal and are useful in planning operation and maintenance budgets. Many of the tasks described for the goals under each of the elements presented in this plan are interrelated. Therefore, where relevant, tasks are cross-referenced to minimize redundancy throughout this chapter.

Adaptive Management: Adaptive Management is a dynamic strategy in which management efforts are monitored regularly to assess their status and effectiveness. Monitoring results are then evaluated and used to update management goals and implementation strategies. The adaptive management and monitoring component is designed to provide sufficient data on the status of these resources, identify trends, provide recommendations and a process for implementing remedial management actions, and provide a means to evaluate the efficacy of those actions. Where those actions are shown to be insufficient, alternative management tools will be developed and implemented.

“Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. Its most effective form – “active” adaptive management” – employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed” (BCFS 2003).

The active adaptive management component would create and test hypotheses for likely remedial management actions, and then evaluate their efficacy to determine if further or alternative management actions are required. An adaptive management program treats each management action as an experiment, and each monitoring strategy as a means to test a hypothesis, allowing a management program to proceed in the face of incomplete knowledge (CNLM 2001).

Adaptive Management (active and passive) has been applied to all elements within this LMP.

B. Biological Elements, Goals, and Environmental Impacts

The following four biological elements are discussed in this section: Habitat (wetlands/riparian and uplands), Special Status Species (threatened/endangered and non-listed), Non-Native Species, and Managed Species. Within each element, several goals are identified along with tasks that will help implement each goal. The goals of each element include three main components: (1) Survey and Monitor; (2) Assess Threats and Set Priorities; and (3) Management. As part of the adaptive management strategy, management and monitoring work synergistically, forming a feedback loop. As such, management and ongoing monitoring goals and tasks are included together in the Biological Element. However, goals related to regional level monitoring and management are discussed in a separate Biological Monitoring and Scientific Research Element later in this chapter.

Where relevant, tasks are cross-referenced if noted under more than one goal. This LMP uses an ecosystem level approach to management, which is consistent with the goals and policies of the Department and the South County MSCP Subarea Plan. As such, management objectives will be discussed, for the most part, in terms of habitats rather than individual species. However, several federal and state listed species are addressed individually in the Special Status Species Element. In addition, potential impacts due to management activities associated with biological elements are discussed at the end of this section.

As part of the management plan, both qualitative and quantitative surveys are recommended, each of which serves a different purpose. The following definitions clarify the differences between the two.

Qualitative Surveys: Qualitative biological surveys are conducted to generally assess and describe a habitat, species population, or other biological feature. The descriptions can consist of observations or other kinds of information which convey the quality of what is being evaluated. Qualitative surveys are conducted to determine the suitability of a feature (e.g., a vegetation community type) to support a resource (e.g., a species). Qualitative surveys are also conducted to evaluate the overall health of a feature to determine whether it is sustaining, degrading, or absent. Qualitative surveys do not involve measuring or counting specific attributes about a feature and typically do not involve a protocol; rather, qualitative surveys utilize a more general, random methodology.

Quantitative Surveys: Quantitative surveys are conducted to obtain measurable details about a habitat, species population, or other biological feature, e.g., a population size, acreage, frequency of a species occurrence or its density within an area, or other ratings. Quantitative surveys are often performed during specific seasons when the resource is most obvious. In addition, quantitative surveys are often conducted at specific intervals (e.g., seasonally, or annually) in order to maximize the accuracy of the information collected. Results from repeat surveys may also be used to evaluate change over time. Numbers derived from quantitative surveys at one location may be compared with numbers derived from evaluations at another location to determine whether a resource is doing better or worse than a particular area. Quantitative surveys typically involve a resource-specific protocol or standard methodology to quantify the resource size.

Opportunities

- Ecological diversity. RJER significantly contributes to the conservation of ecological diversity and ecosystem integrity within the regional context of southern California and northern Mexico.
- Ecosystem-based management. Ecosystem level management has many advantages: it allows for the conservation and protection of numerous species at once; it protects the integrity of ecological processes; and it is much more cost effective than a species-by-species approach.
- Sensitive natural resources. Because of its protected status as an ecological reserve, RJER will play an active role in the conservation of sensitive natural resources through the protection, conservation, restoration, and enhancement of natural habitat, and through reintroduction of selected species.

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- Rich biodiversity. RJER supports a rich assemblage of native plants and animals, including 170 plant species, 73 invertebrates, 5 amphibians, 22 reptiles, 113 birds, and 38 mammals.
 - Wildlife movement corridors and habitat linkages. Wildlife movement corridors and habitat linkages are essential to maintain the health and viability of plant and animal populations by allowing gene flow and dispersal into new areas, thus reducing the effects of habitat fragmentation. The maintenance of viable corridors and linkages is essential in providing continued gene flow and migration opportunities to regional wildlife.
 - Value added. While RJER currently supports and conserves high quality biological resources, and provides educational opportunities regarding those resources, there are numerous opportunities for enhancing and restoring areas where past or current uses have adversely affected biological resources, and for providing additional educational benefit to the public.

Constraints

- Staffing and budget. As with all other elements, limited staffing and budget are the greatest constraints that may impede the implementation of management goals in this LMP. However, the following additional constraints may impede efforts as well:
- Adjacent development. Increasing development to the north, including residential expansion and a large casino that is planned on the Jamul Indian Reservation, is expected to place additional pressure on the reserve and adjacent protected lands in a variety of ways:
 - Increased traffic in the area could result in more road-kill of animals.
 - An increasing population may bring with it an increasing desire for public recreation, which may be at odds with habitat and species conservation.
 - Development can result in greater edge effects, including habitat fragmentation, invasion by non-native plant and animal species, and an increase in contaminants (such as pesticides, herbicides, and fertilizer) from the runoff of adjacent privately owned properties.
- Past practices or events. The following past practices or events have had a negative impact on much of the habitat:
 - Grazing practices of the previous landowner resulted in heavy degradation of the riparian corridors, which serve as habitat and movement corridors for a number of species. However, restoration efforts by Wildlands Inc. are currently underway.

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- Recent fires have had a negative impact on the reserve. The 2003 Otay Fire burned approximately three-quarters of the reserve. Although many habitat types, most notably coastal sage scrub and chaparral, have adapted to periodic wild fires, wild fires can have detrimental effects. For example:
 - Fires commonly increase erosion by removing the vegetation and root system that holds the soil together.
 - Particularly large or frequent fires often lead to a greater vulnerability to invasion by non-native plant species and a potential for type conversion of scrub vegetation to weedy grass and forb habitat (Oberbauer 2003).
 - Burned riparian areas along stream courses may provide an avenue for the introduction and spread of non-native giant reed and salt cedar, which could potentially displace native willows and cottonwood trees.
 - Wildlife-linked diseases. Wildlife-linked diseases could potentially affect native wildlife species on the reserve directly through infection, or indirectly through vector control methods. For example, methods used to control mosquitoes, such as the use of pesticides or mosquito fish, can harm native wildlife populations. Therefore, great care should be taken before using these control methods.
 - Illegal activities. Illegal use of the property includes illegal immigration and associated Border Patrol activities, trash dumping, off-road vehicles, and illegal hunting. These activities can cause harm to the environment by damaging habitat and increasing habitat fragmentation, and by causing direct harm to wildlife.

Bio 1 Subelement: Habitat

Because the ecological processes for riparian and upland habitats are generally different, the goals and tasks below are divided into two subheadings to reflect the difference in management need: Wetlands and Riparian Habitat, and Upland Habitat.

Wetlands and Riparian Habitat

Bio 1.1 Goal – Wetlands and Riparian Habitat Management and Monitoring

Conserve, manage, and enhance wetlands and riparian habitat to promote native species diversity, genetic flow, and ecological and hydrological function.

Tasks:

- Bio 1.1.1 Survey and Ongoing Monitoring. Use the USGS (2001; 2003) baseline biodiversity surveys as the source for baseline species inventory data,

and conduct ongoing monitoring using survey techniques that are consistent with those used in the USGS reports.

a) *Conduct additional surveys.*

- Conduct focused surveys for vernal pools and vernal pool complexes to determine locations and functions of this habitat.

b) *Conduct ongoing monitoring.* Conduct periodic surveys to maintain an accurate record of changes in the extent and condition of the wetlands and riparian habitats within RJER over time.

- Conduct annual qualitative surveys to detect any immediate threats to the habitat.
- Conduct quantitative surveys every three to five years, as described in Bio 1.1.1.

Bio 1.1.2 Assess Threats and Set Priorities

a) *Assess Threats.* During annual qualitative surveys, note and map areas that are experiencing damage or degradation due to human-caused activities, or natural causes, such as fire or weather events. Signs of degradation include new introduction or expansion of non-native species, unnatural soil compaction, vegetation removal, erosion, and trash.

b) *Prioritize* remediation efforts based on the relative sensitivity of the wetland or riparian type affected, whether a habitat connection is at risk, potential for expansion of the threat, and eminence of damage to habitat.

Bio 1.1.3 Management

a) *Prepare annual work plan* by December for management to be conducted the following year. This plan should include the management and restoration tasks that are to be completed for the year, staffing requirements, a funding analysis, and schedule for completion.

b) *Adhere to the no-net-loss-of-wetlands standard* to satisfy MSCP, state, and federal wetlands policies.

c) *Protect and maintain* riparian and wetland vegetation communities to provide breeding and foraging habitat for riparian and wetland species that occur or have the potential to occur on the reserve.

Manage riparian and wetlands habitats for a variety of age classes and structure to accommodate a high diversity of native wildlife species, specifically riparian bird species. Implement a regular invasive species control program and coordinate with the Department's Pesticide Investigations Unit.

- d) *Maintain ecological and hydrological processes* to support healthy and riparian habitats. Allow creeks to meander naturally, which requires less ongoing maintenance.
- e) *Implement erosion and sediment control* BMPs as necessary to protect habitat. Bio-engineered erosion control methods should be chosen over hardscape methods. In addition, sedimentation can assist with erosion control by slowing the erosion process; however, remove any sediment build up that may threaten critical riparian habitat.
- f) *Maintain bat habitat* by providing open, perennial water sources such as creeks or artificial ponds that are not blocked by vegetation or steep walls and by maintaining natural and man-made roosting sites.
- g) *Implement a riparian and wetlands buffer* (set-back) of 100 feet or more from the edge of riparian habitat to protect the riparian zone from new development, public use, erosion, hydrological impediments, and non-native species invasions.
- h) *Prohibit livestock access* to Jamul and Dulzura Creeks. If livestock will be used to maintain grasslands, provide fencing to protect creek beds and riparian habitat.
- i) *Encourage the public to use adjacent HCWA* for most recreational needs. This will help strike a balance between conservation and serving the recreational needs of the public.
- j) *Maintain and enhance wildlife corridors and habitat linkages.* Conduct the following activities to support wildlife movement within and beyond the reserve:
 - Remove fences that may impede wildlife movement as needed. Where fences are necessary, use materials that provide access to native wildlife while restricting access to the public or grazing animals, as appropriate. However, maintain fencing along public roads to protect wildlife from traffic, and to divert them to highway undercrossings.

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- If feasible, work with Caltrans to assess the need to construct new or enhance existing structures. Undercrossing enhancement might include brush management, regular monitoring of wildlife movement, and directional fencing. If feasible, add new crossings large enough for deer and mountain lions as appropriate. New undercrossing should have a length-to-width ratio that does not exceed 2, unless the culvert is higher than 30 ft, and a clear line-of-site from one end to the other.
 - Identify, maintain and restore connectivity between upland and adjacent wetland habitats.
 - Ensure that corridors for large mammals and birds are at least 1,000 ft wide. Provide visual continuity (long lines-of-sight) along corridors.
 - Continue to coordinate with other agencies, such as BLM, USFWS, and USFS to prioritize land acquisition such that large blocks of contiguous, protected lands will be created adjacent to RJER and HCWA.
- k) *Evaluate all future management programs* for potential impacts to sensitive biological resources and take appropriate steps to avoid and mitigate potential significant impacts.
- l) *Adaptive management.* Apply the adaptive management strategy to all management activities by following these guidelines:
- For each management goal, evaluate the potential to implement pilot studies or experimental design in which multiple management strategies are tested and compared to a control. For example, invasive species control could include three management areas - one with no treatment, and two with different treatments such as herbicide application and mechanical removal.
 - Establish success criteria (clear and concise objectives) that should be met in order to consider the management task(s) successful.
 - Use monitoring data to assess overall habitat integrity, detect changes in species distribution and abundance, and detect positive and adverse effects of management activities, human use, and non-native species.

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- Compile information relevant to monitoring program design, by regularly reviewing applicable documents and management plans from other agencies and for other areas within the Department, MSCP monitoring protocols, or reports about experimental design.
 - Re-evaluate priorities and management activities based on this assessment.

Bio 1.2 Goal – Wetlands and Riparian Habitat Restoration

Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.

Tasks:

Bio 1.2.1 Survey and Monitor Identify candidate wetland or riparian restoration/enhancement areas, implement restoration, and monitor restoration success.

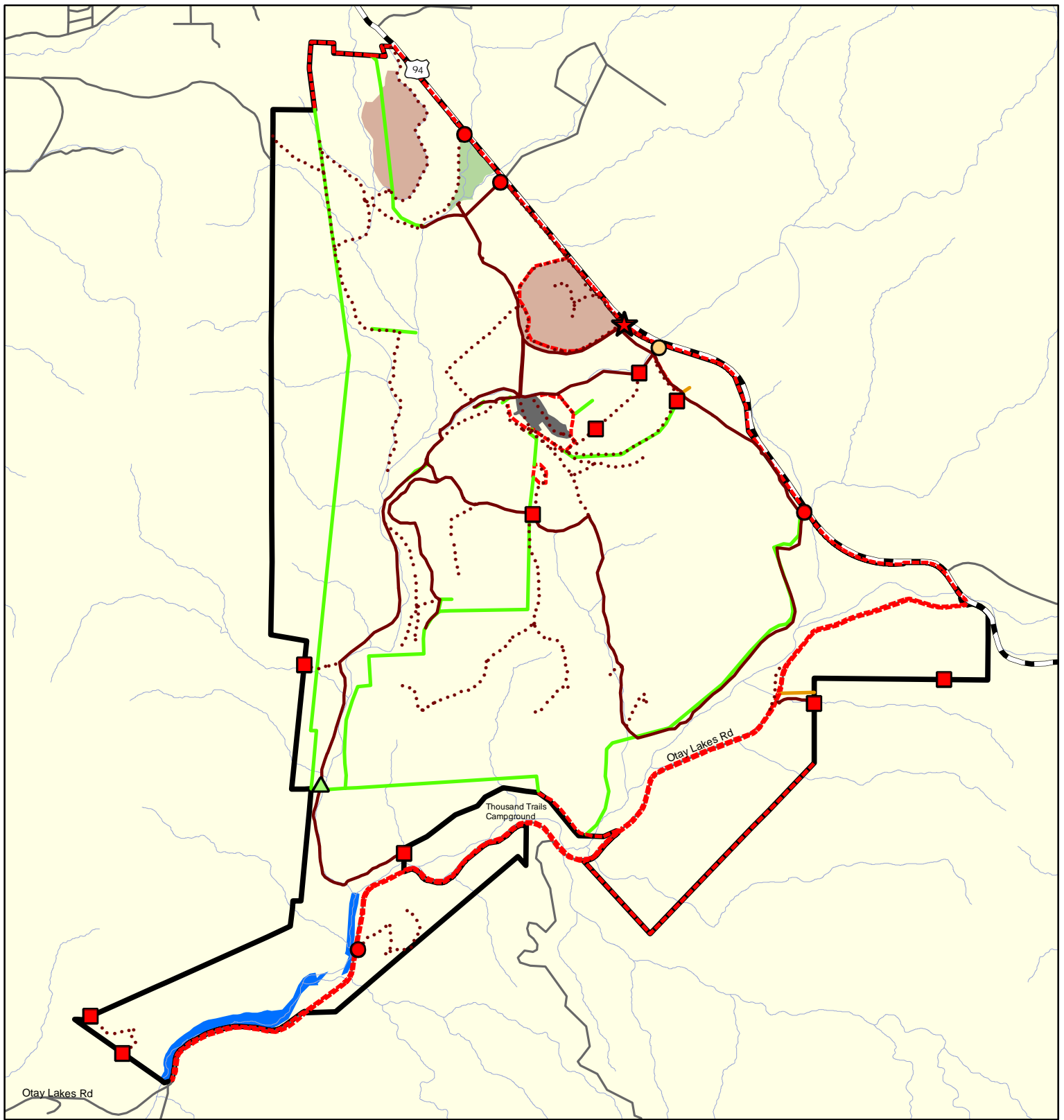
a) *Included projects.* In addition to other projects that are identified in the future, the following restoration projects should be considered (Figures 21 and 22):

- Restore riparian habitat that has been invaded by castor bean after the Otay Fire along Dulzura Creek, downstream from Thousand Trails Campground.
- Restore degraded riparian habitat to provide increased nesting, breeding, and foraging habitat for special status species and other wildlife known from or potentially occurring on RJER. Coordinate efforts with those being conducted on the adjacent HWCA

b) *Ongoing monitoring.*

- Conduct annual qualitative surveys to detect any immediate threats to the habitat.
- Conduct quantitative surveys every five years, as described in Bio 1.1.1.

Bio 1.2.2 Assess Threats and Set Priorities As part of the annual work plan preparation, as described in 1.1.3 (a), evaluate potential benefits of each identified restoration project, and designate each as high, medium, or low priority.



- Legend**
- Conservation Education Center
 - Restoration Areas**
 - Coastal Sage Scrub
 - Grassland
 - Riparian

- Fences**
- Existing
 - Proposed Removal
 - Proposed New Construction
- Trails**
- Public/Management
 - Management Only

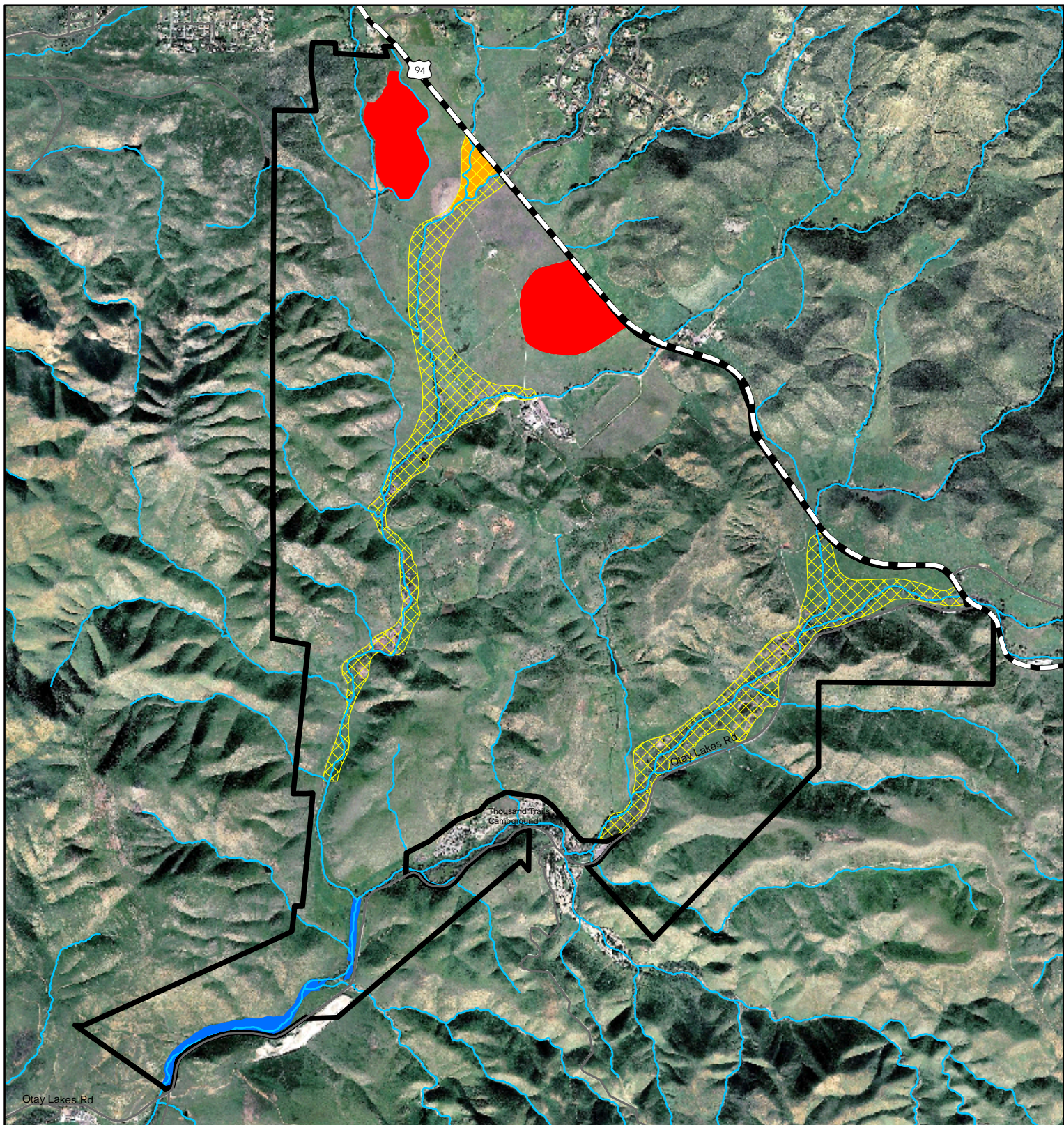
- Gates**
- Proposed Main Public Access
 - CEC Access
 - Existing
 - Proposed
 - To Be Removed

- Basemap Legend**
- RJER Boundary
 - State Highway
 - Road
 - Stream







Feet

0 3,100



- Legend**
-  Wildlands Mitigation Bank Restoration Areas
 - CDFG Proposed Restoration Areas**
 -  Coastal Sage Scrub
 -  Grassland
 -  Riparian

- Basemap Legend**
-  RJER Boundary
 -  State Highway
 -  Road
 -  Stream



Feet
0 3,100

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- a) *Prioritize* areas to be restored by designating them as “high” (areas that should be restored immediately to avoid imminent damage to habitat), “medium” (areas that should be restored within the next three years), and “low” (areas that should be monitored to ensure the degradation does not worsen, and then conduct area restoration when time, budget, and staffing allows).
 - b) *Evaluate the function of vernal pools* on RJER to determine the suitability for restoration. Restoration of vernal pool function is possible where historic vernal pools have occurred and where function has been lost over time due to agricultural practices or other land use developments.

Bio 1.2.3 Management

- a) *Coordinate with Wildlands Inc.* regarding riparian management and monitoring.
- b) *Develop area specific restoration plans* for each restoration project outside of the Wildlands Inc. project areas. These plans should include planting design and specifications, goals, and costs. Plans for areas that are heavily infested with non-native species should contain an intensive exotic species removal component, including herbicide treatment and replanting.
- c) *Vernal pool restoration and conservation plan.* Prepare a vernal pool restoration plan that encompasses whole ecosystem restoration versus mere revegetation. Enhance vernal pool function through established practices. Conservation measures should include the following:
 - Prohibit access to vernal pools unless for management and research purposes only.
 - Remove tire tracks in vernal pool basins and route access roads around pools
 - Manually remove exotic plant species, and monitor vernal pool hydrology, function, plants and animals on an annual basis during the hydrological phase of the pools
 - Evaluate the applicability of a vegetation management program (including fire management and managed grazing) to reduce vegetation biomass and improve the hydrological gradient within the vernal pool watershed.

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- Evaluate whether restoration and enhancement is necessary; restore and enhance vernal pools where feasible by inoculating with native vernal pool soils, seeds, eggs and cysts from donor pools within the same vernal pool watershed.
 - d) *Agency coordination.* Coordinate restoration planning efforts with the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the Department's wetlands regulatory branch. Obtain appropriate state and federal permits pursuant to Section 404 of the Clean Water Act, and Fish and Game Code Sections 1600-1616.
 - e) *Phased restoration.* Riparian restoration will be performed in phases, combined with the removal of exotic species to foster natural recruitment. Mature exotic trees such as eucalyptus should eventually be replaced with large riparian trees, including coast live oak, sycamores, cottonwoods, and willow species.
 - f) *Limit access.* As appropriate, fence restored areas to protect them from impacts due to unauthorized public use.
 - g) *Adaptive management.* Use monitoring data to assess successional progress of the restored area. Refer to Bio 1.1.3 (k) for additional details.

Upland Habitat

Bio 1.3 Goal – Upland Habitat Management and Monitoring

Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.

Tasks:

- Bio 1.3.1 Survey and Ongoing Monitoring. Use the USGS (2001; 2003) baseline biodiversity surveys as the source for baseline species inventory data, and conduct ongoing monitoring using survey techniques that are consistent with those used in the USGS reports.
- a) *Conduct ongoing monitoring.* Conduct periodic surveys to maintain an accurate record of changes in the extent and condition of the upland habitats within RJER over time.
 - Conduct annual qualitative surveys to detect any immediate threats to the habitat.
 - Conduct quantitative surveys every five years, as described in Bio 1.1.1.

Bio 1.3.2 Assess Threats and Set Priorities

- a) *Conduct threat assessment.* (See Bio 1.1.2). Issues of concern include adverse edge effects, general habitat degradation, fragmentation (particularly native grasslands, and coastal sage scrub/clay lens habitat), and high fuel loads. Signs of degradation include new introductions or expansions of non-native species, unnatural soil compaction, vegetation removal, erosion, trash, and dense cover with high amounts of dead biomass.
- b) *Prioritize remediation efforts* (See Bio 1.1.2). Prioritize remediation efforts based on relative sensitivity of the upland habitat affected, whether a habitat conversion is at risk, and potential for expansion of the threat.

Bio 1.3.3 Management

- a) *Prepare annual work plan* by December of the previous year. (See Bio 1.1.3)
- b) *Protect and maintain* upland vegetation communities to provide breeding and foraging habitat for sensitive and non-sensitive species that occur or have the potential to occur on the reserve. Maximize habitat structural diversity. Specific tasks related to the enhancement of upland habitats are given in Bio 1.4.3 below.
- c) *Hunting areas.* Restore non-native grasslands to native grasslands by removing and replacing non-native grasses with native grasses and forbs.
- d) *Trail reduction.* Reduce edge effects and habitat fragmentation by reducing the number of roads and trails in the interior of the reserve. Concentrate roads and trails around the perimeter and CEC.
- e) *Erosion control.* Provide erosion control where necessary to prevent gully or rill formation within uplands.
- f) *Non-native exotic species removal.* Remove individuals of, non-native plant species to reduce the threat of future expansion and enhance habitat for native species and coordinate with the Department's Pesticide Investigations Unit.

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- g) *Encourage the public to use adjacent HCWA* for most recreational needs. This will help strike a balance between conservation and serving the recreational needs of the public.
 - h) *Maintain and enhance wildlife corridors in upland areas.* (See Bio 1.1.3).
 - i) *Evaluate all future management programs* for potential impacts to sensitive biological resources and take appropriate steps to mitigate potential significant impacts.
 - j) *Adaptive management.* Refer to Bio 1.1.3 (k) for details.

Bio 1.4 Goal – Upland Habitat Restoration

Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.

Tasks:

Bio 1.4.1 Survey and Monitor Use the USGS baseline biodiversity survey (2002) as the source for baseline species inventory data, and conduct ongoing monitoring using survey techniques that are consistent with those used in the USGS report.

- a) *Included projects.* In addition to other projects that are identified in the future, the following restoration projects should be considered:
 - Grasslands: intensive restoration in the northeastern portion of reserve (as identified in Figure 21); hunting areas (Figure 13); or closed areas containing grassland (Figure 13). If hunting areas are to be planted with cereal crops to attract dove and quail, a regulation change to Title 14, Section 630(a)(11) of the CCR must first be submitted to the Fish and Game Commission. However, all other disturbed grasslands are candidates for conversion to native grassland.
 - Coastal sage scrub: two areas in the northeastern portion of the reserve (Figure 21).
 - Trails: unnecessary trails, including double trails (where two relatively parallel trails lead to the same destination) should be decommissioned and/or restored to native habitat (Figure 13).
 - Highly erodible post-fire areas.

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- Habitat for rare, threatened, or endangered species, as described in Biological Element 2:

b) *Ongoing monitoring.*

- Conduct annual qualitative surveys to detect any immediate threats to the habitat.
- Conduct quantitative surveys every five years, as described in Bio 1.1.1.

Bio 1.4.2 Assess Threats and Set Priorities As part of the annual work plan preparation, as described in 1.1.3 (a), evaluate potential benefits of each identified restoration project, and designate each as high, medium, or low priority.

- a) *Prioritize* areas to be restored by designating them as “high” (areas that should be restored immediately to avoid imminent damage to habitat), “medium” (areas that should be restored within the next three years), and “low” (areas that should be monitored to ensure the degradation does not worsen, and then conduct area restoration when time, budget, and staffing allows).
- b) *Consider the benefits* to sensitive species known to occur within RJER and the adjacent HCWA.

Bio 1.4.3 Management

- a) *Develop area specific restoration plans.* (See Bio 1.2.3).
- b) *Grassland restoration.* Actively restore and maintain existing grassland habitat in the valleys to enhance this vegetation community and avoid conversion to scrub habitat by following the guidelines below:
 - Create a mosaic of tall and short grasses for wildlife and hunting; convert non-native grasslands to native grasslands.
 - Identify areas where adaptive grassland management trials could be developed, possibly in conjunction with suitable lands within the HCWA. Management methods can include mowing, burning, disking, and grazing.
 - Use exclusionary fencing (such as temporary T-post) to protect newly restored habitats as needed, but maintain wildlife access.

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- c) *Coastal sage scrub restoration.* Passively restore areas that have been identified for conversion to coastal sage scrub or chaparral habitat.
 - Allow scrub habitat to re-establish itself naturally, and conduct invasive exotic species eradication as necessary.
 - The higher valleys and hills should be converted back to native shrublands, while the valley bottoms should be managed to avoid conversion to coastal sage scrub.
 - d) *Limit access.* As appropriate, fence restored areas to protect them from impacts due to unauthorized public use.
 - e) *Adaptive management.* Use monitoring data to assess successional progress of the restored area. Refer to Bio 1.1.3 (k) for additional details.

Bio 2 Subelement: Special Status Species

The high quality habitats within RJER and the adjacent HCWA, and neighboring conserved lands, provide for regionally important and high levels of biodiversity. For example, RJER provides habitat for 20 sensitive plant species, and 48 sensitive wildlife species. Of these, 23 are covered by MSCP, 9 are narrow endemic species (species that are confined to a specific geographic region, soil type, and/or habitat), and 6 are listed by federal or state agencies. The following goals and tasks summarize the most important management components to help provide for the long-term viability of populations of these vulnerable species. The management guidelines are organized into two categories: Rare, threatened, and endangered species; and non-listed sensitive species, including those covered by MSCP. Management of listed species should include all tasks in Bio 2.2, as well as species specific tasks outlined in Bio 2.1.

Opportunities

- Management of sensitive species and associated habitats will provide an opportunity to assist with the recovery of listed and other sensitive species.
- Monitoring and protection of sensitive species are consistent with and provide support for the goals of the MSCP.

Constraints

- Little is known about the biology, genetics, reproduction, and behavior of many sensitive species, which may impede efforts to develop the best management or reintroduction strategies. Additionally, scientific study and dissemination of results takes time, often more time than the management timeframe.

Rare, Threatened, and Endangered Species

A combination of general population management, enhancement, and restoration will be necessary to maintain and preserve the most sensitive species found on RJER. These approaches are generally described below.

General population management: General population management pertains to those activities that will help contribute to the health and stability of the sensitive species populations found on RJER and adjacent HCWA. These tasks should be conducted even if the populations appear stable in population area and/or density.

Population enhancement and restoration: Population enhancement pertains to those activities that are intended to stop the decline of a sensitive species population as well as to stabilize and enhance the population. These tasks should be conducted if the population appears to be declining in area and/or density or if there is concern that it might decline in the near future. Population restoration tasks should be employed when enhancement techniques have not been sufficient to stabilize the population.

Bio 2.1 Goal - Protect and enhance populations of rare, threatened, and endangered species

Protect, monitor, and enhance populations and preferred habitat of federal and state listed species

Tasks:

- Bio 2.1.1 Surveys and Ongoing Monitoring Use the USGS baseline biodiversity survey (2002) as the source for baseline species inventory data, and conduct ongoing monitoring using survey techniques that are consistent with those used in the USGS report. Generally assess the condition of the known populations and document population count and area occupied. Target species include vernal pool plant species, San Diego ambrosia, Otay tarplant, Quino checkerspot butterfly, fairy shrimp, least Bell's vireo, and California gnatcatcher. Initially collect voucher specimens of sensitive plants and validate identification with species experts.

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- a) *Timing*. Surveys should be conducted at the appropriate time of year (e.g., the appropriate blooming period for each species of plant, and breeding season for migratory birds). Ongoing monitoring should be conducted every five years.
 - b) *Qualitative surveys* should be conducted annually to detect immediate threats to known populations of listed species within RJER, and generally assess the condition of the population.
 - c) *Species-specific surveys*. The following species and habitat surveys should be conducted by a qualified biologist with the appropriate state and federal permits.
 - Protocol-level or other appropriate type of focused surveys should be conducted every three years to document species population health, count, and extent, and allow for timely remediation efforts, as needed.
 - Areas of suitable habitat, not currently known to support listed species, should be surveyed to detect new populations of listed species within the property.
 - Survey and GPS full extent of San Diego ambrosia population(s).

Bio 2.1.2 Assess Threats and Set Priorities Carry out tasks outlined in Bio 2.2.2.

Bio 2.1.3 Management In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed:

- a) *Restore and enhance native habitat* preferred by rare, threatened, or endangered species known from or with the potential occur at RJER. Refer to habitat restoration goals Bio 1.2 and Bio 1.4.
- b) *San Diego ambrosia*
 - Protect populations from detrimental edge effects by locating facilities away from occupied areas. Move planned public parking lot to alternate location away from existing San Diego ambrosia populations.
 - Protect the population with wildlife-friendly fencing if necessary to avoid adverse impacts from trampling. If no fencing is installed, GPS the outer boundary of the population to make it easier to locate the population when surveys, restoration, or management activities are being implemented.

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- Conduct an annual weed removal program (e.g., mowing, or use of herbicides) within the immediate vicinity of the ambrosia population. All herbicides used should be approved for use in native habitats. Herbicides should be applied early in the season, and should be applied after dethatching has been completed.
 - Implement dethatching program every three to five years, by raking, hand clearing, and weed-eating the dead remains of the weed species from the previous season. This technique has benefits over the more aggressive methods of herbicide and mowing because it is best applied later in the year, after the native and non-native plants have finished and set seed.
 - Because this species reproduces mostly through clonal means, it is not recommended at this time to collect seeds for propagation. However, this species is not well understood. Review relevant literature regarding genetics, reproduction, and management.

c) *Otay tarplant*

- Follow the same strategies as outlined for San Diego ambrosia.
- Seed collection and greenhouse propagation can be undertaken if the tarplant populations continue to decline despite management activities, or if it is determined that the population needs a rebuilding of the seed bank. Coordinate all activities with the CDFG Habitat Conservation Planning Branch.

d) *Quino checkerspot butterfly*

- Restore areas of appropriate habitat structure through revegetation of primary larval host plant species.
- Control fire frequency through an effective fire management program. The Quino checkerspot can survive a fire cycle of 20 years or more, but may be susceptible to more frequent cycles (Marschalek 2001a).
- An experimental restoration program is currently being implemented in the Johnson Canyon area east of SR-125 by Caltrans and California Transportation Ventures. Evaluate the success of this project and incorporate successful management strategies into the Quino checkerspot enhancement and restoration effort for RJER.

e) *Coastal California Gnatcatcher*

- Restore areas of appropriate habitat structure through revegetation of disturbed and/or type-converted coastal sage scrub.
- Control fire frequency through an effective fire management program (See Fire Management Element). The California gnatcatcher prefers open scrub habitat. Too frequent of a fire interval can prevent scrub habitats from reaching a maturity level capable of supporting the California gnatcatcher.
- Conduct regular cowbird trapping as necessary to protect gnatcatcher nestlings from this brood parasite; see Bio 3.2.3 (e).
- Control indirect effects of noise within gnatcatcher habitat by keeping noise levels at or below 60 dBA during the breeding season. Avoid the use of noise-generating equipment, and noise-generating public activities as necessary.
- Control indirect effects of night lighting within gnatcatcher habitat by shielding lighting from neighboring properties as feasible, using low-wattage sodium outdoor lighting near occupied habitat, and educating/encouraging the public to do the same.
- Avoid flushing young or adults from their nest by restricting public recreational and educational activities during the breeding season as necessary.

f) *Least Bell's vireo*

- Restore and enhance areas of appropriate habitat structure through invasive species removal and revegetation of disturbed willow scrub riparian habitat.
- Conduct regular cowbird trapping as necessary to protect nestlings from this brood parasite. Please see Bio 3.2.3 (e).
- Control indirect effects of noise within vireo habitat by keeping noise levels at or below 60 dBA during the breeding season. Avoid the use of noise-generating equipment, and noise-generating public activities as necessary.
- Control indirect effects of night lighting within occupied vireo habitat by shielding lighting from neighboring properties as

feasible, using low-wattage sodium outdoor lighting near occupied habitat, and educating/encouraging the public to do the same.

- Avoid flushing young or adults from their nest by restricting public recreational and educational activities during the breeding season as necessary.
- Restrict all trails and public activity within 100 feet of all occupied vireo habitat.

g) *Peregrine Falcon*. No species specific conservation measures have been identified.

h) *New populations of listed species*. Wherever new populations of listed species, or additional listed species previously undocumented for RJER, are detected, the type and level of active management for the area should be determined within 6 months of the detection.

i) *Adaptive management*: use monitoring results to re-evaluate priorities and management activities, as described in (l).

Non-listed Sensitive Species

Bio 2.2 Goal – Protect/enhance populations of non-listed sensitive biological resources.

Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources.

Tasks:

Bio 2.2.1 Survey and Monitor Use the USGS baseline biodiversity survey (2002) as the source for baseline species inventory data, and conduct ongoing monitoring using survey techniques that are consistent with those used in the USGS report. Generally assess the condition of the known populations and document population count and area occupied.

- a) *Timing*. Surveys should be conducted at the appropriate time of year (e.g., the appropriate blooming period for each species of plant, and breeding season for migratory birds). Ongoing monitoring should be conducted every five years.
- b) *Target species*. Survey targets should include narrow endemic species, vernal pools species, (including indicator plant species and fairy shrimp), migratory birds, bats and other sensitive plant and animal species not covered in Section Bio 2.1. Priority should be

given to MSCP covered species and state and federal species of concern.

- c) *Wildlife movement.* Monitor wildlife movement, as feasible, within and beyond the reserve using tracking and camera stations as described in USGS (2002). Coordinate these efforts with those conducted for HCWA and other adjacent lands.

Bio 2.2.2 Assess Threats and Set Priorities Identify threats to sensitive species. Focus on habitat-specific assemblages, i.e., grassland species. Prioritize areas for species management by designating them as “high” (species or assemblage in imminent danger where action must be taken as soon as possible), “medium” (action should be taken within the next three years), and “low” (species that should be monitored to ensure the threat does not worsen, and then conduct management action when time, budget, and staffing allows). Incorporate these priorities into annual work plan, as outlined in Bio 1.1.3 (a).

Bio 2.2.3 Management Implement the following management activities to protect sensitive biological resources:

- a) *Follow MSCP guidelines* for Area Specific Management Directives (ASMDs) for MSCP covered species (see Table 3-5 in MSCP Subregional Plan; Appendix H). ASMDs are guidelines for managing and monitoring each covered species and its habitat. For example, each narrow endemic species should be closely monitored and protected from direct (such as trampling) and indirect (such as edge effects) impacts.
- b) *Remove non-native predators* that may threaten sensitive wildlife species.
- c) *Implement invasive plant species eradication* measures as needed and coordinate with the Department’s Pesticide Investigations Unit.
- d) *Add structures* such as bluebird nest boxes or bat houses as necessary to provide nesting or roosting opportunities for sensitive species.
- e) *Evaluate all future management programs* for potential impacts to sensitive species and take appropriate steps to mitigate these impacts.
- f) *Adaptive management.* Use monitoring results to re-evaluate priorities and management activities, as described in Bio 1.1.3 (l).

Bio 2.3 Goal – Species Reintroduction

Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve.

Tasks:

Bio 2.3.1 Identify Species for Potential Reintroduction

- a) *Conduct habitat inventories* using established protocols and guidelines (e.g., *USGS Monitoring Protocol for Arroyo Toad*, February 2005), including habitat characteristics published in listings, critical habitat designations, or survey protocols, for potentially occurring species. These habitat classifications can be used to determine the feasibility of reintroduction or recolonization of these species.
- b) *Consider the following species* for reintroduction: burrowing owl, southwestern pond turtle, and arroyo toad.

Bio 2.3.2 Management Conduct the following general and species-specific management activities. Develop reintroduction plans based on the best available data and Department policy.

- a) *Burrowing owl*
 - Create artificial nest burrows and perches on the hill near the future interpretive area (old racetrack). Artificial perches are used to provide increased hunting and predator observation sites.
 - Assess and manage threat from medium sized predators such as foxes and coyotes.
- b) *Southwestern pond turtle*
 - The pond turtle has been identified as a potential candidate for reintroduction into Corral Pit Pond or Main Pond, which are permanently wet (USGS 2002).
 - Manage open water habitat for emergent and floating vegetation such as cattails and mats of algae, which are preferred by this species.
 - Conduct eradication program and monitor for non-native predators such as bullfrogs.

c) *Arroyo toad*

- Assess suitability of riparian and adjacent upland habitat based on characteristics outlined in listings (e.g., Federal Register), critical habitat designation, survey protocol, and/or recovery plan.
- Conduct ongoing monitoring following the *USGS Monitoring Protocol for Arroyo Toad*, February 2005. Monitor upland and riparian habitat as well as hydrological regime.

d) *Adaptive management*: Monitor the success of each reintroduction program annually for the first five years, and then every three years thereafter. Use monitoring results to re-evaluate reintroduction and management methods. Refer to Bio 1.1.3 (l) for additional details.

Bio 3 Subelement: Non-Native Species

Many non-native plants and animals require continuous, active management to control their populations so that they do not harm native species or natural habitats. The following management tasks focus on prevention, monitoring, and remediation of this potential threat.

Opportunities

- Managing non-native, exotic species is one of the best ways to conserve and protect native biodiversity and ecological function.
- Because adjacent HCWA is expected to provide more open recreational opportunities for the public, there is a greater likelihood that users of RJER will respect its more limited public use regulations. This will result in the elimination or reduction of disturbance in RJER that can cause non-native species invasion, such as illegal trail blazing or non-permitted equestrian use.

Constraints

- Because of extensive historical agricultural and grazing practices and the recent Otay Fire, it may be difficult to completely eliminate the threat of invasive species. Additionally, some invasive species, such as tamarisk and giant reed, are difficult to completely remove once they become established, and may require ongoing maintenance for the foreseeable future.
- Erosion, runoff, sedimentation, exotic species invasion, etc. from neighboring land uses may limit efforts to control these effects within RJER. Specifically, weed

eradication programs within the RJER may be hampered by continued re-infestation from off-site sources.

Bio 3.1 Goal – Control and minimize impacts of invasive, non-native plants

Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve.

Tasks:

Bio 3.1.1 Survey and Ongoing Monitoring Conduct surveys for invasive, non-native plant species and monitor the populations on an as-needed basis (see Figure 18). Focus on the invasive, non-native plant species that occur among sensitive plant species, or within 500 feet of sensitive plant populations, particularly listed plant species.

- a) *Qualitative surveys* should be conducted annually to detect immediate threats from invasive species to known populations of listed species within RJER.
- b) *Quantitative surveys* (e.g., species density and mapping) should be conducted every three years to document the condition of the invasive species population within and surrounding (500 feet) the target sensitive species.

Bio 3.1.2 Assess Threats and Set Priorities Identify threat of invasive plant species population expansion and associated degradation to native habitat or sensitive species population.

- a) *Prioritize* areas for invasive plant species management by designating risk as “high” (action must be taken as soon as possible), “medium” (action should be taken within the next three years), and “low” (action to be taken when time, budget, and staffing allows). Incorporate these priorities into annual work plan, as outlined in Bio 1.1.3 (a) Management priorities for RJER include:
 - Occurrences of invasive, non-native plants among or near (within 500 feet of) highly sensitive plant species.
 - New occurrences (i.e., previously unknown and/or currently small populations) of highly invasive plant species anywhere within RJER are also a high priority as these occurrences should be eliminated while the population is most manageable.

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- Species designated as High by Cal-IPC should be the highest priority for control or elimination.

Bio 3.1.3 Management Control and eliminate, as feasible, populations of invasive, non-native plant species as follows:

- a) *Project areas.* Conduct intensive invasive species removal in the disturbed grasslands located in the northeast portion of the reserve, adjacent to SR 94, and along western Dulzura Creek (Figure 20).
- b) *Coordinate efforts* and/or compare results with invasive plant species control programs being conducted elsewhere in the county such as regional Non-Governmental Organizations (NGOs).
- c) *Adaptive management.* Use monitoring results to determine the effectiveness of non-native species control methods and protection of sensitive species; adapt management strategies as necessary. Refer to Bio 1.1.3 (l) for additional details.

Bio 3.2 Goal – Control and minimize impacts of non-native wildlife species

Control for non-native, predatory animal species that may negatively impact native species on the reserve.

Tasks:

Bio 3.2.1 Survey and Monitor Conduct as-needed surveys for non-native wildlife species, and monitor as needed.

Bio 3.2.2 Assess Threats and Set Priorities for management actions based on monitoring results. Prioritize goals and tasks based on “high” (sensitive species in imminent danger), “medium” (actions should be completed within three years), and “low” (threat should be closely monitored).

Bio 3.2.3 Management The major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.

- a) *Prohibit non-native species* in ponds attached to streams or creeks.
- b) *Native species fencing.* When predatory mosquito fish are introduced into one or more ponds as mosquito control, place a barrier around these ponds to keep native fauna, such as frogs, from using the ponds. Determine which ponds are most frequented by native fauna, and keep these free of predatory fish.

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- c) *Pets*. Monitor for the presence of domestic cats and dogs during wildlife movement surveys, as described in Bio 2.2.1 (c).
 - d) *Monitor cowbird populations* in the reserve and establish trapping stations where cowbirds are found to be a problem.
 - e) *Monitor populations of the European starling and house sparrow* in the reserve and install nest boxes for bluebirds, woodpeckers, and other cavity nesters as needed. In addition, create snags from non-native trees that are killed but left standing.
 - f) *Educate the surrounding communities* about the threats to native wildlife caused by release of non-native species into the wild.
 - g) *Adaptive management*. Use monitoring results to determine the effectiveness of non-native species control methods and protection of native fauna. Adapt management strategy as necessary. Refer to Bio 1.1.3 (l) for additional details.

Bio 4 Subelement: Game Species

Game species require continuous, active management to maintain populations for hunting opportunities. Because some native species, such as doves and quail, are hunted as game, these are considered game species as they relate to hunting.

Opportunities

- Limited access, monitoring, and hunter education will continue to provide a higher quality experience for hunters and maintain healthy populations of game species.

Constraints

- Hunting activities may negatively impact native species or natural habitat. For example, trampling may directly impact habitat, or increased human presence might flush native birds from nests. Therefore, hunting impacts should be closely monitored.

Bio 4.1 Goal – Manage game populations

Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources.

Tasks:

Bio 4.1.1 Survey and Monitor

- a) Conduct annual dove and quail counts to assess population condition and obtain trend data.
- b) Conduct surveys every 3-5 years of resident and small game species throughout HCWA.
- c) Conduct harvest surveys to track numbers, species, and locations of take.

Bio 4.1.2 Management Conduct the following tasks to manage for native and non-native game species (See also Pub 1.3).

- a) *Release only males.* Continue the practice of releasing only male game species (pheasants) so that non-native species cannot reproduce and form self-sustaining populations.
- b) *Manage and maintain game species habitat*
 - Based on monitoring data, rotate hunting areas or periodically close areas if heavy use is adversely affecting the habitat that game species prefer.
 - Manage for all aspects of game species' needs, including food, water, cover, and breeding habitat.
- c) *Limit hunting.* Continue the practice of holding only limited, permit only, organized hunting events.
- d) *Adaptive Management.* Use monitoring data to assess success of game species management strategies. Refer to Bio 1.1.3 (I) for additional details.

Bio 4.1.3 Enhance and restore. (See also Pub 1.3).

- a) Enhance and/or restore habitat in designated hunting areas (Figure 13) by removing or replacing non-native grasses with native grasses and forbs, mowing, and controlled burns.

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- b) Assess current food plots for success. Evaluate other potential areas for manipulation or native/passive feeding centers. Continue planting as resources allow and benefit is derived.
 - c) Assess current water sources. Evaluate other potential areas where water sources can be developed or artificially enhanced.
 - d) Incorporate brush piles or vegetation design that will provide cover for quail and small game.
 - e) Construct and install dove cones where appropriate.
 - f) Evaluate success of habitat improvement projects and modify as necessary to achieve desired results.

Potential Impacts Related to Biological Elements

Although the primary goal of the RJER is to protect sensitive biological resources, potential impacts could result from certain management actions, such as surveys and monitoring, erosion and sediment control, restoration activities, species reintroduction projects, invasive non-native plant eradication, non-native wildlife control, and game management. However, implementation of the following actions is expected to reduce potential impacts to a less than significant level.

- Surveys and monitoring will be performed by a qualified biologist following established protocols.
- Preventative measures will be used for erosion and sediment control whenever possible. If heavy equipment is necessary, any impacts to habitat will be actively restored.
- New facilities will be placed in disturbed habitat whenever possible. Temporary staging areas will be actively revegetated. Permanent impacts to habitat will be avoided, minimized, and/or mitigated.
- Management activities will include appropriate mitigation measures (e.g. temporary fencing to protect riparian areas from grazers, prescribed burn protocols, appropriate use of herbicides and pesticides, etc.). All future management actions will be evaluated for potential impacts.

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- The following projects identified in this LMP will result in a net benefit to sensitive natural resources in the reserve: active and passive restoration, habitat enhancement, species reintroduction, and sensitive species conservation.

C. Cultural Resources Element, Goals, and Environmental Impacts

Cultural resources at RJER are extensive, with at least 50 site that are considered potentially eligible for the National Register of Historic Places (National Register). Resources formally determined eligible for, or listed in, the National Register through federal preservation programs administered by the California Office of Historic Preservation are included in the California Register of Historical Resources (California Register). The California Register is an authoritative guide to California's significant historical and archeological resources to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state, and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change.

Resources included on the California Register are those that are:

- Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
- Associated with the lives of persons important to local, California or national history.
- Embodied with the distinctive characteristics of a type, period, region or method of construction or represent the work of a master or possesses high artistic values.
- Have yielded, or have the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Typically, resources included on the California Register are 50 years old or greater. A resource less than fifty years old may be considered for listing in the California Register if it can be demonstrated that sufficient time has passed to understand its historical importance. California's statutes, regulations, and administrative policies regarding historic preservation and protection of cultural resources can be reviewed at <http://www.ohp.parks.ca.gov/pages>.

Opportunities

- Value. Preservation and protection of cultural resources are opportunities that provide cultural, social, and environmental benefits.
- Informed decisions. The Department's knowledge of the complete inventory of cultural resources with RJER and their significance provides for informed planning and better decision-making.
- Stewardship. Management of cultural resources is consistent with the California Environmental Quality Act and meets the Department's intent to provide long-term stewardship of cultural resources at the reserve. A stewardship monitoring program can provide volunteer labor and create a sense of ownership in the community. Potential resources for this effort include the San Diego County Archaeological Society's monitoring protocol or the California Native American Heritage Commission's California Archaeological Site Stewardship Program.
- Volunteer Labor. Student investigations can provide volunteer labor to the Department. Research opportunities can be provided to college-level students through formal field school classes or independent studies conducted at the reserve in the fields of anthropology, archaeology, ethnohistory, ethnobotany, cultural geography, or cultural resources management.
- Education. The large set of relatively undisturbed archaeological sites from various time periods make the reserve an ideal laboratory for the study of changing prehistoric subsistence and settlement patterns in southern California. The Jamul Cement Works provides a unique opportunity to learn about late 19th century cement-making technology and kilns, while the William Robinson adobe house site provides information about pioneering farmers in this region after 1860.
- Community involvement. Involving the community in the cultural resources activities of the reserve provides an opportunity for public participation, stewardship, education, and research. In addition, the Native American community may be able to provide information on the cultural uses of the area and significant resources. This information provides an opportunity to interpret the Native American importance of the region and protect resources they deem significant.

Constraints

- Staff and funding. Constraints of managing cultural resources includes limited availability of staff and funding to maintain data, oversee documentation generated by others, track resource conditions, implement treatment, maintain contact with interested parties, create interpretive materials, and conduct public outreach programs.

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- Vandalism. Identifying cultural resources to the public makes them more vulnerable to vandalism. The Department will maintain confidentiality with regard to the majority of cultural resources.

Cul 1.0 Goal – Identify Cultural Resources

Identify all cultural resources that are significant or potentially significant to understanding the prehistory or history of the Rancho Jamul Ecological Reserve and that meet the criteria for listing in the California Register.

Tasks:

- Cul 1.1 Gather data Compile all of the inventories and investigations of cultural resources for RJER that are on file with the Department. Create a working bibliography.
- Cul 1.2 Conduct search Have a qualified cultural resources person or consultant conduct a records search at the South Coastal Information Center (SCIC). The SCIC is the regional cultural resources data repository for the California Historical Resources Information System, which includes the statewide Historical Resources Inventory database maintained by the California Office of Historic Preservation. This will provide the Department with the following:
- A datasheet (National Archaeological Database record [or NAD]) for each investigation within RJER that is on file with the SCIC.
 - A hard copy map (digital files may be requested) of the investigation boundaries within RJER that are on file with the SCIC.
 - A record for each resource within RJER that is on file with the SCIC.
 - A hard copy map (digital files may be requested) of the resource boundaries within RJER that are on file with the SCIC.
 - A copy of each historic map that includes RJER
- Cul 1.3 Maintain data Maintain and continue to update the data collected from the Department files and the records search
- Cul 1.4 Evaluate resources Have a qualified cultural resources person or consultant formally evaluate known cultural resources for the California Register.
- Cul 1.5 Contact Native Americans Contact the Native Americans identified in the 2005 contact program (see Appendix G, confidential for public viewing), and solicit information on resources that may not be previously identified or that they deem important.

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- Cul 1.6 Define areas to be surveyed Using the data acquired from the SCIC, define the areas that have not been surveyed. In addition, review the adequacy and age of prior surveys to determine if certain areas need to be resurveyed.
- Cul 1.7 Inventory and evaluate Have a qualified cultural resources person or consultant conduct cultural resources inventories in areas to be surveyed and evaluate identified resources.
- a) *Identify programs* and planned development within RJER and conduct focused field surveys in those areas.
 - b) *Avoid areas* where resources are found.
 - c) *Encourage non-destructive research* by professional archaeologists.
 - d) *Require publication* and distribution of results.
 - e) *Ensure proper curation* of any materials collected, including notes and photographs.
- Cul 1.8 Add new data Add new data to existing dataset.

Cul 2.0 Goal – Protect Cultural Resources

Protect all cultural resources that are significant or potentially significant to understanding the prehistory or history of RJER and that meet the criteria for listing in the California Register of Historical Resources.

Tasks:

- Cul 2.1 Identify and Prioritize Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003).
- a) *Proposed staging area near the CEC*: Maintain fencing and signage to protect sites CA-SDI-14,893 and -14,894, and avoid using the area where P-37-025320 is located.
 - b) *Robinson Adobe* (CA-SDI-14,826): Protect this resource by carrying out the following management tasks.
 - Avoid ground-disturbing activities within the recorded prehistoric and historic site area.
 - Coat the remaining adobe wall with a protective material; El Rey Superior Additive 200 is recommended.

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- Clear soil and debris away from the foundation of the wall under the supervision of an archaeologist, and remove vegetation from the base of the wall using an herbicide (do not pull plants).
 - Monitor the erosion gully located east of the adobe, and take remedial measures if needed, under the supervision of an archaeologist.
 - Install low height signage around the adobe to notify visitors that the area should not be entered. The signage should not draw attention to the area, and fencing is not necessary.
 - An archaeologist should monitor any activities that result in disturbance of the ground surface or the adobe walls or foundations.
- c) *Proposed staging area on Otay Lake Road*: No cultural resources are located within the project area, and no further measures are recommended.
- d) Kiln (CA-SDI-6967H): Protect this resource by having a cultural resources professional conduct a conditions assessment and prepare a treatment plan.
- e) Site of Pio Pico Homestead: Protect this resource by having a cultural resources professional conduct a conditions assessment and prepare a treatment plan.
- f) *Evaluate and mitigate*. Evaluate all future projects for potential to impact cultural resources. Conduct a cultural resources review before conducting any ground-disturbing activities. All areas not previously surveyed should be surveyed by a cultural resources professional. Mitigate any potential adverse impacts to cultural resources through active management.

Cul 2.2

Implement Treatments Implement treatments using the Treatment Categories provided by Hector (2002). See Appendix B for those resources previously categorized.

- a) *Category 1 Treatment*. Preserve in place. Do not introduce incompatible elements.
- Restoration and replacement of architectural features should be based on detailed and accurate representations of the original features, as substantiated by historical, physical, pictorial, or archaeological evidence.

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- Do not introduce plant materials into the sites area that will undermine, damage, or modify the cultural resource (e.g. invasive vining plants, surface roots of certain trees).
 - Active management of cultural resources may include fencing, re-routing trails, stabilization and repair of historic structures and features, i.e., providing covers for buildings or ruins, capping with non-cultural soils, and annual monitoring.

- b) *Category 2 Treatment.* Preserve in place. Trails, staging areas, or other uses may be nearby if no direct access is provided to the resources. Treatments to avoid impacts to these resources may include: avoidance through re-routing trails and activity areas, revegetation to hide and protect the resource, limited stabilization of historic features such as dump sites and small architectural sites, and biennial monitoring.
- c) *Category 3 Treatment.* Preserve in place. Trails and other modern amenities may be nearby. This category includes resources used in interpretive programs and for research and study. Treatment may include: avoidance of direct impacts, revegetation to hide or protect the resource, and restoration or reconstruction of a historic building for interpretive use.
- d) *Category 4 Treatment.* These resources should be treated as follows: ensure that proper documentation in terms of a site report or site record has been completed and submitted to the proper agencies and organizations (e.g., South Coastal Information Center); and if artifacts were collected, provide funds for curation at an appropriate facility.
- e) *Retain Professional Assistance.* Have a professional cultural resources person assist in assigning treatments to those not identified by Hector (2002).

Cul 2.3 Consult California Law When activities may affect cultural resources, consult California's statutes, regulations, and administrative policies regarding historic preservation and protection of cultural resources (<http://www.ohp.parks.ca.gov/pages/1069/files/10%20law%20and%20preservation.pdf>).

Cul 2.4 Protect During Planning Protect cultural resources using the following methods identified by Hector (2002) during planning.

- a) *Avoidance.* Avoid impacts to cultural resources whenever possible.

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- b) *Fencing*. The placement of fence posts should be monitored by an archaeologist. Split rail or lodge-pole fencing is adequate.
 - c) *Capping with non-cultural soils*. Capping an area where there is a trail or dirt road should be supervised by an archaeologist. Considerations should include depth of the cap and trail safety issues; potential erosion of the soil or gravel cap; disturbance of the site during the capping process; and maintenance of the trail or road.
 - d) *Revegetation* to protect a site should not include any disturbance of the surface of the ground, even if the site has been an agricultural field.
 - e) *Monitoring*. Conduct additional monitoring as necessary.
 - f) *Collect data*. Test the area and collect data if the resource cannot be avoided

Cul 2.5 Ongoing Monitoring Monitor cultural resources at the recommended intervals (Appendix B).

- a) *Qualified Department staff* or volunteers should conduct monitoring, with professional consultation as needed. Mitigate, as described above, if damage or impacts are observed.
- b) *Implement stewardship program*. Implement a stewardship program that trains volunteers to monitor the conditions of cultural resources. Site stewards will require mandatory training and ongoing monitoring. Youth service projects can be developed through this program.

Cul 3.0 Goal – Involve the Community

Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve.

Tasks:

Cul 3.1 Consult with Native Americans Consultation refers to establishing a relationship (through periodic phone calls and letters) with the Native American community. This could include a presentation to Native American communities and an invitation for input and concerns. Contact information of those with potential interest in the activities of RJER was provided by the Native American Heritage Commission (Appendix G, confidential).

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- Cul 3.2 Create Public Contact List Create a contact list of all interested parties from the community.
- Cul 3.3 Implement Interpretive Plan Create and implement an interpretive plan for the public. Without threatening the integrity of the cultural resource, prepare written material, graphics, and/or interpretive displays describing what is present. Other interpretive displays could feature the history of ranching in San Diego.
- Cul 3.4 Develop Public Outreach and Educational Programs for users and visitors. Include educational materials that may be used in county schools curriculum.

Potential Environmental Impacts Related to the Cultural Resources Element

Any ground-disturbing activities at RJER may potentially affect historic or archaeological resources. Potential impacts would be reduced to less than significant by the implementation of the following management actions.

- All cultural resources investigations will be conducted under the guidance of a qualified cultural resources professional, as defined by the Secretary of Interior's Professional Qualifications Standards. A final report for each investigation will be filed at RJER, and with the South Coastal Information Center, which manages the Historical Resources Inventory database for San Diego County, under the direction of the California Office of Historic Preservation.
- Avoidance of archaeological sites or treatments of standing buildings and structures as defined in the Secretary of the Interior's Standards for the Treatment of Historic Properties. Treatments include preservation, restoration, rehabilitation, or reconstruction.
- Cultural resource investigations and treatments will be conducted in accordance with federal and state of California regulations and standards concerning cultural resources.

D. Public Use Element, Goals, and Environmental Impacts

This section describes the goals and tasks to be implemented in support of public access and use at RJER. Opportunities and constraints as well as potential environmental impacts are discussed as well.

It is the policy of the California Fish and Game Commission that lands under its administration be available to the public for wildlife-dependent recreational use and

scientific study whenever such activities will not unduly interfere with the primary purpose for which such lands were acquired. The Rancho Jamul Ecological Reserve was acquired primarily for the protection of multiple species and sensitive habitats within the South County MSCP/NCCP area. Because RJER is an ecological reserve, public use is limited to low level recreational use such as hiking and bird watching, and occasional permit-only hunting activities. However, adjacent HCWA will support less restrictive multiple-use recreation for the public, such as equestrian use and biking. RJER and HCWA together provide a unique opportunity to balance the need to protect sensitive biological resources, with the desire to provide the public with abundant recreational opportunities.

Management opportunities and constraints that are common to all public use elements are discussed as follows. Additional opportunities or constraints specific to a particular goal are noted under each goal statement after the list of tasks.

Opportunities

- General public use. Currently RJER is not being used by the public to its maximum potential capacity. Allowable activities include pre-arranged educational tours, permit-only hunting events, and approved scientific research. However, in the future, opportunities for public will include walking, hiking, wildlife observation, nature study, environmental education and interpretation.
- Hunting. Hunting opportunities provided within RJER include dove, quail, crow, rabbit, and pheasant. The Department's goal is to provide a sustainable yield of game.
- Wildlife viewing. The abundant bird and wildlife species of coastal sage scrub and grassland habitats contribute to the potential for wildlife viewing.
- Outreach/education. The public outreach and educational programs will increase the public's respect and concern for wild animals, and their knowledge of the interrelationships between wild animals, their environment, and their human neighbors.

Constraints

- Habitat and species preservation. While public access is an important component in DFG's mission, protection of habitat and wildlife are the primary purpose of the Department. The public's affect on RJER lands must be balanced with habitat and wildlife protection. Capacity monitoring can assist identifying that balance.
- Restricted access areas. "Closed areas" are areas within RJER that do not allow entry except to Department staff, or other authorized personnel (Figure 13). Areas closed to the public will include sensitive habitats, areas containing sensitive resources, species,

restoration or research project areas, selected maintenance roads, and trails closed for revegetation.

- Staffing. Limited availability of staff and funding for operations such as opening and closing of gates, garbage collection, visitor use coordination, and law enforcement. Also, staff and funding are limited for maintenance of roads, trails, parking lots, fencing, and signs.
- Circulation. In general, roads and trails within 100 feet of creeks will be closed/decommissioned where possible unless the Department needs access for maintenance or management purposes. Road closures will be based on wildlife and habitat needs. Circulation elements necessary for the Border Patrol or Fire Agencies will be retained; these areas may only be accessible to the public where appropriate.
- Human disturbance. Constraints involving human disturbance include potential impacts to riparian areas, grasslands and uplands. Potential impacts to wildlife include flushing of from habitat, disturbance while roosting or nesting, and noise disturbance. In addition, human disturbance could impact cultural resources.
- Potential human conflicts include conflicts between public use and resource protection (for example public trails should not be located in sensitive habitat); incompatibility between public uses (for example hunting and wildlife viewing cannot be accommodated in the same area at the same time); and potential, occasional encounters with border patrol officers.
- Non-allowable activities. Sporting dog training and equestrian use may be allowed on RJER under a special-use permit. Bicycling and open hunting are not allowed per Title 14 (Appendix A); however, adjacent HCWA will provide ample opportunities for these activities. Other prohibited activities in the reserve include collecting of natural resources (except under special-use permit), off-road vehicle use, releasing any fish or wildlife species, littering or dumping, and camping.

Pub 1.0 Goal – Public Access

Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resources.

Tasks:

Pub 1.1 Improve public access Tasks to improve public access include the following:

- a) *Open RJER to the public* on a daily basis.
- b) *Build new parking lots* at entrance along SR 94, and along Otay Lakes Road.

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- c) *Continue to maintain access* routes to existing and new parking lot.
 - d) *Improve physical accessibility and design.* Improve design and landscaping of RJER entrance to make this area more inviting. Improve trails near the future visitor center and interpretive area for ADA accessibility.

Pub 1.2 Restrict access as necessary to protect biological and cultural resources.

- a) *Rain events.* Close RJER for up to three days after rain events to prevent damage to trails.
- b) *Fire and severe weather.* Close RJER to the public during and following fire and severe weather events.
- c) *Gates.* Control access with locked gates.
- d) *Prohibit unauthorized activity.* Increase enforcement and create additional educational materials when unauthorized activities take place. Restore any damaged habitat as soon as feasible. In severe cases, public access or facilities may be removed, reduced or limited to certain locations.

Pub 1.3 Provide facilities for the public, including:

- a) Develop a sampling design and monitoring scheme to detect changes that may occur once RJER is opened to the public.
- b) Rent and maintain portable toilets during hunting season. Evaluate need for other portable toilets in parking areas.
- c) Pursue funding and construction for a day use facility or classroom at the entrance parking lot off of SR 94.

Pub 1.4 Evaluate use levels and visitor satisfaction periodically including use of visitor surveys.

- a) *Conduct quantitative user surveys every 5 years* or more frequently and estimate user capacity. Document condition of habitat in relationship to public use capacity.
- b) *Conduct periodic reviews of public uses of RJER;* evaluate rules, regulations, guidelines, and materials to ensure compatibility of public uses.

Pub 2.0 Goal – Public Safety

Minimize competition and conflicts among users and facilitate compatibility between public uses.

Tasks:

- Pub 2.1 Identify potential conflicts between recreational uses and resolve such conflicts.
- Pub 2.2 Encourage hunter safety through hunt design, supervision, monitoring and enforcement of regulations.
- Pub 2.3 Inform the public of RJER use designations and use restrictions through outreach, signage, physical barriers, and the Department's website, especially times and locations where hunting is allowed. Include a Department contact person's name, phone number, and e-mail address on signage for questions, comments, and suggestions regarding compatible uses of RJER.
- Pub 2.4 Have Department personnel available on-site during time of high use to monitor visitor activities and provide information as needed to visitors.
- Pub 2.5 Have Department and law enforcement on-site periodically to enforce regulations.

Pub 3.0 Goal – Hunting

Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources.

Tasks:

- Pub 3.1 Maintain and improve safe hunting opportunities by carrying out the following tasks:
- a) *Continue current seasonal hunting program* in designated areas.
 - b) *Evaluate* whether current hunting program may be expanded as habitat and access is improved.
 - c) *Maintain physical separation* of hunting areas from closed areas through signage and landmarks that blend into the landscape, such as boulders along access roads.
 - d) *Continue recruitment* of new hunters by providing hunter safety instruction on a regular basis at RJER.

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- e) *Continue encouragement* of young hunters through participation in junior hunt programs.
 - f) *Conduct late summer volunteer “clean up day”* to ready RJER for the upcoming hunting season.
 - g) *Maintain a good relationship* between Department staff, hunters, and volunteers.

Pub 4.0 Goal – Wildlife Observation

Provide compatible wildlife observation opportunities to the public.

Tasks:

- Pub 4.1 Maintain and improve wildlife observation by carrying out the following tasks:
 - a) *Designate specific wildlife viewing areas* that provide for undisturbed wildlife viewing, protect sensitive species, and do not cause a visual impact (e.g., blinds in grassland may be too visible).
 - b) *Manage existing wildlife routes* and design future habitat enhancements that attract wildlife for viewing.
 - c) *Provide adequate vegetative screening* to protect wildlife while providing viewing areas.
 - d) *Develop interpretive signage* for wildlife viewing trails.

Pub 5.0 Goal – Environmental Education

Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public.

Tasks:

- Pub 5.1 Develop an overall plan for interpretive features including signs, blinds, and walking tours.
- Pub 5.2 Develop and distribute interpretive materials including brochures and materials for self-guided tours.
- Pub 5.3 Convert the former race track into an ADA accessible interpretive nature trail with interpretive signs and displays of local and regional natural habitats and species (emphasizing those covered by MSCP).

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- Pub 5.4 Construct a visitor center with interpretive kiosk and develop interpretive displays and signage (Figure 13). The visitor center will have: parking, kiosks, bathrooms, a trailhead to the interpretive track and a building with indoor exhibits and an information desk. This center will be staffed by volunteers.
- Pub 5.5 Move the gate back from SR 94 to provide additional parking at the visitor center.
- Pub 5.6 Develop new programs as time and budget allow.
- a) *Youth programs.* Develop programs specifically to create visitation and education opportunities for urban and disadvantaged youth, including “girls in science,” hunter education, and collaborations with agencies and organizations that have a conservation curriculum.
 - b) *Research.* Identify and designate an area to be used for research purposes that is closed to the general public. Work with local academic institutions on research needs for RJER.
 - c) *Field Trips.* Provide a forum and presentations for school and museum (e.g., San Diego Natural History Museum) field trips.
 - d) *Volunteers.* Provide guided field trips by volunteer docents and organizations.
- Pub 5.7 Construct viewing platform and interpretive panels near the kiln areas. Evaluation fencing options to ensure public safety and protection of the kiln while allowing public viewing.

Pub 6.0 Goal – Trail Use

Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities.

Tasks:

- Pub 6.1 Maintain and post existing trail system (Figure 13).
- Pub 6.2 Routinely inspect and document condition of trails and habitat. If damage to biological resources is taking place, consider those trail elements for removal or relocation.
- Pub 6.3 Repair unsafe sections of the trails as needed.
- Pub 6.4 Use barriers such as logs, boulders and native vegetation (prickly or thorny plants) to prevent trail widening, to close trails for restoration, or

to control access to areas (e.g. areas closed for hunting or research).

- Pub 6.5 Evaluate the County Trails Plan. The San Diego County Community Trails Master Plan has been adopted by the County to establish a system of interconnected regional and community trails and pathways. These trails and pathways are intended to address an established public need for recreation and transportation, but will also provide health and quality of life benefits associated with hiking, biking, and horseback riding throughout the County's biologically diverse environments. RJER trails connect with this trail system; however, consistency and public use compatibility issues will have to be coordinated between the County and the Department.

Pub 7.0 Goal – Signage

Provide signage that clearly communicates regulations, safety warnings, expected code of conduct and interpretive messages to the public.

Tasks:

- Pub 7.1 Erect and maintain signs at parking lots with ecological reserve maps, regulations, and safety information such as general rules, the prohibition of rifles or pistols, and potential hazards (e.g. mountain lions, rattle snakes, poison oak, border patrol, etc.). Entrance signs at RJER should inform visitors that they are proceeding at their own risk.
- Pub 7.2 Work with California Department of Transportation (Caltrans) to install signage on SR 94 to direct visitors to the public entrance of RJER and the CEC.
- Pub 7.3 Provide the following signs: a large sign marking the RJER entrance, interpretive signs, signs marking trails and hunting access areas, and signs marking areas that are temporarily closed for nesting, maintenance, habitat restoration, emergency repairs, flood damage, or other reasons.
- Pub 7.4 Develop a monitoring and maintenance schedule for all signage, and include placement and content.
- Pub 7.5 Inventory existing boundary signage and fencing, and install new signs and fencing where necessary.

Pub 8.0 Goal – Community Partnership

Continue to foster community partnership.

Tasks:

Pub 8.1 Foster community partnership. Facilitate the participation of wildlife agencies, NGOs, community groups and the public in activities relevant to this LMP, such as trail planning, educational outreach, and land stewardship. Coordinating with these groups will give the community a sense of ownership in RJER, and enable the Department to tap into this valuable resource. Enhance community partnerships by carrying out the following tasks (see also Management Coordination Element, Section H):

- a) *Communicate and coordinate* with various community groups for special events, to discuss volunteer opportunities, and to develop new program areas. The San Diego County Wildlife Federation is made up of a number of groups including Quail Unlimited, National Wild Turkey Federation, San Diego Fly Fishers, etc. They organize cleanups and other work parties throughout the County including working with the Department at RJER & HCWA.
- b) *Coordinate with volunteers* to protect wildlife resources and habitat. This is especially important with large work parties. Provide training and briefings as necessary.
- c) *Coordinate with the Jamul Trail Council* to maintain and repair trails. The Jamul Trails Council, Inc. is a non-profit organization that provides education about horseback riding, and mountain biking trails. The organization works to preserve existing trails and establish new trails on public land or by voluntary dedications

Pub 9.0 Goal – Regulations

Support compatible wildlife-dependent public use through consistent regulations and coordination with other agencies and applicable plans such as the NCCP.

Tasks:

Pub 9.1 Ensure compliance with regulations (see also Management Coordination Element, Section H):

- a) *Periodically evaluate* all public use activities and programs, and RJER regulations to identify changes that are warranted to maintain consistency with the goals of this LMP. Submit regulations changes through headquarters for Fish and Game Commission review and adoption.

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- b) *Periodically review activities* within RJER for compatibility with the MSCP, specifically as updated monitoring and management guidelines and information become available for MSCP participants.

Potential Impacts Related to Public Use Element

Compatible, wildlife-dependent public uses support the Department's mission in providing public access to RJER. Potential impacts to public access are considered as well impacts that can be caused by public uses. Potential direct and indirect impacts that could result from the public's use of RJER include overuse of trails, open areas, or parking lots; unauthorized use of closed areas; conflicts among users; and accidents involving wildlife (e.g. snake bites), or visitor accidents.

These potential impacts will be avoided and/or minimized by:

- Managing visitation levels.
- Preventing unauthorized activities through daily observation of visitor activities.
- Promptly repairing damaged areas.
- Installing educational signs and/or display cases to educate and inform the public regarding rules and regulations governing the use of the RJER and access restrictions.
- Regularly monitoring public use effects on existing ecosystems.
- Closing trails where use is determined to have, or potentially have, an adverse effect on sensitive biological or cultural resources.

E. Facility Management Element, Goals, and Environmental Impacts

Facilities on RJER include roads and trails; signage and educational kiosks; access control structures such as fences, gates and barriers; buildings and other public or management structures; and water features, such as wells, pumps, and artificial ponds. Managing these facilities will require ongoing monitoring, prioritization based on budget and staffing, preventative maintenance, and as-needed repair.

Opportunities

- Conducting regular assessments and preventative maintenance will keep facilities in good condition thereby avoiding costly repairs in the future.
- Educating and engaging the community might result in volunteer-based stewardship, which can help deflect the costs and staffing constraints faced by the Department.

Constraints

- Limited funding for staffing, inspections, enforcement, operations, and maintenance is a constraint for long-term operations of RJER. Routine assessment and repair or replacement of trails, culverts, gates, fencing, and signs will be required, as well as regular inspections throughout the reserve to ensure that there are no safety hazards for the public.

Fac 1.0 Goal – Facility Management

Manage structures and facilities to provide wildlife-dependent public use, education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).

Tasks:

- Fac 1.1 Roads and Trails Manage the trails system by taking the following actions:
- a) *Restore closed trails.* Identify trails to be closed and implement active restoration through decompaction, invasives removal, and when necessary, seeding or planting. Invasive species eradication efforts should continue for no less than five years.
 - b) *Prevent erosion* damage to trails by developing and implementing BMPs as necessary.
 - c) *Prohibit off-road activities.* Ensure that no illegal trails are formed by off-road activities by posting signs or installing barriers as needed.
- Fac 1.2 Signage and Public Education Remove, add, or update signs as necessary (See also Pub 1.7). Review and update educational information at Kiosks, at the CEC, and in informational brochures as necessary (See also Pub 1.5).
- Fac 1.3 Fences, Gates, and Barriers Manage fences, gates, barriers, and other structures to support wildlife movement, and to protect sensitive biological resources from impacts due to traffic and illegal public use (Figure 20) (See also Pub 1.1, Pub 1.2, and Pub 1.6). Remove structures that impede management activities or Border Patrol Access (at the discretion of the Department).
- Fac 1.4 Structures Maintain Conservation Education Center, and other structures to support management and public education activities.

Fac 1.5 Water Features Ensure that fire hydrants are maintained, artificial ponds, wells, water tanks, aqueducts, pumps, and pipelines to support fire management, wildlife, restoration efforts, and use in the Conservation Education Center.

- a) *For each well*, determine functionality, the depth to groundwater, and the pumping rate. In addition, conduct water quality analysis of the well water to determine if it is safe for people and wildlife to drink.
- b) *Maintain functional wells* regularly. Cap all wells to protect the public from accidents.
- c) *Maintain fire hydrants* by lubricating and testing them every six months.
- d) *Remove sediment buildup* from aqueducts and repair washouts as needed.
- e) *Maintain water levels* in selected artificial ponds to support native flora and fauna using existing pumps and levy system.
- f) Prepare a water features “operations manual” and graphics of the water system for ease in repairs and maintenance.

Potential Impacts Related to Facility Management Element

Potential direct and/or indirect impacts may be associated with construction activities related to trail maintenance or sediment removal. However, all management projects will be assessed for potential impacts prior to implementation, and all impacts are expected to be temporary. For example, noise and dust might be produced if heavy equipment is used, but if activities are carried out during the non-breeding season, no impacts to sensitive bird species would be expected. Additionally, any “take” of habitat would be mitigated through avoidance, revegetation, or the use of hand tools rather than mechanized equipment.

F. Scientific Research and Monitoring Element, Goals, and Environmental Impacts

This element provides goals and tasks that encourage scientific study, especially in relation to open space management. In addition, these goals encourage consistency with various monitoring and management efforts in the County. Biologists are drawn to San Diego County, in part, because it is a “hotspot” of biodiversity. Numerous universities and colleges in the area support research in conservation biology, land management, population

genetics, metapopulation dynamics, systematics, etc. The scientific community's active role in regional conservation adds scientific rigor to the process of natural resources management. In addition, wildlife agencies, NGOs, community groups and the public participate in activities relevant to this LMP, such as trail planning, educational outreach, and land stewardship. Coordinating with these groups will give the community a sense of ownership in RJER, and enable the Department to tap into this valuable resource.

Opportunities

- Coordinating with other management and monitoring protocols and guidelines will make management efforts at RJER more effective. This is an key component of the adaptive management strategy.
- Encouraging scientific, conservation-related research will benefit land managers by providing information that will help more efficiently manage, monitor and protect sensitive biological resources, and will add scientific rigor to management strategies.

Constraints

- Collecting, analyzing, and reporting the results scientific research can take years, which may be beyond the immediate management timeframe.
- The priorities of the researchers are not always the same as those of the land managers. Therefore, it may be difficult to encourage research projects that are directly relevant to RJER management.

Mon 1.0 Goal – Scientific Research

Provide opportunities for scientific research that will support the adaptive management strategy and provide useful biological information to land managers.

Tasks:

- | | |
|---------|---|
| Mon 1.1 | <u>Identify data gaps</u> related to management, monitoring, and species or ecosystem-level biology, and design or encourage research projects on these topics. |
| Mon 1.2 | <u>Identify experimental design opportunities</u> to be incorporated into habitat and species management, restoration, and/or introduction projects on the reserve. |
| Mon 1.3 | <u>Facilitate access</u> to students and researchers from local universities and colleges. Encourage research that support the goals of this LMP. Provide access authorization letter for all authorized research activity. |

Mon 2.0 Goal – Consistency with Appropriate Management and Monitoring Protocols
When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols

Tasks:

Mon 2.1 Use the following protocols as appropriate:

- Draft MSCP Framework Management Plan (County of San Diego 2001)
- See also Ogden, 1996; CBI 2001a and 2001b)
- a) *State and federally listed species.*
 - USFWS focused species survey protocols for Quino checkerspot butterfly, California gnatcatcher, least Bell’s vireo, arroyo toad, southwestern willow flycatcher, California red-legged frog.
 - A management and monitoring plan for Quino checkerspot butterfly (*Euphydryas editha quino*) and its habitats in San Diego County (Longcore, et al. 2003).
 - Survey and Monitor report for the arroyo toad conducted in the MSCP study area (County of San Diego 2006).
- b) *MSCP covered species.*
- c) *Vegetation communities.*
 - California Native Plant Society - Rapid Assessment Protocol (CNPS 2005). If used, the vegetation communities described in this LMP will first have to be crosswalked to the classification system used in Sawyer and Keeler-Wolf (1995).
 - MSCP annual report. Includes information about post-fire habitat recovery monitoring conducted for the MSCP; photo points established near Rancho Jamul. (County of San Diego 2006).
- d) *Sensitive Habitats.*
 - Final report for “Creating an Index of Biological Integrity for Coastal Sage Scrub: A tool for habitat quality assessment and monitoring.” (Diffendorfer, et al. 2004).
 - Adaptive management for southern California grasslands. (Chadden, A., E. Dowsza, and L. Turner 2004).

e) *Rare Plants.*

- Survey methods should be consistent with those used for the baseline biodiversity study (USGS 2002).
- Although no rare plant monitoring protocol is available for the South County MSCP, see MSCP rare plant monitoring: field monitoring methods (City of San Diego 2005), Department Habitat Conservation Planning Branch (HCPB) protocols, and USFWS protocols.

f) *Sensitive Wildlife.*

- Habitat surveys and monitoring reports on bats, arroyo toad, and southwestern pond turtle throughout the San Diego MSCP study area (includes management recommendations) (County of San Diego 2006).

g) *General Surveys.*

- General wildlife surveys and non-native species surveys should be consistent with methods used in USGS (2002).

h) *Wildlife movement.*

- Wildcat Canyon Road enhancement project before-after-control-impact study. Final preconstruction report. Volume 1. (EDAW 2004).
- Wildlife Corridor Monitoring Study, prepared for the Multiple Species Conservation Program (CBI 2003).

i) *Adaptive management.*

- Designing monitoring programs in an adaptive management context for regional multiple species conservation plans. (USGS 2004a).

Potential Impacts Related to Scientific Research and Biological Monitoring Element

No impacts are expected from the Scientific Research and Biological Monitoring Element. All research projects will be evaluated for potential impacts, which will be avoided, minimized, or mitigated to a level below significant.

G. Fire Management Element, Goals, and Environmental Impacts

In 1994, the California State Board of Forestry and the California Fish and Game Commission adopted an interim *Joint Policy on Pre-, During-, and Post-fire Activities and Wildlife Habitat* (California State Board of Forestry and California Fish and Game Commission 1994). This joint policy describes multiple measures that both the California Department of Forestry and Fire Protection (CDF) and the Department should undertake to protect lives and property with consideration of natural resources. These measures would be implemented before, during, and after fires. Additional state, local, and federal policies and agreements that apply to fire management activities on RJER include the following:

- California Fire Plan: A Framework for Minimizing Costs and Losses from Wildland Fires (CDF 1996).
- Memorandum of Understanding and Operating Agreement between the California Department of Forestry and the California Department of Fish and Game Regarding the Department's Lands in San Diego County (2002).
- Memorandum of Understanding between the USFWS, the Department, CDF [and Fire Protection], the San Diego County Fire Chief's Association, and the Fire District's Association of San Diego County, signed on February 26, 1997 (USFWS 1997a). Guidance is applicable to defensible space, fuelbreaks, and greenbelts within 100 feet of structures and 30 feet of roads.
- Biological Opinion on USFWS Participation in a Memorandum of Understanding with the San Diego County Fire Chief's Association Addressing Flammable Vegetation Abatement in San Diego County (1-6-97-FS-19), dated February 26, 1997 (USFWS 1997b). This document authorizes take and provides terms and conditions for the actions described in the above Memorandum of Understanding.

Opportunities

- Continuing coordination among fire agencies (e.g., CDF with federal and local fire departments) and with adjacent landowners and communities can increase the likelihood of sustaining long-term ecosystem health and processes in fire-adapted lands.

Constraints

- Private lands adjacent to RJER are likely to continue to develop, increasing the risk of ignition from human sources.

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- A future large-scale fire has the potential to negatively impact the biological resources within RJER. Although many habitat types, e.g. coastal sage scrub and chaparral, have adapted to periodic wild fires, an intense and large scale fire can affect the natural communities and associated plants and animals. For example,
 - Fires commonly increase erosion by removing the vegetation and root system that holds the soil together.
 - Particularly large or frequent fires often lead to a greater vulnerability to invasion by non-native plant species and a potential for type conversion of scrub vegetation to weedy grass and forb habitat (Oberbauer 2003).
 - Burned riparian areas along stream courses may provide an avenue for the introduction and spread of non-native giant reed and salt cedar, which could potentially displace native willows and other riparian species.

Fire 1.0 Goal – Pre-fire Fire Management

Develop and implement pre-fire vegetation access, treatments, and inter-agency coordination to sustain long-term ecosystem health and processes, and minimize impacts to facilities and biological and cultural resources within RJER.

Tasks:

- Fire 1.1 Meet biennially, with CDF representatives to discuss fire-related issues relevant to the RJER, including vegetation management, recent fires in the property, current contact information, areas of high fire hazard, sensitive areas to avoid in firefighting activities, priority suppression areas (especially cultural and biological resources), potential access and staging areas, availability of fire-fighting personnel, procedures, and other relevant factors. Areas of concern should be identified on a map that is updated as needed.
- Fire 1.2 Develop a wildfire management plan (WFMP) to address ongoing fire management needs for both wildlife habitat and defensible space. Review WFMP every 5 years and update if needed.
- a) *Assess road conditions* and maintain road surfaces and width to allow access by wildland firefighting engines.
 - b) *Fuel management*. Mow grasses and thin or reduce vegetation (fuel management zones) in areas adjacent to vehicle access to minimize risks of ignition.
 - c) *Address coordination needs* with Caltrans and the Department for fuel management along SR 94.

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- d) *Incorporate plans for cooperative management* of habitat through prescribed burns at specific locations (e.g., hunting areas, or habitat restoration efforts) using controlled burns at specific locations.
 - e) *Incorporate methods for fire response* that would consider effects on natural and cultural resources within RJER, i.e., identify fire suppression tactics that could have adverse long-term effects on ecosystems or cultural resources (e.g., use of retardant), and those tactics should avoided or modified whenever feasible.
- Fire 1.3 Participate in preparing Community Wildfire Protection Plans (CWPP) for areas that encompass RJER. Work with any Fire Safe Councils established in the area, or absent such a council, work with adjacent homeowners regarding establishment and inspection of defensible space.
- Fire 1.4 Train a Department biologist to serve the role of resource specialist or agency representative through the Incident Command System (ICS).
- Fire 1.5 Review and comment on adjacent development and proposals to ensure that project incorporates adequate defensible space so that RJER lands are not impacted later.

Fire 2.0 Goal – Fire Suppression

Conduct wildfire suppression activities in ways that sustain long-term ecosystem health and processes, and minimize impacts to facilities and biological and cultural resources within RJER.

Tasks:

- Fire 2.1 Establish staging areas on roads and already-disturbed areas.
- Fire 2.2 Restrict heavy equipment Avoid the use of bulldozers or other heavy equipment within 100 feet of vernal pools and stream centers in riparian areas. Avoid dropping retardant within 200 feet of any riparian areas. Avoid bulldozer use within 100 feet of cultural resource sites, populations of listed plant species, and occupied Quino checkerspot butterfly habitat.
- Fire 2.3 Coordinate fire suppression activities and cooperate with CDF and local fire districts (including the National Wildlife Refuge, BLM, and rural fire departments).

Fire 3.0 Goal – Post-fire Management

Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore long-term ecosystem health and processes, and minimize impacts to facilities and biological and cultural resources within RJER.

Tasks:

- Fire 3.1 Restoration After wildfire suppression activities, restore roads, fences, trails, and landscape contours to pre-fire conditions and mitigate for any damage from mechanical firefighting equipment. Remediation needs should be identified immediately so that fire crews can complete the work before demobilizing.
- Fire 3.2 Complete emergency watershed work as soon as possible and before the first heavy rainfall.
- Fire 3.3 Repair culverts and stream crossings and restore drainage and road surfaces in areas damaged by firefighting activities and post-fire storm runoff.
- Fire 3.4 Monitor invasion of weeds in areas disturbed by fire activities and the effectiveness of erosion control methods, and take corrective actions as needed.

Potential Impacts Related to Fire Management Element

No significant direct or indirect impacts are expected from activities related to the Fire Management Element. All activities will be conducted by qualified Department and fire agency staff.

Potential adverse impacts will be avoided and/or minimized by:

- Development, review, and approval of site-specific plans for all fuel manipulation activities.
- As needed, fuel management via mechanical clearing or burning will be conducted outside of typical breeding periods for all sensitive animal species to avoid adverse impacts on reproduction. Fuel management activities will be conducted in a manner that will not contribute to fragmentation of habitat linkages.
- Following fire, all areas burned will be monitored to assess invasion by non-native plant species. Weed-dominated habitats and non-native grasslands dry out earlier than native perennial species and are easily ignited. Remedial seeding with native plants or other measures will be conducted as needed.
- Areas damaged from fire suppression activities will be promptly repaired.

H. Management Coordination Element, Goals, and Environmental Impacts

Management coordination includes communicating with others that are involved with conservation, management, and restoration in the region; coordinating management and monitoring efforts with policies, goals, and guidelines of relevant regional plans; and standardizing data management in order to streamline the process of reporting and updating this LMP in the future.

Opportunities

- Coordinating with other agencies, non-governmental organizations (NGOs), and scientists will provide an opportunity to share resources, knowledge, and data gained from adaptive management efforts.
- Coordination will help promote a broader, more regional perspective when assessing threats to resources and setting management priorities.

Constraints

- It may be difficult for Department staff or personnel from other agencies or groups to find the time to analyze and discuss conservation efforts on a regular basis.
- There may be some differences in philosophy among interested parties regarding conservation and management strategies.

Crd 1.0 Goal – Plan Revisions

Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions.

Tasks:

Crd 1.1 Standardize methods of data collection and data management.

- a) *Develop a protocol* for data collection and data management, including GIS data, to ensure consistency even if there is a personnel change in the Department.
- b) *Consistency*. Ensure that the protocol is consistent with Department procedures and with the County's comprehensive MSCP database and reporting procedures.

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- Crd 1.2 Annual or semi-annual status reports Prepare regular status reports, and include such information as: goals and tasks implemented, management strategies tested and lessons learned, updates to GIS layers (boundaries, trails, fences, species points, vegetation communities, etc.), a description of projects and status, status of game and sensitive species. Make data and reports available to CDFG, other agencies and possibly the public. If feasible, post online.
- Crd 1.3 Revise LMP every five years Following the appropriate process, major revisions to this LMP should include revised existing conditions information, boundary changes, policy changes, appropriate CEQA documentation, and changes to goals and tasks based on the best available data and lessons learned from the previous five years.

Crd 2.0 Goal – Regional Conservation Coordination

Coordinate with agencies, NGOs, the scientific community and other interested parties involved with conservation in the region, and ensure consistency with regional planning efforts.

Tasks:

- Crd 2.1 Coordinate with other entities, as appropriate. Discuss conservation goals; threats; methodology for management, monitoring, restoration, and reintroduction; results of management tasks and scientific research; and potential future projects.
- a) *Agencies*. Federal (USFWS, BLM, USFS, and USGS), state (other Department land managers, California Resources Agency, and California State Parks), and county (Departments of Parks and Recreation, and Planning and Land Use).
 - b) *NGOs*. For example, the Endangered Habitats League, and Jamul Trails Council, and San Diego County Wildlife Federation.
 - c) *The scientific community* and other land managers using adaptive management strategies.
 - d) *The public* to provide them with an opportunity to ask questions and express concerns.
- Crd 2.2 Coordinate with relevant regional plans, to ensure that management actions and reporting for RJER are consistent. Some examples include:
- a) *South County MSCP Subarea Plan*. Ensure consistency with monitoring protocols, monitoring efforts conducted by the county, data submittal for the MSCP annual report, and MSCP goals. Seek

opportunities for funding, monitoring assistance, and educational outreach.

- b) *County of San Diego General Plan and Jamul-Dulzura Community Plans.* Ensure that there is no conflict between these plans and the goals of this LMP. Where conflicts occur, meet and confer with the County and/or adjacent land owner to discuss specific recommendations to resolve conflicts.
- c) *County trails program and Jamul-Dulzura Community Trail and Pathway Plan.* Ensure consistency with the goals of the LMP. Assist in trails plan implementation by evaluating goals for trail placement as appropriate.
- d) *Otay River WMP and SAMP (in progress).* Ensure that planning goals for the Otay River Watershed Management Plan (WMP) and Special Area Management Plan (SAMP) are consistent with goals of this LMP. Evaluate and implement watershed goals and policies as appropriate.

Potential Impacts Related to Management Coordination Element

No impacts are expected from the Management Coordination Element.

Table 18. Outline of Elements, Goals, and Tasks

Element /Subelement	Goal	Tasks
BIOLOGICAL ELEMENTS		
Bio 1: Habitat	Bio 1.1 Wetlands and Riparian Habitat Management and Monitoring <i>Conserve, manage, and enhance wetlands and riparian habitat to promote native species diversity, genetic flow, and ecological and hydrological function n.</i>	Bio 1.1.1 Survey and monitor (a) <i>Conduct additional surveys</i> (b) <i>Conduct ongoing monitoring</i>
		Bio 1.1.2 Assess threats and set priorities (a) <i>Identify and assess threats</i> (b) <i>Prioritize</i>
		Bio 1.1.3 Management (a) <i>Prepare annual work plan</i> (b) <i>Adhere to no-net loss of wetlands standard</i> (c) <i>Protect and maintain riparian and wetlands habitat</i> (d) <i>Maintain natural ecological and hydrological processes</i> (e) <i>Implement erosion and sediment control BMPs</i> (f) <i>Maintain bat foraging habitat</i> (g) <i>Implement a riparian and wetlands buffer</i> (h) <i>Prohibit livestock access to riparian and wetlands habitat</i> (i) <i>Encourage the public to use adjacent HCWA</i> (j) <i>Maintain and enhance wildlife corridors and habitat linkages</i> (k) <i>Evaluate all future management programs</i> (l) <i>Implement adaptive management</i>
	Bio 1.2: Wetlands and Riparian Habitat Restoration <i>Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.</i>	Bio 1.2.1: Survey and Ongoing Monitoring (a) <i>Include recommended restoration projects</i> (b) <i>Monitor restored areas</i>
		Bio 1.2.2 Assess threats and set priorities (a) <i>Prioritize</i> (b) <i>Evaluate the function of vernal pools</i>
		Bio 1.2.3 Management (a) <i>Coordinate with Wildlands Inc.</i> (b) <i>Develop area-specific restoration plans</i> (c) <i>Vernal pool restoration/conservation plan</i> (d) <i>Coordinate with wildlife agencies</i> (e) <i>Restore in phases</i> (f) <i>Limit access</i> (g) <i>Implement adaptive management; Bio 1.1.3 (l).</i>
	Bio 1.3 Upland Habitat Management and Monitoring <i>Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.</i>	Bio 1.3.1 Survey and monitor (a) <i>Conduct ongoing monitoring</i>

Continued on next page

Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
BIOLOGICAL ELEMENTS <i>continued</i>		
Bio 1: Habitat <i>continued</i>	Bio 1.3 Upland Habitat Management and Monitoring <i>continued</i>	Bio 1.3.2 Management (a) <i>Prepare annual work plan (Bio 1.1.3)</i> (b) <i>Protect and maintain uplands to provide breeding and foraging habitat for wildlife</i> (c) <i>Manage hunting areas</i> (d) <i>Implement trail reduction</i> (e) <i>Implement erosion control</i> (f) <i>Remove non-native species</i> (g) <i>Encourage public to use adjacent HCWA</i> (h) <i>Maintain and enhance wildlife corridors in uplands (Bio 1.1.3)</i> (i) <i>Implement adaptive management; Bio 1.1.3 (I)</i>
	Bio 1.4 Upland Habitat Restoration <i>Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.</i>	Bio 1.4.1 Survey and ongoing monitoring (a) <i>Incorporate recommended projects</i> (b) <i>Monitor restored areas</i>
		Bio 1.4.2 Assess threats and set priorities (a) <i>Prioritize</i> (b) <i>Consider the benefits to sensitive species within RJER and adjacent HCWA</i> Bio 1.4.3 Management (a) <i>Develop area-specific restoration plans (Bio 1.2.3)</i> (b) <i>Restore grasslands</i> (c) <i>Restore coastal sage scrub</i> (d) <i>Limit access</i> (e) <i>Implement adaptive management; Bio 1.1.3 (I)</i>
Bio 2: Special Status Species	Bio 2.1 Protect/Enhance Populations of Listed Species <i>Protect, monitor, and enhance populations and preferred habitat of federal and state listed species</i>	Bio 2.1.1 Surveys and ongoing monitoring (a) <i>Conduct surveys at the appropriate time of year</i> (b) <i>Conduct annual qualitative surveys</i> (c) <i>Conduct species-specific surveys</i>
		Bio 2.1.2 Assess threats and set priorities (a) <i>Restore/ enhance native habitat preferred by listed species</i> (b) <i>San Diego ambrosia</i> (c) <i>Otay tarplant</i> (d) <i>Quino checkerspot butterfly</i> (e) <i>Coastal California gnatcatcher</i> (f) <i>Least Bell's vireo</i> (g) <i>Peregrine falcon</i> (h) <i>New populations of listed species</i>

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
BIOLOGICAL ELEMENTS <i>continued</i>		
Bio 2: Sensitive Biological Resources <i>continued</i>	Bio 2.2 Protect/Enhance Non-listed Sensitive Species <i>Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources.</i>	Bio 2.2.1 Surveys and ongoing monitoring (a) <i>Conduct surveys at appropriate time of year</i> (b) <i>Monitor target species</i> (c) <i>Maintain wildlife movement corridors; Bio 1.1</i>
		Bio 2.2.2 Assess threats and set priorities
	Bio 2.2 Protect/Enhance Non-listed Sensitive Species <i>continued</i>	Bio 2.2.3 Management (a) <i>Follow MSCP guidelines</i> (b) <i>Remove non-native predators</i> (c) <i>Eradicate invasive plant species</i> (d) <i>Post leash law</i> (e) <i>Add structures to provide nesting</i> (f) <i>Evaluate future management programs for potential impacts</i> (g) <i>Implement adaptive mgt; Bio 1.1.3 (l)</i>
	Bio 2.3 Species Reintroduction <i>Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve.</i>	Bio2.3.1 Identify species for potential reintroduction (a) <i>Conduct habitat inventories using established protocols and guidelines</i> (b) <i>Assess recommended spp for reintroduction</i> Bio 2.3.2 Management (a) <i>Introduce Burrowing owl</i> (b) <i>Introduce Southwestern pond turtle</i> (c) <i>Introduce Arroyo toad</i> (d) <i>Implement adaptive Management; Bio1.1.3 (l)</i>
Bio 3: Non-Native Species	Bio 3.1 Control Impacts from Non-Native Plants <i>Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve</i>	Bio 3.1.1 Survey and monitor
		Bio 3.1.2 Assess threats and set priorities
	Bio 3.2 Control Impacts from Non-Native Wildlife <i>Control for non-native, predatory animal species that may negatively impact native species on the reserve.</i>	Bio 3.1.3 Management (a) <i>Control invasives in recommended areas</i> (b) <i>Coordinate efforts</i> (c) <i>Implement adaptive management; Bio 1.1.3 (l)</i>
		Bio 3.2.1 Survey and monitor
		Bio 3.2.2 Assess threats and set priorities
		Bio 3.2.3 Management (a) <i>Prohibit predatory species in ponds or creeks</i> (b) <i>Use fencing to protect native species</i> (c) <i>Monitor for domestic pets</i> (d) <i>Monitor cowbird populations</i> (e) <i>Monitor starlings and house sparrows</i> (f) <i>Implement adaptive management; See Bio 1.1.3 (l)</i>

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
BIOLOGICAL ELEMENTS <i>continued</i>		
Bio 4: Game Species <i>continued</i>	Bio 4.1 Manage game populations <i>Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources.</i>	Bio 4.1.1 Survey and ongoing monitoring <i>(a) Conduct annual dove and quail counts</i> <i>(b) Conduct surveys of resident and small game</i> <i>(c) Conduct harvest surveys</i>
		Bio 4.1.2 Management <i>(a) Release only males</i> <i>(b) Manage and maintain game species habitat</i>
		Bio 4.1.3 Enhance and Restore <i>(a) Remove or replace non-native grasses Assess current food plots for success</i> <i>(b) Assess current water sources</i> <i>(c) Provide cover for quail and small game</i> <i>(d) Construct and install dove cones</i> <i>(e) Evaluate success of habitat improvement projects and modify as necessary</i>
CULTURAL RESOURCES ELEMENT		
Cul 1: Cultural Resources	Cul 1.0 Identify cultural resources <i>Identify all significant cultural resources</i>	Cul 1.1 Gather data
		Cul 1.2 Conduct search
		Cul 1.3 Maintain data
		Cul 1.4 Evaluation resources
		Cul 1.5 Contact Native Americans
		Cul 1.6 Define areas to be surveyed
		Cul 1.7 Inventory and evaluate
		Cult 1.8 Add new data.
	Cul 2.0 Protect Cultural Resources <i>Protect all significant cultural resources</i>	Cul 2.1 Identify and prioritize <i>(a) Protect resources near CEC</i> <i>(b) Protect Robinson Adobe</i> <i>(c) Protect resources near Otay Lakes Rd staging</i> <i>(d) Protect Kiln</i> <i>(e) Protect Pio Pico homestead</i> <i>(f) Evaluate future projects for potential impacts</i>
		Cul 2.2 Implement treatments <i>(a) Implement Category 1 treatment</i> <i>(b) Implement Category 2 treatment</i> <i>(c) Implement Category 3 treatment</i> <i>(d) Implement Category 4 treatment</i> <i>(e) Retain professional assistance</i>
		Cul 2.3 Consult California law
		Cul 2.4 Protect during planning <i>(a) Avoid</i> <i>(b) Fence</i> <i>(c) Cap with non-cultural soils</i> <i>(d) Revegetate</i> <i>(e) Monitor</i> <i>(f) Collect data</i>

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
CULTURAL RESOURCES ELEMENT <i>continued</i>		
Cul 1: Cultural Resources <i>continued</i>	Cul 2.0 Protect Cultural Resources <i>continued</i>	Cul 2.5 Monitor (qualified staff) (a) <i>Conduct monitoring and mitigation</i> (b) <i>Implement stewardship program</i>
	Cul 3.0 Involve the Community <i>Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve.</i>	Cul 3.1 Consult with Native Americans
		Cul 3.2 Create and update public contact list
		Cul 3.3 Implement interpretive plan
		Cul 3.4 Develop public outreach and educational programs
PUBLIC USE ELEMENT		
Pub 1: Public Use	Pub 1.0 Public Access <i>Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resources.</i>	Pub 1.1 Improve public access (a) <i>Open RJER to the public</i> (b) <i>Build new parking lots</i> (c) <i>Continue to maintain access</i> (d) <i>Improve physical accessibility and design</i>
		Pub 1.2 Restrict access as necessary (a) <i>Close RJER for up to three days after rain events</i> (b) <i>Close RJER to the public during and following fire and severe weather events</i> (c) <i>Control access with locked gates</i> (d) <i>Prohibit unauthorized activity</i>
		Pub 1.3 Provide facilities for the public
		Pub 1.4 Evaluate use levels and visitor satisfaction
	Pub 2.0 Public Safety <i>Minimize competition and conflicts among users and facilitate compatibility between public uses.</i>	Pub 2.1 Identify potential conflicts between recreational uses
		Pub 2.2 Encourage hunter safety through hunt design, supervision, monitoring and enforcement
		Pub 2.3 Inform the public of RJER use designations and use restrictions
		Pub 2.4 Provide Department personnel on-site during time of high use
		Pub 2.5 Provide Department and law enforcement on-site periodically to enforce regulations

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
PUBLIC USE ELEMENT <i>continued</i>		
Pub 1: Public Use <i>continued</i>	Pub 3.0 Hunting <i>Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources.</i>	Pub 3.1 Maintain and improve safe hunting (a) <i>Continue current seasonal hunting program</i> (b) <i>Evaluate current hunting program for expansion potential</i> (c) <i>Maintain physical separation of hunting areas from closed areas</i> (d) <i>Continue recruitment of new hunters by providing hunter safety instruction on a regular basis at RJER</i> (e) <i>Continue encouragement of young hunters through junior hunt programs</i> (f) <i>Conduct late summer volunteer “clean up day” to ready RJER for the upcoming hunting season</i> (g) <i>Maintain a good relationship between Department staff, hunters, and volunteers</i>
	Pub 4.0 Wildlife Observation <i>Provide compatible, wildlife observation opportunities to the public.</i>	Pub 4.1 Maintain and improve wildlife observation (a) <i>Designate wildlife viewing areas</i> (b) <i>Attract wildlife for viewing</i> (c) <i>Provide vegetative screening in viewing areas</i> (d) <i>Develop interpretive signage</i>
	Pub 5.0 Environmental Education <i>Provide compatible, environmental education and interpretation</i>	Pub 5.1 Develop overall plan for interpretive features
		Pub 5.2 Develop and distribute interpretive materials
		Pub 5.3 Convert the former race track into an ADA accessible interpretive nature trail
		Pub 5.4 Construct a visitors center with interpretive kiosk and develop interpretive displays and signage
		Pub 5.5 Move the gate back from SR 94 to provide additional parking at the visitors center
		Pub 5.6 Develop new programs as time/budget allow (a) <i>Develop youth programs</i> (b) <i>Encourage research</i> (c) <i>Provide a forum and presentations field trips</i> (d) <i>Provide guided field trips</i>
		Pub 5.7 Construct viewing platform and interpretive panels near the kiln areas
	Pub 6.0 Trail Use <i>Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities.</i>	Pub 6.1 Maintain and post existing trail system
		Pub 6.2 Routinely inspect and document condition of trails and habitat
		Pub 6.3 Repair unsafe sections of the trails
		Pub 6.4 Install barriers to prevent trail widening, to close trails for restoration, or to control access to areas
		Pub 6.5 Evaluate the County Trails Plan

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
PUBLIC USE ELEMENT <i>continued</i>		
Pub 1: Public Use <i>continued</i>	Pub 7.0 Signage <i>Provide signage that clearly communicates regulations, safety warnings, expected code of conduct and interpretive messages to the public.</i>	Pub 7.1 Erect and maintain signs at parking lots
		Pub 7.2 Work w/ Caltrans to install signage on SR 94
		Pub 7.3 Provide the signage to assist the public
		Pub 7.4 Develop a monitoring and maintenance schedule for all signage
		Pub 7.5 Inventory existing boundary signage and fencing, and install new signs and fencing where necessary
	Pub 8.0 Community Partnership <i>Continue to foster community partnership.</i>	Pub 8.1 Foster community partnership (a) <i>Communicate and coordinate with various community groups</i> (b) <i>Coordinate with volunteers to protect wildlife resources and habitat</i> (c) <i>Coordinate with the Jamul Trail</i>
	Pub 9.0 Regulations Support compatible wildlife-dependent public use through consistent regulations and coordination with other agencies and applicable plans such as the NCCP.	Pub 9.1 Ensure compliance with regulations (a) <i>Periodically evaluate all public use activities and programs, and RJER regulations</i> (b) <i>Periodically review activities within RJER for compatibility with the MSCP</i>
FACILITY MAINTENANCE ELEMENT		
Fac 1: Facility Management	Fac 1.0 Facility Management <i>Manage structures and facilities to provide wildlife-dependent public use, education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).</i>	Fac 1.1 Manage roads and trails (a) <i>Restore closed trails</i> (b) <i>Prevent erosion damage to trails by developing and implementing BMPs</i> (c) <i>Prohibit off-road activities</i>
		Fac 1.2 Remove, add, or update signs as necessary (See also Pub 1.7).
		Fac 1.3 Manage structures to support wildlife movement, and to protect sensitive resources
		Fac 1.4 Maintain CEC and other structures to support management

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
FACILITY MAINTENANCE ELEMENT <i>continued</i>		
Fac 1: Facility Management <i>continued</i>	Fac 1.0 Facility Management <i>continued</i>	Fac 1.5 Maintain water features (a) <i>For each well, determine functionality, the depth to groundwater, and the pumping rate.</i> (b) <i>Maintain functional wells regularly</i> (c) <i>Maintain fire hydrants by lubricating and testing them every six months</i> (d) <i>Remove sediment buildup from aqueducts and repair washouts as needed</i> (e) <i>Maintain water levels in selected artificial ponds to support native flora and fauna using existing pumps and levy system</i> (f) <i>Prepare a water features "operations manual" and graphics of the water system for ease in repairs and maintenance</i>
SCIENTIFIC RESEARCH AND BIOLOGICAL MONITORING ELEMENT		
Mon 1: Scientific Research and Biological Monitoring	Mon 1.0 Scientific Research <i>Provide opportunities for scientific research that will support the adaptive management strategy and provide useful biological information to land managers.</i>	Mon 1.1 Identify data gaps
		Mon 1.2 Identify experimental design opportunities
		Mon 1.3 Facilitate access to students and researchers from local universities and colleges
	Mon 2.0 Consistency with Appropriate Management and Monitoring Protocols <i>Provide opportunities for scientific research that will support the adaptive management strategy and provide useful biological information to land managers.</i>	Mon 2.1 Use current protocols as appropriate (a) <i>Implement listed species protocols</i> (b) <i>Implement MSCP covered species protocols</i> (c) <i>Implement vegetation communities protocols</i> (d) <i>Implement sensitive habitats protocols</i> (e) <i>Implement rare plants protocols</i> (f) <i>Implement sensitive wildlife protocols</i> (g) <i>Implement general surveys protocols</i> (h) <i>Implement wildlife movement protocols</i> (i) <i>Implement adaptive management</i>
FIRE MANAGEMENT ELEMENT		
Fire 1: Fire Management	Fire 1.0 Pre-Fire Management <i>Develop and implement pre-fire vegetation access, treatments, and inter-agency coordination to sustain long-term ecosystem health and processes, and minimize impacts to facilities and cultural resources within RJER.</i>	Fire1.1 Meet biannually, or as needed, with CDF representatives to discuss fire-related issues relevant to the RJER

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
FIRE MANAGEMENT ELEMENT <i>continued</i>		
Fire 1: Fire Management <i>continued</i>		<p>Fire 1.2 Develop a wildfire management plan to address ongoing fire management needs</p> <ul style="list-style-type: none"> (a) <i>Assess and maintain roads to allow access by fire fighting engines</i> (b) <i>Mow grasses and thin or reduce vegetation in areas adjacent to vehicle access</i> (c) <i>Mow grasses and thin or reduce vegetation (fuel management zones) in areas adjacent to vehicle access</i> (d) <i>Implement prescribed burning into habitat management planning</i> (e) <i>Incorporate methods for fire response that would consider effects on resources in RJER</i>
		Fire 1.3 Participate in preparing Community Wildfire Protection Plans (CWPP) for areas that encompass RJER
		Fire 1.4 Train a Department representative for the Incident Command System (ICS).
		Fire 1.5 Review and comment on adjacent development and proposals to ensure adequate defensible space
	Fire 2.0 Fire Suppression <i>Conduct wildfire suppression activities in ways that sustain long-term ecosystem health and processes, and minimize impacts to facilities and resources within RJER.</i>	Fire 2.1 Establish staging areas on roads and already-disturbed areas
		Fire 2.2 Restrict heavy equipment
		Fire 2.3 Coordinate fire suppression activities and cooperate with local fire districts
	Fire 3.0 Post-Fire Management <i>Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore long-term ecosystem health and processes, and minimize impacts to facilities and resources within RJER.</i>	Fire 3.1 After wildfire suppression activities, restore roads, fences, trails, and landscape contours to pre-fire conditions
		Fire 3.2 Complete emergency watershed work as soon as possible and before the first heavy rainfall
		Fire 3.3 Repair culverts and stream crossings and restore drainage and road surfaces in areas damaged by firefighting activities and post-fire storm runoff
		Fire 3.4 Monitor invasion of weeds in areas disturbed by fire activities and the effectiveness of erosion control methods, and take corrective actions as needed.

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Table 18. Outline of Elements, Goals, and Tasks *continued*

Element /Subelement	Goal	Tasks
MANAGEMENT COORDINATION ELEMENT		
Crd 1: Management Coordination	Crd 1.0 Plan Revisions <i>Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions.</i>	Crd 1.1 Standardize methods of data collection and data management (a) <i>Develop a protocol for data collection and data management</i> (b) <i>Ensure that the protocol is consistent with Department procedures and MSCP</i>
		Crd 1.2 Prepare regular status reports
		Crd 1.3 Revise LMP every five years
	Crd 2.0 Regional Conservation Coordination <i>Coordinate with agencies, NGOs, the scientific community and other interested parties involved with conservation in the region, and ensure consistency with regional planning efforts.</i>	Crd 2.1 Coordinate with other entities, as appropriate (a) <i>Coordinate with Agencies</i> (b) <i>Coordinate with NGOs</i> (c) <i>Coordinate with the scientific community</i> (d) <i>Coordinate with the public</i>
		Crd 2.2 Coordinate with relevant regional plans (a) <i>South County MSCP Subarea Plan</i> (b) <i>County of San Diego General Plan and Jamul-Dulzura Community Plans</i> (c) <i>County trails program and Jamul-Dulzura Community Trail and Pathway Plan</i> (d) <i>Otay River WMP and SAMP</i>

V. OPERATIONS AND MAINTENANCE SUMMARY

The purpose of this chapter is to indicate staffing, funding, and other resources to operate and maintain RJER. Implementation of this LMP will require additional staffing and resources than are currently allocated to RJER, to accomplish the tasks indicated in Section IV. This LMP proposes proactive application of an ecosystem approach to the management of the multiple natural communities and habitats present at RJER at a more intensive level than in the past. This LMP also identifies tasks for management of cultural resources, public uses, facility maintenance, scientific research and monitoring, fire, and regional coordination that are not currently being conducted. Implementation of many of the tasks will require a commitment of additional budgetary resources if the goals of this LMP are to be achieved. The Department will use this LMP in their budget and work planning efforts. No guarantee of additional staffing or funding can be obligated by this LMP.

In addition to financial resources, this LMP will require periodic revision to ensure that it is kept current and that it appropriately reflects ecosystem response to management and monitoring and state-of-the-art knowledge. It is fully expected that the ongoing, adaptive management of RJER and advancement of scientific knowledge regarding the area will result in new techniques and opportunities for more effective management of habitat. Suggested procedures to help keep this LMP current and relevant are included in Chapter IV, Subsection H.

A. Operations and Maintenance Tasks to Implement Plan

The detailed table provided in Appendix I is a list of the goals and tasks that were identified in Chapter IV. The tasks listed in Appendix I are summaries of the detailed descriptions provided in Chapter IV. This allowed for a somewhat abbreviated table; the reader should refer back to Chapter IV for any detail that may be needed.

Within each element presented in this LMP, the tasks that have been identified fall into seven primary categories, or types of management, as noted below:

- Preparation of documents (D)
- Facility maintenance (MA)
- Resource management (MN), including wildlife linkages (LK)
- Resource monitoring (MO)

-
- Outreach (OU)
 - Resource restoration (RE)
 - Special projects(SP)

For each task listed in Appendix I, an entry has been included in the table indicating what type of management the task pertains to and the schedule for conducting the activity (e.g., annually, every 3-5 years, every 5 years, one-time or as needed). Appendix I is intended as a living work document for land managers that can be used in combination with and independent of this LMP. It can be sorted by the above listed primary categories, management tasks, schedule, etc., and may be updated as needed to make it as useful as possible to the Department staff who will oversee and conduct the various tasks identified. An overview of all tasks, organized by management type and associated scheduling, is provided in Table 19 at the end of this chapter.

B. Existing Staff and Additional Personnel Needs Summary

The 4,701-acre RJER (excluding the two discontinuous pieces of the Proctor Valley Unit) is currently staffed by 0.75 FT (0.25 x 3) permanent employees and 0.5 FT part-time employees. To ensure appropriate support of RJER and performance of the tasks identified in this LMP, a combination of additional site management, maintenance, and administrative staffing is required. The Department identified the staffing team that would be necessary to implement the tasks described in Chapter IV.

Included in Appendix I is the distribution of the hours associated with each staff type estimated to complete each task. In some cases where a particular task refers to another task [e.g., all biology tasks related to adaptive management refer to the first mention of adaptive management, Bio 1.1.3(j)] the labor hours noted should be added to the referenced task. In other instances, only the referenced task contains the associated hours. Some tasks do not contain hours (e.g., experimental design) because additional information about the task will be needed before costs can be estimated. Many of the tasks that have been designated as “Special Projects” may require special funding or may need to be implemented by consultants or academic researchers; therefore, labor hours may not be included for these tasks in Appendix I.

Based on the staff hours entered in Appendix I, approximately 12 FTE additional Department staff would be needed to implement the tasks identified in this LMP. Because not all tasks are conducted each year, fewer additional staff would actually be necessary. In addition, contracting with consultants, researchers, and utilizing volunteers

would reduce the number of Department staff necessary to complete the tasks identified in any given year.

C. Operations and Maintenance Summary

Estimated Costs

Based on the proposed staffing of RJER, as identified in Appendix I and summarized above, an annual operations and maintenance budget will be determined by the Department. Other costs, e.g., materials and administrative labor associated with contracting non-Department specialists, have not been identified in the LMP and will need additional consideration when budgets are itemized.

Funding Sources

Current funding sources for operation and maintenance include:

- ▶ State Wildlife Grant Program, Federal Aid in Wildlife Restoration Program
- ▶ The Environmental License Plate Fund
- ▶ Mitigation funds

On a project basis, funding sources for capitol improvements/restoration and enhancement could include:

- ▶ California Endangered Species Tax Check-Off Fund
- ▶ USFWS support under the Federal ESA Section 6 provisions for cooperation with the states
- ▶ Wetlands Conservation Fund
- ▶ Upland Game Stamp Program
- ▶ U.S. Department of Agriculture, Natural Resources Conservation Service Farm Bill Programs
- ▶ Neotropical Migratory Bird Conservation Act Grants Program
- ▶ Riparian Joint Venture
- ▶ Ducks Unlimited Wetland Restoration Program
- ▶ The Department's Minor/Major Capital Outlay proposals

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- ▶ The Department's Comprehensive Wetlands Program
 - ▶ Wildlife Conservation Board Inland Wetlands Conservation Program
 - ▶ Other programs authorized under future bond acts
 - ▶ Department of Water Resources grants available for water conservation, ground water management, and studies and activities to enhance local water supply reliability
 - ▶ Funding from grant programs administered by U.S. Environmental Protection Agency
 - ▶ Funding from grant programs administered by the National Fish and Wildlife Foundation
 - ▶ Funding from grant programs administered by US Bureau of Reclamation
 - ▶ Funding from the San Diego County NCCP
 - ▶ AB 1982 : Funding to implement mosquito Best Management Practices
 - ▶ Department deferred maintenance fund.

Table 19. Operations and Maintenance Requirements to Implement LMP

Tasks	Reference	Every year	Every 3 - 5 yrs	Every 5 yrs	One Time/ As Needed
DOCUMENTS					
Annual Work Plan	Set annual priorities for: -Wetlands, riparian, and upland habitat management -Adaptive management and experimental design if feasible -Habitat restoration -Special status species management -Non-native species removal -Game species management -Cultural resources surveys and management -Public access, educational and outreach tasks -Monitoring (all of the above)	x			
	Set priorities for remediation of threats to or from: -Habitat and restoration areas -Special status species -Game species -Cultural resources -Excessive public use	x		x	
Miscellaneous Documents	Prepare the following protocols, reports, and plans as required: -Protocol for data collection and data management -Status reports for incorporation into MSCP annual report -Supplement working bibliography for cultural resources -Water features "operations manual" -Wildfire management plan -Pursue state and federal permits as needed -Help prepare Community Wildfire Protection Plans -Area specific restoration plans	x			x
Update Land Management Plan	Revise Land Management Plan: -Incorporate boundary changes and new acquisitions -Incorporate current species and habitat data -Incorporate lessons learned from adaptive management -Incorporate current cultural resources data -Incorporate public use monitoring data -Re-evaluate goals and tasks -Update maps and graphics, trails and facilities -Prepare appropriate CEQA documentation			x	
MAINTENANCE					
Facility Maintenance	Regularly maintain the following: -Gates, fences, and trail barriers -Trails, roads, and parking lots -Structures and facilities -Signage -Water features (ponds, aqueducts, fire hydrants, wells, etc)	x			x

Table 19. Summary and Schedule of Tasks Organized by Management Type *continued*

Tasks	Reference	Every year	Every 3 - 5 yrs	Every 5 yrs	One Time/ As Needed
MANAGEMENT					
Biological Resources Management	Protect and enhance the following: -Sensitive and unique habitat -State and federally listed species -Narrow endemic or unique species -MSCP covered species -Game species	x			x
	Maintain wildlife movement corridors and habitat linkages: -Maintain contiguous blocks of wetland and upland habitat -Manage and improve Hwy 94 undercrossings -Install fencing to direct wildlife away from roads, and toward undercrossings -Remove fencing that may impede native wildlife movement				x
	Implement invasive species control for the following: -Habitat management -Habitat restoration -Special status species management -Post-fire management	x			x
	Implement remedial measures for threats to: -Habitat and restoration areas -Special status species -Game species -Cultural resources	x			x
	Apply adaptive management strategy to/by: -Habitat management -Habitat restoration -Management of special status species -Fire management methods -Invasive species eradication -Reviewing current literature -Coordinating with other conservation entities in the region -Coordinating with the scientific community -Encouraging research	x			x
Cultural Resources Management	Manage cultural resources by: -Assessing conditions assessment and preparing treatment plan for new sites -Assessing threats -Avoiding impacts -Implementing treatments as needed				x

Table 19. Summary and Schedule of Tasks Organized by Management Type *continued*

Tasks	Reference	Every year	Every 3 - 5 yrs	Every 5 yrs	One Time/ As Needed
MANAGEMENT <i>continued</i>					
Public Use Management	Manage for the following: -Public access -Public safety -Hunting -Wildlife observation -Environmental Ed. -Trail use -Signage -Community partnership -Regulations				
	Refer to the following: -Biological Resources Management -General Management -Maintenance				
General Management	Install or remove fencing and gates as needed to: -Protect sensitive habitat -Protect special status species -Protect cultural resources -Direct wildlife towards undercrossings -Direct wildlife away from paved roads -Direct the public towards appropriate trails, interpretive signage, and wildlife viewing areas				X
	Incorporate established policies, and guidelines involving: -Habitat management -Habitat restoration -Habitat assessments -Species surveys and monitoring -Wildlife movement monitoring -Adaptive management -Fire management				X
	Evaluate future projects for impacts to biological resources: -Management and monitoring activities -Restoration -Public use facilities -Projects related to cultural resources -Fire management activities	X			
MONITORING					
Baseline Biological Surveys	Compile baseline biological data: -Use USGS (2002, 2004) species survey data for baseline -Use O'Leary vegetation community classifications -Conduct initial vernal pool survey -Conduct initial San Diego ambrosia survey				X

Table 19. Summary and Schedule of Tasks Organized by Management Type *continued*

Tasks	Reference	Every year	Every 3 - 5 yrs	Every 5 yrs	One Time/ As Needed
MONITORING <i>continued</i>					
Qualitative Biological Surveys <i>continued</i>	Asses general condition of: -Wetland, riparian, and upland habitat -Habitat restoration and enhancement areas -Habitat that is suitable for state and federally listed species -Special status species (listed, narrow endemics, MSCP covered, and other) -Game species -Disturbed habitat for potential restoration or enhancement -Sources of water for wildlife	x			
	Identify threats, and prioritize by high, medium and low: -To natural habitat -To the success of habitat restoration projects -To special status species -To game species -From invasive non-native plant species -From problematic non-native wildlife -From erosion and sediment deposits -From wild fires -From excessive public use -From edge effects and other indirect impacts -From any other disturbance	x			
Quantitative Biological Surveys	Identify changes and trends in: -Habitat condition -Special status species presence/absence (conduct focused-species or protocol-level surveys) -Game species populations -Game species take		x		
Specialized Biological Monitoring	Conduct specialized monitoring: -Wildlife movement -Vernal pool hydrology and function -Special status species population density and distribution (e.g., Otay tarplant and Quino checkerspot)		x		x
Cultural Resources Monitoring	Compile cultural resources information: -Compile all inventories and investigations on file for RJER -Conduct records search at SCIC -Formally evaluate cultural resources for CA Register -Identify areas to be surveyed				x

Table 19. Summary and Schedule of Tasks Organized by Management Type *continued*

Tasks	Reference	Every year	Every 3 - 5 yrs	Every 5 yrs	One Time/ As Needed
MONITORING <i>continued</i>					
Cultural Resources Monitoring <i>continued</i>	Conduct qualitative monitoring of: -Condition of cultural resources -Treatment implementation and its effectiveness -Ground disturbance near cultural resources to assess impacts	x			
Public Use Monitoring	Conduct the following monitoring activities: -Quantitative survey to determine use capacity -Review rules, regulations, materials, and public use for consistency with goals of LMP -Monitor illegal activity (off-road vehicles, dumping, etc). -Monitor for impacts to habitat or species from excessive public use	x	x		
Facilities Monitoring	Monitor the condition of the following -Trails, roads -Parking lots -Signs -Fences and gates -Structures -Water features -Interpretive kiosks	x			
OUTREACH					
Public Use	Educate/inform the public about the following: -Detrimental impacts caused by non-native species -Adverse effects caused by unsuitable recreational uses -Reserve rules, regulations, goals, and areas of access -Local flora and fauna, ecology, conservation -Hunter safety -Guided field trips -Volunteer opportunities	x			x
	Coordinate with: -Management and monitoring in HCWA -Local interest groups and community groups -Local schools -Local research and educational institutions -Scientific community (researchers and students) -General public -Local and regional fire safety groups -Wildlife agencies	x			x
Cultural Resources	Conduct cultural resources related outreach activities: -Contact Native Americans for information about resources -Involve community in cultural resources activities -Implement stewardship program -Create educational program for cultural resources				x

Table 19. Summary and Schedule of Tasks Organized by Management Type *continued*

Tasks	Reference	Every year	Every 3 - 5 yrs	Every 5 yrs	One Time/ As Needed
RESTORATION					
Biological Resources Restoration	Quantify candidate restoration/enhancement areas and implement the following types: -Disturbed habitat (grassland, coastal sage scrub, riparian) -Areas heavily infested with non-native exotic plants -Areas damaged by fire -Damaged or decommissioned trails and roads -Areas damaged by erosion and/or sediment build up -Habitat that is suitable for special status species -Habitat that is suitable for game species				X
SPECIAL PROJECTS					
Biological Resources Special Projects	Develop the following special projects as feasible: -Coordinate with Wildland Inc. -Actively restore and/or enhance native grasslands -Collect seeds and propagate Otay tarplant -Actively restore habitat for Quino checkerspot butterfly -Actively restore/enhance California gnatcatcher habitat -Actively restore and/or enhance least Bell's vireo habitat -Actively manage for least Bell's vireo -Re-introduce sensitive species, such as burrowing owl, southwestern pond turtle, or arroyo toad if appropriate -Conduct intensive invasive species removal -Implement active adaptive management (including pilot studies and hypothesis testing) -Install bluebird nest boxes and bat houses				X
Cultural Resources Special Projects	Develop the following special use projects as feasible: -Formally evaluate known cultural resources, and develop treatment plan -Identify areas unsurveyed and conduct focused field surveys -Implement treatments to restore and protect cultural resources				X
Public Use Special Projects	Develop the following special use projects as feasible: -Designate wildlife viewing areas -Construct visitor center -Construct viewing platform and interp. panels near kiln -Develop volunteer program to protect biological and cultural resources				X

VI. REFERENCES

- Atwood, J.L. 1993. California gnatcatchers and coastal sage scrub: the biological basis for endangered species listing. In Keeley, J.E. ed. *Interface Between Ecology and Land Development in California*, pp. 149-166. Southern California Academy of Sciences, Los Angeles.
- Bainbridge, D. 2004. Post-fire Survey and Recommendations for Four San Diego County Department of Fish and Game Ecological Reserves. Soil Ecology and Restoration Group. January 30, 2004.
- Bossard, C., J. Randall, M. Hoshavsky (eds.). 2000. *Invasive Plants of California's Wildlands*. U.C. Press. Berkeley,. 360 pp.
- Boyce, W., C. Kreuder, R. Anderson, and C. Barker., 2004. Potential impacts of West Nile Virus on wildlife in California. Prepared June 29, 2004 for the California Department of Fish and Game.
- British Columbia Forest Service (BCFS). 2003. Definitions of Adaptive Management. Ministry of Forests, Forest Practices Branch, Victoria, BC. Available at: <http://www.for.gov.bc.ca/hfp/amhome/Amdefs.htm>.
- Burkenroad, D. 1979. Jamul Cement: Speculation in the Hinterland. *Journal of San Diego History*, 24(4): 273-286.
- California Burrowing Owl Consortium (CBOC). 1993. Burrowing owl survey protocol and mitigation guidelines. Prepared April 1993.
- California Department of Fish and Game (CDFG). 2006. Avian Influenza. Available at <http://www.dfg.ca.gov/avianflu/>. Access on June 7, 2006.
- CDFG. 2005a. California Department of Fish and Game Mission Statement. <http://www.dfg.ca.gov/html/dfgmiss.html>. Site accessed Access on May 4, 2005.
- CDFG. 2005b. California Hunting Regulations: Waterfowl, Upland Game, State and Federal Areas.
- CDFG. 2002. Sensitive plant monitoring Final Report. April 30, 2002, 2002.
- CDFG. 1995. Staff report on Burrowing Owl Mitigation. Memorandum, October 17, 1995.
- California Department of Forestry and Fire Protection (CDF). 2004. Fire perimeters, Geographic Information System file.

-
- California Invasive Plant Council (Cal-IPC). 1999. Exotic Pest Plants of Greatest Ecological Concern in California.
- California Native Plant Society (CNPS). 2005. Vegetation Rapid Assessment Protocol. Prepared by CNPS Vegetation Committee.
- California Natural Diversity Database (CNDDDB). 2006. California Department of Fish and Game, Natural Heritage Division.
- California Wilderness Coalition (CWC). 2000. Missing Linkages: Restoring connectivity to the California landscape. Proceedings of workshop held in November, 2000.
- Center for Lands Management (CNLM) 2001. Adaptive Management and Monitoring Program for the Coachella Valley Multiple Species Habitat Conservation Plan and Natural Community Conservation Program. Center for Natural Lands Management. July 2001.
- Centers for Disease Control (CDC). 2005. Avian Flu: the virus and its spread. Available at <http://www.cdc.gov/flu/avian/virus.htm>. Last updated on October 17, 2005. Access on June 7, 2006.
- Conservation Biology International (CBI). In progress. Framework management Plan for the Ramona Grasslands. Prepared for the County of San Diego Department of Parks and Recreation, and The Nature Conservancy.
- CBI. 2004. Las California binational conservation initiative: A vision for habitat conservation in the border region of California and Baja California. Prepared for the San Diego, Resources Legacy Fund, and International Community Foundations.
- CBI. 2003a. Review of regional habitat linkage monitoring locations. Prepared for CDFG,. 25 pp + appendices.
- CBI. 2003b. Wildlife Corridor Monitoring Study. Prepared for the Multiple Species Conservation Program, March 2003,. 34 pp + figures and appendices.
- CBI. 2001a. Status summary of MSCP Biological Monitoring Protocols. Prepared for the City of San Diego MSCP.
- CBI. 2001b. Strategic Framework for MSCP Monitoring Program. Prepared for the City of San Diego MSCP.
- CBI. 2001c. Proposed structure for centralized data management, review and analysis for monitoring and management of NCCP preserves in San Diego County. Prepared for the City of San Diego MSCP.
- CBI. 2001d. Recommendations for MSCP Biological Monitoring Database. Prepared for the City of San Diego MSCP.

-
- Center for Disease Control (CDC). 2004. Division of vector-borne infectious diseases: West Nile virus background, virus history, and distribution. Available at <http://www.cdc.gov/ncidod/dybid/westnile/background.htm>. Last updated on April 6, 2004. Access on December 15, 2005.
- Center for Disease Control (CDC). 2005. Department of Health and Human Services. <http://www.influenzareport.com/ir/ai.htm>.
- Chadden, A., E. Dowksza, and L. Turner. 2004. Adaptive management for southern California grasslands. University of California, Santa Barbara. Unpublished report prepared for the Donald Bren School of Environmental Science and Management, May 2004. This is an adaptive management framework management for grassland managers in southern California.
- City of San Diego. 2005. MSCP rare plant monitoring: field monitoring methods. September 2005.
- Coleman, J., S. Temple, and S. Craven,. 1997,. Cats and Wildlife - A Conservation Dilemma. University of Wisconsin Cooperative Extension Service. <http://www.wisc.edu/wildlife/e-pubs.html>.
- Comrack, L., T.E. Hovey, and D. Lawhead. 2002. Monitoring Team Annual Report. Land Management and Monitoring Program, Region 5. Prepared for California Department of Fish and Game,. 130 pp.
- Corum, J. M. and K. C. Crafts. 1997. An Archaeological Survey for Two Proposed Passing Lanes on State Route 94. Prepared by Caltrans, District 11, San Diego, California.
- County of San Diego. 2006. Multiple Species Conservation Program 2005 Annual Report. Unpublished report, 51 pp.
- County of San Diego. 2001. Draft framework management plan for the Multiple Species Conservation Program (MSCP) South County Subarea Plan. Submitted to the wildlife agencies in 2001. <http://dplu-mscp.sdcountry.ca.gov/southcountyplan.htm>.
- County of San Diego Vector Control Program. 2006. 2005 West Nile virus in San Diego County. Available at http://www.sdcountry.ca.gov/deh/chd/wnv/wnv_currentstats.html. Last updated on January 4, 2006. Access on January 4, 2006.
- De Barros, P., A. R. Pignuolo, M. Baksh, and S. R. Van Wormer. 1998. An Inventory and Preliminary Evaluation of Cultural Resources Located Within a 3,248-Acre Portion of Rancho Jamul, San Diego, California. Prepared for State of California, U.S. Fish and Wildlife Service, Sherwood d, Oregon. Prepared by Tierra Environmental Services, Inc., San Diego, California. Unpublished document on file at the South Coastal Information Center, San Diego, California.

-
- Diffendorfer, J., G. Fleming, J. Duggan, R. Chapman, and D. Hogan. 2004. Final report for "Creating and Index of Biological Integrity for Coastal Sage Scrub: A tool for habitat quality assessment and monitoring." Unpublish report prepared for the California Department of Fish and Game December 6, 2004.
- Dudek and Associates. 1998. Draft Biological Resources Report and Constraints Analysis for Rancho Jamul Mitigation Bank Project. Prepared for Wildlands Inc., 88 pp + appendices.
- EDAW. 2004. Wildcat Canyon Road enhancement project before-and-after control impacts study. Final pre-construction report. Volume 1.
- Harder, T.C. and O. Werner. 2006. Avian Influenza. Flying Publisher. Available at <http://www.influenzareport.com/ir/ai.htm>.
- Hathaway, S., and R. Fisher., 2001. Biological Inventory of Rancho Jamul Ecological Reserve, San Diego, CA. Quarterly Report.
- Hector, S. M. 2003. Cultural Resource Surveys for Proposed Staging Areas within the Rancho Jamul Ecological Reserve and Management Recommendations for the Robinson Adobe Site (SDI-14, 826). Prepared for State of California, Department of Fish and Game, San Diego, California. Prepared by ASM Planning and Research Collaborative, Encinitas, California.
- Hector, S. M. 2002. Hollenbeck Canyon Wildlife Area Archaeology Management Plan with an Appendix for Rancho Jamul Ecological Reserve. Prepared for State of California, Department of Fish and Game, San Diego, California. Prepared by Broken Fragments LLC, San Diego, California. Unpublished document on file at the South Coastal Information Center, San Diego, California.
- Interagency Burned Area Emergency Response (BAER) Team. 2003. Southern California Fires, Burned Area Emergency Stabilization and Rehabilitation Plan.
- Jenny, H. 1980. The soil resource: Origin and behavior. Springer-Verlag. New York.
- Kruckeberg, A. 1986. An essay: The stimulus of unusual geologies for plant speciation. *Systematic Botany* (1986), 11(3): pp. 455-463.
- Laymon, S.A. 1987. Brown-headed cowbirds in California: Historical perspectives and management opportunities in riparian habitats. *Western Birds* 18:63-70.
- Lettieri-McIntyre and Associates (LMA). 1994. Supplemental Environmental Impact Report for the Proposed Daley Enterprises Rock Quarry, Recirculated Draft. Prepared for Daley Enterprises.
- Longcore, T., D. Murphy, D. Deutschman, R. Redak, and R. Fisher. 2003. A management and monitoring plant for Quino checkerspot butterfly (*Euphydryas*

editha quino) and its habitats in San Diego County. Prepared by the County of San Diego, December 30, 2003.

Lowe, S., Browne, M., Boudjelas, S., De Poorter M.,. 2000. 100 of the World's Worst Invasive Alien Species A selection from the Global Invasive Species Database. Published by The Invasive Species Specialist Group (ISSG) of the World Conservation Union (IUCN), 12pp.

Major, J. 1951. A functional, factorial approach to plant ecology. Ecology 32: 392-412.

Marra, P.P., S. Griffing, C. Caffrey, A.M. Kilpatrick, R. McLean, C. Brand, E. Saito, A.P. Dupuis, L. Kramer, and R. Novak. 2004. West Nile virus and wildlife. Bioscience. 54: 393-402.

Marschalek, D. 2001a. How the Department of Fish and Game can help San Diego's ten most sensitive butterfly species. Prepared for California Department of Fish and Game.,. 4pp.

Marschalek, D. 2001b. Insects in the DFG lands collection. Prepared for the Prepared for California Department of Fish and Game., 10 pp.

Minnich, R. A. 1995. Fuel-driven fire regimes of the California chaparral. In: Brushfires in California Wildlands: Ecology and Resource Management, J.E. Keeley and T. Scott (eds.). International Association of Wildland Fire, Fairfield Washington.

NECIS. , 2004. Fact Sheet: Ten Invasive Species that the United States Exported. Prepared by the National Environmental Coalition on Invasive Species. http://www.ucsusa.org/documents/export_fm_us.pdf.

O'Leary, J. 2002. Vegetation and Land Cover Mapping at Rancho Jamul Ecological Reserve, San Diego, California, Draft Final Report.,. 8pp.

O'Leary, J. 2001. Mapping Rules for Vegetation and Land Cover Types on Marine Corps Air Station Miramar, 8pp.

Oberbauer, T. 2003. Vegetation communities affected. In: A Summary of Affected Flora and Fauna in the San Diego County Fires of 2003, prepared for the Burned Area Emergency Response (BAER) Program., November 14, 2003.

Oberbauer, T. and J. Vanderwier 1991. The vegetation and geologic substrate association and its effect on development in southern California. In, Abbot, P. and B. Elliot. Geol. Soc. North Amer., So. Calif. Reg., Sympos. Oct. 21-24, 1991, San Diego, California.

Ogden Environmental. 1996. Biological Monitoring Plan for the Multiple Species Conservation Program. Prepared for the City of San Diego.

-
- O'Leary, J.F., et al., 2002. Vegetation and Land Cover Mapping at Rancho Jamul Ecological Reserve, San Diego, California. Prepared for CDFG. , 31 pp.
- Penrod, K. 2000. Missing linkages: Restoring connectivity to the California landscape. South Coast Wildlands Project, San Diego, California., 74 pp.
- Pigniolo, A. R., M. Baksh, P. De Barros, and S. R. Van Wormer. 1998. Archaeological Survey Report for the Jamul Creek and Dulzura Creek Biological Mitigation Site for State Route (SR) 125, San Diego County, California. Prepared for State of California, Department of Transportation, District 11, San Diego, California. Prepared by Tierra Environmental Services, San Diego, California. Unpublished document on file at the State of California Department of Fish and Game, South Coast Region, San Diego California.
- Raven, P. 1964. Catastrophic selection and edaphic endemism. *Evolution*. Vol. 18. No. 2. June 1964. pp. 336-338.
- Reiser, C.H. 1994. Rare plants of San Diego County. Aquafir Press, Imperial Beach, CA.
- Rothstein, S. I. 1994. The cowbird's invasion of the far west: History, causes, and consequences experienced by host species. *Avian Biology* 15:301-315.
- San Diego Association of Governments (SANDAG). 2006. Regional species database.
- San Diego Natural History Museum (SDNHM). 2005. Field Guide to plants, animals, minerals, and fossils. Prepared by the San Diego Natural History Museum (SDNHM). Latest update, 2005. <http://www.sdnhm.org/fieldguide/index.html>. San Diego Natural History Museum (SDNHM). 2005. Mammal Atlas species database, provided by San Diego Natural History Museum, San Diego, CA.
- SDNHM, 2006. Bird Atlas species database, provided by San Diego Natural History Museum, San Diego, CA.
- Sawyer, J. O., and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society. Sacramento, California.
- Simpson, Michael G., and Jon P. Rebman. 2001. Checklist of the Vascular Plants of San Diego County. 3rd edition. San Diego State University Herbarium Press, San Diego, California.
- Stokes, D.C., C. S. Brehme, and R. N. Fisher. 2003. USGS Bat Inventory of the San Diego County Multiple Species Conservation Program Area. San Diego Field Station, USGS Western Ecological Research Center; Sacramento, California 2003; Interim report.
- Sweetwater Environmental Biologists. , 1996a. Wildlife Corridor Study for the CalMat Jamul Project. Prepared for CalMat, July 17, 1996., 9 pp.

-
- Sweetwater Environmental Biologists., 1996b. Wildlife Corridor Study for the CalMat Jamul Project. Prepared for CalMat, August 23, 1996.,12 pp.
- True, D.L. 1966. Archaeological Differentiation of Shoshonean and Yuman Speaking Groups in Southern California. Unpublished Ph.D. Dissertation, Department of Anthropology, University of California, Los Angeles.
- Unitt, P. 2004. San Diego County Bird Atlas. San Diego Natural History Museum. San Diego, CA. 645 pp.
- Urban/Wildlands Interface Task Force (UWTF). 1997. Memorandum of Understanding (MOU) between the Wildlife Agencies, California Department of Forestry and Fire Protection, and Fire Chiefs and Fire Districts; executed in February 1997.
- U.S. Department of Agriculture (USDA). 1973. Soil Survey for San Diego, California. Part I and Part II.
- U.S. Fish and Wildlife Service (USFWS). 2002. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Quino Checkerspot Butterfly (*Euphydryas editha quino*); Final Rule. Federal Register, 67(72).
- USFWS. 1994. Endangered and threatened wildlife and plants: Determination of endangered status for the arroyo southwestern toad. Final Rule. Federal Register, 59(241).
- U.S. Forest Service (USFS). 2006. Species database in Geographic Information System (GIS) format.
- U.S. Geological Survey (USGS) 2005a. Invasivespecies.gov, gateway to Federal efforts concerning invasive species. Developed by U.S. Geological Society.
- USGS 2005 b. Monitoring protocol for arroyo toad. Prepared February, 2005.
- USGS. 2004a. Designing monitoring programs in an adaptive management context for regional multiple species conservation plans. Unpublished report prepared by A. J. Atkinson et al. in partnership with California Department of Fish and Game and U.S. Fish and Wildlife Service.
- USGS. 2004b. Baseline biodiversity survey for the Hollenbeck Canyon Wildlife Area and continued bird monitoring at the Rancho Jamul Ecological Reserve, 2003-2004. prepared for the California Department of Fish and Game
- USGS. 2003. Alien Species in cahoots. News Release April 13, 2003. Prepared by the U.S. Geological Society.
- USGS. 2002. Baseline biodiversity survey for the Rancho Jamul Ecological Reserve. Final Report prepared for the California Department of Fish and Game by the USGS Western Ecological Research Center.

Wildlands, Inc., 1999. Rancho Jamul Mitigation Bank Restoration and Management Plan. Prepared for the Mitigation Bank Review Team., 88 pp + appendices.

Wildlife Conservation Society (WCS). 2005. Avian Influenza fact sheet. Available at http://www.wcs.org/media/file/avian_influenzamigratorybirdsavg2005factsheetupdatev2.pdf.

World Health Organization (WHO). 2006. Avian Influenza fact sheet. Available at http://www.who.int/mediacentre/factsheets/avian_influenza/en/index.html. Last updated February 2006. Access on June 7, 2006.

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Appendix I. Operations and Maintenance Requirements

Appendix A

Ecological Reserve Rules and Regulations

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FISH AND GAME CODE

Division 2. Department of Fish and Game

Chapter 5. Fish and Game Management

Article 4. Ecological Reserves

Section 1580-1586

1580. The Legislature hereby declares that the policy of the state is to protect threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and nonmarine aquatic, or large heterogeneous natural gene pools for the future use of mankind through the establishment of ecological reserves. For the purpose of establishing those ecological reserves, the department, with the approval of the commission, may obtain, accept on behalf of the state, acquire, or control, by purchase, lease, easement, gift, rental, memorandum of understanding, or otherwise, and occupy, develop, maintain, use, and administer land, or land and nonmarine water, or land and nonmarine water rights, suitable for the purpose of establishing ecological reserves. Any property obtained, accepted, acquired, or controlled by the department pursuant to this article may be designated by the commission as an ecological reserve. The commission may adopt regulations for the occupation, utilization, operation, protection, enhancement, maintenance, and administration of ecological reserves. The ecological reserves shall not be classified as wildlife management areas pursuant to Section 1504 and shall be exempt from Section 1504.

1581. Any property acquired in fee for ecological reserves shall be acquired in the name of the state, and shall, at all times, be subject to such rules and regulations as may be prescribed from time to time by the commission for the occupation, use, operation, protection, and administration of such property as ecological reserves.

1582. The department shall do all things necessary to secure a valid title in the state to the property acquired in fee for ecological reserves but no payment shall be made therefor until the title is vested in and satisfactory to the state. No such land will be acquired by eminent domain.

1583. Except in accordance with the regulations of the commission it is unlawful to enter upon any ecological reserves established under the provisions of this article, or to take therein any bird or the nest or eggs thereof, or any mammal, fish, mollusks, crustaceans, amphibia, reptiles or any other form of plant or animal life.

1584. As used in this article, "ecological reserve" means land or land and water areas that are designated as an ecological reserve by the commission pursuant to Section 1580 and that are to be preserved in a natural condition, or which are to be provided some level of protection as determined by the commission, for the benefit of the general public to observe native flora and fauna and for scientific study or research.

1585. Notwithstanding Section 1580, which sets forth the primary purposes of ecological reserves, the department may construct facilities and conduct programs in ecological reserves it selects to provide natural history education and recreation if those facilities and programs are compatible with the protection of the biological resources of the reserve. As provided in Sections 1764 and 1765, the department may control access, use, and collect fees for selected ecological reserves.

1586. The Upper Newport Bay Ecological Reserve Maintenance and Preservation Fund is hereby created in the State Treasury. Notwithstanding Section 13340 of the Government Code, the money in the fund is continuously appropriated, without regard to fiscal years, to the department for purposes related to the maintenance and preservation of the Upper Newport Bay Ecological Reserve.

CALIFORNIA CODE OF REGULATIONS

TITLE 14. Natural Resources

Division 1. Fish and Game Commission--Department of Fish and Game

Subdivision 2. Game and Furbearers

Chapter 11. Ecological Reserves

§630. Ecological Reserves

The areas specified in this chapter have been declared by the Fish and Game Commission to be ecological reserves. A legal description of the boundaries of each ecological reserve is on file at the department's headquarters, 1416 Ninth Street, Sacramento. Ecological reserves are established to provide protection for rare, threatened or endangered native plants, wildlife, aquatic organism and specialized terrestrial or aquatic habitat types. Public entry and use of ecological reserves shall be compatible with the primary purposes of such reserves, and subject to the following applicable general rules and regulations, except as otherwise provided for in the special area regulations:

Ecological Reserves - General Rules and Regulations

Protection of Resources	No person shall mine or disturb geological formations or archeological artifacts or take or disturb any bird or nest, or eggs thereof, or any plant, mammal, fish, mollusk, crustacean, amphibian, reptile, or any other form of plant or animal life in an ecological reserve except as provided in subsections 630 (a)(2) and (a)(8). The department may implement enhancement and protective measures to assure proper utilization and maintenance of ecological reserves.
Fishing	Fishing shall be allowed in accordance with the general fishing regulations of the commission except that the method of taking fish shall be limited to angling from shore. No person shall take fish for commercial purposes in any ecological reserve except by permit from the commission.
Collecting	No collecting shall be done in an ecological reserve except by permit issued pursuant to section 650 of Title 14. Any person applying for a permit must have a valid scientific collecting permit issued pursuant to part 3 of this title.
Motor Vehicles	No person shall drive, operate, leave, or stop any motor vehicle, bicycle, tractor, or other type of vehicle in an ecological reserve except on designated access roads and parking areas.
Swimming	No person shall swim, wade, dive, or use any diving equipment within an ecological reserve except as authorized under the terms of a permit issued pursuant to subsection (3).
Boating	No person shall launch or operate a boat or other floating device within an ecological reserve except by permit from the commission.
Trails	DFG may designate areas within an ecological reserve where added protection of plant or animal life is desirable, and may establish equestrian or walking trails or paths within such designated areas. No person shall walk or ride horseback in such areas except upon the established trails or paths.
Firearms	No person shall fire or discharge any firearm, bow and arrow, air or gas gun, spear gun, or any other weapon of any kind within or into an ecological reserve or possess such weapons within an ecological reserve, except law enforcement personnel and as provided for in individual area regulations that allow for hunting.
Ejection	DFG employees may eject any person from an ecological reserve for violation of any of these rules or regulations or for any reason when it appears that the general safety or welfare of the ecological reserve or persons thereon is endangered.

Public Entry	Public entry may be restricted on any area at the discretion of DFG to protect the wildlife, aquatic life, or habitat. No person, except state and local law enforcement officers, fire suppression agencies and DFG employees in the performance of their official duties or persons possessing written permission from DFG, may enter an ecological reserve, or portion thereof, which is closed to public entry. No person may enter any ecological reserve between sunset and sunrise except with written permission from the Department, which may be granted for purposes in accordance with subsection (a)(2).
Introduction of Species	Unless authorized by the commission, the release of any fish or wildlife species, including domestic or domesticated species, or the introduction of any plant species, is prohibited. DFG may reintroduce endemic species on an ecological reserve for management purposes.
Feeding of Wildlife	The feeding of wildlife is prohibited.
Pesticides	The use of pesticides is prohibited on an ecological reserve unless authorized by the commission with the exception that DFG may use pesticides for management purposes and for public safety.
Litter	No person shall deposit, drop, or scatter any debris on an ecological reserve except in a receptacle or area designated for that purpose. Where no designated receptacles are provided, any refuse resulting from a person's use of an area must be removed from that area by such person.
Grazing	The grazing of livestock is prohibited on an ecological reserve.
Falconry	Falconry is prohibited.
Aircraft	No person shall operate any aircraft or hovercraft within a reserve, except as authorized by a permit from the commission.
Pets	Pets, including dogs and cats, are prohibited from entering an ecological reserve unless they are retained on a leash of less than ten feet or are inside a motor vehicle, except as provided for through area-specific regulations (e.g., RJER) that allow for hunting or training activities.
Fires	No person shall light fireworks or other explosive or incendiary devices, or start or maintain any fire on or in any reserve, except for management purposes as provided in subsection (a)(1).
Camping	No person shall camp on/in an ecological reserve.
Vandalism	No person shall tamper with, damage or remove any property not his own when such property is located within an ecological reserve.

Special Regulations for Use at Rancho Jamul Ecological Reserve

Dog Training	Controlled retriever training may be permitted within a designated area. This area shall be clearly posted.
Hunting	Hunting shall be allowed in accordance with the general hunting regulations, but only at such times and in specific areas as designated by the department.
Future Activities and Facilities	Within the 50.51 acre Headquarters Unit, the Department may develop facilities and conduct activities consistent with training programs, meeting and storage needs, fire suppression and control, and educational programs under guidelines established by the regional manager.
Occupied State Housing	Uses associated with occupied state housing shall be allowed within the 50.51 acre Headquarters Unit.

Source: CCR 2005.

Appendix B

Cultural Resources (confidential)

Appendix C

Flora Inventory for RJER

Inventory of Plants Documented from or Potentially Occurring in Rancho Jamul Ecological Reserve

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
CRYPTOGAMS				
POLYPODIACEAE- Fern Family				
<i>Polypodium californicum</i>	California Polypody	S, C	--/--	No
PTERIDACEAE - Brake Family				
<i>Adiantum jordanii</i>	California Maidenhair	C, G	--/--	No
<i>Aspidotis californica</i>	California Lace Fern	C, G	--/--	No
<i>Cheilanthes clevelandii</i>	Cleveland's Lipfern	C, G	--/--	No
<i>Cheilanthes newberryi</i>	California Cotton Fern	C, G	--/--	No
<i>Notholaena californica</i>	California Cloak Fern	S	--/--	No
<i>Pellaea mucronata</i> var. <i>mucronata</i>	Bird's-foot Fern	S, C, G	--/--	No
<i>Pentagramma triangularis</i>	California Goldenback Fern	S, C, G	--/--	No
SELAGINELLACEAE - Spike-Moss Family				
<i>Selaginella bigelovii</i>	Bigelow's Mossfern	S, C, G	--/--	No
<i>Selaginella cinerascens</i>	Ashy Spike-moss	S, C, G, RD	--/--	No
CONIFERS				
CUPRESSACEAE				
<i>Cupressus forbesii</i>	Tecate Cypress	C	--/List 1B	Yes
DICOTYLEDONS				
AIZOACEAE - Fig-Marigold Family				
<i>*Mesembryanthemum crystallineum</i>	Crystalline Iceplant	NG	--/--	No
<i>Sesuvium verrucosum</i>	Wetern Sea Purslane	RD	--/--	No
ALISMACEAE				
<i>Echinodorus berteroi</i>	Burhead	RD	--/--	No
AMARANTHACEAE – Amaranth Family				
<i>Amaranthus albus</i>	White Tumbleweed	NG, G	--/--	No
<i>Amaranthus</i> sp.	Pigweed	M	--/--	No
ANACARDIACEAE - Sumac Family				
<i>Malosma laurina</i>	Laurel Sumac	S, C	--/--	No
<i>Rhus integrifolia</i>	Lemonade Berry	S, G	--/--	No
<i>*Schinus molle</i>	Peruvian Peppertree	RD, NG, G	--/--	No
<i>Toxicodendron diversilobum</i>	Poison Oak	S, C, NG, G, RD	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
APIACEAE - Carrot Family				
<i>Apiastrum angustifolium</i>	Mock Parsley	S, C	--/--	No
<i>Apium graveolens</i>	Common Celery	RD	--/--	No
<i>Bowlesia incana</i>	American Bowlesia	C, S, O	--/--	No
<i>Daucus pusillus</i>	Rattlesnake Weed	G	--/--	No
* <i>Foeniculum vulgare</i>	Fennel	S, G, NG, RD	--/--	No
<i>Sanicula arguta</i>	Sharp-toothed Sanicle	G	--/--	No
ASCLEPIADACEAE - Milkweed Family				
<i>Asclepias fascicularis</i>	Narrow-leaf Milkweed	G, NG	--/--	No
<i>Sarcostemma cynanchoides</i> ssp. <i>hartwegii</i>	Climbing Milkweed	S, C	--/--	No
ASTERACEAE - Sunflower Family				
<i>Achillea millefolium</i>	Yarrow	S, G, NG	--/--	No
<i>Acourtia microcephala</i>	Sacapellote, Purpleheads	S, C, G	--/--	No
<i>Ambrosia confertiflora</i>	Ragweed	S, G, NG	--/--	No
<i>Ambrosia psilostachya</i>	Western Ragweed	RD	--/--	No
<i>Ambrosia pumila</i>	San Diego Ambrosia	C, S, V, G	FE/List 1B	Yes, NE
* <i>Anthemis cotula</i>	Stinkweed	S, C, NG,	--/--	No
<i>Artemisia californica</i>	California Sagebrush	S	--/--	No
<i>Artemisia palmeri</i>	San Diego Sagewort	RD, C, S	--/List 4	No
<i>Baccharis salicifolia</i>	Mule Fat	S, RD	--/--	No
<i>Baccharis sarothroides</i>	Broom Baccharis	S, G, RD	--/--	No
<i>Brickellia californica</i>	California Brickellbush	S, G	--/--	No
* <i>Carduus pycnocephalus</i>	Italian Thistle	S, C, NG	--/--	No
* <i>Centaurea melitensis</i>	Tocalote	S, G, NG	--/--	No
<i>Chaenactis artemisiifolia</i>	Artemisia Pincushion	S, C	--/--	No
<i>Chamomilla suaveolens</i>	Common Pineapple Weed	S, C, NG	--/--	No
* <i>Chrysanthemum coronarium</i>	Garland Chrysanthemum	S, NG	--/--	No
* <i>Cirsium vulgare</i>	Bull Thistle	S, NG	--/--	No
* <i>Cnicus benedictus</i>	Blessed Thistle	S, NG	--/--	No
* <i>Conyza bonariensis</i>	Flax-leaf Fleabane	S, NG	--/--	No
* <i>Conyza canadensis</i>	Horseweed	S, NG	--/--	No
* <i>Conyza coulteri</i>	Coulter's Fleabane	S, NG	--/--	No
* <i>Cotula coronopifolia</i>	African Brass Buttons	S, NG	--/--	No
* <i>Cynara cardunculus</i>	Artichoke Thistle	S, G, NG	--/--	No
<i>Deinandra (Hemizonia) conjugens</i>	Otay Tarplant	G, NG	FT/CE, List 1B	Yes, NE

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<i>Deinandra (Hemizonia) fasciculata</i>	Fascicled Tarweed	S, G, NG	--/--	No
<i>Eclipta prostrata</i>	False Daisy	S, NG, RD	--/--	No
<i>Ericameria palmeri</i> ssp. <i>palmeri</i>	Palmer's Goldenbush	S, C	--/List 2	Yes
<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>	Golden-yarrow	S, G, NG	--/--	No
<i>Erigeron foliosus</i> var. <i>foliosus</i>	Leafy Daisy	S, C, O	--/--	No
* <i>Filago gallica</i>	Narrow-leaf Filago	S, G, NG	--/--	No
<i>Filago</i> sp.	Filago	S, G	--/--	No
<i>Gnaphalium bicolor</i>	Bicolor Cudweed	S, C	--/--	No
<i>Gnaphalium californicum</i>	California Everlasting	C	--/--	No
<i>Gnaphalium luteo-album</i>	Everlasting	S, C	--/--	No
<i>Gnaphalium palustre</i>	Lowland Cudweed	S, C, O	--/--	No
<i>Gnaphalium purpureum</i>	Everlasting	NG	--/--	No
<i>Gnaphalium stramineum</i>	Cotton-Batting Plant	C, G, O	--/--	No
<i>Grindelia camporum</i> var. <i>bracteosum</i>	Rayless Gumplant	S, G	--/--	No
<i>Gutierrezia californica</i>	California Matchweed	S, G	--/--	No
<i>Gutierrezia sarothrae</i>	Matchweed	S, G	--/--	No
<i>Hazardia squarrosa</i>	Saw-toothed Goldenbush	S, G	--/--	No
* <i>Hedypnois cretica</i>	Crete Hedypnois	G, NG	--/--	No
<i>Hemizonia fasciculata</i>	Fascicled Tarplant	S, G, NG	--/--	No
<i>Heterotheca grandiflora</i>	Telegraph Weed	S, G, NG	--/--	No
* <i>Hypochaeris glabra</i>	Smooth Cat's Ear	S, G, NG	--/--	No
* <i>Hypochaeris radicata</i>	Hairy Cat's Ear	NG	--/--	No
<i>Isocoma menziesii</i>	Coast Goldenbush	S, G	--/--	No
<i>Iva hayesiana</i>	San Diego Marsh Elder	RD	--/List 2	No
* <i>Lactuca serriola</i>	Prickly Lettuce	NG, G	--/--	No
<i>Lasthenia californica</i>	Common Goldfields	S, G	--/--	No
<i>Lasthenia coronaria</i>	Southern Goldfields	S, G	--/--	No
<i>Lessingia filaginifolia</i>	California-Aster	S, G	--/--	No
<i>Microseris douglasii</i> ssp. <i>platycarpha</i>	Small-flowered Microseris	C, G	--/--	No
<i>Osmadenia tenella</i>	Osmadenia	S, O	--/--	No
* <i>Picris echioides</i>	Prickly Ox Tongue	NG, G	--/--	No
<i>Porophyllum gracile</i>	Odora	S	--/--	No
<i>Psilocarphus brevissimus</i>	Dwarf Woolly-Heads	V	--/--	No
<i>Psilocarphus tenellus</i> var. <i>tenellus</i>	Slender Woolly-Heads	RD	--/--	No
<i>Rafinesquia californica</i>	California Chicory	S, C	--/--	No
* <i>Senecio vulgaris</i>	Common Groundsel	NG	--/--	No
* <i>Silybum marianum</i>	Milk Thistle	S, G, NG	--/--	No
* <i>Sonchus asper</i>	Prickly Sow Thistle	G, NG	--/--	No

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<i>*Sonchus oleraceus</i>	Common Sow Thistle	G, NG	--/--	No
<i>Stylocline gnaphaloides</i>	Everlasting Nest-Straw			
<i>Uropappus lindleyi</i>	Silver Puffs	G, NG	--/--	No
<i>Viguiera laciniata</i>	San Diego Sunflower	S, G, RD	--/List 4	No
<i>*Xanthium sp.</i>	Cocklebur	RD	--/--	No
<i>Xanthium strumarium</i>	Cocklebur	S, G, NG	--/--	No
BORAGINACEAE - Borage Family				
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Rancher's Fireweed	S, NG	--/--	No
<i>Cryptantha intermedia</i>	Nievetas	S, NG	--/--	No
<i>Harpagonella palmeri</i>	Palmer's Grapplinghook	G	--/List 4	No
<i>Heliotropium curvassavicum</i>	Salt Heliotrope	RD, NG	--/--	No
<i>Pectocarya linearis</i> ssp. <i>ferocula</i>	Slender Pectocarya	S, C, G	--/--	No
<i>Plagiobothrys collinus</i> var. <i>gracilis</i>	San Diego Popcornflower	S, G	--/--	No
BRASSICACEAE - Mustard Family				
<i>*Brassica genticulata</i>	Shortpod Mustard	S, G, NG	--/--	No
<i>*Brassica nigra</i>	Black Mustard	S, G, NG	--/--	No
<i>*Hirschfeldia incana</i>	Short-pod Mustard	S, G, NG	--/--	No
<i>Lepidium nitidum</i> var. <i>nitidum</i>	Shining Peppergrass	C, S, G, NG	--/--	No
<i>*Raphanus sativus</i>	Wild Radish	S, G, NG	--/--	No
<i>Rorippa nasturtium-aquaticum</i>	Watercress	RD	--/--	No
<i>*Sisymbrium sp.</i>	Mustard	S, G, NG	--/--	No
<i>*Raphanus raphanistrum</i>	Jointed Charlock	S, G, NG	--/--	No
<i>*Sisymbrium irio</i>	London Rocket	S, G, NG	--/--	No
<i>*Sisymbrium officinale</i>	Hedge Mustard	S, G, NG	--/--	No
<i>Thysanocarpus laciniatus</i>	Notch Fringepod	S, C, G	--/--	No
CACTACEAE - Cactus Family				
<i>Ferocactus viridescens</i>	Coast Barrel Cactus	S, G, NG	--/List 2	Yes
<i>Opuntia littoralis</i>	Coastal Prickly-pear	S, G, NG	--/--	No
<i>Opuntia prolifera</i>	Coastal Cholla	S, G, NG	--/--	No
CAMPANULACEAE – Bellflower Family				
<i>Githopsis diffusa</i> ssp. <i>filicaulis</i>	Mission Canyon Blue Cup	C	--/--	No
<i>Triodanis biflora</i>	Small Venus Looking-Glass	C, G	--/--	No

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CAPPARACEAE - Caper Family				
<i>Isomeris arborea</i>	Bladderpod	S	--/--	No
CAPRIFOLIACEAE				
<i>Lonicera subspicata</i>	Honeysuckle	C	--/--	No
<i>Sambucus mexicana</i>	Blue Elderberry	RD, S	--/--	No
CARYOPHYLLACEAE - Pink Family				
* <i>Cerastium glomeratum</i>	Mouse-Ear Chickweed	NG	--/--	No
* <i>Herniaria hirsuta</i> ssp. <i>cinerea</i>	Gray Herniaria	NG	--/--	No
* <i>Polycarpon tetraphyllum</i>	Four-Leaf Allseed	NG	--/--	No
<i>Silene antirrhina</i>	Snapdragon Catchfly	NG	--/--	No
* <i>Silene gallica</i>	Common Catchfly	G, NG	--/--	No
* <i>Spergula arvensis</i> ssp. <i>arvensis</i>	Stickwort, Starwort	NG	--/--	No
* <i>Spergularia bocconii</i>	Buccone's Sand-Spurry	NG	--/--	No
* <i>Spergularia rubra</i>	Ruby Sand-Spurry	NG	--/--	No
* <i>Spergularia villosa</i>	Villous Sand-Spurry	S	--/--	No
* <i>Stellaria media</i>	Common Chickweed	NG	--/--	No
* <i>Stellaria pallida</i>	Chickweed			
CHENOPODIACEAE - Goosefoot Family				
<i>Atriplex coulteri</i>	Coulter's Saltbush	S, G	--/List 1B	No
<i>Atriplex pacifica</i>	South Coast Saltbush	S, G, NG	--/List 1B	No
* <i>Atriplex semibaccata</i>	Australian Saltbush	S, G, NG	--/--	No
<i>Atriplex serenana</i> var. <i>serenana</i>	Bractscale			
* <i>Atriplex suberecta</i>	Peregrine Saltbush	S, G, NG	--/--	No
<i>Chenopodium album</i>	Lamb's Quarters	S, G, NG	--/--	No
<i>Chenopodium ambrosioides</i>	Mexican Tea	S, G, NG	--/--	No
<i>Chenopodium berlandieri</i>	Pitseed Goosefoot			
<i>Chenopodium californicum</i>	California Goosefoot	C, S, G, NG	--/--	No
* <i>Chenopodium murale</i>	Nettle-leaf Goosefoot	C, S, G, NG	--/--	No
* <i>Chenopodium pumilio</i>	Tasmania Goosefoot	C, S, G, NG	--/--	No
<i>Dichondra occidentalis</i>	Western Dichondra	C, S, G, NG	--/List 4	No
* <i>Salsola tragus</i>	Russian Thistle	S, G, NG	--/--	No
CISTACEAE - Rock-Rose Family				
<i>Helianthemum scoparium</i>	Peak Rush-rose	S, G, C	--/--	No

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CONVOLVULACEAE - Morning-Glory Family				
<i>Calystegia macrostegia</i> ssp. <i>arida</i>	Morning-Glory	S, C	--/--	No
<i>Calystegia macrostegia</i> ssp. <i>tenuifolia</i>	Narrow-leaf Morning-glory	S, G	--/--	No
* <i>Convolvulus arvensis</i>	Bindweed	NG	--/--	No
<i>Convolvulus simulans</i>	Small-flowered Morning Glory	G, NG	--/List 4	No
CRASSULACEAE - Stonecrop Family				
<i>Crassula aquatica</i>	Water Pygmyweed	V	--/--	No
<i>Crassula connata</i>	Dwarf Stonecrop	S, G	--/--	No
<i>Dudleya edulis</i>	Ladies Fingers	C, S	--/--	No
<i>Dudleya pulverulenta</i>	Chalk-lettuce	C, S	--/--	No
<i>Dudleya variegata</i>	Variegated Dudleya	S, G	--/List 1B	Yes, NE
CUCURBITACEAE - Gourd Family				
<i>Cucurbita foetidissima</i>	Calabazilla	S, G	--/--	No
<i>Marah macrocarpus</i>	Wild Cucumber	S	--/--	No
CUSCUTACEAE - Dodder Family				
<i>Cuscuta californica</i> var. <i>breviflora</i>	Dodder	S, G, NG	--/--	No
<i>Cuscuta subinclusa</i>	Dodder	S, G, NG	--/--	No
DATISCEAE - Datisca Family				
<i>Datisca glomerata</i>	Durango Root	R	--/--	No
ERICACEAE - Heath Family				
<i>Xylococcus bicolor</i>	Mission Manzanita	C, S	--/--	No
EUPHORBIACEAE - Spurge Family				
<i>Chamaesyce polycarpa</i>	Prostrate Spurge	S, C, NG	--/--	No
<i>Chamaesyce serpens</i>	Creeping Spurge	S, C, NG	--/--	No
<i>Eremocarpus setigerus</i>	Doveweed	G, NG	--/--	No
* <i>Ricinus communis</i>	Castor-bean	S, G, NG	--/--	No
FABACEAE - Pea Family				
<i>Astragalus gambelianus</i>	Gambel's Locoweed	S, O	--/--	No
<i>Astragalus trichopodus</i>	Ocean Locoweed	G, NG	--/--	No
<i>Lathyrus vestitus</i> ssp. <i>alefeldii</i>	San Diego Sweat Pea	S	--/--	No
<i>Lotus hamatus</i>	San Diego Bird's Foot Trefoil	S, C	--/--	No

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<i>Lotus purshianus</i>	Spanish Clover	S, G, NG	--/--	No
<i>Lotus salsuginosus</i> var. <i>salsuginosus</i>	Alkali Lotus	S, C	--/--	No
<i>Lotus scoparius</i>	Deerweed	S, G, NG	--/--	No
<i>Lotus strigosus</i>	California Deerweed	S, G, NG	--/--	No
<i>Lotus wrangelianus</i>	Calf Lotus	S, C, G	--/--	No
<i>Lupinus bicolor</i>	Miniature Lupine	S, G	--/--	No
<i>Lupinus concinnus</i>	Bajada Lupine	S, C	--/--	No
<i>Lupinus hirsutissimus</i>	Stinging Lupine	S, C	--/--	No
<i>Lupinus truncatus</i>	Collar Lupine	S, C, G	--/--	No
* <i>Medicago polymorpha</i>	California Burclover	NG	--/--	No
* <i>Melilotus alba</i>	White Sweet Clover	S, G, NG	--/--	No
* <i>Melilotus indica</i>	Indian Sweetclover	NG	--/--	No
<i>Trifolium ciliolatum</i>	Tree Clover	S, C, G	--/--	No
<i>Trifolium depauperatum</i> var. <i>truncatum</i>	Dwarf Sac Clover	S, C, G	--/--	No
<i>Trifolium gracilentum</i> var. <i>gracilentum</i>	Pin-Point Clover	S, C, G	--/--	No
* <i>Trifolium hirtum</i>	Rose Clover	NG	--/--	No
<i>Trifolium microcephalum</i>	Maiden Clover	C, G	--/--	No
<i>Trifolium willdenovii</i>	Valley Clover	C, G	--/--	No
<i>Vicia ludoviciana</i> var. <i>ludoviciana</i>	Deer Pea Vetch	C, G	--/--	No
* <i>Vicia villosa</i> ssp. <i>villosa</i>	Hairy Vetch, Winter Vetch	NG	--/--	No
FAGACEAE - Oak Family				
<i>Quercus agrifolia</i>	Coast Live Oak	O, S	--/--	No
<i>Quercus berberidifolia</i>	Scrub Oak	O, C	--/--	No
GENTIANACEAE – Gentian Family				
<i>Centaurium venustum</i>	Canchalagua	RD, V, G, NG	--/--	No
GERANIACEAE - Geranium Family				
* <i>Erodium botrys</i>	Long-beak Filaree	NG	--/--	No
* <i>Erodium brachycarpum</i>	Short-Beak Filaree/Storksbill	NG	--/--	No
* <i>Erodium cicutarium</i>	Red-stem Filaree	NG	--/--	No
* <i>Erodium moschatum</i>	White-stem Filaree	NG	--/--	No
<i>Geranium carolinianum</i>	Carolina Geranium	C, G	--/--	No
GROSSULARIACEAE – Gooseberry Family				
<i>Ribes indecorum</i>	White-flowered Currant	S, C	--/--	No

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HYACINTHACEAE – Hyacinth Family				
<i>Chlorogalum parviflorum</i>	Soap-Plant, Amole	S, G	--/--	No
HYDROPHYLLACEAE - Waterleaf Family				
<i>Emmenanthe penduliflora</i> var. <i>penduliflora</i>	Whispering Bells	S, C	--/--	No
<i>Eucrypta chrysanthemifolia</i>	Common Eucrypta	S, RD	--/--	No
<i>Nemophila menziesii</i> var. <i>integrifolia</i>	Baby Blue Eyes	S, G, O	--/--	No
<i>Phacelia cicutaria</i> var. <i>hispida</i>	Caterpillar Phacelia	S	--/--	No
<i>Phacelia grandiflora</i>	Large-flowered Phacelia	S, C	--/--	No
<i>Pholistoma auritum</i> var. <i>auritum</i>	Fiesta Flower	S, C, O	--/--	No
<i>Pholistoma racemosum</i>	San Diego Fiesta Flower	S, C, O	--/--	No
LAMIACEAE - Mint Family				
<i>Acanthomintha ilicifolia</i> (PO)	San Diego Thornmint	S, G	FT/SE, List 1B	Yes, NE
<i>*Marrubium vulgare</i>	Horehound	S, G, NG	--/--	No
<i>Salvia apiana</i>	White Sage	S, G	--/--	No
<i>Salvia mellifera</i>	Black Sage	S	--/--	No
<i>Stachys ajugoides</i> var. <i>rigida</i>	Hedge-Nettle	S, RD	--/--	No
<i>Trichostema lanceolatum</i>	Vinegar Weed	G, NG, RD	--/--	No
LILIACEAE - Lily Family				
<i>Fritillaria biflora</i>	Chocolate Lily	G, NG	--/--	No
LYTHRACEAE - Loosestrife Family				
<i>*Lythrum hyssopifolium</i>	Grass Poly	V	--/--	No
MALVACEAE - Mallow Family				
<i>Malocothamnus densiflorus</i>	Many Flowered Bush Mallow	S, G, NG	--/--	No
<i>Malocothamnus fasciculatus</i>	Mesa Bush Mallow	RD	--/--	No
<i>*Malva parviflora</i>	Cheeseweed	NG	--/--	No
<i>Malvella leporosa</i>	Alkali Mallow	RD	--/--	No
<i>Sidalcea malvaeflora</i> ssp. <i>sparsifolia</i>	Checker-bloom	S, G, NG	--/--	No
MOLLUGINACEAE - Carpetweed Family				
<i>*Glinus lotoides</i>	Carpet Weed	NG	--/--	No
<i>*Glinus radiatus</i>	Radiate Sweetjuice	NG	--/--	No
NYCTAGINACEAE - Four-O'Clock Family				

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<i>Mirabilis californica</i>	California Wishbone Plant	S	--/--	No
ONAGRACEAE - Evening Primrose Family				
<i>Camissonia bistorta</i>	California Sun Cup	S, C, O	--/--	No
<i>Camissonia californica</i>	False-Mustard	S, C, G	--/--	No
<i>Camissonia intermedia</i>	Intermediate Sun Cup	S, C	--/--	No
<i>Camissonia robusta</i>	Robust Sun Cup	S, C	--/--	No
<i>Clarkia epilobioides</i>	Canyon Godetia	S, O	--/--	No
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	Four-Spot Clarkia	S, C, G	--/--	No
<i>Clarkia delicata</i>	Delicate clarkia	C, RD	--/List 1B	No
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	Willow Herb	S, C, G	--/--	No
<i>Epilobium canum</i>	California Fuchsia	S, RD	--/--	No
<i>Ludwigia peploides</i>	Yellow Waterweed	RD, M	--/--	No
<i>Oenothera elata</i>	Evening Primrose	G, NG, RD, M, S	--/--	No
OXALIDACEAE - Oxalis Family				
<i>Oxalis albicans</i> ssp. <i>californica</i> .	California Wood Sorrel	S, C, G	--/--	No
PAPAVERACEAE - Poppy Family				
<i>Eschscholzia californica</i>	California Poppy	S, C, G	--/--	No
<i>Romneya coulteri</i>	Coulter's Matilija Poppy	S	--/List 4	No
<i>Romneya trichocalyx</i>	Hairy Matilija Poppy	S, C	--/--	No
PLANTAGINACEAE - Plantain Family				
<i>Plantago elongata</i>	Longleaf Plantain	V	--/--	No
<i>Plantago erecta</i>	Dot-seed Plantain	G, NG, C	--/--	No
* <i>Plantago major</i>	Common Plantain	NG	--/--	No
PLATANACEAE - Sycamore Family				
<i>Platanus racemosa</i>	Western Sycamore	RD, S	--/--	No
POLEMONIACEAE - Phlox Family				
<i>Eriastrum filifolium</i>	Thread-Leaf Woolly-Star	S, C	--/--	No
<i>Gilia angelensis</i>	Grassland Gilia	G, NG	--/--	No
<i>Linanthus dianthiflorus</i>	Ground Pink	S, G	--/--	No
<i>Navarretia hamata</i>	Hooked Skunkweed	S, G	--/--	No
POLYGONACEAE - Buckwheat Family				

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Eriogonum fasciculatum</i>	California Buckwheat	S, G, RD	--/--	No
* <i>Polygonum arenastrum</i>	Common Knotweed	NG	--/--	No
* <i>Polygonum argyrocoleon</i>	Persian Wireweed	NG	--/--	No
<i>Polygonum lapathifolium</i>	Willow Weed	G, NG, RD, M	--/--	No
<i>Polygonum punctatum</i>	Perennial Smartweed	RD	--/--	No
<i>Pterostegia drymarioides</i>	Granny's Hairnet	S, C	--/--	No
* <i>Rumex conglomeratus</i>	Whorled Dock	NG	--/--	No
* <i>Rumex crispus</i>	Curly Dock	NG	--/--	No
* <i>Rumex dentatus</i>	Toothed Dock	NG	--/--	No
* <i>Rumex pulcher</i>	Fiddle Dock	NG	--/--	No
PORTULACACEAE – Purselane Family				
<i>Calandrinia ciliata</i>	Red Maids	G	--/--	No
<i>Claytonia perfoliata</i>	Miner's-Lettuce	S, C, RD	--/--	No
PRIMULACEAE - Primrose Family				
* <i>Anagallis arvensis</i>	Scarlet Pimpernel	RD, G, NG	--/--	No
<i>Dodecatheon clevelandii</i>	Padre's Shooting Star	S	--/--	No
RANUNCULACEAE - Crowfoot Family				
<i>Clematis lasiantha</i>	Pipestem Virgin's Bower	S	--/--	No
<i>Clematis pauciflora</i>	Small-Leaf Virgin's Bower	C	--/--	No
<i>Delphinium parryi</i> ssp. <i>parryi</i>	Parry's Larkspur	S, C, G, O	--/--	No
<i>Myosurus minimus</i>	Little Mousetail	C, S, V, G	--/List 3	No
<i>Ranunculus hebecarpus</i>	Pubescent Fruit Buttercup	C	--/--	No
RHAMNACEAE - Buckthorn Family				
<i>Ceanothus tomentosus</i>	Ramona Lilac	C	--/--	No
<i>Rhamnus crocea</i>	Spiny Redberry	C, S	--/--	No
ROSACEAE - Rose Family				
<i>Adenostoma fasciculatum</i>	Chamise	C	--/--	No
<i>Aphanes occidentalis</i>	Western Lady's Mantle	G	--/--	No
<i>Heteromeles arbutifolia</i>	Toyon	C, S	--/--	No
<i>Potentilla glandulosa</i> ssp. <i>glandulosa</i>	Sticky Cinquefoil	G	--/--	No
<i>Rosa californica</i>	California Rose	RD	--/--	No
RUBIACEAE - Madder Family				

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Galium angustifolium</i>	Narrow-leaf Bedstraw	S	--/--	No
<i>Galium aparine</i>	Common Bedstraw	S, C, G	--/--	No
<i>Galium nuttallii</i> ssp. <i>nuttallii</i>	San Diego Bedstraw	S, C, G	--/--	No
* <i>Galium parisiense</i>	Wall Bedstraw	NG	--/--	No
SALICACEAE - Willow Family				
<i>Populus fremontii</i>	Fremont Cottonwood	RD	--/--	No
<i>Salix exugua</i>	Narrow-leaved Willow	RD	--/--	No
<i>Salix goddingii</i>	Goodding's Black Willow	RD	--/--	No
<i>Salix lasiolepis</i> var. <i>bracelinae</i>	Arroyo Willow	RD	--/--	No
SAURURACEAE - Lizard's Tail Family				
<i>Anemopsis californica</i>	Yerba Mansa	RD, M	--/--	No
SAXIFRAGACEAE - Saxifrage Family				
<i>Jepsonia parryi</i>	Coast Jepsonia	S, G	--/--	No
SCROPHULARIACEAE - Figwort Family				
<i>Antirrhinum nuttallianum</i>	Nuttall's Snapdragon	S, C, G	--/--	No
<i>Castilleja affinis</i> ssp. <i>affinis</i>	Coast Paintbrush	S, C, G	--/--	No
<i>Castilleja exserta</i>	Purple Owl's-clover	S, C, G	--/--	No
<i>Collinsia heterophylla</i>	Chinese Houses	C, G	--/--	No
<i>Keckiella cordifolia</i>	Climbing Bush Penstemon	C, G	--/--	No
<i>Keckiella antirrhinoides</i>	Yellow Bush Penstemon	C	--/--	No
<i>Linaria canadensis</i>	Large Blue Toadflax	C, G	--/--	No
<i>Mimulus aurantiacus</i>	San Diego Monkeyflower	S	--/--	No
<i>Mimulus floribundus</i>	Showy Monkey Flower	C, G	--/--	No
<i>Mimulus guttatus</i>	Common Monkeyflower	C, G, RD	--/--	No
<i>Scrophularia californica</i>	California Figwort	S, C	--/--	No
* <i>Veronica catenata</i>	Broad-Fruit/Chain Speedwell	RD	--/--	No
SIMMONDSIACEAE - Jojoba Family				
<i>Simmondsia chinensis</i>	Jojoba	C	--/--	No
SOLANACEAE - Nightshade Family				
* <i>Datura wrightii</i>	Western Jimson Weed	S, G, NG, RD	--/--	No
* <i>Nicotiana glauca</i>	Tree Tobacco	S, G, NG, RD	--/--	No
<i>Solanum douglasii</i>	Douglas' Nightshade	C, S	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Solanum parishii</i>	Parish's Nightshade	C, S	--/--	No
* <i>Solanum elaeagnifolium</i>	Silverleaf Horse Nettle	G, NG	--/--	No
SIMAROUBACEAE - Quassia or Simarouba Family				
* <i>Ailanthus altissima</i>	Tree of Heaven	NG	--/--	No
TAMARICACEAE - Tamarisk Family				
* <i>Tamarix</i> sp.	Tamarisk	RD	--/--	No
URTICACEAE - Nettle Family				
<i>Hesperocnide tenella</i>	Western Nettle	S, C, G, RD	--/--	No
<i>Parietaria hespera</i>	Western Pellitory	S, C, G, RD	--/--	No
<i>Parietaria pensylvanica</i>	Pennsylvania Pellitory	S, C, G, RD	--/--	No
<i>Urtica dioica</i> ssp. <i>holosericea</i>	Hoary Nettle	G, NG, RD	--/--	No
* <i>Urtica urens</i>	Dwarf Nettle	NG	--/--	No
VALERIANACEAE – Valerian Family				
<i>Plectritis ciliosa</i> ssp. <i>insignis</i>	Long-spurred Seablush	C, G	--/--	No
VERBENACEAE – Vervain Family				
<i>Verbena menthifolia</i>	Mint-leaf Vervain	s	--/--	No
VIOLACEAE - Violet Family				
<i>Viola pedunculata</i>	Johnny-jump-up	G, NG	--/--	No
VISCACEAE - Mistletoe Family				
<i>Phoradendron (tomentosum) macrophyllum</i>	Big-leaf Mistletoe	S, RD	--/--	No
MONOCOTYLEDONS				
AGAVACEAE - Agave Family				
<i>Hesperoyucca whipplei</i>	Our Lord's Candle	S, NG	--/--	No
<i>Yucca schidigera</i>	Mohave Yucca	S, NG	--/--	No
ARECACEAE – Palm Family				
* <i>Phoenix</i> sp.	Date Palm	RD, NG	--/--	No
* <i>Washingtonia robusta</i>	Mexican Fan Palm	NG	--/--	No
CYPERACEAE - Sedge Family				

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Cyperus eragrostis</i>	Tall Flatsedge			
<i>Cyperus erythrorhizos</i>	Red-Root Flatsedge			
* <i>Cyperus ligularis</i>	Umbrella Plant	RD	--/--	No
* <i>Cyperus involucratus</i>	African Umbrella Sedge	RD	--/--	No
<i>Cyperus odoratus</i>	Coarse Cyperus	RD	--/--	No
* <i>Cyperus rotundus</i>	Purple Nutsedge	RD	--/--	No
<i>Eleocharis macrostachya</i>	Pale Spike-rush	RD	--/--	No
<i>Eleocharis montevidensis</i>	Dombey's Spike-Sedge	RD	--/--	No
<i>Eleocharis parishii</i>	Parish's Spike-Sedge	RD	--/--	No
<i>Scirpus americanus</i>	Olney's Bulrush	RD	--/--	No
<i>Scirpus californicus</i>	Bulrush	RD	--/--	No
IRIDACEAE - Iris Family				
<i>Sisyrinchium bellum</i>	Blue-eyed-grass	S, G, NG	--/--	No
JUNCACEAE - Rush Family				
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	Southwestern Spiny Rush	S, G, RD	--/List 4	No
<i>Juncus balticus</i>	Wire Rush	RD	--/--	No
<i>Juncus bufonius</i>	Toad Rush	RD	--/--	No
<i>Juncus dubius</i>	Mariposa Rush	RD	--/--	No
<i>Juncus effuses</i>	Bog Rush	RD	--/--	No
<i>Juncus xiphioides</i>	Iris-Leaf Rush	RD	--/--	No
LILIACEAE - Lily Family				
<i>Allium haematociton</i>	Red Skin Onion	G	--/--	No
<i>Bloomeria crocea</i>	Common Goldenstar	S, C, G, NG	--/--	No
<i>Calochortus splendens</i>	Splendid Mariposa	S, G, NG	--/--	No
<i>Chlorogalum parviflorum</i>	Small-flower Soap-plant	S, G	--/--	No
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	Wild Hyacinth	S, G	--/--	No
POACEAE - Grass Family				
<i>Achnatherum diegoensis</i>	San Diego Needlegrass	G, NG	--/List 4	No
<i>Agrostis pallens</i>	Bent Grass	C, G	--/--	No
<i>Aristida adscensionis</i>	Sixweeks Three Awn	C	--/--	No
* <i>Arundo donax</i>	Giant Reed	R	--/--	No
* <i>Avena barbata</i>	Slender Oat	NG	--/--	No
* <i>Avena fatua</i>	Wild Oat	NG	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Bothriochloa barbinodis</i>	Cane Bluestem	G, N, V	--/--	No
* <i>Brachypodium distachyon</i>	Purple Falsebrome	NG	--/--	No
<i>Bromus carinatus</i>	California Brome	NG	--/--	No
* <i>Bromus diandrus</i>	Rippgut Grass	NG	--/--	No
* <i>Bromus hordeaceus</i>	Soft Chess	NG	--/--	No
* <i>Bromus madritensis</i> ssp. <i>rubens</i>	Foxtail Chess	NG	--/--	No
* <i>Cortaderia jubata</i>	Pampas Grass	RD, NG	--/--	No
* <i>Crypsis schoenoides</i>	Pricke or Swamp Grass	RD, NG, G	--/--	No
* <i>Cynodon dactylon</i>	Bermuda Grass	NG, RD	--/--	No
<i>Deschampsia danthonioides</i>	Annual Hairgrass	G, V	--/--	No
* <i>Digitaria sanguinalis</i>	Hairy Crabgrass	NG	--/--	No
<i>Distichlis spicata</i>	Saltgrass	G, NG, V, RD	--/--	No
* <i>Echinochloa crus-galli</i>	Common Barnyard Grass	NG	--/--	No
* <i>Gastridium ventricosum</i>	Nit Grass	NG, G	--/--	No
* <i>Hainardia cylindrica</i>	Thintail	NG	--/--	No
<i>Hordeum depressum</i>	Low Barley	RD, G	--/--	No
* <i>Hordeum murinum</i> ssp. <i>glaucum</i>	Glaucous Barley	NG	--/--	No
<i>Koeleria macrantha</i>	Junegrass	C, G	--/--	No
* <i>Lamarckia aurea</i>	Goldentop	G, NG, RD	--/--	No
<i>Leymus triticoides</i>	Beardless Wild Rye	RD, G, NG	--/--	No
* <i>Lolium perenne</i>	Perennial Ryegrass	NG	--/--	No
* <i>Lolium multiflorum</i>	Italian Ryegrass	NG	--/--	No
<i>Melica imperfecta</i>	Coast Range Melic	S, C, O	--/--	No
* <i>Melinis repens</i>	Natal Grass	G, NG	--/--	No
<i>Muhlenbergia microsperma</i>	Littleseed Muhly	S, G	--/--	No
<i>Nassella lepida</i>	Foothill Needlegrass	G, NG	--/--	No
<i>Nassella pulchra</i>	Purple Needlegrass	G, S	--/--	No
* <i>Paspalum dilatatum</i>	Dallis Grass	G, NG	--/--	No
<i>Paspalum distichum</i>	Common Knotgrass	RD	--/--	No
* <i>Pennisetum setaceum</i>	African Fountain Grass	G, NG	--/--	No
* <i>Phalaris paradoxa</i>	Paradox Canary Grass	NG	--/--	No
* <i>Phalaris minor</i>	Littleseed Canary Grass	G, NG	--/--	No
* <i>Poa</i> sp.	Bluegrass	G, NG, RD	--/--	No
* <i>Polypogon monspeliensis</i>	Annual Beard Grass	V, RD, NG	--/--	No
* <i>Piptatherum miliaceum</i>	Smilo Grass	G, NG	--/--	No
* <i>Schismus barbatus</i>	Mediterranean Schismus	S, G, NG	--/--	No
* <i>Sorghum halepense</i>	Johnson Grass	G, NG	--/--	No
<i>Sporobolus airoides</i>	Alkali Sacaton	S, G	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>*Vulpia myuros</i> var. <i>hirsuta</i>	Foxtail Fescue	S, G, NG	--/--	No
THEMIDACEAE - Brodiaea Family				
<i>Brodiaea jolonensis</i>	Mesa Brodiaea	G, NG, V	--/--	No
<i>Muilla clevelandii</i>	San Diego Goldenstar	C, G	--/List 1B	Yes
TYPHACEAE				
<i>Typha dominguensis</i>	Southern Cattail	RD	--/--	No
<i>Typha latifolia</i>	Broad-leaf Cattail	RD	--/--	No

¹ **Data Sources:** USGS 2002; LMA 1994; Dudeck and Associates 1998; Wildlands Inc. 1999; unpublished CDFG biological resource surveys.

² **Habitat:** Documented or potential habitat of a species. S – coastal sage scrub or disturbed coastal sage scrub; G – native grasslands or disturbed native grasslands; NG – non-native annual grasslands; RD – riparian drainages (riparian scrub, and riparian woodland); O – oak woodland; C – chaparral; V – vernal pools or disturbed vernal pools; P – ponds; M – freshwater marsh or alkali marsh.

³ **Status:** *Federal:* **FE** – endangered, **FT** – threatened; USFWS no longer keeps a list of Federal Species of Concern, *State:* **SE** – endangered, **ST** – threatened, **SSC** – special concern. *California Native Plant Society (CNPS):* List 1B – Plants rare, threatened, or endangered in California and elsewhere, List 2: Plants rare, threatened, or endangered in California, but more common elsewhere, List 3 – Plants about which we need more information, List 4 – Plants of limited distribution (a watch list).

⁴ **MSCP Coverage:** Yes - covered by the County of San Diego Subarea Plan. NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

*** Introduced Species**

PO = potentially occurring. Except for San Diego thornmint, all plant species in this inventory have been documented from RJER.

Appendix D

Fauna Inventory for RJER

Inventory of Invertebrates Known to Occur in Rancho Jamul Ecological Reserve

Scientific Name	Common Name	Status ¹	Covered by MSCP ²
ATHROPODA			
CRUSTACEA			
<i>*Procambarus clarkii</i>	Swamp Crayfish	--/--	No
INSECTA			
ODONATA (Dragonflies and Damselflies)			
Family Libellulidae (Skimmer Dragonflies)			
<i>Libellula lydia</i>	Common Whitetail	--/--	No
<i>Pachydiplax longipennis</i>	Blue Dasher	--/--	No
Family Zygoptera (Damselflies)			
<i>Telebasis salva</i>	Desert Firetail	--/--	No
ORTHOPTERA (Grasshoppers, Crickets, Katyids)			
Family Acrididae	Grasshoppers and Locusts	--/--	No
Family Gryllacrididae	Camel Crickets	--/--	No
Family Gryllidae	Crickets	--/--	No
Family Tettigoniidae	Katyids	--/--	No
DERMAPTERA (Earwigs)			
Family Forficulidae	Earwigs	--/--	No
HOMOPTERA (Cicadas, Leafhoppers, Aphids)			
Family Cicadidae	Cicadas	--/--	No
HEMIPTERA (True Bugs)			
Family Gelastocoridae	Toad Bugs	--/--	No
Family Gerridae	Water Striders	--/--	No
Family Reduviidae	Assassin Bugs	--/--	No
NEUROPTERA (Lacewings, Antlions)			
Family Myrmeleontidae	Antlions	--/--	No
COLEOPTERA (Beetles)			
Family Carabidae	Ground Beetles	--/--	No
Family Chrysomelidae	Leaf Beetles	--/--	No
Family Coccinellidae	Lady Bugs	--/--	No
Family Cupedidae	Reticulated Beetles	--/--	No
Family Meloidae	Blister Beetles	--/--	No
Family Melyridae	Soft-winged Flower Beetles	--/--	No
Family Staphylinidae	Rove Beetles	--/--	No
Family Tenebrionidae	Darkling Beetles	--/--	No
HYMENOPTERA (Ants, Bees, Wasps)			
Family Apidae	Honey Bees	--/--	No
Family Encyrtidae	Parasitic Wasps	--/--	No
Family Formicidae (Ants)			
Subfamily Dolichoderinae			
<i>Dorymyrmex bicolor</i>	Pyramid Ant	--/--	No

Inventory of Invertebrates *Continued*

Scientific Name	Common Name	Status ¹	Covered by MSCP
<i>Dorymyrmex insanus</i>	Pyramid Ant	--/--	No
<i>Forelius foetidus</i>		--/--	No
<i>Forelius pruinosus</i>		--/--	No
<i>Tapinoma sessile</i>	Malodorous House Ant	--/--	No
Subfamily Ecitoninae			
<i>Neivamyrmex nigrescens</i>	Army Ant	--/--	No
<i>Neivamyrmex opacithorax</i>	Army Ant	--/--	No
Subfamily Formicinae			
<i>Liometopum occidentale</i>		--/--	No
<i>Myrmecocystus mimicus</i>	Honey Pot Ant	--/--	No
Subfamily Myrmecinae			
<i>Crematogaster californica</i>	Acrobat Ant	--/--	No
<i>Crematogaster hespera</i>	Acrobat Ant	--/--	No
<i>Leptothorax andrei</i>		--/--	No
<i>Messor Andrei</i>	Harvester Ant	--/--	No
<i>Pheidole sp.</i>		--/--	No
<i>Pheidole cerebrosior</i>		--/--	No
<i>Pheidole clementensis</i>		--/--	No
<i>Pheidole vistana</i>		--/--	No
<i>Pogonomyrmex rugosus</i>	Harvester Ant	--/--	No
<i>Solenopsis molesta</i>	Thief Ant	--/--	No
<i>Solenopsis xyloni</i>	Native Southern Fire Ant	--/--	No
<i>Tetramorium spinosum</i>			
Family Mutillidae	Velvet Ants	--/--	No
Family Pompilidae	Spider Wasps	--/--	No
Family Tiphidae	Flower Wasps	--/--	No
Family Vespidae	Social Wasps	--/--	No
LEPIDOPTERA			
Family Hesperidae (Skippers)			
<i>Euphyes vestris harbisoni</i> ¹	Harbison's Dun Skipper	--/--	No, NE
<i>Pyrgus albescens</i>	White Checkered Skipper	--/--	No
Family Lycaenidae (Blues, Hairstreaks, Coppers)			
<i>Brephidium exilis</i>	Pygmy Blue	--/--	No
<i>Euphilotes enoptes</i>	Pacific Dotted-Blue	--/--	No
<i>Glaucopsyche lygdamus</i>	Southern Blue	--/--	No
<i>Icaricia acmon</i>	Acmon Blue	--/--	No
<i>Icaricia lupini</i>	Lupine Blue	--/--	No
<i>Leptotes marina</i>	Marine Blue	--/--	No
<i>Lycaena hermes</i>	Hermes Copper Butterfly	--/--	No
Family Nymphalidae (Brushfoots)			
<i>Ceononympha tullia</i>	California Ringlet	--/--	No
<i>Euphydryas editha quino</i>	Quino Checkerspot	FE/--	No, NE

Inventory of Invertebrates *Continued*

Scientific Name	Common Name	Status ¹	Covered by MSCP
<i>Junonia coenia</i>	Buckeye	--/--	No
<i>Speyeria callippe</i>	Callippe Fritillary	--/--	No
<i>Vanessa cardui</i>	Painted Lady	--/--	No
Family Papilionidae			
<i>Papilio zelicaon</i>	Anise Swallowtail	--/--	No
Family Pieridae (Whites and Sulphurs)			
<i>Pontia beckerii</i>	Becker's White	--/--	No
<i>Pieris rapae</i>	Cabbage White	--/--	No
<i>Pontia protodice</i>	Checkered White	--/--	No
<i>Nathalis iole</i>	Dainty Sulphur	--/--	No
<i>Colias eurytheme</i>	Orange Sulphur	--/--	No
Family Riodinidae (Metalmarks)			
<i>Apodemia virgulti</i>	Behr's Metalmark	--/--	No
DIPTERA (True Flies)			
Family Bombyliidae	Bee Flies	--/--	No
Family Calliphoridae	Blow Flies	--/--	No
Family Tachinidae	Tachinid Flies	--/--	No
Family Tabanidae	Horse Flies	--/--	No

* **Introduced Species**

¹ **Status:** Federal: FE – endangered, FT – threatened, FFP – fully protected, BEPA – Bald Eagle Protection Act, FD – federally delisted. State: SE – endangered, ST – threatened, SSC – special concern, SFP – fully protected.

² **MSCP Coverage:** Yes - covered by the County of San Diego Subarea Plan. NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

Inventory of Vertebrate Species Observed or Potentially Occurring (PO) at Rancho Jamul

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
CLASS: OSTEICHTHYES (Bony Fish)				
ATHERINIFORMES				
POECILIDAE (Livebearers)				
*Mosquito fish	<i>Gambusia affinis</i>	--/--	No	AS
PERCIFORMES				
CENTRARCHIDAE (Sunfishes)				
*Green sunfish	<i>Lepomis cyanellus</i>	--/--	No	AS
*Bluegill sunfish	<i>Lepomis macrochirus</i>	--/--	No	AS
*Largemouth bass	<i>Micropterus salmoides</i>	--/--	No	AS
*Black crappie	<i>Pomoxis nigromaculatus</i>	--/--	No	AS
SILURIFORMES				
ICTALURIDAE (Bullhead and Catfishes)				
*Black bullhead	<i>Ameiurus melas</i>	--/--	No	AS
CLASS: AMPHIBIA (Amphibians)				
CAUDATA (Salamanders)				
PLETHODONTIDAE (Lungless Salamanders)				
Arboreal Salamander	<i>Aneides lugubris</i>	--/--	No	PO
Garden Slender Salamander	<i>Batrachoseps major</i>	--/--	No	PF
ANURA (Frogs and Toads)				
PELOBATIDAE (Spadefoot Toads)				
Western Spadefoot	<i>Spea (Scaphiopus) hammondi</i>	--/SSC	No	AS, PF, OD
BUFONIDAE (True Toads)				
Western Toad	<i>Bufo boreas</i>			AS, PF
Arroyo Toad	<i>Bufo californicus</i>	FE/SSC	Yes, NE	PO
HYLIDAE (Treefrogs and relatives)				
Pacific Tree Frog	<i>Hyla regilla</i>	--/--	No	AS
California Tree Frog	<i>Hyla cadaverina</i>	--/--	No	PO
RANIDAE (True Frogs)				
*Bullfrog	<i>Rana catesbeiana</i>	--/--	No	AS, PF
Red-legged Frog[†]	<i>Rana aurora draytonii</i>	FT/SSC	Yes, NE	FS
PIPIDAE (Pipid Frogs)				
*African Clawed Frog	<i>Xenopus laevis</i>	--/--	No	AS
CLASS: REPTILIA (Reptiles)				
TESTUDINES (Turtles)				
EMYDIDAE (Box and Water Turtles)				
Southwestern Pond Turtle	<i>Clemmys marmorata pallida</i>	--/SSC	Yes	PO
SQUAMATA (Lizards and Snakes)				
PHRYNOSOMATIDAE				
Coast Horned Lizard	<i>Phrynosoma coronatum</i>	--/SSC	Yes	PF, OD
Western Fence Lizard	<i>Sceloporus occidentalis</i>	--/--	No	PF
Granite Spiny Lizard	<i>Sceloporus orcutti</i>	--/--	No	PF
Side-blotched Lizard	<i>Uta stansburiana</i>	--/--	No	PF
EUBLEPHARIDAE (Eyelid Geckos)				
Western Banded Gecko	<i>Coleonyx variegatus⁴</i>	--/SSC	No	PO
ANIPELLIDAE				
California Legless Lizard	<i>Anniella pulchra pulchra</i>	--/SSC	No	PO

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
XANTUSIIDAE (Night Lizards)				
Granite Night Lizard	<i>Xantusia henshawi</i>	--/--	No	PF
SCINCIDAE (Skinks)				
Gilbert's Skink	<i>Eumeces gilberti</i>	--/--	No	PF
Western Skink	<i>Eumeces skiltonianus</i>	--/SSC	No	PF
TEIIDAE (Whiptails and relatives)				
Orange-throated Whiptail	<i>Cnemidophorus hyperythrus</i>	--/SSC	Yes	PF, OD
Western Whiptail	<i>Cnemidophorus tigris</i>	--/--	No	PF, OD
ANGUIDAE (Alligator Lizards and relatives)				
Southern Alligator Lizard	<i>Elgaria multicarinata</i>	--/--	No	PF
LEPTOTYPHLOPIDAE (Slender Blind Snakes)				
Western Blind Snake	<i>Leptotyphlops humilis</i>	--/--	No	PF
California Lyre Snake	<i>Trimorphodon biscutatus</i>	--/--	No	PO
BOIDAE (Boas)				
Coastal Rosy Boa	<i>Lichanura trivirgata roseofusca</i> ⁴	--/--	No	PO
COLUBRIDAE (Colubrids)				
Glossy Snake	<i>Arizona elegans</i> ⁴	--/--	No	PO
Ringneck Snake	<i>Diadophis punctatus</i>	--/--	No	PF
Night Snake	<i>Hypsiglena torquata</i>	--/--	No	PO
Common Kingsnake	<i>Lampropeltis getula</i>	--/--	No	PF
Baja California Coachwhip	<i>Masticophis flagellum</i>	--/--	No	PF
Striped Racer (California Whipsnake)	<i>Masticophis lateralis</i>	--/--	No	PF
Gopher Snake	<i>Pituophis melanoleucus</i>	--/--	No	PF
Long-nosed Snake	<i>Rhinocheilus lecontei</i>	--/--	No	PF
Coast Patch-nosed Snake	<i>Salvadora hexalepis virgultea</i>	--/SSC	No	PF
California Black-headed Snake	<i>Tantilla planiceps</i>	--/--	No	PF
Two-striped Garter Snake	<i>Thamnophis hammondi</i>	--/SSC	No	AS, PF, OD
VIPERIDAE (Vipers)				
Speckled Rattlesnake	<i>Crotalus mitchellii</i>	--/--	No	PO
Red Diamond Rattlesnake	<i>Crotalus ruber ruber</i>	--/SSC	No	PF
Western Rattlesnake	<i>Crotalus viridis</i>	--/--	No	PF
CLASS: AVES (Birds)				
PODICIPEDIFORMES (Grebes)				
PODICIPEDIDAE (Grebes)				
Eared Grebe	<i>Podiceps nigricollis</i>	--/--	No	IN
CICONIIFORMES (Hérons, Storks, Ibises, and relatives)				
ARDEIDAE (Hérons and Bitterns)				
Great Blue Heron	<i>Ardea herodias</i>	--/--	No	OD
Green Heron	<i>Butorides virescens</i>	--/--	No	BP
Snowy Egret	<i>Egretta thula</i>	--/--	No	IN
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	--/--	No	IN
CATHARTIDAE (New World Vultures)				
Turkey Vulture	<i>Cathartes aura</i>	--/--	No	IN, OD
ANSERIFORMES (Screamers, Ducks, and relatives)				
ANATIDAE (Swans, Geese, and Ducks)				
Mallard	<i>Anas platyrhynchos</i>	--/--	No	BP
Ring-necked Duck	<i>Aythya collaris</i>	--/--	No	IN, OD

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
Bufflehead	<i>Bucephala albeola</i>	--/--	No	IN, OD
FALCONIFORMES (Vultures, Hawks, and Falcons)				
ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)				
Cooper's Hawk	<i>Accipiter cooperi</i>	--/SSC	Yes	OD
Sharp shinned Hawk	<i>Accipiter striatus</i>	--/SSC	No	OD
Golden Eagle	<i>Aquila chrysaetos</i>	BEPA/SF P	Yes, NE	BP, OD
Red-tailed Hawk	<i>Buteo jamaicensis</i>	--/--	No	BP, OD
Red-shouldered Hawk	<i>Buteo lineatus</i>	--/--	No	BP
Ferruginous Hawk	<i>Buteo regalis</i>	--/SSC	Yes	OD
Swainson's Hawk	<i>Buteo swainsoni</i>	--/ST	Yes	PO
Northern Harrier	<i>Circus cyaneus</i>	--/SSC	Yes	IN, OD
White-tailed Kite	<i>Elanus leucurus</i>	--/SFP	No	BP, OD
Bald Eagle	<i>Haliaeetus leucocephalus</i>	FD, BEPA/SE, SFP	Yes	PO
Osprey	<i>Pandion haliaetus</i>	--/SSC	No	OD
FALCONIDAE (Caracaras and Falcons)				
Crested Caracara	<i>Caracara plancus auduboni</i>	--/--	No	BP
Merlin	<i>Falco columbarius</i>	--/SSC	No	BP, OD
Prairie Falcon	<i>Falco mexicanus</i>	--/SSC	No	IN
Peregrine Falcon	<i>Falco peregrinus</i>	FD/SE, SFP	Yes, NE	BP
American Kestrel	<i>Falco sparverius</i>	--/--	No	BP, OD
GRUIFORMES (Cranes, rails, and relatives)				
RALLIDAE (Rails, coots)				
American Coot	<i>Fulica americana</i>	--/--	No	OD
GALLIFORMES (Megapodes, Curassows, Pheasants, and relatives)				
PHASIANIDAE (Quails, Pheasants, and relatives)				
*Ring-necked Pheasant	<i>Phasianus colchicus</i>	--/--	No	IN
ODONTOPHORIDAE (New World Quail)				
California Quail	<i>Callipepla californica</i>	--/--	No	BP, OD
CHARADRIIFORMES (Shorebirds, Gulls, and relatives)				
CHARADRIIDAE (Plovers and relatives)				
Killdeer	<i>Charadrius vociferus</i>	--/--	No	BP, OD
SCOLOPACIDAE (Sandpipers and relatives)				
Greater Yellowlegs	<i>Tringa melanoleuca</i>	--/--	No	IN
LARIDAE (Terns)				
Forster's Tern	<i>Sterna forsteri</i>	--/--	No	BP
COLUMBIFORMES (Pigeons and Doves)				
COLUMBIDAE (Pigeons and Doves)				
*Rock Pigeon	<i>Columba livia</i>	--/--	No	IN
Mourning Dove	<i>Zenaidura macroura</i>	--/--	No	BP, OD
CUCULIFORMES (Cuckoos and relatives)				
CUCULIDAE (Typical Cuckoos)				
Greater Roadrunner	<i>Geococcyx californianus</i>	--/--	No	BP, RC
STRIGIFORMES (Owls)				
TYTONIDAE (Barn Owls)				
Common Barn Owl	<i>Tyto alba</i>	--/--	No	NT, OD
STRIGIDAE (Typical Owls)				

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
Short-eared Owl	<i>Asio flammeus</i>	--/SSC	No	OD
Long-eared Owl	<i>Asio otus</i>	--/SSC	No	NT
Burrowing Owl	<i>Athene cunicularia hypugaea</i>	--/SSC	Yes	NT, OD
Great Horned Owl	<i>Bubo virginianus</i>	--/--	No	NT, OD
Western Screech Owl	<i>Megascops kennicottii</i>	--/--	No	OD
CAPRIMULGIFORMES (Goatsuckers and relatives)				
CAPRIMULGIDAE (Goatsuckers)				
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	--/--	No	OD
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	--/--	No	NT
APODIFORMES (Swifts and Hummingbirds)				
TROCHILIDAE (Hummingbirds)				
White-throated Swift	<i>Aeronautes saxatalis</i>	--/--	No	PO
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	--/--	No	IN
Anna's Hummingbird	<i>Calypte anna</i>	--/--	No	BP
Costa's Hummingbird	<i>Calypte costae</i>	--/--	No	BP
Allen's Hummingbird	<i>Selasphorus sasin</i>	--/--	No	BP
CORACIIFORMES (Kingfishers and relatives)				
ALCEDINIDAE (Kingfishers)				
Belted Kingfisher	<i>Ceryle alcyon</i>	--/--	No	IN
PICIFORMES (Woodpeckers and relatives)				
PICIDAE (Woodpeckers and Wrynecks)				
Northern Flicker	<i>Colaptes auratus</i>	--/--	No	IN
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	--/--	No	BP
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	--/--	No	BP, OD
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	--/--	No	PO
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	--/--	No	PO
PASSERIFORMES (Perching Birds)				
TYRANNIDAE (Tyrant Flycatchers)				
Western Wood Pewee	<i>Contopus sordidulus</i>	--/--	No	OD
Pacific-Slope Flycatcher	<i>Empidonax difficilis</i>	--/--	No	IN, OD
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	FE/SSC	Yes	PO
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	--/--	No	BP
Black Phoebe	<i>Sayornis nigricans</i>	--/--	No	BP
Say's Phoebe	<i>Sayornis saya</i>	--/--	No	IN
Western Kingbird	<i>Tyrannus verticalis</i>	--/--	No	BP, OD
Cassin's Kingbird	<i>Tyrannus vociferans</i>	--/--	No	BP, OD
LANIIDAE (Shrikes)				
Loggerhead Shrike	<i>Lanius ludovicianus</i>	--/SSC	No	BP, OD
VIREONIDAE (Typical Vireos)				
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE/SE	Yes	BP, OD
Warbling Vireo	<i>Vireo gilvus</i>	--/--	No	BP
Hutton's Vireo	<i>Vireo huttoni</i>	--/--	No	BP, OD
Gray Vireo	<i>Vireo vicinior</i>	--/SSC	No	PO
CORVIDAE (Jays, Magpies, and Crows)				
Western Scrub-Jay	<i>Aphelocoma californica</i>	--/--	No	BP, OD
*Magpie Jay (Black-throated form)	<i>Calocitta colliei</i>	--/--	No	IN, OD
American Crow	<i>Corvus brachyrhynchos</i>	--/--	No	BP, OD
Common Raven	<i>Corvus corax</i>	--/--	No	BP, OD
BOMBYCILLIDAE (Waxwings and Silky Flycatchers)				
Phainopepla	<i>Phainopepla nitens</i>	--/--	No	BP, OD

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
TURDIDAE				
Swainson's Thrush	<i>Catharus ustulatus</i>	--/--	No	OD
Mountain Bluebird	<i>Sialia currucoides</i>	--/--	No	IN, OD
Western Bluebird	<i>Sialia mexicana</i>	--/--	Yes	IN, OD
American Robin	<i>Turdus migratorius</i>	--/--	No	PO
STURNIDAE (Starlings & Allies)				
*European Starling	<i>Sturnus vulgaris</i>	--/--	No	BP
MIMIDAE (Mockingbirds and Thrashers)				
Northern Mockingbird	<i>Mimus polyglottos</i>	--/--	No	BP, OD
California Thrasher	<i>Toxostoma redivivum</i>	--/--	No	BP
SITTIDAE (Nuthatches)				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	--/--	No	PO
TROGLODYTIDAE (Wrens)				
Coastal Cactus Wren	<i>Campylorhynchus brunneicapillus cousei</i>	--/SSC	Yes	PO
Marsh Wren	<i>Cistothorus palustris</i>	--/--	No	BP
Bewick's Wren	<i>Thryomanes bewickii</i>	--/--	No	BP
House Wren	<i>Troglodytes aedon</i>	--/--	No	IN, OD
POLIOPTILIDAE (Verdin and Gnatcatcher)				
Blue Gray Gnatcatcher	<i>Poliophtila caerulea</i>	--/--	No	BP
California Gnatcatcher	<i>Poliophtila californica</i>	FT/SSC	Yes	BP, OD
PARIDAE (Titmice and relatives)				
Oak Titmouse	<i>Baeolophus inornatus</i>	--/--	No	BP
AEGITHALIDAE (Bushtit)				
Bushtit	<i>Psaltiriparus minimus</i>	--/--	No	BP, OD
HIRUNDINIDAE (Swallows)				
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	--/--	No	BP, OD
Purple Martin	<i>Progne subis</i>	--/SSC	No	PO
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	--/--	No	BP
Violet-green Swallow	<i>Tachycineta thalassina</i>	--/--	No	BP
REGULIDAE (Kinglets)				
Ruby-crowned Kinglet	<i>Regulus calendula</i>	--/--	No	PO
Golden-crowned Kinglet	<i>Regulus satrapa</i>	--/--	No	OD
TIMALIIDAE (Babblers)				
Wrentit	<i>Chamaea fasciata</i>	--/--	No	BP, OD
ALAUDIDAE (Larks)				
Horned Lark	<i>Eremophila alpestris</i>	--/SSC	No	BP
MOTACILLIDAE (Pipits and Wagtails)				
American Pipit	<i>Anthus rubescens</i>	--/--	No	PO
FRINGILLIDAE (Finches)				
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	--/--	No	BP
Lesser Goldfinch	<i>Carduelis psaltria</i>	--/--	No	BP
American Goldfinch	<i>Carduelis tristis</i>	--/--	No	BP
House Finch	<i>Carpodacus mexicanus</i>	--/--	No	BP
PASSERIDAE				
*House Sparrow	<i>Passer domesticus</i>	--/--	No	OD

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
EMBERIZIDAE (Emberizines)				
Southern CA Rufous-crowned Sparrow	<i>Aimophila ruficeps canescens</i>	--/SSC	Yes	BP, OD
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	--/--	No	BP, OD
Bell's Sage Sparrow	<i>Amphispiza belli</i>	--/SSC	No	BP, OD
Lark Sparrow	<i>Chondestes grammacus</i>	--/--	No	BP, OD
Dark-eyed Junco	<i>Junco hyemalis</i>	--/--	No	IN,
Song Sparrow	<i>Melospiza melodia</i>	--/--	No	BP
Savannah Sparrow	<i>Passerculus sandwichensis</i>	--/--	No	BP
Fox Sparrow	<i>Passerella iliaca</i>	--/--	No	PO
Lincoln's Sparrow	<i>Passerella (Melospiza) lincolni</i>	--/--	No	OD
Spotted Towhee	<i>Pipilo maculatus</i>	--/--	No	BP
California Towhee	<i>Pipilo crissalis</i>	--/--	No	BP
Vesper Sparrow	<i>Pooecetes gramineus</i>	--/--	No	OD
Chipping Sparrow	<i>Spizella passerina</i>	--/--	No	IN
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	--/--	No	PO
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	--/--	No	BP
PARULIDAE (Wood Warblers and relatives)				
Yellow-rumped Warbler	<i>Dendroica coronata</i>	--/--	No	BP
Yellow Warbler	<i>Dendroica petechia</i>	--/SSC	No	BP, OD
Townsend's Warbler	<i>Dendroica townsendii</i>	--/--	No	BP
Yellow-breasted Chat	<i>Icteria virens</i>	--/SSC	No	BP, OD
Common Yellowthroat	<i>Geothlypis trichas</i>	--/--	No	BP
Orange-crowned Warbler	<i>Vermivora celata</i>	--/--	No	BP
Nashville Warbler	<i>Vermivora ruficapilla</i>	--/--	No	BP
Wilson's Warbler	<i>Wilsonia pusilla</i>	--/--	No	OD
THRAUPIDAE (Tanagers)				
Western Tanager	<i>Piranga ludoviciana</i>	--/--	No	BP
CARDINALIDAE (Cardinals, Grosbeaks & Allies)				
Blue Grosbeak	<i>Guiraca caerulea</i>	--/--	No	BP
Lazuli Bunting	<i>Passerina amoena</i>	--/--	No	BP, RC
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	--/--	No	IN
ICTERIDAE (Blackbirds, Orioles & Allies)				
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	--/--	No	BP
Tricolored Blackbird	<i>Agelaius tricolor</i>	--/SSC	Yes	PO
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	--/--	No	BP
Bullocks Oriole	<i>Icterus bullockii</i>	--/--	No	BP
Hooded Oriole	<i>Icterus cucullatus</i>	--/--	No	BP
*Brown-headed Cowbird	<i>Molothrus ater</i>	--/--	No	IN
Western Meadowlark	<i>Sturnella neglecta</i>	--/--	No	BP
CLASS: MAMMALIA (Mammals)				
DIDELPHIMORPHIA (Marsupials)				
DIDELPHIDAE (Opossums)				
*Virginia Opossum	<i>Didelphis virginiana</i>	--/--	No	TS
INSECTIVORA (Insectivores)				
SORICIDAE (Shrews)				
Desert Shrew	<i>Notiosorex crawfordi</i>	--/--	No	PF
Ornate Shrew	<i>Sorex ornatus</i>	--/--	No	PF
TALPIDAE (Moles)				
Broad-footed Mole	<i>Scapanus latimanus</i>	--/--	No	PO
CHIROPTERA (Bats)				
VESPERTILIONIDAE (Evening Bats)				
Pallid Bat	<i>Antrozous pallidus</i>	--/SSC	No	BS
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	--/SSC	No	BS

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
Big Brown Bat	<i>Eptesicus fuscus</i>	--/--	No	BS
Western Red Bat	<i>Lasiurus blossevillii</i>	--/--	No	PO
Hoary Bat	<i>Lasiurus cinereus</i>	--/--	No	BS
California Myotis	<i>Myotis californicus</i>	--/--	No	BS
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	--/--	No	BS
Long-eared Myotis	<i>Myotis evotis</i> ⁴	--/--	No	IN
Yuma Myotis	<i>Myotis yumanensis</i>	--/--	No	BS
Western Pipistrelle	<i>Pipistrellus hesperus</i>	--/--	No	BS
MOLOSSIDAE (Free-tailed Bats)				
Western Mastiff Bat	<i>Eumops perotis</i>	--/SSC	No	BS
Pocketed Free-tailed Bat	<i>Nyctinomops femorosacca</i>	--/SSC	No	BS
Big Free-tailed Bat	<i>Nyctinomops macrotis</i>	--/SSC	No	BS
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>	--/--	No	BS
LAGOMORPHA (Rabbits, Hares, and Pikas)				
LEPORIDAE (Rabbits and Hares)				
Black-tailed (Hare) Jackrabbit	<i>Lepus californicus</i>	--/SSC	No	RC
Audubon's (Desert) Cottontail	<i>Sylvilagus audubonii</i>	--/--	No	RC, TS
Brush Rabbit	<i>Sylvilagus bachmani</i>	--/--	No	OD
RODENTIA (Squirrels, Rats, Mice, and relatives)				
SCIURIDAE (Squirrels, Chipmunks, and Marmots)				
California Ground Squirrel	<i>Spermophilus beecheyi</i>	--/--	No	TS
GEOMYIDAE (Pocket Gophers)				
Botta's Pocket Gopher	<i>Thomomys bottae</i>	--/--	No	PF
HETEROMYIDAE (Pocket Mice and Kangaroo Rats)				
California Pocket Mouse	<i>Chaetodipus californicus</i>	--/SSC	No	PO
San Diego Pocket Mouse	<i>Chaetodipus fallax fallax</i>	--/SSC	No	PF, ST
Agile Kangaroo Rat	<i>Dipodomys agilis</i>	--/--	No	OD
San Diego Kangaroo Rat	<i>Dipodomys simulans</i>	--/--	No	PF, ST
MURIDAE				
California Vole	<i>Microtus californicus</i>	--/--	No	PF
*House Mouse	<i>Mus musculus</i>	--/--	No	ST
Dusky-footed Woodrat	<i>Neotoma fuscipes</i>	--/--	No	PO
Desert Woodrat	<i>Neotoma lepida</i>	--/SSC	No	PF, ST
Southern Grasshopper Mouse	<i>Onychomys torridus</i> ⁴	--/SSC	No	PO
Brush Mouse	<i>Peromyscus boylii</i>	--/--	No	PO
California Mouse	<i>Peromyscus californicus</i>	--/--	No	PF
Cactus Mouse	<i>Peromyscus eremicus</i>	--/--	No	PF, ST
Deer Mouse	<i>Peromyscus maniculatus</i>	--/--	No	PF, ST
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	--/--	No	PF
CARNIVORA (Carnivores)				
CANIDAE (Foxes, Wolves, and relatives)				
*Domestic Dog	<i>Canis familiaris</i>	--/--	No	RC, TS
Coyote	<i>Canis latrans</i>	--/--	No	RC, TS
Gray Fox	<i>Urocyon cinereoargenteus</i>	--/--	No	TS
PROCYONIDAE (Raccoons and relatives)				
Ringtail	<i>Bassariscus astutus</i> ⁴	--/--	No	PO
Raccoon	<i>Procyon lotor</i>	--/--	No	TS
MUSTELIDAE (Weasles, skunks, and relatives)				
Long-tailed Weasel	<i>Mustela frenata</i>	--/--	No	OD
Striped Skunk	<i>Mephitis mephitis</i>	--/--	No	RC, TS
Western Spotted Skunk	<i>Spilogale gracilis</i>	--/--	No	TS

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
American Badger	<i>Taxidea taxus</i>	--/SSC	Yes	PO
FELIDAE (Cats)				
*House Cat	<i>Felis catus</i>	--/--	No	TS
Bobcat	<i>Lynx rufus</i>	--/--	No	RC, TS
Mountain Lion	<i>Puma concolor</i>	--/--	Yes	RC
ARTIODACTYLA (Even-toed Ungulates)				
CERVIDAE (Deer, Elk, and relatives)				
Mule Deer	<i>Odocoileus hemionus</i>	--/--	Yes	RC, TS

¹ **Status:** *Federal:* FE – endangered, FT – threatened, FSC – special concern, FFP – fully protected, BEPA – Bald Eagle Protection Act, FD – federally delisted. USFWS no longer keeps a list of Federal Species of Concern. *State:* SE – endangered, ST – threatened, SSC – special concern, SFP – fully protected.

² **MSCP Coverage:** Yes - covered by the County of San Diego Subarea Plan. NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

³ **Detection Method Codes**

Methods used during 1998-2004 USGS baseline surveys: PO – Potentially Occurring; AS - Aquatic Survey, BP - Bird Point Count Survey, BS - Bat Survey, IN - Incidental, NT - Night Time Bird Point Count Survey, PF - Pitfall Survey, RC - Remote Camera, ST - Sherman Trap, TS- Track Station.

Observations made before or after USGS baseline surveys: FS – US Forest Service, 1950; OD – Other Data Sources (incidental sightings or surveys conducted by CDFG, Wildland Inc, Dudeck & Associates, SDNHM Bird Atlas Project, and Lettieri-McIntyre and Associates)

⁴ USGS recommended species for which additional surveys may be required

[†] Presumed extirpated from RJER

* **Introduced species**

Appendix E

Sensitive Species Documented from RJER

Sensitive Species Documented from Rancho Jamul Ecological Reserve

Common Name	Scientific Name	Status ¹	Covered by MSCP	Detection Method ²
Plants				
Coast Barrel Cactus	<i>Ferocactus viridescens</i>	--/List 2	Yes	RP
Coulter's Matilija Poppy	<i>Romneya coulteri</i>	--/List 4	No	RP
Coulter's Saltbush	<i>Atriplex coulteri</i>	--/List 1B	No	RP
Delicate Clarkia	<i>Clarkia delicata</i>	--/List 1B	No	OD
Little Mousetail	<i>Myosurus minimus</i>	--/List 3	No	OD
Otay Tarplant	<i>Deinandra (Hemizonia) conjugens</i>	FT/SE, List 1B	Yes, NE	RP
Palmer's Goldenbush	<i>Ericameria palmeri ssp. palmeri</i>	--/List 2	Yes	OD
Palmer's Grapplinghook	<i>Harpagonella palmeri</i>	--/List 4	No	RP
San Diego Ambrosia	<i>Ambrosia pumila</i>	FE/List 1B	Yes, NE	CM
San Diego Goldenstar	<i>Muilla clevelandii</i>	--/List 1B	Yes	RP
San Diego Marsh Elder	<i>Iva hayesiana</i>	--/List 2	No	RP
San Diego Needlegrass	<i>Achnatherum diegoensis</i>	--/List 4	No	RP
San Diego Sagewort	<i>Artemisia palmeri</i>	--/List 4	No	OD
San Diego Sunflower	<i>Viguiera laciniata</i>	--/List 4	No	RP
Small-flowered Morning-glory	<i>Convolvulus simulans</i>	--/List 4	No	RP
South Coast Saltbush	<i>Atriplex pacifica</i>	--/List 1B	No	RP
Southwestern Spiny Rush	<i>Juncus acutus ssp. leopoldii</i>	--/List 4	No	RP
Tecate Cypress	<i>Cupressus forbesii</i>	--/List 1B	Yes	RP
Variegated Dudleya	<i>Dudleya variegata</i>	--/List 1B	Yes, NE	RP
Western Dichondra	<i>Dichondra occidentalis</i>	--/List 4	No	RP
Invertebrates				
Harbison's Dun Skipper	<i>Euphyes vestris harbisoni</i>	--/--	No, NE	OD
Hermes Copper Butterfly	<i>Lycaena hermes</i>	--/--	No	OD
Quino Checkerspot Butterfly	<i>Euphydryas editha quino</i>	FE/--	No, NE	OD
Amphibians				
California Red-legged Frog†	<i>Rana aurora draytoni</i>	FT/SSC	Yes, NE	FS
Western Spadefoot	<i>Spea (Scaphiopus) hammondii</i>	--/SSC	No	AS, PF, OD
Reptiles				
Coast Horned Lizard	<i>Phrynosoma coronatum</i>	--/SSC	Yes	PF, OD
Western Coast Patch-nosed Snake	<i>Salvadora hexalepis virgultea</i>	--/SSC	No	PF
Orange-throated Whiptail	<i>Cnemidophorus hyperythrus</i>	--/SSC	Yes	PF, OD
Red Diamond Rattlesnake	<i>Crotalus ruber ruber</i>	--/SSC	No	PF
Two-striped Garter Snake	<i>Thamnophis hammondii</i>	--/SSC	No	AS, PF, OD
Western Skink	<i>Eumeces skiltonianus</i>	--/SSC	No	PF
Birds				
Allen's Hummingbird	<i>Selasphorus sasin</i>	--/--	No	BP
Bell's Sage Sparrow	<i>Amphispiza belli</i>	--/SSC	No	BP, OD
Burrowing Owl	<i>Athene cunicularia hypugaea</i>	--/SSC	Yes	NT, OD
California Gnatcatcher	<i>Poliophtila californica</i>	FT/SSC	Yes	BP, OD
California Thrasher	<i>Toxostoma redivivum</i>	--/--	No	BP
Cooper's Hawk	<i>Accipiter cooperi</i>	--/SSC	Yes	OD
Ferruginous Hawk	<i>Buteo regalis</i>	--/SSC	Yes	OD
Golden Eagle	<i>Aquila chrysaetos</i>	BEPA/SFP	Yes, NE	BP, OD
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	--/--	No	BP, OD
Horned Lark	<i>Eremophila alpestris</i>	--/SSC	No	BP
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	--/--	No	BP
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE/SE	Yes	BP, OD
Loggerhead Shrike	<i>Lanius ludovicianus</i>	--/SSC	No	BP, OD

Special Status Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP	Detection Method ²
Long-eared Owl	<i>Asio otus</i>	--/SSC	No	NT
Merlin	<i>Falco columbarius</i>	--/SSC	No	BP, OD
Northern Harrier	<i>Circus cyaneus</i>	--/SSC	Yes	IN, OD
Osprey	<i>Pandion haliaetus</i>	--/SSC	No	OD
Peregrine Falcon	<i>Falco peregrinus</i>	FD/SE, SFP	Yes, NE	BP
Prairie Falcon	<i>Falco mexicanus</i>	--/SSC	No	IN
Sharp-shinned Hawk	<i>Accipiter striatus</i>	--/SSC	No	OD
Short-eared Owl	<i>Asio flammeus</i>	--/SSC	No	OD
Southern CA Rufous-crowned Sparrow	<i>Aimophila ruficeps canescens</i>	--/SSC	Yes	BP, OD
Western Bluebird	<i>Sialia mexicana</i>	--/--	Yes	IN, OD
White-tailed Kite	<i>Elanus leucurus</i>	--/SFP	No	BP, OD
Yellow Warbler	<i>Dendroica petechia</i>	--/SSC	No	BP, OD
Yellow-breasted Chat	<i>Icteria virens</i>	--/SSC	No	BP, OD
Mammals				
Big Free-tailed Bat	<i>Nyctinomops macrotis</i>	--/SSC	No	BS
Black-tailed (Hare) Jackrabbit	<i>Lepus californicus</i>	--/SSC	No	RC
Desert Woodrat	<i>Neotoma lepida</i>	--/SSC	No	PF, ST
Hoary Bat	<i>Lasiurus cinereus</i>	--/--	No	BS
Long-eared Myotis	<i>Myotis evotis</i>	--/--	No	IN
Mountain Lion	<i>Puma concolor</i>	--/--	Yes	RC
Mule Deer	<i>Odocoileus hemionus</i>	--/--	Yes	RC, TS
Pallid Bat	<i>Antrozous pallidus</i>	--/SSC	No	BS
Pocketed Free-tailed Bat	<i>Nyctinomops femorosacca</i>	--/SSC	No	BS
San Diego Pocket Mouse	<i>Chaetodipus fallax fallax</i>	--/SSC	No	PF, ST
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	--/SSC	No	BS
Western Mastiff Bat	<i>Eumops perotis</i>	--/SSC	No	BS
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	--/--	No	BS
Yuma Myotis	<i>Myotis yumanensis</i>	--/--	No	BS

¹ **Status:** *Federal:* FE – endangered, FT – threatened, FFP – fully protected, BEPA – Bald Eagle Protection Act, FD – federally delisted; USFWS no longer keeps a list of Federal Species of Concern. *State:* SE – endangered, ST – threatened, SSC – special concern, SFP – fully protected. *California Native Plant Society (CNPS):* List 1B – Plants rare, threatened, or endangered in California and elsewhere, List 2: Plants rare, threatened, or endangered in California, but more common elsewhere, List 3 – Plants about which we need more information, List 4 – Plants of limited distribution (a watch list).

² **Covered by MSCP :** covered by County of San Diego Subarea Plan; NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

³ **Detection Method Codes**

Methods used during 1998-2004 USGS baseline surveys: PO – Potentially Occurring; RP – Rare Plant Survey, AS - Aquatic Survey, BP - Bird Point Count Survey, BS - Bat Survey, IN - Incidental, NT - Night Time Bird Point Count Survey, PF - Pitfall Survey, RC - Remote Camera, ST - Sherman Trap, TS - Track Station.

Observations made before or after USGS baseline surveys: CM – CalMat and PSBS surveys reported in LMA (1994); FS – US Forest Service, 1050; OD – Other Data Sources (incidental sightings or surveys conducted by the Department, Wildland Inc, Dudeck & Associates, SDNHM Bird Atlas Project, and Lettieri-McIntyre and Associates).

† **Presumed extirpated from RJER**

Appendix F

Species Accounts for Listed Species

Species Accounts

for Listed Species that Occur or Potentially Occur on RJER

SAN DIEGO AMBROSIA – *Ambrosia pumila*

USFWS Status: None
CDFG Status: Endangered
CNPS Status: List 1B
MSCP Status: Covered
RJER Status: Documented but presumed extirpated

San Diego ambrosia is distributed from western Riverside County and western San Diego County, California, to the west coast of Baja California, Mexico. Currently a total of only 15 occurrences are believed to remain in San Diego (12) and Riverside (3) Counties. The population status in Mexico is unknown. This species occurs in creek beds, seasonally dry drainages, open floodplains, and occasionally on the watershed margins of vernal pools. These habitats are usually associated with sandy alluvium or riverwash type soils. Reproduction occurs by vegetative means through the extension of rhizomes (underground stems). The implication of this type of reproduction is that each population could be one genetically distinct individual restricted to the immediate appropriate habitat. Sexual reproduction and seed set are not considered to be common in this taxon, and therefore, dispersal is limited. Although this species has been documented from RJER (at the southwestern corner of the CalMat parcel) (CNDDDB) it is presumed to have been extirpated based on a description of extant occurrences in the federal listing document (USFWS 2002a).

SAN DIEGO THORN MINT - *Acanthomintha ilicifolia*

USFWS Status: Threatened
CDFG Status: Endangered
CNPS Status: List 1B
MSCP Status: Covered
RJER Status: Potentially occurring

San Diego thorn-mint is restricted in distribution to San Diego County and northern Baja California, Mexico. It occurs on calcareous marine sediments, clay, or gabbro-derived soils and is associated with coastal sage scrub, chaparral, and grassland (Reiser, 1994). It is an annual plant that may experience yearly fluctuations in population size and location. This species appears to be an out-cropper that is insect-pollinated, and may rely on animal vectors, in part, for seed dispersal. Threats to this species include cumulative habitat loss and degradation, trampling, illegal dumping, livestock grazing, invasive exotic plants, collecting, edge effects, and, possibly, genetic isolation and herbivory. Although this species has not been documented from RJER, it has been documented just north of SR 94, in Hollenbeck Canyon Wildlife Area, east of RJER. In addition, appropriate habitat conditions exist in many parts of the Reserve (Hathaway, et al. 2002).

OTAY TARPLANT - *Deinandra (Hemizonia) conjugens*

USFWS Status: Threatened
CDFG Status: Endangered
CNPS Status: List 1B
MSCP Status: Covered
RJER Status: Present

This herbaceous plant is restricted to southern San Diego County and northern Baja California, Mexico. It occurs on fractured clay soils in grassland or open coastal sage scrub. Its U.S. distribution is limited to the remaining undisturbed lands from the Sweetwater River to the border and between Chula Vista and lower Otay Reservoir (Reiser 1994). Within RJER, this species has been documented from grassland and coastal sage scrub habitat in the central mesa/plateau. The estimated population size on the Reserve is approximately 2,000 plants (Hathaway, et al. 2002). Encroaching development and invasion by exotic species are its greatest threats, however, this species is not as sensitive to disturbance as many other species restricted to clay soils (Hathaway et al. 2002).

QUINO CHECKERSPOT BUTTERFLY - *Euphydryas editha quino*

USFWS Status: Endangered
CDFG Status: None
MSCP Status: Not Covered
RJER Status: Present

The historical distribution of the Quino Checkerspot Butterfly (QCB) included much of coastal California south of Ventura County and inland valleys south of the Tehachapi Mountains. The current distribution is limited to western Riverside County, southern San Diego County and northern Baja California. Distribution of this subspecies is driven by metapopulation dynamics involving local extinctions and population explosions, which lead to recolonization of habitat.

Effective habitat management for this species requires an understanding of behavior, habitat structure, and host plants. Preferred Quino checkerspot habitat consists of coastal sage scrub or grassland habitat with low, open vegetation, as adults tend to fly low to the ground. The soil is exposed in large patches, and often composed of red clay with a cryptogamic crust. Another indicator of good quality habitat is a shallow slope, most commonly on hill tops. Presence of the primary or secondary larval host plants plantago (*Plantago erecta* and *P. patagonica*) white snapdragon (*Antirrhinum coulterianum*), bird's beak (*Cordylanthus rigidus*), and owl's clover (*Castilleja exerta*) is critical to the survival of the larvae, and therefore, the species (Marschalek 2001b, USFWS 2002b). Adult checkerspot butterflies, which feed on nectar, use a much wider range of plant species for feeding than the larvae which feed on leaves and stems.

The federally endangered Quino checkerspot butterfly is known to occur in at least three different areas in the southeastern portion of RJER. Additional potential habitat for this species occurs in at least 23 separate areas scattered throughout the Reserve (Marschalek, 2001a). The LMP area is an important component of the conservation efforts for this species because it lies within critical habitat (the San Diego Otay Unit) that has been designated by the USFWS (USFWS 2002).

ARROYO TOAD - *Bufo californicus*

USFWS Status: Endangered
CDFG Status: California Special Concern Species
MSCP Status: Covered
RJER Status: Potentially occurring

This species is distributed in semiarid parts of the southwest from near Santa Margarita in San Luis Obispo County to northwestern Baja California. Because the arroyo toad requires very specific breeding and adjacent upland (non-breeding) habitat conditions, its distribution is very limited. Breeding activity typically occurs from February to June. Suitable breeding habitat includes a low-gradient (usually less than 2 percent), sandy or

gravelly stream bed with little current, shallow pools and adjacent sand bars (USFWS 1994). This condition must persist for at least three months during the spring and summer. Riparian vegetation consists of oaks, willows and cottonwood trees, with little understory.

Habitat management for this species should include protection of primary breeding habitat and adjacent upland areas. Breeding habitat can be protected by maintaining ecological and hydrological processes to support healthy alluvial fan and riparian habitats. This can be done by controlling land uses that will affect flood control, water use, erosion, sediment deposition; by controlling pesticide and herbicide use; and by managing for exotic plant and animal species, and limiting access to livestock.

Although this species has not been recorded from RJER, potential habitat exists along riparian corridors wherever appropriate breeding conditions exist.

BALD EAGLE - *Haliaeetus leucocephalus*

USFWS Status:	Proposed for Delisting, Bald Eagle Protection Act
CDFG Status:	Endangered, Fully Protected
MSCP Status:	Covered
RJER Status:	Potentially occurring

The bald eagle breeds throughout much of North America and southern Canada, but is an uncommon winter visitor to San Diego County (Unitt 2004). Only one nesting record has been reported for this species in the County, at Little Tecate Peak in 1936. Bald eagles frequently winter at Lake Henshaw, Whalen Lake, and Lake Cuyamaca (Unitt 2004). Because their diet consists mostly of fish, wintering bald eagles require large bodies of open water for foraging. Additionally, preferred habitat contains large trees for roosting. This species has declined because of shooting, human disturbance at nest sites, loss of nesting trees, loss of open water habitat due to human activities, power line electrocution, and reproductive failure caused by DDT (Buehler et al 2002). No observations of this species have been made on RJER; however, one incidental sighting was reported by Madden-Smith et al. (2004) in adjacent Hollenbeck Canyon Wildlife Area. The closest large body of water in the vicinity is Otay Lakes to the southwest. Therefore, any incidental observations of this species within RJER are likely to be individuals that are passing through.

CALIFORNIA GNATCATCHER - *Polioptila californica californica*

USFWS Status:	Threatened
CDFG Status:	Species of Concern
MSCP Status:	Covered
RJER Status:	Present

The coastal California gnatcatcher is restricted to the coastal slopes of southern California, from Los Angeles County south to El Rosario, Baja California, Mexico. It is

closely associated with coastal sage scrub vegetation occurring on gentle slopes within the maritime and coastal climate zones. Dominant plants in this vegetation community include California sagebrush (*Artemisia californica*) California buckwheat (*Eriogonum fasciculatum*) as well as black sage (*Salvia mellifera*) or lemonade berry (*Rhus integrifolia*). Early studies suggested that the California gnatcatcher is highly sensitive to the effects of habitat fragmentation and development activity (Atwood and Bontranger 2001). The USFWS has estimated that coastal sage scrub habitat has been reduced by 70 to 90% of its historical extent (USFWS 1993), and little of what remains is protected in natural open space. RJER will play an important role in the conservation of this species. Approximately 10 observations have been recorded throughout the Reserve.

LEAST BELL'S VIREO - *Vireo bellii pusillus*

USFWS Status:	Endangered
CDFG Status:	Endangered
MSCP Status:	Covered
RJER Status:	Present

Currently, least Bell's vireos breed only in riparian woodlands in southern California, with the majority of breeding pairs in San Diego, Santa Barbara, and Riverside Counties. Substantial vireo populations are currently found on five rivers in San Diego County: Tijuana, Sweetwater, San Diego, San Luis Rey, and Santa Margarita, with smaller populations in other drainages. The least Bell's vireo arrives in San Diego County in late March and early April and leaves for its wintering ground in September. This species is most frequent in areas that combine an understory of dense young willows or mule fat with a semi-open canopy of tall willows. The vireo's decline is due to loss, degradation, and fragmentation of riparian habitat combined with nest parasitism by the brown-headed cowbird. Survey data obtained from Wildlands Inc. (1998-2004) document the presence of vireos along much of Jamul and Dulzura Creeks.

PEREGRINE FALCON - *Falco peregrinus*

USFWS Status:	Delisted
CDFG Status:	Endangered, Fully Protected
MSCP Status:	Covered
RJER Status:	Present

The American peregrine falcon is in the process of recovering much of its former breeding range in North America. Within San Diego County, peregrine falcons occur along coastal areas and at reservoirs in the county during winter. Foraging habitat for this species includes coastal wetland areas, extensive riparian areas, and lakes that support large flocks of waterbirds (ducks, shorebirds) or pigeons. Peregrines traditionally nest on cliff faces but have adapted to also nest on tall building ledges, towers, and similar tall structures. Nest sites need minimal human disturbance. One falcon was observed in the southeastern portion of RJER near Dulzura Creek.

SOUTHWESTERN WILLOW FLYCATCHER - *Empidonax traillii extimus*

USFWS Status: Endangered
CDFG Status: Species of Concern
MSCP Status: Covered
RJER Status: Potentially occurring

The southwestern willow flycatcher is a migratory species that is restricted to a few major river drainages in the southwestern United States. Within San Diego County, small concentrations of breeding willow flycatchers persist along the San Luis Rey and Santa Margarita Rivers with scattered observations throughout the county (Unitt 2004). During the breeding season this species is primarily confined to riparian woodland and riparian willow habitats. It is often found in the same habitat as the least Bell's vireo; however, the willow flycatcher generally prefers larger patches of a more mature riparian forest, which consists of a well developed canopy. The presence of dense foliage down through the understory layer also appears to be critical (J. Lovio pers comm.).

This species has declined primarily due to loss, alteration, and degradation of riparian habitats, and brown-headed cowbird nest parasitism (Unitt 2004). Although breeding pairs have not been recorded from RJER, appropriate habitat conditions for the willow flycatcher exist along Dulzura and Jamul Creeks, and migrating individuals have been recorded in or near the Reserve (Unitt 2004).

SWAINSON'S HAWK - *Buteo swainsoni*

USFWS Status: Species of Concern
CDFG Status: Threatened
MSCP Status: Covered
RJER Status: Potentially occurring

Though once abundant in San Diego during the breeding season a hundred years ago, this species is now only seen during spring and fall migration usually as individuals or small flocks (Unitt, 2004). During the breeding season, the diet of the Swainson's hawk consists of rodents, rabbits, and reptiles. When not breeding, however, this hawk is atypical because it is almost exclusively insectivorous (England et al, 1997). In many parts of its range, this hawk has adjusted well to agricultural landscapes. The greatest threat to this declining species is the use of pesticides and other chemicals, especially in Argentina, where it winters, urbanization, and loss of habitat (Unitt, 2004). Although this species has not been recorded from RJER, it is expected to occur due to the presence of suitable habitat and documented occurrences within a few miles of the reserve.

References

- Atwood, J.L. and D.R. Bontrager. 2001. California Gnatcatcher (*Polioptila californica*). In A. Poole and F. Gill (eds.) *The Birds of North America* No. 574. Philadelphia.
- Buehler, D.A. 2000. Bald Eagle (*Haliaeetus leucocephalus*), In: A. Poole and F. Gill eds., *The Birds of North America*, No. 506, Philadelphia, PA.
- England, A. S., M. J. Bechard, and C. S. Houston. 1997. Swainson's Hawk (*Buteo swainsoni*). In *The Birds of North America*, No. 265 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Marschalek, D. 2001. Potential quino checkerspot butterfly (*Euphydryas editha quino*) habitat at Rancho Jamul Ecological Reserve. Prepared for California Department of Fish and Game. 4pp.
- Marschalek, D. 2001. Insects in the DFG lands collection. Prepared for the Prepared for California Department of Fish and Game. 10 pp.
- Reiser, C. H. 1994. *Rare Plants of San Diego County*. Aquafir Press, Imperial Beach, CA.
- Unitt, P. 2004. *San Diego County bird atlas*. San Diego Natural History Museum and Ibis Publishing Company, San Diego.
- U.S. Fish and Wildlife Service (USFWS) 1993. Endangered and threatened wildlife and plants: Special rule concerning take of the threatened coastal California Gnatcatcher. Final Rule. Federal Register 58: 65088-65096.
- USFWS, 1994. Endangered and threatened wildlife and plants: Determination of endangered status for the arroyo southwestern toad. Final Rule. Federal Register, 59(241).
- USFWS, 2002a. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status from *Ambrosia pumila* (San Diego Ambrosia) from Southern California. Final Rule. Federal Register, 67(127).
- USFWS, 2002b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Quino Checkerspot Butterfly (*Euphydryas editha quino*); Final Rule. Federal Register, 67(72).

Appendix G

Native American Contact List (confidential)

Appendix H

Table 3-5, MSCP Subarea Plan: Species Evaluated for MSCP Coverage

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
ANIMALS					
Invertebrates					
<i>Euphydryas editha quino</i> Quino checkerspot butterfly FE/	Unknown conservation level and lack of assurances that Plan will protect preferred habitat (mesa tops/grassland) and connection to known source populations, therefore, not covered by the Plan.				NO
<i>Euphyes vestris harbisoni</i> Harbison's dun skipper FSC*/	Unknown conservation level and therefore not covered by the Plan based on insufficient distribution and life history data.				NO
<i>Lycaena hermes</i> Hermes copper butterfly FSC*/	Unknown conservation level and therefore not covered by the Plan based on insufficient distribution and life history data.				NO
<i>Mitoura thornei</i> Thorne's hairstreak butterfly FSC*/	98% of Tecate cypress forest (larval host plant)	2% of Tecate cypress forest	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED This species will be covered by the MSCP because 98% of the major populations of its larval host plant, Tecate cypress, will be conserved. Most of the Tecate cypress forest occurs on BLM lands. Conditions: Area-specific management directives must manage for the host species (Tecate cypress). ⁴ Management measures to accomplish this may include prescribed fire.					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Panoquina errans</i> Salt marsh skipper FSC*/	93% of salt marsh habitat (1,700± acres)	7% of salt marsh habitat (120± acres) may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved.</p> <p>Conditions: Area-specific management directives must include measures to: (1) control exotic weeds and invertebrate predators, where appropriate, and (2) control access to saltmarsh habitat.⁴</p>					
<i>Branchinecta sandiegoensis</i> San Diego fairy shrimp FE/	88% of vernal pool habitat	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives (wetlands)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) will be conserved. Federal and local wetland regulations will provide additional protection for vernal pool habitats. The Otay Ranch project RMP and GDP require protection for vernal pools with sensitive species.</p> <p>Notes: Additional important habitat for this species occurs on military lands (Miramar) and is not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Streptocephalus woottoni</i> Riverside fairy shrimp FE/	88% of vernal pool habitat	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives (wetlands)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) will be conserved. Federal and local wetland regulations will provide additional protection for vernal pool habitats. The Otay Ranch project RMP and GDP require protection for vernal pools with sensitive species.</p> <p>Notes: Additional important habitat for this species occurs on military lands (Miramar) and is not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Reptiles and Amphibians					
<i>Bufo microscaphus californicus</i> Arroyo southwestern toad FE/SSC	All known locations (Cottonwood Creek in Marron Valley, San Vicente Creek and Santa Ysabel Creek in San Pasqual Valley, Sweetwater River, and Otay River), 78% riparian wetland areas in suitable habitat	Upland habitats adjacent to riparian wetlands (potential habitat) in un- determined status areas in Sloan Canyon - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Site Specific (7 locations) and Management Plans/ Directives	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species will be covered by the MSCP because the MHPA preserves all known locations, and 90-95% of the upland habitats within the Marron Valley area will be conserved. Impacts to upland habitats within 1 km of riparian corridors within the MHPA will be minimized during project review by CDFG and USFWS. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Notes: Important habitat areas include the San Diego River below El Capitan Reservoir, San Vicente Creek between Sweetwater Reservoir and Loveland Reservoir, Dulzura Creek, San Pasqual Valley from Lake Hodges to Boden Canyon, Otay River, Jamul Creek, Cedar Creek, and Sycamore Creek.</p> <p>Conditions: Area-specific management directives must address the maintenance of arroyo toad through control of nonnative predators, protection and maintenance of sufficient suitable low-gradient sandy stream habitat (including appropriate water quality) to meet breeding requirements, and preservation of sheltering and foraging habitat within 1 km of occupied breeding habitat within preserve lands. Area-specific management directives must include measures to control human impacts to the species within the preserve (e.g., public education, patrol, etc.).¹ Take authorization holders must minimize impacts to upland habitats that are: within the MHPA and are within 1 km of riparian habitat that supports or is likely to support arroyo toad.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Rana aurora draytoni</i> California red-legged frog FT/SSC	72% of riparian habitats and freshwater marsh (9,500± acres)	28% of riparian habitats and freshwater marsh (3,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is believed to be extirpated from the county. Although unlikely, additional survey effort may detect red-legged frog. Therefore, this species will be covered by the MSCP because 70% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must provide for management of any new discovered populations within the preserve.⁴</p>					
<i>Clemmys marmorata pallida</i> Southwestern pond turtle FSC*/SSC	72% of riparian habitats and freshwater marsh (9,501± acres)	28% of riparian habitats and freshwater marsh (3,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 72% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Maintain and manage areas with 1500 feet around known locations within preserve lands for the species. Within this impact avoidance area, human impacts will be minimized, non-native species detrimental to pond turtles will be controlled/removed, and habitat restoration/enhancement measures will be implemented.</p>					
<i>Cnemidophorus hyperythrus</i> <i>beldingi</i> Orange-throated whiptail PSC*/SSC	59% of potential habitat (129,600± acres) - 64% of coastal sage scrub, 60% of maritime succulent scrub, 54% of chaparral, 67% of southern maritime chaparral, 44% of coastal sage/chaparral - 62% of known point occurrences	41% of potential habitat (89,800± acres) - 38% of known point occurrences	Preserve design/landscape level	Monitoring Plan - Site Specific (pit traps at 12 locations)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 59% of its potential habitat and 62% of known point occurrences will be conserved. Habitat linkages between large blocks of protected lands are conserved in a functional manner. Monitoring of populations and adaptive management of preserves will occur as a result of plan implementation.

Notes: This species also occurs extensively on military lands.

Conditions: Area-specific management directives must address edge effects.⁴

<i>Phrynosoma coronatum blainvillei</i> San Diego horned lizard FSC*/SSC	60% of potential habitat (132,000± acres) - 64% of coastal sage scrub, 54% of chaparral, 44% of coastal sage/chaparral, 80% of riparian scrub - 63% of known point occurrences	40% of potential habitat (89,700± acres) - 37% of known point occurrences	Preserve design/landscape level	Monitoring Plan - Site Specific (pit traps at 12 locations)	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 60% of its potential habitat and 63% of known point occurrences will be conserved. Habitat linkages between large blocks of protected lands are conserved in a functional manner. Monitoring of populations and adaptive management of preserves will occur as a result of plan implementation.

Conditions: Area-specific management directives must include specific measures to maintain native ant species, discourage the Argentine ant, and protect against detrimental edge effects to this species.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Birds					
<i>Pelecanus occidentalis californicus</i> California brown pelican FE/CE	91% of roosting and foraging habitat (2,900± acres) - 93% of southern coastal saltmarsh, 88% of natural flood channel, 90-95% of beach outside of intensively used recreational beaches	9% of roosting and foraging habitat (270± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 91% of roosting and foraging habitat within the MSCP Plan area will be conserved. No new development of beaches is authorized which will result in 90-95% protection of beach habitat that is outside of intensively used beach areas.</p> <p>Notes: Most of the important roosting and foraging habitat occurs on military lands and waters under Port Authority jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. This species is a common to very common non-breeding visitor which uses mud flats, piers, jetties, etc. to roost, and it forages primarily in coastal ocean waters and San Diego Bay.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Egretta rufescens</i> Reddish egret FSC*/	92% of potential habitat (2,700± acres)- 93% of southern coastal saltmarsh, 99% of saltpan, 88% of natural flood channel	8% of potential habitat (230± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 90% of its potential habitat will be conserved.</p> <p>Notes: Additional important habitat occurs in waters under Port Authority and military jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. This species forages in shallow lagoons, mud flats, tidal channels, and salt marsh. This species is a rare visitor in fall and winter and a casual visitor in spring and summer but does not nest in San Diego County.</p>					
<i>Plegadis chihi</i> White-faced ibis FSC*/SSC	80% of potential habitat (1,200± acres) - 68% of freshwater marsh, 88% of natural flood channel; additionally 1,800± acres of agricultural land will be conserved	20% of potential habitat (300± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 78% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. The preserve management plan for the City of San Diego cornerstone lands must include protection and management of potential nesting habitat at Lake Hodges.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Branta canadensis</i> Canada goose none	8,200± acres of potential habitat	1,100± acres of potential habitat - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>Although not considered sensitive, this species has aesthetic and intrinsic values and is a regulated game species, thereby being an important species to protect. This species will be covered by the MSCP because 8,200± acres of its potential habitat will be conserved, including open water areas for loafing. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Haliaeetus leucocephalus</i> Bald eagle FT/CE	89% of potential foraging habitat (wetlands, 5,719± acres), 68% of freshwater marsh, 92% of open water. In addition, foraging opportunities on 100,000+ acres will be conserved.	11% of potential foraging habitat (wetlands, 692± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 89% of its potential foraging habitat (open water and freshwater marsh) will be conserved. Bald eagles are a rare winter visitor which require perching and roosting sites adjacent to open water and marshes. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<i>Circus cyaneus</i> Northern harrier /SSC	42% of potential nesting habitat (12,000± acres) - 93% of saltmarsh, 68% of freshwater marsh, and 38% of grasslands - 85,000± acres of potential foraging habitat	58% of potential nesting habitat (16,300± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Management Plans/Directives (nest sites)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species is an uncommon migrant, winter visitor, and rare summer resident/breeder. This species will be covered by the MSCP because 42% of its potential nesting habitat and 85,000± acres of its potential foraging habitat will be conserved. The plan will not adversely affect the species' long-term survival.

Notes: Harriers tolerate patchiness in their habitat, exhibit nest area fidelity, and forage within 4 miles of their nests. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Active nesting areas include:

Tijuana River Valley - The City of San Diego Subarea Plan includes conservation of two known nesting sites in the Tijuana River Valley and maintenance of some agricultural lands (available for foraging harriers) within the Tijuana River Valley Regional Park. The Tijuana National Estuarine Sanctuary will continue to enhance marshlands and manage for nesting harriers. Some existing grasslands and agricultural lands at the outer limits of the foraging distance for nesting harriers will be developed. With the addition of over 4,000 acres of agricultural and disturbed lands to the City of San Diego's preserve (in comparison with the March 1995 preserve design), adequate foraging areas within this area are conserved. Food production for harriers on preserve lands can be enhanced.

South San Diego Bay/Sweetwater Marsh - The City of San Diego Subarea Plan includes conservation of one known nesting site in the Sweetwater Marsh area. All nesting and foraging habitat within 4 miles of the known nesting site will be conserved. Upland habitat enhancement opportunities exist at the D Street fill area.

Proctor Valley - Proctor Valley includes a historical nesting location (1970s). Over 80% of the Proctor Valley area will be conserved, with most of the development occurring in the upper portion of the valley, away from the more likely nesting areas.

Conditions: Area-specific management directives must: (1) manage agricultural and disturbed lands (which become part of the preserve) within 4 miles of nesting habitat to provide foraging habitat; (2) include an impact avoidance area (900 feet or maximum possible within the preserve) around active nests; and (3) include measures for maintaining winter foraging habitat in preserve areas in Proctor Valley, around Sweetwater Reservoir, San Miguel Ranch, Otay Ranch east of Wueste Road, Lake Hodges, and San Pasqual Valley. The preserve management coordination group shall coordinate efforts to manage for wintering northern harriers' foraging habitat within the MSCP preserve.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Accipiter cooperii</i> Cooper's hawk /SSC	59% of potential foraging habitat (133,400± acres) (47% of oak woodland, 58% of oak riparian, 64% of coastal sage scrub, 54% of chaparral, 44% of coastal sage scrub/chaparral - 57% of known localities) and 52% (5,705± acres) of potential nesting habitat (58% of oak riparian and 47% of oak woodland)	41% of potential foraging (93,900± acres) and 48% of potential nesting habitat (5,200± acres)	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives (site-specific nest territories)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 59% of potential foraging habitat, 52% of potential nesting habitat, and 57% of known occurrences will be conserved.</p> <p>Conditions: In the design of future projects within the Metro-Lakeside-Jamul segment, preserve areas shall conserve patches of oak woodland and oak riparian forest of adequate size for nesting and foraging habitat. Area-specific management directives must include 300-foot impact avoidance areas around active nests and minimization of disturbance in oak woodlands and oak riparian forests.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Buteo swainsoni</i> Swainson's hawk /CT	22% of foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of foraging habitat (42,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based (10 grassland locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is an extremely rare visitor during migration which forages in grasslands and agricultural fields. This species will be covered by the MSCP because more than 11,000 acres of potential foraging habitat will be conserved.</p> <p>Notes: The plan will not adversely affect the <u>species</u>' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. This species is a rare migrant through the area.</p>					
<i>Buteo regalis</i> Ferruginous hawk FSC*/SSC	22% of foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of foraging habitat (42,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based (10 grassland locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered because 11,600± acres of potential foraging habitat will be conserved. This species is an uncommon winter visitor which forages in grasslands and agricultural fields.</p> <p>Notes: The plan will not adversely affect the <u>species</u>' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. This species is not known to nest within the MSCP study area.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Aquila chrysaetos</i> Golden eagle BEPA/SSC	53% of potential foraging/nesting habitat (coastal sage scrub, chaparral, grassland and oak woodland) (139,000+ acres) - large blocks of habitat conserved in the eastern portion of the plan area where active nesting territories exist. Of the 11 active nesting territories (based on information from the Golden Eagle Survey Project, San Diego) which are fully or partially within the MSCP plan area, 7 nesting territories should remain viable.	Viability of 4 of the 11 active nesting territories (partially or fully within the plan area)	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives (site-specific nest territories)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 53% of potential foraging and nesting habitat will be conserved. Local populations are not critical to, and the plan will not adversely affect, the species' long-term survival.

Notes: Fourteen active nesting territories occur primarily outside of the MSCP area (east and northeast of the plan area). Plans developed for these areas should include measures to conserve adequate habitat to maintain their viability. The following is an analysis of the plan's effects on each nesting territory within the MSCP study area:

1. Rancho San Diego- development under the plan will result in <10% loss of habitat in the nesting territory; nesting territory should remain viable.
2. East Otay Mountain- development under the plan will result in <5% loss of habitat in the nesting territory; nesting territory should remain viable.
3. Sequan Peak- between 30% and 40% of the habitat in the nesting territory could be developed; the nesting territory may not remain viable, but the steepness of the areas that could be developed may preclude enough development to keep the territory viable.
4. Loveland Reservoir- development under the plan will result in <20% loss of habitat in the nesting territory; nesting territory should remain viable.
5. Lake Jennings- between 40% and 60% of the habitat in the nesting territory could be developed under the plan; the nesting territory may not remain viable.
6. El Capitan- development under the plan will result in <15% loss of habitat within the nesting territory; the territory should remain viable.
7. San Vicente Reservoir- development under the plan will result in <30% of the high quality golden eagle habitat being developed, although low quality habitat (steep chaparral) could be developed, resulting in greater habitat loss within the nesting territory (although high density development is not likely to occur because of the steep slopes); the nesting territory may not be viable.
- 8 and 9. San Pasqual (two nesting territories)- development under the plan will result in <20% loss of habitat in the nesting territory; both nesting territories should remain viable.
10. Santee- development under the plan could result in 30%-40% loss of habitat in the nesting territory; nesting territory may not remain viable, although a significant amount of foraging habitat (Miramar and Mission Trails) occurs just outside of the territory and within normal foraging distances.
11. Lake Hodges- development under the plan will result in <20% loss of habitat in the nesting territory; nesting territory should remain viable.

Conditions: Area-specific management directives for areas with nest sites must include measures to avoid human disturbance while the nest is active, including establishing a 4,000-foot disturbance avoidance area within preserve lands.⁴ Area-specific management directives must also include monitoring of nest sites to determine use/success.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Falco peregrinus anatum</i> American peregrine falcon FE/CE	61% of historic nesting sites - 58% of foraging habitat (89,400± acres) - 93% southern coastal saltmarsh, 99% of saltpan, 68% of freshwater marsh, 92% of open water, 88% of natural flood channel, 64% of coastal sage scrub, 38% of grassland	39% of foraging habitat (57,000± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because more than 89,000 acres of potential foraging habitat will be conserved.</p> <p>Notes: This species has very low population numbers in the county, being primarily a rare fall and winter visitor. All three nest sites occur outside of the MHPA: one on Coronado Bridge, one on a crane in Port Authority jurisdiction, and one on Pt. Loma federal lands. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<i>Rallus longirostris levipes</i> Light-footed clapper rail FE/CE	93% of potential habitat (1,700± acres of southern coastal saltmarsh)	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Site-specific preserve design and special measures/management	Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its habitat will be conserved.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand) which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include active management of wetlands to ensure a healthy tidal saltmarsh environment and specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Charadrius alexandrinus nivosus</i> Western snowy plover FT/SSC	93% of potential habitat (650± acres) - 99% of saltpan, 90-95% of beach outside of intensively used recreational beaches	7% of potential habitat (46± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved. All breeding activity of western snowy plovers in the county occurs in saltpan habitat. No new development of beaches is authorized, which will result in 90-95% conservation of beach habitat that is outside of intensively used beach areas.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during the reproductive season and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Charadrius montanus</i> Mountain plover C/SSC	22% of potential foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of potential foraging habitat (41,100± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because over 11,000 acres of potential foraging habitat will be conserved. The plan will not adversely affect the <u>species</u>' long-term survival.</p> <p>Notes: This species is an uncommon winter visitor (primarily in the Tijuana River Valley) that forages in grasslands and agricultural fields. The MSCP conservation requirement for the Tijuana River Valley area is primarily 94%, with a small area identified as 75%.</p> <p>Conditions: Area-specific management directives for the Tijuana River Valley should specifically address the habitat requirements for this species.⁴</p>					
<i>Numenius americanus</i> Long-billed curlew FSC*/SSC	24% of potential foraging habitat (13,500± acres) - 93% of southern coastal saltmarsh, 99% of saltpan, 38% of grassland, 6% of agricultural fields	76% of potential foraging habitat (42,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is a fairly common migrant and winter visitor.</p> <p>Notes: This species will be covered by the MSCP because more than 13,500 acres of potential foraging habitat will be conserved. The plan will not adversely affect the <u>species'</u> long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. Additional habitat occurs on military lands (Silver Strand, San Diego Bay) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<i>Sterna elegans</i> Elegant tern FSC*/SSC	93% of potential habitat (650± acres) - 99% of saltpan, 90-95% of beach outside of intensively used recreational beaches	7% of potential habitat (46± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved.</p> <p>Notes: All breeding activity of elegant terns in the county occurs in saltpan habitat. No new development of beaches is authorized, which will result in 90-95% protection of beach habitat that is outside of intensively used beach areas. Additional important foraging habitat (bay waters) is under the jurisdiction of the Port Authority and military and is not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Sterna antillarum browni</i> California least tern FE/CE	93% of potential habitat (650+ acres) -99% of saltpan, 90- 95% of beach outside of intensively used recreational beaches	7% of potential habitat (46+ acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved.</p> <p>Notes: No new development of beaches is authorized, which will result in 90-95% conservation of beach habitat that is outside of intensively used beach areas. Additional important breeding habitat occurs on military lands (North Beach, Silver Strand, Naval Training Center) and is not part of the MSCP. Additional important foraging habitat (bay waters) is under the jurisdiction of the Port Authority and the military and is not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season, predator control, and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of dikes/levees, beach maintenance/enhancement is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Speotyto cunicularia hypugaea</i> Burrowing owl FSC*/SSC	4 known locations (Spring Canyon, northeast of Brown Field, Lake Hodges), 8 known locations within major amendment area (South County segment), 4,000± acres of known habitat	8 known locations (Otay Ranch, San Pasqual Valley, and South County at border), 5,000± acres of known habitat	Site-specific preserve design and special measures/management	Monitoring Plan (10 grassland locations) and Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 5,770± acres of potential and 4,000± acres of known suitable habitat (grassland vegetation community) will be conserved, including portions of Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4.</p> <p>Notes: Habitat enhancement opportunities for the species occur in the Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4. The wildlife agencies will enhance and manage lands within their ownership to allow for relocation of burrowing owls, particularly in conjunction with burrowing owl removal programs in areas where their presence conflicts with nesting of California least terns. The wildlife agencies will attempt to achieve additional conservation of occupied burrowing owl habitat or habitat suitable for restoration using state and federal acquisition resources. Persistence of the species in San Diego County is also dependent on adequate conservation of known concentrations in the Santa Maria Valley in the vicinity of Ramona.</p> <p>Conditions: During the environmental analysis of proposed projects, burrowing owl surveys (using appropriate protocols) must be conducted in suitable habitat to determine if this species is present and the location of active burrows. If burrowing owls are detected, the following mitigation measures must be implemented: within the MHPA, impacts must be avoided; outside of the MHPA, impacts to the species must be avoided to the maximum extent practicable; any impacted individuals must be relocated out of the impact area using passive or active methodologies approved by the wildlife agencies; mitigation for impacts to occupied habitat (at the subarea plan specified ratio) must be through the conservation of occupied burrowing owl habitat or conservation of lands appropriate for restoration, management, and enhancement of burrowing owl nesting and foraging requirements.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>Management plans/directives must include: enhancement of known, historical, and potential burrowing owl habitat and management for ground squirrels (the primary excavator of burrowing owl burrows). Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans must also include: monitoring of burrowing owl nest sites to determine use and nesting success; predator control; and establishing a 300 foot-wide impact avoidance area (within the preserve) around occupied burrows.⁴</p> <p>Eight known burrowing owl locations occur within major amendment areas of the South County Segment of the County Subarea Plan, and the conservation of occupied burrowing owl habitat must be one of the primary factors in preserve design during the permit amendment process.</p>					
<i>Empidonax traillii extimus</i> Southwestern willow flycatcher FE/CE	76% of potential habitat (4,900± acres) - 93% of riparian woodland, 80% of riparian scrub - 88% of known localities	24% of potential habitat (1,400± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan -Habitat Based and Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 4,900± acres (76%) of potential habitat will be conserved.</p> <p>Conditions: Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions must require monitoring and control of cowbirds. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and May 1 (i.e., outside of the nesting period).</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Campylorhynchus brunneiicapillus couesi</i> Coastal cactus wren FSC*/SSC	60% of maritime succulent scrub habitat in large contiguous blocks (850± acres)	40% of maritime succulent scrub habitat in small isolated blocks (580± acres)	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (31 locations) and Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is covered because four of five major populations are conserved, including populations at Lake Hodges/San Pasqual Valley, Lake Jennings, South Sweetwater Reservoir/San Miguel Ranch, and Salt Creek/Otay Mesa, and 60% (850 ± acres) of potential habitat will be conserved, allowing for expansion of the populations with management.</p> <p>Notes: This species also uses other habitat types (coastal sage scrub and chaparral) containing cactus patches. Small clusters of birds at Black Mountain and Spring Valley will also be conserved. Conservation of the Salt Creek population is critical to the persistence of the species in San Diego County, and it would only be conserved under the City of Chula Vista's "Modified GDP B" alternative. The existing distribution of cactus wrens in the MSCP Plan area has been greatly reduced, and restoration of suitable cactus wren habitat and its management are important components of the MSCP Plan. Significant opportunities for restoration within the MHPA occur on Otay Ranch, Spring Canyon (and adjacent areas), Denny Canyon, San Miguel Ranch, Lake Hodges/San Pasqual Valley, Otay River Valley, and Santee/Lake Jennings. The participating jurisdictions should seek OHV funds for restoration, as much of these areas has been heavily impacted by OHVs. The City of San Diego already has acquired habitat in Spring Canyon as mitigation. The City of San Diego and the wildlife agencies have agreed to make restoration of maritime succulent scrub in Spring Canyon a high priority. The USFWS also will make restoration of maritime succulent scrub a high priority on any lands it acquires in Spring Canyon.</p> <p>Conditions: The restoration of maritime succulent scrub habitat as specified in the Otay Ranch RMP and GDP must occur at the specified 1:1 ratio. Area-specific management directives must include restoration of maritime succulent scrub habitat, including propagation of cactus patches, active/adaptive management of cactus wren habitat, monitoring of populations within preserves, and specific measures to reduce or eliminate detrimental edge effects.⁴ No clearing of occupied habitat may occur from the period February 15 through August 15.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Poliptila californica californica</i> California gnatcatcher FT/SSC	73,300± acres of coastal sage scrub and interdigitated habitats in an interconnected network of preserves	67,300± acres of coastal sage scrub and interdigitated habitats	Preserve design/landscape level	Area-specific Management Directives (31 locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because: over 73,300 acres of existing and potential gnatcatcher habitat will be conserved and linked together; over 81% of the core areas where the species occurs (Otay, San Miguel, Mission Trails, Santee, Kearny Mesa, Poway, San Pasqual, and Lake Hodges) will be conserved; and 65% (1,819 of 2,814) of the known locations will be conserved.</p> <p>Notes: 68% (57,874 acres) of habitat supporting core gnatcatcher populations, 70% (30,273 acres) of Very High value and 62% High value (4,609 acres) gnatcatcher coastal sage scrub habitat will be conserved. Critical habitat linkages between core areas will be conserved in a functional manner, with a minimum of 75% of the habitat within identified linkages conserved. Populations of this species also occur on military lands which are not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure.⁴ No clearing of occupied habitat within the cities' MHPAs and within the County's Biological Resource Core Areas may occur between March 1 and August 15.</p>					
<i>Sialia mexicana</i> Western bluebird none	59% of potential habitat (15,500± acres) - 58% of oak riparian forest, 47% of oak woodland, 38% of grassland	41% of potential habitat (12,100± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because over 15,000 acres of habitat will be conserved.

Notes: Persistence of this species in San Diego County depends largely on conservation of existing large populations on public lands east of the MSCP Plan area.

<i>Vireo bellii pusillus</i> Least Bell's vireo FE/CE	81% of potential habitat (1,700± acres) - 93% of riparian woodland, 58% of oak riparian forest - 82-100% of major populations	19% of potential habitat (400± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 1,700± acres (81%) of potential habitat will be conserved.

Conditions: Jurisdictions will require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments, adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, to monitor and control cowbirds. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species.⁴ Any clearing of occupied habitat must occur between September 15 and March 15 (i.e., outside of the nesting period).

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Aimophila ruficeps canescens</i> California rufous-crowned sparrow FSC*/SSC	61% of potential habitat (73,600± acres) - 64% of coastal sage scrub, 60% of maritime succulent scrub, 44% of coastal sage/chaparral - 71% of mapped localities	39% of potential habitat (46,600± acres) - 29% of mapped localities	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 61% (73,600± acres) of potential habitat (including 71% of mapped localities) will be conserved.</p> <p>Notes: This species is tolerant of edge effects, small habitat patches, low shrub volume, and short-term habitat disturbance.</p> <p>Conditions: Area-specific management directives must include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.⁴</p>					
<i>Passerculus sandwichensis beldingi</i> Belding's Savannah sparrow FSC*/CE	93% of potential habitat (1,700± acres of southern coastal saltmarsh) - 71% of mapped localities	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based and Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% (1,700± acres) of potential habitat (including 71% of mapped localities) will be conserved, and the remaining acres (120±) are subject to no net loss of value and function.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand, North Island, etc.) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Passerculus sandwichensis</i> <i>rostratus</i> Large-billed Savannah sparrow FSC*/SSC	93% of potential habitat (1,700± acres of southern coastal saltmarsh) - 50% of mapped localities	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based and Management Plans/Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% (1,700± acres) of potential habitat (including 50% of mapped localities) will be conserved, and the remaining acres (120±) are subject to no net loss of value and function.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand, North Island, etc.) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Ammodramus savannarum</i> Grasshopper sparrow none	This species will not be covered by the MSCP because insufficient information is available to determine if adequate habitat is conserved.				NO
<i>Agelaius tricolor</i> Tricolored blackbird FSC*/SSC	77% of breeding habitat (4,800± acres) - 68% of freshwater marsh, 80% of riparian scrub - 59% of known localities	23% of breeding habitat (1,400± acres)	Preserve design/landscape level	Management Plans/Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 77% of potential habitat (including 59% of mapped localities) will be conserved. Breeding colonies move from season to season, and with a goal of no net loss of wetlands, most of the suitable breeding sites will continue to be available. This species forages in grasslands and agricultural fields near its breeding habitat. Foraging habitat near the known nesting colonies will be conserved at 70-100%. Additionally, foraging opportunities will continue to be provided and created in turfed areas such as golf courses and cemeteries. Jurisdictions will require surveys during the CEQA review process in suitable breeding habitat proposed to be impacted. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Project approvals must require avoidance of active nesting areas during the breeding season. Area-specific management directives must include measures to avoid impacts to breeding colonies and specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Mammals					
<i>Corynorhinus townsendii</i> <i>pallascens</i> Townsend's western big-eared bat FSC*/SSC	Unknown/Insufficient data on distribution and life history.				NO
<i>Eumops perotis californicus</i> California mastiff bat FSC*/SSC	Unknown/Insufficient data on distribution and life history.				NO
<i>Perognathus longimembris</i> <i>pacificus</i> Pacific pocket mouse FE/SSC	Unknown/Only 3 to 4 known populations in Southern California. Insufficient data on distribution and life history.				NO
<i>Taxidea taxus</i> American badger /SSC	58% of potential habitat (82,500± acres) - 38% of grassland, 64% of coastal sage scrub, 44% of coastal sage/chaparral	42% of potential habitat (58,300± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 82,500± acres (58%) of its potential habitat will be conserved.					
Notes: This species has a wide range, and the plan will not adversely affect the <u>species</u> ' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas.					
Conditions: Area-specific management directives must include measures to avoid direct human impacts to this species if it is present or likely to be present. ⁴					
<i>Felis concolor</i> Mountain lion /protected	81% of core areas 5, 6, 7, 8, 9, 11, and 12 (105,000± acres) - connected by linkages C, D, N	19% of core areas (24,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based and Corridor Sites	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
This species will be covered by the MSCP because 81% of the core areas (105,000± acres) that support its habitat will be conserved.					
Notes: Although not considered sensitive, this species has aesthetic and intrinsic values, thereby being an important species to protect. This species has a wide range, and the plan will not adversely affect the <u>species</u> ' long-term survival. The criteria used to define core and linkage areas involve maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem will be maintained. An extensive monitoring program will be implemented by the wildlife agencies to detect unanticipated changes in ecosystem function and allow for adaptive management of the preserve system. Specific design criteria for linkages and road crossings/undercrossings are included in subarea plans.					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Odocoileus hemionus fuliginata</i> Southern mule deer none	81% of core areas 5, 6, 7, 8, 9, 11, and 12 (105,000± acres) - connected by linkages C, D, N	19% of core areas (24,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based and Corridor Sites	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 81% of the core areas (105,000± acres) that support its habitat will be conserved.</p> <p>Notes: Although not considered sensitive, this broadly distributed species has aesthetic and intrinsic values, and is the only large native herbivore in the plan area, thereby making it an important species to protect. The criteria used to define core and linkage areas involve maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem will be maintained. An extensive monitoring program will be implemented by the wildlife agencies to detect unanticipated changes in ecosystem function and allow for adaptive management of the preserve system. Specific design criteria for linkages and road crossings/undercrossings are included in subarea plans.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

¹ **Status (Federal/State)**

FE=Federally Endangered

PE=Proposed for federal listing as Endangered

FT=Federally Threatened

PT=Proposed for federal listing as Threatened

C=Candidate for federal listing

FSC* = Federal species of concern; formerly Category 2 or Category 3 candidate for federal listing.

FSC† = Federal species of concern; proposed federal rule to list as Endangered or Threatened has been withdrawn.

Shading indicates federally and state listed species, species proposed for listing, candidate species, and NCCP target species.

BEPA = Bald Eagle Protection Act

CE = State Endangered

CR = State Rare

CT = State Threatened

SSC = State Species of Special Concern

protected = moratorium on hunting

none = no federal or state status

² This column indicates the conservation level for the species. Not all major populations are in the GIS database, i.e., if specific locality data are lacking. In these cases, the percentage of major populations preserved is determined or estimated from the percentage of associated habitat in the MHPA.

³ Measures to conserve population of species on the MSCP Plan's narrow endemic list must be incorporated into the subarea plans that do not have preserve/development areas specifically delineated based on site-specific surveys. The City of San Diego's and the County of San Diego's Subarea Plan areas are primarily where this requirement is applicable, and both subarea plans specify MSCP narrow endemic species conservation measures. Within the City of San Diego's MHPA, populations of MSCP narrow endemic species will be avoided.

The County will conserve MSCP narrow endemic species using a process that: (1) requires avoidance to the maximum extent possible; (2) allows for a maximum 20% encroachment into a population if total avoidance is not possible; and (3) requires mitigation at a 1:1 to 3:1 ratio (in-kind) for impacts if (1) avoidance and (2) minimization of impacts would result in no reasonable use of the property. The County requirements for (1) avoidance, (2) minimization, and (3) mitigation are specifically described in the County's proposed Biological Mitigation Ordinance (BMO).

⁴ Area-specific management directives for preserve areas will include specific guidelines for managing and monitoring covered species and their habitats, including following best management practices. Edge effects may include (but are not limited to) trampling, dumping, vehicular traffic, competition with invasive species, parasitism by cowbirds, predation by domestic animals, noise, collecting, recreational activities, and other human intrusion.

⁵ The County's proposed BMO includes a list of sensitive plant species (Groups A and B) that require special consideration in project design. The County will conserve Groups A and B species using a process that: (1) requires avoidance to the maximum extent possible; (2) allows for a maximum 20% encroachment into a population if total avoidance is not possible; and (3) requires mitigation at a 1:1 to 3:1 ratio (in-kind) for impacts if (1) avoidance and (2) minimization of impacts would result in no reasonable use of the property.

Source: 1996 MSCP GIS database. Military lands excluded from analysis.

Appendix I

Operations and Maintenance Requirements (hours by staff position) to Implement Plan

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologists/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Biological Element																	
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	Use current USGS survey data (USGS 2002 and 2004) as baseline data set.	ongoing	MO		2	24						24
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	a) Conduct focused surveys for vernal pools and vernal pool complexes.	one-time task	MO			8						8
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	b) Conduct ongoing monitoring.	annual	MO		8	8						16
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	-Conduct annual qualitative surveys to detect any immediate threats to the habitat	3-5 years	MO		8	40						80
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	b) cont.											
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	a) Assess threats. During annual qualitative surveys, note and map areas that are experiencing damage or degradation.	annual	MN									
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	b) Prioritize remediation efforts based on the relative sensitivity of the wetland or riparian type affected, whether a habitat connection is at risk, potential for expansion of the threat, and eminence of damage to habitat.	annual	MN	2								
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	c) Identify remediation measures (e.g., signage, installation of split-rail fencing, boulders, or other barriers).	annual	MN		8							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	a) Prepare annual work plan by December for the following year. Include management and restoration tasks, staffing requirements, a funding analysis, and schedule for completion	annual	D	16	16	16	16					
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	b) Adhere to the no-net-loss-of-wetlands standard to satisfy MSCP, state, and federal wetlands policies.	ongoing	MN	1	4							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	c) Manage riparian and wetland vegetation communities for a variety of age classes and structure to provide breeding and foraging habitat for riparian and wetland species. Implement a regular invasive species control program (Bio 1.3)	ongoing	MN	8	8	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	d) Maintain ecological and hydrological processes to support healthy and riparian habitats. Restore natural creek meander.	ongoing	MN	2	2	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	Repair culverts and stream crossings and restore drainage and road surfaces in areas damaged by firefighting activities and post-fire storm runoff (see Bio 1.4)	as needed	SP	2	2		24					
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	f) Maintain bat habitat by providing open, perennial water sources such as creeks or artificial ponds that are not blocked by vegetation or steep walls and by maintaining roosting sites.	ongoing	MN									
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	g) Implement a riparian and wetlands buffer (set-back) of 100 feet or more from the edge of riparian habitat to protect the riparian zone from new development, public use, erosion, hydrological impediments, and non-native species invasions.	as needed	MN	2	8	16	8		24			
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	h) Prohibit livestock access to Jamul and Dulzura Creeks. If livestock will be used to maintain grasslands, provide fencing to protect creek beds and riparian habitat.	ongoing	MN		2							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	i) Encourage the public to use adjacent HCWA for most recreational needs. This will help strike a balance between conservation and serving the recreational needs of the public	ongoing	OU								24	
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) Manage wildlife corridors and habitat linkages.	as needed	MN/LK	2	8		8	40		40		80
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	-Remove fences that may impede wildlife movement and maintain fencing along public roads to protect wildlife from traffic, and to divert them to highway undercrossings.	ongoing	MN/LK	2	24							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont											
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont	ongoing	MN/LK		8							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont	ongoing	MN/LK	2	16							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	-Ensure that corridors for large mammals and birds are at least 1,000 ft wide. Provide visual continuity (long lines-of-sight) along corridors.	ongoing	MN/LK									

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont Continue to work with other wildlife agencies, such as BLM, USFWS, and USFW to prioritize land acquisition in contiguous blocks adjacent to RJER and HCWA.	ongoing	MN/LK	16	16							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	k) Evaluate all future management programs for potential impacts to sensitive biological resources and take appropriate steps to avoid and mitigate potential significant impacts.	annual	MN	8	8	8	8					
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) Implement adaptive management strategy: -For each management goal, evaluate the potential to implement pilot studies or experimental design in which multiple management strategies are tested and compared to a control.	annual	MN			8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont. -Determine and report success criteria (clear and concise objectives) that should be met in order to consider the management task(s) successful.	annual	MN		2	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) cont -Assess habitat integrity, detect changes in species distribution and abundance, and detect effects of management activities, human use, and non-native species using monitoring data.	annual	MN	2	8	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) cont -Review current literature, documents and management plans for management and monitoring protocols and experimental design	annual	MN		2	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) cont. -Re-evaluate priorities and management activities based on this assessment.	annual	MN	8	8							
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify wetlands and riparian restoration areas that would support the goals of this LMP. Coordinate efforts with those being conducted in adjacent HCWA.	a) Identify location(s) and quantify acreage for wetlands restoration projects. -Restore riparian habitat that has been invaded by castor bean downstream from Thousand Trails Campground	one-time task	RE	4	26	48	40	160	80	160		320
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify areas where expansion or restoration of existing wetlands or riparian habitat could be conducted and would support the goals of this LMP.	a) cont. -Identify areas for restoration and quantify acreage. Restore riparian habitat to provide nesting, breeding, and foraging habitat for special status species. Coordinate efforts with HCWA	as needed	RE	2	16	32	8	40	16	40		80
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify areas where expansion or restoration of existing wetlands or riparian habitat could be conducted and would support the goals of this LMP.	b) Conduct ongoing monitoring -Conduct annual qualitative surveys to detect any immediate threats to the habitat that might require restoration.	annual	MO		2	24						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify areas where expansion or restoration of existing wetlands or riparian habitat could be conducted and would support the goals of this LMP.	b) cont. -Conduct quantitative surveys every three to five years, as described in Bio 1.1.1, to identify the areas in need of restoration	3-5 years	MO	2	24	24						48
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.2	Assess threats and set priorities. Evaluate potential benefits of each identified restoration project, and designate each as high, medium, or low priority	a) Prioritize areas to be restored by designating them as "high", "medium", and "low" based on threats, funding, and accessibility.	annual	MN	8	10	16	8					
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.2	Assess threats and set priorities. Evaluate potential benefits of each identified restoration project, and designate each as high, medium, or low priority	b) Evaluate the biological and hydrological function of vernal pools on RJER to determine the suitability for restoration.	annual	MO			8						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	a) Coordinate with Wildlands Inc. regarding the restoration, management, and monitoring of wetland and riparian habitat	annual	RE		2	8						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	b) Identify area(s) to be restored, quantify the acreage, and develop an area specific restoration plan for each area outside of the Wildlands Inc. project areas. These plans should include planting design and specifications, goals, and costs.	annual	RE/D		2	8						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	c) Prepare a vernal pool restoration plan that encompasses whole ecosystem restoration and that incorporates established practices. Prohibit access to vernal pools unless for management and research purposes only.	ongoing	RE/D		2		8	8	8	8		
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	b) cont. -Manually remove exotic plant species (Bio 3.1), and monitor vernal pool hydrology, function, plants and animals on an annual basis during the hydrological phase of the pools	annual	MN/MO			24						48
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	c) cont. -Evaluate the applicability of a vegetation management program to reduce vegetation biomass and improve the hydrological gradient within the vernal pool watershed.	annual	MN		4	16						

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	d) Coordinate restoration planning efforts with the Corps, the USFWS, and the Department's wetlands regulatory branch. Pursue appropriate state and federal permits.	ongoing	MN	2	16							
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	e) Conduct riparian restoration in phases, combined with the removal of exotic species to foster natural recruitment. Replace mature exotic trees with large riparian trees, including coast live oak, sycamores, cottonwoods, and willow species.	as needed	RE	2		16						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	f) Limit access by fencing restored areas to protect them from impacts due to unauthorized public use (Pub 1.0).	ongoing	MN		2							
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	g) Implement adaptive management. Use monitoring data to assess successional progress of the restored area. Refer to Bio 1.1.3 (k) for additional details.	annual	MN	8	8	8	8					
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.1	Survey and monitor. Conduct periodic surveys to maintain accurate records of the extent and condition of the upland habitats within RJER, and document changes.	a) Conduct periodic surveys: -Conduct annual qualitative surveys to detect any immediate threats to the habitat.	annual	MO	4	36	36						48
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.1	Survey and monitor. Conduct periodic surveys to maintain accurate records of the extent and condition of the upland habitats within RJER, and document changes.	a) cont. -Conduct quantitative surveys every three to five years, as described in Bio 1.1.1	3-5 years	MO	16	52	92						160
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.2	Assess threats and set priorities	a) During general habitat condition surveys, map areas that are becoming damaged or degraded. Issues of concern include adverse edge effects, general habitat degradation, fragmentation, and high fuel loads. (See Bio 1.1.2).	annual	MO			8						
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.2	Assess threats and set priorities	b) Prioritize remediation efforts based on relative sensitivity of the upland habitat affected, whether a habitat conversion is at risk, and potential for expansion of the threat. (See Bio 1.1.2)	annual	MN	2	8							
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.2	Assess threats and set priorities	c) Identify remediation measures such as signage (Pub 7.0); installation of barriers to direct public use away from areas where adverse effects are occurring (Pub 6.0); and fuel reduction programs (see Fire 1.0).	annual	MN	1	4							
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	a) Prepare annual work plan by December of the previous year. (See Bio 1.1.3).	annual	D	16	16	16	16					
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	b) Protect and maintain upland vegetation communities to provide breeding and foraging habitat for native species. Maximize habitat structural diversity. Specific tasks related to the enhancement of upland habitats are given in Bio 1.4.3 below.	ongoing	MN	2	40	40						
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	c) Restore hunting areas from non-native grasslands to native grasslands; remove and replace non-native grasses with native grasses and forbs (Bio 1.4).	ongoing	MN	2	40		8		80			40
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	d) Reduce edge effects and habitat fragmentation by reducing the number of roads and trails in the interior of the reserve. Concentrate roads and trails around the perimeter and CEC.	ongoing	MN		2	16	16	40	40	40		160
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	e) Provide erosion control where necessary to prevent gully or rill formation within uplands.	as needed	MN		2		8	24	24	24		48
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	f) Non-native exotic species removal. Remove individuals of invasive, non-native plant species to reduce the threat of future expansion and enhance habitat for native species (Bio 3.1)	annual	MN	2	24	80	40	80	40	80		160
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	g) Encourage the public to use adjacent HCWA for most recreational needs. This will help strike a balance between conservation and serving the recreational needs of the public	ongoing	OU								40	
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	h) Maintain and enhance wildlife corridors in upland areas. (See Bio 1.1.3).	ongoing	MN/LK		2	8	8					
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	i) Evaluate all future management programs for potential impacts to sensitive biological resources and take appropriate steps to mitigate potential significant impacts.	annual	MN	2	2	8						
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	j) Implement adaptive management where necessary and feasible. Refer to Bio 1.1.3 (k) for details.	annual	MN	8	8	8	8					
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where restoration of upland habitats would support the goals of this LMP. Coordinate efforts with those being conducted in adjacent HCWA.	a) Identify location(s) and quantify acreage for upland restoration. -Restore grasslands, including intensive restoration in the northeastern portion of reserve; hunting areas; or closed areas containing grassland.	one-time task	SP	4	24	40	16	40	80	40		40

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Restore coastal sage scrub: two areas in the northeastern portion of the reserve.	ongoing	RE	4	24	40	8		16	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Identify trails to be closed, such as unnecessary trails, including double trails (where two relatively parallel trails lead to the same destination); decommission and/or restore trails to native habitat	ongoing	RE/MO	2	8	24	8			40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Identify and restore highly erodible post-fire areas (Fire 3.0).	as needed	RE/MO	2	2	16			16	16		40
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Identify and restore habitat for rare, threatened, or endangered species as described in Bio 2.	as needed	MO	2	24	80		40	24	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	b) Conduct ongoing monitoring -Conduct annual qualitative surveys to detect any immediate threats to the habitat that might require restoration.	annual	MO		2	24						48
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	b) cont. -Conduct quantitative surveys every three to five years, as described in Bio 1.1.1, to identify the areas in need of restoration.	3-5 years	MO	2	4	40						80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.2	Assess threats and set priorities. Evaluate the potential benefits associated with the upland restoration projects identified, then prioritize the projects for implementation.	a) Assess threats and prioritize areas to be restored by designating them as "high," "medium," and "low".	annual	MN	6	18	10						
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	a) Identify area(s) to be restored, quantify the acreage, and develop an area specific restoration plan. (See Bio 1.2.3). Restoration efforts should include the goals listed below.	as needed	RE/D		2	24						
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	b) Restore degraded upland areas to provide increased nesting, breeding, and foraging habitat for special status species and other wildlife	one-time task	RE	2	2	16	80	40	40	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	c) Actively restore and maintain grassland habitat in the valleys and avoid conversion to scrub habitat. -Create a mosaic of tall and short grasses; convert non-native grasslands to native grasslands; use exclusionary fencing to protect newly restored habitat as needed.	ongoing	SP		26	12	16	80	24	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	c) cont. -Incorporate experimental design (active adaptive management). An experimental approach for restoring disturbed non-native grasslands could evaluate the most effective method for restoring the larger area (see chapter IV text for more detail)	one-time task	MN	2	4	16						
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	d) Passively restore areas of coastal sage scrub that have been identified -Allow scrub habitat to re-establish itself naturally; conduct invasive exotic species eradication and limit access as necessary.	ongoing	RE	2	2	82	34	124	48	80		240
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	e) Implement adaptive management. Use monitoring data to assess successional progress of the restored area. Refer to Bio 1.1.3 (k) for additional details	annual	MN	8	8	8	8					
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	a) Qualitative surveys should be conducted annually to detect immediate threats to known populations of listed species within RJER, and generally assess the condition of the population. Surveys should be conducted at the appropriate time of year (e.g., the appropriate blooming period for each species of plant, and breeding season for migratory birds).	annual	MN	6	6	6						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) Conduct protocol-level or other appropriate type of focused surveys every 3-5 years to document species population health, count, and extent, and allow for timely remediation efforts. - Conduct surveys for vernal pool plant species.	3-5 years	MO	2	40	80						

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct surveys for San Diego ambrosia and GPS extent of population.	3 years	MO	4	30	60						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct surveys for Otay tarplant and GPS extent of population.	annual	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused surveys for Quino checkerspot butterfly.	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused (sampling) surveys for fairy shrimp.	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused surveys for least Bell's vireo.	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused surveys for California gnatcatcher	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	c) Survey areas of suitable habitat, not currently known to support listed species, to detect new populations of listed species within the property.	3 years	MO		2	40						80
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.2	Assess threats and set priorities	a) Assess threats and set priorities by carrying out tasks outlined in Bio 2.2.2	annual	MN	4	4	4	4					
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	a) Restore and enhance native habitat preferred by rare, threatened, or endangered species known from or with the potential occur at RJER. Refer to habitat restoration goals Bio 1.2 and Bio 1.4. Identify areas to be restored and quantify acreage	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) Conduct the following tasks to manage San Diego ambrosia -Protect populations from edge effects by locating facilities away from occupied areas. Move planned public parking lot to alternate location away from existing San Diego ambrosia populations	as needed	MN	2	2							
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Protect the population with wildlife-friendly fencing to avoid adverse impacts from trampling.	as needed	MN				2	16	16			16
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Conduct an annual weed removal program (e.g., mowing) within the immediate vicinity of the ambrosia population (see Bio 3.1). Do not apply herbicide to avoid harming this endangered species	annual	MN	2	2	16	8			40		80
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Implement dethatching program every three to five years, by raking, hand clearing, and weed-eating the dead remains of the weed species from the previous season. Test other means of thatching (grazing, fire, etc.) through adaptive management and experimental design.	3-5 years	MN			4	2	8				16
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Review relevant literature regarding genetics, reproduction, and management, and update monitoring plans accordingly.	annual	MN		8	8						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	c) Conduct the following tasks to manage Otay tarplant -Follow the same strategies as outlined for San Diego ambrosia.	as needed	MN			8						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	c) Otay tarplant cont. -Collect seeds and conduct greenhouse propagation if the tarplant populations continue to decline despite management activities, or if it is determined necessary, to maintain the population	as feasible	SP									

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	d) Manage for Quino checkerspot butterfly -Identify location(s), quantify acreage, and restore areas of appropriate habitat structure through revegetation of primary larval host plant species (see Bio 1.4).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	d) Quino checkerspot butterfly cont. -Implement effective fire management program to control fire frequency . See Fire Management Element.	ongoing	MN									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	d) cont. -Evaluate the success of pertinent projects and incorporate successful management strategies into the Quino checkerspot enhancement and restoration effort for RJER	ongoing	MN	4	4	4	4					
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Conduct the following tasks to manage California Gnatcatcher -Identify areas, quantify acreage, and restore areas of appropriate habitat structure through revegetation of disturbed and/or type-converted coastal sage scrub (see Bio 1.4)	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Quino checkerspot butterfly cont. -Implement effective fire management program to control fire frequency (See Fire Management Element).	ongoing	MN									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Quino checkerspot butterfly cont. -Conduct regular cowbird trapping as necessary to protect gnatcatcher nestlings from this brood parasite, see Bio 3.2.3 (e).	as needed	MN			24						256
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) cont. -Control indirect effects of night lighting within occupied vireo habitat by shielding lighting from neighboring properties as feasible, using low-wattage sodium outdoor lighting near occupied habitat, and educating/encouraging the public to do the same	as needed	MN		2	4						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) cont. -Control indirect effects of noise within vireo habitat by keeping noise levels at or below 60 dBA during the breeding season. Avoid the use of noise-generating equipment, and noise-generating public activities as necessary.	as needed	MN		2	4						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Quino checkerspot butterfly cont. -Avoid flushing young or adults from their nest by restricting public recreational and educational activities during the breeding season as necessary.	ongoing	MN			8						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Manage for Least Bell's vireo -Identify locations, quantify acreage, and restore/enhance areas of appropriate habitat structure through invasive species removal and revegetation (see Bio 1.2 and Bio 3.1)	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Conduct regular cowbird trapping as necessary to protect nestlings from this brood parasite. Please see Bio 3.2.3 (e).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Control indirect effects of night lighting within occupied vireo habitat by shielding lighting, using low-wattage sodium outdoor lighting near occupied habitat, and educating the public.	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Control indirect effects of noise within vireo habitat by keeping noise levels at or below 60 dBA during the breeding season. Avoid the use of noise-generating equipment, and noise-generating public activities as necessary.	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Restrict public recreational and educational activities during the breeding season as necessary to avoid flushing young or adult from their nest (see Pub 1.0, 6.0, and 7.0).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Restrict all trails and public activity within 100 feet of all occupied vireo habitat (see Pub 1.0, 6.0, and 7.0).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	g) Peregrine Falcon. No species specific conservation measures have been identified at this time; review as necessary.	as needed	SP									

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	h) Determine type and level of active management needed wherever new populations of listed species, or additional listed species previously undocumented for RJER, are detected, within 6 months of the detection.	as needed	MN		2	4						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	i) Implement adaptive management: use monitoring results to re-evaluate priorities and management activities, as described in Bio 1.1.3 (i).	annual	MN	8	8	8						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.1	Survey and monitor. Conduct periodic sensitive plant and animal species surveys.	a) At appropriate time of year, conduct qualitative surveys every 3-5 years to detect immediate threats to known populations of listed species within RJER, and generally assess the condition of the population.	3-5 years	MO		2	24						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.1	Survey and monitor. Conduct periodic sensitive plant and animal species surveys.	b) Survey target species, including narrow endemic species, vernal pools species, (including indicator plant species and fairy shrimp), migratory birds, bats and other sensitive plant and animal species not covered in Section Bio 2.1.		MO									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.1	Survey and monitor. Conduct periodic sensitive plant and animal species surveys.	c) Monitor wildlife movement, as feasible, within and beyond the reserve using tracking and camera stations as described in USGS (2002). Coordinate these efforts with those conducted for HCWA and other adjacent lands.	ongoing	MO	2	2							
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.2	Assess threats and set priorities.	a) Identify threats to sensitive species. Focus on habitat-specific assemblages, i.e., grassland species. Prioritize areas for species management by designating them as "high," "medium," and "low."	annual	MN	16	16	16						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.2	Assess threats and set priorities.	b) Incorporate these priorities in annual work plan, as outlined in Bio 1.1.3 (a).	annual	D									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	a) Follow MSCP guidelines for Area Specific Management Directives (ASMDs) for MSCP covered species (see Table 3-5 in MSCP Subregional Plan; Appendix H). ASMDs are guidelines for managing and monitoring each covered species and its habitat	ongoing	MN	8	8	8						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	b) Remove non-native predators that may threaten sensitive wildlife species (Bio 3.2). Evaluate different removal methods.	as needed	MN			24	8					48
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	c) Implement invasive plant species eradication measures as needed (Bio 3.1).		MN									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	d) Add structures such as bluebird nest boxes or bat houses as necessary to provide nesting or roosting opportunities for sensitive species.	as needed	SP									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	e) Evaluate all future management programs for potential impacts to sensitive species and take appropriate steps to mitigate these impacts	as needed	MN		8	8						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	f) Implement adaptive management. Use monitoring results to re-evaluate priorities and management activities, as described in Bio 1.1.3 (i).	annual	MN	4	4	4	4					
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.1	Identify Species for Potential Reintroduction	a) Conduct habitat inventories using established protocols and guidelines. These habitat classifications can be used to determine the feasibility of reintroduction or recolonization of these species	annual	MO	10	34	168						320
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.1	Identify Species for Potential Reintroduction	b) Assess the following species for reintroduction: burrowing owl, southwestern pond turtle, and arroyo toad.	one-time task	MO									
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	a) Burrowing owl -Create artificial nest burrows and perches near the future interpretive area (old racetrack). Artificial perches are used to provide increased hunting and predator observation sites.	one-time task	SP									
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	a) cont -Assess and manage threat from medium sized predators such as foxes and coyotes.	as needed	SP	2	2	16						
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	b) Southwestern pond turtle -Assess Corral Pit Pond or Main Pond for reintroduction of the pond turtle (USGS 2002).	as needed	SP		4	8						
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	b) cont. -Manage open water habitat for emergent and floating vegetation such as cattails and mats of algae, which are preferred by this species.	as needed	SP		2		16	16				16

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	b) cont. -Conduct eradication program and monitor for non-native predators such as bullfrogs (Bio 3.2).	as needed	SP			40	8			16		16
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	c) Arroyo toad -Assess suitability of riparian and adjacent upland habitat based on characteristics outlined in listings (e.g., Federal Register), critical habitat designation, survey protocol, and/or recovery plan; assess restoration potential.	one-time task	SP		2	24						
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	c) cont. -Conduct ongoing monitoring following the USGS Monitoring Protocol for Arroyo Toad, February 2005. Monitor upland and riparian habitat as well as hydrological regime	as needed	SP			40						80
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	d) Implement adaptive management: Monitor the success of each reintroduction program annually for the first five years, and then every three years thereafter. Refer to Bio 1.1.3 (l)	annual	MN	4	4	4	4					
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.1	Survey and monitor. Conduct surveys for invasive, non-native plant species and monitor the populations on an as-needed basis.	a) Conduct qualitative surveys annually to detect immediate threats from invasive species to known populations of listed species within RJER.	annual	MO	2	16	40						80
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.1	Survey and monitor. Conduct surveys for invasive, non-native plant species and monitor the populations on an as-needed basis.	b) Conduct quantitative surveys (e.g., species density and mapping) should be conducted every three years to document the condition of the invasive species population within and surrounding (500 feet) the target sensitive species.	3 years	MO	2	8	80						160
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.2	Assess threats and set priorities Identify threat of invasive plant species population expansion and associated degradation to native habitat or sensitive species population	a) Identify threats and prioritize areas for invasive plant species management by designating risk as "high," "medium," and "low." -Prioritize occurrences of invasive, non-native plants among or near (within 500 feet of) highly sensitive plant species	annual	MN	4	4	4						
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.2	Assess threats and set priorities Identify threat of invasive plant species population expansion and associated degradation to native habitat or sensitive species population	a) cont. -Quickly eliminate new occurrences of highly invasive plant species such that the population is most manageable. -Prioritize species designated as High by Cal-IPC	annual	MN		6	6						
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.2	Assess threats and set priorities Identify threat of invasive plant species population expansion and associated degradation to native habitat or sensitive species population	b) Incorporate priorities into annual work plan, as outlined in Bio 1.1.3 (a).	annual	RP									
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.3	Manage to control and eliminate populations of invasive non-native plant species	a) Conduct intensive invasive species removal in the disturbed grasslands located in the northeast portion of the reserve, adjacent to SR 94, and along western Dulzura Creek.	one-time task	SP									
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.3	Manage to control and eliminate populations of invasive non-native plant species	b) Coordinate efforts and/or compare results with invasive plant species control programs being conducted elsewhere in the county such as regional Non-Governmental Organizations (NGOs), including CALEPPC.	ongoing	MN	2	2	2	2					
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.3	Manage to control and eliminate populations of invasive non-native plant species	c) Implement adaptive management. Use monitoring results to determine the effectiveness of non-native species control methods and protection of sensitive species; adapt management strategies as necessary. Refer to Bio 1.1.3 (l) for additional details	annual	MN									
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.1	Survey and monitor.	Conduct surveys for non-native wildlife species, and monitor as needed.	as needed	MO			40						
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.2	Assess threats and set priorities	Assess threats and set priorities for management actions based on monitoring results. Prioritize goals and tasks based on "high," "medium," and "low."	annual	MN	2	2	2	2					
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	a) Prohibit or remove non-native species in ponds attached to streams or creeks.	ongoing	MN		2							
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	Immediately after wildfire suppression activities, restore roads, fences, trails, and landscape contours to pre-fire conditions and mitigate for any damage. See Bio 1.2 and 1.4.	as needed	SP									
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	c) Monitor for the presence of domestic cats and dogs during wildlife movement surveys, as described in Bio 2.2.1 (c).	as needed	MO		2	16	16	16	16	16	16	32

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	d) Monitor cowbird populations in the reserve and establish trapping stations where cowbirds are found to be a problem.	as needed	MO		2	16						64
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	e) Monitor populations of the European starling and house sparrow in the reserve and install nest boxes for bluebirds, woodpeckers, and other cavity nesters as needed. In addition, create snags from non-native trees that are killed but left standing.	as needed	MO			16						16
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	f) Educate the surrounding communities about the threats to native wildlife caused by release of non-native species into the wild.	ongoing	SP									
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	g) Implement adaptive management. Use monitoring results to determine the effectiveness of non-native species control methods and protection of native fauna. Adapt management strategy as necessary. Refer to Bio 1.1.3 (f) for additional details.	annual	MN	2	2	2	2					
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.1	Survey and monitor. See also Pub 3.0	a) Conduct annual dove and quail counts to assess population condition and obtain trend data	annual	MO		2	40						80
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.1	Survey and monitor. See also Pub 3.0	b) Conduct surveys every 3-5 years of resident and small game species throughout RJER	3-5 years	MO		2	40						80
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.1	Survey and monitor. See also Pub 3.0	c) Conduct harvest surveys to track numbers, species, and locations of take.	as needed	MO		2	8						40
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	a) Continue the practice of releasing only male game species (pheasants) so that non-native species cannot reproduce and form self-sustaining populations	ongoing	MN		2							
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	b) Manage and maintain game species habitat -Based on monitoring data, rotate hunting areas or periodically close areas if heavy use is adversely affecting the habitat that game species prefer.	as needed	MN		8	8						
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	b) cont. -Manage for all aspects of game species' needs, including food, water, cover, and breeding habitat	as needed	MN	2	8	80	16	80	40	80		160
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	c) Limit hunting. Continue the practice of holding only limited, permit only, organized hunting events.	ongoing	MN									
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	d) Implement adaptive management. Use monitoring data to assess success of game species management strategies. Assess hunting capacity. Refer to Bio 1.1.3 (l) for additional details	annual	MN	2	2	2	2					
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	a) Enhance and/or restore habitat in designated hunting areas by removing or replacing non-native grasses with native grasses and forbs, mowing, and controlled burns	as needed	SP									
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	b) Assess current food plots for success. Evaluate other potential areas for manipulation or native/passive feeding centers. Continue planting as resources allow and benefit is derived.	as needed	MO/MN			24						
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	c) Assess current water sources. Evaluate other potential areas where water sources can be developed or artificially enhanced.	as needed	MO			8						24
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	d) Incorporate brush piles or vegetation design that will provide cover for quail and small game	as needed	MN			8				24		24

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	e) Construct and install dove cones where appropriate	as needed	MN			8				16		32
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	f) Evaluate success of habitat improvement projects and modify as necessary to achieve desired results	as needed	SP	2	2	2	2					
CULTURAL ELEMENT																	
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.1	Gather data	Compile all of the inventories and investigations of cultural resources for RJER that are on file with the Department. Create a working bibliography.	as feasible	D	2	16							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.2	Conduct record search	Conduct records search using a qualified cultural resources professional or consultant conduct a records search at the South Coastal Information Center (SCIC).	as needed	D		16							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.3	Maintain data	Maintain and continue to update the data collected from the Department files and the records search.	as needed	D		24							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.4	Evaluate resources	Formally evaluate known cultural resources for the California Register (to be conducted by a qualified cultural resources professional or consultant).	as needed	SP	2	8							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.5	Contact Native Americans	Contact the Native Americans identified in the 2005 contact program (see Appendix G), and solicit information on resources that may not be previously identified or that they deem important	as needed	MN	2	16							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.6	Define areas to be surveyed	Using the data acquired from the SCIC, define the areas that have not been surveyed. In addition, review the adequacy and age of prior surveys to determine if certain areas need to be resurveyed.	as needed	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	a) Identify programs and planned development within RJER and conduct focused field surveys in those areas.	as needed	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	b) Avoid areas where resources are found.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	c) Encourage non-destructive research by professional archaeologists.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	d) Require publication and distribution of results.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	e) Ensure proper curation of any materials collected, including notes and photographs.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.8	Add new data	Add new data to existing dataset	as needed	MN									
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003)	a) Proposed staging area near the CEC: Maintain fencing and signage to protect sites CA-SDI-14,893 and -14,894, and avoid using the area where P-37-025320 is located	as needed	MN		2		8	8		8		16
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003)	b) Protect the Robinson Adobe (CA-SDI-14,826): -Avoid ground-disturbing activities within the recorded prehistoric and historic site area	as needed	MN		2							

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -An archaeologist should monitor any activities that result in disturbance of the ground surface or the adobe walls or foundations	as needed	MN		2							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Clear soil and debris away from the foundation of the wall under the supervision of an archaeologist, and remove vegetation from the base of the wall using an herbicide (do not pull plants)	as needed	MN		2		16			16		16
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Monitor the erosion gully located east of the adobe, and take remedial measures if needed, under the supervision of an archaeologist	as needed	MN		2		2	8	4	8		8
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Install low height signage around the adobe to notify visitors that the area should not be entered. The signage should not draw attention to the area, and fencing is not necessary	as needed	MN				2			4		4
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Coat the remaining adobe wall with a protective material; El Rey Superior Additive 200 is recommended	as needed	MN		2		8	8				
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	c) Proposed staging area on Otay Lake Road: No cultural resources are located within the project area, and no further measures are recommended	as needed	MN									
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	d) Protect Kiln (CA-SDI-6967H): Contract a cultural resources professional to conduct a conditions assessment and prepare a treatment plan; specific management recommendations would need to be made by a structural engineer who specializes in historic resources	as needed	MN	2	4		24	24	8	24		24
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	e) Protect Pio Pico Homestead site: Conduct onsite assessment to determine management needs.	as needed	SP									
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	f) Evaluate all future projects for potential to impact cultural resources. Conduct a cultural resources review before conducting any ground-disturbing activities. Mitigate any potential adverse impacts to cultural resources through active management	as needed	MO/MN		4							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	a) Implement Category 1 Treatment. Preserve in place. -Restore and/or replace architectural features based on detailed and accurate representations of the original features. -Do not introduce plant materials into the sites such as invasive vining plants, surface roots of certain trees	as needed	SP		1		10	10	10	10		20
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	a) cont. -Implement active management of cultural resources including fencing re-routing trails, stabilization and repair of historic structures and features, i.e., providing covers for buildings or ruins, capping with non-cultural soils, and annual monitoring.	as needed	MN		1		10	10	10	10		20
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	b) Implement Category 2 Treatment. Preserve in place. Trails, staging areas, or other uses may be nearby if no direct access is provided to the resources. Treatments may include: avoidance, revegetation, limited stabilization of historic features, and monitoring.	as needed	SP		2		20	20	20	20		40
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	c) Implement Category 3 Treatment. Preserve in place. Trails and other modern amenities may be nearby. This category includes resources used in interpretive programs and for research and study. Treatment may include: avoidance of direct impacts, revegetation to hide or protect the resource, and restoration or reconstruction of a historic building for interpretive use	as needed	SP		2		20	20	20	20		40
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	d) Implement Category 4 Treatment. Ensure proper site specific documentation has been completed and submitted to the proper agencies and organizations; provide funds for curation of collected artifacts at an appropriate facility	as needed	SP		2		20	20	20	20		40
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	e) Retain Professional Assistance. Have a professional cultural resources person assist in assigning treatments to those not identified by Hector (2002)	as needed	SP		16							

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.3	Consult California law	When activities may affect cultural resources, consult California's statutes, regulations, and administrative policies regarding historic preservation and protection of cultural resources	as needed	MN		8							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	a) Avoid impacts to cultural resources whenever possible	as needed	MN		2		8	8				
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	b) Install Fencing as needed. The placement of fence posts should be monitored by an archaeologist. Split rail or lodge-pole fencing is adequate.	as needed	SP		2		2	24	8	24		48
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	c) Cap areas with trails or dirt roads with non-cultural soils; activities should be supervised by an archaeologist.	as needed	MN		2		24		24			
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	d) Revegetate to protect a site should not include any disturbance of the surface of the ground, even if the site has been an agricultural field	as needed	MN		2	24	8	80	40	80		160
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	e) Conduct additional monitoring as necessary	as needed	MO	2	16							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	f) Test the area and collect data if the resource cannot be avoided	as needed	MO		8							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.5	Monitor cultural resources at the recommended intervals (Appendix B)	a) Conduct monitoring, using qualified Department staff or volunteers, with professional consultation as needed. Mitigate, as described above, if damage or impacts are observed	as needed	MO		16							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.5	Monitor cultural resources at the recommended intervals (Appendix B)	b) Implement a stewardship program that trains volunteers to monitor the conditions of cultural resources. Site stewards will require mandatory training and ongoing monitoring. Youth service projects can be developed through this program	ongoing	OU		40							
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.1	Consult with Native Americans	Establish a relationship (through periodic phone calls and letters) with the Native American community. This could include a presentation to Native American communities and an invitation for input and concerns.	as needed	OU		16							
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.2	Create public contact	Create a contact list of all interested parties from the community.	as needed	OU		2						24	
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.3	Implement interpretive plan	Create and implement an interpretive plan for the public. Without threatening the integrity of the cultural resource, prepare written material, graphics, and/or interpretive displays describing what is present. Other interpretive displays could feature the history of ranching in San Diego.	ongoing	OU	4	4						320	
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.4	Develop public outreach and educational programs	Develop public outreach and educational programs for users and visitors. Include educational materials that may be used in county schools curriculum.	ongoing	OU	4	4						160	
PUBLIC ACCESS ELEMENT																	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.1	Improve public access	a) Provide limited access to the public on a daily basis.	ongoing	MN	4	10	2	44	20	10	20	40	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.1	Improve public access	b) Build new parking lots at entrance along SR 94, and along Otay Lakes Road.	one-time task	MA	4	10	2	24	28	18	20	40	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.1	Improve public access	c) Continue to maintain access routes to existing and new parking lot.	ongoing	MA	2	4	2	20	20	10	20	40	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resources	Pub 1.1	Improve public access	d) Improve physical accessibility and design. Improve design and landscaping of RJER entrance to make this area more inviting. Improve trails near the future visitor center and interpretive area for ADA accessibility.	ongoing	MA	4	10	2	28	20	10	20	40	
PUBLIC USE ELEMENT																	

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	a) Close RJER for up to three days after rain events to prevent damage to trails	as needed	MN		2	10						24
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	b) Close RJER to the public during and following fire and severe weather events	as needed	MN	2	4	10						24
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	c) Control access with locked gates	as needed	MN		4	4						
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resources	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	d) Increase enforcement and create additional educational materials when unauthorized activities take place. Restore any damaged habitat as soon as feasible. In severe cases, public access or facilities may be removed, reduced or limited to certain locations.	as needed	MN/MA	2	2	4						328
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.3	Provide facilities for the public	a) Develop a sampling design and monitoring scheme to detect changes that may occur once RJER is opened to the public	as needed	MO	2	3	22						70
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.3	Provide facilities for the public	b) Rent and maintain portable toilets during hunting season. Evaluate need for other portable toilets in parking areas.	as needed	MA		3	22						70
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.3	Provide facilities for the public	c) Pursue funding and construction for a day use facility or classroom at the entrance parking lot off of SR 94.	as needed	MA		3	22						70
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.4	Evaluate use levels and visitor satisfaction periodically including use of visitor surveys	a) Conduct quantitative user surveys every 5 years or more frequently and estimate user capacity. Document condition of habitat in relationship to public use capacity	5 years	MO		2							40
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.4	Evaluate use levels and visitor satisfaction periodically including use of visitor surveys	b) Conduct periodic reviews of public uses of RJER; evaluate rules, regulations, guidelines, and materials to ensure compatibility of public uses.	annual	MO		2							40
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.1	Identify potential conflicts	Identify potential conflicts between recreational uses and resolve such conflicts.	as needed	MO	2	8		8					
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.2	Encourage hunter safety	Implement safe hunt design, and provide supervision, monitoring and enforcement of regulations.	ongoing	MN/MO	2	8		8					
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.3	Inform the public of RJER use designations and use restrictions	Provide information to the public regarding RJER use designations and use restrictions through outreach, signage, physical barriers, and the Department's website.	ongoing	OU	16	40	40	40	40	40	40	40	80
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.4	Have Department personnel available	Provide on-site staffing during times of high use to monitor visitor activities and provide information as needed to visitors.	as needed	MO		40		40					800
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.5	Have Department and law enforcement on-site periodically to enforce regulations	Work with California Department enforcement division to assign personnel and train personnel on regulations.	as needed	MN	40	40	40	40	40	40	40	40	160
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	a) Continue current seasonal hunting program in designated areas.	ongoing	MN	26	50	24	16		24			72
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	b) Evaluate whether current hunting program may be expanded as habitat and access is improved.	as needed	MO		4	16						
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	c) Maintain physical separation of hunting areas from closed areas through signage and landmarks that blend into the landscape, such as boulders along access roads	as needed	MN		4		8					
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	d) Provide hunter safety instruction on a regular basis at RJER.	ongoing	OU	4	8							
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	e) Continue encouragement of young hunters through participation in junior hunt programs.	ongoing	OU	2	4							
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	f) Conduct late summer volunteer "clean up day" to ready RJER for the upcoming hunting season.	annual	OU		2		8	8				
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	g) Maintain a good relationship between Department staff, hunters, and volunteers.	ongoing	OU	2	2	2	2					

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	a) Identify and create specific wildlife viewing areas that provide for undisturbed wildlife viewing, protect sensitive species, and do not cause a visual impact (e.g., blinds in grassland may be too visible).	as needed	SP		4	26	16	40				
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	b) Manage existing wildlife routes and design future habitat enhancements that attract wildlife for viewing	ongoing	MN	2	8	8						
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	c) Provide adequate vegetative screening to protect wildlife while providing viewing areas.	ongoing	MN			8	8					
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	d) Develop interpretive signage for wildlife viewing trails (see also Pub 5.0 and 7.0).	one-time task	OU	2	2		6				40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.1	Develop an overall plan	Develop an overall plan for interpretive features including signs, blinds, and walking tours.	one-time task	OU	2	2						80	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.2	Develop and distribute interpretive materials	Develop and distribute interpretive materials including brochures and materials for self-guided tours.	ongoing	OU	2	2						40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.3	Convert the former race track	Convert the former race track into an ADA accessible interpretive nature trail with interpretive signs and displays of local and regional natural habitats and species (emphasizing those covered by MSCF).	one-time task	OU	4	8	40	160	160	24	160	320	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.4	Construct a visitors center and develop interpretive material	Construct visitors center that includes interpretive signage, parking, bathrooms, a trailhead to the interpretive track, and a building with indoor exhibits and information desk. Staff with qualified volunteers.	one-time task	SP									
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.5	Provide additional parking	Move the gate back from SR 94 to provide additional parking at the visitors center.	one-time task	SP									
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	a) Develop programs specifically to create visitation and education opportunities for urban and disadvantaged youth, including "girls in science," hunter education, and collaborations with agencies and organizations that have a conservation curriculum.	ongoing	OU	2							80	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	b) Identify and designate an area to be used for research purposes that is closed to the general public. Work with local academic institutions on research needs for RJER.	ongoing	MO/SP		16	40						
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	c) Provide and continue forums and presentations for schools and museums (e.g., San Diego Natural History Museum) field trips.	ongoing	OU								40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	d) Provide guided field trips by volunteer docents and organizations.	ongoing	OU								40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.7	Construct viewing platform	Construct viewing platform and interpretive panels near the kiln areas. Evaluate fencing options to ensure public safety and protection of the kiln while allowing public viewing.	one-time task	SP									
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.1	Manage trail system	Maintain and post existing trail system	ongoing	MN		2		8					24
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.2	Inspect trail system	Routinely inspect and document condition of trails and habitat. If damage to biological resources is taking place, consider those trail elements for removal or relocation	ongoing	MO				8					24
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.3	Repair trails	Identify and repair unsafe sections of the trails as needed.	as needed	MA			4	8	24				48
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.4	Install barriers as needed	Install barriers such as logs, boulders and native vegetation (native prickly or thorny plants) to prevent trail widening, to close trails for restoration, or to control access to areas (e.g. areas closed for hunting or research).	as needed	MA		2	8	8			24		48
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.5	Evaluate the County Trails Plan	Evaluate The San Diego County Community Trails Master Plan for consistency with the goals and regulations of the reserve. Coordinate with the County as needed.	as needed	MO	4	8							
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.1	Erect and maintain signs at parking lots	Install and maintain signs at parking lots with ecological reserve maps, regulations, and safety information such as general rules, the prohibition of rifles or pistols, and potential hazards.	ongoing	MN				2	4	4	4		8
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.2	Work with California Department of Transportation	Work with California Department of Transportation (Caltrans) to install signage on SR 94 to direct visitors to the public entrance of RJER and the CEC.	one-time task	MN	4	16							

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.3	Provide additional signs to protect natural resources and direct the public to accessible areas.	Provide the following types of signs: RJER entrance, trails and hunting access areas, areas that are temporarily closed for nesting, maintenance, habitat restoration, emergency repairs, etc.	as needed	MN		4			16				
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.4	Monitor and manage signage	Develop a monitoring and maintenance schedule for all signage.	as needed	MO/MA					16				
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.5	Repair signage as needed	Inventory existing boundary signage and fencing; identify signs and fencing in need of repair; and identify and implement remedial measures as necessary.	as needed	MO/MA					16				32
Pub 1: Public Use	Pub 8.0	Community Partnership	Continue to foster community partnership	Pub 8.1	Facilitate the participation of wildlife agencies, NGOs, community groups and the public in activities relevant to this LMP. (see also Crd 1)	a) Communicate and coordinate with various community groups for special events, to discuss volunteer opportunities, and to develop new program areas.	ongoing	OU	48	48							
Pub 1: Public Use	Pub 8.0	Community Partnership	Continue to foster community partnership	Pub 8.1	Facilitate the participation of wildlife agencies, NGOs, community groups and the public in activities relevant to this LMP. (see also Crd 1)	b) Coordinate with volunteers to protect wildlife resources and habitat. This is especially important with large work parties. Provide training and briefings as necessary.	ongoing	OU		24	40					160	
Pub 1: Public Use	Pub 8.0	Community Partnership	Continue to foster community partnership	Pub 8.1	Facilitate the participation of wildlife agencies, NGOs, community groups and the public in activities relevant to this LMP. (see also Crd 1)	c) Coordinate with the Jamul Trail Council to maintain and repair trails.	ongoing	OU		16		16					
Pub 1: Public Use	Pub 9.0	Regulations	Support compatible wildlife-dependent public use through consistent regulations and coordination with other agencies and applicable plans such as the NCCP	Pub 9.1	Ensure compliance with regulations (see also Management Coordination Element, Section H)	a) Periodically evaluate public use, and RJER regulations to identify changes necessary to maintain consistency with the goals of this LMP. Submit regulations changes through headquarters for Fish and Game Commission review and adoption.	as needed	MO	8	8	8	8					
Pub 1: Public Use	Pub 9.0	Regulations	Support compatible wildlife-dependent public use through consistent regulations and coordination with other agencies and applicable plans such as the NCCP	Pub 9.1	Ensure compliance with regulations (see also Management Coordination Element, Section H)	b) Periodically review activities within RJER for compatibility with the MSCP, specifically as updated monitoring and management guidelines and information become available for MSCP participants.	as needed	MO	4	4	4	4					
FACILITY MANAGEMENT ELEMENT																	
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.1	Manage roads and trail system (See also Bio 1.2, Bio 1.4, Bio 3.1, Pub 6.0, and Pub 7.0)	a) Restore closed trails. Identify trails to be closed, quantify acreage, and implement active restoration through decompaction, invasives removal, and when necessary, seeding or planting. Invasive species eradication efforts should continue for no less than five years	as needed	RE/MA		2	40	16	40	24	40		80
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.1	Manage roads and trail system (See also Bio 1.2, Bio 1.4, Bio 3.1, Pub 6.0, and Pub 7.0)	b) Prevent erosion damage to trails by developing and implementing BMPs as necessary.	as needed	MA		4		16					
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.1	Manage roads and trail system (See also Bio 1.2, Bio 1.4, Bio 3.1, Pub 6.0, and Pub 7.0)	c) Prohibit off-road activities. Ensure that no illegal trails are formed by off-road activities by posting signs or installing barriers as needed.	as needed	MA		2							
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.2	Maintain signage and public education information	Remove, add, or update signs as necessary (See Pub 7.0). Review and update educational information at Kiosks, at the CEC, and in informational brochures as necessary (See Pub 5.0).	as needed	MA	2	4		4					
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.3	Manage Fences, Gates, and Barriers	Manage fences, gates, barriers, and other structures to support wildlife movement, and to protect impacts to sensitive biological resources (See Pub 1.0, Pub 2.0, Pub 6.0). Remove structures that impede wildlife movement, management activities or Border Patrol Access.	as needed	MN		2	24	8	24	24	24		48
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.4	Maintain structures	Maintain Conservation Education Center, and other structures to support management and public education activities.	as needed	MA	24	40	40	40	80	120	500	40	800
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	a) For each well, determine functionality, the depth to groundwater, and the pumping rate. In addition, conduct water quality analysis of the well water to determine if it is safe for people and wildlife.	as needed	MA				2			8		8
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	b) Maintain functional wells regularly. Cover all non-functional wells to protect the public from accidents.	annual	MA		2		4					20
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	c) Maintain fire hydrants by lubricating and testing them every six months.	6 months	MA							2		

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	d) Remove sediment buildup from aqueducts and repair washouts as needed.	as needed	MA				4		24			10
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	e) Maintain water levels in selected artificial ponds to support native flora and fauna using existing pumps and levy system.	as needed	MA		2		4			40		10
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	f) Prepare a water features "operations manual" and graphics of the water system for ease in repairs and maintenance.	ongoing	D		8		8					
SCIENTIFIC RESEARCH AND BIOLOGICAL MONITORING																	
Mon 1: Research and Monitoring	Mon 1.0	Scientific Research	Provide opportunities for research to support adaptive management and provide useful biological information	Mon 1.1	Identify data gaps	Identify data gaps and/or encourage research on species or ecosystem-level biology, management, or monitoring.	ongoing	MO	4	4	8						
Mon 1: Research and Monitoring	Mon 1.0	Scientific Research	Provide opportunities for research to support adaptive management and provide useful biological information	Mon 1.2	Identify experimental design opportunities	Identify experimental design opportunities to be incorporated into habitat and species management, restoration, and/or introduction projects on the reserve	ongoing	SP	4	4	4						
Mon 1: Research and Monitoring	Mon 1.0	Scientific Research	Provide opportunities for research to support adaptive management and provide useful biological information	Mon 1.3	Facilitate access to students and researchers	Facilitate access to students and researchers from local universities and colleges. Encourage research that support the goals of this LMP. Provide access authorization letter for all authorized research activity.	ongoing	OU		8	16						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management and monitoring activities within RJER, including: -Draft MSCP Framework Management Plan (County of San Diego 2001); Ogden, 1996; CBI 2001a and 2001b)	a) Incorporate established protocols related to listed species -USFWS focused species survey protocols -Management/monitoring plan for Quino checkerspot (Longcore, et al. 2003). -Survey/monitoring for the arroyo toad (County of S.D., 2006)	ongoing	MO/MN	8	8	8						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	b) Incorporate established protocols related to MSCP covered species (especially narrow endemic species).	ongoing	MO/MN	24	24	80						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	c) Incorporate established protocols related to vegetation communities -California Native Plant Society - Rapid Assessment Protocol (CNPS 2005). -MSCP annual report.; MSCP post-fire habitat recovery monitoring photo points established near Rancho Jamul. (County of San Diego 2006).	ongoing	MO/MN	24	24	80						
Mon 1: Scientific Research and Biological Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	d) Incorporate established protocols related to sensitive habitats: -Final report for "Creating an Index of Biological Integrity for Coastal Sage Scrub: A tool for habitat quality assessment and monitoring." (Diffendorfer, et al. 2004). -Adaptive management for southern California grasslands. (Chadden, A., E. Dowksza, and L. Turner 2004)	ongoing	MO/MN	24	24	80						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	e) Incorporate established protocols related to rare plants. -Survey methods consistent with baseline study (USGS 2002). -MSCP rare plant monitoring (see City of San Diego 2005).	ongoing	MO/MN	8	8	40						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	f) Incorporate established protocols related to sensitive wildlife. -Habitat surveys and monitoring reports on bats, arroyo toad, and southwestern pond turtle (County of San Diego 2006).	ongoing	MO/MN	24	24	80						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	g) Incorporate established protocols related to general surveys. -General wildlife surveys and non-native species surveys should be consistent with methods used in USGS (2002).	ongoing	MO/MN	8	8	40						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	h) Incorporate established protocols related to wildlife movement. -Wildcat Canyon Road enhancement project before-after-control-impact study. (EDAW 2004). -Wildlife Corridor Monitoring Study, prepared for the Multiple Species Conservation Program (CBI 2003).	ongoing	MO/MN		2	24						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	i) Incorporate established protocols related to adaptive management. -Designing monitoring programs in an adaptive management context for regional multiple species conservation plans. (USGS 2004a).	ongoing	MO/MN	4	4	4						
FIRE MANAGEMENT ELEMENT																	

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.1	Meet biennially, with CDF representatives and identify areas of concern	Meet biennially, with CDF representatives to discuss fire-related issues relevant to the RJER. Identify areas of concern should be identified on a map and update the map as needed.	biennially/as needed	MN	8	8	8	8					
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	Prepare WFMP to address ongoing fire management needs for wildlife habitat and defensible space. Review WFMP every 5 years and update if needed.	one-time task	D	2	16							
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	a) Assess road conditions and maintain road surfaces and width to allow access by wildland firefighting engines	as needed	MO				8					
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	b) Mow grasses and thin or reduce vegetation adjacent to public vehicle access to minimize risks of ignition.	as needed	MN/D			8	2		40			
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	c) Address coordination needs with Caltrans and the Department for fuel management along SR 94.	as needed	MN/D			8	2		16			
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	d) Incorporate plans for cooperative management of habitat through prescribed burns at specific locations.	as	MN/D		8	8						
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	e) Incorporate methods for fire response that would consider effects on natural and cultural resources within RJER.	one-time task	MN/D	4	4	8						
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.3	Participate in preparing Community Wildfire Protection Plans (CWPP)	Participate in preparing Community Wildfire Protection Plans (CWPP) for areas that encompass RJER.	ongoing	MN/D		8							
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.4	Provide resource specialist to represent the Department in the Incident Command System (ICS)	Train a Department biologist to serve the role of resource specialist or agency representative through the (ICS)	ongoing	MN	8	8	8	8					
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.5	Ensure that project incorporates adequate defensible space so that RJER lands	Review and comment on adjacent development and proposals to ensure that project incorporates adequate defensible space so that RJER lands are not impacted later.	as needed	MO	4	16	16						
Fire 1: Fire Management	Fire 2.0	Fire Suppression	Conduct wildfire suppression activities to sustain ecosystem health, and minimize impacts	Fire 2.1		Establish staging areas on roads and already-disturbed areas	as needed	MN		4							
Fire 1: Fire Management	Fire 2.0	Fire Suppression	Conduct wildfire suppression activities to sustain ecosystem health, and minimize impacts	Fire 2.2	Restrict the use of heavy equipment	Avoid the use of bulldozers or other heavy equipment within 100 feet of sensitive biological and cultural resources unless necessary for repairs or habitat restoration; protect biological and cultural resources from negative effects.	as needed	MN	4	4	4	4					
Fire 1: Fire Management	Fire 2.0	Fire Suppression	Conduct wildfire suppression activities to sustain ecosystem health, and minimize impacts	Fire 2.3	Coordinate fire suppression activities	Coordinate fire suppression activities as appropriate for wildlands and natural habitat, and cooperate with CDF and local fire districts (including the National Wildlife Refuge, BLM, and rural fire departments).	ongoing	MN	2								
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.1	Implement habitat restoration as needed after a fire.	Immediately after wildfire suppression activities, restore roads, fences, trails, and landscape contours to pre-fire conditions and mitigate for any damage. See Bio 1.2 and 1.4.	as needed	RE/MA	8	8	16	16		80			160
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.2	Implement emergency remediation	Complete emergency watershed work as soon as possible and before the first heavy rainfall.	as needed	RE	2	2	24	24		80			160
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.3	Repair areas in riparian and wetland habitats.	Repair culverts and stream crossings and restore drainage and road surfaces in areas damaged by firefighting activities and post-fire storm runoff (see Bio 1.4)	as needed	RE/MA	2	2	8	8	24	24			80
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.4	Monitor invasion of weeds	Monitor invasion of weeds in areas disturbed by fire activities and the effectiveness of erosion control methods, and take corrective actions as needed (see Bio 3.1)	as needed	MO			40						80
MANAGEMENT COORDINATION ELEMENT																	
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.1	Standardize methods of data collection and data management	a) Develop a protocol for data collection and data management, including GIS data, to ensure consistency even if there is a personnel change in the Department.	one-time task	D	12	12	32						
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.1	Standardize methods of data collection and data management	b) Ensure that the protocol is consistent with Department procedures and with the County's comprehensive MSCP database and reporting procedures.	one-time task	D	4	4							
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.2	Prepare annual or semi-annual status reports	Prepare annual or semi-annual status reports. Make data and reports available to CDFG, other agencies and possibly the public. If feasible, post online.	annual	D	4	24	8	8					

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.3	Incorporate new data and revise LMP every five years	Revise LMP every five years and prepare appropriate CEQA documentation.	5 years	D	24	24	24	24					
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	a) Meet with county, state, and federal resource agencies.	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	b) Meet with NGOs.	ongoing	MN	24	24						40	
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	c) Meet with the scientific community and other land managers using adaptive management strategies.	ongoing	MN	24	24	40						
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	d) Meet with the public to provide them with an opportunity to ask questions and express concerns.	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	Discuss conservation threats; management, monitoring, restoration, and reintroduction; results of management tasks and scientific research; and potential future projects	ongoing	MN	24	24	24	24				24	
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	Coordinate and ensure consistency with the following regional planning efforts: a) South County MSCP subarea plan.	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	b) Avoid conflicts with County of San Diego General Plan and Jamul-Dulzura Community Plans. Review and comment on proposed projects that may affect RJER	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	c) Ensure that County trails program and Jamul-Dulzura Community Trail and Pathway Plan are consistent with the goals of the LMP. Evaluate goals for trail placement as appropriate	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	d) Ensure Otay River Watershed Management Plan (WMP) and Special Area Management Plan (SAMP) are consistent with goals of this LMP. Evaluate and implement watershed goals and policies as appropriate.	ongoing	MN	16	16							
Total Hours:									978	2,336	3,829	1,474	1,712	1,408	2,126	1,728	8,384
FTE:									0.5094	1.21667	1.99427	0.76771	0.89167	0.73333	1.10729	0.9	4.36667

D - report, plan, or other document to be prepared
 LK - wildlife movement corridor and habitat linkage
 MN - management
 MO - monitoring
 OU - public outreach
 SP- special project

Grand Total No. Hours:	23,975
Grand Total FTE:	12

List of Appendices

Appendix A. Ecological Reserve Rules and Regulations

Appendix B. Cultural Resources (confidential)

Appendix C. Flora Inventory for RJER

Appendix D. Fauna Inventory for RJER

Appendix E. Sensitive Species Documented from RJER

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FISH AND GAME CODE

Division 2. Department of Fish and Game

Chapter 5. Fish and Game Management

Article 4. Ecological Reserves

Section 1580-1586

1580. The Legislature hereby declares that the policy of the state is to protect threatened or endangered native plants, wildlife, or aquatic organisms or specialized habitat types, both terrestrial and nonmarine aquatic, or large heterogeneous natural gene pools for the future use of mankind through the establishment of ecological reserves. For the purpose of establishing those ecological reserves, the department, with the approval of the commission, may obtain, accept on behalf of the state, acquire, or control, by purchase, lease, easement, gift, rental, memorandum of understanding, or otherwise, and occupy, develop, maintain, use, and administer land, or land and nonmarine water, or land and nonmarine water rights, suitable for the purpose of establishing ecological reserves. Any property obtained, accepted, acquired, or controlled by the department pursuant to this article may be designated by the commission as an ecological reserve. The commission may adopt regulations for the occupation, utilization, operation, protection, enhancement, maintenance, and administration of ecological reserves. The ecological reserves shall not be classified as wildlife management areas pursuant to Section 1504 and shall be exempt from Section 1504.

1581. Any property acquired in fee for ecological reserves shall be acquired in the name of the state, and shall, at all times, be subject to such rules and regulations as may be prescribed from time to time by the commission for the occupation, use, operation, protection, and administration of such property as ecological reserves.

1582. The department shall do all things necessary to secure a valid title in the state to the property acquired in fee for ecological reserves but no payment shall be made therefor until the title is vested in and satisfactory to the state. No such land will be acquired by eminent domain.

1583. Except in accordance with the regulations of the commission it is unlawful to enter upon any ecological reserves established under the provisions of this article, or to take therein any bird or the nest or eggs thereof, or any mammal, fish, mollusks, crustaceans, amphibia, reptiles or any other form of plant or animal life.

1584. As used in this article, "ecological reserve" means land or land and water areas that are designated as an ecological reserve by the commission pursuant to Section 1580 and that are to be preserved in a natural condition, or which are to be provided some level of protection as determined by the commission, for the benefit of the general public to observe native flora and fauna and for scientific study or research.

1585. Notwithstanding Section 1580, which sets forth the primary purposes of ecological reserves, the department may construct facilities and conduct programs in ecological reserves it selects to provide natural history education and recreation if those facilities and programs are compatible with the protection of the biological resources of the reserve. As provided in Sections 1764 and 1765, the department may control access, use, and collect fees for selected ecological reserves.

1586. The Upper Newport Bay Ecological Reserve Maintenance and Preservation Fund is hereby created in the State Treasury. Notwithstanding Section 13340 of the Government Code, the money in the fund is continuously appropriated, without regard to fiscal years, to the department for purposes related to the maintenance and preservation of the Upper Newport Bay Ecological Reserve.

CALIFORNIA CODE OF REGULATIONS

TITLE 14. Natural Resources

Division 1. Fish and Game Commission--Department of Fish and Game

Subdivision 2. Game and Furbearers

Chapter 11. Ecological Reserves

§630. Ecological Reserves

The areas specified in this chapter have been declared by the Fish and Game Commission to be ecological reserves. A legal description of the boundaries of each ecological reserve is on file at the department's headquarters, 1416 Ninth Street, Sacramento. Ecological reserves are established to provide protection for rare, threatened or endangered native plants, wildlife, aquatic organism and specialized terrestrial or aquatic habitat types. Public entry and use of ecological reserves shall be compatible with the primary purposes of such reserves, and subject to the following applicable general rules and regulations, except as otherwise provided for in the special area regulations:

Ecological Reserves - General Rules and Regulations

Protection of Resources	No person shall mine or disturb geological formations or archeological artifacts or take or disturb any bird or nest, or eggs thereof, or any plant, mammal, fish, mollusk, crustacean, amphibian, reptile, or any other form of plant or animal life in an ecological reserve except as provided in subsections 630 (a)(2) and (a)(8). The department may implement enhancement and protective measures to assure proper utilization and maintenance of ecological reserves.
Fishing	Fishing shall be allowed in accordance with the general fishing regulations of the commission except that the method of taking fish shall be limited to angling from shore. No person shall take fish for commercial purposes in any ecological reserve except by permit from the commission.
Collecting	No collecting shall be done in an ecological reserve except by permit issued pursuant to section 650 of Title 14. Any person applying for a permit must have a valid scientific collecting permit issued pursuant to part 3 of this title.
Motor Vehicles	No person shall drive, operate, leave, or stop any motor vehicle, bicycle, tractor, or other type of vehicle in an ecological reserve except on designated access roads and parking areas.
Swimming	No person shall swim, wade, dive, or use any diving equipment within an ecological reserve except as authorized under the terms of a permit issued pursuant to subsection (3).
Boating	No person shall launch or operate a boat or other floating device within an ecological reserve except by permit from the commission.
Trails	DFG may designate areas within an ecological reserve where added protection of plant or animal life is desirable, and may establish equestrian or walking trails or paths within such designated areas. No person shall walk or ride horseback in such areas except upon the established trails or paths.
Firearms	No person shall fire or discharge any firearm, bow and arrow, air or gas gun, spear gun, or any other weapon of any kind within or into an ecological reserve or possess such weapons within an ecological reserve, except law enforcement personnel and as provided for in individual area regulations that allow for hunting.
Ejection	DFG employees may eject any person from an ecological reserve for violation of any of these rules or regulations or for any reason when it appears that the general safety or welfare of the ecological reserve or persons thereon is endangered.

Public Entry	Public entry may be restricted on any area at the discretion of DFG to protect the wildlife, aquatic life, or habitat. No person, except state and local law enforcement officers, fire suppression agencies and DFG employees in the performance of their official duties or persons possessing written permission from DFG, may enter an ecological reserve, or portion thereof, which is closed to public entry. No person may enter any ecological reserve between sunset and sunrise except with written permission from the Department, which may be granted for purposes in accordance with subsection (a)(2).
Introduction of Species	Unless authorized by the commission, the release of any fish or wildlife species, including domestic or domesticated species, or the introduction of any plant species, is prohibited. DFG may reintroduce endemic species on an ecological reserve for management purposes.
Feeding of Wildlife	The feeding of wildlife is prohibited.
Pesticides	The use of pesticides is prohibited on an ecological reserve unless authorized by the commission with the exception that DFG may use pesticides for management purposes and for public safety.
Litter	No person shall deposit, drop, or scatter any debris on an ecological reserve except in a receptacle or area designated for that purpose. Where no designated receptacles are provided, any refuse resulting from a person's use of an area must be removed from that area by such person.
Grazing	The grazing of livestock is prohibited on an ecological reserve.
Falconry	Falconry is prohibited.
Aircraft	No person shall operate any aircraft or hovercraft within a reserve, except as authorized by a permit from the commission.
Pets	Pets, including dogs and cats, are prohibited from entering an ecological reserve unless they are retained on a leash of less than ten feet or are inside a motor vehicle, except as provided for through area-specific regulations (e.g., RJER) that allow for hunting or training activities.
Fires	No person shall light fireworks or other explosive or incendiary devices, or start or maintain any fire on or in any reserve, except for management purposes as provided in subsection (a)(1).
Camping	No person shall camp on/in an ecological reserve.
Vandalism	No person shall tamper with, damage or remove any property not his own when such property is located within an ecological reserve.

Special Regulations for Use at Rancho Jamul Ecological Reserve

Dog Training	Controlled retriever training may be permitted within a designated area. This area shall be clearly posted.
Hunting	Hunting shall be allowed in accordance with the general hunting regulations, but only at such times and in specific areas as designated by the department.
Future Activities and Facilities	Within the 50.51 acre Headquarters Unit, the Department may develop facilities and conduct activities consistent with training programs, meeting and storage needs, fire suppression and control, and educational programs under guidelines established by the regional manager.
Occupied State Housing	Uses associated with occupied state housing shall be allowed within the 50.51 acre Headquarters Unit.

Source: CCR 2009.

Appendix B

Cultural Resources (confidential)

Appendix C

Flora Inventory for RJER

Inventory of Plants Documented from or Potentially Occurring in Rancho Jamul Ecological Reserve

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
CRYPTOGAMS				
POLYPODIACEAE- Fern Family				
<i>Polypodium californicum</i>	California Polypody	S, C	--/--	No
PTERIDACEAE - Brake Family				
<i>Adiantum jordanii</i>	California Maidenhair	C, G	--/--	No
<i>Aspidotis californica</i>	California Lace Fern	C, G	--/--	No
<i>Cheilanthes clevelandii</i>	Cleveland's Lipfern	C, G	--/--	No
<i>Cheilanthes newberryi</i>	California Cotton Fern	C, G	--/--	No
<i>Notholaena californica</i>	California Cloak Fern	S	--/--	No
<i>Pellaea mucronata</i> var. <i>mucronata</i>	Bird's-foot Fern	S, C, G	--/--	No
<i>Pentagramma triangularis</i>	California Goldenback Fern	S, C, G	--/--	No
SELAGINELLACEAE - Spike-Moss Family				
<i>Selaginella bigelovii</i>	Bigelow's Mossfern	S, C, G	--/--	No
<i>Selaginella cinerascens</i>	Ashy Spike-moss	S, C, G, RD	--/--	No
CONIFERS				
CUPRESSACEAE				
<i>Cupressus forbesii</i>	Tecate Cypress	C	--/List 1B	Yes
DICOTYLEDONS				
AIZOACEAE - Fig-Marigold Family				
<i>*Mesembryanthemum crystallineum</i>	Crystalline Iceplant	NG	--/--	No
<i>Sesuvium verrucosum</i>	Wetern Sea Purslane	RD	--/--	No
ALISMACEAE				
<i>Echinodorus berteroi</i>	Burhead	RD	--/--	No
AMARANTHACEAE – Amaranth Family				
<i>Amaranthus albus</i>	White Tumbleweed	NG, G	--/--	No
<i>Amaranthus</i> sp.	Pigweed	M	--/--	No
ANACARDIACEAE - Sumac Family				
<i>Malosma laurina</i>	Laurel Sumac	S, C	--/--	No
<i>Rhus integrifolia</i>	Lemonade Berry	S, G	--/--	No
<i>*Schinus molle</i>	Peruvian Peppertree	RD, NG, G	--/--	No
<i>Toxicodendron diversilobum</i>	Poison Oak	S, C, NG, G, RD	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
APIACEAE - Carrot Family				
<i>Apiastrum angustifolium</i>	Mock Parsley	S, C	--/--	No
<i>Apium graveolens</i>	Common Celery	RD	--/--	No
<i>Bowlesia incana</i>	American Bowlesia	C, S, O	--/--	No
<i>Daucus pusillus</i>	Rattlesnake Weed	G	--/--	No
* <i>Foeniculum vulgare</i>	Fennel	S, G, NG, RD	--/--	No
<i>Sanicula arguta</i>	Sharp-toothed Sanicle	G	--/--	No
ASCLEPIADACEAE - Milkweed Family				
<i>Asclepias fascicularis</i>	Narrow-leaf Milkweed	G, NG	--/--	No
<i>Sarcostemma cynanchoides</i> ssp. <i>hartwegii</i>	Climbing Milkweed	S, C	--/--	No
ASTERACEAE - Sunflower Family				
<i>Achillea millefolium</i>	Yarrow	S, G, NG	--/--	No
<i>Acourtia microcephala</i>	Sacapellote, Purpleheads	S, C, G	--/--	No
<i>Ambrosia confertiflora</i>	Ragweed	S, G, NG	--/--	No
<i>Ambrosia psilostachya</i>	Western Ragweed	RD	--/--	No
<i>Ambrosia pumila</i>	San Diego Ambrosia	C, S, V, G	FE/List 1B	Yes, NE
* <i>Anthemis cotula</i>	Stinkweed	S, C, NG,	--/--	No
<i>Artemisia californica</i>	California Sagebrush	S	--/--	No
<i>Artemisia palmeri</i>	San Diego Sagewort	RD, C, S	--/List 4	No
<i>Baccharis salicifolia</i>	Mule Fat	S, RD	--/--	No
<i>Baccharis sarothroides</i>	Broom Baccharis	S, G, RD	--/--	No
<i>Brickellia californica</i>	California Brickellbush	S, G	--/--	No
* <i>Carduus pycnocephalus</i>	Italian Thistle	S, C, NG	--/--	No
* <i>Centaurea melitensis</i>	Tocalote	S, G, NG	--/--	No
<i>Chaenactis artemisiifolia</i>	Artemisia Pincushion	S, C	--/--	No
<i>Chamomilla suaveolens</i>	Common Pineapple Weed	S, C, NG	--/--	No
* <i>Chrysanthemum coronarium</i>	Garland Chrysanthemum	S, NG	--/--	No
* <i>Cirsium vulgare</i>	Bull Thistle	S, NG	--/--	No
* <i>Cnicus benedictus</i>	Blessed Thistle	S, NG	--/--	No
* <i>Conyza bonariensis</i>	Flax-leaf Fleabane	S, NG	--/--	No
* <i>Conyza canadensis</i>	Horseweed	S, NG	--/--	No
* <i>Conyza coulteri</i>	Coulter's Fleabane	S, NG	--/--	No
* <i>Cotula coronopifolia</i>	African Brass Buttons	S, NG	--/--	No
* <i>Cynara cardunculus</i>	Artichoke Thistle	S, G, NG	--/--	No
<i>Deinandra (Hemizonia) conjugens</i>	Otay Tarplant	G, NG	FT/CE, List 1B	Yes, NE

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Deinandra (Hemizonia) fasciculata</i>	Fascicled Tarweed	S, G, NG	--/--	No
<i>Eclipta prostrata</i>	False Daisy	S, NG, RD	--/--	No
<i>Ericameria palmeri</i> ssp. <i>palmeri</i>	Palmer's Goldenbush	S, C	--/List 2	Yes
<i>Eriophyllum confertiflorum</i> var. <i>confertiflorum</i>	Golden-yarrow	S, G, NG	--/--	No
<i>Erigeron foliosus</i> var. <i>foliosus</i>	Leafy Daisy	S, C, O	--/--	No
* <i>Filago gallica</i>	Narrow-leaf Filago	S, G, NG	--/--	No
<i>Filago</i> sp.	Filago	S, G	--/--	No
<i>Gnaphalium bicolor</i>	Bicolor Cudweed	S, C	--/--	No
<i>Gnaphalium californicum</i>	California Everlasting	C	--/--	No
<i>Gnaphalium luteo-album</i>	Everlasting	S, C	--/--	No
<i>Gnaphalium palustre</i>	Lowland Cudweed	S, C, O	--/--	No
<i>Gnaphalium purpureum</i>	Everlasting	NG	--/--	No
<i>Gnaphalium stramineum</i>	Cotton-Batting Plant	C, G, O	--/--	No
<i>Grindelia camporum</i> var. <i>bracteosum</i>	Rayless Gumplant	S, G	--/--	No
<i>Gutierrezia californica</i>	California Matchweed	S, G	--/--	No
<i>Gutierrezia sarothrae</i>	Matchweed	S, G	--/--	No
<i>Hazardia squarrosa</i>	Saw-toothed Goldenbush	S, G	--/--	No
* <i>Hedypnois cretica</i>	Crete Hedypnois	G, NG	--/--	No
<i>Hemizonia fasciculata</i>	Fascicled Tarplant	S, G, NG	--/--	No
<i>Heterotheca grandiflora</i>	Telegraph Weed	S, G, NG	--/--	No
* <i>Hypochaeris glabra</i>	Smooth Cat's Ear	S, G, NG	--/--	No
* <i>Hypochaeris radicata</i>	Hairy Cat's Ear	NG	--/--	No
<i>Isocoma menziesii</i>	Coast Goldenbush	S, G	--/--	No
<i>Iva hayesiana</i>	San Diego Marsh Elder	RD	--/List 2	No
* <i>Lactuca serriola</i>	Prickly Lettuce	NG, G	--/--	No
<i>Lasthenia californica</i>	Common Goldfields	S, G	--/--	No
<i>Lasthenia coronaria</i>	Southern Goldfields	S, G	--/--	No
<i>Lessingia filaginifolia</i>	California-Aster	S, G	--/--	No
<i>Microseris douglasii</i> ssp. <i>platycarpha</i>	Small-flowered Microseris	C, G	--/--	No
<i>Osmadenia tenella</i>	Osmadenia	S, O	--/--	No
* <i>Picris echioides</i>	Prickly Ox Tongue	NG, G	--/--	No
<i>Porophyllum gracile</i>	Odora	S	--/--	No
<i>Psilocarphus brevissimus</i>	Dwarf Woolly-Heads	V	--/--	No
<i>Psilocarphus tenellus</i> var. <i>tenellus</i>	Slender Woolly-Heads	RD	--/--	No
<i>Rafinesquia californica</i>	California Chicory	S, C	--/--	No
* <i>Senecio vulgaris</i>	Common Groundsel	NG	--/--	No
* <i>Silybum marianum</i>	Milk Thistle	S, G, NG	--/--	No
* <i>Sonchus asper</i>	Prickly Sow Thistle	G, NG	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>*Sonchus oleraceous</i>	Common Sow Thistle	G, NG	--/--	No
<i>Stylocline gnaphaloides</i>	Everlasting Nest-Straw			
<i>Uropappus lindleyi</i>	Silver Puffs	G, NG	--/--	No
<i>Viguiera laciniata</i>	San Diego Sunflower	S, G, RD	--/List 4	No
<i>*Xanthium sp.</i>	Cocklebur	RD	--/--	No
<i>Xanthium strumarium</i>	Cocklebur	S, G, NG	--/--	No
BORAGINACEAE - Borage Family				
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Rancher's Fireweed	S, NG	--/--	No
<i>Cryptantha intermedia</i>	Nievetas	S, NG	--/--	No
<i>Harpagonella palmeri</i>	Palmer's Grapplinghook	G	--/List 4	No
<i>Heliotropium curvassavicum</i>	Salt Heliotrope	RD, NG	--/--	No
<i>Pectocarya linearis</i> ssp. <i>ferocula</i>	Slender Pectocarya	S, C, G	--/--	No
<i>Plagiobothrys collinus</i> var. <i>gracilis</i>	San Diego Popcornflower	S, G	--/--	No
BRASSICACEAE - Mustard Family				
<i>*Brassica genticulata</i>	Shortpod Mustard	S, G, NG	--/--	No
<i>*Brassica nigra</i>	Black Mustard	S, G, NG	--/--	No
<i>*Hirschfeldia incana</i>	Short-pod Mustard	S, G, NG	--/--	No
<i>Lepidium nitidum</i> var. <i>nitidum</i>	Shining Peppergrass	C, S, G, NG	--/--	No
<i>*Raphanus sativus</i>	Wild Radish	S, G, NG	--/--	No
<i>Rorippa nasturtium-aquaticum</i>	Watercress	RD	--/--	No
<i>*Sisymbrium sp.</i>	Mustard	S, G, NG	--/--	No
<i>*Raphanus raphanistrum</i>	Jointed Charlock	S, G, NG	--/--	No
<i>*Sisymbrium irio</i>	London Rocket	S, G, NG	--/--	No
<i>*Sisymbrium officinale</i>	Hedge Mustard	S, G, NG	--/--	No
<i>Thysanocarpus laciniatus</i>	Notch Fringepod	S, C, G	--/--	No
CACTACEAE - Cactus Family				
<i>Ferocactus viridescens</i>	Coast Barrel Cactus	S, G, NG	--/List 2	Yes
<i>Opuntia littoralis</i>	Coastal Prickly-pear	S, G, NG	--/--	No
<i>Opuntia prolifera</i>	Coastal Cholla	S, G, NG	--/--	No
CAMPANULACEAE – Bellflower Family				
<i>Githopsis diffusa</i> ssp. <i>filicaulis</i>	Mission Canyon Blue Cup	C	--/--	No
<i>Triodanis biflora</i>	Small Venus Looking-Glass	C, G	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
CAPPARACEAE - Caper Family				
<i>Isomeris arborea</i>	Bladderpod	S	--/--	No
CAPRIFOLIACEAE				
<i>Lonicera subspicata</i>	Honeysuckle	C	--/--	No
<i>Sambucus mexicana</i>	Blue Elderberry	RD, S	--/--	No
CARYOPHYLLACEAE - Pink Family				
* <i>Cerastium glomeratum</i>	Mouse-Ear Chickweed	NG	--/--	No
* <i>Herniaria hirsuta</i> ssp. <i>cinerea</i>	Gray Herniaria	NG	--/--	No
* <i>Polycarpon tetraphyllum</i>	Four-Leaf Allseed	NG	--/--	No
<i>Silene antirrhina</i>	Snapdragon Catchfly	NG	--/--	No
* <i>Silene gallica</i>	Common Catchfly	G, NG	--/--	No
* <i>Spergula arvensis</i> ssp. <i>arvensis</i>	Stickwort, Starwort	NG	--/--	No
* <i>Spergularia bocconii</i>	Buccone's Sand-Spurry	NG	--/--	No
* <i>Spergularia rubra</i>	Ruby Sand-Spurry	NG	--/--	No
* <i>Spergularia villosa</i>	Villous Sand-Spurry	S	--/--	No
* <i>Stellaria media</i>	Common Chickweed	NG	--/--	No
* <i>Stellaria pallida</i>	Chickweed			
CHENOPODIACEAE - Goosefoot Family				
<i>Atriplex coulteri</i>	Coulter's Saltbush	S, G	--/List 1B	No
<i>Atriplex pacifica</i>	South Coast Saltbush	S, G, NG	--/List 1B	No
* <i>Atriplex semibaccata</i>	Australian Saltbush	S, G, NG	--/--	No
<i>Atriplex serenana</i> var. <i>serenana</i>	Bractscale			
* <i>Atriplex suberecta</i>	Peregrine Saltbush	S, G, NG	--/--	No
<i>Chenopodium album</i>	Lamb's Quarters	S, G, NG	--/--	No
<i>Chenopodium ambrosioides</i>	Mexican Tea	S, G, NG	--/--	No
<i>Chenopodium berlandieri</i>	Pitseed Goosefoot			
<i>Chenopodium californicum</i>	California Goosefoot	C, S, G, NG	--/--	No
* <i>Chenopodium murale</i>	Nettle-leaf Goosefoot	C, S, G, NG	--/--	No
* <i>Chenopodium pumilio</i>	Tasmania Goosefoot	C, S, G, NG	--/--	No
<i>Dichondra occidentalis</i>	Western Dichondra	C, S, G, NG	--/List 4	No
* <i>Salsola tragus</i>	Russian Thistle	S, G, NG	--/--	No
CISTACEAE - Rock-Rose Family				
<i>Helianthemum scoparium</i>	Peak Rush-rose	S, G, C	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
CONVOLVULACEAE - Morning-Glory Family				
<i>Calystegia macrostegia</i> ssp. <i>arida</i>	Morning-Glory	S, C	--/--	No
<i>Calystegia macrostegia</i> ssp. <i>tenuifolia</i>	Narrow-leaf Morning-glory	S, G	--/--	No
* <i>Convolvulus arvensis</i>	Bindweed	NG	--/--	No
<i>Convolvulus simulans</i>	Small-flowered Morning Glory	G, NG	--/List 4	No
CRASSULACEAE - Stonecrop Family				
<i>Crassula aquatica</i>	Water Pygmyweed	V	--/--	No
<i>Crassula connata</i>	Dwarf Stonecrop	S, G	--/--	No
<i>Dudleya edulis</i>	Ladies Fingers	C, S	--/--	No
<i>Dudleya pulverulenta</i>	Chalk-lettuce	C, S	--/--	No
<i>Dudleya variegata</i>	Variegated Dudleya	S, G	--/List 1B	Yes, NE
CUCURBITACEAE - Gourd Family				
<i>Cucurbita foetidissima</i>	Calabazilla	S, G	--/--	No
<i>Marah macrocarpus</i>	Wild Cucumber	S	--/--	No
CUSCUTACEAE - Dodder Family				
<i>Cuscuta californica</i> var. <i>breviflora</i>	Dodder	S, G, NG	--/--	No
<i>Cuscuta subinclusa</i>	Dodder	S, G, NG	--/--	No
DATISCEAE - Datisca Family				
<i>Datisca glomerata</i>	Durango Root	R	--/--	No
ERICACEAE - Heath Family				
<i>Xylococcus bicolor</i>	Mission Manzanita	C, S	--/--	No
EUPHORBIACEAE - Spurge Family				
<i>Chamaesyce polycarpa</i>	Prostrate Spurge	S, C, NG	--/--	No
<i>Chamaesyce serpens</i>	Creeping Spurge	S, C, NG	--/--	No
<i>Eremocarpus setigerus</i>	Doveweed	G, NG	--/--	No
* <i>Ricinus communis</i>	Castor-bean	S, G, NG	--/--	No
FABACEAE - Pea Family				
<i>Astragalus gambelianus</i>	Gambel's Locoweed	S, O	--/--	No
<i>Astragalus trichopodus</i>	Ocean Locoweed	G, NG	--/--	No
<i>Lathyrus vestitus</i> ssp. <i>alefeldii</i>	San Diego Sweat Pea	S	--/--	No
<i>Lotus hamatus</i>	San Diego Bird's Foot Trefoil	S, C	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Lotus purshianus</i>	Spanish Clover	S, G, NG	--/--	No
<i>Lotus salsuginosus</i> var. <i>salsuginosus</i>	Alkali Lotus	S, C	--/--	No
<i>Lotus scoparius</i>	Deerweed	S, G, NG	--/--	No
<i>Lotus strigosus</i>	California Deerweed	S, G, NG	--/--	No
<i>Lotus wrangelianus</i>	Calf Lotus	S, C, G	--/--	No
<i>Lupinus bicolor</i>	Miniature Lupine	S, G	--/--	No
<i>Lupinus concinnus</i>	Bajada Lupine	S, C	--/--	No
<i>Lupinus hirsutissimus</i>	Stinging Lupine	S, C	--/--	No
<i>Lupinus truncatus</i>	Collar Lupine	S, C, G	--/--	No
* <i>Medicago polymorpha</i>	California Burclover	NG	--/--	No
* <i>Melilotus alba</i>	White Sweet Clover	S, G, NG	--/--	No
* <i>Melilotus indica</i>	Indian Sweetclover	NG	--/--	No
<i>Trifolium ciliolatum</i>	Tree Clover	S, C, G	--/--	No
<i>Trifolium depauperatum</i> var. <i>truncatum</i>	Dwarf Sac Clover	S, C, G	--/--	No
<i>Trifolium gracilentum</i> var. <i>gracilentum</i>	Pin-Point Clover	S, C, G	--/--	No
* <i>Trifolium hirtum</i>	Rose Clover	NG	--/--	No
<i>Trifolium microcephalum</i>	Maiden Clover	C, G	--/--	No
<i>Trifolium willdenovii</i>	Valley Clover	C, G	--/--	No
<i>Vicia ludoviciana</i> var. <i>ludoviciana</i>	Deer Pea Vetch	C, G	--/--	No
* <i>Vicia villosa</i> ssp. <i>villosa</i>	Hairy Vetch, Winter Vetch	NG	--/--	No
FAGACEAE - Oak Family				
<i>Quercus agrifolia</i>	Coast Live Oak	O, S	--/--	No
<i>Quercus berberidifolia</i>	Scrub Oak	O, C	--/--	No
GENTIANACEAE – Gentian Family				
<i>Centaurium venustum</i>	Canchalagua	RD, V, G, NG	--/--	No
GERANIACEAE - Geranium Family				
* <i>Erodium botrys</i>	Long-beak Filaree	NG	--/--	No
* <i>Erodium brachycarpum</i>	Short-Beak Filaree/Storksbill	NG	--/--	No
* <i>Erodium cicutarium</i>	Red-stem Filaree	NG	--/--	No
* <i>Erodium moschatum</i>	White-stem Filaree	NG	--/--	No
<i>Geranium carolinianum</i>	Carolina Geranium	C, G	--/--	No
GROSSULARIACEAE – Gooseberry Family				
<i>Ribes indecorum</i>	White-flowered Currant	S, C	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
HYACINTHACEAE – Hyacinth Family				
<i>Chlorogalum parviflorum</i>	Soap-Plant, Amole	S, G	--/--	No
HYDROPHYLLACEAE - Waterleaf Family				
<i>Emmenanthe penduliflora</i> var. <i>penduliflora</i>	Whispering Bells	S, C	--/--	No
<i>Eucrypta chrysanthemifolia</i>	Common Eucrypta	S, RD	--/--	No
<i>Nemophila menziesii</i> var. <i>integrifolia</i>	Baby Blue Eyes	S, G, O	--/--	No
<i>Phacelia cicutaria</i> var. <i>hispida</i>	Caterpillar Phacelia	S	--/--	No
<i>Phacelia grandiflora</i>	Large-flowered Phacelia	S, C	--/--	No
<i>Pholistoma auritum</i> var. <i>auritum</i>	Fiesta Flower	S, C, O	--/--	No
<i>Pholistoma racemosum</i>	San Diego Fiesta Flower	S, C, O	--/--	No
LAMIACEAE - Mint Family				
<i>Acanthomintha ilicifolia</i> (PO)	San Diego Thornmint	S, G	FT/SE, List 1B	Yes, NE
* <i>Marrubium vulgare</i>	Horehound	S, G, NG	--/--	No
<i>Salvia apiana</i>	White Sage	S, G	--/--	No
<i>Salvia mellifera</i>	Black Sage	S	--/--	No
<i>Stachys ajugoides</i> var. <i>rigida</i>	Hedge-Nettle	S, RD	--/--	No
<i>Trichostema lanceolatum</i>	Vinegar Weed	G, NG, RD	--/--	No
LILIACEAE - Lily Family				
<i>Fritillaria biflora</i>	Chocolate Lily	G, NG	--/--	No
LYTHRACEAE - Loosestrife Family				
* <i>Lythrum hyssopifolium</i>	Grass Poly	V	--/--	No
MALVACEAE - Mallow Family				
<i>Malocothamnus densiflorus</i>	Many Flowered Bush Mallow	S, G, NG	--/--	No
<i>Malocothamnus fasciculatus</i>	Mesa Bush Mallow	RD	--/--	No
* <i>Malva parviflora</i>	Cheeseweed	NG	--/--	No
<i>Malvella leporosa</i>	Alkali Mallow	RD	--/--	No
<i>Sidalcea malvaeflora</i> ssp. <i>sparsifolia</i>	Checker-bloom	S, G, NG	--/--	No
MOLLUGINACEAE - Carpetweed Family				
* <i>Glinus lotoides</i>	Carpet Weed	NG	--/--	No
* <i>Glinus radiatus</i>	Radiate Sweetjuice	NG	--/--	No
NYCTAGINACEAE - Four-O'Clock Family				

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

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<i>Mirabilis californica</i>	California Wishbone Plant	S	--/--	No
ONAGRACEAE - Evening Primrose Family				
<i>Camissonia bistorta</i>	California Sun Cup	S, C, O	--/--	No
<i>Camissonia californica</i>	False-Mustard	S, C, G	--/--	No
<i>Camissonia intermedia</i>	Intermediate Sun Cup	S, C	--/--	No
<i>Camissonia robusta</i>	Robust Sun Cup	S, C	--/--	No
<i>Clarkia epilobioides</i>	Canyon Godetia	S, O	--/--	No
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	Four-Spot Clarkia	S, C, G	--/--	No
<i>Clarkia delicata</i>	Delicate clarkia	C, RD	--/List 1B	No
<i>Epilobium ciliatum</i> ssp. <i>ciliatum</i>	Willow Herb	S, C, G	--/--	No
<i>Epilobium canum</i>	California Fuchsia	S, RD	--/--	No
<i>Ludwigia peploides</i>	Yellow Waterweed	RD, M	--/--	No
<i>Oenothera elata</i>	Evening Primrose	G, NG, RD, M, S	--/--	No
OXALIDACEAE - Oxalis Family				
<i>Oxalis albicans</i> ssp. <i>californica</i> .	California Wood Sorrel	S, C, G	--/--	No
PAPAVERACEAE - Poppy Family				
<i>Eschscholzia californica</i>	California Poppy	S, C, G	--/--	No
<i>Romneya coulteri</i>	Coulter's Matilija Poppy	S	--/List 4	No
<i>Romneya trichocalyx</i>	Hairy Matilija Poppy	S, C	--/--	No
PLANTAGINACEAE - Plantain Family				
<i>Plantago elongata</i>	Longleaf Plantain	V	--/--	No
<i>Plantago erecta</i>	Dot-seed Plantain	G, NG, C	--/--	No
* <i>Plantago major</i>	Common Plantain	NG	--/--	No
PLATANACEAE - Sycamore Family				
<i>Platanus racemosa</i>	Western Sycamore	RD, S	--/--	No
POLEMONIACEAE - Phlox Family				
<i>Eriastrum filifolium</i>	Thread-Leaf Woolly-Star	S, C	--/--	No
<i>Gilia angelensis</i>	Grassland Gilia	G, NG	--/--	No
<i>Linanthus dianthiflorus</i>	Ground Pink	S, G	--/--	No
<i>Navarretia hamata</i>	Hooked Skunkweed	S, G	--/--	No
POLYGONACEAE - Buckwheat Family				

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

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<i>Eriogonum fasciculatum</i>	California Buckwheat	S, G, RD	--/--	No
* <i>Polygonum arenastrum</i>	Common Knotweed	NG	--/--	No
* <i>Polygonum argyrocoleon</i>	Persian Wireweed	NG	--/--	No
<i>Polygonum lapathifolium</i>	Willow Weed	G, NG, RD, M	--/--	No
<i>Polygonum punctatum</i>	Perennial Smartweed	RD	--/--	No
<i>Pterostegia drymarioides</i>	Granny's Hairnet	S, C	--/--	No
* <i>Rumex conglomeratus</i>	Whorled Dock	NG	--/--	No
* <i>Rumex crispus</i>	Curly Dock	NG	--/--	No
* <i>Rumex dentatus</i>	Toothed Dock	NG	--/--	No
* <i>Rumex pulcher</i>	Fiddle Dock	NG	--/--	No
PORTULACACEAE – Purselane Family				
<i>Calandrinia ciliata</i>	Red Maids	G	--/--	No
<i>Claytonia perfoliata</i>	Miner's-Lettuce	S, C, RD	--/--	No
PRIMULACEAE - Primrose Family				
* <i>Anagallis arvensis</i>	Scarlet Pimpernel	RD, G, NG	--/--	No
<i>Dodecatheon clevelandii</i>	Padre's Shooting Star	S	--/--	No
RANUNCULACEAE - Crowfoot Family				
<i>Clematis lasiantha</i>	Pipestem Virgin's Bower	S	--/--	No
<i>Clematis pauciflora</i>	Small-Leaf Virgin's Bower	C	--/--	No
<i>Delphinium parryi</i> ssp. <i>parryi</i>	Parry's Larkspur	S, C, G, O	--/--	No
<i>Myosurus minimus</i>	Little Mousetail	C, S, V, G	--/List 3	No
<i>Ranunculus hebecarpus</i>	Pubescent Fruit Buttercup	C	--/--	No
RHAMNACEAE - Buckthorn Family				
<i>Ceanothus tomentosus</i>	Ramona Lilac	C	--/--	No
<i>Rhamnus crocea</i>	Spiny Redberry	C, S	--/--	No
ROSACEAE - Rose Family				
<i>Adenostoma fasciculatum</i>	Chamise	C	--/--	No
<i>Aphanes occidentalis</i>	Western Lady's Mantle	G	--/--	No
<i>Heteromeles arbutifolia</i>	Toyon	C, S	--/--	No
<i>Potentilla glandulosa</i> ssp. <i>glandulosa</i>	Sticky Cinquefoil	G	--/--	No
<i>Rosa californica</i>	California Rose	RD	--/--	No
RUBIACEAE - Madder Family				

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

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<i>Galium angustifolium</i>	Narrow-leaf Bedstraw	S	--/--	No
<i>Galium aparine</i>	Common Bedstraw	S, C, G	--/--	No
<i>Galium nuttallii</i> ssp. <i>nuttallii</i>	San Diego Bedstraw	S, C, G	--/--	No
* <i>Galium parisiense</i>	Wall Bedstraw	NG	--/--	No
SALICACEAE - Willow Family				
<i>Populus fremontii</i>	Fremont Cottonwood	RD	--/--	No
<i>Salix exugua</i>	Narrow-leaved Willow	RD	--/--	No
<i>Salix goddingii</i>	Goodding's Black Willow	RD	--/--	No
<i>Salix lasiolepis</i> var. <i>bracelinae</i>	Arroyo Willow	RD	--/--	No
SAURURACEAE - Lizard's Tail Family				
<i>Anemopsis californica</i>	Yerba Mansa	RD, M	--/--	No
SAXIFRAGACEAE - Saxifrage Family				
<i>Jepsonia parryi</i>	Coast Jepsonia	S, G	--/--	No
SCROPHULARIACEAE - Figwort Family				
<i>Antirrhinum nuttallianum</i>	Nuttall's Snapdragon	S, C, G	--/--	No
<i>Castilleja affinis</i> ssp. <i>affinis</i>	Coast Paintbrush	S, C, G	--/--	No
<i>Castilleja exserta</i>	Purple Owl's-clover	S, C, G	--/--	No
<i>Collinsia heterophylla</i>	Chinese Houses	C, G	--/--	No
<i>Keckiella cordifolia</i>	Climbing Bush Penstemon	C, G	--/--	No
<i>Keckiella antirrhinoides</i>	Yellow Bush Penstemon	C	--/--	No
<i>Linaria canadensis</i>	Large Blue Toadflax	C, G	--/--	No
<i>Mimulus aurantiacus</i>	San Diego Monkeyflower	S	--/--	No
<i>Mimulus floribundus</i>	Showy Monkey Flower	C, G	--/--	No
<i>Mimulus guttatus</i>	Common Monkeyflower	C, G, RD	--/--	No
<i>Scrophularia californica</i>	California Figwort	S, C	--/--	No
* <i>Veronica catenata</i>	Broad-Fruit/Chain Speedwell	RD	--/--	No
SIMMONDSIACEAE - Jojoba Family				
<i>Simmondsia chinensis</i>	Jojoba	C	--/--	No
SOLANACEAE - Nightshade Family				
* <i>Datura wrightii</i>	Western Jimson Weed	S, G, NG, RD	--/--	No
* <i>Nicotiana glauca</i>	Tree Tobacco	S, G, NG, RD	--/--	No
<i>Solanum douglasii</i>	Douglas' Nightshade	C, S	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Solanum parishii</i>	Parish's Nightshade	C, S	--/--	No
* <i>Solanum elaeagnifolium</i>	Silverleaf Horse Nettle	G, NG	--/--	No
SIMAROUBACEAE - Quassia or Simarouba Family				
* <i>Ailanthus altissima</i>	Tree of Heaven	NG	--/--	No
TAMARICACEAE - Tamarisk Family				
* <i>Tamarix</i> sp.	Tamarisk	RD	--/--	No
URTICACEAE - Nettle Family				
<i>Hesperocnide tenella</i>	Western Nettle	S, C, G, RD	--/--	No
<i>Parietaria hespera</i>	Western Pellitory	S, C, G, RD	--/--	No
<i>Parietaria pensylvanica</i>	Pennsylvania Pellitory	S, C, G, RD	--/--	No
<i>Urtica dioica</i> ssp. <i>holosericea</i>	Hoary Nettle	G, NG, RD	--/--	No
* <i>Urtica urens</i>	Dwarf Nettle	NG	--/--	No
VALERIANACEAE – Valerian Family				
<i>Plectritis ciliosa</i> ssp. <i>insignis</i>	Long-spurred Seablush	C, G	--/--	No
VERBENACEAE – Vervain Family				
<i>Verbena menthifolia</i>	Mint-leaf Vervain	s	--/--	No
VIOLACEAE - Violet Family				
<i>Viola pedunculata</i>	Johnny-jump-up	G, NG	--/--	No
VISCACEAE - Mistletoe Family				
<i>Phoradendron (tomentosum) macrophyllum</i>	Big-leaf Mistletoe	S, RD	--/--	No
MONOCOTYLEDONS				
AGAVACEAE - Agave Family				
<i>Hesperoyucca whipplei</i>	Our Lord's Candle	S, NG	--/--	No
<i>Yucca schidigera</i>	Mohave Yucca	S, NG	--/--	No
ARECACEAE – Palm Family				
* <i>Phoenix</i> sp.	Date Palm	RD, NG	--/--	No
* <i>Washingtonia robusta</i>	Mexican Fan Palm	NG	--/--	No
CYPERACEAE - Sedge Family				

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

Scientific Name ¹	Common Name	Habitat ²	Status ³	Covered by MSCP ⁴
<i>Cyperus eragrostis</i>	Tall Flatsedge			
<i>Cyperus erythrorhizos</i>	Red-Root Flatsedge			
* <i>Cyperus ligularis</i>	Umbrella Plant	RD	--/--	No
* <i>Cyperus involucratus</i>	African Umbrella Sedge	RD	--/--	No
<i>Cyperus odoratus</i>	Coarse Cyperus	RD	--/--	No
* <i>Cyperus rotundus</i>	Purple Nutsedge	RD	--/--	No
<i>Eleocharis macrostachya</i>	Pale Spike-rush	RD	--/--	No
<i>Eleocharis montevidensis</i>	Dombey's Spike-Sedge	RD	--/--	No
<i>Eleocharis parishii</i>	Parish's Spike-Sedge	RD	--/--	No
<i>Scirpus americanus</i>	Olney's Bulrush	RD	--/--	No
<i>Scirpus californicus</i>	Bulrush	RD	--/--	No
IRIDACEAE - Iris Family				
<i>Sisyrinchium bellum</i>	Blue-eyed-grass	S, G, NG	--/--	No
JUNCACEAE - Rush Family				
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	Southwestern Spiny Rush	S, G, RD	--/List 4	No
<i>Juncus balticus</i>	Wire Rush	RD	--/--	No
<i>Juncus bufonius</i>	Toad Rush	RD	--/--	No
<i>Juncus dubius</i>	Mariposa Rush	RD	--/--	No
<i>Juncus effuses</i>	Bog Rush	RD	--/--	No
<i>Juncus xiphioides</i>	Iris-Leaf Rush	RD	--/--	No
LILIACEAE - Lily Family				
<i>Allium haematochiton</i>	Red Skin Onion	G	--/--	No
<i>Bloomeria crocea</i>	Common Goldenstar	S, C, G, NG	--/--	No
<i>Calochortus splendens</i>	Splendid Mariposa	S, G, NG	--/--	No
<i>Chlorogalum parviflorum</i>	Small-flower Soap-plant	S, G	--/--	No
<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>	Wild Hyacinth	S, G	--/--	No
POACEAE - Grass Family				
<i>Achnatherum diegoensis</i>	San Diego Needlegrass	G, NG	--/List 4	No
<i>Agrostis pallens</i>	Bent Grass	C, G	--/--	No
<i>Aristida adscensionis</i>	Sixweeks Three Awn	C	--/--	No
* <i>Arundo donax</i>	Giant Reed	R	--/--	No
* <i>Avena barbata</i>	Slender Oat	NG	--/--	No
* <i>Avena fatua</i>	Wild Oat	NG	--/--	No

Inventory of Plants Known or Expected to Occur in Rancho Jamul Ecological Reserve *Continued*

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<i>Bothriochloa barbinodis</i>	Cane Bluestem	G, N, V	--/--	No
* <i>Brachypodium distachyon</i>	Purple Falsebrome	NG	--/--	No
<i>Bromus carinatus</i>	California Brome	NG	--/--	No
* <i>Bromus diandrus</i>	Ripgut Grass	NG	--/--	No
* <i>Bromus hordeaceus</i>	Soft Chess	NG	--/--	No
* <i>Bromus madritensis</i> ssp. <i>rubens</i>	Foxtail Chess	NG	--/--	No
* <i>Cortaderia jubata</i>	Pampas Grass	RD, NG	--/--	No
* <i>Crypsis schoenoides</i>	Pricke or Swamp Grass	RD, NG, G	--/--	No
* <i>Cynodon dactylon</i>	Bermuda Grass	NG, RD	--/--	No
<i>Deschampsia danthonioides</i>	Annual Hairgrass	G, V	--/--	No
* <i>Digitaria sanguinalis</i>	Hairy Crabgrass	NG	--/--	No
<i>Distichlis spicata</i>	Saltgrass	G, NG, V, RD	--/--	No
* <i>Echinochloa crus-galli</i>	Common Barnyard Grass	NG	--/--	No
* <i>Gastridium ventricosum</i>	Nit Grass	NG, G	--/--	No
* <i>Hainardia cylindrica</i>	Thintail	NG	--/--	No
<i>Hordeum depressum</i>	Low Barley	RD, G	--/--	No
* <i>Hordeum murinum</i> ssp. <i>glaucum</i>	Glaucous Barley	NG	--/--	No
<i>Koeleria macrantha</i>	Junegrass	C, G	--/--	No
* <i>Lamarckia aurea</i>	Goldentop	G, NG, RD	--/--	No
<i>Leymus triticoides</i>	Beardless Wild Rye	RD, G, NG	--/--	No
* <i>Lolium perenne</i>	Perennial Ryegrass	NG	--/--	No
* <i>Lolium multiflorum</i>	Italian Ryegrass	NG	--/--	No
<i>Melica imperfecta</i>	Coast Range Melic	S, C, O	--/--	No
* <i>Melinis repens</i>	Natal Grass	G, NG	--/--	No
<i>Muhlenbergia microsperma</i>	Littleseed Muhly	S, G	--/--	No
<i>Nassella lepida</i>	Foothill Needlegrass	G, NG	--/--	No
<i>Nassella pulchra</i>	Purple Needlegrass	G, S	--/--	No
* <i>Paspalum dilatatum</i>	Dallis Grass	G, NG	--/--	No
<i>Paspalum distichum</i>	Common Knotgrass	RD	--/--	No
* <i>Pennisetum setaceum</i>	African Fountain Grass	G, NG	--/--	No
* <i>Phalaris paradoxa</i>	Paradox Canary Grass	NG	--/--	No
* <i>Phalaris minor</i>	Littleseed Canary Grass	G, NG	--/--	No
* <i>Poa</i> sp.	Bluegrass	G, NG, RD	--/--	No
* <i>Polypogon monspeliensis</i>	Annual Beard Grass	V, RD, NG	--/--	No
* <i>Piptatherum miliaceum</i>	Smilo Grass	G, NG	--/--	No
* <i>Schismus barbatus</i>	Mediterranean Schismus	S, G, NG	--/--	No
* <i>Sorghum halepense</i>	Johnson Grass	G, NG	--/--	No
<i>Sporobolus airoides</i>	Alkali Sacaton	S, G	--/--	No

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<i>*Vulpia myuros</i> var. <i>hirsuta</i>	Foxtail Fescue	S, G, NG	--/--	No
THEMIDACEAE - Brodiaea Family				
<i>Brodiaea jolonensis</i>	Mesa Brodiaea	G, NG, V	--/--	No
<i>Muilla clevelandii</i>	San Diego Goldenstar	C, G	--/List 1B	Yes
TYPHACEAE				
<i>Typha dominguensis</i>	Southern Cattail	RD	--/--	No
<i>Typha latifolia</i>	Broad-leaf Cattail	RD	--/--	No

¹ **Data Sources:** USGS 2002; LMA 1994; Dudeck and Associates 1998; Wildlands Inc. 1999; unpublished CDFG biological resource surveys.

² **Habitat:** Documented or potential habitat of a species. S – coastal sage scrub or disturbed coastal sage scrub; G – native grasslands or disturbed native grasslands; NG – non-native annual grasslands; RD – riparian drainages (riparian scrub, and riparian woodland); O – oak woodland; C – chaparral; V – vernal pools or disturbed vernal pools; P – ponds; M – freshwater marsh or alkali marsh.

³ **Status:** *Federal:* **FE** – endangered, **FT** – threatened; USFWS no longer keeps a list of Federal Species of Concern, *State:* **SE** – endangered, **ST** – threatened, **SSC** – special concern. *California Native Plant Society (CNPS):* List 1B – Plants rare, threatened, or endangered in California and elsewhere, List 2: Plants rare, threatened, or endangered in California, but more common elsewhere, List 3 – Plants about which we need more information, List 4 – Plants of limited distribution (a watch list).

⁴ **MSCP Coverage:** Yes - covered by the County of San Diego Subarea Plan. NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

* **Introduced Species**

PO = potentially occurring. Except for San Diego thornmint, all plant species in this inventory have been documented from RJER.

Appendix D

Fauna Inventory for RJER

Inventory of Invertebrates Known to Occur in Rancho Jamul Ecological Reserve

Scientific Name	Common Name	Status ¹	Covered by MSCP ²
ATHROPODA			
CRUSTACEA			
<i>*Procambarus clarkii</i>	Swamp Crayfish	--/--	No
INSECTA			
ODONATA (Dragonflies and Damselflies)			
Family Libellulidae (Skimmer Dragonflies)			
<i>Libellula lydia</i>	Common Whitetail	--/--	No
<i>Pachydiplax longipennis</i>	Blue Dasher	--/--	No
Family Zygoptera (Damselflies)			
<i>Telebasis salva</i>	Desert Firetail	--/--	No
ORTHOPTERA (Grasshoppers, Crickets, Katyids)			
Family Acrididae	Grasshoppers and Locusts	--/--	No
Family Gryllacrididae	Camel Crickets	--/--	No
Family Gryllidae	Crickets	--/--	No
Family Tettigoniidae	Katyids	--/--	No
DERMAPTERA (Earwigs)			
Family Forficulidae	Earwigs	--/--	No
HOMOPTERA (Cicadas, Leafhoppers, Aphids)			
Family Cicadidae	Cicadas	--/--	No
HEMIPTERA (True Bugs)			
Family Gelastocoridae	Toad Bugs	--/--	No
Family Gerridae	Water Striders	--/--	No
Family Reduviidae	Assassin Bugs	--/--	No
NEUROPTERA (Lacewings, Antlions)			
Family Myrmeleontidae	Antlions	--/--	No
COLEOPTERA (Beetles)			
Family Carabidae	Ground Beetles	--/--	No
Family Chrysomelidae	Leaf Beetles	--/--	No
Family Coccinellidae	Lady Bugs	--/--	No
Family Cupedidae	Reticulated Beetles	--/--	No
Family Meloidae	Blister Beetles	--/--	No
Family Melyridae	Soft-winged Flower Beetles	--/--	No
Family Staphylinidae	Rove Beetles	--/--	No
Family Tenebrionidae	Darkling Beetles	--/--	No
HYMENOPTERA (Ants, Bees, Wasps)			
Family Apidae	Honey Bees	--/--	No
Family Encyrtidae	Parasitic Wasps	--/--	No
Family Formicidae (Ants)			
Subfamily Dolichoderinae			
<i>Dorymyrmex bicolor</i>	Pyramid Ant	--/--	No

Inventory of Invertebrates *Continued*

Scientific Name	Common Name	Status ¹	Covered by MSCP
<i>Dorymyrmex insanus</i>	Pyramid Ant	--/--	No
<i>Forelius foetidus</i>		--/--	No
<i>Forelius pruinosus</i>		--/--	No
<i>Tapinoma sessile</i>	Malodorous House Ant	--/--	No
Subfamily Ecitoninae			
<i>Neivamyrmex nigrescens</i>	Army Ant	--/--	No
<i>Neivamyrmex opacithorax</i>	Army Ant	--/--	No
Subfamily Formicinae			
<i>Liometopum occidentale</i>		--/--	No
<i>Myrmecocystus mimicus</i>	Honey Pot Ant	--/--	No
Subfamily Myrmecinae			
<i>Crematogaster californica</i>	Acrobat Ant	--/--	No
<i>Crematogaster hespera</i>	Acrobat Ant	--/--	No
<i>Leptothorax andrei</i>		--/--	No
<i>Messor Andrei</i>	Harvester Ant	--/--	No
<i>Pheidole sp.</i>		--/--	No
<i>Pheidole cerebrosior</i>		--/--	No
<i>Pheidole clementensis</i>		--/--	No
<i>Pheidole vistana</i>		--/--	No
<i>Pogonomyrmex rugosus</i>	Harvester Ant	--/--	No
<i>Solenopsis molesta</i>	Thief Ant	--/--	No
<i>Solenopsis xyloni</i>	Native Southern Fire Ant	--/--	No
<i>Tetramorium spinosum</i>			
Family Mutillidae	Velvet Ants	--/--	No
Family Pompilidae	Spider Wasps	--/--	No
Family Tiphidae	Flower Wasps	--/--	No
Family Vespidae	Social Wasps	--/--	No
LEPIDOPTERA			
Family Hesperidae (Skippers)			
<i>Euphyes vestris harbisoni</i> ¹	Harbison's Dun Skipper	--/--	No, NE
<i>Pyrgus albescens</i>	White Checkered Skipper	--/--	No
Family Lycaenidae (Blues, Hairstreaks, Coppers)			
<i>Brephidium exilis</i>	Pygmy Blue	--/--	No
<i>Euphilotes enoptes</i>	Pacific Dotted-Blue	--/--	No
<i>Glaucopsyche lygdamus</i>	Southern Blue	--/--	No
<i>Icaricia acmon</i>	Acmon Blue	--/--	No
<i>Icaricia lupini</i>	Lupine Blue	--/--	No
<i>Leptotes marina</i>	Marine Blue	--/--	No
<i>Lycaena hermes</i>	Hermes Copper Butterfly	--/--	No
Family Nymphalidae (Brushfoots)			
<i>Ceononympha tullia</i>	California Ringlet	--/--	No
<i>Euphydryas editha quino</i>	Quino Checkerspot	FE/--	No, NE

Inventory of Invertebrates *Continued*

Scientific Name	Common Name	Status ¹	Covered by MSCP
<i>Junonia coenia</i>	Buckeye	--/--	No
<i>Speyeria callippe</i>	Callippe Fritillary	--/--	No
<i>Vanessa cardui</i>	Painted Lady	--/--	No
Family Papilionidae			
<i>Papilio zelicaon</i>	Anise Swallowtail	--/--	No
Family Pieridae (Whites and Sulphurs)			
<i>Pontia beckerii</i>	Becker's White	--/--	No
<i>Pieris rapae</i>	Cabbage White	--/--	No
<i>Pontia protodice</i>	Checkered White	--/--	No
<i>Nathalis iole</i>	Dainty Sulphur	--/--	No
<i>Colias eurytheme</i>	Orange Sulphur	--/--	No
Family Riodinidae (Metalmarks)			
<i>Apodemia virgulti</i>	Behr's Metalmark	--/--	No
DIPTERA (True Flies)			
Family Bombyliidae	Bee Flies	--/--	No
Family Calliphoridae	Blow Flies	--/--	No
Family Tachinidae	Tachinid Flies	--/--	No
Family Tabanidae	Horse Flies	--/--	No

* **Introduced Species**

¹ **Status:** Federal: FE – endangered, FT – threatened, FFP – fully protected, BEPA – Bald Eagle Protection Act, FD – federally delisted. State: SE – endangered, ST – threatened, SSC – special concern, SFP – fully protected.

² **MSCP Coverage:** Yes - covered by the County of San Diego Subarea Plan. NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

Inventory of Vertebrate Species Observed or Potentially Occurring (PO) at Rancho Jamul

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
CLASS: OSTEICHTHYES (Bony Fish)				
ATHERINIFORMES				
POECILIDAE (Livebearers)				
*Mosquito fish	<i>Gambusia affinis</i>	--/--	No	AS
PERCIFORMES				
CENTRARCHIDAE (Sunfishes)				
*Green sunfish	<i>Lepomis cyanellus</i>	--/--	No	AS
*Bluegill sunfish	<i>Lepomis macrochirus</i>	--/--	No	AS
*Largemouth bass	<i>Micropterus salmoides</i>	--/--	No	AS
*Black crappie	<i>Pomoxis nigromaculatus</i>	--/--	No	AS
SILURIFORMES				
ICTALURIDAE (Bullhead and Catfishes)				
*Black bullhead	<i>Ameiurus melas</i>	--/--	No	AS
CLASS: AMPHIBIA (Amphibians)				
CAUDATA (Salamanders)				
PLETHODONTIDAE (Lungless Salamanders)				
Arboreal Salamander	<i>Aneides lugubris</i>	--/--	No	PO
Garden Slender Salamander	<i>Batrachoseps major</i>	--/--	No	PF
ANURA (Frogs and Toads)				
PELOBATIDAE (Spadefoot Toads)				
Western Spadefoot	<i>Spea (Scaphiopus) hammondi</i>	--/SSC	No	AS, PF, OD
BUFONIDAE (True Toads)				
Western Toad	<i>Bufo boreas</i>			AS, PF
Arroyo Toad	<i>Bufo californicus</i>	FE/SSC	Yes, NE	PO
HYLIDAE (Treefrogs and relatives)				
Pacific Tree Frog	<i>Hyla regilla</i>	--/--	No	AS
California Tree Frog	<i>Hyla cadaverina</i>	--/--	No	PO
RANIDAE (True Frogs)				
*Bullfrog	<i>Rana catesbeiana</i>	--/--	No	AS, PF
Red-legged Frog[†]	<i>Rana aurora draytonii</i>	FT/SSC	Yes, NE	FS
PIPIDAE (Pipid Frogs)				
*African Clawed Frog	<i>Xenopus laevis</i>	--/--	No	AS
CLASS: REPTILIA (Reptiles)				
TESTUDINES (Turtles)				
EMYDIDAE (Box and Water Turtles)				
Southwestern Pond Turtle	<i>Clemmys marmorata pallida</i>	--/SSC	Yes	PO
SQUAMATA (Lizards and Snakes)				
PHRYNOSOMATIDAE				
Coast Horned Lizard	<i>Phrynosoma coronatum</i>	--/SSC	Yes	PF, OD
Western Fence Lizard	<i>Sceloporus occidentalis</i>	--/--	No	PF
Granite Spiny Lizard	<i>Sceloporus orcutti</i>	--/--	No	PF
Side-blotched Lizard	<i>Uta stansburiana</i>	--/--	No	PF
EUBLEPHARIDAE (Eyelid Geckos)				
Western Banded Gecko	<i>Coleonyx variegatus⁴</i>	--/SSC	No	PO
ANIPELLIDAE				
California Legless Lizard	<i>Anniella pulchra pulchra</i>	--/SSC	No	PO

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
XANTUSIIDAE (Night Lizards)				
Granite Night Lizard	<i>Xantusia henshawi</i>	--/--	No	PF
SCINCIDAE (Skinks)				
Gilbert's Skink	<i>Eumeces gilberti</i>	--/--	No	PF
Western Skink	<i>Eumeces skiltonianus</i>	--/SSC	No	PF
TEIIDAE (Whiptails and relatives)				
Orange-throated Whiptail	<i>Cnemidophorus hyperythrus</i>	--/SSC	Yes	PF, OD
Western Whiptail	<i>Cnemidophorus tigris</i>	--/--	No	PF, OD
ANGUIDAE (Alligator Lizards and relatives)				
Southern Alligator Lizard	<i>Elgaria multicarinata</i>	--/--	No	PF
LEPTOTYPHLOPIDAE (Slender Blind Snakes)				
Western Blind Snake	<i>Leptotyphlops humilis</i>	--/--	No	PF
California Lyre Snake	<i>Trimorphodon biscutatus</i>	--/--	No	PO
BOIDAE (Boas)				
Coastal Rosy Boa	<i>Lichanura trivirgata roseofusca</i> ⁴	--/--	No	PO
COLUBRIDAE (Colubrids)				
Glossy Snake	<i>Arizona elegans</i> ⁴	--/--	No	PO
Ringneck Snake	<i>Diadophis punctatus</i>	--/--	No	PF
Night Snake	<i>Hypsiglena torquata</i>	--/--	No	PO
Common Kingsnake	<i>Lampropeltis getula</i>	--/--	No	PF
Baja California Coachwhip	<i>Masticophis flagellum</i>	--/--	No	PF
Striped Racer (California Whipsnake)	<i>Masticophis lateralis</i>	--/--	No	PF
Gopher Snake	<i>Pituophis melanoleucus</i>	--/--	No	PF
Long-nosed Snake	<i>Rhinocheilus lecontei</i>	--/--	No	PF
Coast Patch-nosed Snake	<i>Salvadora hexalepis virgultea</i>	--/SSC	No	PF
California Black-headed Snake	<i>Tantilla planiceps</i>	--/--	No	PF
Two-striped Garter Snake	<i>Thamnophis hammondi</i>	--/SSC	No	AS, PF, OD
VIPERIDAE (Vipers)				
Speckled Rattlesnake	<i>Crotalus mitchellii</i>	--/--	No	PO
Red Diamond Rattlesnake	<i>Crotalus ruber ruber</i>	--/SSC	No	PF
Western Rattlesnake	<i>Crotalus viridis</i>	--/--	No	PF
CLASS: AVES (Birds)				
PODICIPEDIFORMES (Grebes)				
PODICIPEDIDAE (Grebes)				
Eared Grebe	<i>Podiceps nigricollis</i>	--/--	No	IN
CICONIIFORMES (Hérons, Storks, Ibises, and relatives)				
ARDEIDAE (Hérons and Bitterns)				
Great Blue Heron	<i>Ardea herodias</i>	--/--	No	OD
Green Heron	<i>Butorides virescens</i>	--/--	No	BP
Snowy Egret	<i>Egretta thula</i>	--/--	No	IN
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	--/--	No	IN
CATHARTIDAE (New World Vultures)				
Turkey Vulture	<i>Cathartes aura</i>	--/--	No	IN, OD
ANSERIFORMES (Screamers, Ducks, and relatives)				
ANATIDAE (Swans, Geese, and Ducks)				
Mallard	<i>Anas platyrhynchos</i>	--/--	No	BP
Ring-necked Duck	<i>Aythya collaris</i>	--/--	No	IN, OD

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
Bufflehead	<i>Bucephala albeola</i>	--/--	No	IN, OD
FALCONIFORMES (Vultures, Hawks, and Falcons)				
ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)				
Cooper's Hawk	<i>Accipiter cooperi</i>	--/SSC	Yes	OD
Sharp shinned Hawk	<i>Accipiter striatus</i>	--/SSC	No	OD
Golden Eagle	<i>Aquila chrysaetos</i>	BEPA/SF P	Yes, NE	BP, OD
Red-tailed Hawk	<i>Buteo jamaicensis</i>	--/--	No	BP, OD
Red-shouldered Hawk	<i>Buteo lineatus</i>	--/--	No	BP
Ferruginous Hawk	<i>Buteo regalis</i>	--/SSC	Yes	OD
Swainson's Hawk	<i>Buteo swainsoni</i>	--/ST	Yes	PO
Northern Harrier	<i>Circus cyaneus</i>	--/SSC	Yes	IN, OD
White-tailed Kite	<i>Elanus leucurus</i>	--/SFP	No	BP, OD
Bald Eagle	<i>Haliaeetus leucocephalus</i>	FD, BEPA/SE, SFP	Yes	PO
Osprey	<i>Pandion haliaetus</i>	--/SSC	No	OD
FALCONIDAE (Caracaras and Falcons)				
Crested Caracara	<i>Caracara plancus auduboni</i>	--/--	No	BP
Merlin	<i>Falco columbarius</i>	--/SSC	No	BP, OD
Prairie Falcon	<i>Falco mexicanus</i>	--/SSC	No	IN
Peregrine Falcon	<i>Falco peregrinus</i>	FD/SE, SFP	Yes, NE	BP
American Kestrel	<i>Falco sparverius</i>	--/--	No	BP, OD
GRUIFORMES (Cranes, rails, and relatives)				
RALLIDAE (Rails, coots)				
American Coot	<i>Fulica americana</i>	--/--	No	OD
GALLIFORMES (Megapodes, Curassows, Pheasants, and relatives)				
PHASIANIDAE (Quails, Pheasants, and relatives)				
*Ring-necked Pheasant	<i>Phasianus colchicus</i>	--/--	No	IN
ODONTOPHORIDAE (New World Quail)				
California Quail	<i>Callipepla californica</i>	--/--	No	BP, OD
CHARADRIIFORMES (Shorebirds, Gulls, and relatives)				
CHARADRIIDAE (Plovers and relatives)				
Killdeer	<i>Charadrius vociferus</i>	--/--	No	BP, OD
SCOLOPACIDAE (Sandpipers and relatives)				
Greater Yellowlegs	<i>Tringa melanoleuca</i>	--/--	No	IN
LARIDAE (Terns)				
Forster's Tern	<i>Sterna forsteri</i>	--/--	No	BP
COLUMBIFORMES (Pigeons and Doves)				
COLUMBIDAE (Pigeons and Doves)				
*Rock Pigeon	<i>Columba livia</i>	--/--	No	IN
Mourning Dove	<i>Zenaidura macroura</i>	--/--	No	BP, OD
CUCULIFORMES (Cuckoos and relatives)				
CUCULIDAE (Typical Cuckoos)				
Greater Roadrunner	<i>Geococcyx californianus</i>	--/--	No	BP, RC
STRIGIFORMES (Owls)				
TYTONIDAE (Barn Owls)				
Common Barn Owl	<i>Tyto alba</i>	--/--	No	NT, OD
STRIGIDAE (Typical Owls)				

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
Short-eared Owl	<i>Asio flammeus</i>	--/SSC	No	OD
Long-eared Owl	<i>Asio otus</i>	--/SSC	No	NT
Burrowing Owl	<i>Athene cunicularia hypugaea</i>	--/SSC	Yes	NT, OD
Great Horned Owl	<i>Bubo virginianus</i>	--/--	No	NT, OD
Western Screech Owl	<i>Megascops kennicottii</i>	--/--	No	OD
CAPRIMULGIFORMES (Goatsuckers and relatives)				
CAPRIMULGIDAE (Goatsuckers)				
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	--/--	No	OD
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	--/--	No	NT
APODIFORMES (Swifts and Hummingbirds)				
TROCHILIDAE (Hummingbirds)				
White-throated Swift	<i>Aeronautes saxatalis</i>	--/--	No	PO
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	--/--	No	IN
Anna's Hummingbird	<i>Calypte anna</i>	--/--	No	BP
Costa's Hummingbird	<i>Calypte costae</i>	--/--	No	BP
Allen's Hummingbird	<i>Selasphorus sasin</i>	--/--	No	BP
CORACIIFORMES (Kingfishers and relatives)				
ALCEDINIDAE (Kingfishers)				
Belted Kingfisher	<i>Ceryle alcyon</i>	--/--	No	IN
PICIFORMES (Woodpeckers and relatives)				
PICIDAE (Woodpeckers and Wrynecks)				
Northern Flicker	<i>Colaptes auratus</i>	--/--	No	IN
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	--/--	No	BP
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	--/--	No	BP, OD
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	--/--	No	PO
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	--/--	No	PO
PASSERIFORMES (Perching Birds)				
TYRANNIDAE (Tyrant Flycatchers)				
Western Wood Pewee	<i>Contopus sordidulus</i>	--/--	No	OD
Pacific-Slope Flycatcher	<i>Empidonax difficilis</i>	--/--	No	IN, OD
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	FE/SSC	Yes	PO
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	--/--	No	BP
Black Phoebe	<i>Sayornis nigricans</i>	--/--	No	BP
Say's Phoebe	<i>Sayornis saya</i>	--/--	No	IN
Western Kingbird	<i>Tyrannus verticalis</i>	--/--	No	BP, OD
Cassin's Kingbird	<i>Tyrannus vociferans</i>	--/--	No	BP, OD
LANIIDAE (Shrikes)				
Loggerhead Shrike	<i>Lanius ludovicianus</i>	--/SSC	No	BP, OD
VIREONIDAE (Typical Vireos)				
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE/SE	Yes	BP, OD
Warbling Vireo	<i>Vireo gilvus</i>	--/--	No	BP
Hutton's Vireo	<i>Vireo huttoni</i>	--/--	No	BP, OD
Gray Vireo	<i>Vireo vicinior</i>	--/SSC	No	PO
CORVIDAE (Jays, Magpies, and Crows)				
Western Scrub-Jay	<i>Aphelocoma californica</i>	--/--	No	BP, OD
*Magpie Jay (Black-throated form)	<i>Calocitta colliei</i>	--/--	No	IN, OD
American Crow	<i>Corvus brachyrhynchos</i>	--/--	No	BP, OD
Common Raven	<i>Corvus corax</i>	--/--	No	BP, OD
BOMBYCILLIDAE (Waxwings and Silky Flycatchers)				
Phainopepla	<i>Phainopepla nitens</i>	--/--	No	BP, OD

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
TURDIDAE				
Swainson's Thrush	<i>Catharus ustulatus</i>	--/--	No	OD
Mountain Bluebird	<i>Sialia currucoides</i>	--/--	No	IN, OD
Western Bluebird	<i>Sialia mexicana</i>	--/--	Yes	IN, OD
American Robin	<i>Turdus migratorius</i>	--/--	No	PO
STURNIDAE (Starlings & Allies)				
*European Starling	<i>Sturnus vulgaris</i>	--/--	No	BP
MIMIDAE (Mockingbirds and Thrashers)				
Northern Mockingbird	<i>Mimus polyglottos</i>	--/--	No	BP, OD
California Thrasher	<i>Toxostoma redivivum</i>	--/--	No	BP
SITTIDAE (Nuthatches)				
White-breasted Nuthatch	<i>Sitta carolinensis</i>	--/--	No	PO
TROGLODYTIDAE (Wrens)				
Coastal Cactus Wren	<i>Campylorhynchus brunneicapillus cousei</i>	--/SSC	Yes	PO
Marsh Wren	<i>Cistothorus palustris</i>	--/--	No	BP
Bewick's Wren	<i>Thryomanes bewickii</i>	--/--	No	BP
House Wren	<i>Troglodytes aedon</i>	--/--	No	IN, OD
POLIOPTILIDAE (Verdin and Gnatcatcher)				
Blue Gray Gnatcatcher	<i>Poliophtila caerulea</i>	--/--	No	BP
California Gnatcatcher	<i>Poliophtila californica</i>	FT/SSC	Yes	BP, OD
PARIDAE (Titmice and relatives)				
Oak Titmouse	<i>Baeolophus inornatus</i>	--/--	No	BP
AEGITHALIDAE (Bushtit)				
Bushtit	<i>Psaltirparus minimus</i>	--/--	No	BP, OD
HIRUNDINIDAE (Swallows)				
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	--/--	No	BP, OD
Purple Martin	<i>Progne subis</i>	--/SSC	No	PO
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	--/--	No	BP
Violet-green Swallow	<i>Tachycineta thalassina</i>	--/--	No	BP
REGULIDAE (Kinglets)				
Ruby-crowned Kinglet	<i>Regulus calendula</i>	--/--	No	PO
Golden-crowned Kinglet	<i>Regulus satrapa</i>	--/--	No	OD
TIMALIIDAE (Babblers)				
Wrentit	<i>Chamaea fasciata</i>	--/--	No	BP, OD
ALAUDIDAE (Larks)				
Horned Lark	<i>Eremophila alpestris</i>	--/SSC	No	BP
MOTACILLIDAE (Pipits and Wagtails)				
American Pipit	<i>Anthus rubescens</i>	--/--	No	PO
FRINGILLIDAE (Finches)				
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	--/--	No	BP
Lesser Goldfinch	<i>Carduelis psaltria</i>	--/--	No	BP
American Goldfinch	<i>Carduelis tristis</i>	--/--	No	BP
House Finch	<i>Carpodacus mexicanus</i>	--/--	No	BP
PASSERIDAE				
*House Sparrow	<i>Passer domesticus</i>	--/--	No	OD

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
EMBERIZIDAE (Emberizines)				
Southern CA Rufous-crowned Sparrow	<i>Aimophila ruficeps canescens</i>	--/SSC	Yes	BP, OD
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	--/--	No	BP, OD
Bell's Sage Sparrow	<i>Amphispiza belli</i>	--/SSC	No	BP, OD
Lark Sparrow	<i>Chondestes grammacus</i>	--/--	No	BP, OD
Dark-eyed Junco	<i>Junco hyemalis</i>	--/--	No	IN,
Song Sparrow	<i>Melospiza melodia</i>	--/--	No	BP
Savannah Sparrow	<i>Passerculus sandwichensis</i>	--/--	No	BP
Fox Sparrow	<i>Passerella iliaca</i>	--/--	No	PO
Lincoln's Sparrow	<i>Passerella (Melospiza) lincolni</i>	--/--	No	OD
Spotted Towhee	<i>Pipilo maculatus</i>	--/--	No	BP
California Towhee	<i>Pipilo crissalis</i>	--/--	No	BP
Vesper Sparrow	<i>Pooecetes gramineus</i>	--/--	No	OD
Chipping Sparrow	<i>Spizella passerina</i>	--/--	No	IN
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	--/--	No	PO
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	--/--	No	BP
PARULIDAE (Wood Warblers and relatives)				
Yellow-rumped Warbler	<i>Dendroica coronata</i>	--/--	No	BP
Yellow Warbler	<i>Dendroica petechia</i>	--/SSC	No	BP, OD
Townsend's Warbler	<i>Dendroica townsendii</i>	--/--	No	BP
Yellow-breasted Chat	<i>Icteria virens</i>	--/SSC	No	BP, OD
Common Yellowthroat	<i>Geothlypis trichas</i>	--/--	No	BP
Orange-crowned Warbler	<i>Vermivora celata</i>	--/--	No	BP
Nashville Warbler	<i>Vermivora ruficapilla</i>	--/--	No	BP
Wilson's Warbler	<i>Wilsonia pusilla</i>	--/--	No	OD
THRAUPIDAE (Tanagers)				
Western Tanager	<i>Piranga ludoviciana</i>	--/--	No	BP
CARDINALIDAE (Cardinals, Grosbeaks & Allies)				
Blue Grosbeak	<i>Guiraca caerulea</i>	--/--	No	BP
Lazuli Bunting	<i>Passerina amoena</i>	--/--	No	BP, RC
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	--/--	No	IN
ICTERIDAE (Blackbirds, Orioles & Allies)				
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	--/--	No	BP
Tricolored Blackbird	<i>Agelaius tricolor</i>	--/SSC	Yes	PO
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	--/--	No	BP
Bullocks Oriole	<i>Icterus bullockii</i>	--/--	No	BP
Hooded Oriole	<i>Icterus cucullatus</i>	--/--	No	BP
*Brown-headed Cowbird	<i>Molothrus ater</i>	--/--	No	IN
Western Meadowlark	<i>Sturnella neglecta</i>	--/--	No	BP
CLASS: MAMMALIA (Mammals)				
DIDELPHIMORPHIA (Marsupials)				
DIDELPHIDAE (Opossums)				
*Virginia Opossum	<i>Didelphis virginiana</i>	--/--	No	TS
INSECTIVORA (Insectivores)				
SORICIDAE (Shrews)				
Desert Shrew	<i>Notiosorex crawfordi</i>	--/--	No	PF
Ornate Shrew	<i>Sorex ornatus</i>	--/--	No	PF
TALPIDAE (Moles)				
Broad-footed Mole	<i>Scapanus latimanus</i>	--/--	No	PO
CHIROPTERA (Bats)				
VESPERTILIONIDAE (Evening Bats)				
Pallid Bat	<i>Antrozous pallidus</i>	--/SSC	No	BS
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	--/SSC	No	BS

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
Big Brown Bat	<i>Eptesicus fuscus</i>	--/--	No	BS
Western Red Bat	<i>Lasiurus blossevillii</i>	--/--	No	PO
Hoary Bat	<i>Lasiurus cinereus</i>	--/--	No	BS
California Myotis	<i>Myotis californicus</i>	--/--	No	BS
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	--/--	No	BS
Long-eared Myotis	<i>Myotis evotis</i> ⁴	--/--	No	IN
Yuma Myotis	<i>Myotis yumanensis</i>	--/--	No	BS
Western Pipistrelle	<i>Pipistrellus hesperus</i>	--/--	No	BS
MOLOSSIDAE (Free-tailed Bats)				
Western Mastiff Bat	<i>Eumops perotis</i>	--/SSC	No	BS
Pocketed Free-tailed Bat	<i>Nyctinomops femorosacca</i>	--/SSC	No	BS
Big Free-tailed Bat	<i>Nyctinomops macrotis</i>	--/SSC	No	BS
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>	--/--	No	BS
LAGOMORPHA (Rabbits, Hares, and Pikas)				
LEPORIDAE (Rabbits and Hares)				
Black-tailed (Hare) Jackrabbit	<i>Lepus californicus</i>	--/SSC	No	RC
Audubon's (Desert) Cottontail	<i>Sylvilagus audubonii</i>	--/--	No	RC, TS
Brush Rabbit	<i>Sylvilagus bachmani</i>	--/--	No	OD
RODENTIA (Squirrels, Rats, Mice, and relatives)				
SCIURIDAE (Squirrels, Chipmunks, and Marmots)				
California Ground Squirrel	<i>Spermophilus beecheyi</i>	--/--	No	TS
GEOMYIDAE (Pocket Gophers)				
Botta's Pocket Gopher	<i>Thomomys bottae</i>	--/--	No	PF
HETEROMYIDAE (Pocket Mice and Kangaroo Rats)				
California Pocket Mouse	<i>Chaetodipus californicus</i>	--/SSC	No	PO
San Diego Pocket Mouse	<i>Chaetodipus fallax fallax</i>	--/SSC	No	PF, ST
Agile Kangaroo Rat	<i>Dipodomys agilis</i>	--/--	No	OD
San Diego Kangaroo Rat	<i>Dipodomys simulans</i>	--/--	No	PF, ST
MURIDAE				
California Vole	<i>Microtus californicus</i>	--/--	No	PF
*House Mouse	<i>Mus musculus</i>	--/--	No	ST
Dusky-footed Woodrat	<i>Neotoma fuscipes</i>	--/--	No	PO
Desert Woodrat	<i>Neotoma lepida</i>	--/SSC	No	PF, ST
Southern Grasshopper Mouse	<i>Onychomys torridus</i> ⁴	--/SSC	No	PO
Brush Mouse	<i>Peromyscus boylii</i>	--/--	No	PO
California Mouse	<i>Peromyscus californicus</i>	--/--	No	PF
Cactus Mouse	<i>Peromyscus eremicus</i>	--/--	No	PF, ST
Deer Mouse	<i>Peromyscus maniculatus</i>	--/--	No	PF, ST
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	--/--	No	PF
CARNIVORA (Carnivores)				
CANIDAE (Foxes, Wolves, and relatives)				
*Domestic Dog	<i>Canis familiaris</i>	--/--	No	RC, TS
Coyote	<i>Canis latrans</i>	--/--	No	RC, TS
Gray Fox	<i>Urocyon cinereoargenteus</i>	--/--	No	TS
PROCYONIDAE (Raccoons and relatives)				
Ringtail	<i>Bassariscus astutus</i> ⁴	--/--	No	PO
Raccoon	<i>Procyon lotor</i>	--/--	No	TS
MUSTELIDAE (Weasles, skunks, and relatives)				
Long-tailed Weasel	<i>Mustela frenata</i>	--/--	No	OD
Striped Skunk	<i>Mephitis mephitis</i>	--/--	No	RC, TS
Western Spotted Skunk	<i>Spilogale gracilis</i>	--/--	No	TS

Inventory of Vertebrate Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP ²	Detection Method ³
American Badger	<i>Taxidea taxus</i>	--/SSC	Yes	PO
FELIDAE (Cats)				
*House Cat	<i>Felis catus</i>	--/--	No	TS
Bobcat	<i>Lynx rufus</i>	--/--	No	RC, TS
Mountain Lion	<i>Puma concolor</i>	--/--	Yes	RC
ARTIODACTYLA (Even-toed Ungulates)				
CERVIDAE (Deer, Elk, and relatives)				
Mule Deer	<i>Odocoileus hemionus</i>	--/--	Yes	RC, TS

¹ **Status:** *Federal:* FE – endangered, FT – threatened, FSC – special concern, FFP – fully protected, BEPA – Bald Eagle Protection Act, FD – federally delisted. USFWS no longer keeps a list of Federal Species of Concern. *State:* SE – endangered, ST – threatened, SSC – special concern, SFP – fully protected.

² **MSCP Coverage:** Yes - covered by the County of San Diego Subarea Plan. NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

³ **Detection Method Codes**

Methods used during 1998-2004 USGS baseline surveys: PO – Potentially Occurring; AS - Aquatic Survey, BP - Bird Point Count Survey, BS - Bat Survey, IN - Incidental, NT - Night Time Bird Point Count Survey, PF - Pitfall Survey, RC - Remote Camera, ST - Sherman Trap, TS- Track Station.

Observations made before or after USGS baseline surveys: FS – US Forest Service, 1950; OD – Other Data Sources (incidental sightings or surveys conducted by CDFG, Wildland Inc, Dudeck & Associates, SDNHM Bird Atlas Project, and Lettieri-McIntyre and Associates)

⁴ USGS recommended species for which additional surveys may be required

[†] Presumed extirpated from RJER

* **Introduced species**

Appendix E

Sensitive Species Documented from RJER

Sensitive Species Documented from Rancho Jamul Ecological Reserve

Common Name	Scientific Name	Status ¹	Covered by MSCP	Detection Method ²
Plants				
Coast Barrel Cactus	<i>Ferocactus viridescens</i>	--/List 2	Yes	RP
Coulter's Matilija Poppy	<i>Romneya coulteri</i>	--/List 4	No	RP
Coulter's Saltbush	<i>Atriplex coulteri</i>	--/List 1B	No	RP
Delicate Clarkia	<i>Clarkia delicata</i>	--/List 1B	No	OD
Little Mousetail	<i>Myosurus minimus</i>	--/List 3	No	OD
Otay Tarplant	<i>Deinandra (Hemizonia) conjugens</i>	FT/SE, List 1B	Yes, NE	RP
Palmer's Goldenbush	<i>Ericameria palmeri ssp. palmeri</i>	--/List 2	Yes	OD
Palmer's Grapplinghook	<i>Harpagonella palmeri</i>	--/List 4	No	RP
San Diego Ambrosia	<i>Ambrosia pumila</i>	FE/List 1B	Yes, NE	CM
San Diego Goldenstar	<i>Muilla clevelandii</i>	--/List 1B	Yes	RP
San Diego Marsh Elder	<i>Iva hayesiana</i>	--/List 2	No	RP
San Diego Needlegrass	<i>Achnatherum diegoensis</i>	--/List 4	No	RP
San Diego Sagewort	<i>Artemisia palmeri</i>	--/List 4	No	OD
San Diego Sunflower	<i>Viguiera laciniata</i>	--/List 4	No	RP
Small-flowered Morning-glory	<i>Convolvulus simulans</i>	--/List 4	No	RP
South Coast Saltbush	<i>Atriplex pacifica</i>	--/List 1B	No	RP
Southwestern Spiny Rush	<i>Juncus acutus ssp. leopoldii</i>	--/List 4	No	RP
Tecate Cypress	<i>Cupressus forbesii</i>	--/List 1B	Yes	RP
Variegated Dudleya	<i>Dudleya variegata</i>	--/List 1B	Yes, NE	RP
Western Dichondra	<i>Dichondra occidentalis</i>	--/List 4	No	RP
Invertebrates				
Harbison's Dun Skipper	<i>Euphyes vestris harbisoni</i>	--/--	No, NE	OD
Hermes Copper Butterfly	<i>Lycaena hermes</i>	--/--	No	OD
Quino Checkerspot Butterfly	<i>Euphydryas editha quino</i>	FE/--	No, NE	OD
Amphibians				
California Red-legged Frog†	<i>Rana aurora draytoni</i>	FT/SSC	Yes, NE	FS
Western Spadefoot	<i>Spea (Scaphiopus) hammondii</i>	--/SSC	No	AS, PF, OD
Reptiles				
Coast Horned Lizard	<i>Phrynosoma coronatum</i>	--/SSC	Yes	PF, OD
Western Coast Patch-nosed Snake	<i>Salvadora hexalepis virgultea</i>	--/SSC	No	PF
Orange-throated Whiptail	<i>Cnemidophorus hyperythrus</i>	--/SSC	Yes	PF, OD
Red Diamond Rattlesnake	<i>Crotalus ruber ruber</i>	--/SSC	No	PF
Two-striped Garter Snake	<i>Thamnophis hammondii</i>	--/SSC	No	AS, PF, OD
Western Skink	<i>Eumeces skiltonianus</i>	--/SSC	No	PF
Birds				
Allen's Hummingbird	<i>Selasphorus sasin</i>	--/--	No	BP
Bell's Sage Sparrow	<i>Amphispiza belli</i>	--/SSC	No	BP, OD
Burrowing Owl	<i>Athene cunicularia hypugaea</i>	--/SSC	Yes	NT, OD
California Gnatcatcher	<i>Poliophtila californica</i>	FT/SSC	Yes	BP, OD
California Thrasher	<i>Toxostoma redivivum</i>	--/--	No	BP
Cooper's Hawk	<i>Accipiter cooperi</i>	--/SSC	Yes	OD
Ferruginous Hawk	<i>Buteo regalis</i>	--/SSC	Yes	OD
Golden Eagle	<i>Aquila chrysaetos</i>	BEPA/SFP	Yes, NE	BP, OD
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	--/--	No	BP, OD
Horned Lark	<i>Eremophila alpestris</i>	--/SSC	No	BP
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	--/--	No	BP
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	FE/SE	Yes	BP, OD
Loggerhead Shrike	<i>Lanius ludovicianus</i>	--/SSC	No	BP, OD

Special Status Species *Continued*

Common Name	Scientific Name	Status ¹	Covered by MSCP	Detection Method ²
Long-eared Owl	<i>Asio otus</i>	--/SSC	No	NT
Merlin	<i>Falco columbarius</i>	--/SSC	No	BP, OD
Northern Harrier	<i>Circus cyaneus</i>	--/SSC	Yes	IN, OD
Osprey	<i>Pandion haliaetus</i>	--/SSC	No	OD
Peregrine Falcon	<i>Falco peregrinus</i>	FD/SE, SFP	Yes, NE	BP
Prairie Falcon	<i>Falco mexicanus</i>	--/SSC	No	IN
Sharp-shinned Hawk	<i>Accipiter striatus</i>	--/SSC	No	OD
Short-eared Owl	<i>Asio flammeus</i>	--/SSC	No	OD
Southern CA Rufous-crowned Sparrow	<i>Aimophila ruficeps canescens</i>	--/SSC	Yes	BP, OD
Western Bluebird	<i>Sialia mexicana</i>	--/--	Yes	IN, OD
White-tailed Kite	<i>Elanus leucurus</i>	--/SFP	No	BP, OD
Yellow Warbler	<i>Dendroica petechia</i>	--/SSC	No	BP, OD
Yellow-breasted Chat	<i>Icteria virens</i>	--/SSC	No	BP, OD
Mammals				
Big Free-tailed Bat	<i>Nyctinomops macrotis</i>	--/SSC	No	BS
Black-tailed (Hare) Jackrabbit	<i>Lepus californicus</i>	--/SSC	No	RC
Desert Woodrat	<i>Neotoma lepida</i>	--/SSC	No	PF, ST
Hoary Bat	<i>Lasiurus cinereus</i>	--/--	No	BS
Long-eared Myotis	<i>Myotis evotis</i>	--/--	No	IN
Mountain Lion	<i>Puma concolor</i>	--/--	Yes	RC
Mule Deer	<i>Odocoileus hemionus</i>	--/--	Yes	RC, TS
Pallid Bat	<i>Antrozous pallidus</i>	--/SSC	No	BS
Pocketed Free-tailed Bat	<i>Nyctinomops femorosacca</i>	--/SSC	No	BS
San Diego Pocket Mouse	<i>Chaetodipus fallax fallax</i>	--/SSC	No	PF, ST
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	--/SSC	No	BS
Western Mastiff Bat	<i>Eumops perotis</i>	--/SSC	No	BS
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	--/--	No	BS
Yuma Myotis	<i>Myotis yumanensis</i>	--/--	No	BS

¹ **Status:** *Federal:* FE – endangered, FT – threatened, FFP – fully protected, BEPA – Bald Eagle Protection Act, FD – federally delisted; USFWS no longer keeps a list of Federal Species of Concern. *State:* SE – endangered, ST – threatened, SSC – special concern, SFP – fully protected. *California Native Plant Society (CNPS):* List 1B – Plants rare, threatened, or endangered in California and elsewhere, List 2: Plants rare, threatened, or endangered in California, but more common elsewhere, List 3 – Plants about which we need more information, List 4 – Plants of limited distribution (a watch list).

² **Covered by MSCP :** covered by County of San Diego Subarea Plan; NE – listed as Narrow Endemic in the County subarea plan. A narrow endemic is a species that is confined to a specific geographic region, soil type, and/or habitat.

³ **Detection Method Codes**

Methods used during 1998-2004 USGS baseline surveys: PO – Potentially Occurring; RP – Rare Plant Survey, AS - Aquatic Survey, BP - Bird Point Count Survey, BS - Bat Survey, IN - Incidental, NT - Night Time Bird Point Count Survey, PF - Pitfall Survey, RC - Remote Camera, ST - Sherman Trap, TS - Track Station.

Observations made before or after USGS baseline surveys: CM – CalMat and PSBS surveys reported in LMA (1994); FS – US Forest Service, 1050; OD – Other Data Sources (incidental sightings or surveys conducted by the Department, Wildland Inc, Dudeck & Associates, SDNHM Bird Atlas Project, and Lettieri-McIntyre and Associates).

† **Presumed extirpated from RJER**

Appendix F

Species Accounts for Listed Species

Species Accounts

for Listed Species that Occur or Potentially Occur on RJER

SAN DIEGO AMBROSIA – *Ambrosia pumila*

USFWS Status: None
CDFG Status: Endangered
CNPS Status: List 1B
MSCP Status: Covered
RJER Status: Documented but presumed extirpated

San Diego ambrosia is distributed from western Riverside County and western San Diego County, California, to the west coast of Baja California, Mexico. Currently a total of only 15 occurrences are believed to remain in San Diego (12) and Riverside (3) Counties. The population status in Mexico is unknown. This species occurs in creek beds, seasonally dry drainages, open floodplains, and occasionally on the watershed margins of vernal pools. These habitats are usually associated with sandy alluvium or riverwash type soils. Reproduction occurs by vegetative means through the extension of rhizomes (underground stems). The implication of this type of reproduction is that each population could be one genetically distinct individual restricted to the immediate appropriate habitat. Sexual reproduction and seed set are not considered to be common in this taxon, and therefore, dispersal is limited. Although this species has been documented from RJER (at the southwestern corner of the CalMat parcel) (CNDDDB) it is presumed to have been extirpated based on a description of extant occurrences in the federal listing document (USFWS 2002a).

SAN DIEGO THORN MINT - *Acanthomintha ilicifolia*

USFWS Status: Threatened
CDFG Status: Endangered
CNPS Status: List 1B
MSCP Status: Covered
RJER Status: Potentially occurring

San Diego thorn-mint is restricted in distribution to San Diego County and northern Baja California, Mexico. It occurs on calcareous marine sediments, clay, or gabbro-derived soils and is associated with coastal sage scrub, chaparral, and grassland (Reiser, 1994). It is an annual plant that may experience yearly fluctuations in population size and location. This species appears to be an out-cropper that is insect-pollinated, and may rely on animal vectors, in part, for seed dispersal. Threats to this species include cumulative habitat loss and degradation, trampling, illegal dumping, livestock grazing, invasive exotic plants, collecting, edge effects, and, possibly, genetic isolation and herbivory. Although this species has not been documented from RJER, it has been documented just north of SR 94, in Hollenbeck Canyon Wildlife Area, east of RJER. In addition, appropriate habitat conditions exist in many parts of the Reserve (Hathaway, et al. 2002).

OTAY TARPLANT - *Deinandra (Hemizonia) conjugens*

USFWS Status: Threatened
CDFG Status: Endangered
CNPS Status: List 1B
MSCP Status: Covered
RJER Status: Present

This herbaceous plant is restricted to southern San Diego County and northern Baja California, Mexico. It occurs on fractured clay soils in grassland or open coastal sage scrub. Its U.S. distribution is limited to the remaining undisturbed lands from the Sweetwater River to the border and between Chula Vista and lower Otay Reservoir (Reiser 1994). Within RJER, this species has been documented from grassland and coastal sage scrub habitat in the central mesa/plateau. The estimated population size on the Reserve is approximately 2,000 plants (Hathaway, et al. 2002). Encroaching development and invasion by exotic species are its greatest threats, however, this species is not as sensitive to disturbance as many other species restricted to clay soils (Hathaway et al. 2002).

QUINO CHECKERSPOT BUTTERFLY - *Euphydryas editha quino*

USFWS Status: Endangered
CDFG Status: None
MSCP Status: Not Covered
RJER Status: Present

The historical distribution of the Quino Checkerspot Butterfly (QCB) included much of coastal California south of Ventura County and inland valleys south of the Tehachapi Mountains. The current distribution is limited to western Riverside County, southern San Diego County and northern Baja California. Distribution of this subspecies is driven by metapopulation dynamics involving local extinctions and population explosions, which lead to recolonization of habitat.

Effective habitat management for this species requires an understanding of behavior, habitat structure, and host plants. Preferred Quino checkerspot habitat consists of coastal sage scrub or grassland habitat with low, open vegetation, as adults tend to fly low to the ground. The soil is exposed in large patches, and often composed of red clay with a cryptogamic crust. Another indicator of good quality habitat is a shallow slope, most commonly on hill tops. Presence of the primary or secondary larval host plants plantago (*Plantago erecta* and *P. patagonica*) white snapdragon (*Antirrhinum coulterianum*), bird's beak (*Cordylanthus rigidus*), and owl's clover (*Castilleja exerta*) is critical to the survival of the larvae, and therefore, the species (Marschalek 2001b, USFWS 2002b). Adult checkerspot butterflies, which feed on nectar, use a much wider range of plant species for feeding than the larvae which feed on leaves and stems.

The federally endangered Quino checkerspot butterfly is known to occur in at least three different areas in the southeastern portion of RJER. Additional potential habitat for this species occurs in at least 23 separate areas scattered throughout the Reserve (Marschalek, 2001a). The LMP area is an important component of the conservation efforts for this species because it lies within critical habitat (the San Diego Otay Unit) that has been designated by the USFWS (USFWS 2002).

ARROYO TOAD - *Bufo californicus*

USFWS Status: Endangered
CDFG Status: California Special Concern Species
MSCP Status: Covered
RJER Status: Potentially occurring

This species is distributed in semiarid parts of the southwest from near Santa Margarita in San Luis Obispo County to northwestern Baja California. Because the arroyo toad requires very specific breeding and adjacent upland (non-breeding) habitat conditions, its distribution is very limited. Breeding activity typically occurs from February to June. Suitable breeding habitat includes a low-gradient (usually less than 2 percent), sandy or

gravelly stream bed with little current, shallow pools and adjacent sand bars (USFWS 1994). This condition must persist for at least three months during the spring and summer. Riparian vegetation consists of oaks, willows and cottonwood trees, with little understory.

Habitat management for this species should include protection of primary breeding habitat and adjacent upland areas. Breeding habitat can be protected by maintaining ecological and hydrological processes to support healthy alluvial fan and riparian habitats. This can be done by controlling land uses that will affect flood control, water use, erosion, sediment deposition; by controlling pesticide and herbicide use; and by managing for exotic plant and animal species, and limiting access to livestock.

Although this species has not been recorded from RJER, potential habitat exists along riparian corridors wherever appropriate breeding conditions exist.

BALD EAGLE - *Haliaeetus leucocephalus*

USFWS Status:	Proposed for Delisting, Bald Eagle Protection Act
CDFG Status:	Endangered, Fully Protected
MSCP Status:	Covered
RJER Status:	Potentially occurring

The bald eagle breeds throughout much of North America and southern Canada, but is an uncommon winter visitor to San Diego County (Unitt 2004). Only one nesting record has been reported for this species in the County, at Little Tecate Peak in 1936. Bald eagles frequently winter at Lake Henshaw, Whalen Lake, and Lake Cuyamaca (Unitt 2004). Because their diet consists mostly of fish, wintering bald eagles require large bodies of open water for foraging. Additionally, preferred habitat contains large trees for roosting. This species has declined because of shooting, human disturbance at nest sites, loss of nesting trees, loss of open water habitat due to human activities, power line electrocution, and reproductive failure caused by DDT (Buehler et al 2002). No observations of this species have been made on RJER; however, one incidental sighting was reported by Madden-Smith et al. (2004) in adjacent Hollenbeck Canyon Wildlife Area. The closest large body of water in the vicinity is Otay Lakes to the southwest. Therefore, any incidental observations of this species within RJER are likely to be individuals that are passing through.

CALIFORNIA GNATCATCHER - *Polioptila californica californica*

USFWS Status:	Threatened
CDFG Status:	Species of Concern
MSCP Status:	Covered
RJER Status:	Present

The coastal California gnatcatcher is restricted to the coastal slopes of southern California, from Los Angeles County south to El Rosario, Baja California, Mexico. It is

closely associated with coastal sage scrub vegetation occurring on gentle slopes within the maritime and coastal climate zones. Dominant plants in this vegetation community include California sagebrush (*Artemisia californica*) California buckwheat (*Eriogonum fasciculatum*) as well as black sage (*Salvia mellifera*) or lemonade berry (*Rhus integrifolia*). Early studies suggested that the California gnatcatcher is highly sensitive to the effects of habitat fragmentation and development activity (Atwood and Bontranger 2001). The USFWS has estimated that coastal sage scrub habitat has been reduced by 70 to 90% of its historical extent (USFWS 1993), and little of what remains is protected in natural open space. RJER will play an important role in the conservation of this species. Approximately 10 observations have been recorded throughout the Reserve.

LEAST BELL'S VIREO - *Vireo bellii pusillus*

USFWS Status:	Endangered
CDFG Status:	Endangered
MSCP Status:	Covered
RJER Status:	Present

Currently, least Bell's vireos breed only in riparian woodlands in southern California, with the majority of breeding pairs in San Diego, Santa Barbara, and Riverside Counties. Substantial vireo populations are currently found on five rivers in San Diego County: Tijuana, Sweetwater, San Diego, San Luis Rey, and Santa Margarita, with smaller populations in other drainages. The least Bell's vireo arrives in San Diego County in late March and early April and leaves for its wintering ground in September. This species is most frequent in areas that combine an understory of dense young willows or mule fat with a semi-open canopy of tall willows. The vireo's decline is due to loss, degradation, and fragmentation of riparian habitat combined with nest parasitism by the brown-headed cowbird. Survey data obtained from Wildlands Inc. (1998-2004) document the presence of vireos along much of Jamul and Dulzura Creeks.

PEREGRINE FALCON - *Falco peregrinus*

USFWS Status:	Delisted
CDFG Status:	Endangered, Fully Protected
MSCP Status:	Covered
RJER Status:	Present

The American peregrine falcon is in the process of recovering much of its former breeding range in North America. Within San Diego County, peregrine falcons occur along coastal areas and at reservoirs in the county during winter. Foraging habitat for this species includes coastal wetland areas, extensive riparian areas, and lakes that support large flocks of waterbirds (ducks, shorebirds) or pigeons. Peregrines traditionally nest on cliff faces but have adapted to also nest on tall building ledges, towers, and similar tall structures. Nest sites need minimal human disturbance. One falcon was observed in the southeastern portion of RJER near Dulzura Creek.

SOUTHWESTERN WILLOW FLYCATCHER - *Empidonax traillii extimus*

USFWS Status: Endangered
CDFG Status: Species of Concern
MSCP Status: Covered
RJER Status: Potentially occurring

The southwestern willow flycatcher is a migratory species that is restricted to a few major river drainages in the southwestern United States. Within San Diego County, small concentrations of breeding willow flycatchers persist along the San Luis Rey and Santa Margarita Rivers with scattered observations throughout the county (Unitt 2004). During the breeding season this species is primarily confined to riparian woodland and riparian willow habitats. It is often found in the same habitat as the least Bell's vireo; however, the willow flycatcher generally prefers larger patches of a more mature riparian forest, which consists of a well developed canopy. The presence of dense foliage down through the understory layer also appears to be critical (J. Lovio pers comm.).

This species has declined primarily due to loss, alteration, and degradation of riparian habitats, and brown-headed cowbird nest parasitism (Unitt 2004). Although breeding pairs have not been recorded from RJER, appropriate habitat conditions for the willow flycatcher exist along Dulzura and Jamul Creeks, and migrating individuals have been recorded in or near the Reserve (Unitt 2004).

SWAINSON'S HAWK - *Buteo swainsoni*

USFWS Status: Species of Concern
CDFG Status: Threatened
MSCP Status: Covered
RJER Status: Potentially occurring

Though once abundant in San Diego during the breeding season a hundred years ago, this species is now only seen during spring and fall migration usually as individuals or small flocks (Unitt, 2004). During the breeding season, the diet of the Swainson's hawk consists of rodents, rabbits, and reptiles. When not breeding, however, this hawk is atypical because it is almost exclusively insectivorous (England et al, 1997). In many parts of its range, this hawk has adjusted well to agricultural landscapes. The greatest threat to this declining species is the use of pesticides and other chemicals, especially in Argentina, where it winters, urbanization, and loss of habitat (Unitt, 2004). Although this species has not been recorded from RJER, it is expected to occur due to the presence of suitable habitat and documented occurrences within a few miles of the reserve.

References

- Atwood, J.L. and D.R. Bontrager. 2001. California Gnatcatcher (*Polioptila californica*). In A. Poole and F. Gill (eds.) *The Birds of North America* No. 574. Philadelphia.
- Buehler, D.A. 2000. Bald Eagle (*Haliaeetus leucocephalus*), In: A. Poole and F. Gill eds., *The Birds of North America*, No. 506, Philadelphia, PA.
- England, A. S., M. J. Bechard, and C. S. Houston. 1997. Swainson's Hawk (*Buteo swainsoni*). In *The Birds of North America*, No. 265 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Marschalek, D. 2001. Potential quino checkerspot butterfly (*Euphydryas editha quino*) habitat at Rancho Jamul Ecological Reserve. Prepared for California Department of Fish and Game. 4pp.
- Marschalek, D. 2001. Insects in the DFG lands collection. Prepared for the Prepared for California Department of Fish and Game. 10 pp.
- Reiser, C. H. 1994. Rare Plants of San Diego County. Aquafir Press, Imperial Beach, CA.
- Unitt, P. 2004. San Diego County bird atlas. San Diego Natural History Museum and Ibis Publishing Company, San Diego.
- U.S. Fish and Wildlife Service (USFWS) 1993. Endangered and threatened wildlife and plants: Special rule concerning take of the threatened coastal California Gnatcatcher. Final Rule. Federal Register 58: 65088-65096.
- USFWS, 1994. Endangered and threatened wildlife and plants: Determination of endangered status for the arroyo southwestern toad. Final Rule. Federal Register, 59(241).
- USFWS, 2002a. Endangered and Threatened Wildlife and Plants: Determination of Endangered Status from *Ambrosia pumila* (San Diego Ambrosia) from Southern California. Final Rule. Federal Register, 67(127).
- USFWS, 2002b. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Quino Checkerspot Butterfly (*Euphydryas editha quino*); Final Rule. Federal Register, 67(72).

Appendix G

Native American Contact List (confidential)

Appendix H

Table 3-5, MSCP Subarea Plan: Species Evaluated for MSCP Coverage

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
ANIMALS					
Invertebrates					
<i>Euphydryas editha quino</i> Quino checkerspot butterfly FE/	Unknown conservation level and lack of assurances that Plan will protect preferred habitat (mesa tops/grassland) and connection to known source populations, therefore, not covered by the Plan.				NO
<i>Euphyes vestris harbisoni</i> Harbison's dun skipper FSC*/	Unknown conservation level and therefore not covered by the Plan based on insufficient distribution and life history data.				NO
<i>Lycaena hermes</i> Hermes copper butterfly FSC*/	Unknown conservation level and therefore not covered by the Plan based on insufficient distribution and life history data.				NO
<i>Mitoura thornei</i> Thorne's hairstreak butterfly FSC*/	98% of Tecate cypress forest (larval host plant)	2% of Tecate cypress forest	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED This species will be covered by the MSCP because 98% of the major populations of its larval host plant, Tecate cypress, will be conserved. Most of the Tecate cypress forest occurs on BLM lands. Conditions: Area-specific management directives must manage for the host species (Tecate cypress). ⁴ Management measures to accomplish this may include prescribed fire.					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Panoquina errans</i> Salt marsh skipper FSC*/	93% of salt marsh habitat (1,700± acres)	7% of salt marsh habitat (120± acres) may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED This species will be covered by the MSCP because 93% of its potential habitat will be conserved. Conditions: Area-specific management directives must include measures to: (1) control exotic weeds and invertebrate predators, where appropriate, and (2) control access to saltmarsh habitat. ⁴					
<i>Branchinecta sandiegoensis</i> San Diego fairy shrimp FE/	88% of vernal pool habitat	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives (wetlands)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) will be conserved. Federal and local wetland regulations will provide additional protection for vernal pool habitats. The Otay Ranch project RMP and GDP require protection for vernal pools with sensitive species.</p> <p>Notes: Additional important habitat for this species occurs on military lands (Miramar) and is not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Streptocephalus woottoni</i> Riverside fairy shrimp FE/	88% of vernal pool habitat	12% of vernal pool habitat may be impacted, but this habitat is subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives (wetlands)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 88% of its potential habitat (vernal pool habitat) will be conserved. Federal and local wetland regulations will provide additional protection for vernal pool habitats. The Otay Ranch project RMP and GDP require protection for vernal pools with sensitive species.</p> <p>Notes: Additional important habitat for this species occurs on military lands (Miramar) and is not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Reptiles and Amphibians					
<i>Bufo microscaphus californicus</i> Arroyo southwestern toad FE/SSC	All known locations (Cottonwood Creek in Marron Valley, San Vicente Creek and Santa Ysabel Creek in San Pasqual Valley, Sweetwater River, and Otay River), 78% riparian wetland areas in suitable habitat	Upland habitats adjacent to riparian wetlands (potential habitat) in un- determined status areas in Sloan Canyon - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Site Specific (7 locations) and Management Plans/ Directives	YES
DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED					
<p>This species will be covered by the MSCP because the MHPA preserves all known locations, and 90-95% of the upland habitats within the Marron Valley area will be conserved. Impacts to upland habitats within 1 km of riparian corridors within the MHPA will be minimized during project review by CDFG and USFWS. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Notes: Important habitat areas include the San Diego River below El Capitan Reservoir, San Vicente Creek between Sweetwater Reservoir and Loveland Reservoir, Dulzura Creek, San Pasqual Valley from Lake Hodges to Boden Canyon, Otay River, Jamul Creek, Cedar Creek, and Sycamore Creek.</p> <p>Conditions: Area-specific management directives must address the maintenance of arroyo toad through control of nonnative predators, protection and maintenance of sufficient suitable low-gradient sandy stream habitat (including appropriate water quality) to meet breeding requirements, and preservation of sheltering and foraging habitat within 1 km of occupied breeding habitat within preserve lands. Area-specific management directives must include measures to control human impacts to the species within the preserve (e.g., public education, patrol, etc.).¹ Take authorization holders must minimize impacts to upland habitats that are: within the MHPA and are within 1 km of riparian habitat that supports or is likely to support arroyo toad.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Rana aurora draytoni</i> California red-legged frog FT/SSC	72% of riparian habitats and freshwater marsh (9,500± acres)	28% of riparian habitats and freshwater marsh (3,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is believed to be extirpated from the county. Although unlikely, additional survey effort may detect red-legged frog. Therefore, this species will be covered by the MSCP because 70% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must provide for management of any new discovered populations within the preserve.⁴</p>					
<i>Clemmys marmorata pallida</i> Southwestern pond turtle FSC*/SSC	72% of riparian habitats and freshwater marsh (9,501± acres)	28% of riparian habitats and freshwater marsh (3,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 72% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Maintain and manage areas with 1500 feet around known locations within preserve lands for the species. Within this impact avoidance area, human impacts will be minimized, non-native species detrimental to pond turtles will be controlled/removed, and habitat restoration/enhancement measures will be implemented.</p>					
<i>Cnemidophorus hyperythrus</i> <i>beldingi</i> Orange-throated whiptail PSC*/SSC	59% of potential habitat (129,600± acres) - 64% of coastal sage scrub, 60% of maritime succulent scrub, 54% of chaparral, 67% of southern maritime chaparral, 44% of coastal sage/chaparral - 62% of known point occurrences	41% of potential habitat (89,800± acres) - 38% of known point occurrences	Preserve design/landscape level	Monitoring Plan - Site Specific (pit traps at 12 locations)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 59% of its potential habitat and 62% of known point occurrences will be conserved. Habitat linkages between large blocks of protected lands are conserved in a functional manner. Monitoring of populations and adaptive management of preserves will occur as a result of plan implementation.

Notes: This species also occurs extensively on military lands.

Conditions: Area-specific management directives must address edge effects.⁴

<i>Phrynosoma coronatum blainvillei</i> San Diego horned lizard FSC*/SSC	60% of potential habitat (132,000± acres) - 64% of coastal sage scrub, 54% of chaparral, 44% of coastal sage/chaparral, 80% of riparian scrub - 63% of known point occurrences	40% of potential habitat (89,700± acres) - 37% of known point occurrences	Preserve design/landscape level	Monitoring Plan - Site Specific (pit traps at 12 locations)	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 60% of its potential habitat and 63% of known point occurrences will be conserved. Habitat linkages between large blocks of protected lands are conserved in a functional manner. Monitoring of populations and adaptive management of preserves will occur as a result of plan implementation.

Conditions: Area-specific management directives must include specific measures to maintain native ant species, discourage the Argentine ant, and protect against detrimental edge effects to this species.⁴

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Birds					
<i>Pelecanus occidentalis californicus</i> California brown pelican FE/CE	91% of roosting and foraging habitat (2,900± acres) - 93% of southern coastal saltmarsh, 88% of natural flood channel, 90-95% of beach outside of intensively used recreational beaches	9% of roosting and foraging habitat (270± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 91% of roosting and foraging habitat within the MSCP Plan area will be conserved. No new development of beaches is authorized which will result in 90-95% protection of beach habitat that is outside of intensively used beach areas.</p> <p>Notes: Most of the important roosting and foraging habitat occurs on military lands and waters under Port Authority jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. This species is a common to very common non-breeding visitor which uses mud flats, piers, jetties, etc. to roost, and it forages primarily in coastal ocean waters and San Diego Bay.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Egretta rufescens</i> Reddish egret FSC*/	92% of potential habitat (2,700± acres)- 93% of southern coastal saltmarsh, 99% of saltpan, 88% of natural flood channel	8% of potential habitat (230± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 90% of its potential habitat will be conserved.</p> <p>Notes: Additional important habitat occurs in waters under Port Authority and military jurisdiction which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. This species forages in shallow lagoons, mud flats, tidal channels, and salt marsh. This species is a rare visitor in fall and winter and a casual visitor in spring and summer but does not nest in San Diego County.</p>					
<i>Plegadis chihi</i> White-faced ibis FSC*/SSC	80% of potential habitat (1,200± acres) - 68% of freshwater marsh, 88% of natural flood channel; additionally 1,800± acres of agricultural land will be conserved	20% of potential habitat (300± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 78% of its potential habitat will be conserved. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. The preserve management plan for the City of San Diego cornerstone lands must include protection and management of potential nesting habitat at Lake Hodges.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Branta canadensis</i> Canada goose none	8,200± acres of potential habitat	1,100± acres of potential habitat - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>Although not considered sensitive, this species has aesthetic and intrinsic values and is a regulated game species, thereby being an important species to protect. This species will be covered by the MSCP because 8,200± acres of its potential habitat will be conserved, including open water areas for loafing. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Haliaeetus leucocephalus</i> Bald eagle FT/CE	89% of potential foraging habitat (wetlands, 5,719± acres), 68% of freshwater marsh, 92% of open water. In addition, foraging opportunities on 100,000+ acres will be conserved.	11% of potential foraging habitat (wetlands, 692± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 89% of its potential foraging habitat (open water and freshwater marsh) will be conserved. Bald eagles are a rare winter visitor which require perching and roosting sites adjacent to open water and marshes. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<i>Circus cyaneus</i> Northern harrier /SSC	42% of potential nesting habitat (12,000± acres) - 93% of saltmarsh, 68% of freshwater marsh, and 38% of grasslands - 85,000± acres of potential foraging habitat	58% of potential nesting habitat (16,300± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan - Habitat Based and Management Plans/Directives (nest sites)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species is an uncommon migrant, winter visitor, and rare summer resident/breeder. This species will be covered by the MSCP because 42% of its potential nesting habitat and 85,000± acres of its potential foraging habitat will be conserved. The plan will not adversely affect the species' long-term survival.

Notes: Harriers tolerate patchiness in their habitat, exhibit nest area fidelity, and forage within 4 miles of their nests. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Active nesting areas include:

Tijuana River Valley - The City of San Diego Subarea Plan includes conservation of two known nesting sites in the Tijuana River Valley and maintenance of some agricultural lands (available for foraging harriers) within the Tijuana River Valley Regional Park. The Tijuana National Estuarine Sanctuary will continue to enhance marshlands and manage for nesting harriers. Some existing grasslands and agricultural lands at the outer limits of the foraging distance for nesting harriers will be developed. With the addition of over 4,000 acres of agricultural and disturbed lands to the City of San Diego's preserve (in comparison with the March 1995 preserve design), adequate foraging areas within this area are conserved. Food production for harriers on preserve lands can be enhanced.

South San Diego Bay/Sweetwater Marsh - The City of San Diego Subarea Plan includes conservation of one known nesting site in the Sweetwater Marsh area. All nesting and foraging habitat within 4 miles of the known nesting site will be conserved. Upland habitat enhancement opportunities exist at the D Street fill area.

Proctor Valley - Proctor Valley includes a historical nesting location (1970s). Over 80% of the Proctor Valley area will be conserved, with most of the development occurring in the upper portion of the valley, away from the more likely nesting areas.

Conditions: Area-specific management directives must: (1) manage agricultural and disturbed lands (which become part of the preserve) within 4 miles of nesting habitat to provide foraging habitat; (2) include an impact avoidance area (900 feet or maximum possible within the preserve) around active nests; and (3) include measures for maintaining winter foraging habitat in preserve areas in Proctor Valley, around Sweetwater Reservoir, San Miguel Ranch, Otay Ranch east of Wueste Road, Lake Hodges, and San Pasqual Valley. The preserve management coordination group shall coordinate efforts to manage for wintering northern harriers' foraging habitat within the MSCP preserve.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Accipiter cooperii</i> Cooper's hawk /SSC	59% of potential foraging habitat (133,400± acres) (47% of oak woodland, 58% of oak riparian, 64% of coastal sage scrub, 54% of chaparral, 44% of coastal sage scrub/chaparral - 57% of known localities) and 52% (5,705± acres) of potential nesting habitat (58% of oak riparian and 47% of oak woodland)	41% of potential foraging (93,900± acres) and 48% of potential nesting habitat (5,200± acres)	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives (site-specific nest territories)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 59% of potential foraging habitat, 52% of potential nesting habitat, and 57% of known occurrences will be conserved.</p> <p>Conditions: In the design of future projects within the Metro-Lakeside-Jamul segment, preserve areas shall conserve patches of oak woodland and oak riparian forest of adequate size for nesting and foraging habitat. Area-specific management directives must include 300-foot impact avoidance areas around active nests and minimization of disturbance in oak woodlands and oak riparian forests.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Buteo swainsoni</i> Swainson's hawk /CT	22% of foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of foraging habitat (42,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based (10 grassland locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is an extremely rare visitor during migration which forages in grasslands and agricultural fields. This species will be covered by the MSCP because more than 11,000 acres of potential foraging habitat will be conserved.</p> <p>Notes: The plan will not adversely affect the <u>species</u>' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. This species is a rare migrant through the area.</p>					
<i>Buteo regalis</i> Ferruginous hawk FSC*/SSC	22% of foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of foraging habitat (42,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based (10 grassland locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered because 11,600± acres of potential foraging habitat will be conserved. This species is an uncommon winter visitor which forages in grasslands and agricultural fields.</p> <p>Notes: The plan will not adversely affect the <u>species</u>' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. This species is not known to nest within the MSCP study area.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Aquila chrysaetos</i> Golden eagle BEPA/SSC	53% of potential foraging/nesting habitat (coastal sage scrub, chaparral, grassland and oak woodland) (139,000+ acres) - large blocks of habitat conserved in the eastern portion of the plan area where active nesting territories exist. Of the 11 active nesting territories (based on information from the Golden Eagle Survey Project, San Diego) which are fully or partially within the MSCP plan area, 7 nesting territories should remain viable.	Viability of 4 of the 11 active nesting territories (partially or fully within the plan area)	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives (site-specific nest territories)	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 53% of potential foraging and nesting habitat will be conserved. Local populations are not critical to, and the plan will not adversely affect, the species' long-term survival.

Notes: Fourteen active nesting territories occur primarily outside of the MSCP area (east and northeast of the plan area). Plans developed for these areas should include measures to conserve adequate habitat to maintain their viability. The following is an analysis of the plan's effects on each nesting territory within the MSCP study area:

1. Rancho San Diego- development under the plan will result in <10% loss of habitat in the nesting territory; nesting territory should remain viable.
2. East Otay Mountain- development under the plan will result in <5% loss of habitat in the nesting territory; nesting territory should remain viable.
3. Sequan Peak- between 30% and 40% of the habitat in the nesting territory could be developed; the nesting territory may not remain viable, but the steepness of the areas that could be developed may preclude enough development to keep the territory viable.
4. Loveland Reservoir- development under the plan will result in <20% loss of habitat in the nesting territory; nesting territory should remain viable.
5. Lake Jennings- between 40% and 60% of the habitat in the nesting territory could be developed under the plan; the nesting territory may not remain viable.
6. El Capitan- development under the plan will result in <15% loss of habitat within the nesting territory; the territory should remain viable.
7. San Vicente Reservoir- development under the plan will result in <30% of the high quality golden eagle habitat being developed, although low quality habitat (steep chaparral) could be developed, resulting in greater habitat loss within the nesting territory (although high density development is not likely to occur because of the steep slopes); the nesting territory may not be viable.
- 8 and 9. San Pasqual (two nesting territories)- development under the plan will result in <20% loss of habitat in the nesting territory; both nesting territories should remain viable.
10. Santee- development under the plan could result in 30%-40% loss of habitat in the nesting territory; nesting territory may not remain viable, although a significant amount of foraging habitat (Miramar and Mission Trails) occurs just outside of the territory and within normal foraging distances.
11. Lake Hodges- development under the plan will result in <20% loss of habitat in the nesting territory; nesting territory should remain viable.

Conditions: Area-specific management directives for areas with nest sites must include measures to avoid human disturbance while the nest is active, including establishing a 4,000-foot disturbance avoidance area within preserve lands.⁴ Area-specific management directives must also include monitoring of nest sites to determine use/success.

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Falco peregrinus anatum</i> American peregrine falcon FE/CE	61% of historic nesting sites - 58% of foraging habitat (89,400± acres) - 93% southern coastal saltmarsh, 99% of saltpan, 68% of freshwater marsh, 92% of open water, 88% of natural flood channel, 64% of coastal sage scrub, 38% of grassland	39% of foraging habitat (57,000± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because more than 89,000 acres of potential foraging habitat will be conserved.</p> <p>Notes: This species has very low population numbers in the county, being primarily a rare fall and winter visitor. All three nest sites occur outside of the MHPA: one on Coronado Bridge, one on a crane in Port Authority jurisdiction, and one on Pt. Loma federal lands. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<i>Rallus longirostris levipes</i> Light-footed clapper rail FE/CE	93% of potential habitat (1,700± acres of southern coastal saltmarsh)	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Site-specific preserve design and special measures/management	Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its habitat will be conserved.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand) which are not included as part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include active management of wetlands to ensure a healthy tidal saltmarsh environment and specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Charadrius alexandrinus nivosus</i> Western snowy plover FT/SSC	93% of potential habitat (650± acres) - 99% of saltpan, 90-95% of beach outside of intensively used recreational beaches	7% of potential habitat (46± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved. All breeding activity of western snowy plovers in the county occurs in saltpan habitat. No new development of beaches is authorized, which will result in 90-95% conservation of beach habitat that is outside of intensively used beach areas.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during the reproductive season and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Charadrius montanus</i> Mountain plover C/SSC	22% of potential foraging habitat (11,600± acres) - 38% of grassland, 6% of agricultural fields	78% of potential foraging habitat (41,100± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because over 11,000 acres of potential foraging habitat will be conserved. The plan will not adversely affect the <u>species</u>' long-term survival.</p> <p>Notes: This species is an uncommon winter visitor (primarily in the Tijuana River Valley) that forages in grasslands and agricultural fields. The MSCP conservation requirement for the Tijuana River Valley area is primarily 94%, with a small area identified as 75%.</p> <p>Conditions: Area-specific management directives for the Tijuana River Valley should specifically address the habitat requirements for this species.⁴</p>					
<i>Numenius americanus</i> Long-billed curlew FSC*/SSC	24% of potential foraging habitat (13,500± acres) - 93% of southern coastal saltmarsh, 99% of saltpan, 38% of grassland, 6% of agricultural fields	76% of potential foraging habitat (42,800± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is a fairly common migrant and winter visitor.</p> <p>Notes: This species will be covered by the MSCP because more than 13,500 acres of potential foraging habitat will be conserved. The plan will not adversely affect the <u>species'</u> long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas. Additional habitat occurs on military lands (Silver Strand, San Diego Bay) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p>					
<i>Sterna elegans</i> Elegant tern FSC*/SSC	93% of potential habitat (650± acres) - 99% of saltpan, 90-95% of beach outside of intensively used recreational beaches	7% of potential habitat (46± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved.</p> <p>Notes: All breeding activity of elegant terns in the county occurs in saltpan habitat. No new development of beaches is authorized, which will result in 90-95% protection of beach habitat that is outside of intensively used beach areas. Additional important foraging habitat (bay waters) is under the jurisdiction of the Port Authority and military and is not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Sterna antillarum browni</i> California least tern FE/CE	93% of potential habitat (650+ acres) -99% of saltpan, 90- 95% of beach outside of intensively used recreational beaches	7% of potential habitat (46+ acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% of its potential habitat will be conserved.</p> <p>Notes: No new development of beaches is authorized, which will result in 90-95% conservation of beach habitat that is outside of intensively used beach areas. Additional important breeding habitat occurs on military lands (North Beach, Silver Strand, Naval Training Center) and is not part of the MSCP. Additional important foraging habitat (bay waters) is under the jurisdiction of the Port Authority and the military and is not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include protection of nesting sites from human disturbance during reproductive season, predator control, and specific measures to protect against detrimental edge effects to this species.⁴ Incidental take (during the breeding season) associated with maintenance/removal of dikes/levees, beach maintenance/enhancement is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Speotyto cunicularia hypugaea</i> Burrowing owl FSC*/SSC	4 known locations (Spring Canyon, northeast of Brown Field, Lake Hodges), 8 known locations within major amendment area (South County segment), 4,000± acres of known habitat	8 known locations (Otay Ranch, San Pasqual Valley, and South County at border), 5,000± acres of known habitat	Site-specific preserve design and special measures/management	Monitoring Plan (10 grassland locations) and Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 5,770± acres of potential and 4,000± acres of known suitable habitat (grassland vegetation community) will be conserved, including portions of Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4.</p> <p>Notes: Habitat enhancement opportunities for the species occur in the Spring Canyon, San Pasqual Valley, Lake Hodges, Otay Mesa northeast of Brown Field, Otay Ranch, Otay River Valley, and Future Urbanizing Area 4. The wildlife agencies will enhance and manage lands within their ownership to allow for relocation of burrowing owls, particularly in conjunction with burrowing owl removal programs in areas where their presence conflicts with nesting of California least terns. The wildlife agencies will attempt to achieve additional conservation of occupied burrowing owl habitat or habitat suitable for restoration using state and federal acquisition resources. Persistence of the species in San Diego County is also dependent on adequate conservation of known concentrations in the Santa Maria Valley in the vicinity of Ramona.</p> <p>Conditions: During the environmental analysis of proposed projects, burrowing owl surveys (using appropriate protocols) must be conducted in suitable habitat to determine if this species is present and the location of active burrows. If burrowing owls are detected, the following mitigation measures must be implemented: within the MHPA, impacts must be avoided; outside of the MHPA, impacts to the species must be avoided to the maximum extent practicable; any impacted individuals must be relocated out of the impact area using passive or active methodologies approved by the wildlife agencies; mitigation for impacts to occupied habitat (at the subarea plan specified ratio) must be through the conservation of occupied burrowing owl habitat or conservation of lands appropriate for restoration, management, and enhancement of burrowing owl nesting and foraging requirements.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>Management plans/directives must include: enhancement of known, historical, and potential burrowing owl habitat and management for ground squirrels (the primary excavator of burrowing owl burrows). Enhancement measures may include creation of artificial burrows and vegetation management to enhance foraging habitat. Management plans must also include: monitoring of burrowing owl nest sites to determine use and nesting success; predator control; and establishing a 300 foot-wide impact avoidance area (within the preserve) around occupied burrows.⁴</p> <p>Eight known burrowing owl locations occur within major amendment areas of the South County Segment of the County Subarea Plan, and the conservation of occupied burrowing owl habitat must be one of the primary factors in preserve design during the permit amendment process.</p>					
<i>Empidonax traillii extimus</i> Southwestern willow flycatcher FE/CE	76% of potential habitat (4,900± acres) - 93% of riparian woodland, 80% of riparian scrub - 88% of known localities	24% of potential habitat (1,400± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/ management	Monitoring Plan -Habitat Based and Area-specific Management Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 4,900± acres (76%) of potential habitat will be conserved.</p> <p>Conditions: Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions must require monitoring and control of cowbirds. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and May 1 (i.e., outside of the nesting period).</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Campylorhynchus brunneiicapillus couesi</i> Coastal cactus wren FSC*/SSC	60% of maritime succulent scrub habitat in large contiguous blocks (850± acres)	40% of maritime succulent scrub habitat in small isolated blocks (580± acres)	Site-specific preserve design and special measures/management	Monitoring Plan - Site Specific (31 locations) and Management Plans/ Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species is covered because four of five major populations are conserved, including populations at Lake Hodges/San Pasqual Valley, Lake Jennings, South Sweetwater Reservoir/San Miguel Ranch, and Salt Creek/Otay Mesa, and 60% (850 ± acres) of potential habitat will be conserved, allowing for expansion of the populations with management.</p> <p>Notes: This species also uses other habitat types (coastal sage scrub and chaparral) containing cactus patches. Small clusters of birds at Black Mountain and Spring Valley will also be conserved. Conservation of the Salt Creek population is critical to the persistence of the species in San Diego County, and it would only be conserved under the City of Chula Vista's "Modified GDP B" alternative. The existing distribution of cactus wrens in the MSCP Plan area has been greatly reduced, and restoration of suitable cactus wren habitat and its management are important components of the MSCP Plan. Significant opportunities for restoration within the MHPA occur on Otay Ranch, Spring Canyon (and adjacent areas), Denny Canyon, San Miguel Ranch, Lake Hodges/San Pasqual Valley, Otay River Valley, and Santee/Lake Jennings. The participating jurisdictions should seek OHV funds for restoration, as much of these areas has been heavily impacted by OHVs. The City of San Diego already has acquired habitat in Spring Canyon as mitigation. The City of San Diego and the wildlife agencies have agreed to make restoration of maritime succulent scrub in Spring Canyon a high priority. The USFWS also will make restoration of maritime succulent scrub a high priority on any lands it acquires in Spring Canyon.</p> <p>Conditions: The restoration of maritime succulent scrub habitat as specified in the Otay Ranch RMP and GDP must occur at the specified 1:1 ratio. Area-specific management directives must include restoration of maritime succulent scrub habitat, including propagation of cactus patches, active/adaptive management of cactus wren habitat, monitoring of populations within preserves, and specific measures to reduce or eliminate detrimental edge effects.⁴ No clearing of occupied habitat may occur from the period February 15 through August 15.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Poliptila californica californica</i> California gnatcatcher FT/SSC	73,300± acres of coastal sage scrub and interdigitated habitats in an interconnected network of preserves	67,300± acres of coastal sage scrub and interdigitated habitats	Preserve design/landscape level	Area-specific Management Directives (31 locations)	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because: over 73,300 acres of existing and potential gnatcatcher habitat will be conserved and linked together; over 81% of the core areas where the species occurs (Otay, San Miguel, Mission Trails, Santee, Kearny Mesa, Poway, San Pasqual, and Lake Hodges) will be conserved; and 65% (1,819 of 2,814) of the known locations will be conserved.</p> <p>Notes: 68% (57,874 acres) of habitat supporting core gnatcatcher populations, 70% (30,273 acres) of Very High value and 62% High value (4,609 acres) gnatcatcher coastal sage scrub habitat will be conserved. Critical habitat linkages between core areas will be conserved in a functional manner, with a minimum of 75% of the habitat within identified linkages conserved. Populations of this species also occur on military lands which are not part of the MSCP.</p> <p>Conditions: Area-specific management directives must include measures to reduce edge effects and minimize disturbance during the nesting period, fire protection measures to reduce the potential for habitat degradation due to unplanned fire, and management measures to maintain or improve habitat quality including vegetation structure.⁴ No clearing of occupied habitat within the cities' MHPAs and within the County's Biological Resource Core Areas may occur between March 1 and August 15.</p>					
<i>Sialia mexicana</i> Western bluebird none	59% of potential habitat (15,500± acres) - 58% of oak riparian forest, 47% of oak woodland, 38% of grassland	41% of potential habitat (12,100± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because over 15,000 acres of habitat will be conserved.

Notes: Persistence of this species in San Diego County depends largely on conservation of existing large populations on public lands east of the MSCP Plan area.

<i>Vireo bellii pusillus</i> Least Bell's vireo FE/CE	81% of potential habitat (1,700± acres) - 93% of riparian woodland, 58% of oak riparian forest - 82-100% of major populations	19% of potential habitat (400± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level with site-specific consideration(s)/management	Monitoring Plan - Habitat Based and Management Plans/Directives	YES
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DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED

This species will be covered by the MSCP because 1,700± acres (81%) of potential habitat will be conserved.

Conditions: Jurisdictions will require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)1 guidelines into the project. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments, adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, to monitor and control cowbirds. Area-specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species.⁴ Any clearing of occupied habitat must occur between September 15 and March 15 (i.e., outside of the nesting period).

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Aimophila ruficeps canescens</i> California rufous-crowned sparrow FSC*/SSC	61% of potential habitat (73,600± acres) - 64% of coastal sage scrub, 60% of maritime succulent scrub, 44% of coastal sage/chaparral - 71% of mapped localities	39% of potential habitat (46,600± acres) - 29% of mapped localities	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 61% (73,600± acres) of potential habitat (including 71% of mapped localities) will be conserved.</p> <p>Notes: This species is tolerant of edge effects, small habitat patches, low shrub volume, and short-term habitat disturbance.</p> <p>Conditions: Area-specific management directives must include maintenance of dynamic processes, such as fire, to perpetuate some open phases of coastal sage scrub with herbaceous components.⁴</p>					
<i>Passerculus sandwichensis beldingi</i> Belding's Savannah sparrow FSC*/CE	93% of potential habitat (1,700± acres of southern coastal saltmarsh) - 71% of mapped localities	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based and Management Plans/Directives	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% (1,700± acres) of potential habitat (including 71% of mapped localities) will be conserved, and the remaining acres (120±) are subject to no net loss of value and function.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand, North Island, etc.) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					
<i>Passerculus sandwichensis</i> <i>rostratus</i> Large-billed Savannah sparrow FSC*/SSC	93% of potential habitat (1,700± acres of southern coastal saltmarsh) - 50% of mapped localities	7% of potential habitat (120± acres) - wetlands are subject to no net loss of function and value and 404(b)1 guidelines	Preserve design/landscape level	Monitoring Plan - Habitat Based and Management Plans/Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 93% (1,700± acres) of potential habitat (including 50% of mapped localities) will be conserved, and the remaining acres (120±) are subject to no net loss of value and function.</p> <p>Notes: Additional important habitat is found on military lands (Silver Strand, North Island, etc.) which are not part of the MSCP. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Ammodramus savannarum</i> Grasshopper sparrow none	This species will not be covered by the MSCP because insufficient information is available to determine if adequate habitat is conserved.				NO
<i>Agelaius tricolor</i> Tricolored blackbird FSC*/SSC	77% of breeding habitat (4,800± acres) - 68% of freshwater marsh, 80% of riparian scrub - 59% of known localities	23% of breeding habitat (1,400± acres)	Preserve design/landscape level	Management Plans/Directives	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 77% of potential habitat (including 59% of mapped localities) will be conserved. Breeding colonies move from season to season, and with a goal of no net loss of wetlands, most of the suitable breeding sites will continue to be available. This species forages in grasslands and agricultural fields near its breeding habitat. Foraging habitat near the known nesting colonies will be conserved at 70-100%. Additionally, foraging opportunities will continue to be provided and created in turfed areas such as golf courses and cemeteries. Jurisdictions will require surveys during the CEQA review process in suitable breeding habitat proposed to be impacted. Participating jurisdictions' guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands.</p> <p>Conditions: Project approvals must require avoidance of active nesting areas during the breeding season. Area-specific management directives must include measures to avoid impacts to breeding colonies and specific measures to protect against detrimental edge effects to this species.⁴</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
Mammals					
<i>Corynorhinus townsendii</i> <i>pallascens</i> Townsend's western big-eared bat FSC*/SSC	Unknown/Insufficient data on distribution and life history.				NO
<i>Eumops perotis californicus</i> California mastiff bat FSC*/SSC	Unknown/Insufficient data on distribution and life history.				NO
<i>Perognathus longimembris</i> <i>pacificus</i> Pacific pocket mouse FE/SSC	Unknown/Only 3 to 4 known populations in Southern California. Insufficient data on distribution and life history.				NO
<i>Taxidea taxus</i> American badger /SSC	58% of potential habitat (82,500± acres) - 38% of grassland, 64% of coastal sage scrub, 44% of coastal sage/chaparral	42% of potential habitat (58,300± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based	YES

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 82,500± acres (58%) of its potential habitat will be conserved.</p> <p>Notes: This species has a wide range, and the plan will not adversely affect the <u>species</u>' long-term survival. Additional conservation of grassland habitats should be a priority and one of the primary factors in the design of preserves in the major amendment areas.</p> <p>Conditions: Area-specific management directives must include measures to avoid direct human impacts to this species if it is present or likely to be present.⁴</p>					
<i>Felis concolor</i> Mountain lion /protected	81% of core areas 5, 6, 7, 8, 9, 11, and 12 (105,000± acres) - connected by linkages C, D, N	19% of core areas (24,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based and Corridor Sites	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 81% of the core areas (105,000± acres) that support its habitat will be conserved.</p> <p>Notes: Although not considered sensitive, this species has aesthetic and intrinsic values, thereby being an important species to protect. This species has a wide range, and the plan will not adversely affect the <u>species</u>' long-term survival. The criteria used to define core and linkage areas involve maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem will be maintained. An extensive monitoring program will be implemented by the wildlife agencies to detect unanticipated changes in ecosystem function and allow for adaptive management of the preserve system. Specific design criteria for linkages and road crossings/undercrossings are included in subarea plans.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

SCIENTIFIC NAME COMMON NAME STATUS (Federal/State) ¹	CONSERVED ² (BASED ON THE MSCP PLAN)	POTENTIALLY IMPACTED/ DEVELOPED (BASED ON THE MSCP PLAN)	GENERAL BASIS FOR ANALYSIS OF COVERAGE	MONITORING METHOD(S) (MONITORING PLAN AND/OR MANAGEMENT PLANS/ DIRECTIVES)	MEETS STATE & FEDERAL TAKE AUTHORIZATION STANDARDS
<i>Odocoileus hemionus fuliginata</i> Southern mule deer none	81% of core areas 5, 6, 7, 8, 9, 11, and 12 (105,000± acres) - connected by linkages C, D, N	19% of core areas (24,000± acres)	Preserve design/landscape level	Monitoring Plan - Habitat Based and Corridor Sites	YES
<p>DETAILS OF RATIONALE FOR IDENTIFYING SPECIES AS COVERED</p> <p>This species will be covered by the MSCP because 81% of the core areas (105,000± acres) that support its habitat will be conserved.</p> <p>Notes: Although not considered sensitive, this broadly distributed species has aesthetic and intrinsic values, and is the only large native herbivore in the plan area, thereby making it an important species to protect. The criteria used to define core and linkage areas involve maintaining ecosystem function and processes, including large animal movement. Each core area is connected to other core areas or to habitat areas outside of the MSCP either through common boundaries or through linkages. Core areas have multiple connections to help ensure that the balance in the ecosystem will be maintained. An extensive monitoring program will be implemented by the wildlife agencies to detect unanticipated changes in ecosystem function and allow for adaptive management of the preserve system. Specific design criteria for linkages and road crossings/undercrossings are included in subarea plans.</p>					

Table 3-5 (Continued)

SPECIES EVALUATED FOR COVERAGE UNDER THE MSCP

¹ Status (Federal/State)

FE=Federally Endangered

PE=Proposed for federal listing as Endangered

FT=Federally Threatened

PT=Proposed for federal listing as Threatened

C=Candidate for federal listing

FSC* = Federal species of concern; formerly Category 2 or Category 3 candidate for federal listing.

FSC† = Federal species of concern; proposed federal rule to list as Endangered or Threatened has been withdrawn.

Shading indicates federally and state listed species, species proposed for listing, candidate species, and NCCP target species.

BEPA = Bald Eagle Protection Act

CE = State Endangered

CR = State Rare

CT = State Threatened

SSC = State Species of Special Concern

protected = moratorium on hunting

none = no federal or state status

² This column indicates the conservation level for the species. Not all major populations are in the GIS database, i.e., if specific locality data are lacking. In these cases, the percentage of major populations preserved is determined or estimated from the percentage of associated habitat in the MHPA.

³ Measures to conserve population of species on the MSCP Plan's narrow endemic list must be incorporated into the subarea plans that do not have preserve/development areas specifically delineated based on site-specific surveys. The City of San Diego's and the County of San Diego's Subarea Plan areas are primarily where this requirement is applicable, and both subarea plans specify MSCP narrow endemic species conservation measures. Within the City of San Diego's MHPA, populations of MSCP narrow endemic species will be avoided.

The County will conserve MSCP narrow endemic species using a process that: (1) requires avoidance to the maximum extent possible; (2) allows for a maximum 20% encroachment into a population if total avoidance is not possible; and (3) requires mitigation at a 1:1 to 3:1 ratio (in-kind) for impacts if (1) avoidance and (2) minimization of impacts would result in no reasonable use of the property. The County requirements for (1) avoidance, (2) minimization, and (3) mitigation are specifically described in the County's proposed Biological Mitigation Ordinance (BMO).

⁴ Area-specific management directives for preserve areas will include specific guidelines for managing and monitoring covered species and their habitats, including following best management practices. Edge effects may include (but are not limited to) trampling, dumping, vehicular traffic, competition with invasive species, parasitism by cowbirds, predation by domestic animals, noise, collecting, recreational activities, and other human intrusion.

⁵ The County's proposed BMO includes a list of sensitive plant species (Groups A and B) that require special consideration in project design. The County will conserve Groups A and B species using a process that: (1) requires avoidance to the maximum extent possible; (2) allows for a maximum 20% encroachment into a population if total avoidance is not possible; and (3) requires mitigation at a 1:1 to 3:1 ratio (in-kind) for impacts if (1) avoidance and (2) minimization of impacts would result in no reasonable use of the property.

Source: 1996 MSCP GIS database. Military lands excluded from analysis.

Appendix I

Operations and Maintenance Requirements (hours by staff position) to Implement Plan

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologists/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Biological Element																	
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	Use current USGS survey data (USGS 2002 and 2004) as baseline data set.	ongoing	MO		2	24						24
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	a) Conduct focused surveys for vernal pools and vernal pool complexes.	one-time task	MO			8						8
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	b) Conduct ongoing monitoring.	annual	MO		8	8						16
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.1	Survey and Monitor. Conduct surveys to monitor changes in the extent and condition of the wetlands and riparian habitats within RJER over time.	-Conduct annual qualitative surveys to detect any immediate threats to the habitat	3-5 years	MO		8	40						80
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	b) cont.	annual	MN		2	16						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	-Conduct quantitative surveys every three to five years to document changes and trends, and allow timely remediation	annual	MN	2								
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	a) Assess threats. During annual qualitative surveys, note and map areas that are experiencing damage or degradation.	annual	MN									
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	b) Prioritize remediation efforts based on the relative sensitivity of the wetland or riparian type affected, whether a habitat connection is at risk, potential for expansion of the threat, and eminence of damage to habitat.	annual	MN									
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.2	Assess threats and set priorities	c) Identify remediation measures (e.g., signage, installation of split-rail fencing, boulders, or other barriers).	annual	MN		8							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	a) Prepare annual work plan by December for the following year. Include management and restoration tasks, staffing requirements, a funding analysis, and schedule for completion	annual	D	16	16	16	16					
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	b) Adhere to the no-net-loss-of-wetlands standard to satisfy MSCP, state, and federal wetlands policies.	ongoing	MN	1	4							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	c) Manage riparian and wetland vegetation communities for a variety of age classes and structure to provide breeding and foraging habitat for riparian and wetland species. Implement a regular invasive species control program (Bio 1.3)	ongoing	MN	8	8	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	d) Maintain ecological and hydrological processes to support healthy and riparian habitats. Restore natural creek meander.	ongoing	MN	2	2	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	Repair culverts and stream crossings and restore drainage and road surfaces in areas damaged by firefighting activities and post-fire storm runoff (see Bio 1.4)	as needed	SP	2	2		24					
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	f) Maintain bat habitat by providing open, perennial water sources such as creeks or artificial ponds that are not blocked by vegetation or steep walls and by maintaining roosting sites.	ongoing	MN									
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	g) Implement a riparian and wetlands buffer (set-back) of 100 feet or more from the edge of riparian habitat to protect the riparian zone from new development, public use, erosion, hydrological impediments, and non-native species invasions.	as needed	MN	2	8	16	8		24			
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	h) Prohibit livestock access to Jamul and Dulzura Creeks. If livestock will be used to maintain grasslands, provide fencing to protect creek beds and riparian habitat.	ongoing	MN		2							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	i) Encourage the public to use adjacent HCWA for most recreational needs. This will help strike a balance between conservation and serving the recreational needs of the public	ongoing	OU								24	
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) Manage wildlife corridors and habitat linkages.	as needed	MN/LK	2	8		8	40		40		80
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	-Remove fences that may impede wildlife movement and maintain fencing along public roads to protect wildlife from traffic, and to divert them to highway undercrossings.	ongoing	MN/LK	2		24						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont	ongoing	MN/LK	2								
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	-Work with Caltrans to assess the need to construct new or enhance existing structures. If feasible, add new crossings large enough for deer and mountain lions as appropriate.	ongoing	MN/LK		8							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) Identify, maintain and restore connectivity between upland and adjacent wetland habitats.	ongoing	MN/LK									
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont	ongoing	MN/LK	2		16						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	-Ensure that corridors for large mammals and birds are at least 1,000 ft wide. Provide visual continuity (long lines-of-sight) along corridors.	ongoing	MN/LK									

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont Continue to work with other wildlife agencies, such as BLM, USFWS, and USFW to prioritize land acquisition in contiguous blocks adjacent to RJER and HCWA.	ongoing	MN/LK	16	16							
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	k) Evaluate all future management programs for potential impacts to sensitive biological resources and take appropriate steps to avoid and mitigate potential significant impacts.	annual	MN	8	8	8	8					
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) Implement adaptive management strategy: -For each management goal, evaluate the potential to implement pilot studies or experimental design in which multiple management strategies are tested and compared to a control.	annual	MN			8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	j) cont. -Determine and report success criteria (clear and concise objectives) that should be met in order to consider the management task(s) successful.	annual	MN		2	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) cont -Assess habitat integrity, detect changes in species distribution and abundance, and detect effects of management activities, human use, and non-native species using monitoring data.	annual	MN	2	8	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) cont -Review current literature, documents and management plans for management and monitoring protocols and experimental design	annual	MN		2	8						
Bio 1: Habitat	Bio 1.1	Wetlands and Riparian Habitat Management and Monitoring	Manage wetlands and riparian habitat to promote species diversity, genetic flow, and ecological and hydrological function.	Bio 1.1.3	Manage all wetlands and riparian habitats to maintain and enhance existing species and structural diversity	l) cont. -Re-evaluate priorities and management activities based on this assessment.	annual	MN	8	8							
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify wetlands and riparian restoration areas that would support the goals of this LMP. Coordinate efforts with those being conducted in adjacent HCWA.	a) Identify location(s) and quantify acreage for wetlands restoration projects. -Restore riparian habitat that has been invaded by castor bean downstream from Thousand Trails Campground	one-time task	RE	4	26	48	40	160	80	160		320
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify areas where expansion or restoration of existing wetlands or riparian habitat could be conducted and would support the goals of this LMP.	a) cont. -Identify areas for restoration and quantify acreage. Restore riparian habitat to provide nesting, breeding, and foraging habitat for special status species. Coordinate efforts with HCWA	as needed	RE	2	16	32	8	40	16	40		80
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify areas where expansion or restoration of existing wetlands or riparian habitat could be conducted and would support the goals of this LMP.	b) Conduct ongoing monitoring -Conduct annual qualitative surveys to detect any immediate threats to the habitat that might require restoration.	annual	MO		2	24						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.1	Survey and monitor. Identify areas where expansion or restoration of existing wetlands or riparian habitat could be conducted and would support the goals of this LMP.	b) cont. -Conduct quantitative surveys every three to five years, as described in Bio 1.1.1, to identify the areas in need of restoration	3-5 years	MO	2	24	24						48
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.2	Assess threats and set priorities. Evaluate potential benefits of each identified restoration project, and designate each as high, medium, or low priority	a) Prioritize areas to be restored by designating them as "high", "medium", and "low" based on threats, funding, and accessibility.	annual	MN	8	10	16	8					
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.2	Assess threats and set priorities. Evaluate potential benefits of each identified restoration project, and designate each as high, medium, or low priority	b) Evaluate the biological and hydrological function of vernal pools on RJER to determine the suitability for restoration.	annual	MO			8						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	a) Coordinate with Wildlands Inc. regarding the restoration, management, and monitoring of wetland and riparian habitat	annual	RE		2	8						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	b) Identify area(s) to be restored, quantify the acreage, and develop an area specific restoration plan for each area outside of the Wildlands Inc. project areas. These plans should include planting design and specifications, goals, and costs.	annual	RE/D		2	8						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	c) Prepare a vernal pool restoration plan that encompasses whole ecosystem restoration and that incorporates established practices. Prohibit access to vernal pools unless for management and research purposes only.	ongoing	RE/D		2		8	8	8	8		
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	b) cont. -Manually remove exotic plant species (Bio 3.1), and monitor vernal pool hydrology, function, plants and animals on an annual basis during the hydrological phase of the pools	annual	MN/MO			24						48
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	c) cont. -Evaluate the applicability of a vegetation management program to reduce vegetation biomass and improve the hydrological gradient within the vernal pool watershed.	annual	MN		4	16						

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	d) Coordinate restoration planning efforts with the Corps, the USFWS, and the Department's wetlands regulatory branch. Pursue appropriate state and federal permits.	ongoing	MN	2	16							
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	e) Conduct riparian restoration in phases, combined with the removal of exotic species to foster natural recruitment. Replace mature exotic trees with large riparian trees, including coast live oak, sycamores, cottonwoods, and willow species.	as needed	RE	2		16						
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	f) Limit access by fencing restored areas to protect them from impacts due to unauthorized public use (Pub 1.0).	ongoing	MN		2							
Bio 1: Habitat	Bio 1.2	Wetlands and Riparian Habitat Restoration	Restore and enhance wetlands and riparian habitat to foster desired ecological and hydrological function.	Bio 1.2.3	Design for and manage all wetlands and riparian habitat restoration to increase existing species and structural diversity	g) Implement adaptive management. Use monitoring data to assess successional progress of the restored area. Refer to Bio 1.1.3 (k) for additional details.	annual	MN	8	8	8	8					
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.1	Survey and monitor. Conduct periodic surveys to maintain accurate records of the extent and condition of the upland habitats within RJER, and document changes.	a) Conduct periodic surveys: -Conduct annual qualitative surveys to detect any immediate threats to the habitat.	annual	MO	4	36	36						48
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.1	Survey and monitor. Conduct periodic surveys to maintain accurate records of the extent and condition of the upland habitats within RJER, and document changes.	a) cont. -Conduct quantitative surveys every three to five years, as described in Bio 1.1.1	3-5 years	MO	16	52	92						160
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.2	Assess threats and set priorities	a) During general habitat condition surveys, map areas that are becoming damaged or degraded. Issues of concern include adverse edge effects, general habitat degradation, fragmentation, and high fuel loads. (See Bio 1.1.2).	annual	MO			8						
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.2	Assess threats and set priorities	b) Prioritize remediation efforts based on relative sensitivity of the upland habitat affected, whether a habitat conversion is at risk, and potential for expansion of the threat. (See Bio 1.1.2)	annual	MN	2	8							
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.2	Assess threats and set priorities	c) Identify remediation measures such as signage (Pub 7.0); installation of barriers to direct public use away from areas where adverse effects are occurring (Pub 6.0); and fuel reduction programs (see Fire 1.0).	annual	MN	1	4							
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	a) Prepare annual work plan by December of the previous year. (See Bio 1.1.3).	annual	D	16	16	16	16					
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	b) Protect and maintain upland vegetation communities to provide breeding and foraging habitat for native species. Maximize habitat structural diversity. Specific tasks related to the enhancement of upland habitats are given in Bio 1.4.3 below.	ongoing	MN	2	40	40						
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	c) Restore hunting areas from non-native grasslands to native grasslands; remove and replace non-native grasses with native grasses and forbs (Bio 1.4).	ongoing	MN	2	40		8		80			40
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	d) Reduce edge effects and habitat fragmentation by reducing the number of roads and trails in the interior of the reserve. Concentrate roads and trails around the perimeter and CEC.	ongoing	MN		2	16	16	40	40	40		160
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	e) Provide erosion control where necessary to prevent gully or rill formation within uplands.	as needed	MN		2		8	24	24	24		48
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	f) Non-native exotic species removal. Remove individuals of invasive, non-native plant species to reduce the threat of future expansion and enhance habitat for native species (Bio 3.1)	annual	MN	2	24	80	40	80	40	80		160
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	g) Encourage the public to use adjacent HCWA for most recreational needs. This will help strike a balance between conservation and serving the recreational needs of the public	ongoing	OU								40	
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	h) Maintain and enhance wildlife corridors in upland areas. (See Bio 1.1.3).	ongoing	MN/LK		2	8	8					
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	i) Evaluate all future management programs for potential impacts to sensitive biological resources and take appropriate steps to mitigate potential significant impacts.	annual	MN	2	2	8						
Bio 1: Habitat	Bio 1.3	Upland Habitat Management and Monitoring	Conserve and maintain upland habitats in a manner that conserves native regional biological diversity.	Bio 1.3.3	Manage all upland habitats to maintain and enhance existing species and structural diversity or desired condition.	j) Implement adaptive management where necessary and feasible. Refer to Bio 1.1.3 (k) for details.	annual	MN	8	8	8	8					
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where restoration of upland habitats would support the goals of this LMP. Coordinate efforts with those being conducted in adjacent HCWA.	a) Identify location(s) and quantify acreage for upland restoration. -Restore grasslands, including intensive restoration in the northeastern portion of reserve; hunting areas; or closed areas containing grassland.	one-time task	SP	4	24	40	16	40	80	40		40

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Restore coastal sage scrub: two areas in the northeastern portion of the reserve.	ongoing	RE	4	24	40	8		16	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Identify trails to be closed, such as unnecessary trails, including double trails (where two relatively parallel trails lead to the same destination); decommission and/or restore trails to native habitat	ongoing	RE/MO	2	8	24	8			40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Identify and restore highly erodible post-fire areas (Fire 3.0).	as needed	RE/MO	2	2	16			16	16		40
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	a) cont. -Identify and restore habitat for rare, threatened, or endangered species as described in Bio 2.	as needed	MO	2	24	80		40	24	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	b) Conduct ongoing monitoring -Conduct annual qualitative surveys to detect any immediate threats to the habitat that might require restoration.	annual	MO		2	24						48
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.1	Survey and monitor. Identify areas where expansion or restoration of existing upland habitats could be conducted and would support the goals of this LMP.	b) cont. -Conduct quantitative surveys every three to five years, as described in Bio 1.1.1, to identify the areas in need of restoration.	3-5 years	MO	2	4	40						80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.2	Assess threats and set priorities. Evaluate the potential benefits associated with the upland restoration projects identified, then prioritize the projects for implementation.	a) Assess threats and prioritize areas to be restored by designating them as "high," "medium," and "low".	annual	MN	6	18	10						
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	a) Identify area(s) to be restored, quantify the acreage, and develop an area specific restoration plan. (See Bio 1.2.3). Restoration efforts should include the goals listed below.	as needed	RE/D		2	24						
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	b) Restore degraded upland areas to provide increased nesting, breeding, and foraging habitat for special status species and other wildlife	one-time task	RE	2	2	16	80	40	40	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	c) Actively restore and maintain grassland habitat in the valleys and avoid conversion to scrub habitat. -Create a mosaic of tall and short grasses; convert non-native grasslands to native grasslands; use exclusionary fencing to protect newly restored habitat as needed.	ongoing	SP		26	12	16	80	24	40		80
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	c) cont. -Incorporate experimental design (active adaptive management). An experimental approach for restoring disturbed non-native grasslands could evaluate the most effective method for restoring the larger area (see chapter IV text for more detail)	one-time task	MN	2	4	16						
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species.	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	d) Passively restore areas of coastal sage scrub that have been identified -Allow scrub habitat to re-establish itself naturally; conduct invasive exotic species eradication and limit access as necessary.	ongoing	RE	2	2	82	34	124	48	80		240
Bio 1: Habitat	Bio 1.4	Upland Habitat Restoration	Restore and enhance upland habitats in a manner that restores habitat functions and provides opportunities for the expansion or reintroduction of native upland species	Bio 1.4.3	Design and manage all upland habitat restoration to increase existing species and structural diversity.	e) Implement adaptive management. Use monitoring data to assess successional progress of the restored area. Refer to Bio 1.1.3 (k) for additional details	annual	MN	8	8	8	8					
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	a) Qualitative surveys should be conducted annually to detect immediate threats to known populations of listed species within RJER, and generally assess the condition of the population. Surveys should be conducted at the appropriate time of year (e.g., the appropriate blooming period for each species of plant, and breeding season for migratory birds).	annual	MN	6	6	6						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) Conduct protocol -level or other appropriate type of focused surveys every 3-5 years to document species population health, count, and extent, and allow for timely remediation efforts. - Conduct surveys for vernal pool plant species.	3-5 years	MO	2	40	80						

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct surveys for San Diego ambrosia and GPS extent of population.	3 years	MO	4	30	60						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct surveys for Otay tarplant and GPS extent of population.	annual	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused surveys for Quino checkerspot butterfly.	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused (sampling) surveys for fairy shrimp.	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused surveys for least Bell's vireo.	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	b) cont. -Conduct focused surveys for California gnatcatcher	3 years	MO	4	27	53						107
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.1	Survey and monitor. Conduct focused species surveys for all occurring or potentially occurring federally and state listed species.	c) Survey areas of suitable habitat, not currently known to support listed species, to detect new populations of listed species within the property.	3 years	MO		2	40						80
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.2	Assess threats and set priorities	a) Assess threats and set priorities by carrying out tasks outlined in Bio 2.2.2	annual	MN	4	4	4	4					
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	a) Restore and enhance native habitat preferred by rare, threatened, or endangered species known from or with the potential occur at RJER. Refer to habitat restoration goals Bio 1.2 and Bio 1.4. Identify areas to be restored and quantify acreage	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) Conduct the following tasks to manage San Diego ambrosia -Protect populations from edge effects by locating facilities away from occupied areas. Move planned public parking lot to alternate location away from existing San Diego ambrosia populations	as needed	MN	2	2							
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Protect the population with wildlife-friendly fencing to avoid adverse impacts from trampling.	as needed	MN				2	16	16			16
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Conduct an annual weed removal program (e.g., mowing) within the immediate vicinity of the ambrosia population (see Bio 3.1). Do not apply herbicide to avoid harming this endangered species	annual	MN	2	2	16	8			40		80
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Implement dethatching program every three to five years, by raking, hand clearing, and weed-eating the dead remains of the weed species from the previous season. Test other means of thatching (grazing, fire, etc.) through adaptive management and experimental design.	3-5 years	MN			4	2	8				16
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	b) San Diego ambrosia cont. -Review relevant literature regarding genetics, reproduction, and management, and update monitoring plans accordingly.	annual	MN		8	8						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	c) Conduct the following tasks to manage Otay tarplant -Follow the same strategies as outlined for San Diego ambrosia.	as needed	MN			8						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	c) Otay tarplant cont. -Collect seeds and conduct greenhouse propagation if the tarplant populations continue to decline despite management activities, or if it is determined necessary, to maintain the population	as feasible	SP									

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	d) Manage for Quino checkerspot butterfly -Identify location(s), quantify acreage, and restore areas of appropriate habitat structure through revegetation of primary larval host plant species (see Bio 1.4).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	d) Quino checkerspot butterfly cont. -Implement effective fire management program to control fire frequency . See Fire Management Element.	ongoing	MN									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	d) cont. -Evaluate the success of pertinent projects and incorporate successful management strategies into the Quino checkerspot enhancement and restoration effort for RJER	ongoing	MN	4	4	4	4					
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Conduct the following tasks to manage California Gnatcatcher -Identify areas, quantify acreage, and restore areas of appropriate habitat structure through revegetation of disturbed and/or type-converted coastal sage scrub (see Bio 1.4)	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Quino checkerspot butterfly cont. -Implement effective fire management program to control fire frequency (See Fire Management Element).	ongoing	MN									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Quino checkerspot butterfly cont. -Conduct regular cowbird trapping as necessary to protect gnatcatcher nestlings from this brood parasite, see Bio 3.2.3 (e).	as needed	MN			24						256
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) cont. -Control indirect effects of night lighting within occupied vireo habitat by shielding lighting from neighboring properties as feasible, using low-wattage sodium outdoor lighting near occupied habitat, and educating/encouraging the public to do the same	as needed	MN		2	4						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) cont. -Control indirect effects of noise within vireo habitat by keeping noise levels at or below 60 dBA during the breeding season. Avoid the use of noise-generating equipment, and noise-generating public activities as necessary.	as needed	MN		2	4						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	e) Quino checkerspot butterfly cont. -Avoid flushing young or adults from their nest by restricting public recreational and educational activities during the breeding season as necessary.	ongoing	MN			8						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Manage for Least Bell's vireo -Identify locations, quantify acreage, and restore/enhance areas of appropriate habitat structure through invasive species removal and revegetation (see Bio 1.2 and Bio 3.1)	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Conduct regular cowbird trapping as necessary to protect nestlings from this brood parasite. Please see Bio 3.2.3 (e).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Control indirect effects of night lighting within occupied vireo habitat by shielding lighting, using low-wattage sodium outdoor lighting near occupied habitat, and educating the public.	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Control indirect effects of noise within vireo habitat by keeping noise levels at or below 60 dBA during the breeding season. Avoid the use of noise-generating equipment, and noise-generating public activities as necessary.	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Restrict public recreational and educational activities during the breeding season as necessary to avoid flushing young or adult from their nest (see Pub 1.0, 6.0, and 7.0).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	f) Least Bell's vireo cont. -Restrict all trails and public activity within 100 feet of all occupied vireo habitat (see Pub 1.0, 6.0, and 7.0).	as needed	SP									
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	g) Peregrine Falcon. No species specific conservation measures have been identified at this time; review as necessary.	as needed	SP									

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	h) Determine type and level of active management needed wherever new populations of listed species, or additional listed species previously undocumented for RJER, are detected, within 6 months of the detection.	as needed	MN		2	4						
Bio 2: Special Status Species	Bio 2.1	Protect and enhance populations of rare, threatened, and endangered species	Protect, monitor, and enhance populations and preferred habitat of federal and state listed species	Bio 2.1.3	In addition to the management tasks outlined in Bio 2.2, conduct the following general and species-specific management activities as needed	i) Implement adaptive management: use monitoring results to re-evaluate priorities and management activities, as described in Bio 1.1.3 (l).	annual	MN	8	8	8						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.1	Survey and monitor. Conduct periodic sensitive plant and animal species surveys.	a) At appropriate time of year, conduct qualitative surveys every 3-5 years to detect immediate threats to known populations of listed species within RJER, and generally assess the condition of the population.	3-5 years	MO		2	24						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.1	Survey and monitor. Conduct periodic sensitive plant and animal species surveys.	b) Survey target species, including narrow endemic species, vernal pools species, (including indicator plant species and fairy shrimp), migratory birds, bats and other sensitive plant and animal species not covered in Section Bio 2.1.		MO									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.1	Survey and monitor. Conduct periodic sensitive plant and animal species surveys.	c) Monitor wildlife movement, as feasible, within and beyond the reserve using tracking and camera stations as described in USGS (2002). Coordinate these efforts with those conducted for HCWA and other adjacent lands.	ongoing	MO	2	2							
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.2	Assess threats and set priorities.	a) Identify threats to sensitive species. Focus on habitat-specific assemblages, i.e., grassland species. Prioritize areas for species management by designating them as "high," "medium," and "low."	annual	MN	16	16	16						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.2	Assess threats and set priorities.	b) Incorporate these priorities in annual work plan, as outlined in Bio 1.1.3 (a).	annual	D									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	a) Follow MSCP guidelines for Area Specific Management Directives (ASMDs) for MSCP covered species (see Table 3-5 in MSCP Subregional Plan; Appendix H). ASMDs are guidelines for managing and monitoring each covered species and its habitat	ongoing	MN	8	8	8						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	b) Remove non-native predators that may threaten sensitive wildlife species (Bio 3.2). Evaluate different removal methods.	as needed	MN			24	8					48
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	c) Implement invasive plant species eradication measures as needed (Bio 3.1).		MN									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	d) Add structures such as bluebird nest boxes or bat houses as necessary to provide nesting or roosting opportunities for sensitive species.	as needed	SP									
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	e) Evaluate all future management programs for potential impacts to sensitive species and take appropriate steps to mitigate these impacts	as needed	MN		8	8						
Bio 2: Special Status Species	Bio 2.2	Protect/enhance other sensitive biological resources	Protect, monitor, and enhance populations of non-listed special status species and other sensitive biological resources	Bio 2.2.3	Conduct the following management activities as needed.	f) Implement adaptive management. Use monitoring results to re-evaluate priorities and management activities, as described in Bio 1.1.3 (l).	annual	MN	4	4	4	4					
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.1	Identify Species for Potential Reintroduction	a) Conduct habitat inventories using established protocols and guidelines. These habitat classifications can be used to determine the feasibility of reintroduction or recolonization of these species	annual	MO	10	34	168						320
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.1	Identify Species for Potential Reintroduction	b) Assess the following species for reintroduction: burrowing owl, southwestern pond turtle, and arroyo toad.	one-time task	MO									
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	a) Burrowing owl -Create artificial nest burrows and perches near the future interpretive area (old racetrack). Artificial perches are used to provide increased hunting and predator observation sites.	one-time task	SP									
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	a) cont -Assess and manage threat from medium sized predators such as foxes and coyotes.	as needed	SP	2	2	16						
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	b) Southwestern pond turtle -Assess Corral Pit Pond or Main Pond for reintroduction of the pond turtle (USGS 2002).	as needed	SP		4	8						
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	b) cont. -Manage open water habitat for emergent and floating vegetation such as cattails and mats of algae, which are preferred by this species.	as needed	SP		2		16	16				16

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	b) cont. -Conduct eradication program and monitor for non-native predators such as bullfrogs (Bio 3.2).	as needed	SP			40	8			16		16
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	c) Arroyo toad -Assess suitability of riparian and adjacent upland habitat based on characteristics outlined in listings (e.g., Federal Register), critical habitat designation, survey protocol, and/or recovery plan; assess restoration potential.	one-time task	SP		2	24						
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	c) cont. -Conduct ongoing monitoring following the USGS Monitoring Protocol for Arroyo Toad, February 2005. Monitor upland and riparian habitat as well as hydrological regime	as needed	SP			40						80
Bio 2: Special Status Species	Bio 2.3	Species Reintroduction	Provide habitat for, reintroduce, and monitor sensitive species that have been extirpated from the reserve	Bio 2.3.2	Conduct the following general and species-specific management activities. Develop Reintroduction plans based on the best available data	d) Implement adaptive management: Monitor the success of each reintroduction program annually for the first five years, and then every three years thereafter. Refer to Bio 1.1.3 (l)	annual	MN	4	4	4	4					
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.1	Survey and monitor. Conduct surveys for invasive, non-native plant species and monitor the populations on an as-needed basis.	a) Conduct qualitative surveys annually to detect immediate threats from invasive species to known populations of listed species within RJER.	annual	MO	2	16	40						80
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.1	Survey and monitor. Conduct surveys for invasive, non-native plant species and monitor the populations on an as-needed basis.	b) Conduct quantitative surveys (e.g., species density and mapping) should be conducted every three years to document the condition of the invasive species population within and surrounding (500 feet) the target sensitive species.	3 years	MO	2	8	80						160
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.2	Assess threats and set priorities Identify threat of invasive plant species population expansion and associated degradation to native habitat or sensitive species population	a) Identify threats and prioritize areas for invasive plant species management by designating risk as "high," "medium," and "low." -Prioritize occurrences of invasive, non-native plants among or near (within 500 feet of) highly sensitive plant species	annual	MN	4	4	4						
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.2	Assess threats and set priorities Identify threat of invasive plant species population expansion and associated degradation to native habitat or sensitive species population	a) cont. -Quickly eliminate new occurrences of highly invasive plant species so that the population is most manageable. -Prioritize species designated as High by Cal-IPC	annual	MN		6	6						
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.2	Assess threats and set priorities Identify threat of invasive plant species population expansion and associated degradation to native habitat or sensitive species population	b) Incorporate priorities into annual work plan, as outlined in Bio 1.1.3 (a).	annual	RP									
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.3	Manage to control and eliminate populations of invasive non-native plant species	a) Conduct intensive invasive species removal in the disturbed grasslands located in the northeast portion of the reserve, adjacent to SR 94, and along western Dulzura Creek.	one-time task	SP									
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.3	Manage to control and eliminate populations of invasive non-native plant species	b) Coordinate efforts and/or compare results with invasive plant species control programs being conducted elsewhere in the county such as regional Non-Governmental Organizations (NGOs), including CALEPPC.	ongoing	MN	2	2	2	2					
Bio 3: Non-Native Species	Bio 3.1	Control and minimize impacts of invasive, non-native plants	Control for invasive, non-native plant species that may negatively impact native species and habitats on the reserve	Bio 3.1.3	Manage to control and eliminate populations of invasive non-native plant species	c) Implement adaptive management. Use monitoring results to determine the effectiveness of non-native species control methods and protection of sensitive species; adapt management strategies as necessary. Refer to Bio 1.1.3 (l) for additional details	annual	MN									
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.1	Survey and monitor.	Conduct surveys for non-native wildlife species, and monitor as needed.	as needed	MO			40						
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.2	Assess threats and set priorities	Assess threats and set priorities for management actions based on monitoring results. Prioritize goals and tasks based on "high," "medium," and "low."	annual	MN	2	2	2	2					
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	a) Prohibit or remove non-native species in ponds attached to streams or creeks.	ongoing	MN		2							
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	Immediately after wildfire suppression activities, restore roads, fences, trails, and landscape contours to pre-fire conditions and mitigate for any damage. See Bio 1.2 and 1.4.	as needed	SP									
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	c) Monitor for the presence of domestic cats and dogs during wildlife movement surveys, as described in Bio 2.2.1 (c).	as needed	MO		2	16	16	16	16	16	16	32

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	d) Monitor cowbird populations in the reserve and establish trapping stations where cowbirds are found to be a problem.	as needed	MO		2	16						64
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	e) Monitor populations of the European starling and house sparrow in the reserve and install nest boxes for bluebirds, woodpeckers, and other cavity nesters as needed. In addition, create snags from non-native trees that are killed but left standing.	as needed	MO			16						16
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	f) Educate the surrounding communities about the threats to native wildlife caused by release of non-native species into the wild.	ongoing	SP									
Bio 3: Non-Native Species	Bio 3.2	Control and minimize impacts of non-native wildlife species	Control for non-native, predatory animal species that may negatively impact native species on the reserve	Bio 3.2.3	Manage to control the major threats from non-native species include aquatic predators (e.g., bullfrogs, and mosquito fish), domestic pets, and non-native birds such as starlings, house sparrows and cowbirds.	g) Implement adaptive management. Use monitoring results to determine the effectiveness of non-native species control methods and protection of native fauna. Adapt management strategy as necessary. Refer to Bio 1.1.3 (f) for additional details.	annual	MN	2	2	2	2					
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.1	Survey and monitor. See also Pub 3.0	a) Conduct annual dove and quail counts to assess population condition and obtain trend data	annual	MO		2	40						80
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.1	Survey and monitor. See also Pub 3.0	b) Conduct surveys every 3-5 years of resident and small game species throughout RJER	3-5 years	MO		2	40						80
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.1	Survey and monitor. See also Pub 3.0	c) Conduct harvest surveys to track numbers, species, and locations of take.	as needed	MO		2	8						40
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	a) Continue the practice of releasing only male game species (pheasants) so that non-native species cannot reproduce and form self-sustaining populations	ongoing	MN		2							
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	b) Manage and maintain game species habitat -Based on monitoring data, rotate hunting areas or periodically close areas if heavy use is adversely affecting the habitat that game species prefer.	as needed	MN		8	8						
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	b) cont. -Manage for all aspects of game species' needs, including food, water, cover, and breeding habitat	as needed	MN	2	8	80	16	80	40	80		160
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	c) Limit hunting. Continue the practice of holding only limited, permit only, organized hunting events.	ongoing	MN									
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.2	Manage for native and non-native game species (See also Pub 3.0).	d) Implement adaptive management. Use monitoring data to assess success of game species management strategies. Assess hunting capacity. Refer to Bio 1.1.3 (l) for additional details	annual	MN	2	2	2	2					
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	a) Enhance and/or restore habitat in designated hunting areas by removing or replacing non-native grasses with native grasses and forbs, mowing, and controlled burns	as needed	SP									
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	b) Assess current food plots for success. Evaluate other potential areas for manipulation or native/passive feeding centers. Continue planting as resources allow and benefit is derived.	as needed	MO/MN			24						
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	c) Assess current water sources. Evaluate other potential areas where water sources can be developed or artificially enhanced.	as needed	MO			8						24
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	d) Incorporate brush piles or vegetation design that will provide cover for quail and small game	as needed	MN			8				24		24

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	e) Construct and install dove cones where appropriate	as needed	MN			8				16		32
Bio 4: Game Species	Bio 4.1	Manage game populations	Manage game populations and associated habitat to provide limited hunting opportunities for the public, while protecting sensitive biological resources	Bio 4.1.3	Manage for native and non-native game species (See also Pub 3.0).	f) Evaluate success of habitat improvement projects and modify as necessary to achieve desired results	as needed	SP	2	2	2	2					
CULTURAL ELEMENT																	
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.1	Gather data	Compile all of the inventories and investigations of cultural resources for RJER that are on file with the Department. Create a working bibliography.	as feasible	D	2	16							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.2	Conduct record search	Conduct records search using a qualified cultural resources professional or consultant conduct a records search at the South Coastal Information Center (SCIC).	as needed	D		16							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.3	Maintain data	Maintain and continue to update the data collected from the Department files and the records search.	as needed	D		24							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.4	Evaluate resources	Formally evaluate known cultural resources for the California Register (to be conducted by a qualified cultural resources professional or consultant).	as needed	SP	2	8							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.5	Contact Native Americans	Contact the Native Americans identified in the 2005 contact program (see Appendix G), and solicit information on resources that may not be previously identified or that they deem important	as needed	MN	2	16							
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.6	Define areas to be surveyed	Using the data acquired from the SCIC, define the areas that have not been surveyed. In addition, review the adequacy and age of prior surveys to determine if certain areas need to be resurveyed.	as needed	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	a) Identify programs and planned development within RJER and conduct focused field surveys in those areas.	as needed	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	b) Avoid areas where resources are found.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	c) Encourage non-destructive research by professional archaeologists.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	d) Require publication and distribution of results.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.7	Conduct cultural resources inventories in areas to be surveyed, and evaluate identified resources (to be conducted by a qualified cultural resources professional or consultant)	e) Ensure proper curation of any materials collected, including notes and photographs.	ongoing	SP									
Cul 1: Cultural Resources	Cul 1.0	Identify Cultural Resources	Identify all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register	Cul 1.8	Add new data	Add new data to existing dataset	as needed	MN									
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect all cultural resources that are potentially significant to understanding the history of RJER and that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003)	a) Proposed staging area near the CEC: Maintain fencing and signage to protect sites CA-SDI-14,893 and -14,894, and avoid using the area where P-37-025320 is located	as needed	MN		2		8	8		8		16
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003)	b) Protect the Robinson Adobe (CA-SDI-14,826): -Avoid ground-disturbing activities within the recorded prehistoric and historic site area	as needed	MN		2							

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -An archaeologist should monitor any activities that result in disturbance of the ground surface or the adobe walls or foundations	as needed	MN		2							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Clear soil and debris away from the foundation of the wall under the supervision of an archaeologist, and remove vegetation from the base of the wall using an herbicide (do not pull plants)	as needed	MN		2		16			16		16
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Monitor the erosion gully located east of the adobe, and take remedial measures if needed, under the supervision of an archaeologist	as needed	MN		2		2	8	4	8		8
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Install low height signage around the adobe to notify visitors that the area should not be entered. The signage should not draw attention to the area, and fencing is not necessary	as needed	MN				2			4		4
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	b) Robinson Adobe cont -Coat the remaining adobe wall with a protective material; El Rey Superior Additive 200 is recommended	as needed	MN		2		8	8				
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	c) Proposed staging area on Otay Lake Road: No cultural resources are located within the project area, and no further measures are recommended	as needed	MN									
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	d) Protect Kiln (CA-SDI-6967H): Contract a cultural resources professional to conduct a conditions assessment and prepare a treatment plan; specific management recommendations would need to be made by a structural engineer who specializes in historic resources	as needed	MN	2	4		24	24	8	24		24
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	e) Protect Pio Pico Homestead site: Conduct onsite assessment to determine management needs.	as needed	SP									
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.1	Identify and prioritize. Identify the cultural resources on RJER that should be given first priority for protective management actions. Include the following, as identified by Hector (2002; 2003):	f) Evaluate all future projects for potential to impact cultural resources. Conduct a cultural resources review before conducting any ground-disturbing activities. Mitigate any potential adverse impacts to cultural resources through active management	as needed	MO/MN		4							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	a) Implement Category 1 Treatment. Preserve in place. -Restore and/or replace architectural features based on detailed and accurate representations of the original features. -Do not introduce plant materials into the sites such as invasive vining plants, surface roots of certain trees	as needed	SP		1		10	10	10	10		20
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	a) cont. -Implement active management of cultural resources including fencing re-routing trails, stabilization and repair of historic structures and features, i.e., providing covers for buildings or ruins, capping with non-cultural soils, and annual monitoring.	as needed	MN		1		10	10	10	10		20
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	b) Implement Category 2 Treatment. Preserve in place. Trails, staging areas, or other uses may be nearby if no direct access is provided to the resources. Treatments may include: avoidance, revegetation, limited stabilization of historic features, and monitoring.	as needed	SP		2		20	20	20	20		40
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	c) Implement Category 3 Treatment. Preserve in place. Trails and other modern amenities may be nearby. This category includes resources used in interpretive programs and for research and study. Treatment may include: avoidance of direct impacts, revegetation to hide or protect the resource, and restoration or reconstruction of a historic building for interpretive use	as needed	SP		2		20	20	20	20		40
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	d) Implement Category 4 Treatment. Ensure proper site specific documentation has been completed and submitted to the proper agencies and organizations; provide funds for curation of collected artifacts at an appropriate facility	as needed	SP		2		20	20	20	20		40
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.2	Implement treatments using the Treatment Categories provided by Hector (2002).	e) Retain Professional Assistance. Have a professional cultural resources person assist in assigning treatments to those not identified by Hector (2002)	as needed	SP		16							

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.3	Consult California law	When activities may affect cultural resources, consult California's statutes, regulations, and administrative policies regarding historic preservation and protection of cultural resources	as needed	MN		8							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	a) Avoid impacts to cultural resources whenever possible	as needed	MN		2		8	8				
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	b) Install Fencing as needed. The placement of fence posts should be monitored by an archaeologist. Split rail or lodge-pole fencing is adequate.	as needed	SP		2		2	24	8	24		48
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	c) Cap areas with trails or dirt roads with non-cultural soils; activities should be supervised by an archaeologist.	as needed	MN		2		24		24			
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	d) Revegetate to protect a site should not include any disturbance of the surface of the ground, even if the site has been an agricultural field	as needed	MN		2	24	8	80	40	80		160
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	e) Conduct additional monitoring as necessary	as needed	MO	2	16							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.4	Protect cultural resources using the following methods identified by Hector (2002) during planning.	f) Test the area and collect data if the resource cannot be avoided	as needed	MO		8							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.5	Monitor cultural resources at the recommended intervals (Appendix B)	a) Conduct monitoring, using qualified Department staff or volunteers, with professional consultation as needed. Mitigate, as described above, if damage or impacts are observed	as needed	MO		16							
Cul 1: Cultural Resources	Cul 2.0	Protect Cultural Resources	Protect significant cultural resources, including those that meet the criteria for listing in the California Register of Historical Resources	Cul 2.5	Monitor cultural resources at the recommended intervals (Appendix B)	b) Implement a stewardship program that trains volunteers to monitor the conditions of cultural resources. Site stewards will require mandatory training and ongoing monitoring. Youth service projects can be developed through this program	ongoing	OU		40							
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.1	Consult with Native Americans	Establish a relationship (through periodic phone calls and letters) with the Native American community. This could include a presentation to Native American communities and an invitation for input and concerns.	as needed	OU		16							
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.2	Create public contact	Create a contact list of all interested parties from the community.	as needed	OU		2						24	
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.3	Implement interpretive plan	Create and implement an interpretive plan for the public. Without threatening the integrity of the cultural resource, prepare written material, graphics, and/or interpretive displays describing what is present. Other interpretive displays could feature the history of ranching in San Diego.	ongoing	OU	4	4						320	
Cul 1: Cultural Resources	Cul 3.0	Involve the Community	Involve the community in cultural resource activities at the Rancho Jamul Ecological Reserve	Cul 3.4	Develop public outreach and educational programs	Develop public outreach and educational programs for users and visitors. Include educational materials that may be used in county schools curriculum.	ongoing	OU	4	4						160	
PUBLIC ACCESS ELEMENT																	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource.	Pub 1.1	Improve public access	a) Provide limited access to the public on a daily basis.	ongoing	MN	4	10	2	44	20	10	20	40	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource.	Pub 1.1	Improve public access	b) Build new parking lots at entrance along SR 94, and along Otay Lakes Road.	one-time task	MA	4	10	2	24	28	18	20	40	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource.	Pub 1.1	Improve public access	c) Continue to maintain access routes to existing and new parking lot.	ongoing	MA	2	4	2	20	20	10	20	40	
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resources	Pub 1.1	Improve public access	d) Improve physical accessibility and design. Improve design and landscaping of RJER entrance to make this area more inviting. Improve trails near the future visitor center and interpretive area for ADA accessibility.	ongoing	MA	4	10	2	28	20	10	20	40	
PUBLIC USE ELEMENT																	

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	a) Close RJER for up to three days after rain events to prevent damage to trails	as needed	MN		2	10						24
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	b) Close RJER to the public during and following fire and severe weather events	as needed	MN	2	4	10						24
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	c) Control access with locked gates	as needed	MN		4	4						
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resources	Pub 1.2	Restrict access as necessary to protect biological and cultural resources	d) Increase enforcement and create additional educational materials when unauthorized activities take place. Restore any damaged habitat as soon as feasible. In severe cases, public access or facilities may be removed, reduced or limited to certain locations.	as needed	MN/MA	2	2	4						328
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.3	Provide facilities for the public	a) Develop a sampling design and monitoring scheme to detect changes that may occur once RJER is opened to the public	as needed	MO	2	3	22						70
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.3	Provide facilities for the public	b) Rent and maintain portable toilets during hunting season. Evaluate need for other portable toilets in parking areas.	as needed	MA		3	22						70
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.3	Provide facilities for the public	c) Pursue funding and construction for a day use facility or classroom at the entrance parking lot off of SR 94.	as needed	MA		3	22						70
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.4	Evaluate use levels and visitor satisfaction periodically including use of visitor surveys	a) Conduct quantitative user surveys every 5 years or more frequently and estimate user capacity. Document condition of habitat in relationship to public use capacity	5 years	MO		2							40
Pub 1: Public Use	Pub 1.0	Public Access	Provide compatible wildlife-dependent opportunities for public access, while protecting sensitive biological resource:	Pub 1.4	Evaluate use levels and visitor satisfaction periodically including use of visitor surveys	b) Conduct periodic reviews of public uses of RJER; evaluate rules, regulations, guidelines, and materials to ensure compatibility of public uses.	annual	MO		2							40
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.1	Identify potential conflicts	Identify potential conflicts between recreational uses and resolve such conflicts.	as needed	MO	2	8		8					
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.2	Encourage hunter safety	Implement safe hunt design, and provide supervision, monitoring and enforcement of regulations.	ongoing	MN/MO	2	8		8					
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.3	Inform the public of RJER use designations and use restrictions	Provide information to the public regarding RJER use designations and use restrictions through outreach, signage, physical barriers, and the Department's website.	ongoing	OU	16	40	40	40	40	40	40	40	80
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.4	Have Department personnel available	Provide on-site staffing during times of high use to monitor visitor activities and provide information as needed to visitors.	as needed	MO		40		40					800
Pub 1: Public Use	Pub 2.0	Public Safety	Minimize competition and conflicts among users and facilitate compatibility between public uses	Pub 2.5	Have Department and law enforcement on-site periodically to enforce regulations	Work with California Department enforcement division to assign personnel and train personnel on regulations.	as needed	MN	40	40	40	40	40	40	40	40	160
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	a) Continue current seasonal hunting program in designated areas.	ongoing	MN	26	50	24	16		24			72
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	b) Evaluate whether current hunting program may be expanded as habitat and access is improved.	as needed	MO		4	16						
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	c) Maintain physical separation of hunting areas from closed areas through signage and landmarks that blend into the landscape, such as boulders along access roads	as needed	MN		4		8					
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	d) Provide hunter safety instruction on a regular basis at RJER.	ongoing	OU	4	8							
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	e) Continue encouragement of young hunters through participation in junior hunt programs.	ongoing	OU	2	4							
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	f) Conduct late summer volunteer "clean up day" to ready RJER for the upcoming hunting season.	annual	OU		2		8	8				
Pub 1: Public Use	Pub 3.0	Hunting	Provide safe, compatible and quality hunting opportunities to the public, while protecting sensitive biological resources	Pub 3.1	Maintain and improve safe hunting opportunities	g) Maintain a good relationship between Department staff, hunters, and volunteers.	ongoing	OU	2	2	2	2					

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	a) Identify and create specific wildlife viewing areas that provide for undisturbed wildlife viewing, protect sensitive species, and do not cause a visual impact (e.g., blinds in grassland may be too visible).	as needed	SP		4	26	16	40				
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	b) Manage existing wildlife routes and design future habitat enhancements that attract wildlife for viewing	ongoing	MN	2	8	8						
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	c) Provide adequate vegetative screening to protect wildlife while providing viewing areas.	ongoing	MN			8	8					
Pub 1: Public Use	Pub 4.0	Wildlife Observation	Provide compatible wildlife observation opportunities to the public	Pub 4.1	Maintain and improve wildlife observation	d) Develop interpretive signage for wildlife viewing trails (see also Pub 5.0 and 7.0).	one-time task	OU	2	2		6				40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.1	Develop an overall plan	Develop an overall plan for interpretive features including signs, blinds, and walking tours.	one-time task	OU	2	2						80	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.2	Develop and distribute interpretive materials	Develop and distribute interpretive materials including brochures and materials for self-guided tours.	ongoing	OU	2	2						40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.3	Convert the former race track	Convert the former race track into an ADA accessible interpretive nature trail with interpretive signs and displays of local and regional natural habitats and species (emphasizing those covered by MSCFP).	one-time task	OU	4	8	40	160	160	24	160	320	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.4	Construct a visitors center and develop interpretive material	Construct visitors center that includes interpretive signage, parking, bathrooms, a trailhead to the interpretive track, and a building with indoor exhibits and information desk. Staff with qualified volunteers.	one-time task	SP									
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.5	Provide additional parking	Move the gate back from SR 94 to provide additional parking at the visitors center.	one-time task	SP									
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	a) Develop programs specifically to create visitation and education opportunities for urban and disadvantaged youth, including "girls in science," hunter education, and collaborations with agencies and organizations that have a conservation curriculum.	ongoing	OU	2							80	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	b) Identify and designate an area to be used for research purposes that is closed to the general public. Work with local academic institutions on research needs for RJER.	ongoing	MO/SP		16	40						
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	c) Provide and continue forums and presentations for schools and museums (e.g., San Diego Natural History Museum) field trips.	ongoing	OU								40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.6	Develop new programs as time and budget allow	d) Provide guided field trips by volunteer docents and organizations.	ongoing	OU								40	
Pub 1: Public Use	Pub 5.0	Environmental Education	Provide compatible, wildlife-dependent environmental education and interpretation opportunities to the public	Pub 5.7	Construct viewing platform	Construct viewing platform and interpretive panels near the kiln areas. Evaluate fencing options to ensure public safety and protection of the kiln while allowing public viewing.	one-time task	SP									
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.1	Manage trail system	Maintain and post existing trail system	ongoing	MN		2		8					24
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.2	Inspect trail system	Routinely inspect and document condition of trails and habitat. If damage to biological resources is taking place, consider those trail elements for removal or relocation	ongoing	MO				8					24
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.3	Repair trails	Identify and repair unsafe sections of the trails as needed.	as needed	MA			4	8	24				48
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.4	Install barriers as needed	Install barriers such as logs, boulders and native vegetation (native prickly or thorny plants) to prevent trail widening, to close trails for restoration, or to control access to areas (e.g. areas closed for hunting or research).	as needed	MA		2	8	8			24		48
Pub 1: Public Use	Pub 6.0	Trail Use	Provide access to compatible trail use opportunities to the public for the purpose of wildlife-dependent activities	Pub 6.5	Evaluate the County Trails Plan	Evaluate The San Diego County Community Trails Master Plan for consistency with the goals and regulations of the reserve. Coordinate with the County as needed.	as needed	MO	4	8							
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.1	Erect and maintain signs at parking lots	Install and maintain signs at parking lots with ecological reserve maps, regulations, and safety information such as general rules, the prohibition of rifles or pistols, and potential hazards.	ongoing	MN				2	4	4	4		8
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.2	Work with California Department of Transportation	Work with California Department of Transportation (Caltrans) to install signage on SR 94 to direct visitors to the public entrance of RJER and the CEC.	one-time task	MN	4	16							

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.3	Provide additional signs to protect natural resources and direct the public to accessible areas.	Provide the following types of signs: RJER entrance, trails and hunting access areas, areas that are temporarily closed for nesting, maintenance, habitat restoration, emergency repairs, etc.	as needed	MN		4			16				
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.4	Monitor and manage signage	Develop a monitoring and maintenance schedule for all signage.	as needed	MO/MA					16				
Pub 1: Public Use	Pub 7.0	Signage	Provide signage that communicates regulations, safety warnings, code of conduct and interpretive messages to the public	Pub 7.5	Repair signage as needed	Inventory existing boundary signage and fencing; identify signs and fencing in need of repair; and identify and implement remedial measures as necessary.	as needed	MO/MA					16				32
Pub 1: Public Use	Pub 8.0	Community Partnership	Continue to foster community partnership	Pub 8.1	Facilitate the participation of wildlife agencies, NGOs, community groups and the public in activities relevant to this LMP. (see also Crd 1)	a) Communicate and coordinate with various community groups for special events, to discuss volunteer opportunities, and to develop new program areas.	ongoing	OU	48	48							
Pub 1: Public Use	Pub 8.0	Community Partnership	Continue to foster community partnership	Pub 8.1	Facilitate the participation of wildlife agencies, NGOs, community groups and the public in activities relevant to this LMP. (see also Crd 1)	b) Coordinate with volunteers to protect wildlife resources and habitat. This is especially important with large work parties. Provide training and briefings as necessary.	ongoing	OU		24	40					160	
Pub 1: Public Use	Pub 8.0	Community Partnership	Continue to foster community partnership	Pub 8.1	Facilitate the participation of wildlife agencies, NGOs, community groups and the public in activities relevant to this LMP. (see also Crd 1)	c) Coordinate with the Jamul Trail Council to maintain and repair trails.	ongoing	OU		16		16					
Pub 1: Public Use	Pub 9.0	Regulations	Support compatible wildlife-dependent public use through consistent regulations and coordination with other agencies and applicable plans such as the NCCP	Pub 9.1	Ensure compliance with regulations (see also Management Coordination Element, Section H)	a) Periodically evaluate public use, and RJER regulations to identify changes necessary to maintain consistency with the goals of this LMP. Submit regulations changes through headquarters for Fish and Game Commission review and adoption.	as needed	MO	8	8	8	8					
Pub 1: Public Use	Pub 9.0	Regulations	Support compatible wildlife-dependent public use through consistent regulations and coordination with other agencies and applicable plans such as the NCCP	Pub 9.1	Ensure compliance with regulations (see also Management Coordination Element, Section H)	b) Periodically review activities within RJER for compatibility with the MSCP, specifically as updated monitoring and management guidelines and information become available for MSCP participants.	as needed	MO	4	4	4	4					
FACILITY MANAGEMENT ELEMENT																	
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.1	Manage roads and trail system (See also Bio 1.2, Bio 1.4, Bio 3.1, Pub 6.0, and Pub 7.0)	a) Restore closed trails. Identify trails to be closed, quantify acreage, and implement active restoration through decompaction, invasives removal, and when necessary, seeding or planting. Invasive species eradication efforts should continue for no less than five years	as needed	RE/MA		2	40	16	40	24	40		80
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.1	Manage roads and trail system (See also Bio 1.2, Bio 1.4, Bio 3.1, Pub 6.0, and Pub 7.0)	b) Prevent erosion damage to trails by developing and implementing BMPs as necessary.	as needed	MA		4		16					
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.1	Manage roads and trail system (See also Bio 1.2, Bio 1.4, Bio 3.1, Pub 6.0, and Pub 7.0)	c) Prohibit off-road activities. Ensure that no illegal trails are formed by off-road activities by posting signs or installing barriers as needed.	as needed	MA		2							
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.2	Maintain signage and public education information	Remove, add, or update signs as necessary (See Pub 7.0). Review and update educational information at Kiosks, at the CEC, and in informational brochures as necessary (See Pub 5.0).	as needed	MA	2	4		4					
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.3	Manage Fences, Gates, and Barriers	Manage fences, gates, barriers, and other structures to support wildlife movement, and to protect impacts to sensitive biological resources (See Pub 1.0, Pub 2.0, Pub 6.0). Remove structures that impede wildlife movement, management activities or Border Patrol Access.	as needed	MN		2	24	8	24	24	24		48
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.4	Maintain structures	Maintain Conservation Education Center, and other structures to support management and public education activities.	as needed	MA	24	40	40	40	80	120	500	40	800
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	a) For each well, determine functionality, the depth to groundwater, and the pumping rate. In addition, conduct water quality analysis of the well water to determine if it is safe for people and wildlife.	as needed	MA				2			8		8
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	b) Maintain functional wells regularly. Cover all non-functional wells to protect the public from accidents.	annual	MA		2		4					20
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	c) Maintain fire hydrants by lubricating and testing them every six months.	6 months	MA							2		

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	d) Remove sediment buildup from aqueducts and repair washouts as needed.	as needed	MA				4		24			10
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	e) Maintain water levels in selected artificial ponds to support native flora and fauna using existing pumps and levy system.	as needed	MA		2		4			40		10
Fac 1: Facility Management	Fac 1.0	Facility Management	Manage facilities to provide recreation education, and research opportunities, while protecting sensitive biological resources. (See also Public Use Element).	Fac 1.5	Maintain water features.	f) Prepare a water features "operations manual" and graphics of the water system for ease in repairs and maintenance.	ongoing	D		8		8					
SCIENTIFIC RESEARCH AND BIOLOGICAL MONITORING																	
Mon 1: Research and Monitoring	Mon 1.0	Scientific Research	Provide opportunities for research to support adaptive management and provide useful biological information	Mon 1.1	Identify data gaps	Identify data gaps and/or encourage research on species or ecosystem-level biology, management, or monitoring.	ongoing	MO	4	4	8						
Mon 1: Research and Monitoring	Mon 1.0	Scientific Research	Provide opportunities for research to support adaptive management and provide useful biological information	Mon 1.2	Identify experimental design opportunities	Identify experimental design opportunities to be incorporated into habitat and species management, restoration, and/or introduction projects on the reserve	ongoing	SP	4	4	4						
Mon 1: Research and Monitoring	Mon 1.0	Scientific Research	Provide opportunities for research to support adaptive management and provide useful biological information	Mon 1.3	Facilitate access to students and researchers	Facilitate access to students and researchers from local universities and colleges. Encourage research that support the goals of this LMP. Provide access authorization letter for all authorized research activity.	ongoing	OU		8	16						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management and monitoring activities within RJER, including: -Draft MSCP Framework Management Plan (County of San Diego 2001); Ogden, 1996; CBI 2001a and 2001b)	a) Incorporate established protocols related to listed species -USFWS focused species survey protocols -Management/monitoring plan for Quino checkerspot (Longcore, et al. 2003). -Survey/monitoring for the arroyo toad (County of S.D., 2006)	ongoing	MO/MN	8	8	8						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	b) Incorporate established protocols related to MSCP covered species (especially narrow endemic species).	ongoing	MO/MN	24	24	80						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	c) Incorporate established protocols related to vegetation communities -California Native Plant Society - Rapid Assessment Protocol (CNPS 2005). -MSCP annual report.; MSCP post-fire habitat recovery monitoring photo points established near Rancho Jamul. (County of San Diego 2006).	ongoing	MO/MN	24	24	80						
Mon 1: Scientific Research and Biological Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	d) Incorporate established protocols related to sensitive habitats: -Final report for "Creating an Index of Biological Integrity for Coastal Sage Scrub: A tool for habitat quality assessment and monitoring." (Diffendorfer, et al. 2004). -Adaptive management for southern California grasslands. (Chadden, A., E. Dowksza, and L. Turner 2004)	ongoing	MO/MN	24	24	80						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	e) Incorporate established protocols related to rare plants. -Survey methods consistent with baseline study (USGS 2002). -MSCP rare plant monitoring (see City of San Diego 2005).	ongoing	MO/MN	8	8	40						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	f) Incorporate established protocols related to sensitive wildlife. -Habitat surveys and monitoring reports on bats, arroyo toad, and southwestern pond turtle (County of San Diego 2006).	ongoing	MO/MN	24	24	80						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	g) Incorporate established protocols related to general surveys. -General wildlife surveys and non-native species surveys should be consistent with methods used in USGS (2002).	ongoing	MO/MN	8	8	40						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	h) Incorporate established protocols related to wildlife movement. -Wildcat Canyon Road enhancement project before-after-control-impact study. (EDAW 2004). -Wildlife Corridor Monitoring Study, prepared for the Multiple Species Conservation Program (CBI 2003).	ongoing	MO/MN		2	24						
Mon 1: Research and Monitoring	Mon 2.0	Consistency with Appropriate Management and Monitoring Protocols	When defining the details of the methodology for tasks in the Biological Element goal, use relevant, established protocols	Mon 2.1	Incorporate established protocols into management activities: (County of San Diego 2001; Ogden, 1996; CBI 2001a and 2001b)	i) Incorporate established protocols related to adaptive management. -Designing monitoring programs in an adaptive management context for regional multiple species conservation plans. (USGS 2004a).	ongoing	MO/MN	4	4	4						
FIRE MANAGEMENT ELEMENT																	

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.1	Meet biennially, with CDF representatives and identify areas of concern	Meet biennially, with CDF representatives to discuss fire-related issues relevant to the RJER. Identify areas of concern should be identified on a map and update the map as needed.	biennially/as needed	MN	8	8	8	8					
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	Prepare WFMP to address ongoing fire management needs for wildlife habitat and defensible space. Review WFMP every 5 years and update if needed.	one-time task	D	2	16							
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	a) Assess road conditions and maintain road surfaces and width to allow access by wildland firefighting engines	as needed	MO				8					
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	b) Mow grasses and thin or reduce vegetation adjacent to public vehicle access to minimize risks of ignition.	as needed	MN/D			8	2		40			
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	c) Address coordination needs with Caltrans and the Department for fuel management along SR 94.	as needed	MN/D			8	2		16			
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	d) Incorporate plans for cooperative management of habitat through prescribed burns at specific locations.	as	MN/D		8	8						
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.2	Develop a wild fire management plan (WFMP)	e) Incorporate methods for fire response that would consider effects on natural and cultural resources within RJER.	one-time task	MN/D	4	4	8						
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.3	Participate in preparing Community Wildfire Protection Plans (CWPP)	Participate in preparing Community Wildfire Protection Plans (CWPP) for areas that encompass RJER.	ongoing	MN/D		8							
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.4	Provide resource specialist to represent the Department in the Incident Command System (ICS)	Train a Department biologist to serve the role of resource specialist or agency representative through the (ICS)	ongoing	MN	8	8	8	8					
Fire 1: Fire Management	Fire 1.0	Pre-fire Fire Management	Develop and implement pre-fire management measures to sustain ecosystem health, and minimize impacts.	Fire 1.5	Ensure that project incorporates adequate defensible space so that RJER lands	Review and comment on adjacent development and proposals to ensure that project incorporates adequate defensible space so that RJER lands are not impacted later.	as needed	MO	4	16	16						
Fire 1: Fire Management	Fire 2.0	Fire Suppression	Conduct wildfire suppression activities to sustain ecosystem health, and minimize impacts	Fire 2.1		Establish staging areas on roads and already-disturbed areas	as needed	MN		4							
Fire 1: Fire Management	Fire 2.0	Fire Suppression	Conduct wildfire suppression activities to sustain ecosystem health, and minimize impacts	Fire 2.2	Restrict the use of heavy equipment	Avoid the use of bulldozers or other heavy equipment within 100 feet of sensitive biological and cultural resources unless necessary for repairs or habitat restoration; protect biological and cultural resources from negative effects.	as needed	MN	4	4	4	4					
Fire 1: Fire Management	Fire 2.0	Fire Suppression	Conduct wildfire suppression activities to sustain ecosystem health, and minimize impacts	Fire 2.3	Coordinate fire suppression activities	Coordinate fire suppression activities as appropriate for wildlands and natural habitat, and cooperate with CDF and local fire districts (including the National Wildlife Refuge, BLM, and rural fire departments).	ongoing	MN	2								
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.1	Implement habitat restoration as needed after a fire.	Immediately after wildfire suppression activities, restore roads, fences, trails, and landscape contours to pre-fire conditions and mitigate for any damage. See Bio 1.2 and 1.4.	as needed	RE/MA	8	8	16	16		80			160
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.2	Implement emergency remediation	Complete emergency watershed work as soon as possible and before the first heavy rainfall.	as needed	RE	2	2	24	24		80			160
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.3	Repair areas in riparian and wetland habitats.	Repair culverts and stream crossings and restore drainage and road surfaces in areas damaged by firefighting activities and post-fire storm runoff (see Bio 1.4)	as needed	RE/MA	2	2	8	8	24	24			80
Fire 1: Fire Management	Fire 3.0	Post-fire Management	Conduct post-fire activities and erosion control to enhance natural plant recovery and succession, restore ecosystem health, and minimize impacts.	Fire 3.4	Monitor invasion of weeds	Monitor invasion of weeds in areas disturbed by fire activities and the effectiveness of erosion control methods, and take corrective actions as needed (see Bio 3.1)	as needed	MO			40						80
MANAGEMENT COORDINATION ELEMENT																	
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.1	Standardize methods of data collection and data management	a) Develop a protocol for data collection and data management, including GIS data, to ensure consistency even if there is a personnel change in the Department.	one-time task	D	12	12	32						
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.1	Standardize methods of data collection and data management	b) Ensure that the protocol is consistent with Department procedures and with the County's comprehensive MSCP database and reporting procedures.	one-time task	D	4	4							
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.2	Prepare annual or semi-annual status reports	Prepare annual or semi-annual status reports. Make data and reports available to CDFG, other agencies and possibly the public. If feasible, post online.	annual	D	4	24	8	8					

Operations and Maintenance Requirements (hours by staff position) to Implement LMP

Element	Goals			Tasks and Action Items			Schedule	Mgmt Type*	Sr Bio Super	Assoc Biologist/Hab Sup II	Wildlife Biologist	Wildlife Habitat Super I	Wildlife Habitat Assist	Tractor Oper Laborer	Fish and Wildlife Tech	Fish and Wildlife Interpret I	Scientific/Seasonal Aid
	Goal Code	Subject	Statement	Task Code	Task	Action Items											
Crd 1: Management Coordination	Crd 1.0	Plan Revisions	Collect and manage RJER monitoring data in a manner that facilitates MSCP reporting and future LMP revisions	Crd 1.3	Incorporate new data and revise LMP every five years	Revise LMP every five years and prepare appropriate CEQA documentation.	5 years	D	24	24	24	24					
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	a) Meet with county, state, and federal resource agencies.	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	b) Meet with NGOs.	ongoing	MN	24	24						40	
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	c) Meet with the scientific community and other land managers using adaptive management strategies.	ongoing	MN	24	24	40						
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	d) Meet with the public to provide them with an opportunity to ask questions and express concerns.	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.1	Coordinate with other entities, as appropriate.	Discuss conservation threats; management, monitoring, restoration, and reintroduction; results of management tasks and scientific research; and potential future projects	ongoing	MN	24	24	24	24				24	
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	Coordinate and ensure consistency with the following regional planning efforts: a) South County MSCP subarea plan.	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	b) Avoid conflicts with County of San Diego General Plan and Jamul-Dulzura Community Plans. Review and comment on proposed projects that may affect RJER	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	c) Ensure that County trails program and Jamul-Dulzura Community Trail and Pathway Plan are consistent with the goals of the LMP. Evaluate goals for trail placement as appropriate	ongoing	MN	24	24							
Crd 1: Management Coordination	Crd 2.0	Regional Conservation Coordination	Coordinate with all interested parties involved in the region to ensure consistency with regional planning efforts.	Crd 2.2	Coordinate with relevant regional planning efforts, to ensure that management actions and reporting for RJER are consistent	d) Ensure Otay River Watershed Management Plan (WMP) and Special Area Management Plan (SAMP) are consistent with goals of this LMP. Evaluate and implement watershed goals and policies as appropriate.	ongoing	MN	16	16							
Total Hours:									978	2,336	3,829	1,474	1,712	1,408	2,126	1,728	8,384
FTE:									0.5094	1.21667	1.99427	0.76771	0.89167	0.73333	1.10729	0.9	4.36667

D - report, plan, or other document to be prepared
LK - wildlife movement corridor and habitat linkage
MN - management
MO - monitoring
OU - public outreach
SP- special project

Grand Total No. Hours: 23,975
Grand Total FTE: 12